CITY OF ALBUQUERQUE

Planning Department
Alan Varela, Director

Mayor Timothy M. Keller

July 28, 2025

Scott Eddings, P.E.
Huitt-Zollars
6501 Americas Parkway NE Suite 803
Albuquerque, NM 87110

RE: Winrock Town Center – Road A
2160 Louisiana Blvd NE
Grading and Drainage Report for Road A - ACCEPTED
Engineer's Stamp Date: July 2025
Hydrology File: J19D058M
Case # HYDR-2025-00262

Dear Mr. Eddings:

Based upon the information provided in your submittal received 7/24/2025, the Grading & Drainage Report is approved for Design. Please submit the Grading and Drainage Plans for review and approval for Building Permit, Grading Permit, Paving Permit, and Work Order Permit.

PRIOR TO CERTIFICATE OF OCCUPANCY:

1. Engineer's Certification, per the DPM Part 6-14 (F): *Engineer's Certification Checklist For Non-Subdivision* is required.

As a reminder, if the project total area of disturbance (including the staging area and any work within the adjacent Right-of-Way) is 1 acre or more, then an Erosion and Sediment Control (ESC) Plan and Owner's certified Notice of Intent (NOI) is required to be submitted to the Stormwater Quality Engineer (Doug Hughes, PE, jhughes@cabq.gov, 924-3420) 14 days prior to any earth disturbance.

If you have any questions, please contact me at 505-924-3314 or amontoya@cabq.gov.

Sincerely,

Anthony Montoya, Jr., P.E., C.F.M.
Senior Engineer, Hydrology
Planning Department, Development Review Services

PO Box 1293

Albuquerque

NM 87103

www.cabq.gov

DRAINAGE PLAN
ROAD A at WINROCK TOWN CENTER

CITY OF ALBUQUERQUE

PREPARED FOR:

PREPARED BY:

HUITT-ZOLLARS
333 RIO RANCHO BLVD., SUITE 101
RIO RANCHO, NEW MEXICO 87124

JULY 2025

HZI Project No. R312174.01

City of Albuquerque
Planning Department
Development Review Services
HYDROLOGY SECTION
APPROVED

DATE: 7/28/2025
BY:
HydroTrans # J19D058M

THE APPROVAL OF THESE PLANS/REPORTS SHALL NOT BE CONSTRUED TO PERMIT VIOLATIONS OF ANY CITY ORDINANCE OR STATE LAW, AND SHALL NOT PREVENT THE CITY OF ALBUQUERQUE FROM REQUIRING CORRECTIONS FOR ERRORS OR DIMENSIONS IN PLANS, SPECIFICATIONS, OR CONSTRUCTION DOCUMENTS. SUCH APPROVED PLANS/REPORTS SHALL NOT BE CHANGED, MODIFIED OR ALTERED WITHOUT AUTHORIZATION.

THE APPROVAL OF THESE PLANS/REPORTS SHALL EXPIRE TWO (2) YEARS AFTER THE APPROVAL DATE IF NO BUILDING PERMIT HAS BEEN PULLED ON THE DEVELOPMENT.

DRAINAGE PLAN

ROAD A at WINROCK TOWN CENTER

I, Scott Eddings, being first duly sworn upon my oath, state that I am a registered professional engineer, qualified in civil engineering and that the accompanying report was prepared by me or under my supervision and is true and correct to the best of my knowledge and belief.

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APPENDICES

EXHIBITS

INTRODUCTION

This drainage report is for Road A and surrounding basins at Winrock Town Center. The purpose of this drainage report is to provide design details for Road A and specified sites at Winrock Town Center. The drainage plan will encompass a full analysis of the land and incorporate the findings to develop a design that will efficiently distribute the storm water runoff to designated terminal locations.

The entire Winrock basin analysis will encompass approximately 23 Acres and will be comprised of the following entities: Road A, Parking Fields, and Retail Buildings. The analysis area is bordered by Winrock Loop to the west, Indian School Rd to the north, Road A to the south, and an entrance road to Winrock to the east that wraps around the back side of the Town Center. The existing drainage structure currently utilizes surface and sheet flow for travel to discharge locations close to the outer edge of Winrock Town Center.

The new drainage infrastructure will be developed to incorporate an internal pipe network to route runoff quicker and less dependent on exterior storm drains. Design methodology will adhere to the City of Albuquerque expectations and demonstrate that the development of the project complies with the City of Albuquerque ordnances and policies.

FLOOD HAZARD ZONE

The proposed site does not lie within a flood zone as shown on Flood Insurance Rate Map Number 35001C0352H, effective date August, 16, 2012. See **Appendix A** for the FEMA Flood Insurance Rate Map.

RELATED REPORTS

Winrock Town Center Drainage Implementation Plan by Huitt-Zollars, dated May 2019, provided an overall map and design of the proposed drainage improvements for Winrock Town Center.

JURISDICTIONS OF PUBLIC AGENCIES

This project is located entirely within the City of Albuquerque Limits and is therefore within their jurisdiction and must comply with the City's development requirements.

METHODOLOGY

This drainage report follows procedures outlined in the City of Albuquerque Development Process Manual (DPM). The precipitation data used for this project was obtained from the NOAA Atlas Point Precipitation Frequency Estimates site. See **Appendix B** for NOAA information. Hydrology modeling was completed using AHYMO. The data generated from the program was utilized to design drainage devices that will divert the runoff towards internal storm drains specifically designed to handle the Winrock Town Center 100-year storm event. These drainage devices were designed with the assistance of StormCAD and Flowmaster. See **Appendix C** for the AHYMO generated data.

PRECIPITATION

The 100-yr, 24 hrs design storm was used for the surface flow analysis. For the AHYMO utilized storm, the program requires the 1, 6, and 24-hr precipitation values. This generates the surface flow levels that are required for FlowMaster and StormCAD analysis. The precipitation values are consistent with current data obtained from NOAA Atlas 14 Precipitation Frequency Data Server.

LAND TREATMENTS

The land treatments used in the AHYMO Computer model are as described by the AHYMO user manual and are summarized in **Table 1**.

Table 1
Land Treatment Classifications

Treatment	Land Condition
A	Soil uncompacted by human activity with 0 to 10% slopes. Native grasses, weeds, and shrubs in typical densities with minimal disturbance to grading, ground cover, and infiltration capacity. Croplands.
B	Irrigated lawns, parks and golf courses with 0 to 10% slopes. Native grasses, weeds and shrubs, and soil uncompacted by human activity with slopes greater than 10% and less than 20%.
C	Soil compacted by human activity. Minimal vegetation. Unpaved parking, roads, trails. Most vacant lots. Gravel or rock (desert landscaping). Irrigated lawns and parks with slopes greater than 10%. Native grasses, weeds and shrubs, and soil uncompacted by human activity with slopes at 20%or greater. Native grass, weed and shrub areas with clay or clay loam soils, and other soils of very low permeability as classified by SCS Hydrologic Soil Group D.
D	Impervious areas, pavement, and roofs. Ponds, channels, and wetlands, even if seasonally dry

EXISTING CONDITIONS

This site is currently developed and is designed for the majority of the runoff to function as sheet flow until it reaches various drainage devices at the west end of the development. These drainage devices include a detention pond with a weir overflow that discharges into the storm drain located in Winrock Loop. Inlets located to the north and south of the Red Robin restaurant intake the sheet flow that originates from basins north of Road E within the Winrock property. These inlets route the runoff to the I-40 drainage channel.

PROJECT PURPOSE AND PROPOSED CONDITIONS

Road A at Winrock Town Center project site is proposed to create a fluid traffic pattern that will allow entrance onto Winrock property while creating efficient space for future retail development. Land types will include: Retail Buildings, Parking Fields, Road A, and Landscaping. The development will combine for a total of approximately 23 Acres.

The objective of the drainage design is to direct the runoff towards the internal storm drain efficiently and effectively while allowing a landscape design to be enjoyable for the Winrock Town

Center space. With the addition of internal storm drain, the project will be able to provide the drainage relief the space requires.

The junction located at "Road A" and the southbound Road just west of Dillards will have various inlet flows that will contribute to the runoff volume. The following flows entering this junction are: storm runoff from the west, runoff from the north, and storm runoff from the east.

The runoff from the west will be generated from basins 106 and 107. Runoff entering the system from the north will be generated from basins 100, 103, 104, 109, 110, and 105. Runoff entering the system from the east will be generated from basins 102, future, and 108. These basins will combine their flow at junction 1 and continue through the network heading south.

Basin 111 will continue with its current drainage route by sheet flowing to the west through the parking lot. The runoff will enter the storm drain through inlets located between Red Robin and BJ's Restaurants.

The master plan is designed to have a final outfall rate of 120.1 cfs at analysis point AP-D per the "Winrock Town Center Drainage Implementation Plan." This projects fully developed discharge rate brings the fully developed storm drain network to a total of 115.0 cfs and falls within the threshold of the planned outfall rate of 120.1 cfs.

STORMWATER QUALITY

As part of compliance with the stormwater quality program implemented by the City of Albuquerque in cooperation with the EPA, a monetary contribution will be made by the developer or property owner in place of directly implementing stormwater management practices on a specific site

CONCLUSION

This drainage study provides analysis for the proposed storm drain system to convey storm water runoff from all encompassed basins to the I-40 channel. Each basin will have an outlet to connect to the drainage network allowing water to flow to the discharge location of the I-40 channel. This drainage report complies with the City of Albuquerque requirements and is aligned with the "Winrock Town Center Drainage Implementation Plan."

