AtkinsRéalis

SUMMERLIN WEST V27 PARCEL D DRAINAGE INFRASTRUCTURE

Technical Drainage Study
3rd Submittal

Howard Hughes Company, LLC

June 2025

HYDROLOGIC CRITERIA AND DRAINAGE MANUAL

DRAINAGE STUDY INFORMATION FORM

Name of Development: Summerlin West Village 27 Parcel D Drainage Infrastructure 3rd Date: June 18, 2025

Location of Development: a) Descriptive (Cross Streets) North/South: Park Drift Trail

East/West:

b) Section: 03 Township: 20S Range: 59E

c) APN : 137-15-401-003, 137-16-000-001, 137-15-101-001, 137-15-301-002

Name of Owner: Howard Hughes Company, LLC

Telephone No.: (702) 791-4201 Fax No.: (702) 791-4450 E-Mail Address: april.chapman@howardhughes.com

Address: 10845 Griffith Peak Drive Suite 160, Las Vegas, NV 89135

Contact Person-Name: Kenneth Peterson, PH **Telephone No.:** 702-605-9073

* **E-Mail Address:** kenneth.peterson@atkinsrealis.com **Fax No.:** n/a

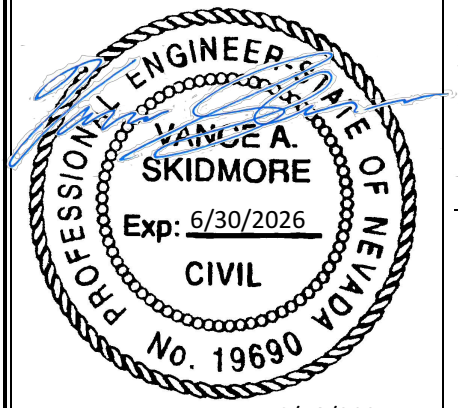
Firm: Atkins

Address: 2360 Corporate Circle, Suite 300, Henderson, NV 89074

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	X	Roadway Improvements

1. Total Owned Land Area: At Site: +/- 446 acres Being Developed/Disturbed: 5.13 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.): Public Drainage Improvements
5. Approximate upstream land area which drains to the subject site: ~1 SqMi
6. Has the site drainage been evaluated in the past? ✔ **YES** **NO** If yes, please identify documentation: Summerlin West Village 27/31 Master Drainage Area Tributary to Reverence Detention Basin
7. If known, please briefly identify the proposed discharge point(s) of runoff from the site: V26 Reverence Detention Basin
8. Briefly describe your proposed schedule for the subject project: ASAP



Engineer's Seal 6/18/2025

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.**

Vance A. Skidmore

Digitally signed by Vance A. Skidmore
Date: 2025.06.18 14:01:35 -07'00'

DS5771B

Local Entity File No.

Revision	Date

REFERENCE:

STANDARD FORM 1

Updated 05/01/2008

Engineer's Certification

Atkins certifies that the information contained herein has been prepared in accordance with generally accepted engineering principles and practices, and to the best of our knowledge, is true and correct.

This letter certifies that all items in the 3rd Submittal to the Drainage Study of SUMMERLIN WEST V27 Parcel D Drainage infrastructure electronic submittal matches the paper version bound into this study.

Kenneth Peterson PH #24-H-05026

Kenneth Peterson, PH, M.S. (AIH# 24-H-05026)
Senior Professional Hydrologist

Vance A. Skidmore, PE (NV #19690)
Senior Engineer

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B.3 Lower North Wall .....

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1. Comment Response Letter

Your reference: DS #5771B

Albert Sung
City of Las Vegas Public Works / Flood Control
495 S. Main Street
Las Vegas, NV

June 2025

RE: **3rd Submittal to the Technical Drainage Study for Summerlin West Parcel Village 27 D Drainage Infrastructure**

Dear Albert,
This letter and the attached documents have been prepared as the third submittal to the Technical Drainage Study (TDS) for Summerlin West Village 27 Parcel D Drainage Infrastructure.

Comment #1: The future development of Village 27 Parcel D is premised on the protection of the Village 27 Debris Basin, ie, construction bond for the Village 27 Debris Basin must be posted with the City prior to the final approval of the subject Summerlin West Village 27 – Parcel D Drainage Infrastructure.

Comment response: The Village 27 Debris Basin is now fully approved, and the bond is posted.

Comment #2: The project proposes to build perimeter flood walls around the subject Parcel D. Erosions around the parcel boundaries are anticipated during interim conditions until permanent measures are implemented. Prior to final plan approval the developer must complete a maintenance and liability agreement for the interim drainage improvements and post a minimum maintenance bond of $50,000 or 50-percent of the construction cost for the improvements, whichever is greater. If the interim drainage improvements are bonded per phase, each phase must post a minimum maintenance bond of $50,000 or 50-percent of the construction cost, whichever is greater, for each phase. The engineer must submit an estimate of the quantities for constructing the facility and an exhibit that adequately shows the location and limits of the drainage facility to City of Las Vegas Flood Control for approval. Once the drainage study is conditionally approved, the engineer should contact the City's Land Development Section (229-6371) to begin the agreement process.

In order for the maintenance bond to be released in the future, a drainage update / letter will be required to justify that the offsite berms / channels are no longer necessary and can be removed.

Comment response: AtkinsRéalis understands that a maintenance bond will need to be posted. This will be addressed in the future.

Comment #3: The site is adjacent to or crosses an existing or proposed Clark County Regional Flood Control District (CCRFCD) master planned facility. Therefore, CCRFCD concurrence is required prior to final approval of the drainage study. Please note that effective March 15, 2019, the CCRFCD adopted new requirements for drainage study concurrence submittal. Follow the link below for specific guidance.

http://gustfront.ccrfcd.org/LandDev/LandDev.aspx

Comment response: AtkinsRéalis will submit the drainage study to CCRFCD upon conditional approval and understands that CCRFCD approval is needed before final approval of the drainage study.

Comment #4: Previous Comment: Sheet 9/30: Address how to get down to the bottom of the North Channel? Provide access and show it in the next submittal.

The comment was meant for maintenance crew's vehicular access to the bottom of the North Channel, particularly at the entrance of the transition structure?

Comment response: The plans have been revised and vehicular access is now provided to the inlet structure. The energy dissipation steps have been removed, and the inlet channel profile has been flatted to approximately 11% so that maintenance vehicles can drive down to the bottom of the inlet. There is no longer a flattened section at the bottom, nor any trash or debris racks, so the accumulation of any sediment and debris in this area will be greatly reduced. Because the profile has been flattened the energy dissipation steps are no longer needed; the inlet is no longer a triple RCB, but instead a single opening, and there will be no inlet losses transitioning from the open channel to the closed conduit. The revised HEC-RAS model for the diversion system can be found in Appendix B.2.

The Diversion channel now starts further downstream. The HEC-RAS 2D analysis performed in the previous studies showed that flows would remain northeast of the channel for a several hundred feet. This area is still protected from flooding and erosion by the concrete access road and multi-level retaining walls.

Comment #5: **Previous Comment: Sheet 14/30:** *The plan shows an "Existing Village 27 COS-1 Drainage Improvements" with 4#12'x6-RCB culverts. The reviewer is not aware of this improvement have been processed and approved. Provide the name of the drainage study for that improvement for verification in the next submittal.*

Given that the "*Village 27 COS-1 Drainage Improvements with 4#12'x6' RCB Culverts"* is shown as "Existing" on the subject improvement plans, the subject drainage study will not be approved prior to the stated facility is being constructed. However, if the subject improvement goes ahead without the existence of the stated facility, then remove the COS-1 Drainage improvements on the plan and replace with natural grade. Address and resolve in the next submittal.

Comment response: The COS-1 study has now been submitted to the City and the plans have been updated accordingly to reference the DS# 5797C. These improvements are no longer labelled as existing. The 4#12'x6's have been revised to 2#14'x6'.

Comment #6: **Previous Comment: Sheet 26/30:** Provide a minimum 40'-wide public drainage easement (privately maintained by the Summerlin Master HOA) containing the proposed 9'x6' RCB across the northwest corner of the subject Parcel D development. The easement must be granted and recorded prior to the final approval of the improvement plans.

The required width of a drainage easement is derived from using 1:1 slope width from the surface to the bottom of the facility on both sides including the width of the box. So the required easement width will be 2 x 13' (maximum depth of the box) + 9' (width of the box) = 35'. Widen the width of the public drainage easement to 35' minimum.

Comment response: The alignment and cover has been revised with this plan set. The easement width is shown as 35' and has been calculated with the formula provided above.

Comment #7: Sheet 26/30: The 100-year flow velocity within the 9'x6'-RCB is more than 25ft/s. Provide 1"-sacrificial concrete in the box. Provide construction note for the sacrificial concrete on the plan in the next submittal.

Comment response: Sacrificial concrete callouts have been added to the RCB profile.

Comment #8. Pertaining to the above comment, there are also portion of north channel that has flow velocity more than 25ft/s, provide sacrificial concrete in those portion in all pertinent plans & profile sheets accordingly.

Comment response:Sacrificial concrete callouts have been added to the channel profile.

Comment #9. **Sheet 6/30 and Sheet 28/30:** Per the *Scour Calculations*, the highest scour depths happen at the northwest corner of **Parcel D**: *Section G/28* will require cut-off wall depth of 6-ft while *Section C/28* will require cut-off wall depth of 8-ft. Revise the callout of cut-off wall depths in the perspective detail sections **on Sheet 28/30** accordingly.

Comment response: The cut-off wall depths on sheet 28/30 have been revised accordingly.

Comment #10. Exhibit titled "Summerlin West Village 27 Parcel D HEC-RAS": In the flow data table, HEC-RAS XS column stops at STA 157, what about STA 149, 120, 80 … etc?

Comment response: The table in the exhibit has been updated to include the final cross sections (Appendix B.1). The North-Wall HEC-RAS model has been updated to now accept an additional 150 cfs from the ultimate Parcel D condition (Parcel D was previously planned to drain to the V27 COS-1 multi-RCB Storm drain system). The HEC-RAS models has been updated to reflect the latest design changes (Appendix B.2 & B.3).

Comment #11. **Sheet 30/30:** *Section Detail C*: It is not clear what dissipater material is within the channel. Provide construction note or detail to specify the type of dissipater

Comment response: The dissipater is composed of concrete. The hatching on the plans has been revised for clarity.

Comment #12. The 50FT Transition Structure from 28'x7' RCB to 9'x7' RCB is a special structure. Provide structural detail and calculations to City of Las Vegas Building & Safety Department for review and approval which must be obtained prior to the final approval of the drainage study.

Comment response: AtkinsRéalis understands that structural approval for the transition structure must be obtained prior to final approval of this drainage study.

Comment #13. The proposed improvement plans show drainage facilities of a size that must be reviewed for maintenance and access concerns. The engineer must submit a separate set of improvement plans to City of Las Vegas Streets & Sanitation Department for their review. CLV Streets & Sanitation approval must be secured prior to the final approval of the subject drainage study.

Comment response: AtkinsRéalis understands. A separate set of improvement plans will be submitted to the Streets and Sanitation Department for their review.

APPENDICES

Appendix A. References

A.1 Comment Letter

CITY OF LAS VEGAS **INTER-OFFICE MEMORANDUM**				**DATE:** **October 15, 2024**
TO: **Land Development Services** Department of Building & Safety				**FROM:** Albert Sung, P.E. Flood Control Project Engineer Department of Public Works
SUBJECT:	Drainage Study for: **Summerlin West Village 27 – Parcel D Drainage Infrastructure**			**COPIES TO:** Atkins
Cross Streets:	Park Drift Trail in Summerlin Village 27			Howard Hughes Company, LLC
File Number:	F:\Depot\DSMemos\DS5771B.doc			Bart Anderson, P.E., DevCo
Parcel Number:	137-15-401-003, 137-16-000-001, 137-15-101-001, 137-15-301-002			CCRFCD
Zoning Action:	N/A			
FEMA Flood Zone	YES	NO **X**		
Proposed Storm Drain	YES **X**	NO		

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1st Submittal	5/16/2024	6/14/2024	Not Approved	$400.00	5763854: $400
2nd Submittal	9/30/2024	10/15/2024	See Comments Below	$400.00	5946413: $400
			TOTAL FEES (LDDRS):	**$800.00**	**----**

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

1. The future development of Village 27 Parcel D is premised on the protection of the Village 27 Debris Basin, ie, construction bond for the Village 27 Debris Basin must be posted with the City prior to the final approval of the subject Summerlin West Village 27 – Parcel D Drainage Infrastructure.
2. The project proposes to build perimeter flood walls around the subject Parcel D. Erosions around the parcel boundaries are anticipated during interim conditions until permanent measures are implemented. Prior to final plan approval the developer must complete a maintenance and liability agreement for the interim drainage improvements and post a minimum maintenance bond of $50,000 or 50-percent of the construction cost for the improvements, whichever is greater. If the interim drainage improvements are bonded per phase, each phase must post a minimum maintenance bond of $50,000 or 50-percent of the construction cost, whichever is greater, for each phase. The engineer must submit an estimate of the quantities for constructing the facility and an exhibit that adequately shows the location and limits of the drainage facility to *City of Las Vegas Flood Control* for approval. Once the drainage study is conditionally approved, the engineer should contact the City's Land Development Section (229-6371) to begin the agreement process.

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   Please note that effective March 15, 2019, the CCRFCD adopted new requirements for drainage study concurrence submittal. Follow the link below for specific guidance.

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   The comment was meant for maintenance crew's vehicular access to the bottom of the *North Channel*, particularly at the entrance of the transition structure?

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***** 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.

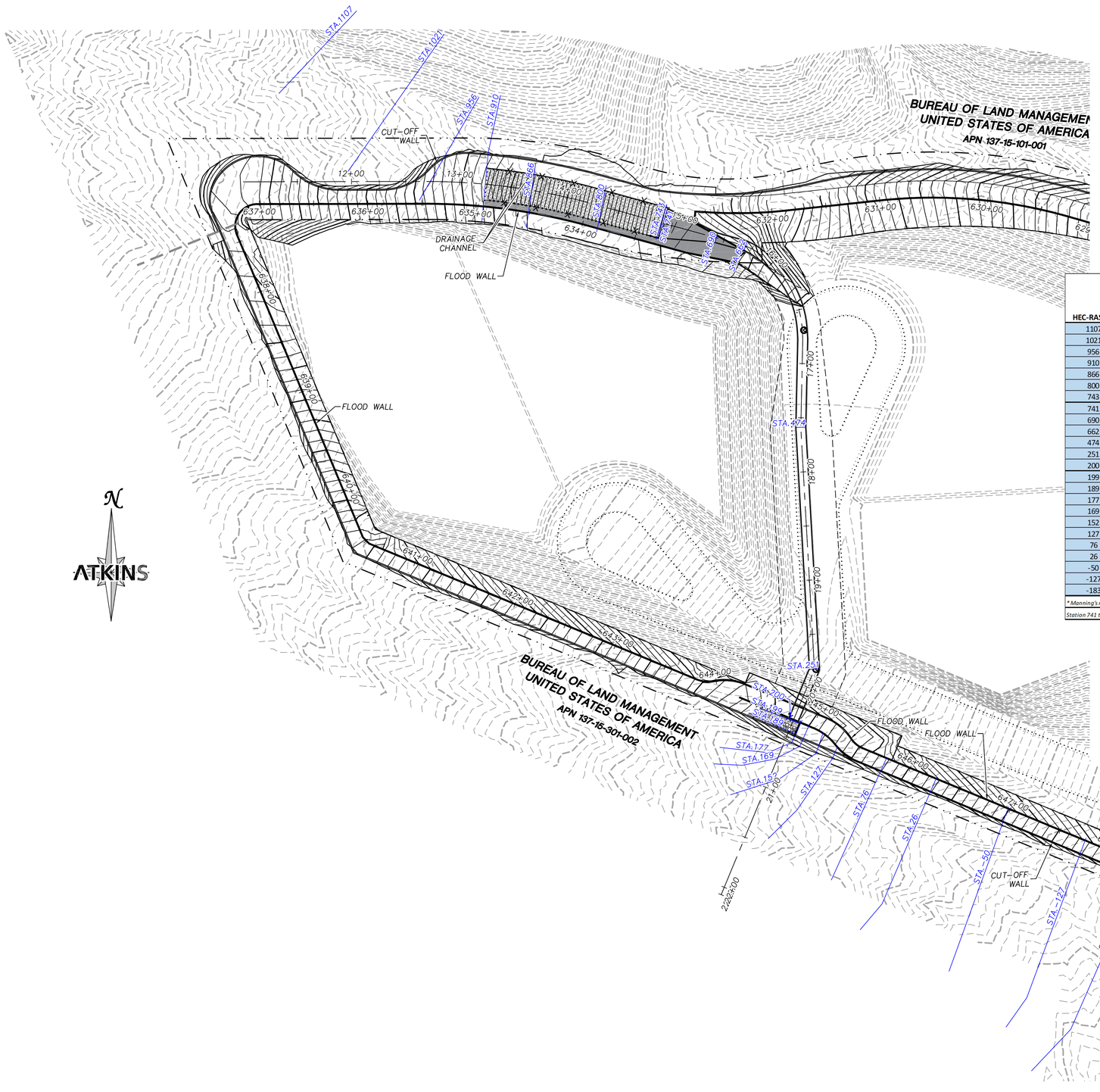
NOTE: Any future changes to the proposed design (or design assumptions) as outlined in the approved drainage study and attached preliminary grading plan which affect drainage must be addressed in a Drainage Study Update and accepted by the *City of Las Vegas Flood Control Section*. Additionally, final 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
HDR/AYS

