SUPPLEMENT #2 TO THE TECHNICAL DRAINAGE STUDY

FOR

Sunrise & 28th

Multi-Family Residential

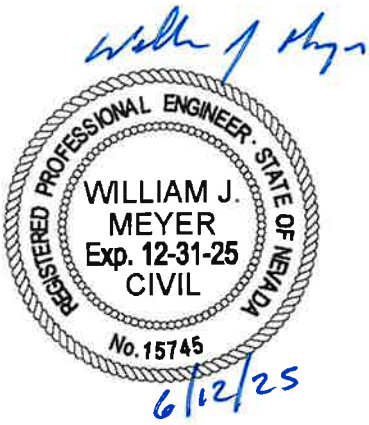
MCH-24-001

City Of Las Vegas

June 2025

Prepared for:

Cody Roskelley
Michaels Development Company
2 Cooper St, 14th Floor
Camden, NJ 08102
(713) 254-8031
CROSKELLEY@TMO.COM



TANEY ENGINEERING
CIVIL ENGINEERING
& LAND SURVEYING

6030 S. Jones Blvd
Las Vegas, NV 89118
P (702) 362-8844
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HYDROLOGIC CRITERIA AND DRAINAGE MANUAL

DRAINAGE STUDY INFORMATION FORM

Name of Development: Sunrise & 28th Date: June, 2024

Location of Development: a) Descriptive (Cross Streets) North/South: 28th Street

East/West: Sunrise Avenue

b) Section: 36 Township: 20 Range: 61

c) APN : 139-36-302-005

Name of Owner: Southern Nevada Regional Housing

Telephone No.: 702-477-3100 Fax No.: Fax No.: E-Mail Address: SNRHAELIGIBILTY@SNVRHA.ORG

Address: 340 North 11th Street

Contact Person-Name: William J. Meyer, P.E. **Telephone No.:** (702) 362-8844

* **E-Mail Address:** BillM@taneycorp.com **Fax No.:** (702) 362-5233

Firm: Taney Engineering

Address: 6030 S. Jones, Suite 100, Las Vegas NV. 89118

Type of Land Development/Land Disturbance Process:

☐	Rezoning	☐	Subdivision Map	☐	Clearing and Grading Only
☐	Parcel Map	☒	Planned Unit Development	☐	Other (Please specify below)
☐	Large Parcel Map	☐	Building Permit		

1. Total Owned Land Area: At Site: 6.05+/- acres Being Developed/Disturbed: 6.05+/- acres
2. Is a portion or all of the subject property located in a designated FEMA Flood Hazard Area? ☐ **Yes**** ☒ **No**
3. Is the property bordered or crossed by an existing or proposed Clark County Regional Flood Control District Master Planned Facility? ☐ **Yes**** ☒ **No**
4. Proposed type of development (Residential, Commercial, Etc.): Multi- Family Residential
5. Approximate upstream land area which drains to the subject site:
6. Has the site drainage been evaluated in the past? ☐ **YES** ☒ **NO** If yes, please identify documentation:
7. If known, please briefly identify the proposed discharge point(s) of runoff from the site: The proposed drainage point will be Northeast of the proposed site flowing through the 10' flume drainage easement.
8. Briefly describe your proposed schedule for the subject project: A.S.A.P

William J. Meyer

REGISTERED PROFESSIONAL ENGINEER · STATE OF NEVADA
WILLIAM J. MEYER
Exp. 12-31-25
CIVIL
No. 15745
6/12/25

Engineer's Seal

Submit this form as part of the required drainage study to the local entity which has jurisdiction over the subject property. This form may provide sufficient information to serve as the Conceptual Drainage Study.

***New Required Field**

****Review and concurrence of the Clark County Regional Flood Control District is required.**

Revision	Date

Local Entity File No.