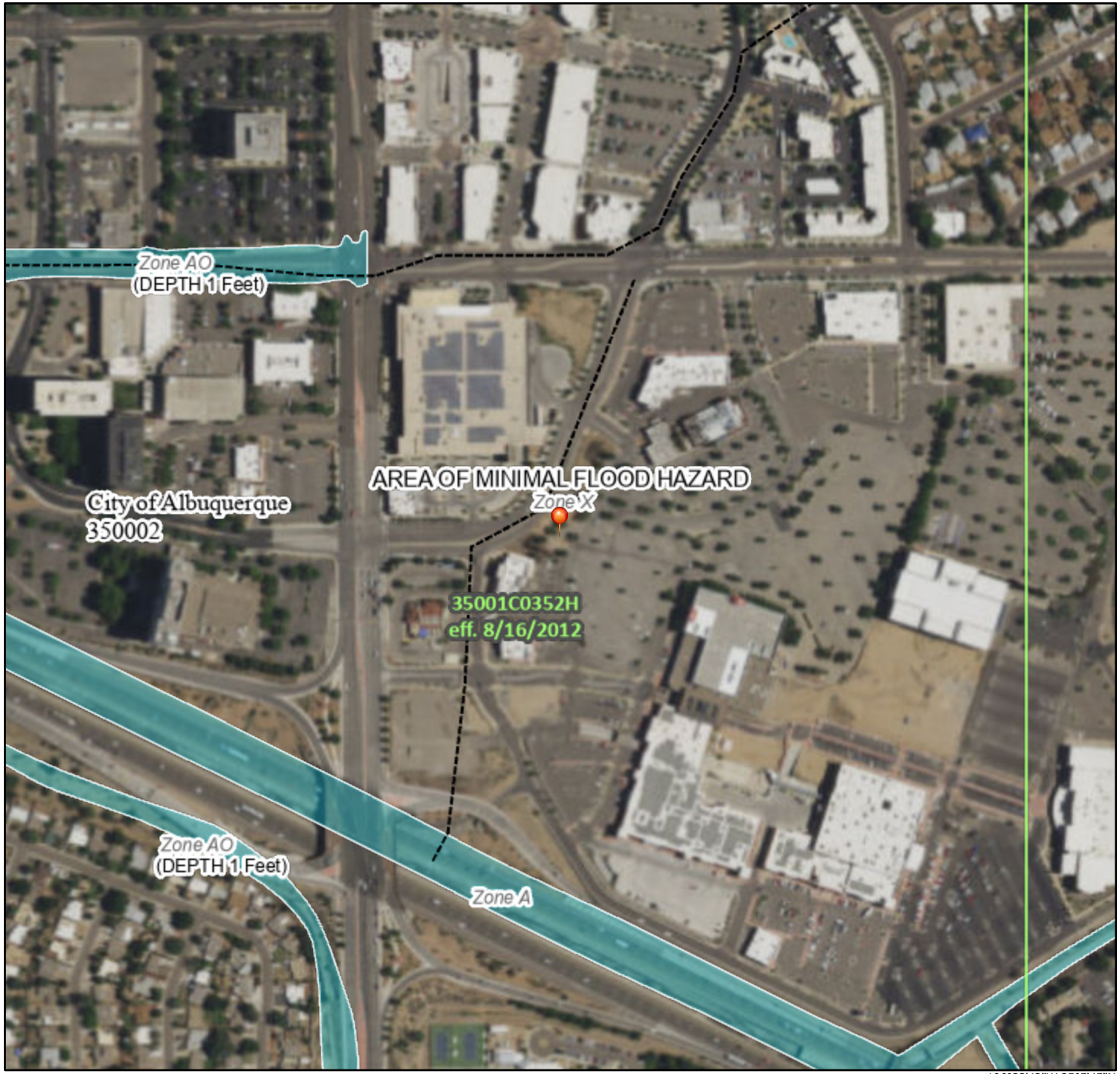
APPENDIX A

FEMA FLOOD INSURANCE RATE MAP

National Flood Hazard Layer FIRMette

FEMA

106°34'19"W 35°6'14"N



0 250 500 1,000 1,500 2,000 Feet

1:6,000

106°33'42"W 35°5'45"N

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN — Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 — Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/15/2024 at 5:59 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

APPENDIX B

NOAA Atlas Point Precipitation Frequency Estimates

NOAA Atlas 14, Volume 1, Version 5
Location name: Albuquerque, New Mexico, USA*
Latitude: 35.0998°, Longitude: -106.5667°
Elevation: 491 ft**
* source: ESRI Maps
** source: USGS

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_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.177** (0.151-0.209)	**0.229** (0.194-0.270)	**0.308** (0.260-0.363)	**0.368** (0.311-0.432)	**0.451** (0.379-0.529)	**0.515** (0.432-0.605)	**0.584** (0.485-0.684)	**0.655** (0.541-0.767)	**0.752** (0.615-0.881)	**0.829** (0.674-0.971)
10-min	**0.270** (0.230-0.318)	**0.349** (0.296-0.411)	**0.468** (0.396-0.552)	**0.560** (0.472-0.658)	**0.686** (0.577-0.805)	**0.785** (0.656-0.921)	**0.889** (0.737-1.04)	**0.998** (0.823-1.17)	**1.14** (0.935-1.34)	**1.26** (1.03-1.48)
15-min	**0.334** (0.285-0.393)	**0.432** (0.367-0.509)	**0.580** (0.492-0.684)	**0.694** (0.586-0.816)	**0.851** (0.715-0.998)	**0.973** (0.814-1.14)	**1.10** (0.914-1.29)	**1.24** (1.02-1.45)	**1.42** (1.16-1.66)	**1.56** (1.27-1.83)
30-min	**0.450** (0.383-0.529)	**0.582** (0.494-0.686)	**0.782** (0.662-0.921)	**0.935** (0.789-1.10)	**1.15** (0.963-1.34)	**1.31** (1.10-1.54)	**1.48** (1.23-1.74)	**1.66** (1.37-1.95)	**1.91** (1.56-2.24)	**2.11** (1.71-2.47)
60-min	**0.557** (0.475-0.655)	**0.720** (0.611-0.849)	**0.967** (0.819-1.14)	**1.16** (0.976-1.36)	**1.42** (1.19-1.66)	**1.62** (1.36-1.90)	**1.84** (1.52-2.15)	**2.06** (1.70-2.41)	**2.36** (1.93-2.77)	**2.61** (2.12-3.05)
2-hr	**0.653** (0.547-0.791)	**0.836** (0.702-1.02)	**1.11** (0.926-1.34)	**1.32** (1.10-1.59)	**1.62** (1.34-1.95)	**1.87** (1.54-2.24)	**2.12** (1.73-2.55)	**2.39** (1.94-2.86)	**2.77** (2.22-3.31)	**3.07** (2.44-3.68)
3-hr	**0.696** (0.587-0.838)	**0.884** (0.745-1.07)	**1.16** (0.976-1.39)	**1.38** (1.15-1.65)	**1.68** (1.40-2.01)	**1.92** (1.60-2.30)	**2.18** (1.80-2.61)	**2.46** (2.01-2.94)	**2.84** (2.30-3.39)	**3.16** (2.53-3.77)
6-hr	**0.810** (0.689-0.970)	**1.02** (0.869-1.22)	**1.32** (1.12-1.57)	**1.55** (1.31-1.84)	**1.87** (1.57-2.22)	**2.12** (1.77-2.52)	**2.38** (1.98-2.83)	**2.66** (2.20-3.15)	**3.03** (2.49-3.59)	**3.34** (2.72-3.96)
12-hr	**0.895** (0.770-1.04)	**1.13** (0.971-1.32)	**1.43** (1.23-1.66)	**1.67** (1.43-1.94)	**1.99** (1.70-2.31)	**2.24** (1.90-2.60)	**2.50** (2.11-2.90)	**2.77** (2.32-3.21)	**3.13** (2.60-3.64)	**3.43** (2.82-3.98)
24-hr	**1.02** (0.895-1.18)	**1.28** (1.12-1.48)	**1.61** (1.40-1.85)	**1.87** (1.63-2.15)	**2.22** (1.92-2.55)	**2.49** (2.15-2.85)	**2.77** (2.39-3.17)	**3.06** (2.62-3.50)	**3.44** (2.93-3.94)	**3.75** (3.17-4.29)
2-day	**1.08** (0.942-1.23)	**1.35** (1.18-1.54)	**1.70** (1.48-1.93)	**1.96** (1.72-2.24)	**2.33** (2.03-2.65)	**2.61** (2.26-2.97)	**2.91** (2.51-3.31)	**3.20** (2.75-3.65)	**3.61** (3.08-4.12)	**3.92** (3.33-4.48)
3-day	**1.18** (1.05-1.31)	**1.47** (1.31-1.64)	**1.82** (1.62-2.03)	**2.10** (1.87-2.34)	**2.47** (2.20-2.76)	**2.76** (2.45-3.08)	**3.06** (2.70-3.41)	**3.36** (2.95-3.74)	**3.75** (3.28-4.19)	**4.06** (3.54-4.54)
4-day	**1.27** (1.16-1.40)	**1.58** (1.44-1.73)	**1.94** (1.77-2.13)	**2.23** (2.03-2.44)	**2.62** (2.37-2.86)	**2.91** (2.63-3.18)	**3.21** (2.89-3.51)	**3.50** (3.15-3.84)	**3.90** (3.49-4.27)	**4.20** (3.74-4.61)
7-day	**1.45** (1.33-1.58)	**1.80** (1.65-1.97)	**2.20** (2.01-2.40)	**2.51** (2.29-2.73)	**2.92** (2.66-3.17)	**3.22** (2.93-3.50)	**3.53** (3.20-3.84)	**3.82** (3.47-4.16)	**4.21** (3.81-4.59)	**4.50** (4.05-4.91)
10-day	**1.61** (1.48-1.76)	**2.00** (1.83-2.18)	**2.45** (2.25-2.66)	**2.81** (2.58-3.04)	**3.28** (3.00-3.55)	**3.63** (3.31-3.93)	**3.99** (3.63-4.32)	**4.34** (3.94-4.70)	**4.80** (4.33-5.20)	**5.14** (4.62-5.58)
20-day	**2.03** (1.86-2.22)	**2.52** (2.31-2.76)	**3.07** (2.80-3.34)	**3.48** (3.18-3.79)	**4.00** (3.65-4.36)	**4.38** (3.99-4.77)	**4.76** (4.32-5.17)	**5.10** (4.63-5.55)	**5.55** (5.02-6.04)	**5.86** (5.29-6.39)
30-day	**2.44** (2.23-2.65)	**3.02** (2.77-3.28)	**3.65** (3.34-3.95)	**4.11** (3.75-4.45)	**4.68** (4.28-5.06)	**5.10** (4.64-5.51)	**5.49** (5.00-5.94)	**5.86** (5.33-6.34)	**6.31** (5.72-6.83)	**6.62** (6.00-7.18)
45-day	**2.98** (2.74-3.24)	**3.70** (3.40-4.01)	**4.41** (4.06-4.78)	**4.92** (4.52-5.33)	**5.54** (5.10-6.00)	**5.98** (5.49-6.47)	**6.37** (5.84-6.89)	**6.72** (6.16-7.28)	**7.13** (6.53-7.72)	**7.39** (6.77-8.00)
60-day	**3.43** (3.16-3.73)	**4.25** (3.92-4.62)	**5.08** (4.68-5.50)	**5.67** (5.22-6.14)	**6.38** (5.87-6.91)	**6.87** (6.32-7.44)	**7.32** (6.74-7.94)	**7.72** (7.11-8.39)	**8.19** (7.54-8.91)	**8.50** (7.82-9.24)

[1] 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.

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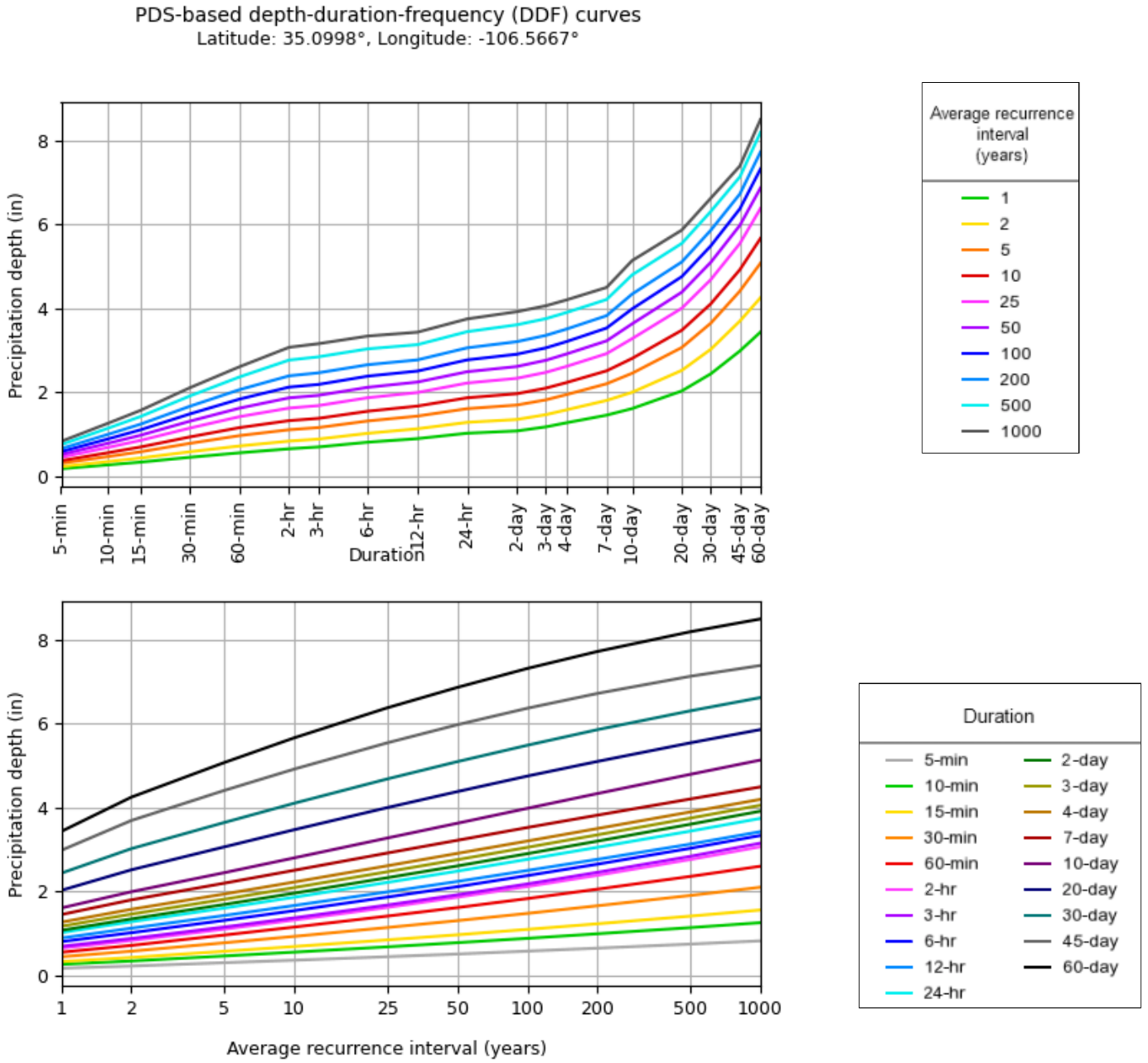
PF graphical