T/R/S: T20S/R59E/03
AREA K-03

Appendix B. Hydraulics

B.1 HEC-RAS Exhibit



LEGEND

HEC–RAS SECTION

HEC-RAS XS	Q (cfs)	100-year WSE (ft)	Bottom Width	n	s (ft/ft)	Froude #	Hydraulic Depth (ft)	Velocity (ft/s)	SuperCritical Freeboard (ft)	Left Freeboard (ft)	Right Freeboard (ft)	Additional Depth Needed (ft)
1107	1,050	3,884.0	44	0.035	0.0694	2.11	1.58	15.1	1.5	n/a	2.0	0.0
1021	1,050	3,876.7	39	0.019	0.0777	2.99	1.36	19.8	1.5	n/a	5.4	0.0
956	1,050	3,872.1	43	0.035	0.0366	3.05	1.27	19.4	1.5	n/a	2.5	0.0
910	1,050	3,869.0	38	0.013	0.1094	3.66	0.89	21.5	1.5	n/a	1.7	0.0
866	1,050	3,864.7	35	0.018*	0.1116	3.39	1.34	22.3	1.6	n/a	1.7	0.0
800	1,050	3,856.9	28	0.018*	0.1105	4.02	1.39	26.9	1.8	3.8	3.9	0.0
743	1,050	3,850.4	28	0.013	0.1632	4.48	1.30	28.9	1.8	7.1	7.1	0.0
741	1,050	3,850.1	28	0.013	0.0500	4.54	1.29	29.2	1.8	n/a	n/a	n/a
690	1,050	3,850.7	9	0.013	0.0511	2.21	4.42	26.4	n/a	n/a	n/a	n/a
662	1,050	3,849.1	9	0.013	0.0506	2.36	4.23	27.6	n/a	n/a	n/a	n/a
474	1,050	3,838.8	9	0.013	0.0103	3.07	3.56	32.8	n/a	n/a	n/a	n/a
251	1,050	3,837.4	9	0.013	0.0099	2.21	4.42	26.4	n/a	n/a	n/a	n/a
200	1,050	3,837.0	9	0.013	0.0334	2.14	4.52	25.8	n/a	n/a	n/a	n/a
199	1,050	3,835.0	25	0.013	0.0000	4.11	1.46	28.2	1.8	7.0	n/a	0.0
189	1,050	3,835.1	31	0.04	0.0590	3.93	1.33	25.7	1.7	6.8	n/a	0.0
177	1,050	3,833.6	54	0.035	0.1667	4.11	0.89	22.0	1.5	7.0	n/a	0.0
169	1,050	3,832.4	48	0.035	0.0994	3.53	1.06	20.6	1.5	7.6	n/a	0.0
152	1,050	3,830.8	45	0.035	0.0832	2.88	1.26	18.3	1.5	5.4	n/a	0.0
127	1,050	3,828.7	46	0.035	0.0749	2.52	1.36	16.7	1.5	2.5	n/a	0.0
76	1,050	3,824.9	75	0.035	0.0803	2.38	1.02	13.6	1.3	7.2	n/a	0.0
26	1,050	3,820.9	102	0.035	0.1156	2.13	0.90	11.5	1.3	8.1	n/a	0.0
-50	1,050	3,812.8	48	0.035	0.0842	2.19	1.46	15.0	1.4	9.6	n/a	0.0
-127	1,050	3,805.9	72	0.035	0.0784	2.34	1.07	13.7	1.4	9.1	n/a	0.0
-183	1,050	3,801.9	61	0.035	0.0000	1.98	1.33	13.0	1.4	8.4	n/a	0.0

** Manning's n-value roughened for tined access rpad*

Station 741 though 200 is closed conduit RCB

50 0 25 50 100

HORIZONTAL: 1"=50'

SUMMERLIN

AtkinsRéalis

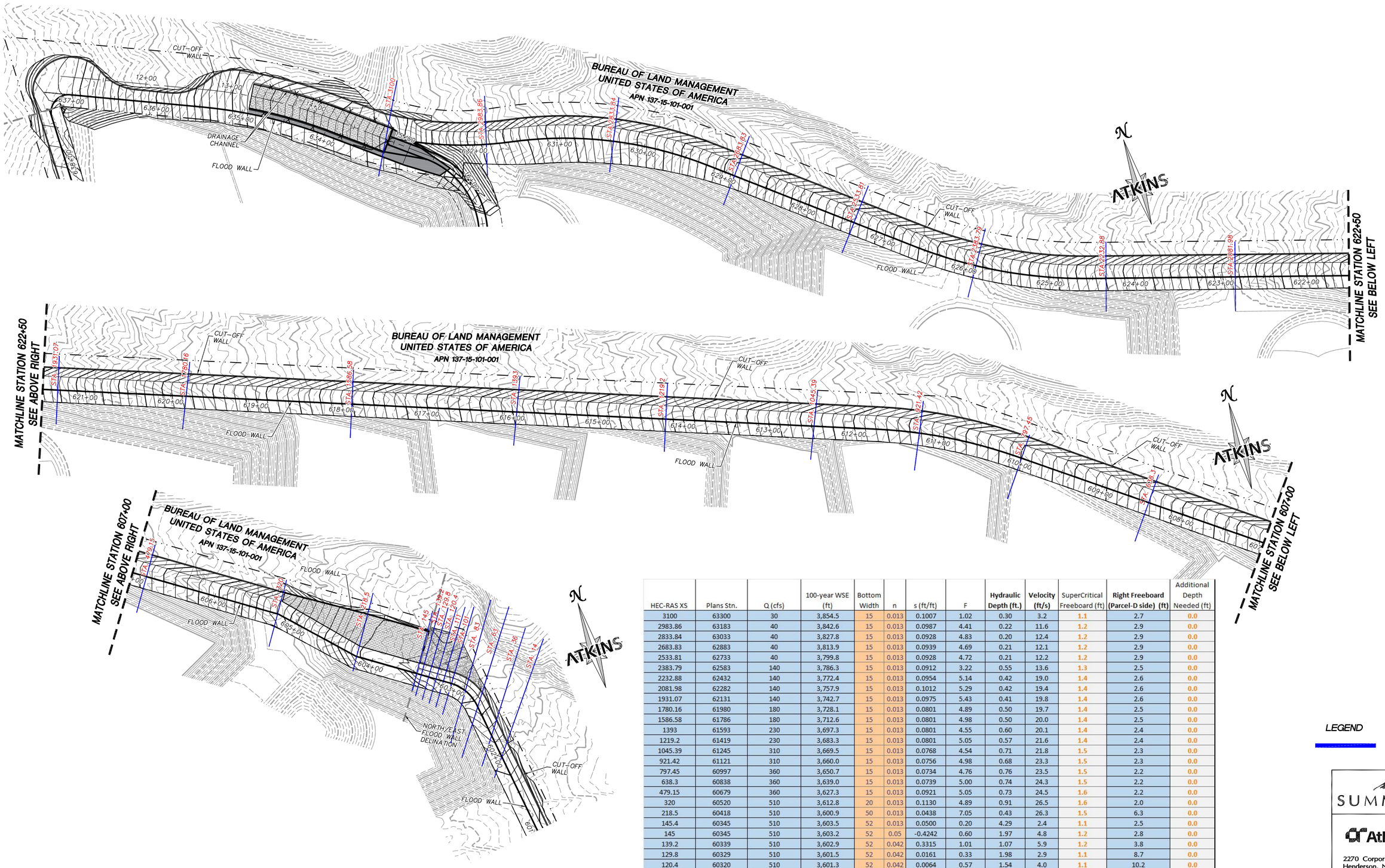
2360 Corporate Circle, Suite
300 Henderson, Nevada 89074
Telephone: +1.702.263.7275

TITLE:
SUMMERLIN WEST VILLAGE 27 PARCEL D HEC-RAS EXHIBIT

DATE: 6/18/2025

SHEET: 1/1

C:\Users\WAMA6066\AppData\Local\Temp\AcPublish_25736\024-09-19-V31-Parcel D HEC-RAS.dwg Layout: DIVERSION SSTEM Jun 18, 2025 - 12:57pm



HEC-RAS XS	Plans Stn.	Q (cfs)	100-year WSE (ft)	Bottom Width	n	s (ft/ft)	F	Hydraulic Depth (ft.)	Velocity (ft/s)	SuperCritical Freeboard (ft)	Right Freeboard (Parcel-D side) (ft)	Additional Depth Needed (ft)
3100	63300	30	3,854.5	15	0.013	0.1007	1.02	0.30	3.2	1.1	2.7	0.0
2983.86	63183	40	3,842.6	15	0.013	0.0987	4.41	0.22	11.6	1.2	2.9	0.0
2833.84	63033	40	3,827.8	15	0.013	0.0928	4.83	0.20	12.4	1.2	2.9	0.0
2683.83	62883	40	3,813.9	15	0.013	0.0939	4.69	0.21	12.1	1.2	2.9	0.0
2533.81	62733	40	3,799.8	15	0.013	0.0928	4.72	0.21	12.2	1.2	2.9	0.0
2383.79	62583	140	3,786.3	15	0.013	0.0912	3.22	0.55	13.6	1.3	2.5	0.0
2232.88	62432	140	3,772.4	15	0.013	0.0954	5.14	0.42	19.0	1.4	2.6	0.0
2081.98	62282	140	3,757.9	15	0.013	0.1012	5.29	0.42	19.4	1.4	2.6	0.0
1931.07	62131	140	3,742.7	15	0.013	0.0975	5.43	0.41	19.8	1.4	2.6	0.0
1780.16	61980	180	3,728.1	15	0.013	0.0801	4.89	0.50	19.7	1.4	2.5	0.0
1586.58	61786	180	3,712.6	15	0.013	0.0801	4.98	0.50	20.0	1.4	2.5	0.0
1393	61593	230	3,697.3	15	0.013	0.0801	4.55	0.60	20.1	1.4	2.4	0.0
1219.2	61419	230	3,683.3	15	0.013	0.0801	5.05	0.57	21.6	1.4	2.4	0.0
1045.39	61245	310	3,669.5	15	0.013	0.0768	4.54	0.71	21.8	1.5	2.3	0.0
921.42	61121	310	3,660.0	15	0.013	0.0756	4.98	0.68	23.3	1.5	2.3	0.0
797.45	60997	360	3,650.7	15	0.013	0.0734	4.76	0.76	23.5	1.5	2.2	0.0
638.3	60838	360	3,639.0	15	0.013	0.0739	5.00	0.74	24.3	1.5	2.2	0.0
479.15	60679	360	3,627.3	15	0.013	0.0921	5.05	0.73	24.5	1.6	2.2	0.0
320	60520	510	3,612.8	20	0.013	0.1130	4.89	0.91	26.5	1.6	2.0	0.0
218.5	60418	510	3,600.9	50	0.013	0.0438	7.05	0.43	26.3	1.5	6.3	0.0
145.4	60345	510	3,603.5	52	0.013	0.0500	0.20	4.29	2.4	1.1	2.5	0.0
145	60345	510	3,603.2	52	0.05	-0.4242	0.60	1.97	4.8	1.2	2.8	0.0
139.2	60339	510	3,602.9	52	0.042	0.3315	1.01	1.07	5.9	1.2	3.8	0.0
129.8	60329	510	3,601.5	52	0.042	0.0161	0.33	1.98	2.9	1.1	8.7	0.0
120.4	60320	510	3,601.3	52	0.042	0.0064	0.57	1.54	4.0	1.1	10.2	0.0
111	60311	510	3,600.8	52	0.042	0.0437	1.00	1.19	6.3	1.2	11.7	0.0
101	60301	510	3,599.1	52	0.04	0.1166	2.18	0.79	11.0	1.3	9.1	0.0
83	60283	510	3,597.3	55	0.04	0.0744	2.25	0.75	11.1	1.3	12.8	0.0
63	60263	510	3,595.3	50	0.04	0.0905	2.26	0.72	10.9	1.2	12.4	0.0
36	60236	510	3,593.0	52	0.04	0.0740	2.00	0.90	10.8	1.3	8.0	0.0
14	60214	510	3,592.1	82	0.04		1.73	0.70	8.2	1.2	4.8	0.0

LEGEND

HEC-RAS SECTION

50 0 25 50 100

HORIZONTAL: 1"=50'

SUMMERLIN

AtkinsRéalis

2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1.702.263.7275
Fax: +1.702.263.7200

TITLE:

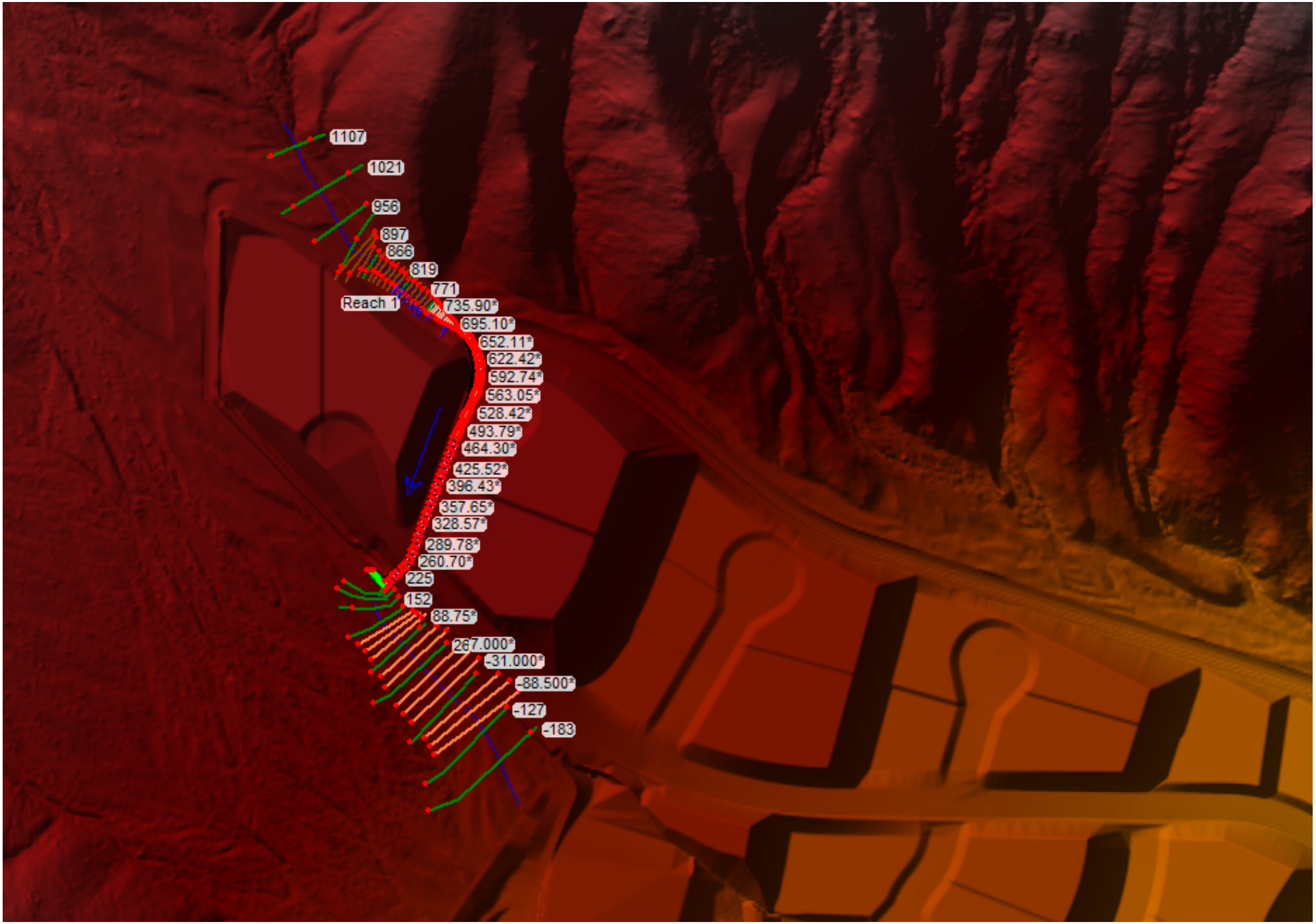
SUMMERLIN WEST VILLAGE 27 PARCEL D HEC-RAS NORTHWALL EXHIBIT

SHEET: 1/1

DATE: 4/11/2025

C:\pw_work\atkinsv01\dms72300\024-09-19-V31-Parcel D HEC-RAS.dwg Layout: NORTHWALL Apr 11, 2025 - 11:07am