REFERENCE:

STANDARD FORM 1

Updated 05/01/2008

TANEY ENGINEERING
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PHONE: (702) 362-8844 | FAX: (702) 362-5233
TANEYCORP.COM

Job No. MCH-23-001

Date: June 11, 2025

JURISDICTION:
Stanley Fong, P.E.
City of Las Vegas Public Works
495 S. Main St, 5th floor
Las Vegas, NV 89101

SUPPLEMENT #2 TO ADDENDUM #2 to the Technical Drainage Study for Sunrise & 28th
JURISDICTION JOB #L24-02473

Dear Mr. Fong:

Taney Engineering is submitting Supplement #2 to Addendum #2 in response to an email correspondence for the Technical Drainage Study for **Sunrise & 28th**. The changes to the grading are in the South and East parking areas. The top of curb grades in these areas have been revised to accurately reflect the transitions from A-curb to Zero Lip curb. These changes range from raising top of curb grades by 0.5' to lowering a top of curb grade by 0.53'. Grades near the maintenance shed were changed to prevent ponding in the area. In addition, an extra parking stall was added in the South parking area. The changes that were made did not have any impact on Finish Floors, Volumes, flow patterns, velocities, or normal depths.

A copy of the City of Las Vegas Public Works email and the most recent supplement has been provided.

If you need any additional information, please do not hesitate to call our office.

Sincerely,
TANEY ENGINEERING

Ryan Beavers, P.E.
Designer III

# CITY OF LAS VEGAS # INTER-OFFICE MEMORANDUM				**DATE:** October 16, 2024
TO: **Land Development Services** Department of Community Development – Building & Safety Division				**FROM:** Jefferson Torrecampo, P.E. Flood Control Engineering Associate Department of Public Works
SUBJECT:	Drainage Study for:			**COPIES TO:**
Sunrise & 28th Multi-Family Residential				Taney Engineering
Cross Streets:	NEC of Sunrise Avenue and 28th Street			Southern Nevada Regional Housing
File Number:	F:\Depot\DSMemos\DS5788C.doc			Bart Anderson, P.E., DevCo
Parcel Number:	139-36-302-005			CCPW
Zoning Action:	24-0087-SDR1; 24-0087VAR1; 24-0087 ZON1; 24-0087 GPA1			
FEMA Flood Zone	YES	NO	**X**	
Proposed Storm Drain	YES	NO	**X**	

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1st Submittal	7/17/2024	7/30/2024	See Comments Below	$400.00	5851929 : $400
2nd Submittal	8/14/2024	8/27/2024	See Comments Below	$400.00	5888359 : $400
3rd Submittal & 4th (Supplement)	9/23/2024	10/16/2024	See Comments Below	$400.00	5936917 : $400
			TOTAL FEES (LDDRS):	**$1200.00**	**----**

REMARKS:

The Drainage Study for the subject project has been reviewed and:

	is approved subject to conformance to all City standards and the following conditions:
	must be resubmitted or supplemented including the following:
	is conditionally approved subject to Clark County Regional Flood Control District concurrence.
X	is conditionally approved subject to Clark County Public Works Department concurrence.

1. The site is adjacent to the jurisdiction of Clark County. The engineer must coordinate with *Clark County Public Works Department* (CCPW) and incorporate any concerns for boundary conditions. CCPW concurrence is required prior to final approval of the subject study.

***** The City of Las Vegas Flood Control is standardizing the file naming of drainage studies and plans during the digitizing process. When saving the project files in the CD or thumb drive, please follow the system below:**

If drainage study only contains one combined file, use the following naming convention in Document Title:
1st Submittal DS and Plans (for first and original submittal);
2nd Submittal DS and Plans (for second submittal (addendum #1)) etc.

If drainage study contains multiple files, use the following naming convention in Document Title:
1st Submittal DS (for the report of the drainage study)
1st Submittal Plan 1 (could be the drainage condition maps)
1st Submittal Plan 2 (could be the improvement plans) etc.