NOAA Atlas 14, Volume 1, Version 5

Created (GMT): Mon Apr 15 21:56:40 2024

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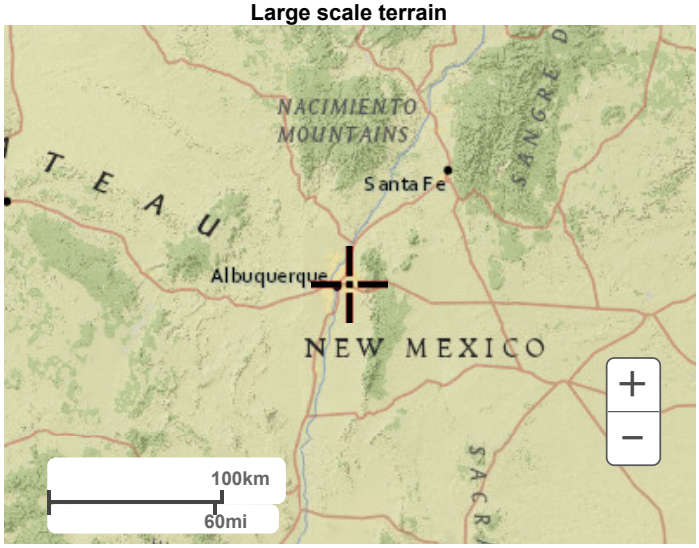
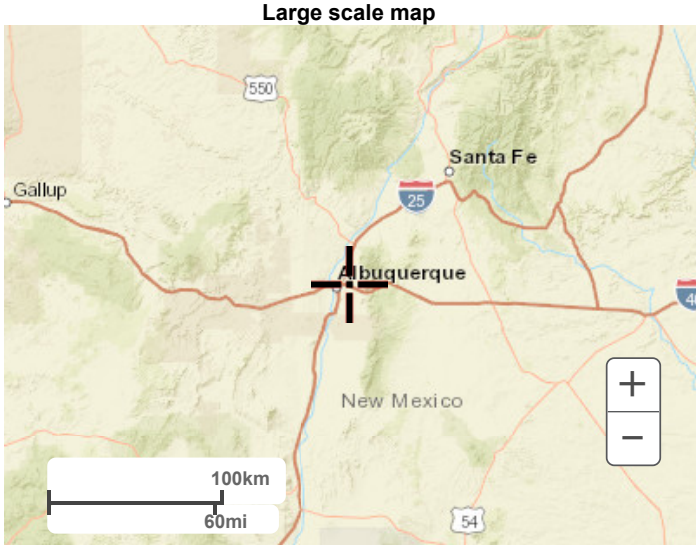
Maps & aerials

Small scale terrain

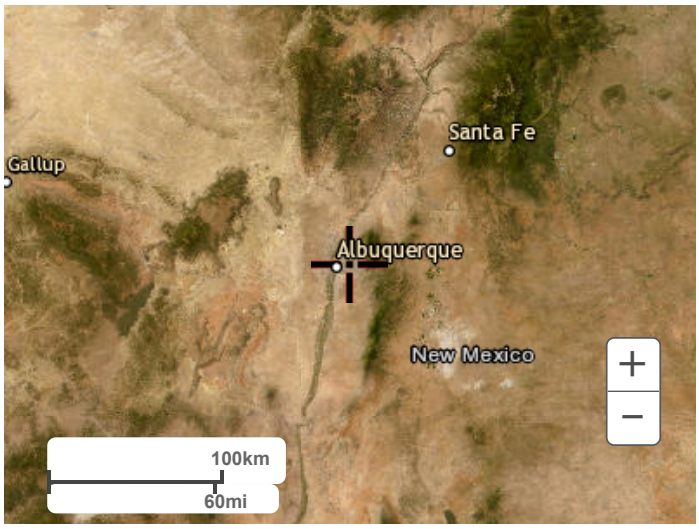
Large scale terrain



Large scale map



Large scale aerial



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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

APPENDIX C

AHYMO Input and Output

Developed Condition Basin Map

Winrock Road A - Basin Summary

Basin	Area (SF)	Area (Acre)	Area (SQ MI)	%B	%C	%D	100-Year Q (CFS)
100	49214	1.13	0.0018	5	5	90	4.9
101	198329	4.55	0.0071	5	5	90	6.4
102	46521	1.07	0.0017	5	5	90	17.7
103	46003	1.06	0.0017	5	5	90	4.7
104	92113	2.11	0.0033	5	5	90	9.1
105	155645	3.57	0.0056	5	5	90	15.5
106	33506	0.77	0.0012	5	5	90	3.3
107	31335	0.72	0.0011	5	5	90	3.1
108	40265	0.92	0.0014	5	5	90	2.5
109	27985	0.64	0.0010	5	5	90	2.8
110	38660	0.89	0.0014	5	5	90	2.8
111	9691	0.22	0.0003	5	5	90	0.9
FUT	263562	6.05	0.0095	5	5	90	26.3

EXISTING CONDITIONS

THIS SITE IS CURRENTLY DEVELOPED AND IS DESIGNED FOR THE MAJORITY OF THE RUNOFF TO FUNCTION AS SHEET FLOW UNTIL IT REACHES VARIOUS DRAINAGE DEVICES AT THE WEST END OF THE DEVELOPMENT. THESE DRAINAGE DEVICES INCLUDE A DETENTION POND WITH A WEIR OVERFLOW THAT DISCHARGES INTO THE STORM DRAIN LOCATED IN WINROCK LOOP. INLETS LOCATED TO THE NORTH AND SOUTH OF THE RED ROBIN RESTAURANT INTAKE THE SHEET FLOW THAT ORIGINATES FROM BASINS NORTH OF ROAD E WITHIN THE WINROCK PROPERTY. THESE INLETS ROUTE THE RUNOFF TO THE I-40 DRAINAGE CHANNEL.

PROPOSED IMPROVEMENTS

LANDSCAPED AREAS SHALL BE DEPRESSED AND GRADES SHALL BE DESIGNED TO PROVIDE POSITIVE DRAINAGE TOWARD DEPRESSED LANDSCAPED AREAS.

THE JUNCTION LOCATED AT "ROAD A" AND THE SOUTHBOUND ROAD JUST WEST OF DILLARDS WILL HAVE VARIOUS INLET FLOWS THAT WILL CONTRIBUTE TO THE RUNOFF VOLUME. THE FOLLOWING FLOWS ENTERING THIS ARE: STORM RUNOFF FROM THE WEST, RUNOFF FROM THE NORTH, AND RUNOFF FROM THE EAST.

THE RUNOFF FROM THE WEST WILL BE GENERATED FROM BASINS 106 AND 107. RUNOFF ENTERING THE SYSTEM FROM THE NORTH WILL BE GENERATED FROM BASIN 100, 103, 104, 109, 110, AND 105. RUNOFF ENTERING THE SYSTEM FROM THE EAST WILL BE GENERATED FROM BASINS 102, FUTURE, AND 108. THESE BASINS WILL COMBINE THEIR FLOW AT JUNCTION 1 AND CONTINUE THROUGH THE NETWORK HEADING SOUTH.

THE EXISTING BASIN 101 UTILIZES THE INDIAN SCHOOL DRAINAGE SYSTEM AND WILL NOT BE EFFECTED BY THIS PROJECT.

BASIN 111 WILL SHEET FLOW WEST TOWARDS INLETS LOCATED NEAR RED ROBIN AND IS THE EXISTING DESIGN. THIS WILL NOT CHANGE.

FLOOD ZONE

PER THE FEMA MAP NUMBER 35001C0352H DATED 8/16/2012 SHOWS THE SITE IS NOT LOCATED WITHIN A FLOOD HAZARD ZONE AREA.

LEGEND

- DRAINAGE BASIN BOUNDARY
- DRAINAGE IN/OUT FLOW
- 100 — DRAINAGE BASIN NUMBER CFS TOTAL
- DRAINAGE HIGH POINT
- RUNOFF DIRECTION
- AP — JUNCTION 1

BASIN MAP
1" =60'-0"

N

0 60' 120'
SCALE: 1" = 60'

HUITT ZOLLARS
333 Rio Rancho Blvd NE, Suite 101
Albuquerque, New Mexico 87124
505.892.5141
www.huitt-zollars.com

COMMITTED TO QUALITY — QUALITY CONTROL REVIEW DOCUMENT PHASE:

HUITT-ZOLLARS

THIS DOCUMENT HAS BEEN REVIEWED BY THE FOLLOWING FOR QUALITY CONTROL.
PROJECT NO.:

QC ACTIVITY	FULL NAME	DATE
REVIEWED BY		
CORRECTED BY		
VERIFIED BY		

PROJECT NO.:
DRAWN BY: CAT
REVIEWED BY: STAFF
APPROVED BY: STAFF

ISSUE DRAWING LOG:

