

Community Services Department  
Planning and Development  
**SPECIAL USE PERMIT FOR GRADING  
APPLICATION**



Community Services Department  
Planning and Development  
1001 E Ninth St., Bldg A.  
Reno, NV 89520

Telephone: 775.328.3600

## Washoe County Development Application

Your entire application is a public record. If you have a concern about releasing personal information, please contact Planning and Development staff at 775.328.3600.

<b>Project Information</b>		Staff Assigned Case No.: _____	
Project Name:			
Project Description:			
Project Address:			
Project Area (acres or square feet):			
Project Location (with point of reference to major cross streets <b>AND</b> area locator):			
Assessor's Parcel No.(s):	Parcel Acreage:	Assessor's Parcel No(s):	Parcel Acreage:
Section(s)/Township/Range:			
<b>Indicate any previous Washoe County approvals associated with this application:</b>			
Case No.(s).			
<b>Applicant Information</b> (attach additional sheets if necessary)			
<b>Property Owner:</b>		<b>Professional Consultant:</b>	
Name:		Name:	
Address:		Address:	
Zip:		Zip:	
Phone:                      Fax:		Phone:                      Fax:	
Email:		Email:	
Cell:                              Other:		Cell:                              Other:	
Contact Person:		Contact Person:	
<b>Applicant/Developer:</b>		<b>Other Persons to be Contacted:</b>	
Name:		Name:	
Address:		Address:	
Zip:		Zip:	
Phone:                      Fax:		Phone:                      Fax:	
Email:		Email:	
Cell:                              Other:		Cell:                              Other:	
Contact Person:		Contact Person:	
<b>For Office Use Only</b>			
Date Received:                      Initial:		Planning Area:	
County Commission District:		Master Plan Designation(s):	
CAB(s):		Regulatory Zoning(s):	

# Special Use Permit Application for Grading Supplemental Information

(All required information may be separately attached)

Chapter 110 of the Washoe County Code is commonly known as the Development Code. Specific references to special use permits may be found in Article 810, Special Use Permits. Article 438, Grading, and Article 418, Significant Hydrologic Resources, are the ordinances specifically involved in this request.

1. What is the purpose of the grading?

2. How many cubic yards of material are you proposing to excavate on site?

3. How many square feet of surface of the property are you disturbing?

4. How many cubic yards of material are you exporting or importing? If none, how are you managing to balance the work on-site?

5. Is it possible to develop your property without surpassing the grading thresholds requiring a Special Use Permit? (Explain fully your answer.)

6. Has any portion of the grading shown on the plan been done previously? (If yes, explain the circumstances and the year the work was done.)

7. Have you shown all areas on your site plan that are proposed to be disturbed by grading? (If no, explain fully your answer.)



8. Can the disturbed area be seen from off-site? If yes, from which directions, and which properties or roadways?

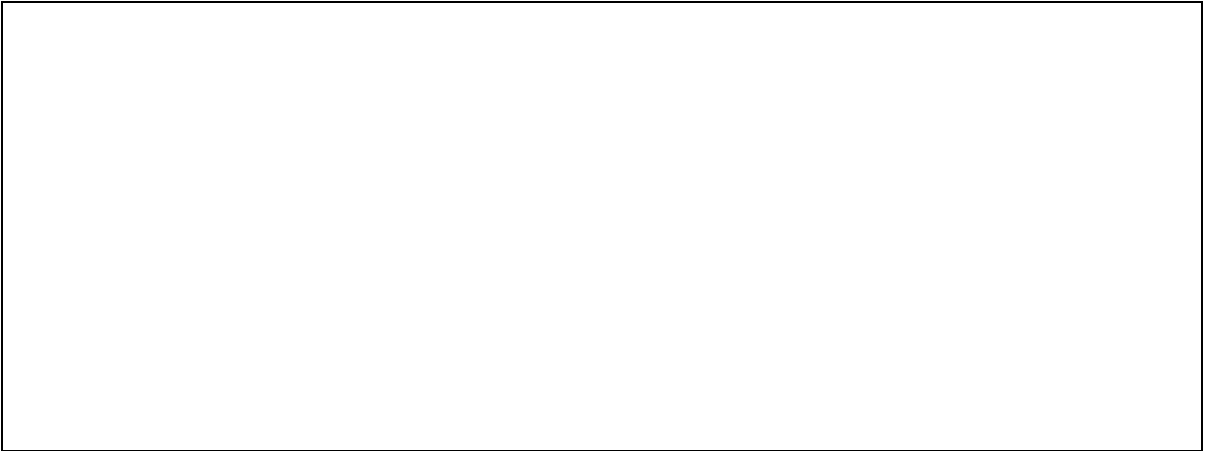
9. Could neighboring properties also be served by the proposed access/grading requested (i.e. if you are creating a driveway, would it be used for access to additional neighboring properties)?

10. What is the slope (Horizontal:Vertical) of the cut and fill areas proposed to be? What methods will be used to prevent erosion until the revegetation is established?

11. Are you planning any berms?

<input type="checkbox"/> Yes	<input type="checkbox"/> No	If yes, how tall is the berm at its highest?
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12. If your property slopes and you are leveling a pad for a building, are retaining walls going to be required? If so, how high will the walls be and what is their construction (i.e. rockery, concrete, timber, manufactured block)?



13. What are you proposing for visual mitigation of the work?



14. Will the grading proposed require removal of any trees? If so, what species, how many and of what size?



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15. What type of revegetation seed mix are you planning to use and how many pounds per acre do you intend to broadcast? Will you use mulch and, if so, what type?

16. How are you providing temporary irrigation to the disturbed area?

17. Have you reviewed the revegetation plan with the Washoe Storey Conservation District? If yes, have you incorporated their suggestions?

18. Are there any restrictive covenants, recorded conditions, or deed restrictions (CC&Rs) that may prohibit the requested grading?

<input type="checkbox"/> Yes	<input type="checkbox"/> No	If yes, please attach a copy.
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# DRAINAGE REPORT

FOR

## MUSTANG INDUSTRIAL DEVELOPMENT

Washoe County, Nevada

APN  
084-370-02

*Prepared for:*

*Scannell Properties  
821 Meander Court, Suite 200  
Medina, MN 55340*

*Prepared by:*



10451 Double R Blvd.  
Reno, Nevada 89521

February 17, 2015  
Job Number: 14217

## TABLE OF CONTENTS

1. GENERAL LOCATION AND DEVELOPMENT DESCRIPTION	
A. SITE LOCATION	Page 2
B. DESCRIPTION OF PROPERTY	Page 2
C. PROJECT DESCRIPTION	Page 2
2. DRAINAGE BASIN DESCRIPTION	Page 2
A. DRAINAGE DESCRIPTION	Page 2
B. FLOODPLAIN INFORMATION	Page 2
3. PROPOSED DRAINAGE FACILITIES	Page 3
A. COMPLIANCE WITH REGULATIONS AND ADOPTED PLANS	Page 3
B. HYDROLOGIC CRITERIA	Page 3
C. FACILITY DESIGN CALCULATIONS	Page 4
4. CONCLUSION	Page 4

### EXHIBITS

EX-1	VICINITY MAP
EX-2	DEVELOPED BASIN MAP
EX-3	FEMA MAP
EX-4	FEMA MAP
EX-5	SLOPE MAP

### APPENDIX

A	REGIONAL DRAINAGE CRITERIA
B	EXISTING BASIN CALCULATIONS
C	DEVELOPED BASIN CALCULATIONS
D	DETENTION BASIN CALCULATIONS

## **INTRODUCTION**

### LOCATION OF PROPERTY

The Mustang Industrial Development is a proposed development located on a vacant parcel of land off the Mustang Road Exist east of Sparks on Interstate 80. The parcel is bound by the UP Railroad to the north and the Truckee River to the south. Please see attached site plan for location. The site is approximately 117.76 acres with an APN of 084-370-02. The project is located in portions of Section 15 & 16, Township 19 North, Range 21 East, Mount Diablo Meridian in Washoe County, Nevada. See Exhibit 1 for a general Vicinity Map.

### DESCRIPTION OF PROPERTY

The site is presently undeveloped land with the slope falling from the north side of the site to the river along the south side of the property. The undisturbed area of the site is sparsely populated with small weeds and sagebrush up to 2 feet in height.

### PROJECT DESCRIPTION

Scannell Properties is proposing to develop a 117-acre parcel in the Truckee Canyon area of Washoe County, Nevada, near the intersection of Interstate 80 and Mustang Road. The site is bound by the Truckee River to the south and the Union Pacific Railroad to the north. The current zoning, Industrial, allows for the proposed use which includes two light industrial buildings that will be approximately 344,000 square feet and 517,000 square feet. Site development will be supported by infrastructure improvements including the construction of a new road from Mustang Road, a water main extension from the north, on-site sewer collection and treatment, and stormwater ponds to collect runoff. The project is expected to begin late-summer of 2015.

## **DRAINAGE BASIN DESCRIPTION**

### DRAINAGE DESCRIPTION

The entire site is being planned for development, as per Exhibit 2 attached, our site has been divided into five separate detention basin areas. All site drainage will be routed to each of these basins, each basin has been designed to meet the Washoe County LID standards for water quality and will treat the runoff before being allowed to be discharged back into the natural drainage way.

### FLOODPLAIN INFORMATION

The project site lies in both Flood Zone AE and X. This information is based on the FEMA Flood Insurance Rate Map No. 32031C3069G and 32031C3088G, dated March 16, 2009 for Washoe County, Nevada. Flood Zone AE is defined as base floodplain where base flood elevations are provided. Flood Zone X is defined as "Areas determined to be outside the 500 year flood plain". Please see Exhibit 4 for the FEMA Map.

## **PROPOSED DRAINAGE FACILITIES**

### COMPLIANCE WITH REGULATIONS AND ADOPTED PLANS

The design criteria which has been used for this drainage report is in compliance with the Washoe County design guidelines, Article 438 Grading Standards.

### HYDROLOGIC CRITERIA

The following design criteria assumptions were used for this analysis:

- Design for on-site facilities is based upon the 100 year storm event.
- Rainfall intensity/duration frequencies were obtained from the Washoe County, NV NOAA Atlas 14 Point Precipitation Frequency (Please see Appendix A)
- Runoff coefficients were obtained from Table 7-7 of the Rational Method QTR-55 Software Program distributed by Hasted Methods.

### METHODOLOGY

The rational method was used to determine the peak flows. The parameters for this method are:

1. The drainage area (A, acres)
2. Time of Concentration ( $T_c$ , minutes)
3. Runoff Coefficient (C)
4. Rainfall Intensity (i, inches per hour)

The time of concentration is calculated based on the equation:

$$T_c = 10 \text{ min or } L / (V \times 60), \text{ whichever is greater,}$$

where

L=The travel distance in feet

V=Channel or overland velocity in feet per second

Due to the relatively small size of the site and sub areas and the high runoff potential within commercial developments, the minimum  $T_c$  of 10 minutes was used in this analysis.

Rainfall intensity/duration frequencies were obtained from the NOAA Atlas 14 Point Precipitation Frequency IDF Curve. For  $T_c=10$  min., the rainfall intensities are  $i_{25}=2.39$  in/hr and  $i_{100}=3.57$  in/hr.

From the Public Works Design Manual (See Appendix A), the following runoff coefficients were used:

Developed C=0.90

Undeveloped C=0.45

The peak runoff is calculated using the following equation:  $Q=CiA$

**FACILITY DESIGN CALCULATIONS**

ON-SITE DRAINAGE CALCULATIONS

Our proposed project will have an on-site storm drainage system consisting of four separate detention pond areas. These areas will have multiple sub basins within each basin but for summary purposes they will be lumped together. Table's 1 and 2 show the net increase in flow due to the development and the detention/retention/retention basin required sizing. All calculations can be found in Appendix B, C and D.

**Table 1 - Peak Basin Flow Summary**  
25 & 100-Year Frequency

	Existing 25Yr(cfs)	Developed 25 Yr(cfs)	Net Increase (cfs)	Existing 100Yr(cfs)	Developed 100Yr(cfs)	Net Increase (cfs)
<b>Basin</b>						
Basin 1	10.04	20.20	10.16	14.96	30.18	15.22
Basin 2	7.81	18.01	10.20	11.63	26.89	15.26
Basin 3	46.16	95.35	49.19	68.78	142.42	73.64
Basin 4	14.10	26.47	12.37	21.00	39.53	18.53

**Table 2 - Basin Volume Summary**  
25 & 100-Year Frequency

	100 yr Volume Required (cf)	Volume Provided (cf)
Basin 1	9,674	10,500
Basin 2	9,927	10,500
Basin 3	47,023	47,500
Basin 4	11,633	12,000

CONCLUSION

All designed storm drain and flood control facilities are effective in controlling storm runoff and have no impact on existing off-site facilities. Therefore, no mitigation of impacts is required. In addition, the storm drain and flood control facilities are in compliance with the following:

- FEMA requirements - No buildings are proposed within the existing or proposed 100-year flood plain boundaries.
- Drainage Laws – As designed, the drainage system shall promote and preserve the general health, welfare, and economic being of the region.



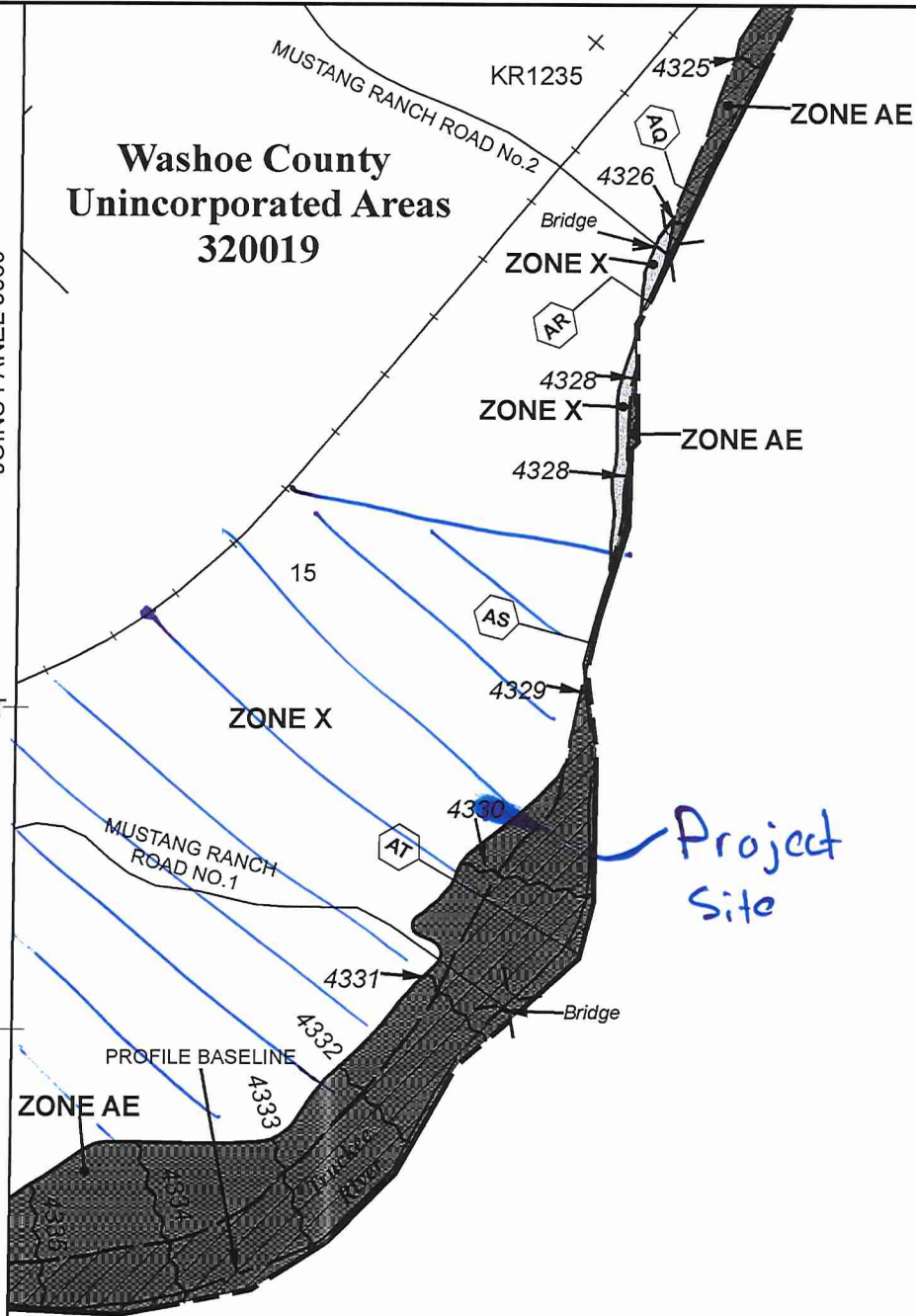
- The designed facilities are consistent with and integrated with the Washoe County Drainage Master Plan.
- All storm drain and flood control improvements have been designed to meet or exceed the design standards as set forth in the overall Washoe County Master Drainage Plan and in compliance with the Washoe County design guidelines, Article 438 Grading Standards.

**EXHIBITS**

Washoe County  
Unincorporated Areas  
320019

JOINS PANEL 3069

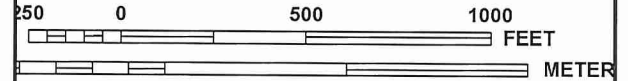
14860000 FT



National Flood Insurance Program at 1-800-658-6026.