NOTE: Please be advised that all land surface area disturbances over 1 acre or any area adjacent to a water way must submit to the *Nevada Division of Environmental Protection* a "Notice of Intent" to discharge that certifies a stormwater pollution prevention plan has been developed and is maintained on site; for inclusion in the Stormwater General Permit No. NVR100000. A phased construction unit in a contiguous subdivision is considered under construction until all stripped or disturbed surface areas have been covered by paving, building construction or planting. For more information, including forms and applications see http://ndep.nv.gov/bwpc/storm01.htm or call (775) 687-9429.

NOTE: Any future changes to the proposed design (or design assumptions) as outlined in the approved drainage study and attached preliminary grading plan which affect drainage must be addressed in a Drainage Study Update and accepted by the *City of Las Vegas Flood Control Section*. Additionally, final approval of a drainage study is valid for a period of one (1) year. If the proposed construction has not been completed in that time period, the *City of Las Vegas* reserves the right to require additional conditions and/or submission and acceptance of a complete drainage study update prior to further construction of a project.

END OF REMARKS
JRT

T/R/S: T20S/R61E/S36
AREA M-36

APPENDIX

APPENDIX A

Figures

APPENDIX C

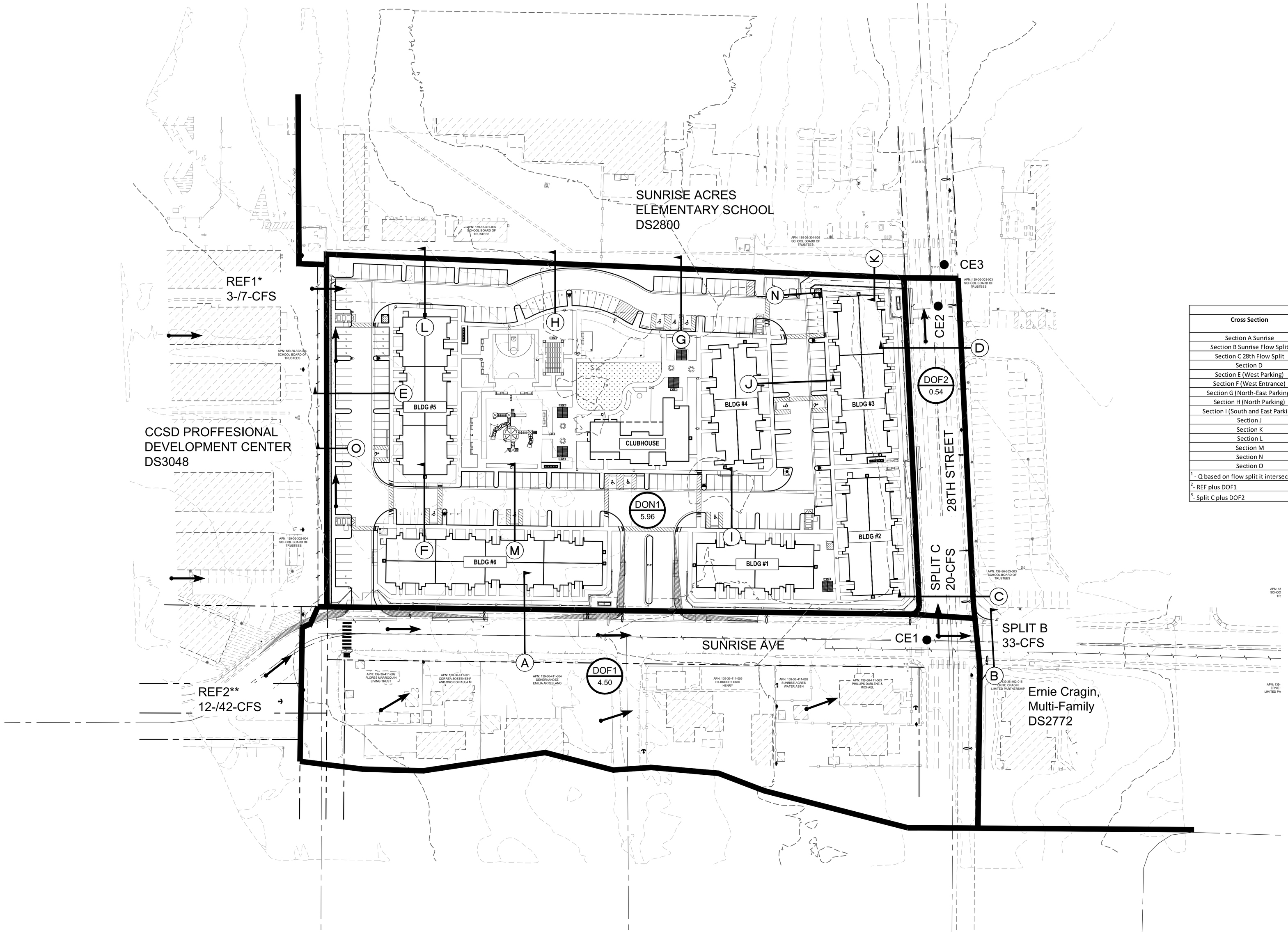
Hydraulic Calculations

APPENDIX E

Improvement Plans

APPENDIX A

Figures



Ultimate Condition						
Cross Section	Description	Q (cfs)	Slope (%)	Depth (ft)	Velocity (ft/s)	DxV