BASIN MAP

C100

Plotted: 7/7/2025 3:57:04 PM, By:Trujillo, Corie
H:\proj\R3\21174.01 - Winrock Phase C Road A Drainage Studies\05 Design\05.13 Hydro\WINROCK ROAD A DRAINAGE .dwg
Last Saved:7/7/2025 3:36:31 PM, ctrujillo

```
START                TIME=0.0 CODE=0  LINES=0

*S      WINROCK ROAD A     JULY 2025   HZI NO. R312174.01
*S--------------------------------------------------------------------
*S--------------------------------------------------------------------
*S 100 - YEAR RAINFALL    ------------------------------------------
RAINFALL            TYPE=-1 RAIN QUAR=0.0 RAIN ONE= 1.84
                    RAIN SIX= 2.38 RAIN DAY=2.77 DT=0.0
*S--------------------------------------------------------------------
*S--------------------------------------------------------------------
*S-------------------------WINROCK DRAINAGE--------------------------
*S--------------------------------------------------------------------
*S--------------------------------------------------------------------
*S--------------------------------------------------------------------
*S BASIN 100
COMPUTE NM HYD  ID=10 HYD NO=110  DA=0.0018 SQ MI
                PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR         MASSRAIN=-1
PRINT HYD       ID=10   CODE=1
*S--------------------------------------------------------------------
*S BASIN 101
COMPUTE NM HYD  ID=11 HYD NO=111  DA=0.0071 SQ MI
                PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR         MASSRAIN=-1
PRINT HYD       ID=11   CODE=1
*S--------------------------------------------------------------------
*S BASIN 102
COMPUTE NM HYD  ID=12 HYD NO=112  DA=0.0017 SQ MI
                PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR         MASSRAIN=-1
PRINT HYD       ID=12   CODE=1
 *S-------------------------------------------------------------------
*S BASIN 103
COMPUTE NM HYD  ID=13 HYD NO=113  DA=0.0017 SQ MI
                PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR         MASSRAIN=-1
PRINT HYD       ID=13   CODE=1
 *S-------------------------------------------------------------------
*S BASIN 104
COMPUTE NM HYD  ID=14 HYD NO=114  DA=0.0033 SQ MI
                PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR         MASSRAIN=-1
PRINT HYD       ID=14   CODE=1
 *S-------------------------------------------------------------------
*S BASIN 105
COMPUTE NM HYD  ID=15 HYD NO=115  DA=0.0056 SQ MI
                PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR         MASSRAIN=-1
PRINT HYD       ID=15   CODE=1
 *S-------------------------------------------------------------------
*S BASIN 106
COMPUTE NM HYD  ID=16 HYD NO=116  DA=0.0012 SQ MI
                PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR         MASSRAIN=-1
PRINT HYD       ID=16   CODE=1
 *S-------------------------------------------------------------------
*S BASIN 107
COMPUTE NM HYD  ID=17 HYD NO=117  DA=0.0011 SQ MI
                PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR         MASSRAIN=-1
PRINT HYD       ID=17   CODE=1
*S--------------------------------------------------------------------
*S BASIN 108
COMPUTE NM HYD  ID=18 HYD NO=118  DA=0.0014 SQ MI
                PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR         MASSRAIN=-1
PRINT HYD       ID=18   CODE=1
*S--------------------------------------------------------------------
*S BASIN 109
COMPUTE NM HYD  ID=19 HYD NO=119  DA=0.0010 SQ MI
                PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR         MASSRAIN=-1
PRINT HYD       ID=19   CODE=1
*S--------------------------------------------------------------------
*S BASIN 110
COMPUTE NM HYD  ID=20 HYD NO=120  DA=0.0010 SQ MI
                PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR         MASSRAIN=-1
PRINT HYD       ID=20   CODE=1
```

```
*S--------------------------------------------------------------------
*S BASIN 111
COMPUTE NM HYD  ID=21 HYD NO=121  DA=0.0003 SQ MI
                PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR         MASSRAIN=-1
PRINT HYD       ID=21   CODE=1
*S--------------------------------------------------------------------
*S BASIN FUTURE
COMPUTE NM HYD  ID=22 HYD NO=122  DA=0.0095 SQ MI
                PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR         MASSRAIN=-1
PRINT HYD       ID=22   CODE=1
*S--------------------------------------------------------------------
*S--------------------------------------------------------------------
*S--------------------------------------------------------------------
FINISH
```

AHYMO PROGRAM SUMMARY TABLE (AHYMO-S4) - Ver. S4.02a, Rel: 02a RUN DATE (MON/DAY/YR) =07/07/2025
INPUT FILE = C:\Users\ctrujillo\Desktop\Winrock Road A Input 7.7.25.txt USER NO.= AHYMO-S4TempUser05901704