B.2 North Wall Upper / Diversion Storm Drain


1107
1021
956
897
866
819
771
Reach 1
735.90*
695.10*
652.11*
622.42*
592.74*
563.05*
528.42*
493.79*
464.30*
425.52*
396.43*
357.65*
328.57*
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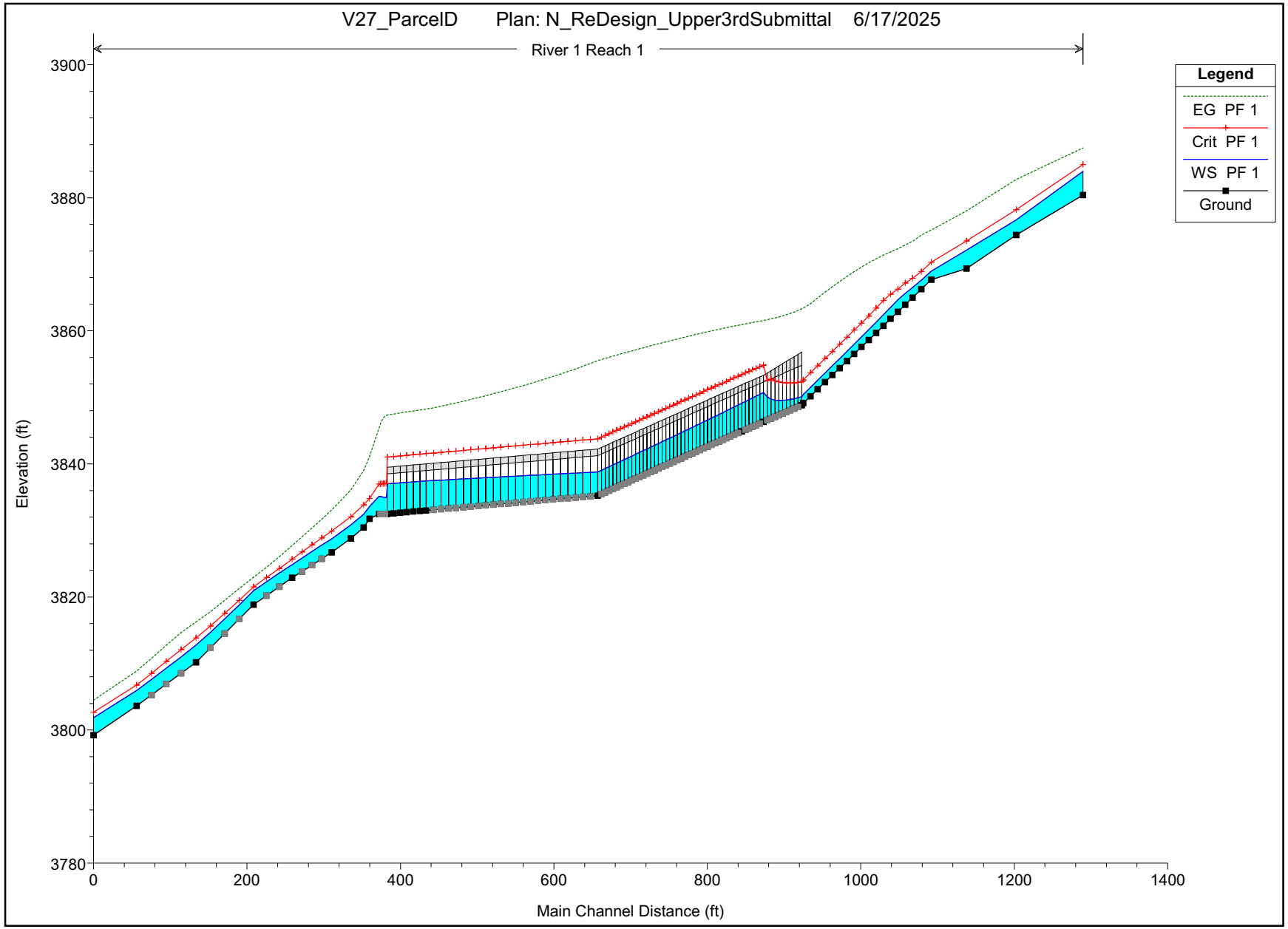
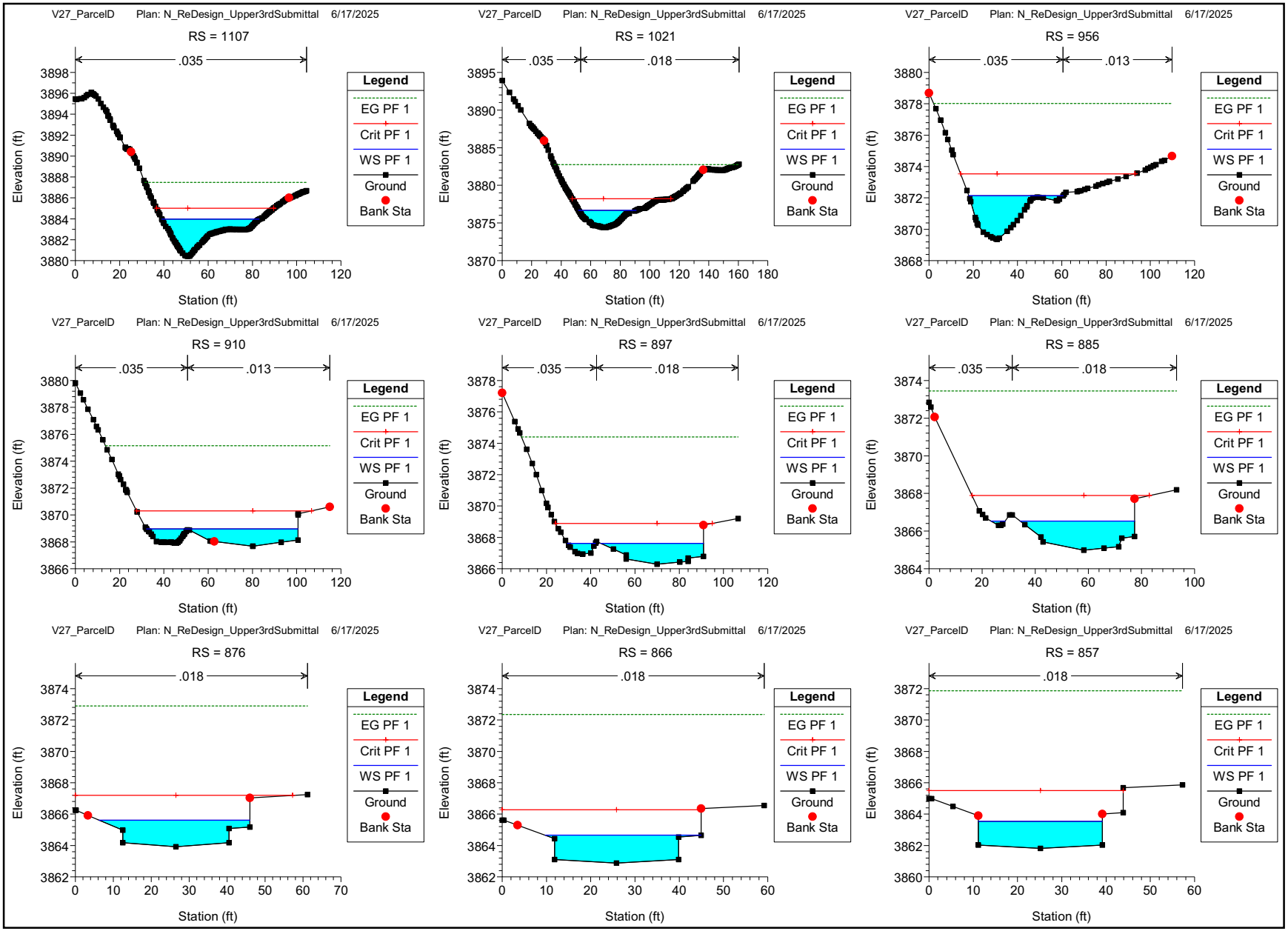
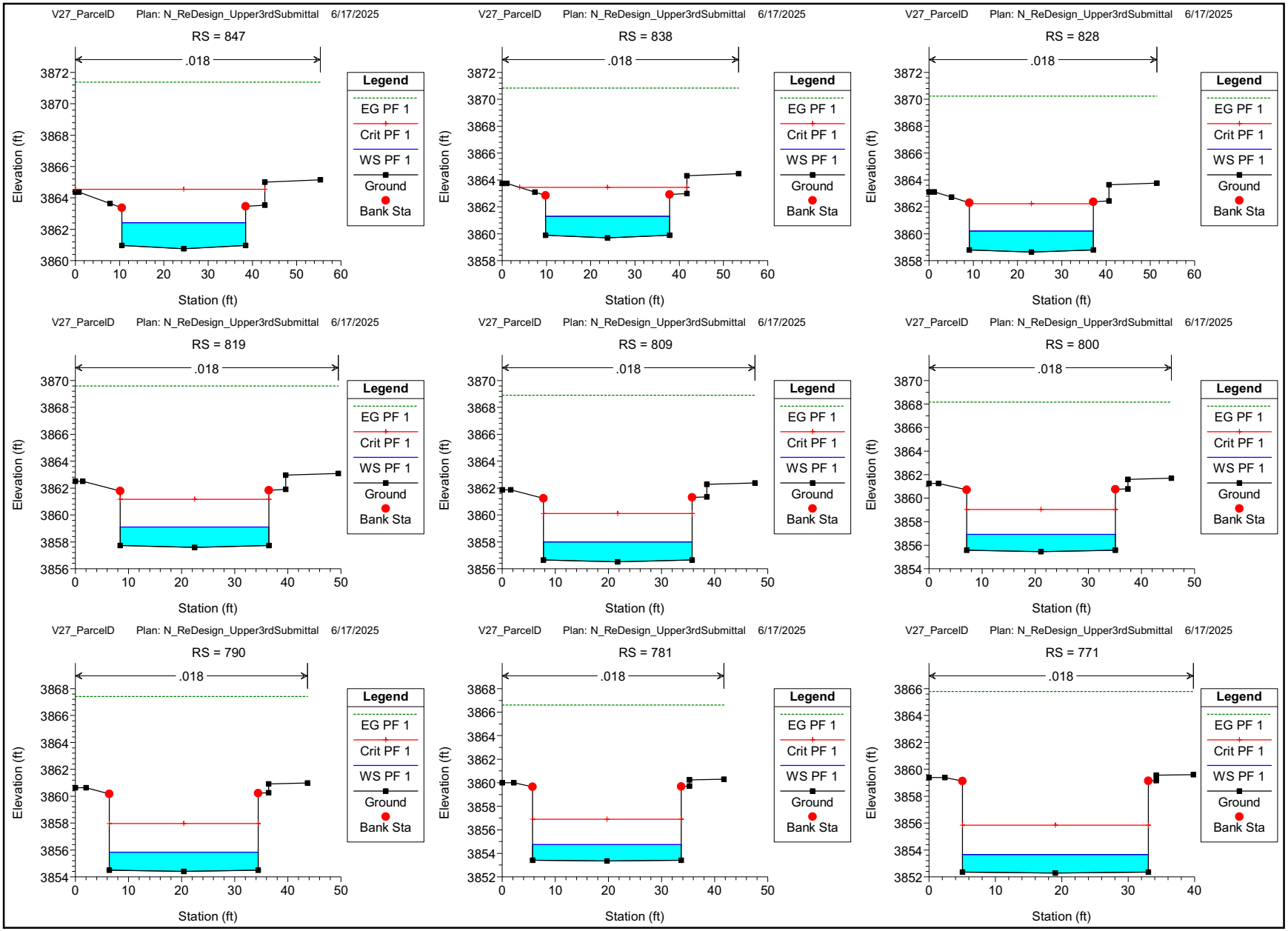
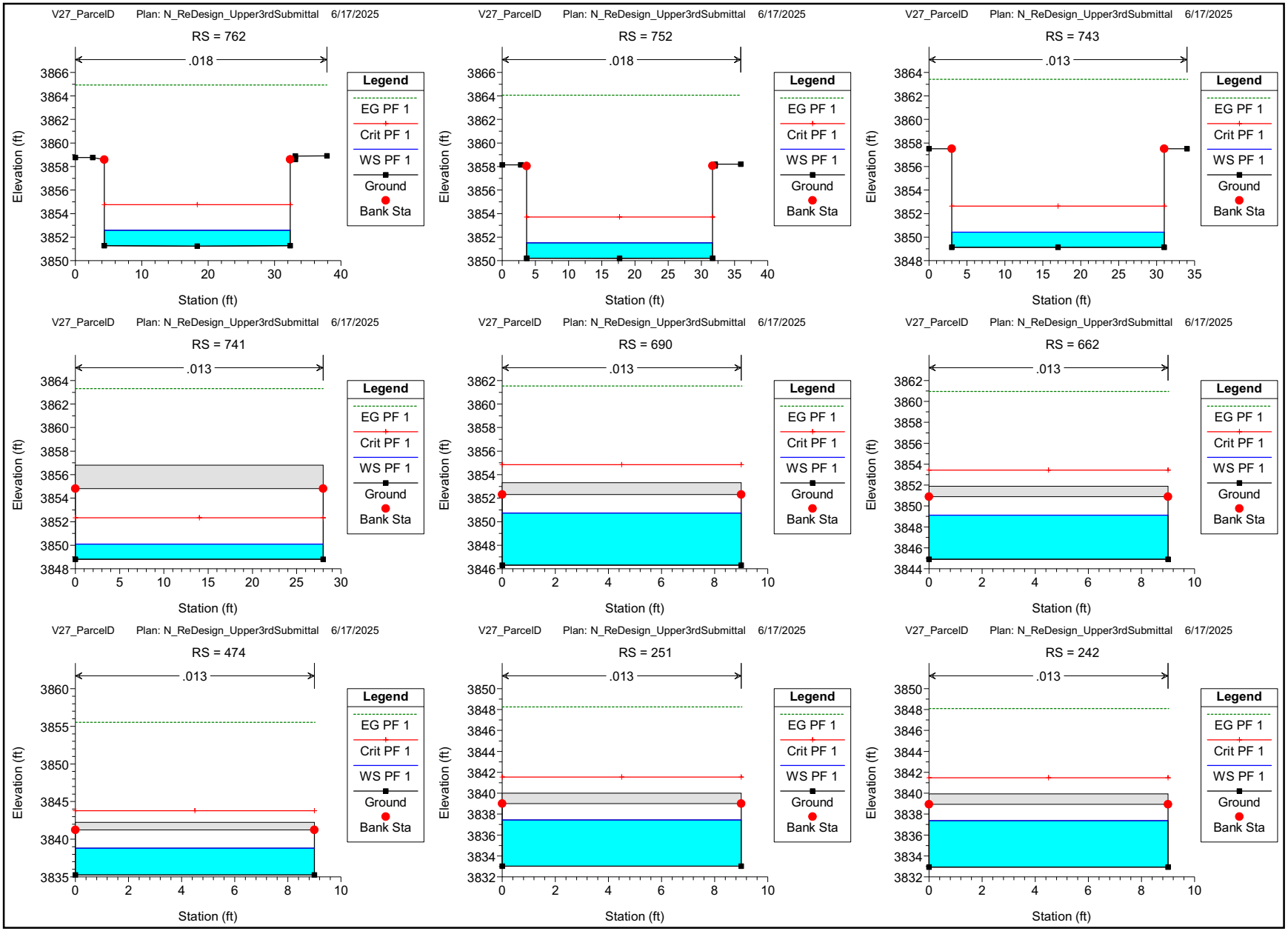
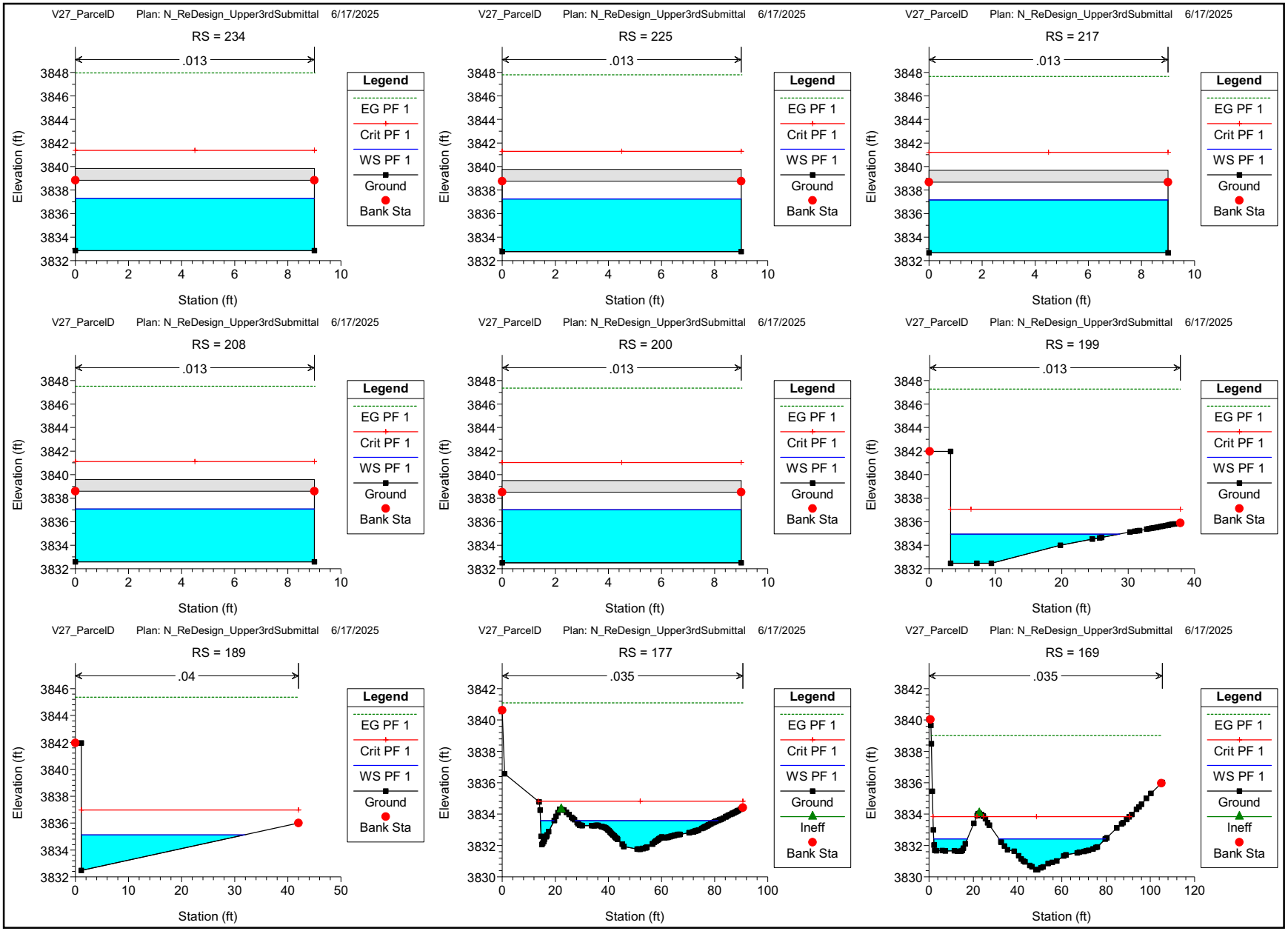
260.70*
225
152
88.75*
267.000*
-31.000*
-88.500*
-127
-183