MAP SCALE 1" = 500'



NFIP

PANEL 3088G

**FIRM**  
FLOOD INSURANCE RATE MAP

WASHOE COUNTY,  
NEVADA  
AND INCORPORATED AREAS

PANEL 3088 OF 3475

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
WASHOE COUNTY	320019	3088	G

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

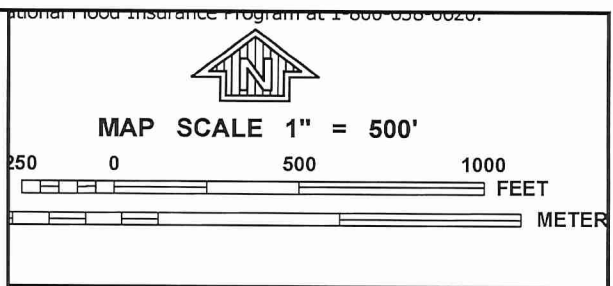
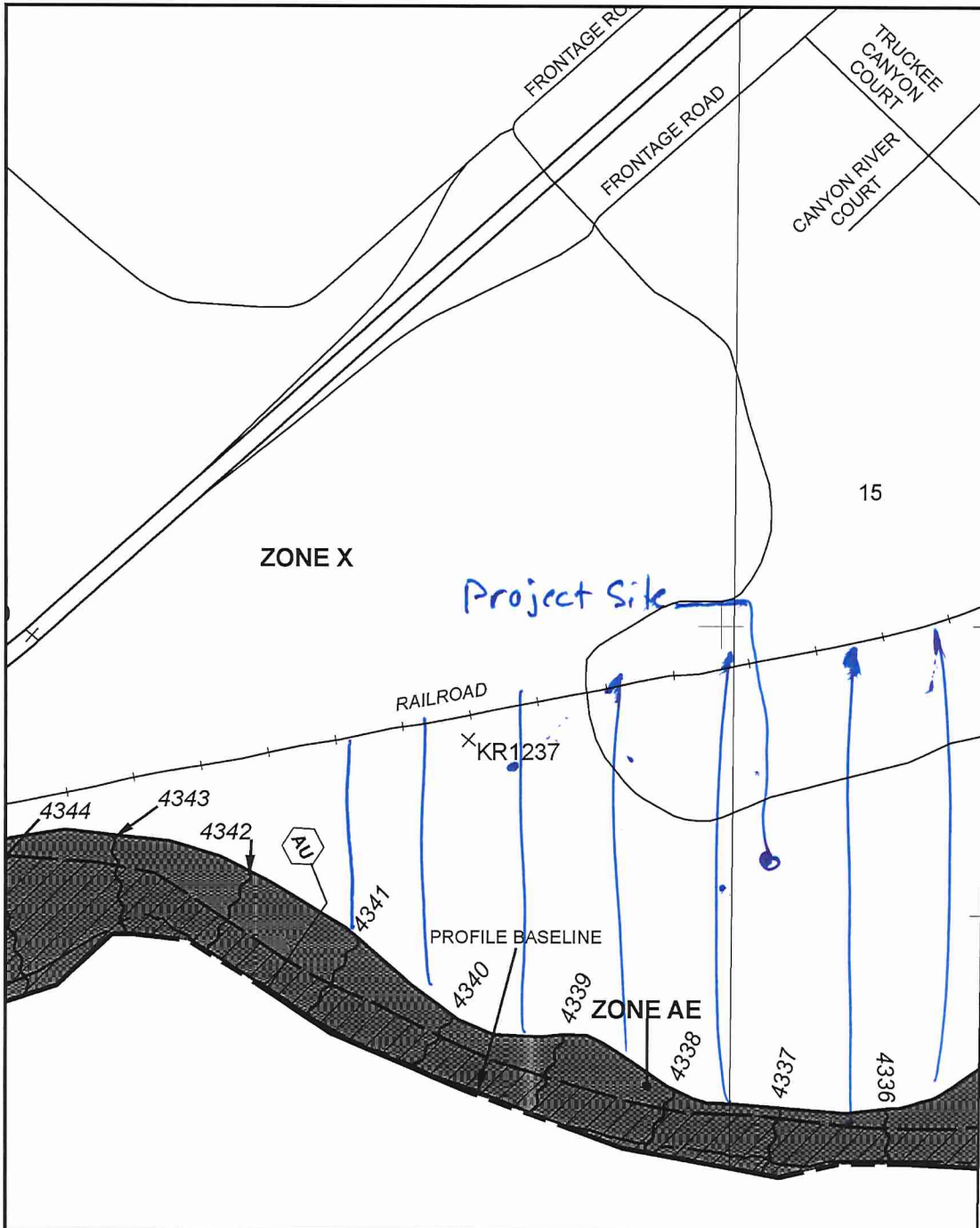


MAP NUMBER  
32031C3088G

MAP REVISED  
MARCH 16, 2009

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at [www.msc.fema.gov](http://www.msc.fema.gov)



PANEL 3069G

**FIRM**  
FLOOD INSURANCE RATE MAP


**WASHOE COUNTY,  
NEVADA  
AND INCORPORATED AREAS**

PANEL 3069 OF 3475  
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

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**APPENDIX A**

**REGIONAL  
DRAINAGE CRITERIA**





**NOAA Atlas 14, Volume 1, Version 5**  
**Location name: Sparks, Nevada, US\***  
**Latitude: 39.5090°, Longitude: -119.6215°**  
**Elevation: 4462 ft\***  
\* source: Google Maps



**POINT PRECIPITATION FREQUENCY ESTIMATES**

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

[PF tabular](#) | [PF graphical](#) | [Maps & aeriels](#)

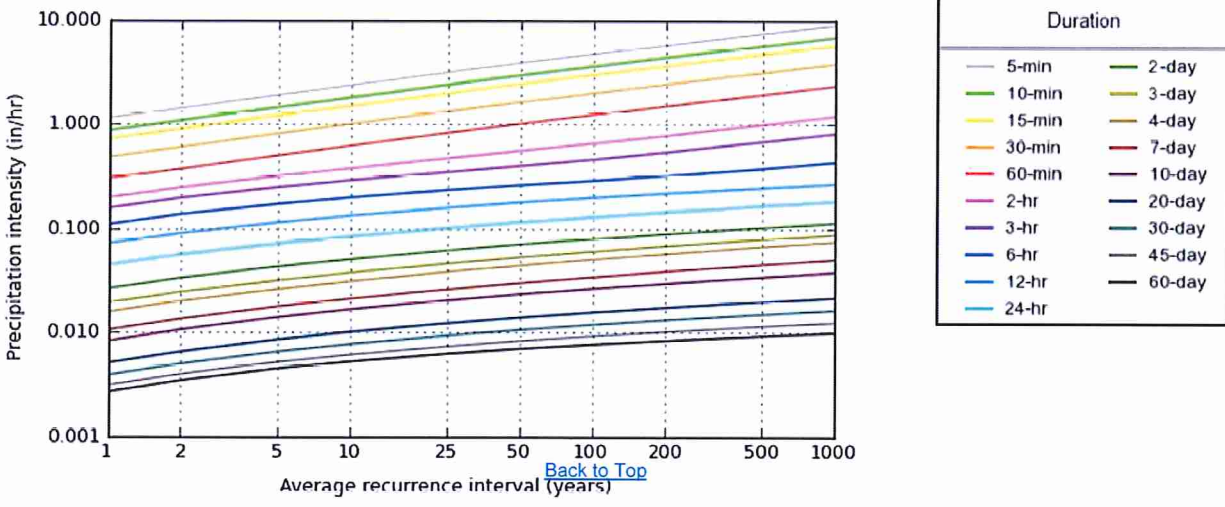
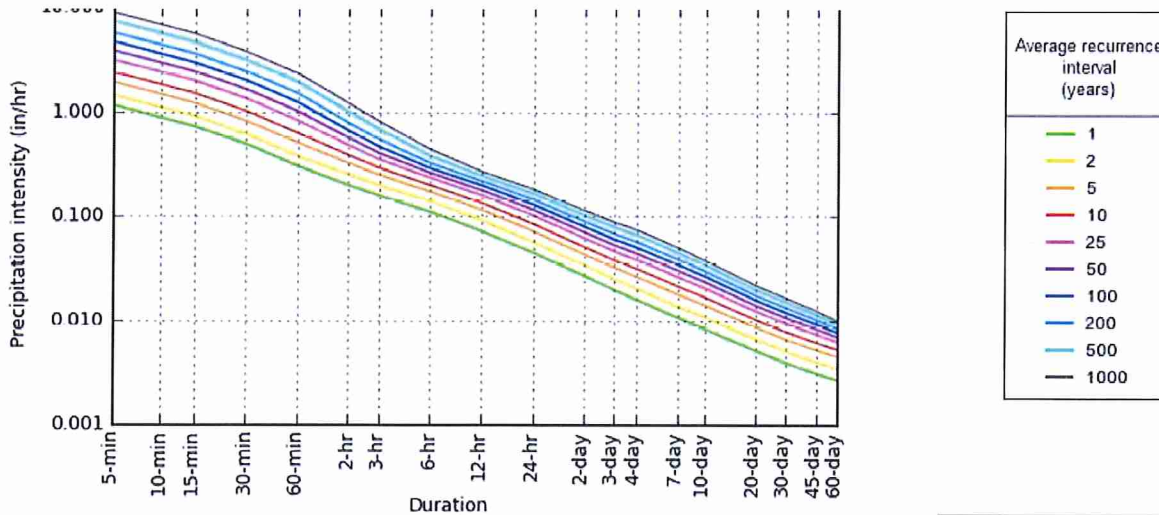
**PF tabular**

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour) <sup>1</sup>										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	1.15 (0.960-1.33)	1.43 (1.21-1.69)	1.92 (1.62-2.28)	2.38 (1.99-2.84)	3.14 (2.57-3.79)	3.85 (3.05-4.69)	4.69 (3.60-5.80)	5.71 (4.21-7.19)	7.37 (5.10-9.55)	8.88 (5.87-11.8)
10-min	0.870 (0.732-1.01)	1.09 (0.918-1.28)	1.46 (1.24-1.73)	1.81 (1.52-2.17)	2.39 (1.96-2.89)	2.93 (2.32-3.57)	3.57 (2.74-4.40)	4.35 (3.20-5.47)	5.60 (3.89-7.27)	6.76 (4.46-8.95)
15-min	0.720 (0.604-0.840)	0.900 (0.760-1.06)	1.21 (1.02-1.44)	1.50 (1.26-1.79)	1.98 (1.62-2.38)	2.42 (1.92-2.95)	2.95 (2.26-3.64)	3.59 (2.65-4.52)	4.63 (3.21-6.01)	5.58 (3.69-7.40)
30-min	0.486 (0.408-0.566)	0.604 (0.512-0.714)	0.812 (0.686-0.966)	1.01 (0.846-1.20)	1.33 (1.09-1.60)	1.63 (1.29-1.99)	1.99 (1.52-2.45)	2.42 (1.78-3.04)	3.12 (2.16-4.05)	3.76 (2.48-4.98)
60-min	0.301 (0.252-0.350)	0.374 (0.316-0.442)	0.503 (0.425-0.598)	0.623 (0.523-0.744)	0.824 (0.674-0.993)	1.01 (0.800-1.23)	1.23 (0.944-1.52)	1.50 (1.10-1.88)	1.93 (1.34-2.50)	2.33 (1.54-3.08)
2-hr	0.198 (0.173-0.230)	0.246 (0.216-0.288)	0.318 (0.276-0.372)	0.380 (0.325-0.443)	0.474 (0.394-0.557)	0.558 (0.453-0.664)	0.656 (0.518-0.790)	0.777 (0.595-0.950)	0.993 (0.727-1.26)	1.19 (0.844-1.55)
3-hr	0.157 (0.139-0.180)	0.196 (0.175-0.226)	0.248 (0.218-0.285)	0.289 (0.252-0.333)	0.348 (0.298-0.403)	0.399 (0.336-0.468)	0.461 (0.380-0.546)	0.541 (0.436-0.651)	0.680 (0.532-0.847)	0.809 (0.617-1.04)
6-hr	0.110 (0.097-0.125)	0.138 (0.122-0.157)	0.172 (0.151-0.196)	0.198 (0.174-0.226)	0.233 (0.202-0.268)	0.260 (0.221-0.301)	0.287 (0.241-0.336)	0.321 (0.264-0.380)	0.376 (0.303-0.453)	0.433 (0.342-0.530)
12-hr	0.072 (0.064-0.081)	0.090 (0.080-0.102)	0.115 (0.101-0.130)	0.134 (0.117-0.151)	0.159 (0.137-0.182)	0.178 (0.152-0.205)	0.198 (0.167-0.231)	0.218 (0.180-0.257)	0.244 (0.196-0.294)	0.267 (0.210-0.327)
24-hr	0.045 (0.040-0.050)	0.056 (0.051-0.063)	0.072 (0.065-0.080)	0.084 (0.075-0.094)	0.101 (0.090-0.114)	0.115 (0.102-0.129)	0.130 (0.113-0.146)	0.144 (0.125-0.164)	0.165 (0.141-0.189)	0.182 (0.152-0.210)
2-day	0.027 (0.024-0.030)	0.034 (0.030-0.038)	0.043 (0.038-0.049)	0.051 (0.045-0.057)	0.062 (0.054-0.070)	0.070 (0.061-0.080)	0.079 (0.068-0.091)	0.089 (0.076-0.103)	0.102 (0.085-0.120)	0.113 (0.093-0.134)
3-day	0.019 (0.017-0.022)	0.025 (0.022-0.028)	0.032 (0.028-0.036)	0.038 (0.033-0.043)	0.046 (0.040-0.052)	0.053 (0.046-0.060)	0.060 (0.052-0.069)	0.068 (0.058-0.078)	0.079 (0.065-0.092)	0.087 (0.071-0.103)
4-day	0.016 (0.014-0.018)	0.020 (0.018-0.023)	0.026 (0.023-0.030)	0.031 (0.028-0.035)	0.038 (0.034-0.044)	0.044 (0.038-0.050)	0.051 (0.043-0.058)	0.057 (0.049-0.066)	0.067 (0.055-0.077)	0.074 (0.061-0.087)
7-day	0.011 (0.009-0.012)	0.014 (0.012-0.015)	0.018 (0.016-0.020)	0.021 (0.019-0.024)	0.026 (0.023-0.030)	0.030 (0.026-0.035)	0.034 (0.029-0.040)	0.039 (0.033-0.045)	0.045 (0.037-0.053)	0.050 (0.041-0.059)
10-day	0.008 (0.007-0.010)	0.011 (0.009-0.012)	0.014 (0.012-0.016)	0.017 (0.015-0.019)	0.020 (0.018-0.023)	0.023 (0.020-0.027)	0.027 (0.023-0.031)	0.030 (0.025-0.035)	0.034 (0.029-0.040)	0.038 (0.031-0.045)
20-day	0.005 (0.005-0.006)	0.007 (0.006-0.007)	0.009 (0.008-0.010)	0.010 (0.009-0.012)	0.012 (0.011-0.014)	0.014 (0.012-0.016)	0.016 (0.013-0.018)	0.017 (0.015-0.020)	0.020 (0.017-0.023)	0.022 (0.018-0.025)
30-day	0.004 (0.003-0.004)	0.005 (0.004-0.006)	0.007 (0.006-0.008)	0.008 (0.007-0.009)	0.009 (0.008-0.011)	0.011 (0.009-0.012)	0.012 (0.010-0.014)	0.013 (0.011-0.015)	0.015 (0.013-0.017)	0.016 (0.014-0.019)
45-day	0.003 (0.003-0.004)	0.004 (0.004-0.005)	0.005 (0.005-0.006)	0.006 (0.005-0.007)	0.007 (0.006-0.008)	0.008 (0.007-0.009)	0.009 (0.008-0.011)	0.010 (0.009-0.012)	0.011 (0.010-0.013)	0.012 (0.010-0.014)
60-day	0.003 (0.002-0.003)	0.003 (0.003-0.004)	0.005 (0.004-0.005)	0.005 (0.005-0.006)	0.006 (0.005-0.007)	0.007 (0.006-0.008)	0.008 (0.007-0.009)	0.008 (0.007-0.010)	0.009 (0.008-0.011)	0.010 (0.008-0.011)

<sup>1</sup> Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.

[Back to Top](#)

**PF graphical**

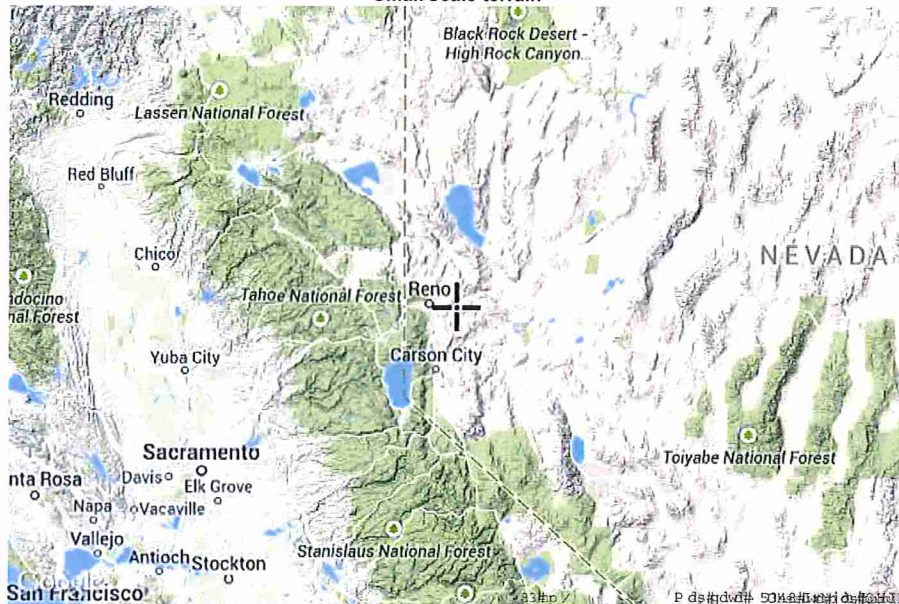


**Maps & aeri**

NOAA Atlas 14, Volume 1, Version 5

Created (GMT): Fri Jan 9 16:59:53 2015

**Small scale terrain**



**APPENDIX B**

**EXISTING BASIN  
CALCULATIONS**



Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:14:24 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
 EXISTING SITE  
 OVERALL SUB BASIN 1

\* \* \* \* \* SUMMARY OF RATIONAL METHOD PEAK DISCHARGES \* \* \* \* \*

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres  
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 10 years  
 'C' adjustment, k = 1  
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
EXISTING	0.450	11.27						
			15.00	0.450	0.450	1.500	11.27	7.61

Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:14:24 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
 EXISTING SITE  
 OVERALL SUB BASIN 1

\* \* \* \* \* SUMMARY OF RATIONAL METHOD PEAK DISCHARGES \* \* \* \* \*

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres  
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 25 years  
 'C' adjustment, k = 1  
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
EXISTING	0.450	11.27	15.00	0.450	0.450	1.980	11.27	10.04

Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:14:24 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
 EXISTING SITE  
 OVERALL SUB BASIN 1

\* \* \* \* \* SUMMARY OF RATIONAL METHOD PEAK DISCHARGES \* \* \* \* \*

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres  
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 100 years  
 'C' adjustment, k = 1  
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
EXISTING	0.450	11.27						
			15.00	0.450	0.450	2.950	11.27	14.96

Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:14:55 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
 EXISTING SITE  
 OVERALL SUB BASIN 2

\* \* \* \* \* SUMMARY OF RATIONAL METHOD PEAK DISCHARGES \* \* \* \* \*

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres  
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 10 years  
 'C' adjustment, k = 1  
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
EXISTING	0.450	8.76						
			15.00	0.450	0.450	1.500	8.76	5.91

Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:14:55 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
 EXISTING SITE  
 OVERALL SUB BASIN 2

\* \* \* \* \* SUMMARY OF RATIONAL METHOD PEAK DISCHARGES \* \* \* \* \*

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres  
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 25 years  
 'C' adjustment, k = 1  
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
EXISTING	0.450	8.76						
			15.00	0.450	0.450	1.980	8.76	7.81

Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:14:55 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
 EXISTING SITE  
 OVERALL SUB BASIN 2

\* \* \* \* \* SUMMARY OF RATIONAL METHOD PEAK DISCHARGES \* \* \* \* \*

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres  
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 100 years  
 'C' adjustment, k = 1  
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
EXISTING	0.450	8.76						
			15.00	0.450	0.450	2.950	8.76	11.63

Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:15:31 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
 EXISTING SITE  
 OVERALL SUB BASIN 3

\* \* \* \* \* SUMMARY OF RATIONAL METHOD PEAK DISCHARGES \* \* \* \* \*

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres  
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 10 years  
 'C' adjustment, k = 1  
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
EXISTING	0.450	51.81	15.00	0.450	0.450	1.500	51.81	34.97

Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:15:31 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
 EXISTING SITE  
 OVERALL SUB BASIN 3

\* \* \* \* \* SUMMARY OF RATIONAL METHOD PEAK DISCHARGES \* \* \* \* \*

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres  
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 25 years  
 'C' adjustment, k = 1  
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
EXISTING	0.450	51.81	15.00	0.450	0.450	1.980	51.81	46.16



Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:15:31 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
 EXISTING SITE  
 OVERALL SUB BASIN 3

\* \* \* \* \* SUMMARY OF RATIONAL METHOD PEAK DISCHARGES \* \* \* \* \*

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres  
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 100 years  
 'C' adjustment, k = 1  
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
EXISTING	0.450	51.81						
			15.00	0.450	0.450	2.950	51.81	68.78

Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:15:56 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
 EXISTING SITE  
 OVERALL SUB BASIN 4

\* \* \* \* \* SUMMARY OF RATIONAL METHOD PEAK DISCHARGES \* \* \* \* \*

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres  
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 10 years  
 'C' adjustment, k = 1  
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
EXISTING	0.450	15.82						
			15.00	0.450	0.450	1.500	15.82	10.68

Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:15:56 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
 EXISTING SITE  
 OVERALL SUB BASIN 4

\* \* \* \* \* SUMMARY OF RATIONAL METHOD PEAK DISCHARGES \* \* \* \* \*

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres  
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 25 years  
 'C' adjustment, k = 1  
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
EXISTING	0.450	15.82	15.00	0.450	0.450	1.980	15.82	14.10

Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:15:56 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
 EXISTING SITE  
 OVERALL SUB BASIN 4