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	NOTATION
START										TIME= 0.00
*S	WINROCK ROAD A JULY 2025 HZI NO. R312174.01									
*S										
*S										
*S 100 - YEAR RAINFALL										
RAINFALL	TYPE= 1 NOAA 14									RAIN6= 2.380
*S										
*S										
*S	WINROCK DRAINAGE									
*S										
*S										
*S										
*S BASIN 100										
COMPUTE NM HYD	110.00	-	10	0.00180	4.99	0.193	2.00837	1.530	4.333	PER IMP= 90.00
*S										
*S BASIN 101										
COMPUTE NM HYD	111.00	-	11	0.00710	19.63	0.761	2.00837	1.530	4.320	PER IMP= 90.00
*S										
*S BASIN 102										
COMPUTE NM HYD	112.00	-	12	0.00170	4.72	0.182	2.00837	1.530	4.334	PER IMP= 90.00
*S BASIN 103										
COMPUTE NM HYD	113.00	-	13	0.00170	4.72	0.182	2.00837	1.530	4.334	PER IMP= 90.00
*S BASIN 104										
COMPUTE NM HYD	114.00	-	14	0.00330	9.14	0.353	2.00837	1.530	4.325	PER IMP= 90.00
*S BASIN 105										
COMPUTE NM HYD	115.00	-	15	0.00560	15.49	0.600	2.00837	1.530	4.322	PER IMP= 90.00
*S BASIN 106										
COMPUTE NM HYD	116.00	-	16	0.00120	3.33	0.129	2.00837	1.530	4.342	PER IMP= 90.00
*S BASIN 107										
COMPUTE NM HYD	117.00	-	17	0.00110	3.06	0.118	2.00837	1.530	4.344	PER IMP= 90.00
*S										
*S BASIN 108										
COMPUTE NM HYD	118.00	-	18	0.00140	3.89	0.150	2.00837	1.530	4.338	PER IMP= 90.00
*S										
*S BASIN 109										
COMPUTE NM HYD	119.00	-	19	0.00100	2.78	0.107	2.00837	1.530	4.347	PER IMP= 90.00
*S										
*S BASIN 110										
COMPUTE NM HYD	120.00	-	20	0.00100	2.78	0.107	2.00837	1.530	4.347	PER IMP= 90.00
*S										
*S BASIN 111										
COMPUTE NM HYD	121.00	-	21	0.00030	0.85	0.032	2.00837	1.530	4.409	PER IMP= 90.00
*S										
*S BASIN FUTURE										
COMPUTE NM HYD	122.00	-	22	0.00950	26.26	1.018	2.00837	1.530	4.319	PER IMP= 90.00
*S										
*S										
*S										
FINISH										

```
    AHYMO PROGRAM (AHYMO-S4)                    - Version: S4.02a - Rel: 02a
         RUN DATE (MON/DAY/YR) = 07/07/2025
         START TIME (HR:MIN:SEC) = 14:57:19     USER NO.= AHYMO-S4TempUser05901704
         INPUT FILE = C:\Users\ctrujillo\Desktop\Winrock Road A Input 7.7.25.txt

START               TIME=0.0 CODE=0  LINES=0

*S                  WINROCK ROAD A     JULY 2025   HZI NO. R312174.01
*S--------------------------------------------------------------------
*S--------------------------------------------------------------------
*S 100 - YEAR RAINFALL    ------------------------------------------
RAINFALL            TYPE=-1 RAIN QUAR=0.0 RAIN ONE= 1.84
                    RAIN SIX= 2.38 RAIN DAY=2.77 DT=0.0

               6-HOUR RAINFALL DIST. - BASED ON NOAA ATLAS 14 FOR CONVECTIVE AREAS (NM & AZ) - D1
               DT =   0.005000 HOURS       END TIME =     6.000000 HOURS
*S--------------------------------------------------------------------
*S--------------------------------------------------------------------
*S------------------------WINROCK DRAINAGE--------------------------
*S--------------------------------------------------------------------
*S--------------------------------------------------------------------
*S--------------------------------------------------------------------
*S BASIN 100
COMPUTE NM HYD      ID=10 HYD NO=110  DA=0.0018 SQ MI
                    PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR     MASSRAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   6.3958    CFS   UNIT VOLUME =   0.9980       B =   526.28      P60 = 1.8400
     AREA =     0.001620 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000


     K =  0.118524HR    TP =  0.133300HR    K/TP RATIO =  0.889153     SHAPE CONSTANT, N =  3.988933
     UNIT PEAK =  0.47861    CFS   UNIT VOLUME =   0.9699       B =   354.44      P60 = 1.8400
     AREA =     0.000180 SQ MI    IA =   0.42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000

PRINT HYD           ID=10   CODE=1

                                  PARTIAL HYDROGRAPH   110.00


    RUNOFF VOLUME =     2.00837 INCHES     =       0.1928 ACRE-FEET
    PEAK DISCHARGE RATE =       4.99 CFS  AT   1.530 HOURS   BASIN AREA =  0.0018 SQ. MI.



*S--------------------------------------------------------------------
*S BASIN 101
COMPUTE NM HYD      ID=11 HYD NO=111  DA=0.0071 SQ MI
                    PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR     MASSRAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   25.228    CFS   UNIT VOLUME =   0.9995       B =   526.28      P60 = 1.8400
     AREA =     0.006390 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000


     K =  0.118524HR    TP =  0.133300HR    K/TP RATIO =  0.889153     SHAPE CONSTANT, N =  3.988933
     UNIT PEAK =   1.8878    CFS   UNIT VOLUME =   0.9924       B =   354.44      P60 = 1.8400
     AREA =     0.000710 SQ MI    IA =   0.42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000

PRINT HYD           ID=11   CODE=1

                                  PARTIAL HYDROGRAPH   111.00


    RUNOFF VOLUME =     2.00837 INCHES     =       0.7605 ACRE-FEET
    PEAK DISCHARGE RATE =      19.63 CFS  AT   1.530 HOURS   BASIN AREA =  0.0071 SQ. MI.



*S--------------------------------------------------------------------
*S BASIN 102
COMPUTE NM HYD      ID=12 HYD NO=112  DA=0.0017 SQ MI
```

```
                    PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR     MASSRAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   6.0405    CFS   UNIT VOLUME =   0.9979       B =   526.28      P60 = 1.8400
     AREA =     0.001530 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000


     K =  0.118524HR    TP =  0.133300HR    K/TP RATIO =  0.889153     SHAPE CONSTANT, N =  3.988933
     UNIT PEAK =  0.45202    CFS   UNIT VOLUME =   0.9681       B =   354.44      P60 = 1.8400
     AREA =     0.000170 SQ MI    IA =   0.42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000

PRINT HYD           ID=12   CODE=1

                                  PARTIAL HYDROGRAPH   112.00


    RUNOFF VOLUME =     2.00837 INCHES     =       0.1821 ACRE-FEET
    PEAK DISCHARGE RATE =       4.72 CFS  AT   1.530 HOURS   BASIN AREA =  0.0017 SQ. MI.



 *S--------------------------------------------------------------------
*S BASIN 103
COMPUTE NM HYD      ID=13 HYD NO=113  DA=0.0017 SQ MI
                    PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR     MASSRAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   6.0405    CFS   UNIT VOLUME =   0.9979       B =   526.28      P60 = 1.8400
     AREA =     0.001530 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000


     K =  0.118524HR    TP =  0.133300HR    K/TP RATIO =  0.889153     SHAPE CONSTANT, N =  3.988933
     UNIT PEAK =  0.45202    CFS   UNIT VOLUME =   0.9681       B =   354.44      P60 = 1.8400
     AREA =     0.000170 SQ MI    IA =   0.42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000

PRINT HYD           ID=13   CODE=1

                                  PARTIAL HYDROGRAPH   113.00


    RUNOFF VOLUME =     2.00837 INCHES     =       0.1821 ACRE-FEET
    PEAK DISCHARGE RATE =       4.72 CFS  AT   1.530 HOURS   BASIN AREA =  0.0017 SQ. MI.



 *S--------------------------------------------------------------------
*S BASIN 104
COMPUTE NM HYD      ID=14 HYD NO=114  DA=0.0033 SQ MI
                    PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR     MASSRAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   11.726    CFS   UNIT VOLUME =   0.9989       B =   526.28      P60 = 1.8400
     AREA =     0.002970 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000


     K =  0.118524HR    TP =  0.133300HR    K/TP RATIO =  0.889153     SHAPE CONSTANT, N =  3.988933
     UNIT PEAK =  0.87745    CFS   UNIT VOLUME =   0.9835       B =   354.44      P60 = 1.8400
     AREA =     0.000330 SQ MI    IA =   0.42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000

PRINT HYD           ID=14   CODE=1

                                  PARTIAL HYDROGRAPH   114.00


    RUNOFF VOLUME =     2.00837 INCHES     =       0.3535 ACRE-FEET
    PEAK DISCHARGE RATE =       9.14 CFS  AT   1.530 HOURS   BASIN AREA =  0.0033 SQ. MI.



 *S--------------------------------------------------------------------
```

```
*S BASIN 105
COMPUTE NM HYD      ID=15 HYD NO=115  DA=0.0056 SQ MI
                    PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR     MASSRAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   19.898    CFS   UNIT VOLUME =   0.9994       B =   526.28      P60 = 1.8400
     AREA =     0.005040 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000


     K =  0.118524HR    TP =  0.133300HR    K/TP RATIO =  0.889153     SHAPE CONSTANT, N =  3.988933
     UNIT PEAK =   1.4890    CFS   UNIT VOLUME =   0.9904       B =   354.44      P60 = 1.8400
     AREA =     0.000560 SQ MI    IA =   0.42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000

PRINT HYD           ID=15   CODE=1

                                  PARTIAL HYDROGRAPH   115.00


    RUNOFF VOLUME =     2.00837 INCHES     =       0.5998 ACRE-FEET
    PEAK DISCHARGE RATE =      15.49 CFS  AT   1.530 HOURS   BASIN AREA =  0.0056 SQ. MI.



 *S--------------------------------------------------------------------
*S BASIN 106
COMPUTE NM HYD      ID=16 HYD NO=116  DA=0.0012 SQ MI
                    PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR     MASSRAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   4.2639    CFS   UNIT VOLUME =   0.9970       B =   526.28      P60 = 1.8400
     AREA =     0.001080 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000


     K =  0.118524HR    TP =  0.133300HR    K/TP RATIO =  0.889153     SHAPE CONSTANT, N =  3.988933
     UNIT PEAK =  0.31907    CFS   UNIT VOLUME =   0.9547       B =   354.44      P60 = 1.8400
     AREA =     0.000120 SQ MI    IA =   0.42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000

PRINT HYD           ID=16   CODE=1

                                  PARTIAL HYDROGRAPH   116.00


    RUNOFF VOLUME =     2.00837 INCHES     =       0.1285 ACRE-FEET
    PEAK DISCHARGE RATE =       3.33 CFS  AT   1.530 HOURS   BASIN AREA =  0.0012 SQ. MI.



 *S--------------------------------------------------------------------
*S BASIN 107
COMPUTE NM HYD      ID=17 HYD NO=117  DA=0.0011 SQ MI
                    PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR     MASSRAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   3.9086    CFS   UNIT VOLUME =   0.9967       B =   526.28      P60 = 1.8400
     AREA =     0.000990 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000


     K =  0.118524HR    TP =  0.133300HR    K/TP RATIO =  0.889153     SHAPE CONSTANT, N =  3.988933
     UNIT PEAK =  0.29248    CFS   UNIT VOLUME =   0.9507       B =   354.44      P60 = 1.8400
     AREA =     0.000110 SQ MI    IA =   0.42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000

PRINT HYD           ID=17   CODE=1

                                  PARTIAL HYDROGRAPH   117.00


    RUNOFF VOLUME =     2.00837 INCHES     =       0.1178 ACRE-FEET
    PEAK DISCHARGE RATE =       3.06 CFS  AT   1.530 HOURS   BASIN AREA =  0.0011 SQ. MI.
```

```
*S--------------------------------------------------------------------
*S BASIN 108
COMPUTE NM HYD      ID=18 HYD NO=118  DA=0.0014 SQ MI
                    PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR     MASSRAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   4.9745    CFS   UNIT VOLUME =   0.9974       B =   526.28      P60 = 1.8400
     AREA =     0.001260 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000


     K =  0.118524HR    TP =  0.133300HR    K/TP RATIO =  0.889153     SHAPE CONSTANT, N =  3.988933
     UNIT PEAK =  0.37225    CFS   UNIT VOLUME =   0.9612       B =   354.44      P60 = 1.8400
     AREA =     0.000140 SQ MI    IA =   0.42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000

PRINT HYD           ID=18   CODE=1

                                  PARTIAL HYDROGRAPH   118.00


    RUNOFF VOLUME =     2.00837 INCHES     =       0.1500 ACRE-FEET
    PEAK DISCHARGE RATE =       3.89 CFS  AT   1.530 HOURS   BASIN AREA =  0.0014 SQ. MI.



*S--------------------------------------------------------------------
*S BASIN 109
COMPUTE NM HYD      ID=19 HYD NO=119  DA=0.0010 SQ MI
                    PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR     MASSRAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   3.5532    CFS   UNIT VOLUME =   0.9964       B =   526.28      P60 = 1.8400
     AREA =     0.000900 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000


     K =  0.118524HR    TP =  0.133300HR    K/TP RATIO =  0.889153     SHAPE CONSTANT, N =  3.988933
     UNIT PEAK =  0.26589    CFS   UNIT VOLUME =   0.9456       B =   354.44      P60 = 1.8400
     AREA =     0.000100 SQ MI    IA =   0.42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000

PRINT HYD           ID=19   CODE=1

                                  PARTIAL HYDROGRAPH   119.00


    RUNOFF VOLUME =     2.00837 INCHES     =       0.1071 ACRE-FEET
    PEAK DISCHARGE RATE =       2.78 CFS  AT   1.530 HOURS   BASIN AREA =  0.0010 SQ. MI.



*S--------------------------------------------------------------------
*S BASIN 110
COMPUTE NM HYD      ID=20 HYD NO=120  DA=0.0010 SQ MI
                    PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR     MASSRAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   3.5532    CFS   UNIT VOLUME =   0.9964       B =   526.28      P60 = 1.8400
     AREA =     0.000900 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000


     K =  0.118524HR    TP =  0.133300HR    K/TP RATIO =  0.889153     SHAPE CONSTANT, N =  3.988933
     UNIT PEAK =  0.26589    CFS   UNIT VOLUME =   0.9456       B =   354.44      P60 = 1.8400
     AREA =     0.000100 SQ MI    IA =   0.42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000

PRINT HYD           ID=20   CODE=1

                                  PARTIAL HYDROGRAPH   120.00


    RUNOFF VOLUME =     2.00837 INCHES     =       0.1071 ACRE-FEET
    PEAK DISCHARGE RATE =       2.78 CFS  AT   1.530 HOURS   BASIN AREA =  0.0010 SQ. MI.
```

```
*S--------------------------------------------------------------------
*S BASIN 111
COMPUTE NM HYD      ID=21 HYD NO=121  DA=0.0003 SQ MI
                    PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR     MASSRAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   1.0660    CFS   UNIT VOLUME =   0.9878       B =   526.28      P60 = 1.8400
     AREA =     0.000270 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000


     K =  0.118524HR    TP =  0.133300HR    K/TP RATIO =  0.889153     SHAPE CONSTANT, N =  3.988933
     UNIT PEAK =  0.79768E-01CFS   UNIT VOLUME =   0.8643       B =   354.44      P60 = 1.8400
     AREA =     0.000030 SQ MI    IA =   0.42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000

PRINT HYD           ID=21   CODE=1

                                  PARTIAL HYDROGRAPH   121.00


    RUNOFF VOLUME =     2.00837 INCHES     =       0.0321 ACRE-FEET
    PEAK DISCHARGE RATE =       0.85 CFS  AT   1.530 HOURS   BASIN AREA =  0.0003 SQ. MI.



*S--------------------------------------------------------------------
*S BASIN FUTURE
COMPUTE NM HYD      ID=22 HYD NO=122  DA=0.0095 SQ MI
                    PER A=0.0 PER B=5.0 PER C=5.0 PER D=90.0
                    TP=-.1333 HR     MASSRAIN=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   33.756    CFS   UNIT VOLUME =   0.9996       B =   526.28      P60 = 1.8400
     AREA =     0.008550 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000


     K =  0.118524HR    TP =  0.133300HR    K/TP RATIO =  0.889153     SHAPE CONSTANT, N =  3.988933
     UNIT PEAK =   2.5260    CFS   UNIT VOLUME =   0.9943       B =   354.44      P60 = 1.8400
     AREA =     0.000950 SQ MI    IA =   0.42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.005000

PRINT HYD           ID=22   CODE=1

                                  PARTIAL HYDROGRAPH   122.00


    RUNOFF VOLUME =     2.00837 INCHES     =       1.0176 ACRE-FEET
    PEAK DISCHARGE RATE =      26.26 CFS  AT   1.530 HOURS   BASIN AREA =  0.0095 SQ. MI.



*S--------------------------------------------------------------------
*S--------------------------------------------------------------------
*S--------------------------------------------------------------------
FINISH

    NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 14:57:19
```

APPENDIX D

FlowMaster Analysis

Street Capacity Analysis

Worksheet for ROAD A

Project Description	
Friction Method	Manning Formula
Solve For	Discharge

Input Data	
Channel Slope	0.005 ft/ft
Normal Depth	6.0 in

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.50
0+00	0.00
0+01	0.08
0+16	0.38
0+31	0.08
0+32	0.00
0+32	0.50

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.50)	(0+32, 0.50)	0.013

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Discharge	30.14 cfs
Roughness Coefficient	0.013
Elevation Range	0.0 to 0.5 ft
Flow Area	8.9 ft²
Wetted Perimeter	32.5 ft
Hydraulic Radius	3.3 in
Top Width	31.50 ft
Normal Depth	6.0 in
Critical Depth	6.3 in
Critical Slope	0.004 ft/ft
Velocity	3.40 ft/s
Velocity Head	0.18 ft
Specific Energy	0.68 ft
Froude Number	1.129
Flow Type	Supercritical

Worksheet for ROAD A

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	6.0 in
Critical Depth	6.3 in
Channel Slope	0.005 ft/ft
Critical Slope	0.004 ft/ft

Worksheet for NORTH OF RED ROBIN ROAD

Project Description	
Friction Method	Manning Formula
Solve For	Discharge

Input Data	
Channel Slope	0.005 ft/ft
Normal Depth	6.0 in

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.50
0+00	0.00
0+01	0.08
0+12	0.30
0+23	0.08
0+24	0.00
0+24	0.50

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.50)	(0+24, 0.50)	0.013

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Discharge	28.20 cfs
Roughness Coefficient	0.013
Elevation Range	0.0 to 0.5 ft
Flow Area	7.7 ft²
Wetted Perimeter	25.0 ft
Hydraulic Radius	3.7 in
Top Width	24.00 ft
Normal Depth	6.0 in
Critical Depth	6.4 in
Critical Slope	0.004 ft/ft
Velocity	3.68 ft/s
Velocity Head	0.21 ft
Specific Energy	0.71 ft
Froude Number	1.146
Flow Type	Supercritical