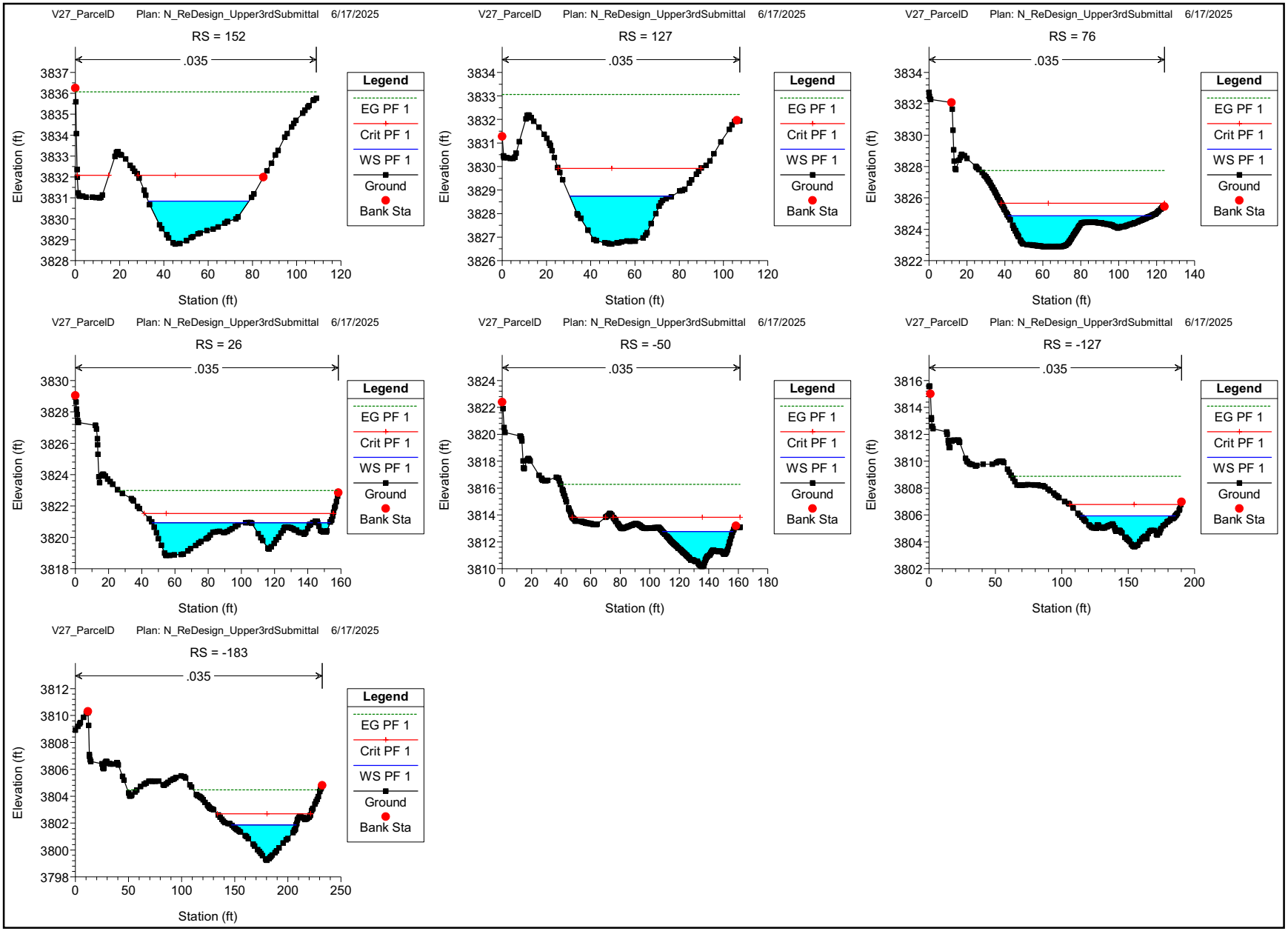

V27_ParcelD Plan: N_ReDesign_Upper3rdSubmittal 6/17/2025
River 1 Reach 1
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Elevation (ft)
3900
3880
3860
3840
3820
3800
3780
0
200
400
600
800
1000
1200
1400
Main Channel Distance (ft)


V27_ParcelD Plan: N_ReDesign_Upper3rdSubmittal 6/17/2025
RS = 1107
.035
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
V27_ParcelD Plan: N_ReDesign_Upper3rdSubmittal 6/17/2025
RS = 1021
.035
.018
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
V27_ParcelD Plan: N_ReDesign_Upper3rdSubmittal 6/17/2025
RS = 956
.035
.013
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
V27_ParcelD Plan: N_ReDesign_Upper3rdSubmittal 6/17/2025
RS = 910
.035
.013
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
V27_ParcelD Plan: N_ReDesign_Upper3rdSubmittal 6/17/2025
RS = 897
.035
.018
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
V27_ParcelD Plan: N_ReDesign_Upper3rdSubmittal 6/17/2025
RS = 885
.035
.018
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
V27_ParcelD Plan: N_ReDesign_Upper3rdSubmittal 6/17/2025
RS = 876
.018
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
V27_ParcelD Plan: N_ReDesign_Upper3rdSubmittal 6/17/2025
RS = 866
.018
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
V27_ParcelD Plan: N_ReDesign_Upper3rdSubmittal 6/17/2025
RS = 857
.018
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


V27_ParcelD Plan: N_ReDesign_Upper3rdSubmittal 6/17/2025
RS = 847
.018
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
V27_ParcelD Plan: N_ReDesign_Upper3rdSubmittal 6/17/2025
RS = 838
.018
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
V27_ParcelD Plan: N_ReDesign_Upper3rdSubmittal 6/17/2025
RS = 828
.018
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
V27_ParcelD Plan: N_ReDesign_Upper3rdSubmittal 6/17/2025
RS = 819
.018
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
V27_ParcelD Plan: N_ReDesign_Upper3rdSubmittal 6/17/2025
RS = 809
.018
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
V27_ParcelD Plan: N_ReDesign_Upper3rdSubmittal 6/17/2025
RS = 800
.018
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
V27_ParcelD Plan: N_ReDesign_Upper3rdSubmittal 6/17/2025
RS = 790
.018
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
V27_ParcelD Plan: N_ReDesign_Upper3rdSubmittal 6/17/2025
RS = 781
.018
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
V27_ParcelD Plan: N_ReDesign_Upper3rdSubmittal 6/17/2025
RS = 771
.018
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


V27_ParcelD Plan: N_ReDesign_Upper3rdSubmittal 6/17/2025
RS = 762
.018
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
V27_ParcelD Plan: N_ReDesign_Upper3rdSubmittal 6/17/2025
RS = 752
.018
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
V27_ParcelD Plan: N_ReDesign_Upper3rdSubmittal 6/17/2025
RS = 743
.013
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
V27_ParcelD Plan: N_ReDesign_Upper3rdSubmittal 6/17/2025
RS = 741
.013
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
V27_ParcelD Plan: N_ReDesign_Upper3rdSubmittal 6/17/2025
RS = 690
.013
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
V27_ParcelD Plan: N_ReDesign_Upper3rdSubmittal 6/17/2025
RS = 662
.013
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
V27_ParcelD Plan: N_ReDesign_Upper3rdSubmittal 6/17/2025
RS = 474
.013
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
V27_ParcelD Plan: N_ReDesign_Upper3rdSubmittal 6/17/2025
RS = 251
.013
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
V27_ParcelD Plan: N_ReDesign_Upper3rdSubmittal 6/17/2025
RS = 242
.013
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta


V27_ParcelD Plan: N_ReDesign_Upper3rdSubmittal 6/17/2025
RS = 234
.013
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
V27_ParcelD Plan: N_ReDesign_Upper3rdSubmittal 6/17/2025
RS = 225
.013
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
V27_ParcelD Plan: N_ReDesign_Upper3rdSubmittal 6/17/2025
RS = 217
.013
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
V27_ParcelD Plan: N_ReDesign_Upper3rdSubmittal 6/17/2025
RS = 208
.013
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
V27_ParcelD Plan: N_ReDesign_Upper3rdSubmittal 6/17/2025
RS = 200
.013
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
V27_ParcelD Plan: N_ReDesign_Upper3rdSubmittal 6/17/2025
RS = 199
.013
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
V27_ParcelD Plan: N_ReDesign_Upper3rdSubmittal 6/17/2025
RS = 189
.04
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
V27_ParcelD Plan: N_ReDesign_Upper3rdSubmittal 6/17/2025
RS = 177
.035
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
V27_ParcelD Plan: N_ReDesign_Upper3rdSubmittal 6/17/2025
RS = 169
.035
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)


V27_ParcelD Plan: N_ReDesign_Upper3rdSubmittal 6/17/2025
RS = 152
.035
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
V27_ParcelD Plan: N_ReDesign_Upper3rdSubmittal 6/17/2025
RS = 127
.035
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
V27_ParcelD Plan: N_ReDesign_Upper3rdSubmittal 6/17/2025
RS = 76
.035
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
V27_ParcelD Plan: N_ReDesign_Upper3rdSubmittal 6/17/2025
RS = 26
.035
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
V27_ParcelD Plan: N_ReDesign_Upper3rdSubmittal 6/17/2025
RS = -50
.035
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
V27_ParcelD Plan: N_ReDesign_Upper3rdSubmittal 6/17/2025
RS = -127
.035
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
V27_ParcelD Plan: N_ReDesign_Upper3rdSubmittal 6/17/2025
RS = -183
.035
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta

HEC-RAS Plan: N_Re River: River 1 Reach: Reach 1 Profile: PF 1

Reach	River Sta	Profile	Q Total	Mann Wtd Chnl	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Hydr Depth C
			(cfs)		(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)		(ft)
Reach 1	1107	PF 1	1050	0.035	3880.430	3884.0	3885.0	3887.5	0.0701	15.1	69.7	44.0	2.1	1.58
Reach 1	1021	PF 1	1050	0.019	3874.410	3876.7	3878.2	3882.8	0.0420	19.8	53.0	38.9	3.0	1.36
Reach 1	956	PF 1	1050	0.035	3869.360	3872.1	3873.5	3878.0	0.1562	19.4	54.0	42.7	3.0	1.27
Reach 1	910	PF 1	1050	0.013	3867.680	3869.0	3870.3	3875.2	0.0331	21.5	61.0	68.5	3.7	1.08
Reach 1	897	PF 1	1050	0.022	3866.280	3867.6	3868.9	3874.4	0.1239	20.9	50.2	59.0	4.0	0.85
Reach 1	885	PF 1	1050	0.018	3864.980	3866.5	3867.9	3873.5	0.0580	21.1	49.8	48.2	3.7	1.03
Reach 1	876	PF 1	1050	0.018	3863.920	3865.6	3867.2	3872.9	0.0566	21.6	48.5	39.8	3.5	1.22
Reach 1	866	PF 1	1050	0.018	3862.870	3864.7	3866.3	3872.4	0.0545	22.3	47.2	35.2	3.4	1.34
Reach 1	857	PF 1	1050	0.018	3861.810	3863.5	3865.5	3871.9	0.0473	23.1	45.4	28.0	3.2	1.62
Reach 1	847	PF 1	1050	0.018	3860.750	3862.4	3864.6	3871.4	0.0533	24.0	43.7	28.0	3.4	1.56
Reach 1	838	PF 1	1050	0.018	3859.690	3861.3	3863.4	3870.8	0.0589	24.8	42.4	28.0	3.5	1.51
Reach 1	828	PF 1	1050	0.018	3858.640	3860.2	3862.2	3870.2	0.0641	25.4	41.3	28.0	3.7	1.48
Reach 1	819	PF 1	1050	0.018	3857.580	3859.1	3861.2	3869.6	0.0688	26.0	40.4	28.0	3.8	1.44
Reach 1	809	PF 1	1050	0.018	3856.520	3858.0	3860.1	3868.9	0.0732	26.5	39.6	28.0	3.9	1.42
Reach 1	800	PF 1	1050	0.018	3855.460	3856.9	3859.0	3868.2	0.0772	26.9	39.0	28.0	4.0	1.39
Reach 1	790	PF 1	1050	0.018	3854.410	3855.8	3858.0	3867.4	0.0808	27.3	38.5	28.0	4.1	1.37
Reach 1	781	PF 1	1050	0.018	3853.350	3854.7	3856.9	3866.6	0.0842	27.6	38.0	28.0	4.2	1.36
Reach 1	771	PF 1	1050	0.018	3852.290	3853.7	3855.8	3865.8	0.0872	27.9	37.6	28.0	4.3	1.34
Reach 1	762	PF 1	1050	0.018	3851.230	3852.6	3854.8	3864.9	0.0900	28.2	37.2	28.0	4.3	1.33
Reach 1	752	PF 1	1050	0.018	3850.180	3851.5	3853.7	3864.1	0.0924	28.4	36.9	28.0	4.4	1.32
Reach 1	743	PF 1	1050	0.013	3849.120	3850.4	3852.6	3863.4	0.0510	28.9	36.3	28.0	4.5	1.30
Reach 1	741	PF 1	1050	0.013	3848.810	3850.1	3852.3	3863.3	0.0524	29.2	36.0	28.0	4.5	1.29
Reach 1	690	PF 1	1050	0.013	3846.310	3850.7	3854.8	3861.5	0.0183	26.4	39.8	9.0	2.2	4.42
Reach 1	662	PF 1	1050	0.013	3844.900	3849.1	3853.4	3860.9	0.0206	27.6	38.1	9.0	2.4	4.23
Reach 1	474	PF 1	1050	0.013	3835.240	3838.8	3843.8	3855.5	0.0330	32.8	32.0	9.0	3.1	3.56
Reach 1	251	PF 1	1050	0.013	3833.010	3837.4	3841.5	3848.3	0.0183	26.4	39.8	9.0	2.2	4.42
Reach 1	242	PF 1	1050	0.013	3832.930	3837.4	3841.5	3848.1	0.0181	26.3	39.9	9.0	2.2	4.44
Reach 1	234	PF 1	1050	0.013	3832.840	3837.3	3841.4	3848.0	0.0179	26.2	40.1	9.0	2.2	4.45
Reach 1	225	PF 1	1050	0.013	3832.760	3837.2	3841.3	3847.8	0.0177	26.1	40.3	9.0	2.2	4.47
Reach 1	217	PF 1	1050	0.013	3832.670	3837.2	3841.2	3847.7	0.0176	26.0	40.4	9.0	2.2	4.49
Reach 1	208	PF 1	1050	0.013	3832.580	3837.1	3841.1	3847.5	0.0174	25.9	40.5	9.0	2.2	4.50
Reach 1	200	PF 1	1050	0.013	3832.500	3837.0	3841.0	3847.4	0.0172	25.8	40.7	9.0	2.1	4.52
Reach 1	199	PF 1	1050	0.013	3832.470	3834.9	3837.1	3847.3	0.0417	28.2	37.3	25.5	4.1	1.46
Reach 1	189	PF 1	1050	0.040	3832.470	3835.1	3837.0	3845.4	0.3667	25.7	40.9	30.8	3.9	1.33
Reach 1	177	PF 1	1050	0.035	3831.750	3833.6	3834.8	3841.1	0.3150	22.0	47.8	58.9	4.1	0.89
Reach 1	169	PF 1	1050	0.035	3830.450	3832.4	3833.8	3839.0	0.2192	20.6	51.0	63.3	3.5	1.06
Reach 1	152	PF 1	1050	0.035	3828.790	3830.8	3832.1	3836.1	0.1383	18.3	57.2	45.4	2.9	1.26
Reach 1	127	PF 1	1050	0.035	3826.710	3828.7	3829.9	3833.1	0.1032	16.7	63.0	46.3	2.5	1.36
Reach 1	76	PF 1	1050	0.035	3822.890	3824.8	3825.7	3827.7	0.1009	13.6	77.0	75.4	2.4	1.02
Reach 1	26	PF 1	1050	0.035	3818.840	3820.9	3821.5	3823.0	0.0850	11.5	91.5	101.8	2.1	0.90
Reach 1	-50	PF 1	1050	0.035	3810.170	3812.8	3813.8	3816.3	0.0767	15.0	69.9	47.8	2.2	1.46
Reach 1	-127	PF 1	1050	0.035	3803.640	3805.9	3806.8	3808.9	0.0967	13.7	76.5	71.6	2.3	1.07
Reach 1	-183	PF 1	1050	0.035	3799.240	3801.9	3802.7	3804.5	0.0643	13.0	80.8	60.7	2.0	1.33