\* \* \* \* \* SUMMARY OF RATIONAL METHOD PEAK DISCHARGES \* \* \* \* \*

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres  
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 100 years  
 'C' adjustment, k = 1  
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
EXISTING	0.450	15.82						
			15.00	0.450	0.450	2.950	15.82	21.00

Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:16:25 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
 EXISTING SITE  
 OVERALL SUB BASIN 5

\* \* \* \* \* SUMMARY OF RATIONAL METHOD PEAK DISCHARGES \* \* \* \* \*

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres  
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 10 years  
 'C' adjustment, k = 1  
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
EXISTING	0.450	30.08	15.00	0.450	0.450	1.500	30.08	20.30

Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:16:25 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
 EXISTING SITE  
 OVERALL SUB BASIN 5

\* \* \* \* \* SUMMARY OF RATIONAL METHOD PEAK DISCHARGES \* \* \* \* \*

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres  
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 25 years  
 'C' adjustment, k = 1  
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
EXISTING	0.450	30.08						
			15.00	0.450	0.450	1.980	30.08	26.80

Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:16:25 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
 EXISTING SITE  
 OVERALL SUB BASIN 5

\* \* \* \* \* SUMMARY OF RATIONAL METHOD PEAK DISCHARGES \* \* \* \* \*

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres  
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 100 years  
 'C' adjustment, k = 1  
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
EXISTING	0.450	30.08						
			15.00	0.450	0.450	2.950	30.08	39.93

APPENDIX C

DEVELOPED BASIN  
CALCULATIONS



Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:17:50 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
 DEVELOPED SITE  
 OVERALL SUB BASIN 1

\* \* \* \* \* SUMMARY OF RATIONAL METHOD PEAK DISCHARGES \* \* \* \* \*

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres  
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 10 years  
 'C' adjustment, k = 1  
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
DEVELOPED	0.750	11.27						
			10.00	0.750	0.750	1.810	11.27	15.30

Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:17:50 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
 DEVELOPED SITE  
 OVERALL SUB BASIN 1

\* \* \* \* \* SUMMARY OF RATIONAL METHOD PEAK DISCHARGES \* \* \* \* \*

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres  
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 25 years  
 'C' adjustment, k = 1  
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
DEVELPED	0.750	11.27						
			10.00	0.750	0.750	2.390	11.27	20.20

Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:17:50 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
 DEVELOPED SITE  
 OVERALL SUB BASIN 1

\* \* \* \* \* SUMMARY OF RATIONAL METHOD PEAK DISCHARGES \* \* \* \* \*

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres  
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 100 years  
 'C' adjustment, k = 1  
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
DEVELPED	0.750	11.27						
			10.00	0.750	0.750	3.570	11.27	30.18

Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:20:17 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
 DEVELOPED SITE  
 OVERALL SUB BASIN 2

\* \* \* \* \* SUMMARY OF RATIONAL METHOD PEAK DISCHARGES \* \* \* \* \*

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres  
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 10 years  
 'C' adjustment, k = 1  
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
DEVELPED	0.860	8.76						
			10.00	0.860	0.860	1.810	8.76	13.64

Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:20:17 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
 DEVELOPED SITE  
 OVERALL SUB BASIN 2

\* \* \* \* \* SUMMARY OF RATIONAL METHOD PEAK DISCHARGES \* \* \* \* \*

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres  
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 25 years  
 'C' adjustment, k = 1  
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
DEVELPED	0.860	8.76						
			10.00	0.860	0.860	2.390	8.76	18.01

Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:20:17 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
 DEVELOPED SITE  
 OVERALL SUB BASIN 2

\* \* \* \* \* SUMMARY OF RATIONAL METHOD PEAK DISCHARGES \* \* \* \* \*

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres  
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 100 years  
 'C' adjustment, k = 1  
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
DEVELOPED	0.860	8.76						
			10.00	0.860	0.860	3.570	8.76	26.89

Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:22:27 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
 DEVELOPED SITE  
 OVERALL SUB BASIN 3

\* \* \* \* \* SUMMARY OF RATIONAL METHOD PEAK DISCHARGES \* \* \* \* \*

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres  
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 10 years  
 'C' adjustment, k = 1  
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
DEVELPED	0.770	51.81						
			10.00	0.770	0.770	1.810	51.81	72.21

Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:22:27 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
 DEVELOPED SITE  
 OVERALL SUB BASIN 3

\* \* \* \* \* SUMMARY OF RATIONAL METHOD PEAK DISCHARGES \* \* \* \* \*

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres  
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 25 years  
 'C' adjustment, k = 1  
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
DEVELOPED	0.770	51.81						
			10.00	0.770	0.770	2.390	51.81	95.35



Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:22:27 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
 DEVELOPED SITE  
 OVERALL SUB BASIN 3

\* \* \* \* \* SUMMARY OF RATIONAL METHOD PEAK DISCHARGES \* \* \* \* \*

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres  
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 100 years  
 'C' adjustment, k = 1  
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
DEVELPED	0.770	51.81						
			10.00	0.770	0.770	3.570	51.81	142.42

Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:23:41 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
 DEVELOPED SITE  
 OVERALL SUB BASIN 4

\* \* \* \* \* SUMMARY OF RATIONAL METHOD PEAK DISCHARGES \* \* \* \* \*

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres  
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 10 years  
 'C' adjustment, k = 1  
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
DEVELPED	0.700	15.82						
			10.00	0.700	0.700	1.810	15.82	20.04

Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:23:41 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
 DEVELOPED SITE  
 OVERALL SUB BASIN 4

\* \* \* \* \* SUMMARY OF RATIONAL METHOD PEAK DISCHARGES \* \* \* \* \*

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres  
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 25 years  
 'C' adjustment, k = 1  
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
DEVELOPED	0.700	15.82						
			10.00	0.700	0.700	2.390	15.82	26.47

Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:23:41 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
 DEVELOPED SITE  
 OVERALL SUB BASIN 4

\* \* \* \* \* SUMMARY OF RATIONAL METHOD PEAK DISCHARGES \* \* \* \* \*

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres  
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 100 years  
 'C' adjustment, k = 1  
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
DEVELPED	0.700	15.82						
			10.00	0.700	0.700	3.570	15.82	39.53

Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:24:46 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
 DEVELOPED SITE  
 OVERALL SUB BASIN 5

\* \* \* \* \* SUMMARY OF RATIONAL METHOD PEAK DISCHARGES \* \* \* \* \*

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres  
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 10 years  
 'C' adjustment, k = 1  
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
DEVELPED	0.450	30.08						
			15.00	0.450	0.450	1.500	30.08	20.30

Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:24:46 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
 DEVELOPED SITE  
 OVERALL SUB BASIN 5

\* \* \* \* \* SUMMARY OF RATIONAL METHOD PEAK DISCHARGES \* \* \* \* \*

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres  
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 25 years  
 'C' adjustment, k = 1  
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
DEVELPED	0.450	30.08						
			15.00	0.450	0.450	1.980	30.08	26.80

Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:24:46 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
 DEVELOPED SITE  
 OVERALL SUB BASIN 5

\* \* \* \* \* SUMMARY OF RATIONAL METHOD PEAK DISCHARGES \* \* \* \* \*

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres  
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 100 years  
 'C' adjustment, k = 1  
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
DEVELPED	0.450	30.08						
			15.00	0.450	0.450	2.950	30.08	39.93

**APPENDIX D**

**DETENTION BASIN  
CALCULATIONS**



Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:19:23 02-16-2015

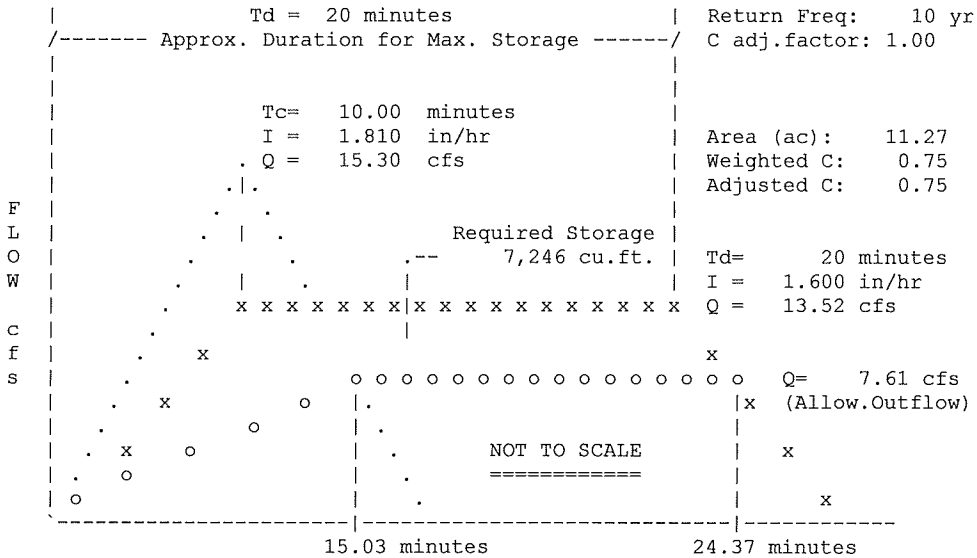
MODIFIED RATIONAL METHOD  
 ---- Graphical Summary for Maximum Required Storage ----

First peak outflow point assumed to occur at Tc hydrograph recession leg.

MUSTANG INDUSTRIAL DEVELOPMENT  
 DEVELOPED SITE  
 OVERALL SUB BASIN 1

```

*****
* RETURN FREQUENCY: 10 yr | Allowable Outflow: 7.61 cfs *
* 'C' Adjustment: 1.000 | Required Storage: 7,246 cu.ft. *
-----*
* Peak Inflow: 13.52 cfs | Inflow .HYD stored: NONE STORED *
*****
  
```





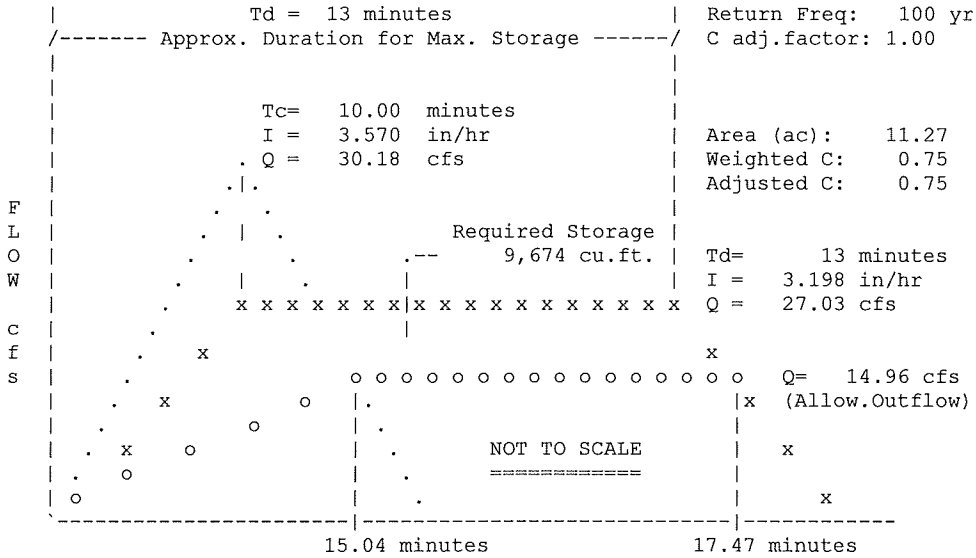
Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:19:23 02-16-2015

MODIFIED RATIONAL METHOD  
 ---- Graphical Summary for Maximum Required Storage ----

First peak outflow point assumed to occur at Tc hydrograph recession leg.

MUSTANG INDUSTRIAL DEVELOPMENT  
 DEVELOPED SITE  
 OVERALL SUB BASIN 1

```
*****
* RETURN FREQUENCY: 100 yr | Allowable Outflow: 14.96 cfs *
* 'C' Adjustment: 1.000 | Required Storage: 9,674 cu.ft. *
*-----*
* Peak Inflow: 27.03 cfs | Inflow .HYD stored: NONE STORED *
*****
```



Quick TR-55 Ver.5.46 S/N:  
Executed: 13:19:23 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
DEVELOPED SITE  
OVERALL SUB BASIN 1

\*\*\*\* Modified Rational Hydrograph \*\*\*\*  
Weighted C = 0.750 Area= 11.270 acres Tc = 10.00 minutes  
Adjusted C = 0.750 Td= 20.00 min. I= 1.60 in/hr Qp= 13.52 cfs  
RETURN FREQUENCY: 10 year storm Adj.factor = 1.00  
Output file: NONE STORED

HYDROGRAPH FOR MAXIMUM STORAGE  
For the 10 Year Storm

Time increment = 1.00 Minutes  
Time on left represents time for first Q in each row.

Time Minutes	0.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00
0.00	0.00	1.35	2.70	4.06	5.41	6.76	8.11	
7.00	9.47	10.82	12.17	13.52	13.52	13.52	13.52	
14.00	13.52	13.52	13.52	13.52	13.52	13.52	13.52	
21.00	12.17	10.82	9.47	8.11	6.76	5.41	4.06	
28.00	2.70	1.35	0.00					



Quick TR-55 Ver.5.46 S/N:  
Executed: 13:19:23 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
DEVELOPED SITE  
OVERALL SUB BASIN 1

\*\*\*\* Modified Rational Hydrograph \*\*\*\*  
Weighted C = 0.750 Area= 11.270 acres Tc = 10.00 minutes  
Adjusted C = 0.750 Td= 13.00 min. I= 3.20 in/hr Qp= 27.03 cfs  
RETURN FREQUENCY: 100 year storm Adj.factor = 1.00  
Output file: NONE STORED

HYDROGRAPH FOR MAXIMUM STORAGE  
For the 100 Year Storm

Time increment = 1.00 Minutes  
Time on left represents time for first Q in each row.

Time Minutes	0.00	2.70	5.41	8.11	10.81	13.52	16.22
0.00	0.00	2.70	5.41	8.11	10.81	13.52	16.22
7.00	18.92	21.62	24.33	27.03	27.03	27.03	27.03
14.00	24.33	21.62	18.92	16.22	13.52	10.81	8.11
21.00	5.41	2.70	0.00				

Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:19:23 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
 DEVELOPED SITE  
 OVERALL SUB BASIN 1

\* \* \* \* \* SUMMARY OF RATIONAL METHOD PEAK DISCHARGES \* \* \* \* \*

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres  
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 10 years  
 'C' adjustment, k = 1  
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
DEVELPED	0.750	11.27						
			10.00	0.750	0.750	1.810	11.27	15.30

Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:19:23 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
 DEVELOPED SITE  
 OVERALL SUB BASIN 1

\* \* \* \* \* SUMMARY OF RATIONAL METHOD PEAK DISCHARGES \* \* \* \* \*

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres  
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 25 years  
 'C' adjustment, k = 1  
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
DEVELOPED	0.750	11.27						
			10.00	0.750	0.750	2.390	11.27	20.20



Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:19:23 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
 DEVELOPED SITE  
 OVERALL SUB BASIN 1

\* \* \* \* \* SUMMARY OF RATIONAL METHOD PEAK DISCHARGES \* \* \* \* \*

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres  
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 100 years  
 'C' adjustment, k = 1  
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
DEVELPED	0.750	11.27						
			10.00	0.750	0.750	3.570	11.27	30.18



Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:19:23 02-16-2015

MODIFIED RATIONAL METHOD  
 ---- Summary for Single Storm Frequency ----

First peak outflow point assumed to occur at Tc hydrograph recession leg.

MUSTANG INDUSTRIAL DEVELOPMENT  
 DEVELOPED SITE  
 OVERALL SUB BASIN 1

RETURN FREQUENCY: 10 yr 'C' Adjustment = 1.000 Allowable Q = 7.61 cfs

Hydrograph file: NONE STORED Tc = 10.00 minutes

VOLUMES							
Weighted 'C'	Adjusted 'C'	Duration minutes	Intens. in/hr	Areas acres	Qpeak cfs	Inflow (cu.ft.)	Storage (cu.ft.)
0.750	0.750	10	1.810	11.27	15.30	9,179	4,613
0.750	0.750	15	1.500	11.27	12.68	11,411	4,797
***** Storage Maximum							
0.750	0.750	20	1.600	11.27	13.52	16,229	7,246
*****							
0.750	0.750	30	1.139	11.27	9.63	17,328	4,299
0.750	0.750	40	0.859	11.27	7.26	Qpeak < Qallow	

Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:19:23 02-16-2015

MODIFIED RATIONAL METHOD  
 ---- Summary for Single Storm Frequency ----

First peak outflow point assumed to occur at Tc hydrograph recession leg.

MUSTANG INDUSTRIAL DEVELOPMENT  
 DEVELOPED SITE  
 OVERALL SUB BASIN 1

RETURN FREQUENCY: 25 yr 'C' Adjustment = 1.000 Allowable Q = 10.04 cfs

Hydrograph file: NONE STORED Tc = 10.00 minutes  
 ::

VOLUMES							
Weighted 'C'	Adjusted 'C'	Duration minutes	Intens. in/hr	Areas acres	Qpeak cfs	Inflow (cu.ft.)	Storage (cu.ft.)
0.750	0.750	10	2.390	11.27	20.20	12,121	6,097
0.750	0.750	15	1.980	11.27	16.74	15,062	6,336
***** Storage Maximum							
0.750	0.750	20	1.850	11.27	15.64	18,765	7,153
*****							
0.750	0.750	30	1.450	11.27	12.26	22,061	4,959
0.750	0.750	40	1.200	11.27	10.14	24,343	1,732
0.750	0.750	50	1.100	11.27	9.30	Qpeak < Qallow	

Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:19:23 02-16-2015

MODIFIED RATIONAL METHOD  
 ---- Summary for Single Storm Frequency ----

First peak outflow point assumed to occur at Tc hydrograph recession leg.

MUSTANG INDUSTRIAL DEVELOPMENT  
 DEVELOPED SITE  
 OVERALL SUB BASIN 1

RETURN FREQUENCY: 100 yr 'C' Adjustment = 1.000 Allowable Q = 14.96 cfs

Hydrograph file: NONE STORED Tc = 10.00 minutes  
 ::

VOLUMES							
Weighted 'C'	Adjusted 'C'	Duration minutes	Intens. in/hr	Areas acres	Qpeak cfs	Inflow (cu.ft.)	Storage (cu.ft.)
0.750	0.750	10	3.570	11.27	30.18	18,105	9,129
***** Storage Maximum							
0.750	0.750	13	3.198	11.27	27.03	21,084	9,674
*****							
0.750	0.750	15	2.950	11.27	24.93	22,441	9,445
0.750	0.750	20	2.500	11.27	21.13	25,358	8,358
0.750	0.750	30	1.733	11.27	14.65	Qpeak < Qallow	

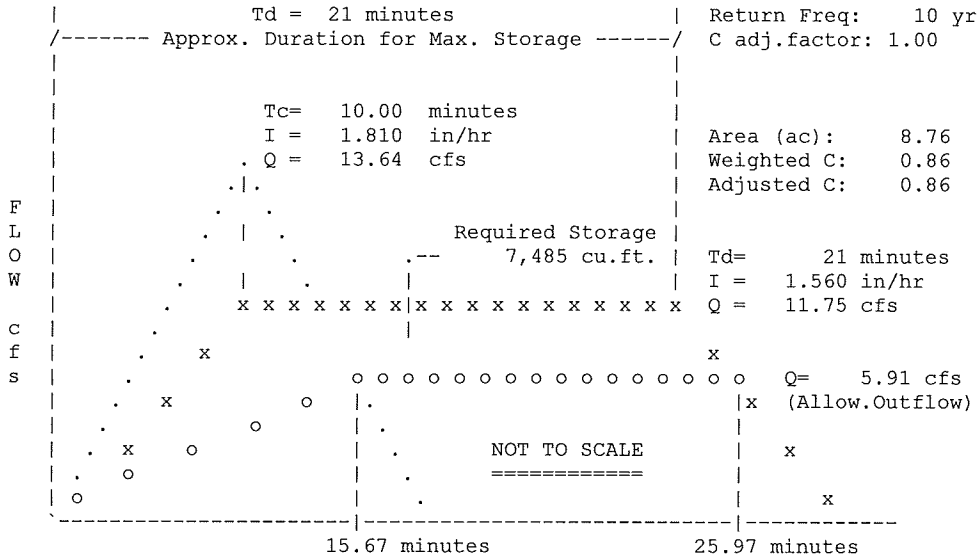
Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:20:49 02-16-2015

MODIFIED RATIONAL METHOD  
 ---- Graphical Summary for Maximum Required Storage ----

First peak outflow point assumed to occur at Tc hydrograph recession leg.