Worksheet for NORTH OF RED ROBIN ROAD

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

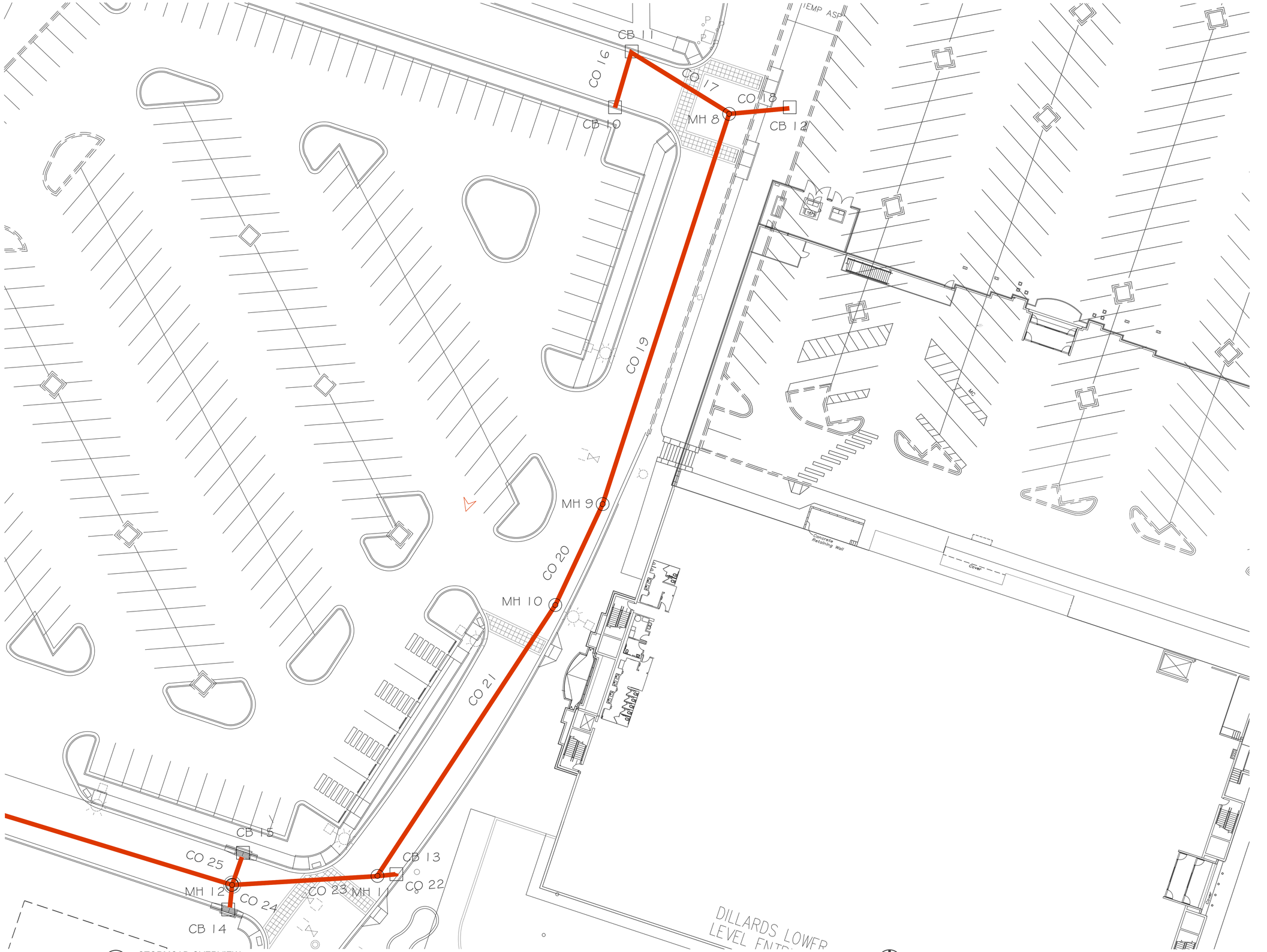
GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	6.0 in
Critical Depth	6.4 in
Channel Slope	0.005 ft/ft
Critical Slope	0.004 ft/ft

APPENDIX E

StormCAD FlexTable – StormCAD Overview

FlexTable: Conduit Table

Label	Start Node	Stop Node	Diameter (in)	Length (3D) (ft)	Flow (cfs)	Velocity (ft/s)	Invert (Start) (ft)	Invert (Stop) (ft)	Elevation Ground (Start) (ft)	Elevation Ground (Stop) (ft)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)
CO-1	CB-1	CB-2	18.0	27.4	2.6	1.47	5,288.25	5,287.70	5,295.00	5,295.00	5,294.73	5,294.72
CO-2	CB-2	CB-3	18.0	57.4	5.2	2.94	5,287.70	5,286.90	5,295.00	5,295.25	5,294.58	5,294.49
CO-3	CB-3	MH-1	24.0	74.1	10.1	3.21	5,286.90	5,286.30	5,295.25	5,295.25	5,294.33	5,294.24
CO-4	MH-1	CB-4	24.0	37.4	14.7	4.68	5,286.30	5,286.75	5,295.25	5,295.00	5,294.23	5,294.13
CO-5	MH-1	MH-2	36.0	150.2	24.8	3.51	5,286.30	5,285.00	5,295.25	5,295.35	5,294.07	5,293.86
CO-6	MH-2	MH-2A	36.0	92.4	24.8	3.51	5,285.00	5,284.20	5,295.35	5,295.45	5,293.75	5,293.62
CO-6A	MH-2A	MH-2B	36.0	103.8	24.8	3.51	5,284.20	5,282.60	5,295.45	5,295.60	5,293.48	5,293.34
CO-7	CB-5	MH-3	24.0	108.7	1.6	0.51	5,285.50	5,284.90	5,294.00	5,294.50	5,292.53	5,292.52
CO-8	MH-3	CB-8	24.0	47.4	1.6	0.51	5,284.90	5,284.70	5,294.50	5,295.00	5,292.52	5,292.52
CO-9	CB-6	CB-7	24.0	18.9	1.6	0.51	5,285.10	5,285.00	5,293.00	5,293.00	5,292.54	5,292.54
CO-10	CB-7	CB-8	24.0	56.6	3.2	1.02	5,285.00	5,284.70	5,293.00	5,295.00	5,292.52	5,292.51
CO-11	CB-8	MH-4	24.0	34.5	6.4	2.04	5,284.70	5,284.40	5,295.00	5,295.25	5,292.44	5,292.42
CO-12	MH-4	MH-5	36.0	91.4	6.4	0.91	5,284.40	5,283.80	5,295.25	5,295.50	5,292.45	5,292.44
CO-13	MH-5	MH-7	36.0	151.5	6.4	0.91	5,283.80	5,280.50	5,295.50	5,295.75	5,292.43	5,292.43
CO-14	CB-9	MH-2B	24.0	27.2	15.5	4.93	5,283.90	5,282.60	5,294.50	5,295.60	5,293.36	5,293.23
CO-14A	MH-2B	MH-6	36.0	74.2	40.3	5.70	5,282.60	5,281.70	5,295.60	5,295.75	5,292.75	5,292.48
CO-15	MH-6	MH-7	36.0	21.5	40.3	5.70	5,281.70	5,280.50	5,295.75	5,295.75	5,292.18	5,292.13
CO-16	CB-10	CB-11	24.0	21.2	2.4	0.76	5,288.20	5,288.00	5,294.25	5,294.25	5,292.92	5,292.92
CO-17	CB-11	MH-8	24.0	37.4	4.8	1.53	5,288.00	5,287.80	5,294.25	5,294.50	5,292.87	5,292.86
CO-18	CB-12	MH-8	36.0	32.1	7.2	14.61	5,290.00	5,287.80	5,298.00	5,294.50	5,292.88	5,292.88
CO-19	MH-8	MH-9	36.0	182.7	12.0	1.70	5,287.80	5,286.80	5,294.50	5,294.50	5,292.82	5,292.78
CO-20	MH-9	MH-10	36.0	61.5	12.0	1.70	5,286.80	5,286.40	5,294.50	5,294.00	5,292.75	5,292.74
CO-21	MH-10	MH-11	36.0	152.4	12.0	1.70	5,286.40	5,285.00	5,294.00	5,293.00	5,292.71	5,292.69
CO-22	CB-13	MH-11	18.0	11.8	0.8	0.45	5,285.80	5,285.00	5,292.50	5,293.00	5,292.71	5,292.71
CO-23	MH-11	MH-12	36.0	62.5	12.8	1.81	5,285.00	5,284.20	5,293.00	5,293.00	5,292.64	5,292.62
CO-24	CB-14	MH-12	18.0	10.9	0.8	0.45	5,285.50	5,284.20	5,292.50	5,293.00	5,292.65	5,292.65
CO-25	CB-15	MH-12	18.0	17.8	0.8	0.45	5,285.50	5,284.20	5,292.50	5,293.00	5,292.65	5,292.65
CO-26	MH-12	MH-13	36.0	287.2	14.4	2.04	5,284.20	5,281.70	5,293.00	5,294.00	5,292.57	5,292.49
CO-27	CB-16	MH-13	18.0	20.4	0.8	0.45	5,284.00	5,281.70	5,293.50	5,294.00	5,292.53	5,292.53
CO-28	CB-17	MH-13	18.0	32.9	0.8	0.45	5,284.00	5,281.70	5,293.50	5,294.00	5,292.53	5,292.53
CO-29	MH-13	MH-7	36.0	150.2	16.0	2.26	5,281.70	5,280.50	5,294.00	5,295.75	5,292.44	5,292.39
CO-30	MH-7	MH-14	42.0	208.7	62.7	6.52	5,280.50	5,278.25	5,295.75	5,296.06	5,291.55	5,290.74
CO-31	MH-14	CB-18	42.0	133.6	62.7	6.52	5,278.25	5,276.00	5,296.06	5,296.69	5,290.34	5,289.82
CO-32	CB-19	CB-20	30.0	87.1	20.7	4.22	5,289.10	5,287.20	5,294.52	5,294.87	5,292.33	5,292.11
CO-33	CB-20	CB-21	30.0	20.0	20.7	4.22	5,287.20	5,286.50	5,294.87	5,295.30	5,291.93	5,291.88
CO-34	CB-21	CB-22	30.0	235.3	20.7	4.22	5,286.50	5,285.00	5,295.30	5,297.26	5,291.65	5,291.06
CO-35	CB-22	MH-15	30.0	223.2	20.7	4.22	5,285.00	5,283.40	5,297.26	5,296.91	5,290.89	5,290.32
CO-36	CB-24	MH-15	24.0	16.7	0.7	11.45	5,289.20	5,283.40	5,296.61	5,296.91	5,290.49	5,290.49
CO-37	CB-23	MH-15	24.0	22.1	0.7	10.26	5,289.20	5,283.40	5,296.70	5,296.91	5,290.49	5,290.49
CO-38	MH-15	CB-18	30.0	28.1	22.1	4.50	5,283.40	5,276.00	5,296.91	5,296.69	5,290.11	5,290.03
CO-39	CB-18	CB-25	42.0	216.4	84.8	8.81	5,276.00	5,274.00	5,296.69	5,290.53	5,288.37	5,286.83
CO-40	CB-25	CB-26	42.0	208.0	104.4	10.85	5,274.00	5,272.30	5,290.53	5,284.59	5,285.36	5,283.12
CO-41	CB-26	CB-27	42.0	57.8	104.4	10.85	5,272.30	5,271.10	5,284.59	5,284.10	5,282.02	5,281.40
CO-42	CB-28	CB-27	24.0	143.7	10.6	3.37	5,272.70	5,271.10	5,284.15	5,284.10	5,282.71	5,282.39
CO-43	CB-27	O-1	42.0	44.6	115.0	11.95	5,271.10	5,268.40	5,284.10	5,282.94	5,279.08	5,278.50



STORMCAD OVERVIEW
1" =20'-0"

HUITT ZOLLARS
333 Rio Rancho Blvd NE, Suite 101
Albuquerque, New Mexico 87124
505.892.5141
www.huitt-zollars.com

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HUITT-ZOLLARS
QUALITY CONTROL REVIEW
DOCUMENT PHASE:

THIS DOCUMENT HAS BEEN REVIEWED BY THE FOLLOWING FOR QUALITY CONTROL.
PROJECT NO.:

QC ACTIVITY	FULL NAME	DATE
REVIEWED BY		
CORRECTED BY		
VERIFIED BY		

LEGEND

- INLET
- MANHOLE
- STORM DRAIN

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

PROJECT NO.:	
DRAWN BY:	CAT
REVIEWED BY:	STAFF
APPROVED BY:	STAFF

ISSUE DRAWING LOG:

STORMCAD OVERVIEW

C101

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STORMCAD OVERVIEW
1" =20'-0"

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QC ACTIVITY	FULL NAME	DATE
REVIEWED BY		
CORRECTED BY		
VERIFIED BY		

LEGEND

- INLET
- MANHOLE
- STORM DRAIN

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

PROJECT NO.:	
DRAWN BY:	CAT
REVIEWED BY:	STAFF
APPROVED BY:	STAFF

ISSUE DRAWING LOG:

STORMCAD OVERVIEW

C102

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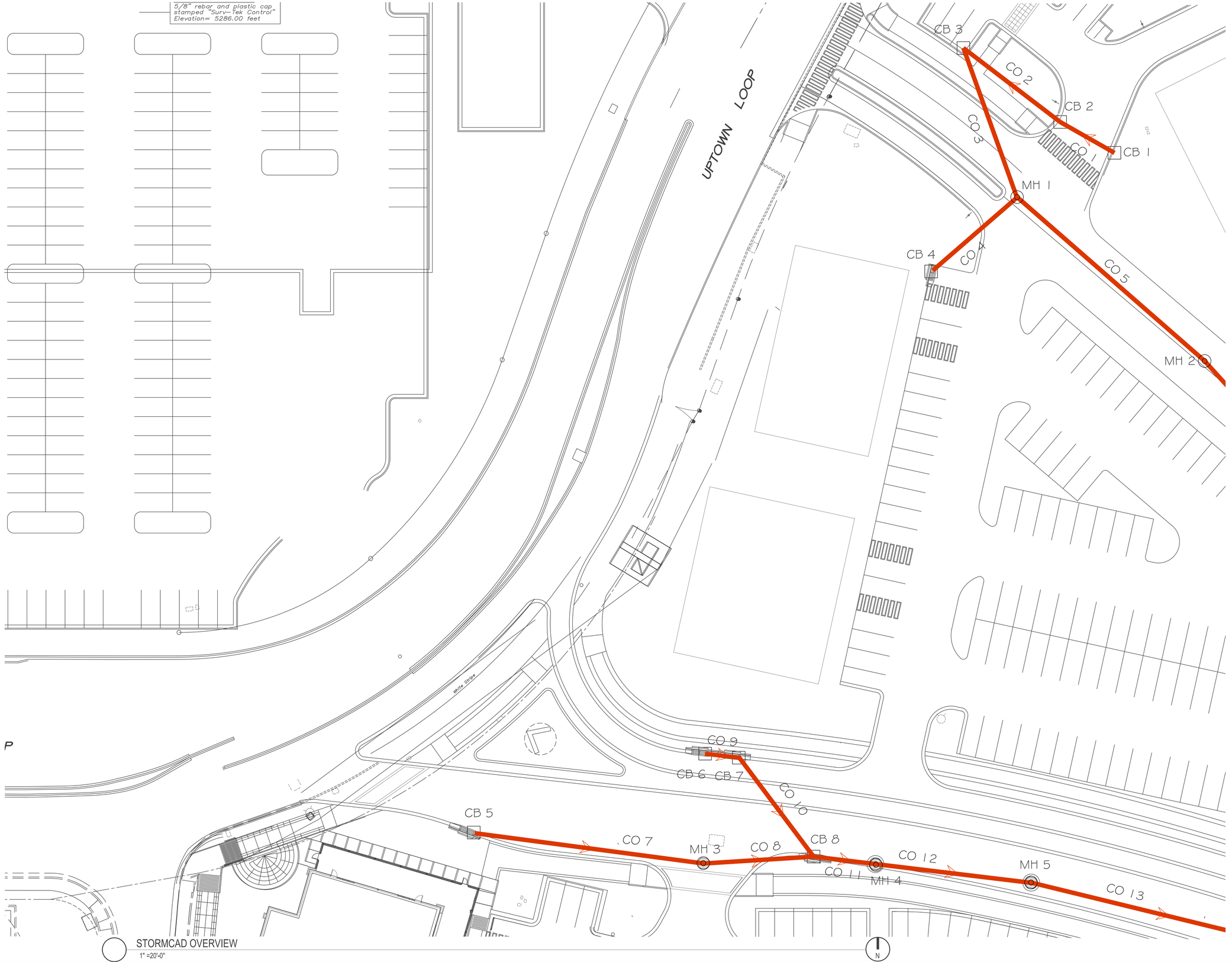

STORMCAD OVERVIEW
1" =20'-0"

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REVIEWED BY		
CORRECTED BY		
VERIFIED BY		

LEGEND

- INLET
- MANHOLE
- STORM DRAIN

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

PROJECT NO.:	
DRAWN BY:	CAT
REVIEWED BY:	STAFF
APPROVED BY:	STAFF

ISSUE DRAWING LOG:

STORMCAD OVERVIEW

C103

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QUALITY CONTROL REVIEW
DOCUMENT PHASE:

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PROJECT NO.:

QC ACTIVITY	FULL NAME	DATE
REVIEWED BY		
CORRECTED BY		
VERIFIED BY		

LEGEND

- INLET
- MANHOLE
- STORM DRAIN

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

PROJECT NO.:	
DRAWN BY:	CAT
REVIEWED BY:	STAFF
APPROVED BY:	STAFF

ISSUE DRAWING LOG:

STORMCAD OVERVIEW

C104

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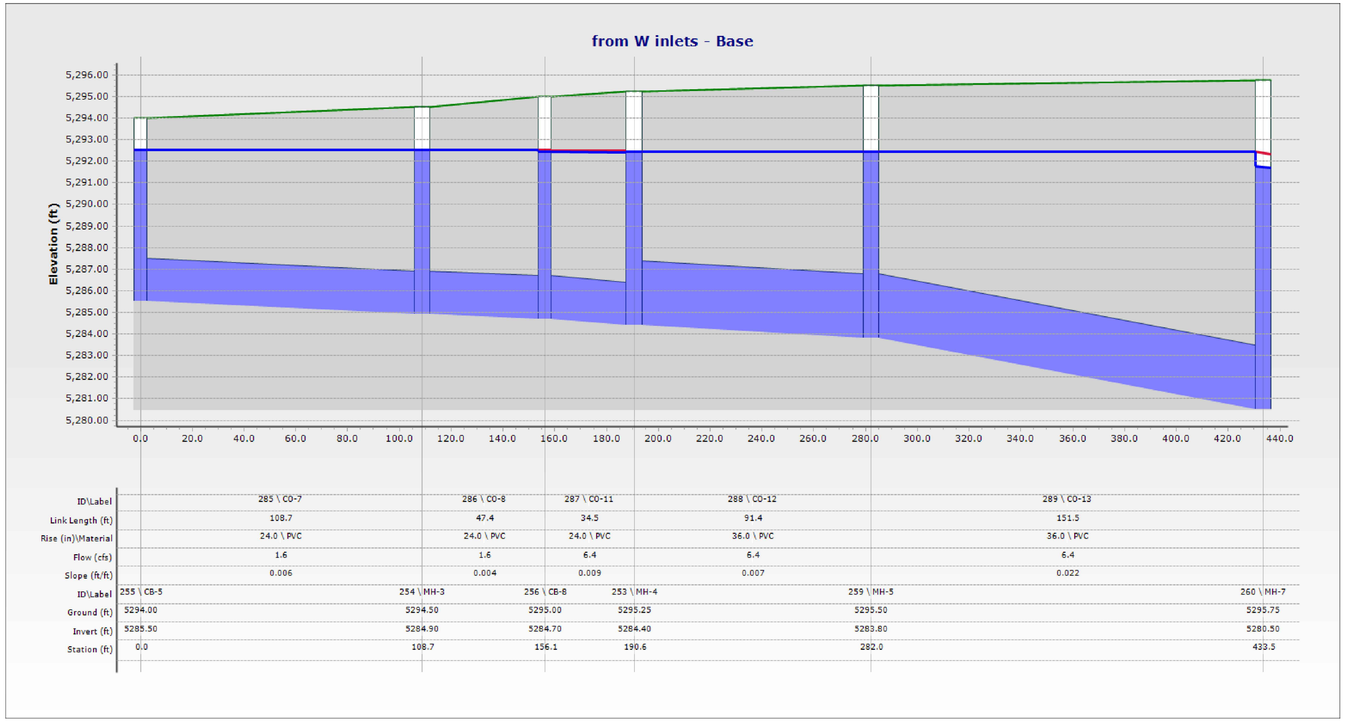

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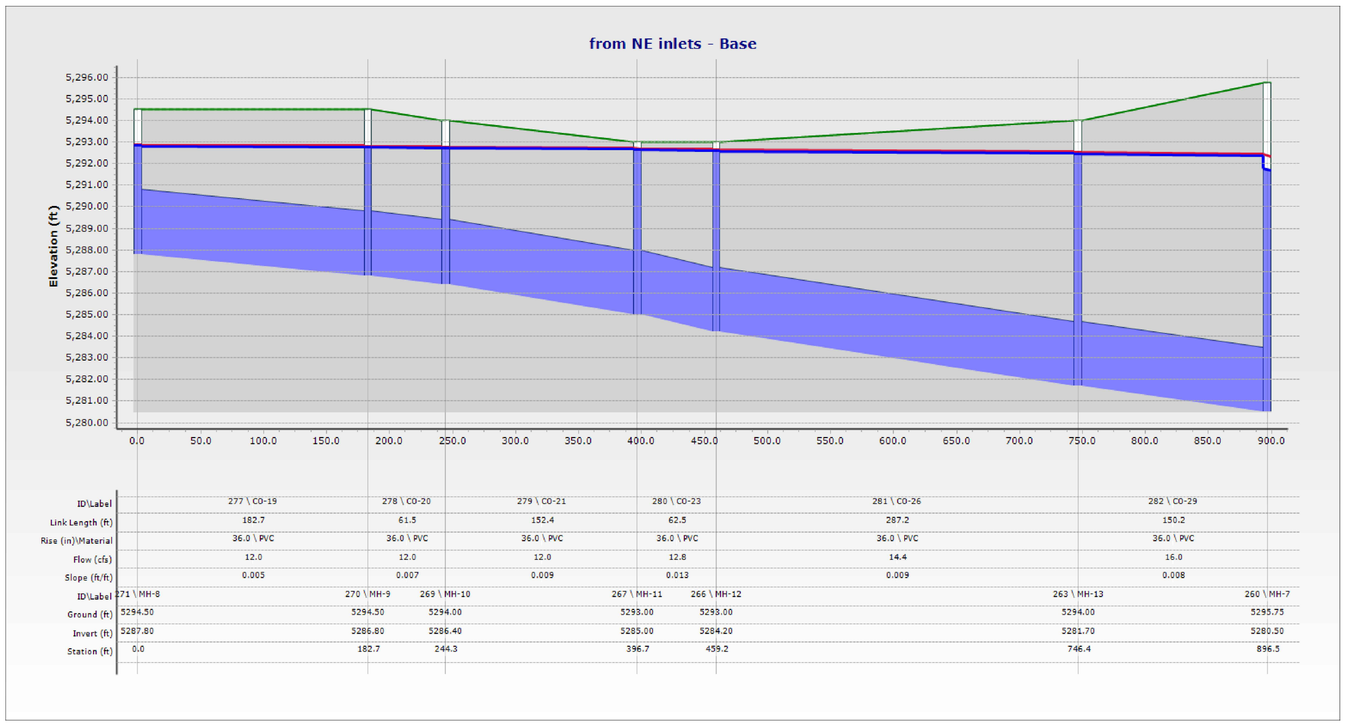
Link Length (ft)		108.7		47.4	34.5	91.4		151.5				
Rise (in)\Material		24.0 \ PVC		24.0 \ PVC	24.0 \ PVC	36.0 \ PVC		36.0 \ PVC				
Flow (cfs)		1.6		1.6	6.4	6.4		6.4				
Slope (ft/ft)		0.006		0.004	0.009	0.007		0.022				
ID\Label	255 \ CB-5		254 \ MH-3		256 \ CB-8	253 \ MH-4		259 \ MH-5				260 \ MH-7
Ground (ft)	5294.00		5294.50		5295.00	5295.25		5295.50				5295.75
Invert (ft)	5285.50		5284.90		5284.70	5284.40		5283.80				5280.50
Station (ft)	0.0		108.7		156.1	190.6		282.0				433.5