HEC-RAS HEC-RAS 6.2 March 2022
U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

```
X     X  XXXXXX    XXXX        XXXX       XX      XXXX
X     X  X        X    X      X   X     X  X    X
X     X  X        X           X   X    X    X   X
XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
X     X  X        X           X  X     X    X        X
X     X  X        X    X      X   X    X    X        X
X     X  XXXXXX    XXXX       X    X   X    X   XXXXX
```

PROJECT DATA
Project Title: V27_ParcelD
Project File : V27_ParcelD.prj
Run Date and Time: 6/17/2025 2:46:53 PM

Project in English units

PLAN DATA

Plan Title: N_ReDesign_Upper3rdSubmittal
Plan File : C:\Users\pete9576\OneDrive Corp\SNC Lavalin Group\Summerlin West Drainage - Documents\Village 27\100085220 - V27 Parcel D Boundary Drainage\Hydraulics\HEC-RAS\V27_ParcelD.p05

Geometry Title: N_Wall_1D_Upper_ReDesign3rdSubmittal
Geometry File : C:\Users\pete9576\OneDrive Corp\SNC Lavalin Group\Summerlin West Drainage - Documents\Village 27\100085220 - V27 Parcel D Boundary Drainage\Hydraulics\HEC-RAS\V27_ParcelD.g05

Flow Title : N_Upper
Flow File : C:\Users\pete9576\OneDrive Corp\SNC Lavalin Group\Summerlin West Drainage - Documents\Village 27\100085220 - V27 Parcel D Boundary Drainage\Hydraulics\HEC-RAS\V27_ParcelD.f11

Plan Summary Information:

Number of:	Cross Sections	= 131	Multiple Openings	=	0
	Culverts	= 0	Inline Structures	=	0
	Bridges	= 0	Lateral Structures	=	0

Computational Information
    Water surface calculation tolerance = 0.01
    Critical depth calculation tolerance = 0.01
    Maximum number of iterations   = 20
    Maximum difference tolerance   = 0.3
    Flow tolerance factor   = 0.001

Computation Options
    Critical depth computed only where necessary
    Conveyance Calculation Method: At breaks in n values only
    Friction Slope Method: Average Conveyance
    Computational Flow Regime: Supercritical Flow

FLOW DATA

Flow Title: N_Upper
Flow File : C:\Users\pete9576\OneDrive Corp\SNC Lavalin Group\Summerlin West Drainage - Documents\Village 27\100085220 - V27 Parcel D Boundary Drainage\Hydraulics\HEC-RAS\V27_ParcelD.f11

Flow Data (cfs)

River	Reach	RS	PF 1
River 1	Reach 1	1107	1050

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
River 1	Reach 1	PF 1	Normal S = 0.07	Normal S = 0.07

GEOMETRY DATA

Geometry Title: N_Wall_1D_Upper_ReDesign3rdSubmittal
Geometry File : C:\Users\pete9576\OneDrive Corp\SNC Lavalin Group\Summerlin West Drainage - Documents\Village 27\100085220 - V27 Parcel D Boundary Drainage\Hydraulics\HEC-RAS\V27_ParcelD.g05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 1107

INPUT
Description:
Station Elevation Data num= 248

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3895.43	.6	3895.41	2.1	3895.48	2.8	3895.49	4.1	3895.59
4.9	3895.77	5.7	3895.9	7.2	3896.1	7.3	3896.09	8	3895.95
8.2	3895.92	8.7	3895.84	9.3	3895.74	10.4	3895.47	11.5	3895.04
12.6	3894.66	13.7	3894.41	14.1	3894.25	14.8	3893.89	14.8	3893.86
15	3893.8	15.6	3893.55	15.8	3893.44	16.9	3892.95	17.1	3892.88
17.5	3892.72	18.6	3892.38	19.1	3892.2	19.4	3892.06	20.1	3891.8
20.2	3891.78	20.2	3891.77	22.5	3890.83	22.7	3890.76	23.2	3890.69
23.4	3890.66	24	3890.7	24.5	3890.6425.162843	890.403		25.2	3890.39
25.5	3890.29	25.6	3890.25	26.3	3890.02	26.7	3889.86	27	3889.7
27.8	3889.39	27.8	3889.38	27.8	3889.37	27.8	3889.36	28.9	3888.83
31	3887.66	31.5	3887.42	31.6	3887.37	32.1	3887.11	32.4	3886.98
33	3886.66	33.1	3886.57	33.2	3886.53	33.9	3886.2	34.3	3886.01
35.3	3885.62	35.4	3885.58	35.4	3885.56	35.5	3885.51	36.2	3885.2
37	3884.88	37.2	3884.79	37.7	3884.55	38.1	3884.39	39	3883.98
39.2	3883.89	39.7	3883.68	40	3883.57	40.8	3883.27	41.9	3883.05
42.3	3882.88	42.8	3882.69	43	3882.61	43.1	3882.57	43.2	3882.48
43.8	3882.2	44.1	3882.08	44.7	3881.89	45.2	3881.74	45.3	3881.69
45.8	3881.55	46.1	3881.45	46.2	3881.41	46.5	3881.3	46.9	3881.19
47.3	3881.03	47.6	3880.94	48.4	3880.72	48.4	3880.71	49.5	3880.49
49.9	3880.47	50.3	3880.45	50.6	3880.43	50.7	3880.43	51	3880.43
51.5	3880.44	51.7	3880.47	52.2	3880.59	52.2	3880.6	52.8	3880.73
53	3880.79	53.5	3880.93	53.7	3880.98	53.8	3881.01	54.1	3881.06
54.9	3881.25	55.3	3881.34	55.9	3881.48	56	3881.5	56.1	3881.52
57.1	3881.73	57.6	3881.83	57.8	3881.89	58.2	3881.96	58.3	3882
58.7	3882.08	59.1	3882.19	59.3	3882.23	59.7	3882.32	59.8	3882.35
60.6	3882.51	61.2	3882.57	61.4	3882.58	61.6	3882.59	62.1	3882.63
62.5	3882.66	62.9	3882.68	63.5	3882.72	63.6	3882.73	63.7	3882.73
63.8	3882.74	64.4	3882.78	64.7	3882.79	65.2	3882.82	65.8	3882.85
66	3882.86	66.4	3882.88	66.7	3882.9	66.9	3882.91	67.2	3882.93
67.5	3882.94	67.9	3882.97	68.9	3882.99	69	3882.99	69	3883
69.1	3883	69.8	3883.01	70.1	3883.01	71	3882.99	71.2	3882.99
71.41983	3882.99	71.5	3882.99	72.3	3882.99	72.8	3883	72.9	3883
73.4	3883	74.1	3882.99	74.3	3882.98	74.5	3882.98	74.7	3882.98
75.1	3882.99	75.5	3882.99	75.9	3882.98	76.6	3882.97	76.7	3882.97
77.4	3882.99	77.7	3883	78.2	3883.03	78.5	3883.06	78.8	3883.09
78.9	3883.1	79.2	3883.15	79.7	3883.26	79.9	3883.3	80.4	3883.42
80.5	3883.44	81	3883.56	81.2	3883.62	81.8	3883.74	82	3883.78
82.1	3883.8	82.3	3883.83	82.7	3883.91	83.1	3883.96	83.5	3883.98
84.1	3884.05	84.2	3884.06	84.3	3884.06	84.4	3884.07	85.3	3884.25
85.8	3884.34	86	3884.38	86.4	3884.45	86.6	3884.48	86.9	3884.55

```
    87.3 3884.61    87.5 3884.64    87.9 3884.71    88.1 3884.74    88.6 3884.83
    88.9 3884.87    89.5 3884.99    89.6 3885.01    89.8 3885.03    90.4 3885.12
    91.1 3885.24    91.6 3885.32    91.8 3885.35    91.9 3885.36    92.1 3885.39
    92.7 3885.47    93.5  3885.6      94 3885.67    94.2  3885.7    94.6 3885.77
      95 3885.83    95.1 3885.84    95.4 3885.88    95.7 3885.92    96.2 3885.97
    96.5    3886    97.2 3886.03    97.3 3886.03      98 3886.09    98.3 3886.11
    99.2 3886.19    99.4 3886.22    99.5 3886.23    99.8 3886.26   100.3 3886.32
   100.5 3886.34     101  3886.4   101.1  3886.4   101.6 3886.45   101.8 3886.47
   102.4 3886.53   102.6 3886.55   102.7 3886.55   102.9 3886.57   103.4  3886.6
   103.8 3886.62   104.1 3886.65   104.5 3886.69

Manning's n Values        num=       1
     Sta   n Val
       0    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      25.16284    96.5             86.8    86.8    86.8            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 1021

INPUT
Description:
Station Elevation Data    num=     326
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3893.94       5 3892.36     7.7 3891.45     8.8 3891.14    10.8 3890.55
    12.5 3890.04    18.5 3888.22    19.4 3887.95    19.8 3887.87    20.5 3887.72
    20.6  3887.7    20.9 3887.63    21.3 3887.55    21.8 3887.43    22.9 3887.19
    23.9 3886.97    24.1 3886.92    24.2 3886.91    24.3 3886.89    24.9 3886.77
    25.3 3886.68    25.6  3886.6    26.2 3886.47    27.1 3886.29    27.6 3886.17
    27.8 3886.13    28.1 3886.06    28.5 3885.94    28.8 3885.84    29.3 3885.62
      30  3885.3    30.1 3885.26    31.1 3884.68    32.8 3883.92    32.9 3883.86
    33.6 3883.53    34.6 3883.04    35.1 3882.83    35.8 3882.53    35.8 3882.51
    35.8  3882.5    35.8 3882.49    36.6 3882.17      37 3881.97    37.8 3881.61
      38 3881.52    38.7 3881.21    39.7 3880.82    40.2 3880.65    40.5 3880.54
    40.9 3880.39    41.6 3880.13    41.7 3880.12    41.7 3880.11    42.4 3879.86
    42.8  3879.7    43.1 3879.61    43.6 3879.46      44 3879.31    44.6 3879.14
    44.7 3879.11    45.2 3878.95    45.3 3878.91    45.5 3878.84      46 3878.66
    46.3 3878.55    46.7 3878.41    47.4  3878.2    47.5 3878.18    47.5 3878.17
    47.6 3878.13    48.2 3877.93    48.7 3877.77    49.4 3877.53    49.7 3877.43
    49.8 3877.37    50.4 3877.19    50.6 3877.12      51 3876.98    51.1 3876.94
    51.3 3876.88    51.8 3876.67    52.2 3876.56    52.6 3876.43    53.2 3876.21
    53.3 3876.19    53.3 3876.17    53.6 3876.11      54 3875.98    54.5 3875.86
    54.8 3875.82    55.1 3875.73    55.7 3875.6156.100653875.554    56.2 3875.54
    56.5  3875.5    56.9 3875.46      59 3875.17    59.1 3875.15    59.2 3875.14
    59.5 3875.09    59.8 3875.04    60.4 3874.94    61.3 3874.73    61.5  3874.7
      62 3874.68    62.5 3874.67    62.7 3874.67    62.8 3874.67    64.9 3874.61
```

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      65 3874.61    65.4 3874.58    65.7 3874.57    66.2 3874.52    66.4 3874.51
    66.7 3874.49    67.1 3874.46    67.4 3874.44    68.5 3874.41    68.6 3874.41
    68.7 3874.41    69.3 3874.42    69.7 3874.42      70 3874.42    70.6 3874.44
    70.8 3874.45    70.9 3874.46    72.1 3874.51    72.2 3874.52    72.5 3874.54
      73 3874.56    73.2 3874.58    73.7 3874.62    74.3 3874.65    74.4 3874.66
    75.1 3874.71    75.6 3874.75    75.9 3874.77    76.6 3874.83    77.3 3874.92
    78.1 3875.02    78.3 3875.06    78.8 3875.16    79.1 3875.21    79.5  3875.3
    80.2 3875.44    80.3 3875.44      81 3875.59    81.4 3875.68    82.2 3875.83
    82.4 3875.89    82.6 3875.92    83.1 3876.04    83.2 3876.06    83.9 3876.17
    84.1 3876.19    84.6 3876.23    84.9 3876.24    85.3 3876.26      86 3876.28
    86.1 3876.28    89.9 3876.59    90.8 3876.67    91.2 3876.71    91.8 3876.77
    91.9 3876.78    92.1  3876.8    92.6 3876.83    93.1 3876.86    93.3 3876.88
    96.6 3876.97      97 3877.01    97.6  3877.1    97.7 3877.12    97.8 3877.12
      98 3877.16    98.4  3877.2    98.9 3877.27    99.2  3877.3    99.5 3877.36
    99.9 3877.41   100.1 3877.45     101 3877.56   101.3 3877.59   101.4  3877.6
   101.5 3877.62   102.1 3877.71   102.5 3877.77   102.8 3877.81   103.4 3877.88
   103.5  3877.9   103.6 3877.91     104 3877.94   104.3 3877.97   104.8 3878.02
     105 3878.03   105.3 3878.05   105.7 3878.05     106 3878.06   106.4 3878.08
   106.9 3878.09   107.1 3878.09   107.2  3878.1   107.3  3878.1   107.9 3878.09
   108.3 3878.09   108.6 3878.09   109.2 3878.09109.2569 3878.09   109.4 3878.09
   109.5 3878.09   109.9  3878.1   110.1  3878.1   110.6 3878.11   110.8 3878.11
   111.1 3878.12   111.5 3878.13   111.8 3878.13   112.3 3878.14   112.9 3878.16
     113 3878.16   113.7 3878.18   114.5 3878.22     115 3878.25   115.2 3878.28
   115.3 3878.29   115.8 3878.35   115.9 3878.36   116.5 3878.42   116.6 3878.44
   116.9 3878.47   117.4 3878.52   117.7 3878.56   118.1 3878.61   118.8 3878.69
   119.6 3878.79     120 3878.85   120.3 3878.88   120.8 3878.94     121 3878.96
   121.2 3878.98   122.5 3879.19   122.7 3879.23   123.5 3879.35   124.6 3879.56
   124.7 3879.56   124.7 3879.58   125.4 3879.69   126.1 3879.83   129.3 3880.56
   129.7 3880.64   130.4 3880.76   130.5 3880.78   130.5 3880.79   130.7 3880.82
   131.2 3880.93   131.7 3881.03   131.9 3881.09   132.3 3881.19   132.7 3881.26
   132.9 3881.31   133.4 3881.44   133.6  3881.5     134 3881.59   134.1 3881.61
   134.3 3881.65   135.2 3881.87   135.6 3881.95   136.2 3882.04   136.3 3882.05
   136.4 3882.05   136.6 3882.06     137 3882.08   137.5  3882.1   138.1 3882.13
   138.5 3882.14   138.7 3882.15   139.2 3882.17   139.9 3882.17   140.1 3882.16
   140.7 3882.13     141 3882.12   141.4 3882.12     142 3882.09   142.1 3882.08
   142.5 3882.07   142.9 3882.06   143.9 3882.04   144.5 3882.05     145 3882.05
   145.5 3882.04   145.8 3882.04   146.5 3882.05   146.9 3882.04   147.2 3882.04
   147.8 3882.04   148.1 3882.04   149.2 3882.03   149.4 3882.03   149.7 3882.03
   150.1 3882.03   150.4 3882.04   150.9 3882.06   151.4 3882.09   151.6  3882.1
   152.3 3882.17   152.7 3882.21     153 3882.24   153.8 3882.29   153.9  3882.3
   154.4 3882.33   154.5 3882.33   155.1 3882.36   155.2 3882.37   155.5 3882.38
     156  3882.4   156.2 3882.41   156.7 3882.44   157.4 3882.47   158.1 3882.53
   158.6 3882.58   159.4 3882.68   159.6  3882.7   159.7 3882.72   160.3 3882.78
   160.5  3882.8