MUSTANG INDUSTRIAL DEVELOPMENT  
 DEVELOPED SITE  
 OVERALL SUB BASIN 2

```
*****
* RETURN FREQUENCY: 10 yr | Allowable Outflow: 5.91 cfs *
* 'C' Adjustment: 1.000 | Required Storage: 7,485 cu.ft. *
*-----*
* Peak Inflow: 11.75 cfs | Inflow .HYD stored: NONE STORED *
*****
```



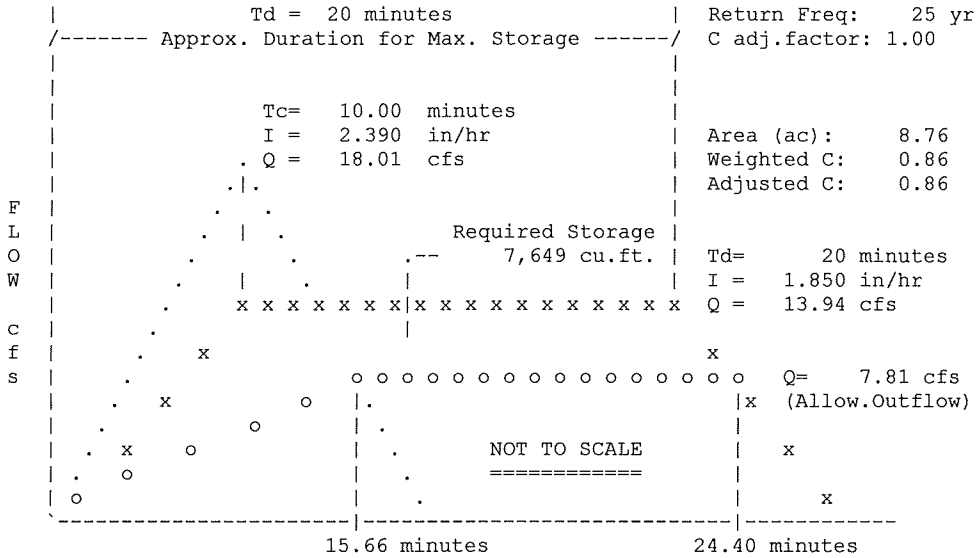
MODIFIED RATIONAL METHOD  
 ---- Graphical Summary for Maximum Required Storage ----

First peak outflow point assumed to occur at Tc hydrograph recession leg.

MUSTANG INDUSTRIAL DEVELOPMENT  
 DEVELOPED SITE  
 OVERALL SUB BASIN 2

```

*****
* RETURN FREQUENCY: 25 yr | Allowable Outflow: 7.81 cfs *
* 'C' Adjustment: 1.000 | Required Storage: 7,649 cu.ft. *
*-----*
* Peak Inflow: 13.94 cfs | Inflow .HYD stored: NONE STORED *
*****
  
```



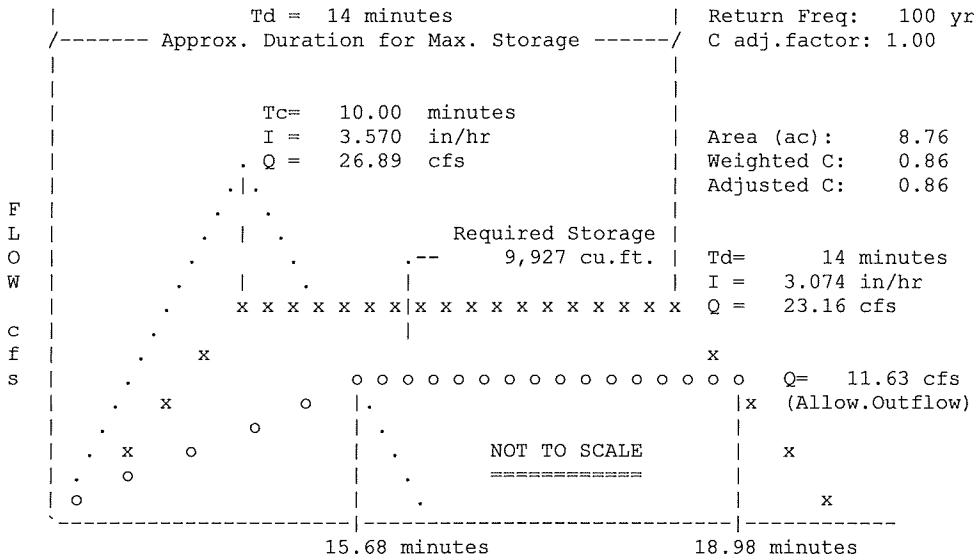
Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:20:49 02-16-2015

MODIFIED RATIONAL METHOD  
 ---- Graphical Summary for Maximum Required Storage ----

First peak outflow point assumed to occur at Tc hydrograph recession leg.

MUSTANG INDUSTRIAL DEVELOPMENT  
 DEVELOPED SITE  
 OVERALL SUB BASIN 2

\*\*\*\*\*  
 \* RETURN FREQUENCY: 100 yr | Allowable Outflow: 11.63 cfs \*  
 \* 'C' Adjustment: 1.000 | Required Storage: 9,927 cu.ft. \*  
 \*-----\*  
 \* Peak Inflow: 23.16 cfs Inflow .HYD stored: NONE STORED \*  
 \*-----\*





Quick TR-55 Ver.5.46 S/N:  
Executed: 13:20:49 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
DEVELOPED SITE  
OVERALL SUB BASIN 2

\*\*\*\* Modified Rational Hydrograph \*\*\*\*  
Weighted C = 0.860 Area= 8.760 acres Tc = 10.00 minutes  
Adjusted C = 0.860 Td= 21.00 min. I= 1.56 in/hr Qp= 11.75 cfs  
RETURN FREQUENCY: 10 year storm Adj.factor = 1.00  
Output file: NONE STORED

HYDROGRAPH FOR MAXIMUM STORAGE  
For the 10 Year Storm

Time	Time increment = 1.00 Minutes						
Minutes	Time on left represents time for first Q in each row.						
-----	-----	-----	-----	-----	-----	-----	-----
0.00	0.00	1.18	2.35	3.53	4.70	5.88	7.05
7.00	8.23	9.40	10.58	11.75	11.75	11.75	11.75
14.00	11.75	11.75	11.75	11.75	11.75	11.75	11.75
21.00	11.75	10.58	9.40	8.23	7.05	5.88	4.70
28.00	3.53	2.35	1.18	0.00			

Quick TR-55 Ver.5.46 S/N:  
Executed: 13:20:49 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
DEVELOPED SITE  
OVERALL SUB BASIN 2

\*\*\*\* Modified Rational Hydrograph \*\*\*\*  
Weighted C = 0.860 Area= 8.760 acres Tc = 10.00 minutes  
Adjusted C = 0.860 Td= 20.00 min. I= 1.85 in/hr Qp= 13.94 cfs  
RETURN FREQUENCY: 25 year storm Adj.factor = 1.00  
Output file: NONE STORED

HYDROGRAPH FOR MAXIMUM STORAGE  
For the 25 Year Storm

Time increment = 1.00 Minutes  
Time on left represents time for first Q in each row.

Time Minutes	0.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00
0.00	0.00	1.39	2.79	4.18	5.57	6.97	8.36	
7.00	9.76	11.15	12.54	13.94	13.94	13.94	13.94	
14.00	13.94	13.94	13.94	13.94	13.94	13.94	13.94	
21.00	12.54	11.15	9.76	8.36	6.97	5.57	4.18	
28.00	2.79	1.39	0.00					

Quick TR-55 Ver.5.46 S/N:  
Executed: 13:20:49 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
DEVELOPED SITE  
OVERALL SUB BASIN 2

\*\*\*\* Modified Rational Hydrograph \*\*\*\*  
Weighted C = 0.860 Area= 8.760 acres Tc = 10.00 minutes  
Adjusted C = 0.860 Td= 14.00 min. I= 3.07 in/hr Qp= 23.16 cfs  
RETURN FREQUENCY: 100 year storm Adj.factor = 1.00  
Output file: NONE STORED

HYDROGRAPH FOR MAXIMUM STORAGE  
For the 100 Year Storm

Time increment = 1.00 Minutes

Time on left represents time for first Q in each row.

Time Minutes	0.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00
0.00	0.00	2.32	4.63	6.95	9.26	11.58	13.89	
7.00	16.21	18.53	20.84	23.16	23.16	23.16	23.16	
14.00	23.16	20.84	18.53	16.21	13.89	11.58	9.26	
21.00	6.95	4.63	2.32	0.00				

Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:20:49 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
 DEVELOPED SITE  
 OVERALL SUB BASIN 2

\* \* \* \* \* SUMMARY OF RATIONAL METHOD PEAK DISCHARGES \* \* \* \* \*

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres  
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 10 years  
 'C' adjustment, k = 1  
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
DEVELOPED	0.860	8.76						
			10.00	0.860	0.860	1.810	8.76	13.64

Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:20:49 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
 DEVELOPED SITE  
 OVERALL SUB BASIN 2

\* \* \* \* \* SUMMARY OF RATIONAL METHOD PEAK DISCHARGES \* \* \* \* \*

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres  
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 25 years  
 'C' adjustment, k = 1  
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
DEVELPED	0.860	8.76						
			10.00	0.860	0.860	2.390	8.76	18.01

Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:20:49 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
 DEVELOPED SITE  
 OVERALL SUB BASIN 2

\* \* \* \* \* SUMMARY OF RATIONAL METHOD PEAK DISCHARGES \* \* \* \* \*

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres  
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 100 years  
 'C' adjustment, k = 1  
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
DEVELPED	0.860	8.76						
			10.00	0.860	0.860	3.570	8.76	26.89



Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:20:49 02-16-2015

MODIFIED RATIONAL METHOD  
 ---- Summary for Single Storm Frequency ----

First peak outflow point assumed to occur at Tc hydrograph recession leg.

MUSTANG INDUSTRIAL DEVELOPMENT  
 DEVELOPED SITE  
 OVERALL SUB BASIN 2

RETURN FREQUENCY: 10 yr 'C' Adjustment = 1.000 Allowable Q = 5.91 cfs

Hydrograph file: NONE STORED Tc = 10.00 minutes  
 ::

VOLUMES							
Weighted 'C'	Adjusted 'C'	Duration minutes	Intens. in/hr	Areas acres	Qpeak cfs	Inflow (cu.ft.)	Storage (cu.ft.)
0.860	0.860	10	1.810	8.76	13.64	8,181	4,635
0.860	0.860	15	1.500	8.76	11.30	10,170	5,010
0.860	0.860	20	1.600	8.76	12.05	14,465	7,473
***** Storage Maximum							
0.860	0.860	21	1.560	8.76	11.75	14,808	7,485
*****							
0.860	0.860	30	1.139	8.76	8.58	15,444	5,259
0.860	0.860	40	0.859	8.76	6.47	15,533	2,199
0.860	0.860	50	0.900	8.76	6.78	20,341	3,388
0.860	0.860	60	0.800	8.76	6.03	21,697	1,391
0.860	0.860	120	0.520	8.76	3.92	Qpeak < Qallow	



Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:20:49 02-16-2015

MODIFIED RATIONAL METHOD  
 ---- Summary for Single Storm Frequency ----

First peak outflow point assumed to occur at Tc hydrograph recession leg.

MUSTANG INDUSTRIAL DEVELOPMENT  
 DEVELOPED SITE  
 OVERALL SUB BASIN 2

RETURN FREQUENCY: 25 yr 'C' Adjustment = 1.000 Allowable Q = 7.81 cfs

Hydrograph file: NONE STORED Tc = 10.00 minutes  
 ::

VOLUMES							
Weighted 'C'	Adjusted 'C'	Duration minutes	Intens. in/hr	Areas acres	Qpeak cfs	Inflow (cu.ft.)	Storage (cu.ft.)
0.860	0.860	10	2.390	8.76	18.01	10,803	6,117
0.860	0.860	15	1.980	8.76	14.92	13,425	6,606
***** Storage Maximum							
0.860	0.860	20	1.850	8.76	13.94	16,725	7,649
*****							
0.860	0.860	30	1.450	8.76	10.92	19,663	6,264
0.860	0.860	40	1.200	8.76	9.04	21,697	3,961
0.860	0.860	50	1.100	8.76	8.29	24,861	2,623
0.860	0.860	60	0.930	8.76	7.01	Qpeak < Qallow	

Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:20:49 02-16-2015

MODIFIED RATIONAL METHOD  
 ---- Summary for Single Storm Frequency ----

First peak outflow point assumed to occur at Tc hydrograph recession leg.

MUSTANG INDUSTRIAL DEVELOPMENT  
 DEVELOPED SITE  
 OVERALL SUB BASIN 2

RETURN FREQUENCY: 100 yr 'C' Adjustment = 1.000 Allowable Q = 11.63 cfs

Hydrograph file: NONE STORED Tc = 10.00 minutes  
 ::

VOLUMES							
Weighted 'C'	Adjusted 'C'	Duration minutes	Intens. in/hr	Areas acres	Qpeak cfs	Inflow (cu.ft.)	Storage (cu.ft.)
0.860	0.860	10	3.570	8.76	26.89	16,137	9,159
***** Storage Maximum							
0.860	0.860	14	3.074	8.76	23.16	19,453	9,927
*****							
0.860	0.860	15	2.950	8.76	22.22	20,002	9,852
0.860	0.860	20	2.500	8.76	18.83	22,601	9,291
0.860	0.860	30	1.733	8.76	13.06	23,505	4,169
0.860	0.860	40	1.262	8.76	9.51	Qpeak < Qallow	



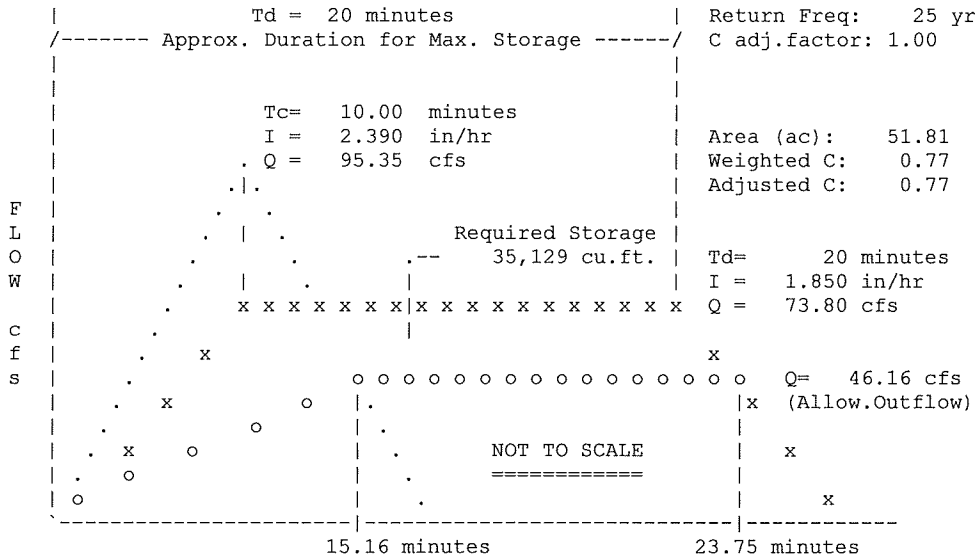
Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:22:49 02-16-2015

MODIFIED RATIONAL METHOD  
 ---- Graphical Summary for Maximum Required Storage ----

First peak outflow point assumed to occur at Tc hydrograph recession leg.

MUSTANG INDUSTRIAL DEVELOPMENT  
 DEVELOPED SITE  
 OVERALL SUB BASIN 3

```
*****
* RETURN FREQUENCY: 25 yr   | Allowable Outflow: 46.16 cfs *
* 'C' Adjustment: 1.000   | Required Storage: 35,129 cu.ft. *
*-----*
* Peak Inflow: 73.80 cfs   | Inflow .HYD stored: NONE STORED *
*****
```







Quick TR-55 Ver.5.46 S/N:  
Executed: 13:22:49 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
DEVELOPED SITE  
OVERALL SUB BASIN 3

\*\*\*\* Modified Rational Hydrograph \*\*\*\*  
Weighted C = 0.770 Area= 51.810 acres Tc = 10.00 minutes  
Adjusted C = 0.770 Td= 20.00 min. I= 1.85 in/hr Qp= 73.80 cfs  
RETURN FREQUENCY: 25 year storm Adj.factor = 1.00  
Output file: NONE STORED

HYDROGRAPH FOR MAXIMUM STORAGE  
For the 25 Year Storm

Time increment = 1.00 Minutes  
Time on left represents time for first Q in each row.

Time Minutes	0.00	7.00	14.00	21.00	28.00	35.00	42.00	49.00	56.00
0.00	0.00	7.38	14.76	22.14	29.52	36.90	44.28	51.66	59.04
7.00	51.66	59.04	66.42	73.80	73.80	73.80	73.80	73.80	73.80
14.00	73.80	73.80	73.80	73.80	73.80	73.80	73.80	73.80	73.80
21.00	66.42	59.04	51.66	44.28	36.90	29.52	22.14	14.76	7.38
28.00	14.76	7.38	0.00						

Quick TR-55 Ver.5.46 S/N:  
Executed: 13:22:49 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
DEVELOPED SITE  
OVERALL SUB BASIN 3

\*\*\*\* Modified Rational Hydrograph \*\*\*\*  
Weighted C = 0.770 Area= 51.810 acres Tc = 10.00 minutes  
Adjusted C = 0.770 Td= 13.00 min. I= 3.20 in/hr Qp= 127.58 cfs  
RETURN FREQUENCY: 100 year storm Adj.factor = 1.00  
Output file: NONE STORED

HYDROGRAPH FOR MAXIMUM STORAGE  
For the 100 Year Storm

Time	Time increment = 1.00 Minutes						
Minutes	Time on left represents time for first Q in each row.						
-----	-----	-----	-----	-----	-----	-----	-----
0.00	0.00	12.76	25.52	38.27	51.03	63.79	76.55
7.00	89.31	102.06	114.82	127.58	127.58	127.58	127.58
14.00	114.82	102.06	89.31	76.55	63.79	51.03	38.27
21.00	25.52	12.76	0.00				



Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:22:49 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
 DEVELOPED SITE  
 OVERALL SUB BASIN 3

\* \* \* \* \* SUMMARY OF RATIONAL METHOD PEAK DISCHARGES \* \* \* \* \*

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres  
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 10 years  
 'C' adjustment, k = 1  
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
DEVELOPED	0.770	51.81						
			10.00	0.770	0.770	1.810	51.81	72.21

Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:22:49 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
 DEVELOPED SITE  
 OVERALL SUB BASIN 3

\* \* \* \* \* SUMMARY OF RATIONAL METHOD PEAK DISCHARGES \* \* \* \* \*

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres  
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 25 years  
 'C' adjustment, k = 1  
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
DEVELPED	0.770	51.81						
			10.00	0.770	0.770	2.390	51.81	95.35

Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:22:49 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
 DEVELOPED SITE  
 OVERALL SUB BASIN 3

\* \* \* \* \* SUMMARY OF RATIONAL METHOD PEAK DISCHARGES \* \* \* \* \*

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres  
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 100 years  
 'C' adjustment, k = 1  
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
DEVELPED	0.770	51.81						
			10.00	0.770	0.770	3.570	51.81	142.42



Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:22:49 02-16-2015

MODIFIED RATIONAL METHOD  
 ---- Summary for Single Storm Frequency ----

First peak outflow point assumed to occur at Tc hydrograph recession leg.