Section A Sunrise	DOF1+REF1	53	1.52	0.61	4.15	2.53
Section B Sunrise Flow Split	Footnote 1	33	1.25	0.56	3.51	1.97
Section C 28th Flow Split	Footnote 1	20	0.5	0.56	2.21	1.24
Section D	CE2	22	0.6	0.55	2.42	1.33
Section E (West Parking)	DON1	16	2.00	0.27	3.04	0.82
Section F (West Entrance)	DON1	16	1.3	0.34	3.98	1.35
Section G (North-East Parking)	REF1 + DON1	23	0.69	0.38	3.19	1.21
Section H (North Parking)	REF1 + DON1	23	0.91	0.42	3.81	1.60
Section I (South and East Parking)	DON1	16	1	0.31	3.31	1.03
Section J	DON1	16	0.5	0.35	2.55	0.89
Section K	REF1+DON1	23	0.5	0.49	4.71	2.31
Section L	REF1+DON1	23	0.7	0.38	3.2	1.22
Section M	DON1	16	1.32	0.30	3.67	1.10
Section N	REF1+DON1	23	0.5	0.38	4.08	1.55
Section O	REF1	7	0.5	0.45	4.07	1.83
[1] - Q based on flow split it intersecion of Sunrise & 28th						
[2]- REF plus DOF1						
[3]- Split C plus DOF2						

Developed Condition			
Basin	Area (acres)	Q_{10} (cfs)	Q_{100} (cfs)
REF1**	NA	12	42
REF2**	NA	3	7
DOF1	3.43	4	11
CE1 [2]	NA	18	53
SPLIT C	NA	NA	19
DOF2	0.54	1	2
CE2 [3]	NA	NA	26
DON1	5.96	8	16
CE3	NA	NA	45
[2] - REF1 plus XOF1			
[3] - SPLIT C plus XOF2			

SCALE: 1" = 50'

50' 25' 0' 50'

DRAINAGE LEGEND

XX / XX	BASIN IDENTIFICATION / BASIN AREA (ACRES)
C1	BASIN BOUNDARY / CONCENTRATION POINT
	FLOW PATH
	PROJECT SITE
X	CROSS SECTION
XX/XXX (XX/XXX)	10-YR/100-YR FLOW (CFS) / REFERENCE FLOW (CFS)

FIGURE 7

DEVELOPED ONSITE AND OFFSITE DRAINAGE BASIN MAP

DATE: 6.12.2025
JOBNO: MCH-23-001

TANEY ENGINEERING
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6030 S. JONES BLVD
LAS VEGAS, NV 89118
(702) 362-8844
INFO@TANEYCORP.COM
EST. 2000