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .035    53.2    .018

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
```

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          28.5   136.3                65      65      65            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 956

INPUT
Description:
Station Elevation Data    num=      64
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3878.69    3.11 3877.69    5.25 3876.96     7.4 3876.16    8.48 3875.72
   10.26 3875.04   10.98 3874.75   17.15 3872.47   18.39 3871.96   18.85 3871.76
   20.87 3870.75   21.17  3870.6   21.71 3870.38    22.1 3870.26   24.58 3869.81
   26.25 3869.66   27.95 3869.53   28.87 3869.45    30.3 3869.37   30.78 3869.36
   31.73 3869.44   35.31 3869.87   36.97  3870.1   38.11  3870.3   39.81 3870.55
    41.5 3870.87   43.18 3871.25    44.13871.438    44.4  3871.5   45.64 3871.79
   46.04 3871.87   46.88    3872    48.9 3872.05   49.62 3872.04   51.67    3872
   57.49 3871.82   58.03 3871.82   58.92 3871.91   60.51 3872.12   61.07 3872.21
   61.83 3872.35   66.92  3872.4    67.13872.407   67.94 3872.44   68.61 3872.46
   70.42 3872.53   71.66 3872.61   75.38 3872.75   76.61 3872.83    78.53872.905
   80.39 3872.98   81.57 3873.05   85.28  3873.2      89 3873.37   93.98 3873.57
   97.67 3873.78   98.91 3873.88  100.15 3873.95  101.39 3874.05   101.53874.057
  102.57 3874.12   105.1 3874.33  106.34  3874.4  109.83 3874.66

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .035   60.51    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  109.83             45.9    45.9    45.9            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 910

INPUT
Description:
Station Elevation Data    num=      69
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3879.83     2.2 3879.06     3.6 3878.57     5.7 3877.87     8.1 3877.09
     9.5 3876.58    10.3 3876.34    12.4  3875.6    14.4 3874.85    16.5 3874.12
    19.4 3873.03    19.8 3872.89    20.5 3872.63    21.7 3872.27    22.8 3871.89
    23.1 3871.81    23.5 3871.68    27.9 3870.23    31.6 3869.09      32 3868.99
    32.3 3868.92    33.1  3868.8    33.4 3868.75    34.3 3868.57      35  3868.4
    36.6 3868.03    36.7 3868.01    38.9 3867.97    39.1 3867.97    39.7 3867.97
      40 3867.97    40.4 3867.96    41.1 3867.97    43.2 3867.97    43.3 3867.97
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    43.4 3867.97    43.7 3867.96    44.1 3867.94    44.8 3867.9244.99986 3867.92
    45.2 3867.92    45.6 3867.93    45.7 3867.93    46.3 3867.98    46.3 3867.99
    46.9 3868.06      47 3868.09    47.3 3868.14    47.8 3868.25    48.5 3868.42
    48.9 3868.52    49.2 3868.57    49.2 3868.59    49.3 3868.61      50 3868.76
    50.3 3868.83    50.7  3868.9    51.5 3868.87      61 3868.07    61.7 3868.04
    62.83868.019    80.1 3867.68    80.2 3867.68      933867.969   100.6 3868.14
   100.6 3870.01  100.64  3870.1   100.7 3870.09     115  3870.6

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .035    50.7    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          62.8     115             12.8    12.8    12.8            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 897

INPUT
Description:
Station Elevation Data    num=      34
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3877.21     5.7 3875.39    7.13 3874.91    7.96 3874.66   11.05 3873.61
   13.56 3872.71   15.42    3872    17.9 3870.98      20 3870.17   20.71 3869.91
   22.14 3869.44   23.57 3869.01   25.36 3868.56   26.43 3868.32   28.58  3867.8
   30.01  3867.5   30.72 3867.38   32.87 3867.09   34.07 3866.98   36.44 3866.94
   40.02    3867   41.51 3867.45   42.18 3867.64   42.67 3867.74    50.33867.248
      56 3866.88      56 3866.62      70 3866.28    80.3 3866.42      84 3866.47
      84 3866.68      91 3866.78      91 3868.78  106.59  3869.2

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .035   42.67    .018

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0      91             11.6    11.6    11.6            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 885

INPUT
Description:
Station Elevation Data    num=      21
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
```

```
       0 3872.84     .72 3872.59    2.15 3872.06   18.91 3867.07   20.18 3866.88
    21.3  3866.7   26.18  3866.3   27.09 3866.31   27.79 3866.37   30.32 3866.86
   31.36 3866.86    36.13866.346   42.16 3865.69   42.99 3865.42   58.27 3864.98
    65.9 3865.09   71.42 3865.17   72.59 3865.62    77.4 3865.71    77.4 3867.72
   93.18  3868.2

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .035   31.36    .018

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          2.15    77.4              9.5     9.5     9.5            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 876

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3866.24.2000008 3866.243.299999 3865.92   12.52 3864.97   12.52 3864.18
   26.52 3863.92   40.52 3864.18   40.52 3865.08   46.03 3865.18   46.03 3867.04
   61.16 3867.25

Manning's n Values        num=       1
     Sta   n Val
       0    .018

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      3.299999   46.03              9.5     9.5     9.5            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 866

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3865.61      .4 3865.61     3.53865.293   11.84 3864.44   11.84 3863.11
   25.84 3862.87   39.84 3863.11   39.84 3864.54   44.95 3864.64   44.95 3866.36
   59.22 3866.55

Manning's n Values        num=       1
     Sta   n Val
```

```
       0    .018

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          3.5   44.95              9.5     9.5     9.5            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 857

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3864.99      .6 3864.99     5.43864.494   11.16  3863.9   11.16 3862.03
   25.16 3861.81   39.16 3862.03   39.16    3864   43.88 3864.09   43.88 3865.68
   57.28 3865.86

Manning's n Values        num=       1
     Sta   n Val
       0    .018

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         11.16   39.16              9.5     9.5     9.5            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 847

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3864.37      .8 3864.37     7.83863.647   10.48 3863.37   10.48 3860.96
   24.48 3860.75   38.48 3860.96   38.48 3863.46   42.81 3863.54   42.81    3865
   55.34 3865.16

Manning's n Values        num=       1
     Sta   n Val
       0    .018

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         10.48   38.48              9.5     9.5     9.5            .03      .05

CROSS SECTION
```

RIVER: River 1
REACH: Reach 1 RS: 838

INPUT
Description:
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3863.75	1	3863.75	7.43	863.088	9.8	3862.84	9.8	3859.88
23.8	3859.69	37.8	3859.88	37.8	3862.92	41.73	3862.99	41.73	3864.32
53.4	3864.47								

Manning's n Values num= 1

Sta	n Val
0	.018

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
9.8	37.8	9.5	9.5	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 828

INPUT
Description:
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3863.12	1.2	3863.12	5.13	862.721	9.12	3862.31	9.12	3858.8
23.12	3858.64	37.12	3858.8	37.12	3862.38	40.66	3862.45	40.66	3863.64
51.46	3863.77								

Manning's n Values num= 1

Sta	n Val
0	.018

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
9.12	37.12	9.5	9.5	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 819

INPUT
Description:
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3862.5	1.4	3862.5	8.44	3861.78	8.44	3857.73	22.44	3857.58

```
   36.44 3857.73   36.44 3861.84   39.59  3861.9   39.59 3862.96   49.52 3863.08

Manning's n Values        num=       1
     Sta   n Val
       0    .018

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          8.44   36.44              9.5     9.5     9.5            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 809

INPUT
Description:
Station Elevation Data    num=      10
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3861.88     1.6 3861.88    7.76 3861.24    7.76 3856.65   21.76 3856.52
   35.76 3856.65   35.76  3861.3   38.51 3861.35   38.51 3862.28   47.58 3862.38

Manning's n Values        num=       1
     Sta   n Val
       0    .018

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          7.76   35.76              9.5     9.5     9.5            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 800

INPUT
Description:
Station Elevation Data    num=      10
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3861.26     1.8 3861.26    7.08 3860.71    7.08 3855.58   21.08 3855.46
   35.08 3855.58   35.08 3860.76   37.44  3860.8   37.44  3861.6   45.64 3861.69

Manning's n Values        num=       1
     Sta   n Val
       0    .018

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          7.08   35.08              9.5     9.5     9.5            .03      .05

CROSS SECTION
```

RIVER: River 1
REACH: Reach 1 RS: 790

INPUT
Description:
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3860.63	2	3860.63	6.4	3860.18	6.4	3854.5	20.4	3854.41
34.4	3854.5	34.4	3860.22	36.37	3860.26	36.37	3860.92	43.7	3860.99

Manning's n Values num= 1

Sta	n Val
0	.018

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
6.4	34.4	9.5	9.5	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 781

INPUT
Description:
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3860.01	2.2	3860.01	5.72	3859.65	5.72	3853.42	19.72	3853.35
33.72	3853.42	33.72	3859.68	35.29	3859.71	35.29	3860.24	41.76	3860.3

Manning's n Values num= 1

Sta	n Val
0	.018

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
5.72	33.72	9.5	9.5	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 771

INPUT
Description:
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3859.39	2.4	3859.39	5.04	3859.12	5.04	3852.35	19.04	3852.29

```
   33.04 3852.35   33.04 3859.14   34.22 3859.16   34.22 3859.56   39.82  3859.6

Manning's n Values        num=       1
     Sta   n Val
       0    .018

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          5.04   33.04              9.5     9.5     9.5            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 762

INPUT
Description:
Station Elevation Data    num=      10
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3858.77     2.6 3858.77    4.36 3858.58    4.36 3851.27   18.36 3851.23
   32.36 3851.27   32.36  3858.6   33.15 3858.61   33.15 3858.88   37.88 3858.91

Manning's n Values        num=       1
     Sta   n Val
       0    .018

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          4.36   32.36              9.5     9.5     9.5            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 752

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3858.142.799999 3858.14    3.68 3858.05    3.68  3850.23.700001  3850.2
   17.68 3850.18   31.68  3850.2   31.68 3858.06   32.07 3858.07   32.07  3858.2
   35.94 3858.21

Manning's n Values        num=       1
     Sta   n Val
       0    .018

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          3.68   31.68              9.4     9.4     9.4            .03      .05
```

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 743

INPUT
Description:
Station Elevation Data num= 7

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3857.52	3	3857.52	3	3849.12	17	3849.12	31	3849.12
31	3857.52	34	3857.52						

Manning's n Values num= 1

Sta	n Val
0	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
3	31	1.9	1.9	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 741

INPUT
Description:
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3854.81	0	3848.81	28	3848.81	28	3854.81

Manning's n Values num= 1

Sta	n Val
0	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	28	5	5	.03	.05

Cross Section Lid
num= 2

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
0	3856.81	3854.81	28	3856.81	3854.81

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 735.90*

INPUT

```
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3854.56       0 3848.56    26.1 3848.56    26.1 3854.56

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013    26.1    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0    26.1                5       5       5             .03      .05
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3856.46 3854.56    26.1 3856.46 3854.56

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 730.80*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3854.31       0 3848.31    24.2 3848.31    24.2 3854.31

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013    24.2    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0    24.2                5       5       5             .03      .05
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3856.11 3854.31    24.2 3856.11 3854.31

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 725.70*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3854.06       0 3848.06    22.3 3848.06    22.3 3854.06
```

```
Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013    22.3    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0    22.3                5       5       5            .03      .05
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3855.76 3854.06    22.3 3855.76 3854.06

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 720.60*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3853.81       0 3847.81    20.4 3847.81    20.4 3853.81

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013    20.4    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0    20.4                5       5       5            .03      .05
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3855.41 3853.81    20.4 3855.41 3853.81

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 715.50*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3853.56       0 3847.56    18.5 3847.56    18.5 3853.56

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013    18.5    .013
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0    18.5                5       5       5            .03      .05
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3855.06 3853.56    18.5 3855.06 3853.56

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 710.40*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3853.31       0 3847.31    16.6 3847.31    16.6 3853.31

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013    16.6    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0    16.6                5       5       5            .03      .05
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3854.71 3853.31    16.6 3854.71 3853.31

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 705.30*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3853.06       0 3847.06    14.7 3847.06    14.7 3853.06

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013    14.7    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0    14.7                5       5       5            .03      .05
Cross Section Lid
```

```
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3854.36 3853.06    14.7 3854.36 3853.06

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 700.20*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3852.81       0 3846.81    12.8 3846.81    12.8 3852.81

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013    12.8    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0    12.8                5       5       5            .03      .05
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3854.01 3852.81    12.8 3854.01 3852.81

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 695.10*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3852.56       0 3846.56    10.9 3846.56    10.9 3852.56

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013    10.9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0    10.9                5       5       5            .03      .05
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3853.66 3852.56    10.9 3853.66 3852.56
```

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 690

INPUT
Description:
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3852.31	0	3846.31	9	3846.31	9	3852.31

Manning's n Values num= 1

Sta	n Val
0	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	9	4.7	4.7	.03	.05

Cross Section Lid
num= 2

Sta Hi Cord	Lo Cord	Sta Hi Cord	Lo Cord
0 3853.31	3852.31	9 3853.31	3852.31

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 685.33*

INPUT
Description:
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3852.07	0	3846.07	9	3846.07	9	3852.07

Manning's n Values num= 2

Sta	n Val	Sta	n Val
0	.013	9	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	9	4.7	4.7	.03	.05

Cross Section Lid
num= 2

Sta Hi Cord	Lo Cord	Sta Hi Cord	Lo Cord
0 3853.07	3852.07	9 3853.07	3852.07

CROSS SECTION

RIVER: River 1

REACH: Reach 1 RS: 680.67*

INPUT
Description:
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3851.84	0	3845.84	9	3845.84	9	3851.84

Manning's n Values num= 2

Sta	n Val	Sta	n Val
0	.013	9	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	9	4.7	4.7	.03	.05

Cross Section Lid
num= 2

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
0	3852.84	3851.84	9	3852.84	3851.84

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 676.00*

INPUT
Description:
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3851.6	0	3845.6	9	3845.6	9	3851.6

Manning's n Values num= 2

Sta	n Val	Sta	n Val
0	.013	9	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	9	4.7	4.7	.03	.05

Cross Section Lid
num= 2

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
0	3852.6	3851.6	9	3852.6	3851.6

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 671.33*

INPUT
Description:

```
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3851.37       0 3845.37       9 3845.37       9 3851.37

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9              4.7     4.7     4.7             .03      .05
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3852.37 3851.37       9 3852.37 3851.37

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 666.67*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3851.14       0 3845.14       9 3845.14       9 3851.14

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9              4.7     4.7     4.7             .03      .05
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3852.14 3851.14       9 3852.14 3851.14

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 662

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  3850.9       0  3844.9       9  3844.9       9  3850.9
```

```
Manning's n Values        num=       1
     Sta   n Val
       0    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9             4.94    4.94    4.94            .03      .05
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0  3851.9  3850.9       9  3851.9  3850.9

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 657.05*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3850.65       0 3844.65       9 3844.65       9 3850.65

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9             4.94    4.94    4.94            .03      .05
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3851.65 3850.65       9 3851.65 3850.65

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 652.11*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3850.39       0 3844.39       9 3844.39       9 3850.39

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9             4.94    4.94    4.94            .03      .05
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3851.39 3850.39       9 3851.39 3850.39

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 647.16*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3850.14       0 3844.14       9 3844.14       9 3850.14

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9             4.94    4.94    4.94            .03      .05
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3851.14 3850.14       9 3851.14 3850.14

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 642.21*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3849.88       0 3843.88       9 3843.88       9 3849.88

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9             4.94    4.94    4.94            .03      .05
Cross Section Lid
    num=       2
```

```
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3850.88 3849.88       9 3850.88 3849.88

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 637.26*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3849.63       0 3843.63       9 3843.63       9 3849.63

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9             4.94    4.94    4.94            .03      .05
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3850.63 3849.63       9 3850.63 3849.63

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 632.32*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3849.37       0 3843.37       9 3843.37       9 3849.37

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9             4.94    4.94    4.94            .03      .05
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3850.37 3849.37       9 3850.37 3849.37

CROSS SECTION
```

```
RIVER: River 1
REACH: Reach 1            RS: 627.37*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3849.12       0 3843.12       9 3843.12       9 3849.12

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9             4.94    4.94    4.94            .03      .05
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3850.12 3849.12       9 3850.12 3849.12

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 622.42*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3848.87       0 3842.87       9 3842.87       9 3848.87

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9             4.94    4.94    4.94            .03      .05
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3849.87 3848.87       9 3849.87 3848.87

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 617.47*
```

```
INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3848.61       0 3842.61       9 3842.61       9 3848.61

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9             4.94    4.94    4.94            .03      .05
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3849.61 3848.61       9 3849.61 3848.61

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 612.53*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3848.36       0 3842.36       9 3842.36       9 3848.36

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9             4.94    4.94    4.94            .03      .05
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3849.36 3848.36       9 3849.36 3848.36

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 607.58*

INPUT
Description:
Station Elevation Data    num=       4
```

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  3848.1       0  3842.1       9  3842.1       9  3848.1

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9             4.94    4.94    4.94            .03      .05
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0  3849.1  3848.1       9  3849.1  3848.1

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 602.63*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3847.85       0 3841.85       9 3841.85       9 3847.85