MUSTANG INDUSTRIAL DEVELOPMENT  
 DEVELOPED SITE  
 OVERALL SUB BASIN 3

RETURN FREQUENCY: 10 yr 'C' Adjustment = 1.000 Allowable Q = 34.97 cfs

Hydrograph file: NONE STORED Tc = 10.00 minutes  
 :::

VOLUMES							
Weighted 'C'	Adjusted 'C'	Duration minutes	Intens. in/hr	Areas acres	Qpeak cfs	Inflow (cu.ft.)	Storage (cu.ft.)
0.770	0.770	10	1.810	51.81	72.21	43,325	22,343
0.770	0.770	15	1.500	51.81	59.84	53,856	23,434
***** Storage Maximum							
0.770	0.770	20	1.600	51.81	63.83	76,596	35,299
*****							
0.770	0.770	30	1.139	51.81	45.43	81,782	21,830
0.770	0.770	40	0.859	51.81	34.27	Qpeak < Qallow	

Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:22:49 02-16-2015

MODIFIED RATIONAL METHOD  
 ---- Summary for Single Storm Frequency ----

First peak outflow point assumed to occur at Tc hydrograph recession leg.

MUSTANG INDUSTRIAL DEVELOPMENT  
 DEVELOPED SITE  
 OVERALL SUB BASIN 3

RETURN FREQUENCY: 25 yr 'C' Adjustment = 1.000 Allowable Q = 46.16 cfs

Hydrograph file: NONE STORED Tc = 10.00 minutes  
 ::

VOLUMES							
Weighted 'C'	Adjusted 'C'	Duration minutes	Intens. in/hr	Areas acres	Qpeak cfs	Inflow (cu.ft.)	Storage (cu.ft.)
0.770	0.770	10	2.390	51.81	95.35	57,208	29,512
0.770	0.770	15	1.980	51.81	78.99	71,091	30,935
***** Storage Maximum							
0.770	0.770	20	1.850	51.81	73.80	88,564	35,129
*****							
0.770	0.770	30	1.450	51.81	57.85	104,123	25,381
0.770	0.770	40	1.200	51.81	47.87	114,894	10,758
0.770	0.770	50	1.100	51.81	43.88	Qpeak < Qallow	

Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:22:49 02-16-2015

MODIFIED RATIONAL METHOD  
 ---- Summary for Single Storm Frequency ----

First peak outflow point assumed to occur at Tc hydrograph recession leg.

MUSTANG INDUSTRIAL DEVELOPMENT  
 DEVELOPED SITE  
 OVERALL SUB BASIN 3

RETURN FREQUENCY: 100 yr 'C' Adjustment = 1.000 Allowable Q = 68.78 cfs

Hydrograph file: NONE STORED Tc = 10.00 minutes  
 ::

VOLUMES							
Weighted 'C'	Adjusted 'C'	Duration minutes	Intens. in/hr	Areas acres	Qpeak cfs	Inflow (cu.ft.)	Storage (cu.ft.)
0.770	0.770	10	3.570	51.81	142.42	85,452	44,184
***** Storage Maximum							
0.770	0.770	13	3.198	51.81	127.58	99,512	47,023
*****							
0.770	0.770	15	2.950	51.81	117.69	105,918	46,110
0.770	0.770	20	2.500	51.81	99.73	119,681	41,410
0.770	0.770	30	1.733	51.81	69.15	124,468	11,223
0.770	0.770	40	1.262	51.81	50.34	Qpeak < Qallow	

Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:24:00 02-16-2015

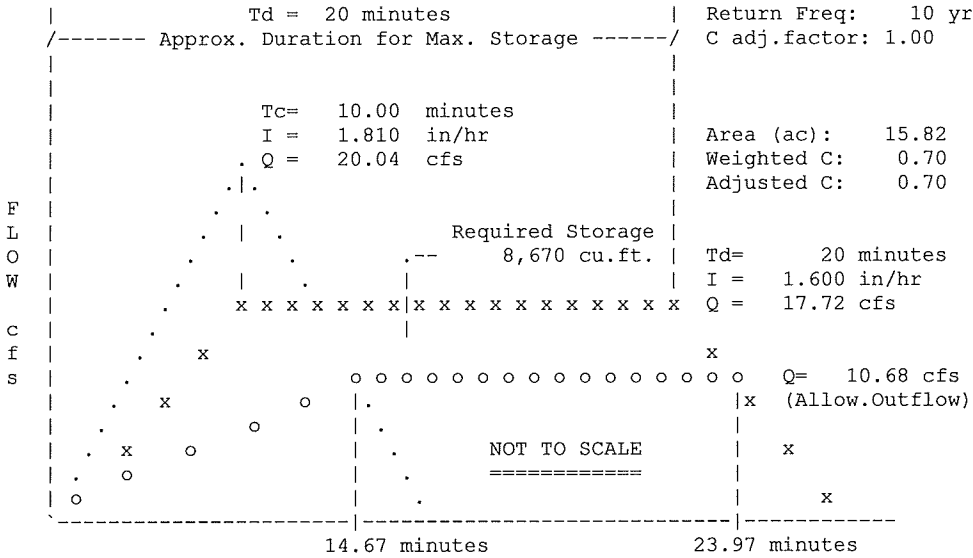
MODIFIED RATIONAL METHOD  
 ---- Graphical Summary for Maximum Required Storage ----

First peak outflow point assumed to occur at Tc hydrograph recession leg.

MUSTANG INDUSTRIAL DEVELOPMENT  
 DEVELOPED SITE  
 OVERALL SUB BASIN 4

```

*****
* RETURN FREQUENCY: 10 yr   | Allowable Outflow: 10.68 cfs *
* 'C' Adjustment: 1.000    | Required Storage: 8,670 cu.ft. *
*-----*
* Peak Inflow: 17.72 cfs   | Inflow .HYD stored: NONE STORED *
*****
  
```





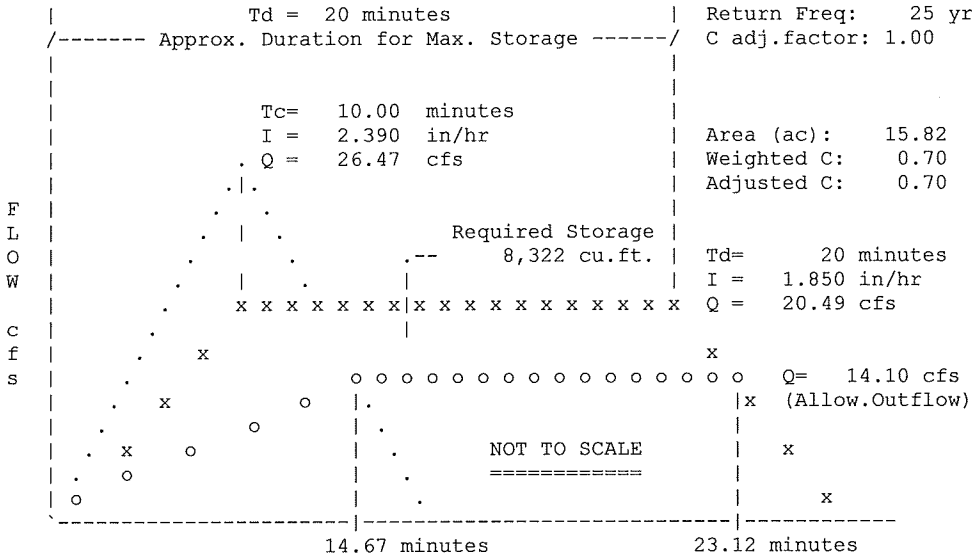
Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:24:00 02-16-2015

MODIFIED RATIONAL METHOD  
 ---- Graphical Summary for Maximum Required Storage ----

First peak outflow point assumed to occur at Tc hydrograph recession leg.

MUSTANG INDUSTRIAL DEVELOPMENT  
 DEVELOPED SITE  
 OVERALL SUB BASIN 4

```
*****
* RETURN FREQUENCY: 25 yr   | Allowable Outflow: 14.10 cfs *
* 'C' Adjustment: 1.000   | Required Storage: 8,322 cu.ft. *
*-----*
* Peak Inflow: 20.49 cfs   | Inflow .HYD stored: NONE STORED *
*****
```



Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:24:00 02-16-2015

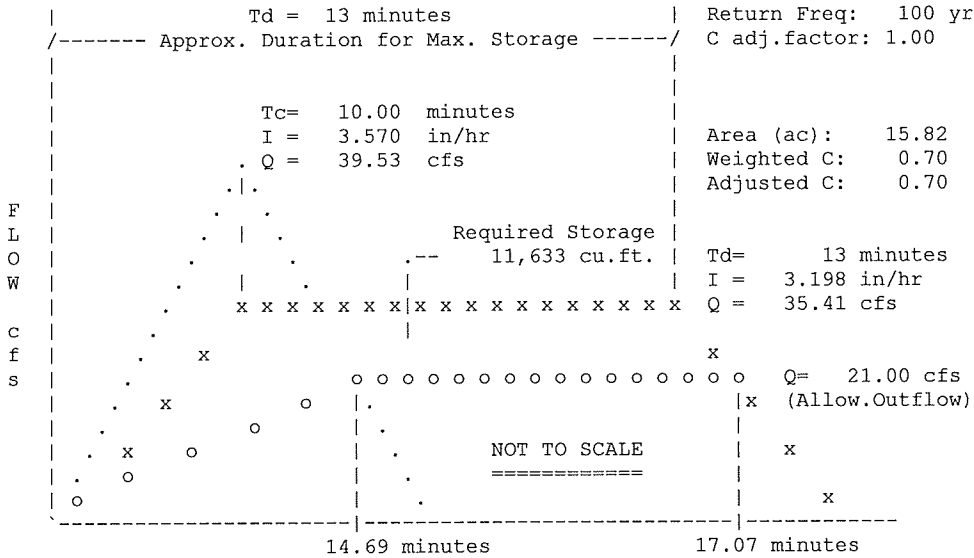
MODIFIED RATIONAL METHOD  
 ---- Graphical Summary for Maximum Required Storage ----

First peak outflow point assumed to occur at Tc hydrograph recession leg.

MUSTANG INDUSTRIAL DEVELOPMENT  
 DEVELOPED SITE  
 OVERALL SUB BASIN 4

```

*****
* RETURN FREQUENCY: 100 yr | Allowable Outflow: 21.00 cfs *
* 'C' Adjustment: 1.000 | Required Storage: 11,633 cu.ft. *
*-----*
* Peak Inflow: 35.41 cfs | Inflow .HYD stored: NONE STORED *
*****
  
```



Quick TR-55 Ver.5.46 S/N:  
Executed: 13:24:00 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
DEVELOPED SITE  
OVERALL SUB BASIN 4

\*\*\*\* Modified Rational Hydrograph \*\*\*\*  
Weighted C = 0.700 Area= 15.820 acres Tc = 10.00 minutes  
Adjusted C = 0.700 Td= 20.00 min. I= 1.60 in/hr Qp= 17.72 cfs  
RETURN FREQUENCY: 10 year storm Adj.factor = 1.00  
Output file: NONE STORED

HYDROGRAPH FOR MAXIMUM STORAGE  
For the 10 Year Storm

Time Minutes	Time increment = 1.00 Minutes						
	Time on left represents time for first Q in each row.						
0.00	0.00	1.77	3.54	5.32	7.09	8.86	10.63
7.00	12.40	14.17	15.95	17.72	17.72	17.72	17.72
14.00	17.72	17.72	17.72	17.72	17.72	17.72	17.72
21.00	15.95	14.17	12.40	10.63	8.86	7.09	5.32
28.00	3.54	1.77	0.00				

Quick TR-55 Ver.5.46 S/N:  
Executed: 13:24:00 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
DEVELOPED SITE  
OVERALL SUB BASIN 4

\*\*\*\* Modified Rational Hydrograph \*\*\*\*  
Weighted C = 0.700 Area= 15.820 acres Tc = 10.00 minutes  
Adjusted C = 0.700 Td= 20.00 min. I= 1.85 in/hr Qp= 20.49 cfs  
RETURN FREQUENCY: 25 year storm Adj.factor = 1.00  
Output file: NONE STORED

HYDROGRAPH FOR MAXIMUM STORAGE  
For the 25 Year Storm

Time increment = 1.00 Minutes  
Time on left represents time for first Q in each row.

Time Minutes	0.00	2.05	4.10	6.15	8.19	10.24	12.29
0.00	0.00	2.05	4.10	6.15	8.19	10.24	12.29
7.00	14.34	16.39	18.44	20.49	20.49	20.49	20.49
14.00	20.49	20.49	20.49	20.49	20.49	20.49	20.49
21.00	18.44	16.39	14.34	12.29	10.24	8.19	6.15
28.00	4.10	2.05	0.00				

Quick TR-55 Ver.5.46 S/N:  
Executed: 13:24:00 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
DEVELOPED SITE  
OVERALL SUB BASIN 4

\*\*\*\* Modified Rational Hydrograph \*\*\*\*  
Weighted C = 0.700 Area= 15.820 acres Tc = 10.00 minutes  
Adjusted C = 0.700 Td= 13.00 min. I= 3.20 in/hr Qp= 35.41 cfs  
RETURN FREQUENCY: 100 year storm Adj.factor = 1.00  
Output file: NONE STORED

HYDROGRAPH FOR MAXIMUM STORAGE  
For the 100 Year Storm

Time	Time increment = 1.00 Minutes						
Minutes	Time on left represents time for first Q in each row.						
-----							
0.00	0.00	3.54	7.08	10.62	14.17	17.71	21.25
7.00	24.79	28.33	31.87	35.41	35.41	35.41	35.41
14.00	31.87	28.33	24.79	21.25	17.71	14.17	10.62
21.00	7.08	3.54	0.00				

Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:24:00 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
 DEVELOPED SITE  
 OVERALL SUB BASIN 4

\* \* \* \* \* SUMMARY OF RATIONAL METHOD PEAK DISCHARGES \* \* \* \* \*

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres  
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 10 years  
 'C' adjustment, k = 1  
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
DEVELPED	0.700	15.82						
			10.00	0.700	0.700	1.810	15.82	20.04

Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:24:00 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
 DEVELOPED SITE  
 OVERALL SUB BASIN 4

\* \* \* \* \* SUMMARY OF RATIONAL METHOD PEAK DISCHARGES \* \* \* \* \*

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres  
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 25 years  
 'C' adjustment, k = 1  
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
DEVELPED	0.700	15.82	10.00	0.700	0.700	2.390	15.82	26.47

Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:24:00 02-16-2015

MUSTANG INDUSTRIAL DEVELOPMENT  
 DEVELOPED SITE  
 OVERALL SUB BASIN 4

\* \* \* \* \* SUMMARY OF RATIONAL METHOD PEAK DISCHARGES \* \* \* \* \*

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres  
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 100 years  
 'C' adjustment, k = 1  
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
DEVELPED	0.700	15.82						
			10.00	0.700	0.700	3.570	15.82	39.53





Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:24:00 02-16-2015

MODIFIED RATIONAL METHOD  
 ---- Summary for Single Storm Frequency ----

First peak outflow point assumed to occur at Tc hydrograph recession leg.

MUSTANG INDUSTRIAL DEVELOPMENT  
 DEVELOPED SITE  
 OVERALL SUB BASIN 4

RETURN FREQUENCY: 10 yr 'C' Adjustment = 1.000 Allowable Q = 10.68 cfs

Hydrograph file: NONE STORED Tc = 10.00 minutes  
 ::

VOLUMES							
Weighted 'C'	Adjusted 'C'	Duration minutes	Intens. in/hr	Areas acres	Qpeak cfs	Inflow (cu.ft.)	Storage (cu.ft.)
0.700	0.700	10	1.810	15.82	20.04	12,026	5,618
0.700	0.700	15	1.500	15.82	16.61	14,950	5,691
***** Storage Maximum							
0.700	0.700	20	1.600	15.82	17.72	21,262	8,670
*****							
0.700	0.700	30	1.139	15.82	12.61	22,702	4,484
0.700	0.700	40	0.859	15.82	9.51	Qpeak < Qallow	

Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:24:00 02-16-2015

MODIFIED RATIONAL METHOD  
 ---- Summary for Single Storm Frequency ----

First peak outflow point assumed to occur at Tc hydrograph recession leg.

MUSTANG INDUSTRIAL DEVELOPMENT  
 DEVELOPED SITE  
 OVERALL SUB BASIN 4

RETURN FREQUENCY: 25 yr 'C' Adjustment = 1.000 Allowable Q = 14.10 cfs

Hydrograph file: NONE STORED Tc = 10.00 minutes  
 ::

VOLUMES							
Weighted 'C'	Adjusted 'C'	Duration minutes	Intens. in/hr	Areas acres	Qpeak cfs	Inflow (cu.ft.)	Storage (cu.ft.)
0.700	0.700	10	2.390	15.82	26.47	15,880	7,420
0.700	0.700	15	1.980	15.82	21.93	19,734	7,511
***** Storage Maximum							
0.700	0.700	20	1.850	15.82	20.49	24,584	8,322
*****							
0.700	0.700	30	1.450	15.82	16.06	28,903	4,984
0.700	0.700	40	1.200	15.82	13.29	Qpeak < Qallow	

Quick TR-55 Ver.5.46 S/N:  
 Executed: 13:24:00 02-16-2015

MODIFIED RATIONAL METHOD  
 ---- Summary for Single Storm Frequency ----

First peak outflow point assumed to occur at Tc hydrograph recession leg.