APPENDIX C

Hydraulic Calculations

Worksheet for DETAIL F 100 YR Supp 2

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data		
Channel Slope	1.3000	%
Discharge	16.00	cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	1.72
0+00.50	1.72
0+00.50	1.22
0+42.50	0.61
0+42.50	0.61
0+42.50	1.11

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 1.72)	(0+00.50, 1.22)	0.013
(0+00.50, 1.22)	(0+42.50, 0.61)	0.013
(0+42.50, 0.61)	(0+42.50, 1.11)	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		
Normal Depth	0.34	ft
Roughness Coefficient	0.013	
Elevation	0.95	ft
Elevation Range	0.61 to 1.72	ft
Flow Area	4.02	ft²
Wetted Perimeter	23.87	ft
Hydraulic Radius	0.17	ft
Top Width	23.53	ft
Normal Depth	0.34	ft
Critical Depth	0.42	ft
Critical Slope	0.4216	%
Velocity	3.98	ft/s
Velocity Head	0.25	ft

Worksheet for DETAIL F 100 YR Supp 2

Results	
Specific Energy	0.59 ft
Froude Number	1.698
Flow Type	Supercritical

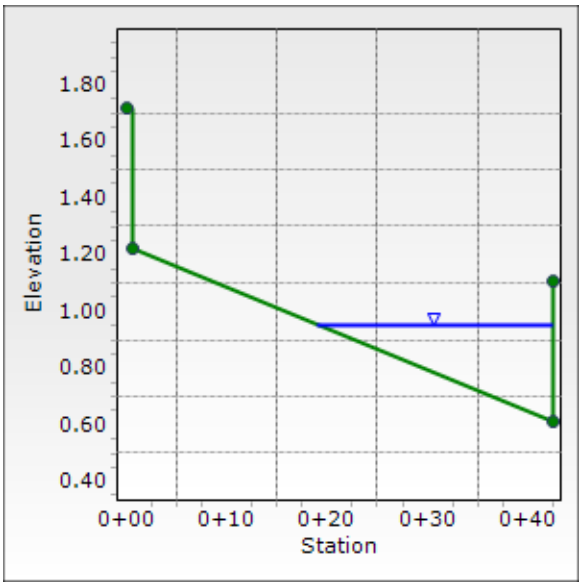
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.00 ft
Profile Description	
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.34 ft
Critical Depth	0.42 ft
Channel Slope	1.3000 %
Critical Slope	0.4216 %

Cross Section for DETAIL F 100 YR Supp 2

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.3000 %
Normal Depth	0.34 ft
Discharge	16.00 cfs



Worksheet for DETAIL I 100 YR Supp 2

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data		
Channel Slope	1.0000	%
Discharge	16.00	cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	1.34
0+00.50	1.34
0+00.50	0.84
0+42.50	0.00
0+60.50	0.36
0+60.50	0.86
0+61.00	0.86

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 1.34)	(0+42.50, 0.00)	0.013
(0+42.50, 0.00)	(0+60.50, 0.36)	0.013
(0+60.50, 0.36)	(0+61.00, 0.86)	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		
Normal Depth	0.31	ft
Roughness Coefficient	0.013	
Elevation	0.31	ft
Elevation Range	0.00 to 1.34	ft
Flow Area	4.84	ft²
Wetted Perimeter	31.12	ft
Hydraulic Radius	0.16	ft
Top Width	31.11	ft
Normal Depth	0.31	ft
Critical Depth	0.36	ft
Critical Slope	0.4343	%
Velocity	3.31	ft/s

Worksheet for DETAIL I 100 YR Supp 2

Results	
Velocity Head	0.17 ft
Specific Energy	0.48 ft
Froude Number	1.478
Flow Type	Supercritical