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9             4.94    4.94    4.94            .03      .05
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3848.85 3847.85       9 3848.85 3847.85

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 597.68*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  3847.6       0  3841.6       9  3841.6       9  3847.6

Manning's n Values        num=       2
```

```
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9             4.94    4.94    4.94            .03      .05
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0  3848.6  3847.6       9  3848.6  3847.6

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 592.74*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3847.34       0 3841.34       9 3841.34       9 3847.34

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9             4.94    4.94    4.94            .03      .05
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3848.34 3847.34       9 3848.34 3847.34

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 587.79*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3847.09       0 3841.09       9 3841.09       9 3847.09

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
```

```
            0       9             4.94    4.94    4.94            .03      .05
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3848.09 3847.09       9 3848.09 3847.09

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 582.84*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3846.83       0 3840.83       9 3840.83       9 3846.83

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            0       9             4.94    4.94    4.94            .03      .05
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3847.83 3846.83       9 3847.83 3846.83

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 577.89*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3846.58       0 3840.58       9 3840.58       9 3846.58

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            0       9             4.94    4.94    4.94            .03      .05
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
```

```
       0 3847.58 3846.58       9 3847.58 3846.58

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 572.95*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3846.32       0 3840.32       9 3840.32       9 3846.32

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9             4.94    4.94    4.94            .03      .05
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3847.32 3846.32       9 3847.32 3846.32

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 568.00*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3846.07       0 3840.07       9 3840.07       9 3846.07

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9             4.94    4.94    4.94            .03      .05
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3847.07 3846.07       9 3847.07 3846.07

CROSS SECTION
```

```
RIVER: River 1
REACH: Reach 1            RS: 563.05*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3845.82       0 3839.82       9 3839.82       9 3845.82

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9             4.94    4.94    4.94            .03      .05
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3846.82 3845.82       9 3846.82 3845.82

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 558.11*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3845.56       0 3839.56       9 3839.56       9 3845.56

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9             4.94    4.94    4.94            .03      .05
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3846.56 3845.56       9 3846.56 3845.56

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 553.16*
```

```
INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3845.31       0 3839.31       9 3839.31       9 3845.31

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9             4.94    4.94    4.94            .03      .05
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3846.31 3845.31       9 3846.31 3845.31

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 548.21*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3845.05       0 3839.05       9 3839.05       9 3845.05

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9             4.94    4.94    4.94            .03      .05
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3846.05 3845.05       9 3846.05 3845.05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 543.26*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
```

```
       0  3844.8       0  3838.8       9  3838.8       9  3844.8

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9             4.94    4.94    4.94            .03      .05
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0  3845.8  3844.8       9  3845.8  3844.8

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 538.32*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3844.54       0 3838.54       9 3838.54       9 3844.54

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9             4.94    4.94    4.94            .03      .05
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3845.54 3844.54       9 3845.54 3844.54

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 533.37*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3844.29       0 3838.29       9 3838.29       9 3844.29

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
```

```
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9             4.94    4.94    4.94            .03      .05
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3845.29 3844.29       9 3845.29 3844.29

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 528.42*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3844.04       0 3838.04       9 3838.04       9 3844.04

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9             4.94    4.94    4.94            .03      .05
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3845.04 3844.04       9 3845.04 3844.04

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 523.47*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3843.78       0 3837.78       9 3837.78       9 3843.78

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9             4.94    4.94    4.94            .03      .05
```

```
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3844.78 3843.78       9 3844.78 3843.78

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 518.53*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3843.53       0 3837.53       9 3837.53       9 3843.53

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9             4.94    4.94    4.94            .03      .05
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3844.53 3843.53       9 3844.53 3843.53

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 513.58*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3843.27       0 3837.27       9 3837.27       9 3843.27

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9             4.94    4.94    4.94            .03      .05
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3844.27 3843.27       9 3844.27 3843.27
```

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 508.63*

INPUT
Description:
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3843.02	0	3837.02	9	3837.02	9	3843.02

Manning's n Values num= 2

Sta	n Val	Sta	n Val
0	.013	9	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	9	4.94	4.94	.03	.05

Cross Section Lid
num= 2

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
0	3844.02	3843.02	9	3844.02	3843.02

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 503.68*

INPUT
Description:
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3842.77	0	3836.77	9	3836.77	9	3842.77

Manning's n Values num= 2

Sta	n Val	Sta	n Val
0	.013	9	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	9	4.94	4.94	.03	.05

Cross Section Lid
num= 2

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
0	3843.77	3842.77	9	3843.77	3842.77

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 498.74*

INPUT
Description:
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3842.51	0	3836.51	9	3836.51	9	3842.51

Manning's n Values num= 2

Sta	n Val	Sta	n Val
0	.013	9	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	9	4.94	4.94	.03	.05

Cross Section Lid
num= 2

Sta Hi Cord	Lo Cord	Sta Hi Cord	Lo Cord
0 3843.51	3842.51	9 3843.51	3842.51

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 493.79*

INPUT
Description:
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3842.26	0	3836.26	9	3836.26	9	3842.26

Manning's n Values num= 2

Sta	n Val	Sta	n Val
0	.013	9	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	9	4.94	4.94	.03	.05

Cross Section Lid
num= 2

Sta Hi Cord	Lo Cord	Sta Hi Cord	Lo Cord
0 3843.26	3842.26	9 3843.26	3842.26

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 488.84*

INPUT

Description:
Station Elevation Data   num=   4
     Sta   Elev   Sta   Elev   Sta   Elev   Sta   Elev
       0   3842   0   3836   9   3836   9   3842

Manning's n Values   num=   2
     Sta   n Val   Sta   n Val
       0   .013   9   .013

Bank Sta: Left   Right   Lengths: Left Channel   Right   Coeff Contr.   Expan.
             0   9   4.94   4.94   4.94   .03   .05
Cross Section Lid
    num=   2
     Sta Hi Cord Lo Cord   Sta Hi Cord Lo Cord
       0   3843   3842   9   3843   3842

CROSS SECTION

RIVER: River 1
REACH: Reach 1   RS: 483.89*

INPUT
Description:
Station Elevation Data   num=   4
     Sta   Elev   Sta   Elev   Sta   Elev   Sta   Elev
       0 3841.75   0 3835.75   9 3835.75   9 3841.75

Manning's n Values   num=   2
     Sta   n Val   Sta   n Val
       0   .013   9   .013

Bank Sta: Left   Right   Lengths: Left Channel   Right   Coeff Contr.   Expan.
             0   9   4.94   4.94   4.94   .03   .05
Cross Section Lid
    num=   2
     Sta Hi Cord Lo Cord   Sta Hi Cord Lo Cord
       0 3842.75 3841.75   9 3842.75 3841.75

CROSS SECTION

RIVER: River 1
REACH: Reach 1   RS: 478.95*

INPUT
Description:
Station Elevation Data   num=   4
     Sta   Elev   Sta   Elev   Sta   Elev   Sta   Elev
       0 3841.49   0 3835.49   9 3835.49   9 3841.49

```
Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9             4.94    4.94    4.94            .03      .05
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3842.49 3841.49       9 3842.49 3841.49

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 474

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3841.24       0 3835.24       9 3835.24       9 3841.24

Manning's n Values        num=       1
     Sta   n Val
       0    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9             9.72    9.72    9.72             .1       .3
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3842.24 3841.24       9 3842.24 3841.24

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 464.30*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3841.14       0 3835.14       9 3835.14       9 3841.14

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9             9.72    9.72    9.72             .1       .3
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3842.14 3841.14       9 3842.14 3841.14

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 454.61*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3841.05       0 3835.05       9 3835.05       9 3841.05

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9             9.72    9.72    9.72             .1       .3
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3842.05 3841.05       9 3842.05 3841.05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 444.91*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3840.95       0 3834.95       9 3834.95       9 3840.95

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9             9.72    9.72    9.72             .1       .3
Cross Section Lid
```

```
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3841.95 3840.95       9 3841.95 3840.95

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 435.22*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3840.85       0 3834.85       9 3834.85       9 3840.85

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9             9.72    9.72    9.72             .1       .3
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3841.85 3840.85       9 3841.85 3840.85

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 425.52*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3840.76       0 3834.76       9 3834.76       9 3840.76

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9             9.72    9.72    9.72             .1       .3
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3841.76 3840.76       9 3841.76 3840.76
```

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 415.83*

INPUT
Description:
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3840.66	0	3834.66	9	3834.66	9	3840.66

Manning's n Values num= 2

Sta	n Val	Sta	n Val
0	.013	9	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	9	9.72	9.72	.1	.3

Cross Section Lid
num= 2

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
0	3841.66	3840.66	9	3841.66	3840.66

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 406.13*

INPUT
Description:
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3840.56	0	3834.56	9	3834.56	9	3840.56

Manning's n Values num= 2

Sta	n Val	Sta	n Val
0	.013	9	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	9	9.72	9.72	.1	.3

Cross Section Lid
num= 2

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
0	3841.56	3840.56	9	3841.56	3840.56

CROSS SECTION

RIVER: River 1

REACH: Reach 1 RS: 396.43*

INPUT
Description:
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3840.46	0	3834.46	9	3834.46	9	3840.46

Manning's n Values num= 2

Sta	n Val	Sta	n Val
0	.013	9	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	9	9.72	9.72	.1	.3

Cross Section Lid
num= 2

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
0	3841.46	3840.46	9	3841.46	3840.46

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 386.74*

INPUT
Description:
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3840.37	0	3834.37	9	3834.37	9	3840.37

Manning's n Values num= 2

Sta	n Val	Sta	n Val
0	.013	9	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	9	9.72	9.72	.1	.3

Cross Section Lid
num= 2

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
0	3841.37	3840.37	9	3841.37	3840.37

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 377.04*

INPUT
Description:

```
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3840.27       0 3834.27       9 3834.27       9 3840.27

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9             9.72    9.72    9.72             .1       .3
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3841.27 3840.27       9 3841.27 3840.27

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 367.35*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3840.17       0 3834.17       9 3834.17       9 3840.17

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9             9.72    9.72    9.72             .1       .3
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3841.17 3840.17       9 3841.17 3840.17

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 357.65*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3840.08       0 3834.08       9 3834.08       9 3840.08
```

```
Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9             9.72    9.72    9.72             .1       .3
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3841.08 3840.08       9 3841.08 3840.08

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 347.96*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3839.98       0 3833.98       9 3833.98       9 3839.98

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9             9.72    9.72    9.72             .1       .3
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3840.98 3839.98       9 3840.98 3839.98

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 338.26*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3839.88       0 3833.88       9 3833.88       9 3839.88

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9             9.72    9.72    9.72             .1       .3
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3840.88 3839.88       9 3840.88 3839.88

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 328.57*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3839.79       0 3833.79       9 3833.79       9 3839.79

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9             9.72    9.72    9.72             .1       .3
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3840.79 3839.79       9 3840.79 3839.79

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 318.87*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3839.69       0 3833.69       9 3833.69       9 3839.69

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9             9.72    9.72    9.72             .1       .3
Cross Section Lid
    num=       2
```

```
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3840.69 3839.69       9 3840.69 3839.69

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 309.17*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3839.59       0 3833.59       9 3833.59       9 3839.59

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9             9.72    9.72    9.72             .1       .3
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3840.59 3839.59       9 3840.59 3839.59

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 299.48*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3839.49       0 3833.49       9 3833.49       9 3839.49

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9             9.72    9.72    9.72             .1       .3
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3840.49 3839.49       9 3840.49 3839.49

CROSS SECTION
```

RIVER: River 1
REACH: Reach 1 RS: 289.78*

INPUT
Description:
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3839.4	0	3833.4	9	3833.4	9	3839.4

Manning's n Values num= 2

Sta	n Val	Sta	n Val
0	.013	9	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	9	9.72	9.72	.1	.3

Cross Section Lid
num= 2

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
0	3840.4	3839.4	9	3840.4	3839.4

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 280.09*

INPUT
Description:
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3839.3	0	3833.3	9	3833.3	9	3839.3

Manning's n Values num= 2

Sta	n Val	Sta	n Val
0	.013	9	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	9	9.72	9.72	.1	.3

Cross Section Lid
num= 2

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
0	3840.3	3839.3	9	3840.3	3839.3

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 270.39*

```
INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  3839.2       0  3833.2       9  3833.2       9  3839.2

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9             9.72    9.72    9.72             .1       .3
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0  3840.2  3839.2       9  3840.2  3839.2

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 260.70*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3839.11       0 3833.11       9 3833.11       9 3839.11

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9             9.72    9.72    9.72             .1       .3
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3840.11 3839.11       9 3840.11 3839.11

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 251

INPUT
Description:
Station Elevation Data    num=       4
```

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3839.01       0 3833.01       9 3833.01       9 3839.01

Manning's n Values        num=       1
     Sta   n Val
       0    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9              8.1     8.1     8.1             .03      .05
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3840.01 3839.01       9 3840.01 3839.01

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 242

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3838.93       0 3832.93       9 3832.93       9 3838.93

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9              8.6     8.6     8.6             .03      .05
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3839.93 3838.93       9 3839.93 3838.93

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 234

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3838.84       0 3832.84       9 3832.84       9 3838.84

Manning's n Values        num=       2
```

```
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9              8.6     8.6     8.6            .03      .05
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3839.84 3838.84       9 3839.84 3838.84

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 225

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3838.76       0 3832.76       9 3832.76       9 3838.76

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0       9              8.5     8.5     8.5            .03      .05
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3839.76 3838.76       9 3839.76 3838.76

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 217

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3838.67       0 3832.67       9 3832.67       9 3838.67

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
```

```
            0       9              8.5     8.5     8.5            .03      .05
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3839.67 3838.67       9 3839.67 3838.67

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 208

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3838.58       0 3832.58       9 3832.58       9 3838.58

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .013       9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            0       9              8.5     8.5     8.5            .03      .05
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 3839.58 3838.58       9 3839.58 3838.58

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 200

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  3838.5       0  3832.5       9  3832.5       9  3838.5

Manning's n Values        num=       1
     Sta   n Val
       0    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            0       9               .9      .9      .9            .03       .1
Cross Section Lid
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
```

```
       0  3839.5  3838.5       9  3839.5  3838.5

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 199

INPUT
Description:
Station Elevation Data    num=      27
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
      .1 3841.97    3.25 3841.97    3.25 3832.47     7.2 3832.47     9.4 3832.47
    19.8    3834    24.6 3834.52    25.7 3834.62      26 3834.65    30.3 3835.12
      31 3835.19    31.4 3835.22    31.7 3835.25    32.8 3835.37    33.1 3835.41
    33.5 3835.44    33.8 3835.47    34.2 3835.51    34.5 3835.55    34.9 3835.59
    35.2 3835.63    35.6 3835.66      36 3835.71    36.3 3835.74    36.6 3835.78
      37 3835.8137.84155 3835.89

Manning's n Values        num=       1
     Sta   n Val
      .1    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            .137.84155             1.98    1.98    1.98            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 197.00*

INPUT
Description:
Station Elevation Data    num=      27
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     .08 3841.97    2.82 3841.97    2.82 3832.47    5.98 3832.47    7.74 3832.47
   19.05 3833.95   24.27 3834.49   25.47 3834.59   25.79 3834.63   30.47 3835.11
   31.23 3835.18   31.67 3835.22   31.99 3835.25   33.19 3835.37   33.52 3835.41
   33.95 3835.44   34.28 3835.48   34.71 3835.52   35.04 3835.56   35.47  3835.6
    35.8 3835.64   36.24 3835.67   36.67 3835.72      37 3835.75   37.32 3835.79
   37.76 3835.83   38.67 3835.91

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
     .08    .018   38.67    .018

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           .08   38.67             1.98    1.98    1.98            .03      .05
```

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 195.00*

INPUT
Description:
Station Elevation Data num= 27

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
.06	3841.97	2.39	3841.97	2.39	3832.47	4.76	3832.47	6.08	3832.47
18.3	3833.9	23.94	3834.45	25.24	3834.57	25.59	3834.6	30.64	3835.1
31.46	3835.17	31.93	3835.21	32.29	3835.25	33.58	3835.37	33.93	3835.41
34.4	3835.45	34.76	3835.48	35.23	3835.53	35.58	3835.56	36.05	3835.61
36.4	3835.65	36.87	3835.68	37.34	3835.73	37.69	3835.77	38.05	3835.81
38.52	3835.84	39.5	3835.93						

Manning's n Values num= 2

Sta	n Val	Sta	n Val
.06	.024	39.5	.024

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
.06	39.5	1.98	1.98	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 193.00*

INPUT
Description:
Station Elevation Data num= 27

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
.04	3841.97	1.96	3841.97	1.96	3832.47	3.54	3832.47	4.42	3832.47
17.55	3833.86	23.61	3834.42	25	3834.54	25.38	3834.58	30.81	3835.09
31.7	3835.17	32.2	3835.21	32.58	3835.24	33.97	3835.37	34.35	3835.41
34.85	3835.45	35.23	3835.49	35.74	3835.53	36.12	3835.57	36.62	3835.62
37	3835.66	37.51	3835.7	38.01	3835.75	38.39	3835.78	38.77	3835.82
39.27	3835.86	40.34	3835.96						

Manning's n Values num= 2

Sta	n Val	Sta	n Val
.04	.029	40.34	.029

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
.04	40.34	1.98	1.98	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 191.00*