MUSTANG INDUSTRIAL DEVELOPMENT  
 DEVELOPED SITE  
 OVERALL SUB BASIN 4

RETURN FREQUENCY: 100 yr 'C' Adjustment = 1.000 Allowable Q = 21.00 cfs

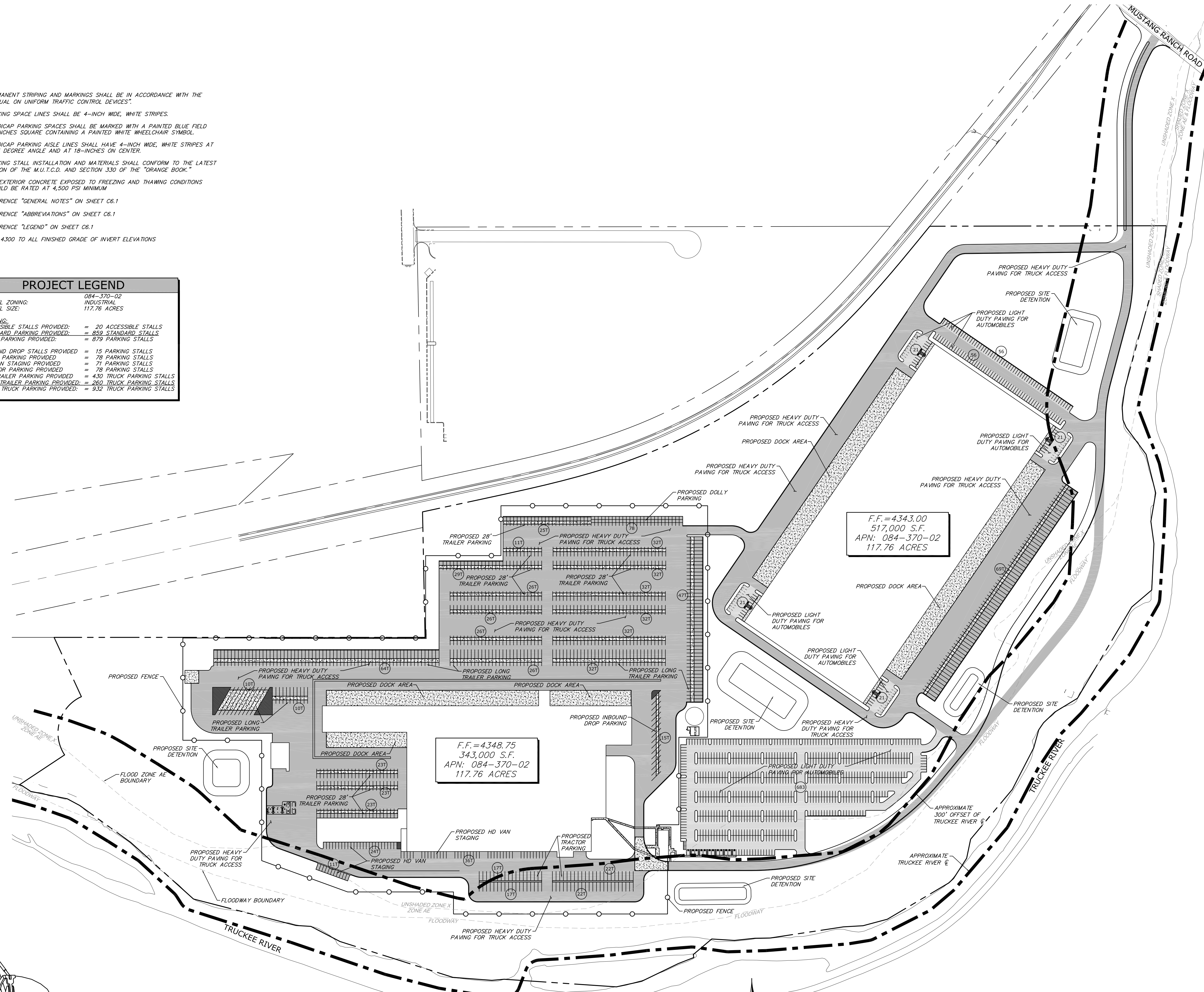
Hydrograph file: NONE STORED Tc = 10.00 minutes  
 ::

VOLUMES							
Weighted 'C'	Adjusted 'C'	Duration minutes	Intens. in/hr	Areas acres	Qpeak cfs	Inflow (cu.ft.)	Storage (cu.ft.)
0.700	0.700	10	3.570	15.82	39.53	23,721	11,121
***** Storage Maximum							
0.700	0.700	13	3.198	15.82	35.41	27,623	11,633
*****							
0.700	0.700	15	2.950	15.82	32.67	29,401	11,205
0.700	0.700	20	2.500	15.82	27.68	33,222	9,454
0.700	0.700	30	1.733	15.82	19.19	Qpeak < Qallow	

**NOTES:**

- PERMANENT STRIPING AND MARKINGS SHALL BE IN ACCORDANCE WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".
- PARKING SPACE LINES SHALL BE 4-INCH WIDE, WHITE STRIPES.
- HANDICAP PARKING SPACES SHALL BE MARKED WITH A PAINTED BLUE FIELD 48-INCHES SQUARE CONTAINING A PAINTED WHITE WHEELCHAIR SYMBOL.
- HANDICAP PARKING AISLE LINES SHALL HAVE 4-INCH WIDE, WHITE STRIPES AT A 45 DEGREE ANGLE AND AT 18-INCHES ON CENTER.
- PARKING STALL INSTALLATION AND MATERIALS SHALL CONFORM TO THE LATEST EDITION OF THE M.U.T.C.D. AND SECTION 330 OF THE "ORANGE BOOK."
- ALL EXTERIOR CONCRETE EXPOSED TO FREEZING AND THAWING CONDITIONS SHOULD BE RATED AT 4,500 PSI MINIMUM
- REFERENCE "GENERAL NOTES" ON SHEET C6.1
- REFERENCE "ABBREVIATIONS" ON SHEET C6.1
- REFERENCE "LEGEND" ON SHEET C6.1
- ADD 4300 TO ALL FINISHED GRADE OF INVERT ELEVATIONS

PROJECT LEGEND	
A.P.N.:	084-370-02
PARCEL ZONING:	INDUSTRIAL
PARCEL SIZE:	117.76 ACRES
<b>PARKING:</b>	
ACCESSIBLE STALLS PROVIDED:	= 20 ACCESSIBLE STALLS
STANDARD PARKING PROVIDED:	= 859 STANDARD STALLS
TOTAL PARKING PROVIDED:	= 879 PARKING STALLS
<b>INBOUND DROP STALLS PROVIDED:</b>	
DOLLY PARKING PROVIDED:	= 15 PARKING STALLS
HD VAN STAGING PROVIDED:	= 78 PARKING STALLS
TRACTOR PARKING PROVIDED:	= 78 PARKING STALLS
28' TRAILER PARKING PROVIDED:	= 430 TRUCK PARKING STALLS
LONG TRAILER PARKING PROVIDED:	= 260 TRUCK PARKING STALLS
TOTAL TRUCK PARKING PROVIDED:	= 932 TRUCK PARKING STALLS



**SITE PLAN**  
SCALE: 1" = 150'-0"

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DESIGNER: **TECTONICS DESIGN GROUP**  
10451 Double R Boulevard  
Reno, NV 89521  
tel 775-824-9988  
fax 775-824-9986  
www.tdg-inc.com

PROJECT/CLIENT: Mustang Industrial Development  
McCarrren, NV

DATE: 02/16/15

SUBMITTAL RECORD: #1: 14217  
SUBMITTAL: SUBMITTAL

SHEET TITLE: Scannell Properties  
821 Meander Court, Suite 200, Medina, Minnesota 55340

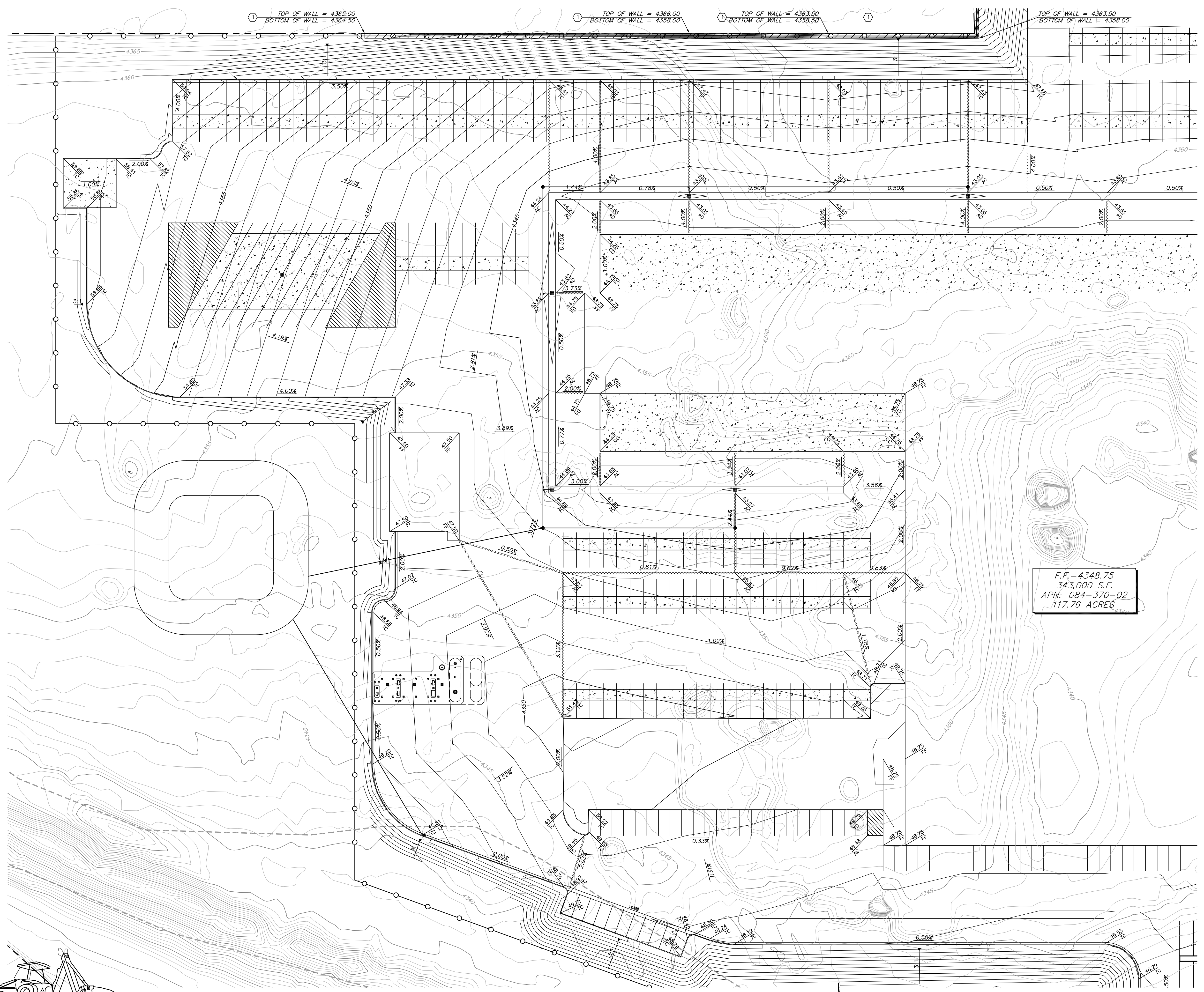
SHEET: SITE PLAN  
C2.1

PRELIMINARY DESIGN

STAMP: DRAWN: S.W.T.  
DESIGNED: S.W.T.  
CHECKED/STAMPED: MATT K. RASMUSSEN, P.E.

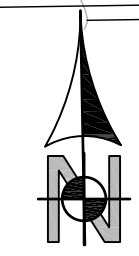


1"=40'-0" FED EX FACILITY 14217 C31



**GRADING PLAN**

SCALE: 1" = 40'-0"



F.F. = 4348.75  
343,000 S.F.  
APN: 084-370-02  
117.76 ACRES

**PRELIMINARY ESTIMATED EARTHWORK QUANTITIES (TO SUB-GRADE):**  
CUT: 332,960 CY CUT  
FILL: 328,085 CY FILL  
TOTAL: 4,875 CY EXPORT  
NOTE: THESE ARE ESTIMATED QUANTITIES ONLY. CONTRACTOR IS RESPONSIBLE TO CONSTRUCT PROJECT TO LINES AND GRADES AS SHOWN ON THE PLANS.

- NOTES:**
1. REFERENCE "GENERAL NOTES" ON SHEET C6.1
  2. REFERENCE "ABBREVIATIONS" ON SHEET C6.1
  3. REFERENCE "LEGEND" ON SHEET C6.1
  4. ADD 5100 TO ALL FINISHED GRADE OR INVERT ELEVATIONS
  5. PERMANENT STRIPING, BIKE LANES, AND MARKINGS SHALL BE IN ACCORDANCE WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES"
  6. ALL CUT AND FILL SLOPES TO BE 3:1 MAXIMUM. ALL FILL/CUT SLOPES TO BEGIN A MINIMUM OF TWO FEET BEHIND CONCRETE CURBS. ALL 3:1 SLOPES SHALL BE TREATED WITH 0.5' DEEP 8"-12" ROCK RIP RAP.

- CONSTRUCTION NOTES:**
1. CONSTRUCT ROCK RETAINING WALL, DESIGN BY OTHERS.

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DESIGNER: **TECTONICS DESIGN GROUP**  
10451 Double R Boulevard  
Reno, NV 89521  
tel 775-824-9988  
fax 775-824-9986  
www.tdg-inc.com

PROJECT/CLIENT: **Mustang Industrial Development**  
McCarren, NV

DESIGNER: **Scannell Properties**  
821 Meander Court, Suite 200, Medina, Minnesota 55340

PROJECT/CLIENT: # 14217

DATE: 02/16/15

SUBMITTAL RECORD: SUBMITTAL

SHEET TITLE: GRADING PLAN

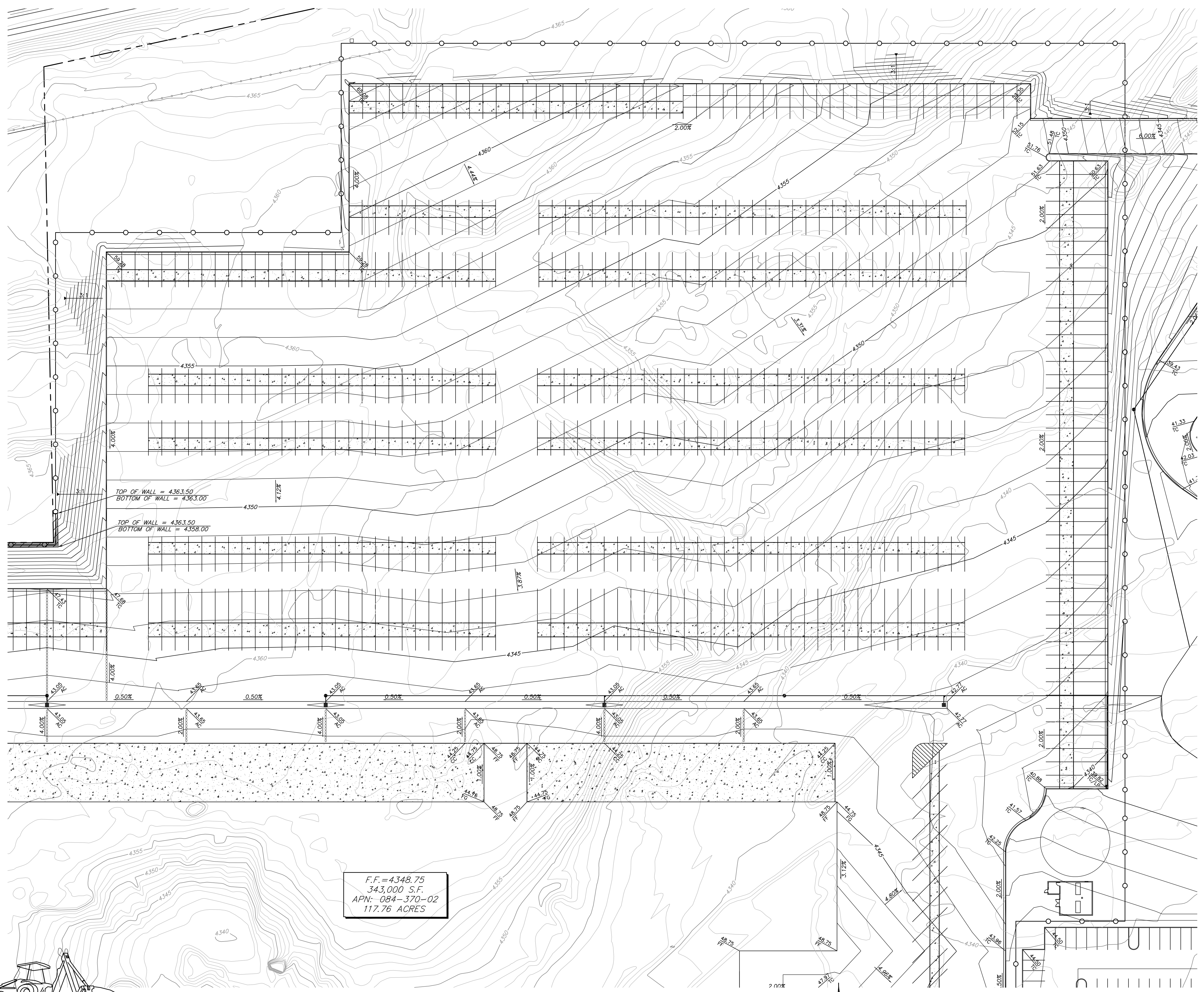
SHEET: **C3.1**

PRELIMINARY DESIGN

DRAWN: S.W.T.  
DESIGNED: S.W.T.  
CHECKED/STAMPED: MATT K. RASMUSSEN, P.E.



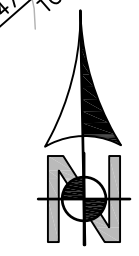
1"=40'-0" FED EX FACILITY 14217 C32



F.F. = 4348.75  
343,000 S.F.  
APN: 084-370-02  
117.76 ACRES

GRADING PLAN

SCALE: 1" = 40'-0"



**PRELIMINARY ESTIMATED EARTHWORK QUANTITIES (TO SUB-GRADE):**  
CUT: 332,960 CY CUT  
FILL: 328,088 CY FILL  
TOTAL: 4,875 CY EXPORT  
NOTE: THESE ARE ESTIMATED QUANTITIES ONLY. CONTRACTOR IS RESPONSIBLE TO CONSTRUCT PROJECT TO LINES AND GRADES AS SHOWN ON THE PLANS.

- NOTES:**
1. REFERENCE "GENERAL NOTES" ON SHEET C6.1
  2. REFERENCE "ABBREVIATIONS" ON SHEET C6.1
  3. REFERENCE "LEGEND" ON SHEET C6.1
  4. ADD 5100 TO ALL FINISHED GRADE OR INVERT ELEVATIONS
  5. PERMANENT STRIPING, BIKE LANES, AND MARKINGS SHALL BE IN ACCORDANCE WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES"
  6. ALL CUT AND FILL SLOPES TO BE 3:1 MAXIMUM. ALL FILL/CUT SLOPES TO BEGIN A MINIMUM OF TWO FEET BEHIND CONCRETE CURBS. ALL 3:1 SLOPES SHALL BE TREATED WITH 0.5" DEEP 8"-12" ROCK RIP RAP.

- CONSTRUCTION NOTES:**
1. CONSTRUCT ROCK RETAINING WALL, DESIGN BY OTHERS.

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DESIGNER: S.W.T.  
DRAWN: S.W.T.  
CHECKED/STAMPED: MATT K. RASMUSSEN, P.E.

PRELIMINARY DESIGN

DESIGNER: **TECTONICS DESIGN GROUP**  
10451 Double R Boulevard  
Reno, NV 89521  
tel 775-824-9988  
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www.tdg-inc.com

PROJECT/CLIENT: Mustang Industrial Development  
McCarren, NV

Scannell Properties  
821 Meander Court, Suite 200, Medina, Minnesota 55340

#1: 14217

DATE: SUBMITTAL  
02/16/15

SUBMITTAL RECORD:

SHEET TITLE: GRADING PLAN

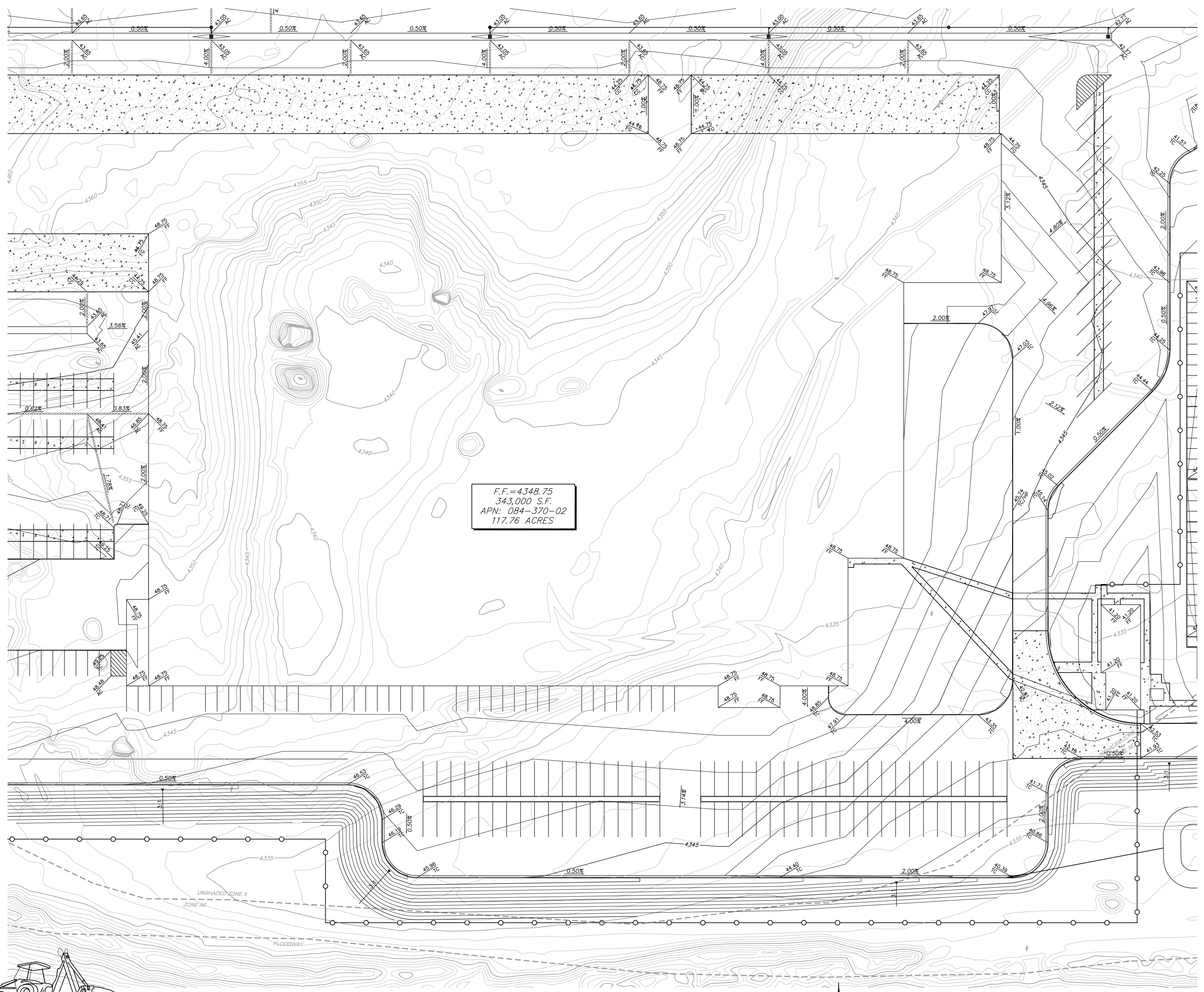
SHEET: C3.2



1"=40'-0" FED EX FACILITY 14217 C33



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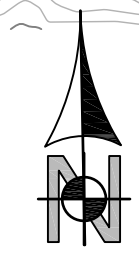


F.F.=4348.75  
343,000 S.F.  
APN: 084-370-02  
117.76 ACRES

**PRELIMINARY ESTIMATED EARTHWORK QUANTITIES (TO SUB-GRADE):**  
CUT: 332,960 CY CUT  
FILL: 328,085 CY FILL  
TOTAL: 4,875 CY EXPORT  
NOTE: THESE ARE ESTIMATED QUANTITIES ONLY. CONTRACTOR IS RESPONSIBLE TO CONSTRUCT PROJECT TO LINES AND GRADES AS SHOWN ON THE PLANS.