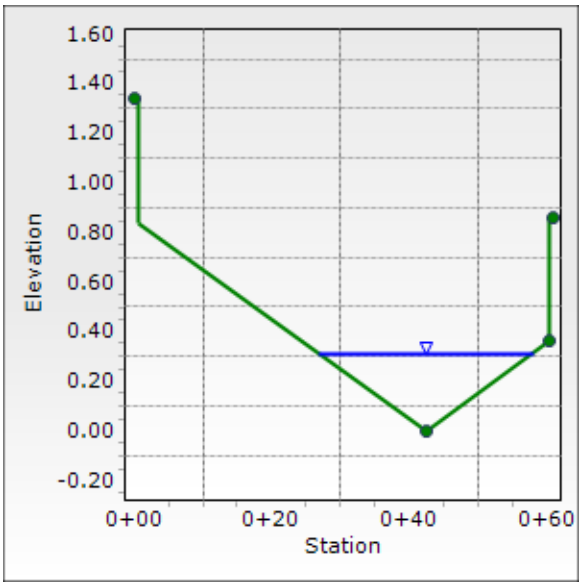
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.00 ft
Profile Description	
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.31 ft
Critical Depth	0.36 ft
Channel Slope	1.0000 %
Critical Slope	0.4343 %

Cross Section for DETAIL I 100 YR Supp 2

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.0000 %
Normal Depth	0.31 ft
Discharge	16.00 cfs



Worksheet for DETAIL M 100 YR Supp 2

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data		
Channel Slope	1.3200	%
Discharge	16.00	cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	1.34
0+00.50	1.34
0+00.50	0.84
0+42.50	0.00
0+60.50	0.36
0+60.50	0.86
0+61.00	0.86

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 1.34)	(0+42.50, 0.00)	0.013
(0+42.50, 0.00)	(0+60.50, 0.36)	0.013
(0+60.50, 0.36)	(0+61.00, 0.86)	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		
Normal Depth	0.30	ft
Roughness Coefficient	0.013	
Elevation	0.30	ft
Elevation Range	0.00 to 1.34	ft
Flow Area	4.36	ft²
Wetted Perimeter	29.54	ft
Hydraulic Radius	0.15	ft
Top Width	29.54	ft
Normal Depth	0.30	ft
Critical Depth	0.36	ft
Critical Slope	0.4342	%
Velocity	3.67	ft/s

Worksheet for DETAIL M 100 YR Supp 2

Results	
Velocity Head	0.21 ft
Specific Energy	0.50 ft
Froude Number	1.683
Flow Type	Supercritical

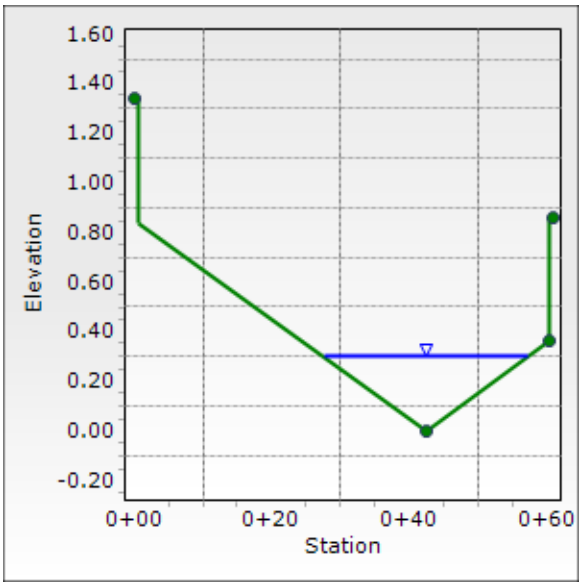
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.00 ft
Profile Description	
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.30 ft
Critical Depth	0.36 ft
Channel Slope	1.3200 %
Critical Slope	0.4342 %

Cross Section for DETAIL M 100 YR Supp 2

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.3200 %
Normal Depth	0.30 ft
Discharge	16.00 cfs



APPENDIX E

Improvement Plans