ID\Label		277 \ CO-19		278 \ CO-20	279 \ CO-21	280 \ CO-23		281 \ CO-26				282 \ CO-29
Link Length (ft)		182.7		61.5	152.4	62.5		287.2				150.2
Rise (in)\Material		36.0 \ PVC		36.0 \ PVC	36.0 \ PVC	36.0 \ PVC		36.0 \ PVC				36.0 \ PVC
Flow (cfs)		12.0		12.0	12.0	12.8		14.4				16.0
Slope (ft/ft)		0.005		0.007	0.009	0.013		0.009				0.008
ID\Label	271 \ MH-8		270 \ MH-9	269 \ MH-10		267 \ MH-11	266 \ MH-12			263 \ MH-13		260 \ MH-7
Ground (ft)	5294.50		5294.50	5294.00		5293.00	5293.00			5294.00		5295.75
Invert (ft)	5287.80		5286.80	5286.40		5285.00	5284.20			5281.70		5280.50
Station (ft)	0.0		182.7	244.3		396.7	459.2			746.4		896.5

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CORRECTED BY		
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REVIEWED BY: STAFF
APPROVED BY: STAFF
ISSUE DRAWING LOG:

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C105

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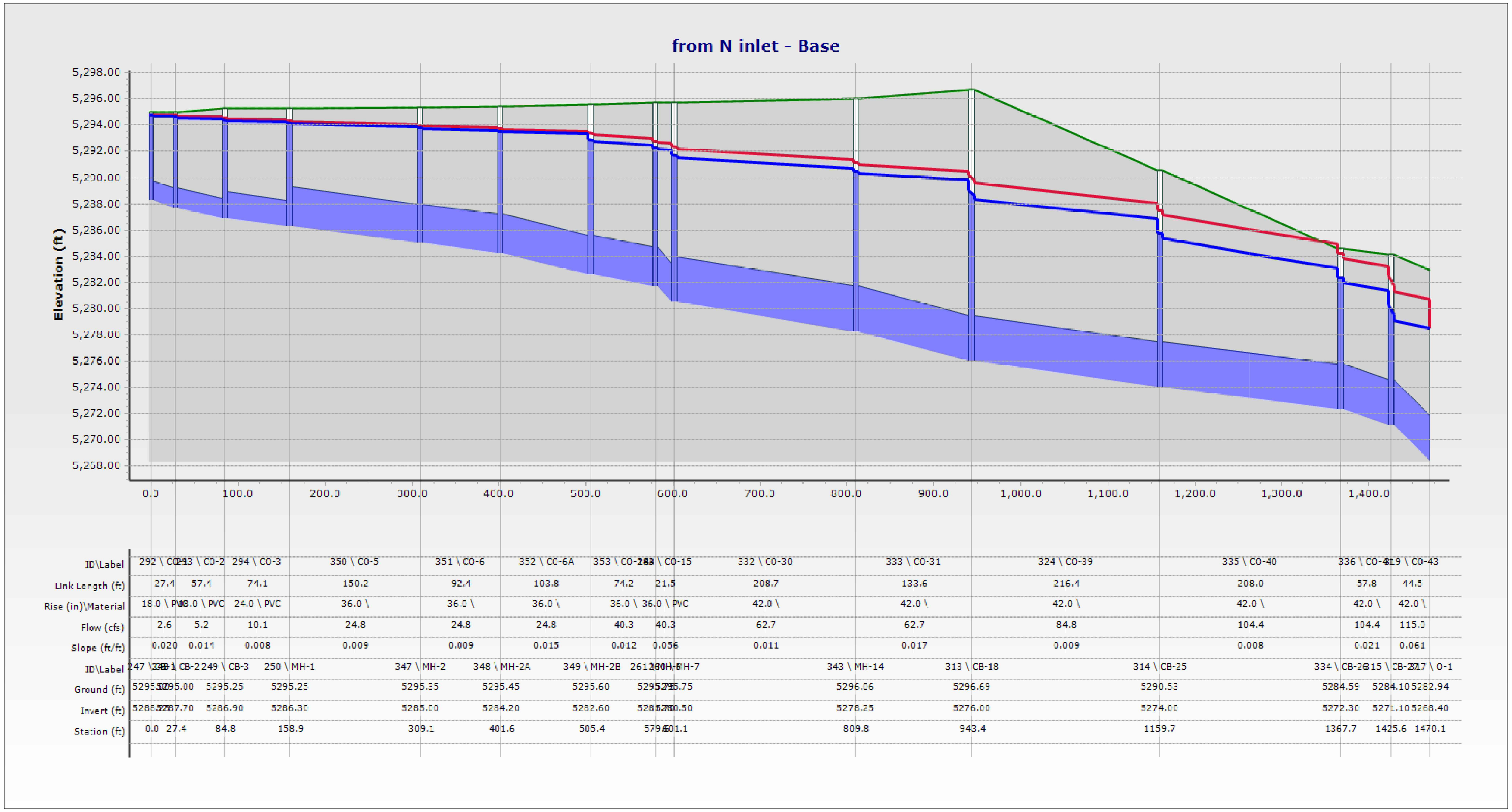

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REVIEWED BY:	STAFF
APPROVED BY:	STAFF

ISSUE DRAWING LOG:

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C106

Plotted: 7/7/2025 3:26:49 PM, By:Trujillo, Corie
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APPENDIX F

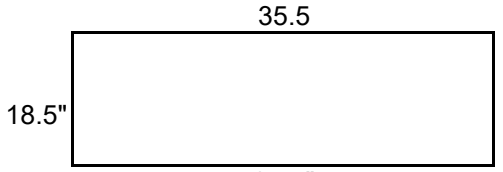
Grate Capacities

Inlet Worksheet for 6" Curbs (Sump Condition)

Objective : Design a Type C or Type D Inlet in Sump Condition for a 100-year flow

1 Inlet to collect peak flow amount before overtopping headwall.

2 Grate Dimensions



18.5

**Net dimensions of open area of a single grate. (Total Area less Area of Bars)

Weir Perimeter =	9.0	ft
Area of Orifice =	4.6	sf

3 Calculate Orifice and Weir Flow into Grate at Design Depth (Top of Curb)

Orifice Equation		Weir Equation		
Q = 0.6 x A x (2 x g x h)^1/2		Q=2.65 x P x H^1/2		
Where		Where		
A =	4.6 sq. ft.	P=	9.0	ft
g =	32.2 ft ^2/sec	H=	0.5	ft
h =	0.5 ft			
Therefore		Therefore		
Q =	15.5 cfs	Q =	16.9	cfs

Orifice Equation controls

Grate Capacity = 15.5 cfs

4 Apply 25% Clogging Factor to determine allowable design flow into inlet

15.5 x 0.75 **12 cfs**

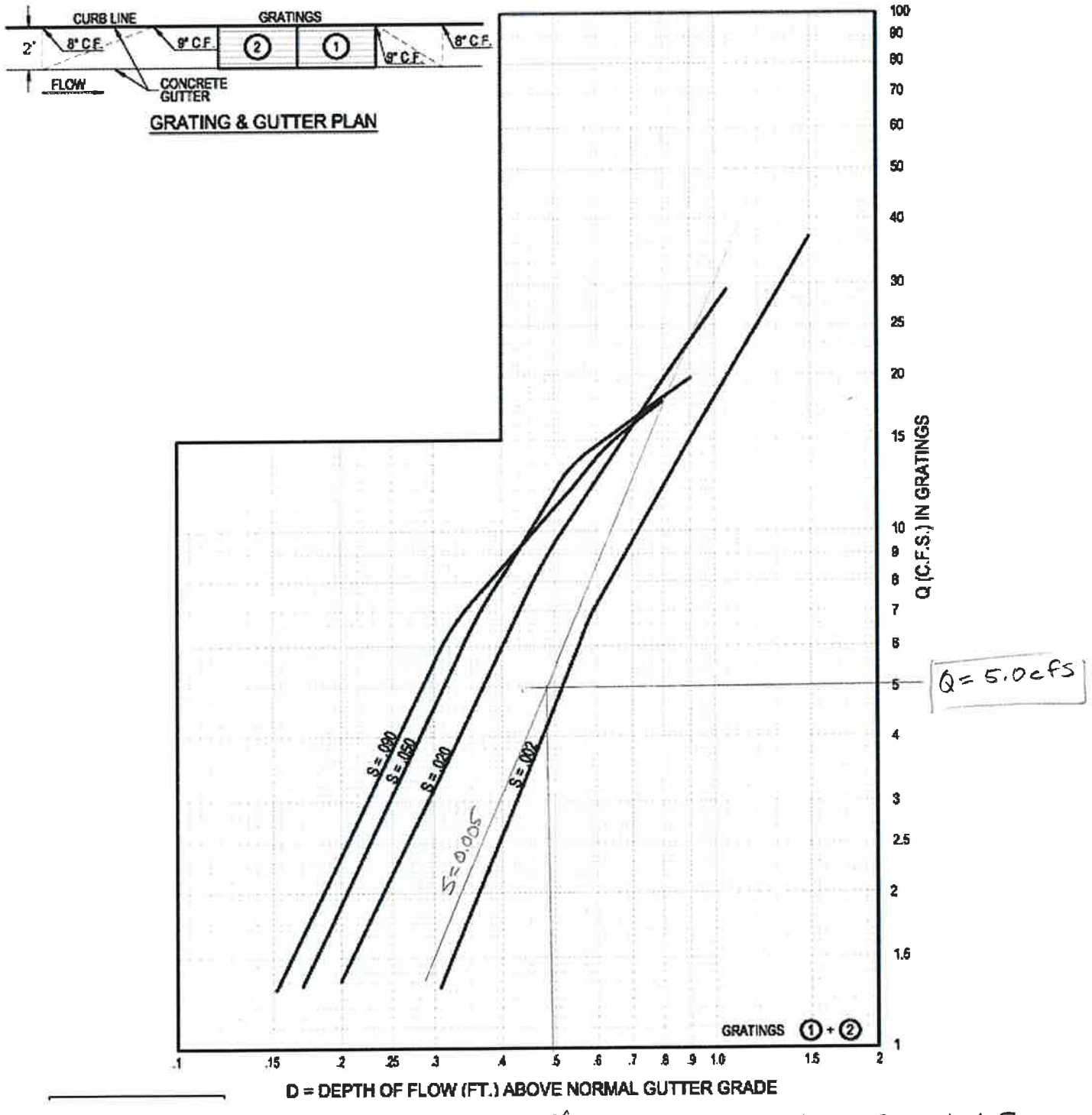
Therefore Capacity of Single C/D Inlet in Sump Condition = 12 cfs

Capacity of Double C/D Inlet in Sump Condition = 23 cfs

Capacity of Triple C/D Inlet in Sump Condition = 35 cfs

*Grate Capacities do not account for curb opening inflow. Therefore, inlet capacities are the same for Type C and Type D inlets.

FIGURE 6.9.10 **Grate Capacities for Types "Double A," "Double C," and "Double D"**



TOC = 0.5 ft ROAD A - BASIN 107 = 5.5 cfs

(2 inlets provided)

Ea Inlet = 2.8 cfs.