- NOTES:**
1. REFERENCE "GENERAL NOTES" ON SHEET C6.1
  2. REFERENCE "ABBREVIATIONS" ON SHEET C6.1
  3. REFERENCE "LEGEND" ON SHEET C6.1
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**GRADING PLAN**  
SCALE: 1" = 40'-0"



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Scannell Properties  
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**PROJECT/CLIENT:** # 14217

**DATE:** SUBMITTAL  
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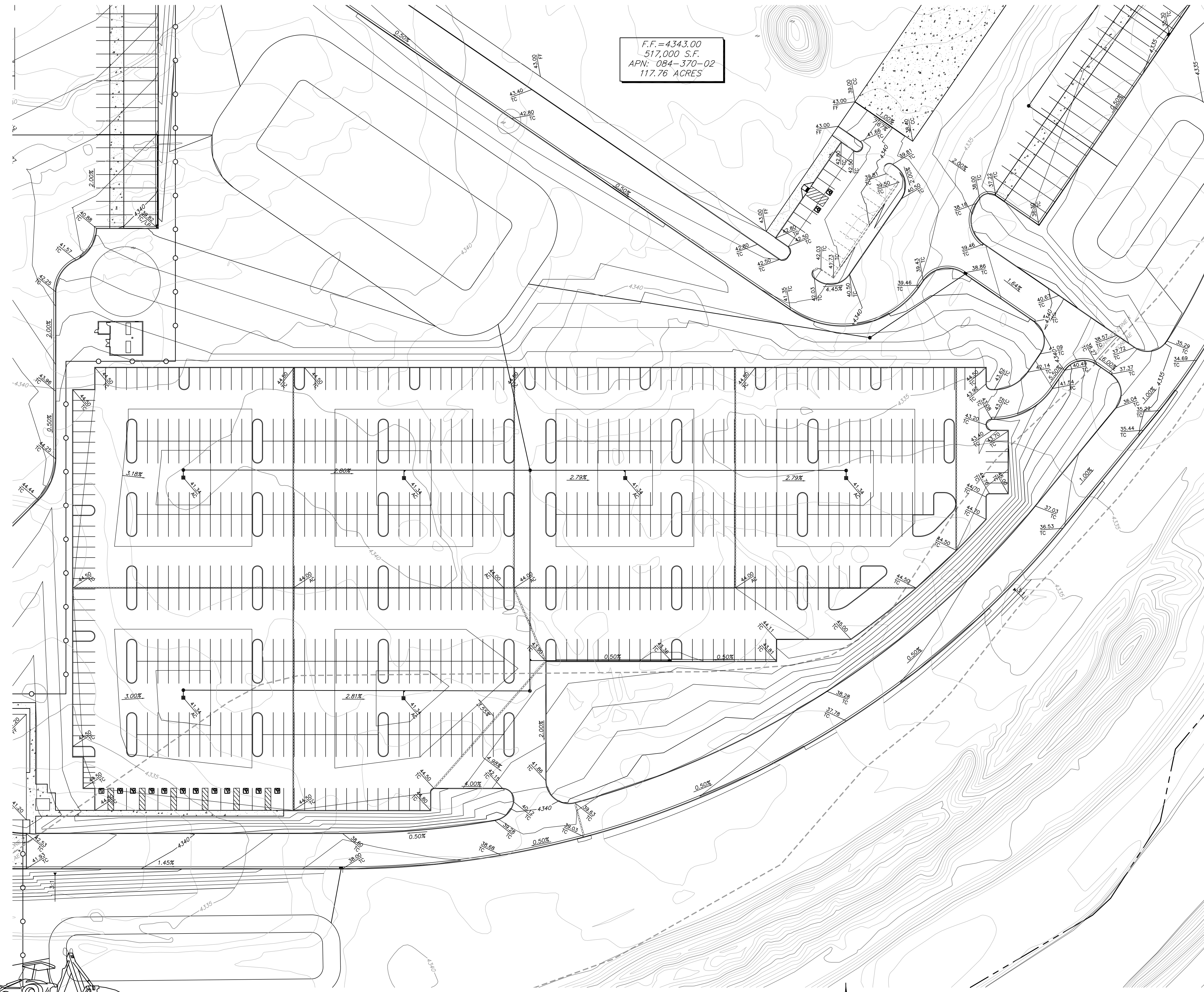
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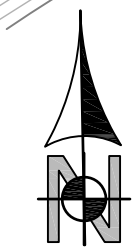
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 APN: 084-370-02  
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**GRADING PLAN**  
 SCALE: 1" = 40'-0"



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**CONSTRUCTION NOTES:**

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PROJECT/CLIENT: **Mustang Industrial Development**  
 McCarrren, NV

PROJECT/CLIENT: **Scannell Properties**  
 821 Meander Court, Suite 200, Medina, Minnesota 55340

DESIGNER: **TECTONICS DESIGN GROUP**

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SHEET TITLE: GRADING PLAN

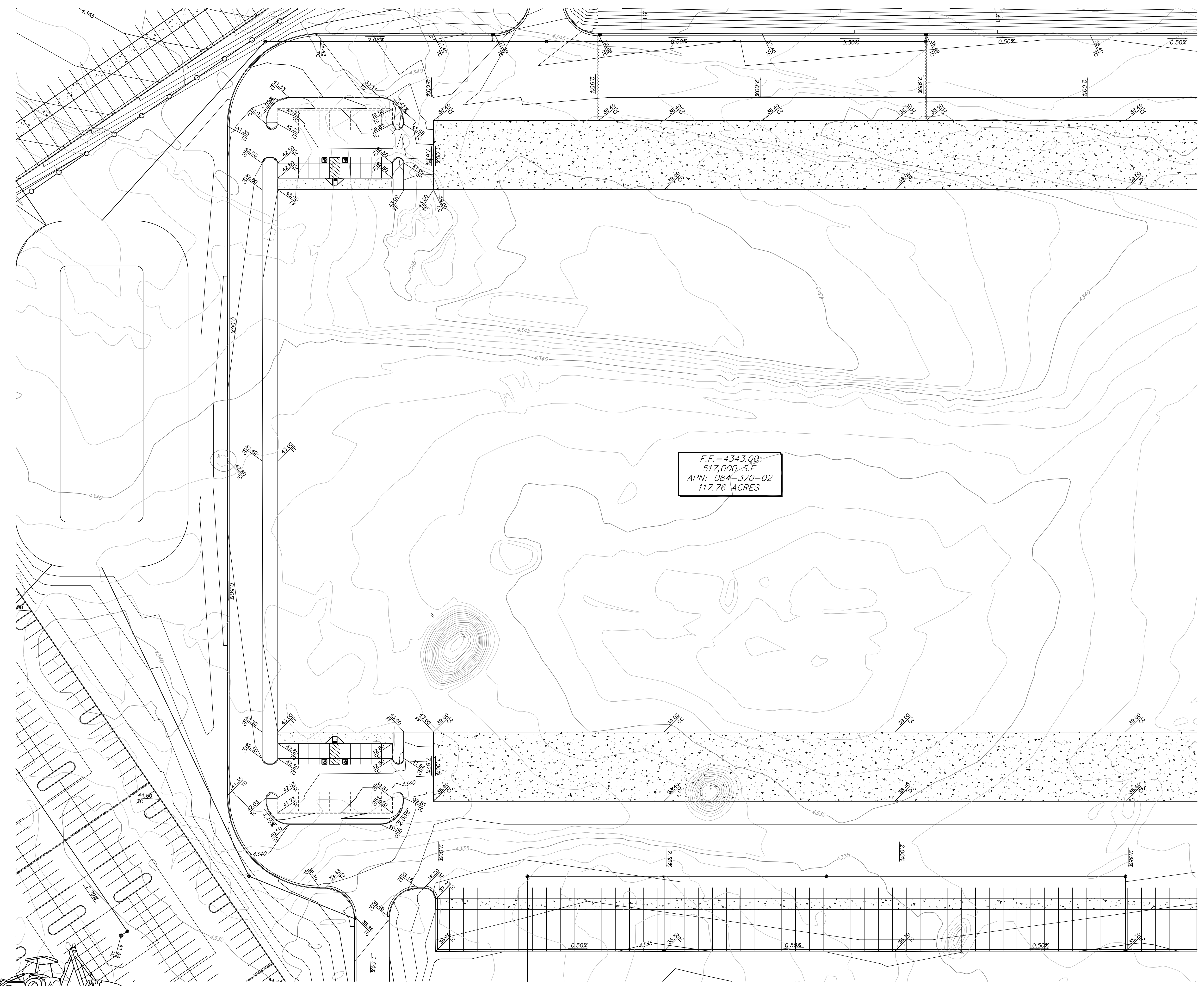
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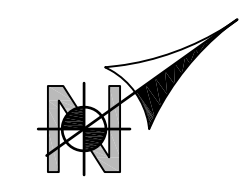
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**GRADING PLAN**

SCALE: 1" = 40'-0"



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**DRAWN:** S.W.T.  
**DESIGNED:** S.W.T.  
**CHECKED/STAMPED:** MATT K. RASMUSSEN, P.E.

**PRELIMINARY DESIGN**

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McCarrren, NV  
Scannell Properties  
821 Meander Court, Suite 200, Medina, Minnesota 55340

**PROJECT NUMBER:** #1: 14217

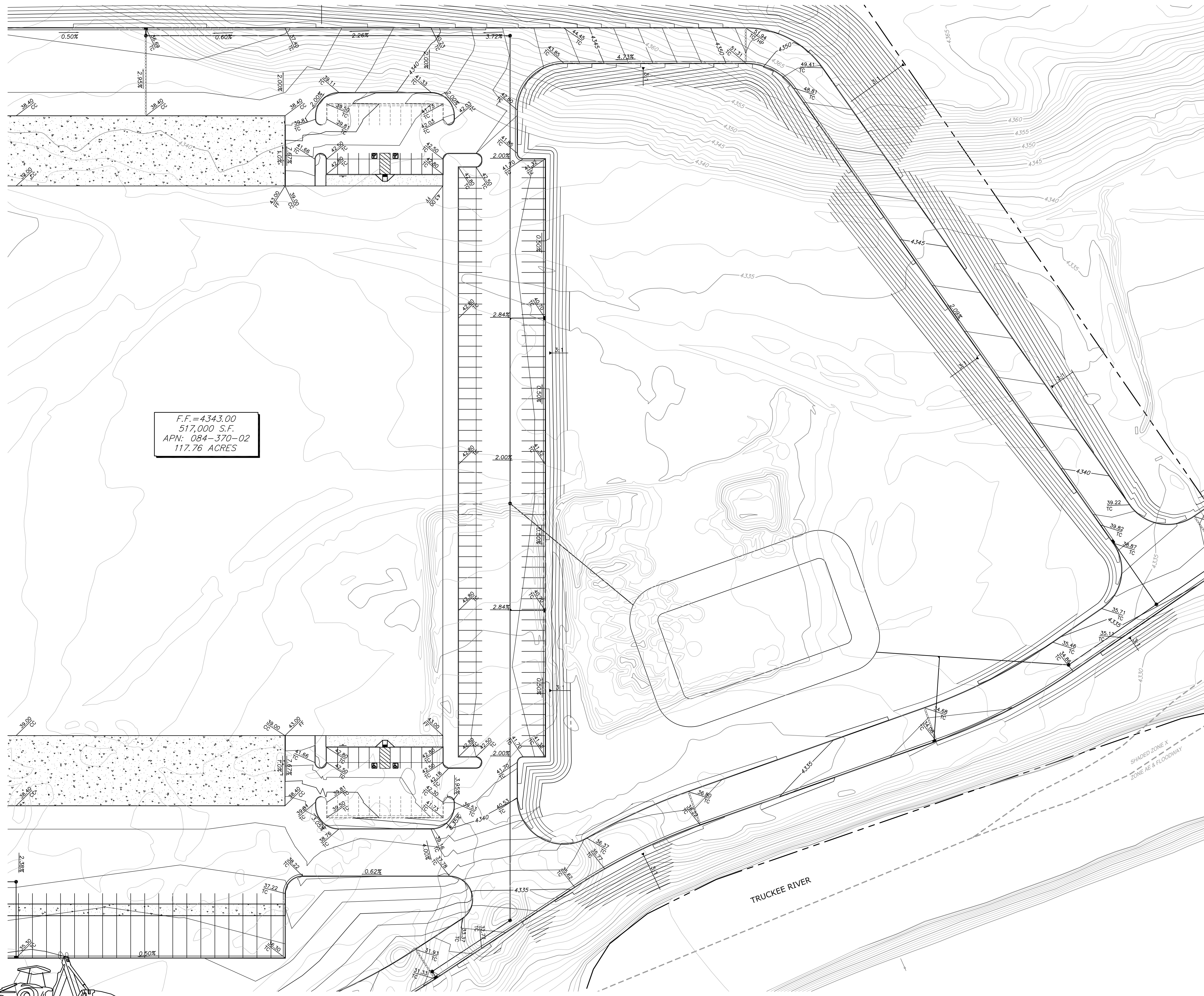
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**SUBMITTAL RECORD:** SUBMITTAL

**SHEET TITLE:** GRADING PLAN

**SHEET:** C3.5





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 APN: 084-370-02  
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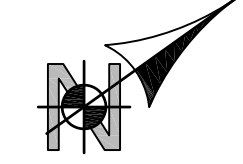
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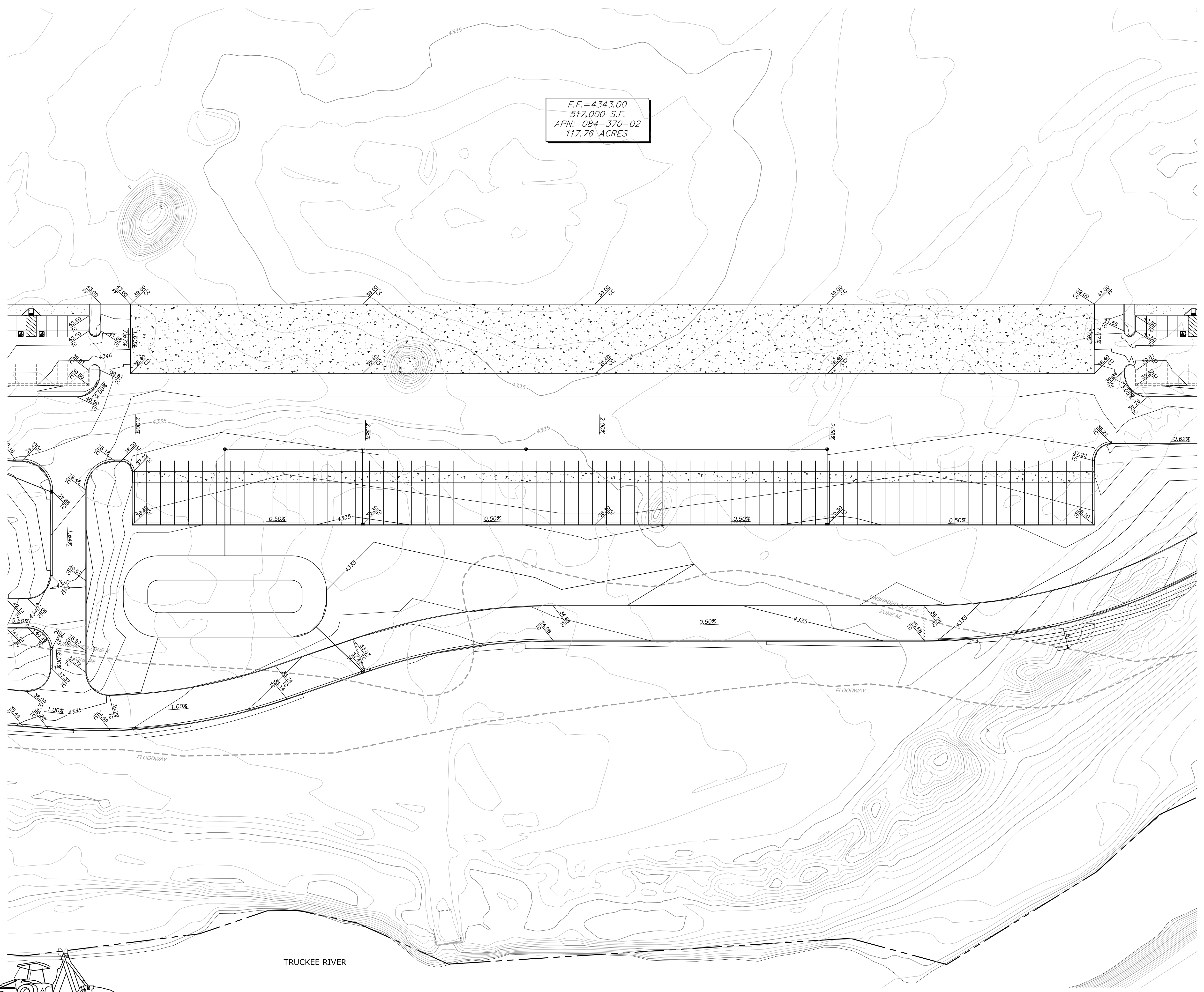
**GRADING PLAN**  
 SCALE: 1" = 40'-0"



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DESIGNER:	DESIGNED:	S.W.T.
	CHECKED/STAMPED:	MATT K. RASMUSSEN, P.E.
STAMP:	<b>PRELIMINARY DESIGN</b>	
	<b>TECTONICS DESIGN GROUP</b>	
PROJECT/CLIENT:	<b>Mustang Industrial Development</b> McCarrren, NV	
	<b>Scannell Properties</b> 821 Meander Court, Suite 200, Medina, Minnesota 55340	
SUBMITTAL RECORD:	DATE:	SUBMITTAL
	#:	14217
SHEET TITLE:	GRADING PLAN	
	<b>C3.6</b>	





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 APN: 084-370-02  
 117.76 ACRES

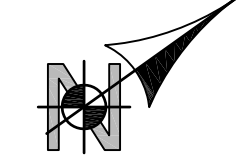
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**GRADING PLAN**  
 SCALE: 1" = 40'-0"



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**DRAWN:** S.W.T.  
**DESIGNED:** S.W.T.  
**CHECKED/STAMPED:** MATT K. RASMUSSEN, P.E.

**PRELIMINARY DESIGN**

**DESIGNER:** **TECTONICS DESIGN GROUP**  
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**PROJECT/CLIENT:** Mustang Industrial Development  
 McCarrren, NV

**Scannell Properties**  
 821 Meander Court, Suite 200, Medina, Minnesota 55340

**PROJECT/CLIENT #:** 14217

**DATE:** 02/16/15

**SUBMITTAL RECORD:** SUBMITTAL

**SHEET TITLE:** GRADING PLAN

**SHEET:** C3.7



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GRADING PLAN  
SCALE: 1" = 40'-0"

**PRELIMINARY ESTIMATED EARTHWORK QUANTITIES (TO SUB-GRADE):**  
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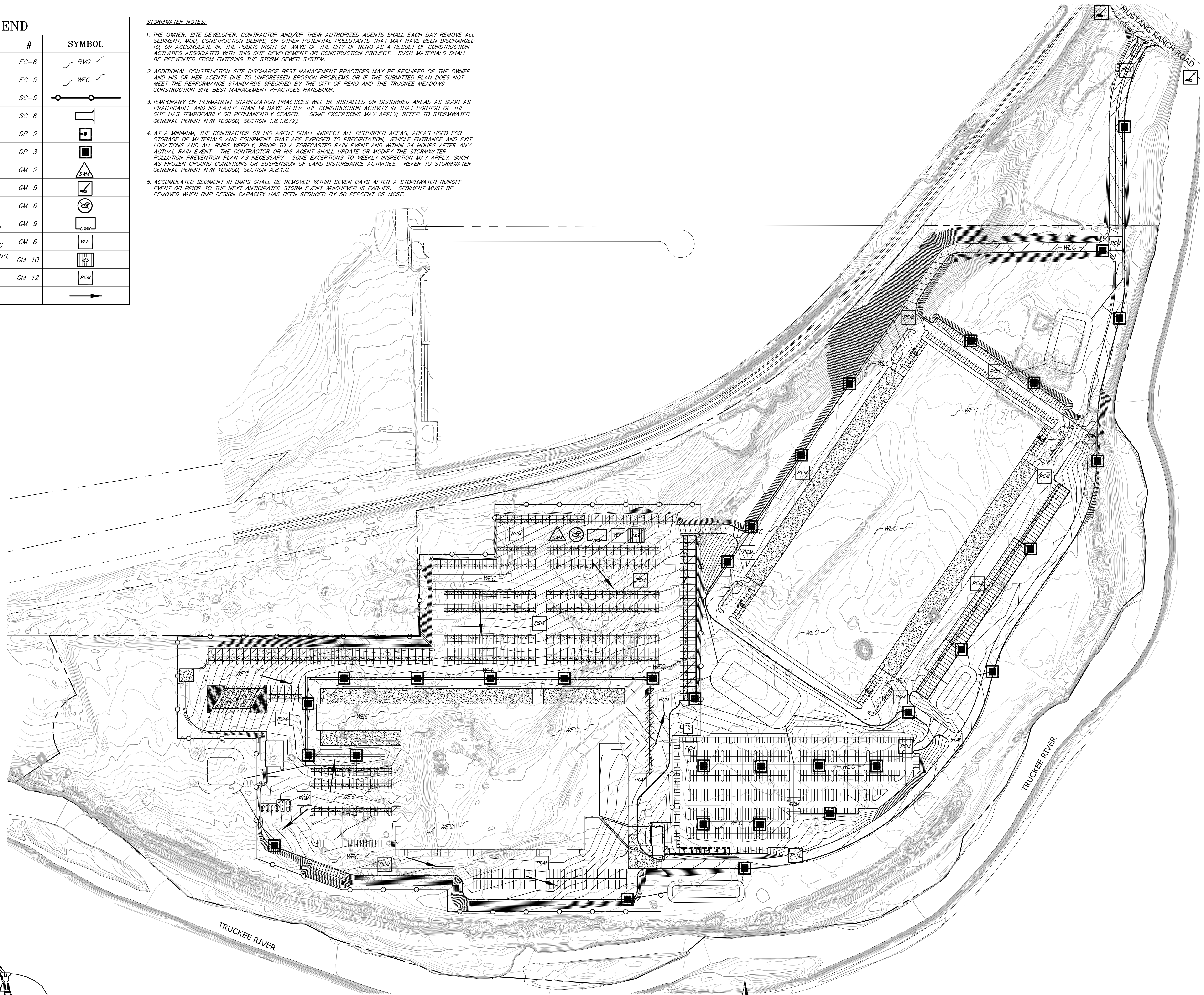
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DESIGNER:	S.W.T. S.W.T. MATT K. RASMUSSEN, P.E.
PROJECT/CLIENT:	Mustang Industrial Development McCarren, NV Scannell Properties 821 Meander Court, Suite 200, Medina, Minnesota 55340
STAMP:	PRELIMINARY DESIGN
DESIGNER:	<b>TECTONICS</b> DESIGN GROUP 10451 Double R Boulevard Reno, NV 89521 tel 775-824-9988 fax 775-824-9986 www.tdg-inc.com
PROJECT/CLIENT:	# 14217
DATE:	SUBMITTAL 02/16/15
SUBMITTAL RECORD:	
SHEET TITLE:	GRADING PLAN
SHEET:	C3.8



LEGEND		
BMP	#	SYMBOL
REVEGETATION	EC-8	
WIND EROSION AND DUST CONTROL	EC-5	
SILT FENCES	SC-5	
CONSTRUCTION SITE ENTRANCES AND EXITS	SC-8	
STORM DRAIN OUTLET PROTECTION	DP-2	
STORM DRAIN INLET PROTECTION	DP-3	
STOCKPILE MANAGEMENT	GM-2	
STREET SWEEPING	GM-5	
SPILL PREVENTION	GM-6	
HANDLING AND DISPOSAL OF CONCRETE AND CEMENT	GM-9	
VEHICLE AND EQUIPMENT MAINTENANCE AND FUELING	GM-8	
MATERIAL DELIVERY, HANDLING, STORAGE, AND USE	GM-10	
PAVEMENT CONSTRUCTION MANAGEMENT	GM-12	
GRADED FLOW DIRECTION		

**STORMWATER NOTES:**

1. THE OWNER, SITE DEVELOPER, CONTRACTOR AND/OR THEIR AUTHORIZED AGENTS SHALL EACH DAY REMOVE ALL SEDIMENT, MUD, CONSTRUCTION DEBRIS, OR OTHER POTENTIAL POLLUTANTS THAT MAY HAVE BEEN DISCHARGED TO, OR ACCUMULATE IN, THE PUBLIC RIGHT OF WAYS OF THE CITY OF RENO AS A RESULT OF CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS SITE DEVELOPMENT OR CONSTRUCTION PROJECT. SUCH MATERIALS SHALL BE PREVENTED FROM ENTERING THE STORM SEWER SYSTEM.
2. ADDITIONAL CONSTRUCTION SITE DISCHARGE BEST MANAGEMENT PRACTICES MAY BE REQUIRED OF THE OWNER AND HIS OR HER AGENTS DUE TO UNFORSEEN EROSION PROBLEMS OR IF THE SUBMITTED PLAN DOES NOT MEET THE PERFORMANCE STANDARDS SPECIFIED BY THE CITY OF RENO AND THE TRUCKEE MEADOWS CONSTRUCTION SITE BEST MANAGEMENT PRACTICES HANDBOOK.
3. TEMPORARY OR PERMANENT STABILIZATION PRACTICES WILL BE INSTALLED ON DISTURBED AREAS AS SOON AS PRACTICABLE AND NO LATER THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED. SOME EXCEPTIONS MAY APPLY; REFER TO STORMWATER GENERAL PERMIT NVR 100000, SECTION 1.B.1.B.(2).
4. AT A MINIMUM, THE CONTRACTOR OR HIS AGENT SHALL INSPECT ALL DISTURBED AREAS, AREAS USED FOR STORAGE OF MATERIALS AND EQUIPMENT THAT ARE EXPOSED TO PRECIPITATION, VEHICLE ENTRANCE AND EXIT LOCATIONS AND ALL BMPs WEEKLY, PRIOR TO A FORECASTED RAIN EVENT AND WITHIN 24 HOURS AFTER ANY ACTUAL RAIN EVENT. THE CONTRACTOR OR HIS AGENT SHALL UPDATE OR MODIFY THE STORMWATER POLLUTION PREVENTION PLAN AS NECESSARY. SOME EXCEPTIONS TO WEEKLY INSPECTION MAY APPLY, SUCH AS FROZEN GROUND CONDITIONS OR SUSPENSION OF LAND DISTURBANCE ACTIVITIES. REFER TO STORMWATER GENERAL PERMIT NVR 100000, SECTION A.B.1.G.
5. ACCUMULATED SEDIMENT IN BMPs SHALL BE REMOVED WITHIN SEVEN DAYS AFTER A STORMWATER RUNOFF EVENT OR PRIOR TO THE NEXT ANTICIPATED STORM EVENT WHICHEVER IS EARLIER. SEDIMENT MUST BE REMOVED WHEN BMP DESIGN CAPACITY HAS BEEN REDUCED BY 50 PERCENT OR MORE.



**SITE PLAN**  
SCALE: 1" = 150'-0"



1"=150'-0" FED EX FACILITY 14217 C51

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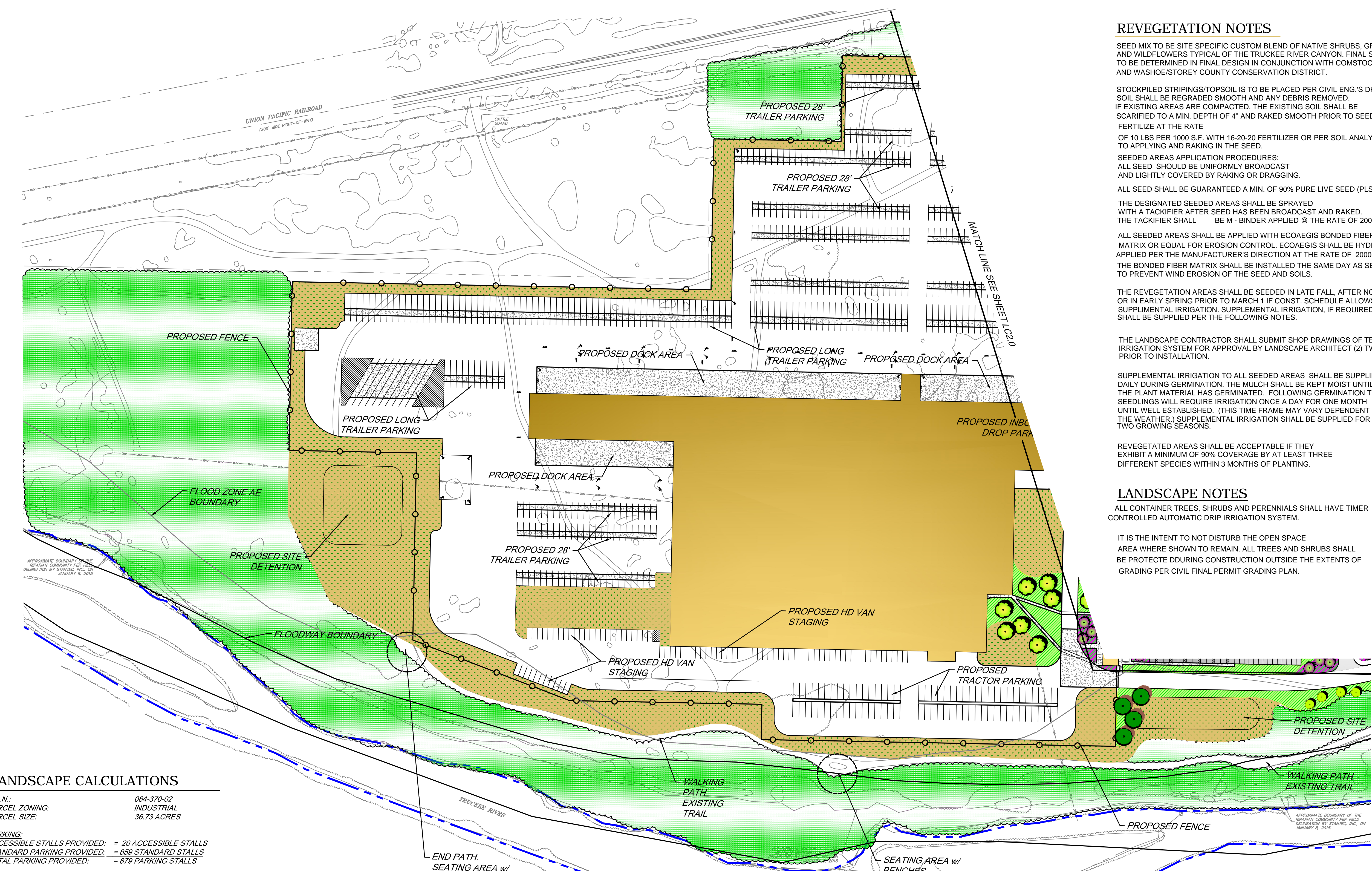
PROJECT/CLIENT: #1: 14217  
DATE: 02/16/15  
SUBMITTAL RECORD: SUBMITTAL  
SHEET TITLE: BMP PLAN  
SHEET: C5.1

PRELIMINARY DESIGN

DESIGNER: S.W.T.  
S.W.T.  
MATT K. RASMUSSEN, P.E.

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**REVEGETATION NOTES**

SEED MIX TO BE SITE SPECIFIC CUSTOM BLEND OF NATIVE SHRUBS, GRASSES AND WILDFLOWERS TYPICAL OF THE TRUCKEE RIVER CANYON. FINAL SEED MIX TO BE DETERMINED IN FINAL DESIGN IN CONJUNCTION WITH COMSTOCK SEED CO. AND WASHOE/STOREY COUNTY CONSERVATION DISTRICT.

STOCKPILED STRIPINGS/TOPSOIL IS TO BE PLACED PER CIVIL ENG.'S DRAWINGS SOIL SHALL BE REGRADED SMOOTH AND ANY DEBRIS REMOVED. IF EXISTING AREAS ARE COMPACTED, THE EXISTING SOIL SHALL BE SCARIFIED TO A MIN. DEPTH OF 4" AND RAKED SMOOTH PRIOR TO SEEDING. FERTILIZE AT THE RATE OF 10 LBS PER 1000 S.F. WITH 16-20-20 FERTILIZER OR PER SOIL ANALYSIS PRIOR TO APPLYING AND RAKING IN THE SEED.

SEEDED AREAS APPLICATION PROCEDURES: ALL SEED SHOULD BE UNIFORMLY BROADCAST AND LIGHTLY COVERED BY RAKING OR DRAGGING.

ALL SEED SHALL BE GUARANTEED A MIN. OF 90% PURE LIVE SEED (PLS).

THE DESIGNATED SEEDED AREAS SHALL BE SPRAYED WITH A TACKIFIER AFTER SEED HAS BEEN BROADCAST AND RAKED. THE TACKIFIER SHALL BE M-BINDER APPLIED @ THE RATE OF 200 LBS. PER ACRE.

ALL SEEDED AREAS SHALL BE APPLIED WITH ECOAGIS BONDED FIBER MATRIX OR EQUAL FOR EROSION CONTROL. ECOAGIS SHALL BE HYDRRAULICALLY APPLIED PER THE MANUFACTURER'S DIRECTION AT THE RATE OF 2000 LBS./AC. THE BONDED FIBER MATRIX SHALL BE INSTALLED THE SAME DAY AS SEEDING TO PREVENT WIND EROSION OF THE SEED AND SOILS.

THE REVEGETATION AREAS SHALL BE SEEDED IN LATE FALL, AFTER NOV. 1 OR IN EARLY SPRING PRIOR TO MARCH 1 IF CONST. SCHEDULE ALLOWS TO AVOID SUPPLEMENTAL IRRIGATION. SUPPLEMENTAL IRRIGATION, IF REQUIRED, SHALL BE SUPPLIED PER THE FOLLOWING NOTES.

THE LANDSCAPE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF TEMPORARY IRRIGATION SYSTEM FOR APPROVAL BY LANDSCAPE ARCHITECT (2) TWO WEEKS PRIOR TO INSTALLATION.

SUPPLEMENTAL IRRIGATION TO ALL SEEDED AREAS SHALL BE SUPPLIED DAILY DURING GERMINATION. THE MULCH SHALL BE KEPT MOIST UNTIL THE PLANT MATERIAL HAS GERMINATED. FOLLOWING GERMINATION THE SEEDLINGS WILL REQUIRE IRRIGATION ONCE A DAY FOR ONE MONTH UNTIL WELL ESTABLISHED. (THIS TIME FRAME MAY VARY DEPENDENT UPON THE WEATHER.) SUPPLEMENTAL IRRIGATION SHALL BE SUPPLIED FOR TWO GROWING SEASONS.

REVEGETATED AREAS SHALL BE ACCEPTABLE IF THEY EXHIBIT A MINIMUM OF 90% COVERAGE BY AT LEAST THREE DIFFERENT SPECIES WITHIN 3 MONTHS OF PLANTING.

**LANDSCAPE NOTES**

ALL CONTAINER TREES, SHRUBS AND PERENNIALS SHALL HAVE TIMER CONTROLLED AUTOMATIC DRIP IRRIGATION SYSTEM.

IT IS THE INTENT TO NOT DISTURB THE OPEN SPACE AREA WHERE SHOWN TO REMAIN. ALL TREES AND SHRUBS SHALL BE PROTECTED DURING CONSTRUCTION OUTSIDE THE EXTENTS OF GRADING PER CIVIL FINAL PERMIT GRADING PLAN.

**LANDSCAPE CALCULATIONS**

A.P.N.: 084-370-02  
 PARCEL ZONING: INDUSTRIAL  
 PARCEL SIZE: 36.73 ACRES

**PARKING:**  
 ACCESSIBLE STALLS PROVIDED: = 20 ACCESSIBLE STALLS  
 STANDARD PARKING PROVIDED: = 859 STANDARD STALLS  
 TOTAL PARKING PROVIDED: = 879 PARKING STALLS

INBOUND DROP STALLS PROVIDED = 15 PARKING STALLS  
 DOLLY PARKING PROVIDED = 78 PARKING STALLS  
 HD VAN STAGING PROVIDED = 71 PARKING STALLS  
 TRACTOR PARKING PROVIDED = 78 PARKING STALLS  
 28' TRAILER PARKING PROVIDED = 430 TRUCK PARKING STALLS  
 LONG TRAILER PARKING PROVIDED = 260 TRUCK PARKING STALLS  
 TOTAL TRUCK PARKING PROVIDED: = 932 TRUCK PARKING STALLS

LANDSCAPE REQUIRED 10% OF GROSS SITE = 3.673 ACRES  
 LANDSCAPE AREA PROVIDED 11% = 4.1 ACRES  
 TREES REQUIRED 1/10 AUTO PARKING SPACES: 88  
 TREES REQUIRED 1/10 TRUCK PARKING SPACES: 93  
 (TREES FOR TRUCK PARKING ARE TO BE LOCATED IN THE REQUIRED LANDSCAPE AREAS)  
 TOTAL TREES REQUIRED: 181  
 TOTAL TREES PROVIDED: 200  
 SHRUB AND GROUND COVER AREA REQUIRED MIN. 50% COVERAGE OF REQUIRED LANDSCAPE AREA: 1.83 ACRES  
 REMAINING AREA TO BE ROCK AND OR DECOMPOSED GRANITE MULCH WITH ROUNDED GRANITE BOULDER ACCENTS

**CONCEPTUAL LANDSCAPE PLAN**

SCALE: 1" = 100'-0"

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