INPUT
Description:
Station Elevation Data num= 27

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
.02	3841.97	1.53	3841.97	1.53	3832.47	2.32	3832.47	2.76	3832.47
16.8	3833.81	23.29	3834.39	24.77	3834.52	25.18	3834.55	30.98	3835.08
31.93	3835.16	32.47	3835.2	32.87	3835.24	34.36	3835.37	34.77	3835.41
35.31	3835.46	35.71	3835.49	36.25	3835.54	36.66	3835.58	37.2	3835.63
37.6	3835.66	38.14	3835.71	38.68	3835.76	39.09	3835.79	39.49	3835.83
40.03	3835.88	41.17	3835.98						

Manning's n Values num= 2

Sta	n Val	Sta	n Val
.02	.035	41.17	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
.02	41.17	1.98	1.98	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 189

INPUT
Description:
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3841.97	1.1	3841.97	1.1	3832.47	42	3836

Manning's n Values num= 1

Sta	n Val
0	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	42	12.2	12.2	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 177

INPUT
Description:
Station Elevation Data num= 158

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3840.62	.9	3836.57	13.9	3834.77	14.3	3834.24	14.6	3832.59
15	3832.07	15.3	3832.15	15.6	3832.25	16	3832.41	16.6	3832.56
16.8	3832.61	16.9	3832.68	17.5	3832.89	19.6	3833.59	19.6	3833.6
20.3	3833.85	21	3834.09	21.7	3834.29	21.9	3834.3	22.2	3834.31
22.7	3834.28	23.2	3834.25	24.2	3834.11	25.2	3833.97	26.2	3833.8
26.7	3833.72	27.2	3833.64	28.2	3833.46	28.6	3833.39	28.7	3833.38
29.2	3833.3	29.6	3833.28	29.7	3833.28	30.2	3833.26	33.7	3833.26
34.2	3833.26	34.6	3833.27	34.7	3833.27	35.2	3833.28	35.6	3833.28
35.7	3833.28	36.2	3833.28	37.2	3833.22	37.6	3833.2	37.8	3833.19
38.2	3833.17	38.6	3833.14	38.8	3833.13	39.2	3833.1	39.6	3833.03
39.8	3833	40.2	3832.94	40.6	3832.87	40.8	3832.83	41.2	3832.76
41.5	3832.7	41.8	3832.66	42.2	3832.6	42.5	3832.54	42.8	3832.5
43.2	3832.45	43.5	3832.39	45.2	3832.08	45.8	3831.94	45.8	3831.93
50.8	3831.77	51.3	3831.77	51.5	3831.77	52	3831.75	52.9	3831.81
53.1	3831.8	54	3831.85	54.3	3831.86	54.4	3831.87	54.5	3831.89
56.5	3832.09	56.6	3832.1	56.7	3832.12	57.3	3832.2	57.8	3832.26
58	3832.3	58.5	3832.35	58.8	3832.38	58.9	3832.4	59.5	3832.47
59.5	3832.48	60.1	3832.54	60.2	3832.54	61	3832.51	61.2	3832.5
61.7	3832.51	62.2	3832.52	62.4	3832.52	62.4	3832.53	62.5	3832.53
63.2	3832.56	63.5	3832.58	63.9	3832.6	64.5	3832.62	64.7	3832.63
64.9	3832.64	65.4	3832.66	65.9	3832.69	66.1	3832.7	66.5	3832.7
66.8	3832.7	67	3832.7	70.4	3832.81	70.5	3832.81	71.6	3832.85
72	3832.87	72.5	3832.9	72.7	3832.91	72.8	3832.91	73.1	3832.94
73.4	3832.95	73.9	3832.98	75.1	3833.08	75.6	3833.12	75.9	3833.15
76.2	3833.18	76.3	3833.19	76.5	3833.2	77.1	3833.25	77.4	3833.28
77.8	3833.31	78.5	3833.37	78.5	3833.38	78.6	3833.38	79.3	3833.44
79.7	3833.47	80	3833.5	80.5	3833.54	81.3	3833.59	82	3833.64
82.2	3833.66	82.5	3833.68	83.2	3833.74	84.1	3833.82	84.3	3833.84
84.4	3833.84	84.5	3833.85	85.1	3833.91	85.9	3833.97	86.5	3834.02
86.6	3834.03	86.6	3834.04	86.8	3834.05	87.3	3834.09	87.8	3834.13
88.1	3834.16	88.5	3834.2	88.8	3834.22	88.9	3834.23	89.6	3834.3
90.3	3834.36	90.5	3834.49	0.64954	3834.42				

Manning's n Values num= 1

Sta	n Val
0	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
90.64954		7.8	7.8	.03	.05

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
0	22.2	3834.31	F

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 169

INPUT
Description:
Station Elevation Data num= 72

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3840.04	.62	3840.03	.82	3839.66	1.04	3838.5	1.53	3835.45
1.97	3833	2.23	3832.03	2.52	3831.69	3.33	3831.67	6.04	3831.68
7.4	3831.65	11.46	3831.66	12.82	3831.63	14.37	3831.63	14.97	3831.68
15.53	3831.83	16.39	3832.11	20.33	3833.411	21.77	3833.9	22.05	3833.98
22.31	3834.02	22.76	3834.05	23.66	3833.98	24.47	3833.88	24.5123	3833.873
25.47	3833.71	26.47	3833.45	27.27	3833.29	32.48	3832.25	32.73	3832.212
34.11	3831.97	35.48	3831.72	38.49	3831.63	40.49	3831.35	41.71	3831.14
42.66	3831.01	43.37	3830.95	45.5	3830.72	46.5	3830.65	48.36	3830.46
48.5	3830.45	49.12	3830.46	50.54	3830.58	51.57	3830.64	53.76	3830.84
55.67	3830.92	57.73	3831.02	60.81	3831.33	61.83	3831.41	66.97	3831.52
67.92	3831.57	70.05	3831.61	71.07	3831.67	72.11	3831.69	74.15	3831.78
75.42	3831.87	76.12	3831.9	79.57	3832.4	80.38	3832.5	84.85	3833.12
87.04	3833.37	87.593	3833.439	89.27	3833.65	90.44	3833.83	91.56	3833.97
93.74	3834.31	94.92	3834.46	96.04	3834.63	98.27	3835	100.33	3835.32
104.98	3835.97	105.45	3836.02						

Manning's n Values num= 1

Sta	n Val
0	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
.62	104.98	16.7	16.7	.03	.05

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
0	22.76	3834.05	F

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 152

INPUT
Description:
Station Elevation Data num= 70

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3836.25	.17	3835.6	.42	3834.08	.83	3832.354	.88	3831.99
1.31	3831.24	1.59	3831.12	1.89	3831.08	3.35	3831.08	4.82	3831.04
7.75	3831.04	9.21	3831.01	10.89	3831	11.49	3831.03	12.25	3831.14
17.86	3832.99	18.57	3833.18	19.1	3833.21	19.27	3833.2	20.19	3833.08
20.71	3833.05	20.7923	3833.042	22.74	3832.86	24.78	3832.56	25.91	3832.42
26.82	3832.27	27.84	3832.16	28.86	3831.95	31.02	3831.37	31.87	3831.13
33.58	3830.69	38.03	3829.71	39.05	3829.53	41.25	3829.23	42.1	3829.09
44.14	3828.85	45.16	3828.79	47.2	3828.82	50.25	3828.95	52.29	3829.1
53.19	3829.14	55.35	3829.28	56.37	3829.31	59.42	3829.44	62.25	3829.51
64.49	3829.61	67.51	3829.79	68.68	3829.87	68.763	3829.873	72.53	3830

```
   73.54 3830.09   79.58 3831.03   80.71 3831.18      853831.993   86.62  3832.3
   88.65 3832.66   90.47 3833.05   91.64 3833.27   94.66  3833.9   95.67 3834.07
   97.73 3834.39   98.69 3834.56   99.69 3834.71  102.71 3835.05  103.71 3835.19
  104.99 3835.34  105.51 3835.41  107.49 3835.66  107.77 3835.69  108.88 3835.76

Manning's n Values        num=       1
     Sta   n Val
       0    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0      85            24.99   24.99   24.99            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 127

INPUT
Description:
Station Elevation Data    num=      72
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3831.28     .61 3830.45     .71 3830.39     .81 3830.37     2.2 3830.37
    3.59 3830.34    4.98 3830.34    5.66  3830.4    6.37 3830.56    7.76 3831.06
   10.69 3832.03   11.32 3832.18  11.7353832.188   11.87 3832.19   12.21 3832.18
    13.1 3832.08   14.27 3831.92   16.63 3831.67   18.98 3831.37   20.15  3831.2
   21.33    3831   21.71 3830.91   22.51 3830.68   23.61 3830.38   25.11 3829.96
   26.03 3829.75   27.29 3829.44   33.83    3828   34.26 3827.93   35.44 3827.79
   38.83 3827.29   41.32  3826.9   42.54 3826.85   46.43 3826.76   47.63 3826.75
   48.36 3826.72   49.55 3826.71    51.9 3826.76   52.72 3826.76   54.04  3826.8
   56.35 3826.84   57.78 3826.82   58.95 3826.84   60.13 3826.83   63.66 3826.97
   64.83 3827.09   65.44 3827.19   67.25 3827.57   69.43 3827.99   70.93 3828.32
    71.7 3828.46   72.47 3828.56   74.02 3828.64   76.34 3828.71   80.21 3828.96
   81.37 3828.98   82.45 3829.03   84.59 3829.29   85.66 3829.44    87.8 3829.68
   88.72  3829.8   89.95 3829.94   92.09 3830.05   93.91 3830.24  95.7323830.543
   98.78 3831.05  102.65 3831.58  103.87 3831.77  104.97 3831.91  106.02 3831.96
  107.09 3831.93  107.41 3831.94

Manning's n Values        num=       1
     Sta   n Val
       0    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  106.02            12.82   12.82   12.82            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 114.25*
```

INPUT
Description:
Station Elevation Data num= 314

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3831.64	.05	3831.58	.15	3831.53	.22	3831.53	2.97	3831.48
3.38	3830.96	3.58	3830.53	3.68	3830.38	3.78	3830.28	4.09	3830.05
4.3	3829.87	4.8	3829.74	5.16	3829.73	5.21	3829.73	6.55	3829.82
7.04	3829.86	7.65	3829.9	7.93	3829.92	8.26	3829.96	8.36	3829.98
8.46	3829.98	8.61	3829.99	9.31	3830.1	9.78	3830.22	10.69	3830.44
11.21	3830.55	13.61	3831.09	14.24	3831.18	14.65	3831.18	14.78	3831.18
15.12	3831.16	15.88	3831.08	16.01	3831.06	16.29	3831.02	16.59	3830.98
17.17	3830.91	17.41	3830.88	17.71	3830.85	19.34	3830.67	19.52	3830.65
20.45	3830.52	20.76	3830.49	21.37	3830.41	21.85	3830.34	21.98	3830.32
22.08	3830.31	22.69	3830.21	22.79	3830.2	23.02	3830.16	23.4	3830.1
23.5	3830.08	24.19	3829.95	24.21	3829.95	24.57	3829.87	24.82	3829.8
24.93	3829.77	25.03	3829.74	25.37	3829.65	25.64	3829.58	26.15	3829.45
26.35	3829.4	26.46	3829.37	26.55	3829.34	27.06	3829.21	27.57	3829.07
27.77	3829.01	27.95	3828.97	28.48	3828.85	28.87	3828.76	28.89	3828.76
29.19	3828.68	29.6	3828.59	30.01	3828.49	30.12	3828.47	30.31	3828.42
30.72	3828.33	31.12	3828.24	31.43	3828.17	32.14	3828.02	32.65	3827.9
32.85	3827.86	32.95	3827.83	33.56	3827.7	34.28	3827.55	34.38	3827.52
35.7	3827.22	35.8	3827.19	36.41	3827.05	36.63	3827.01	37.05	3826.93
37.12	3826.92	37.22	3826.9	37.83	3826.81	38.23	3826.76	38.44	3826.72
38.64	3826.69	38.75	3826.67	39.76	3826.5	40.07	3826.45	40.27	3826.42
40.78	3826.34	41.19	3826.28	41.6	3826.23	43.32	3826.02	44.08	3825.93
45.05	3825.9	45.29	3825.89	45.76	3825.88	46.47	3825.86	46.67	3825.86
47.18	3825.85	47.89	3825.83	47.99	3825.83	48.71	3825.82	48.81	3825.81
49.16	3825.81	49.32	3825.8	49.42	3825.8	50.13	3825.8	50.35	3825.79
50.74	3825.78	50.84	3825.78	50.94	3825.77	51.08	3825.77	51.55	3825.76
52.26	3825.75	52.31	3825.75	52.44	3825.75	52.61	3825.76	52.69	3825.76
52.79	3825.76	52.89	3825.76	52.96	3825.76	53.06	3825.76	53.14	3825.76
53.24	3825.76	53.34	3825.76	53.44	3825.75	53.51	3825.75	54.19	3825.77
54.68	3825.78	54.87	3825.78	54.97	3825.78	55.55	3825.79	55.89	3825.8
56.14	3825.79	56.23	3825.79	56.33	3825.79	56.71	3825.79	56.91	3825.8
57.59	3825.81	57.89	3825.82	58.05	3825.83	58.27	3825.83	58.95	3825.85
59.05	3825.85	59.63	3825.86	60.22	3825.88	60.32	3825.88	60.38	3825.88
61.09	3825.9	61.58	3825.91	61.77	3825.92	61.82	3825.92	61.97	3825.93
62.45	3825.96	62.84	3825.98	63	3825.99	63.13	3826	63.81	3826.02
64.11	3826.04	64.2	3826.04	64.49	3826.06	64.88	3826.1	65.17	3826.12
65.47	3826.14	65.85	3826.17	66.34	3826.21	66.53	3826.22	66.73	3826.24
67.21	3826.27	67.76	3826.32	67.8	3826.32	67.9	3826.34	68.09	3826.35
68.58	3826.39	68.94	3826.42	69.26	3826.46	69.35	3826.48	69.56	3826.5
70.03	3826.57	70.32	3826.62	70.71	3826.68	71.39	3826.79	71.98	3826.87
72.07	3826.89	72.17	3826.9	72.75	3826.99	73.24	3827.06	73.43	3827.09
73.59	3827.11	73.63	3827.11	74.11	3827.2	74.6	3827.28	74.79	3827.31
75.09	3827.35	75.1	3827.35	75.48	3827.4	75.88	3827.45	76.16	3827.48
76.54	3827.51	76.66	3827.52	76.84	3827.53	77.22	3827.54	78.22	3827.58
78.29	3827.58	78.49	3827.58	78.97	3827.59	79.46	3827.6	79.65	3827.6
79.75	3827.6	80.33	3827.61	80.56	3827.62	80.92	3827.63	81.01	3827.64

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   81.11 3827.64   81.69 3827.67   82.37  3827.7   82.86 3827.72   83.06 3827.72
   83.74 3827.75   83.83 3827.75   84.42 3827.77   84.47 3827.77      85 3827.77
    85.1 3827.77   85.29 3827.77   85.64 3827.77   85.78 3827.77   86.36 3827.78
   86.55 3827.79   86.73 3827.79   86.75 3827.79   87.23 3827.84   87.62 3827.88
   87.91 3827.91   88.21 3827.94   88.59 3827.98   88.89 3828.01   89.27 3828.05
   89.66 3828.09   89.95 3828.12   89.98 3828.12   90.25 3828.15   90.64 3828.19
   91.12 3828.23   91.32 3828.25   91.51 3828.27   92.14 3828.33   92.58 3828.38
   92.68 3828.39   93.07 3828.43   93.36 3828.45   94.04 3828.52   94.13 3828.53
   94.31 3828.54   94.81 3828.57    95.3 3828.59   95.49  3828.6   96.47 3828.65
   96.85 3828.69   96.95  3828.7   97.53 3828.75   98.02  3828.8   98.22 3828.81
   98.31 3828.82   98.41 3828.84    98.9  3828.9   99.38 3828.97   99.58 3828.99
   99.87 3829.03  100.15 3829.07  100.26 3829.09  100.64 3829.14  100.94 3829.18
  101.32 3829.23  101.62 3829.28  102.01 3829.33   102.3 3829.37  102.78 3829.43
  103.07 3829.47  103.22 3829.49  103.27  3829.5  103.75 3829.55  104.24 3829.61
  104.43 3829.64  104.63 3829.66  105.11 3829.71   105.7 3829.78   105.8 3829.79
  105.89  3829.8  106.48 3829.88  107.13 3829.96  107.16 3829.97  107.84 3830.06
  108.36 3830.14  108.61 3830.17   109.2 3830.25  109.47 3830.28  109.78  3830.3
  109.88 3830.31  110.53 3830.33  111.34 3830.31  111.58 3830.31

Manning's n Values        num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035    2.97    .035  110.53    .035  111.58    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          2.97  110.53             12.82   12.82   12.82             .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 101.50*

INPUT
Description:
Station Elevation Data    num=     315
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0    3832      .1 3831.88      .3 3831.79     .45 3831.77    5.95 3831.68
    6.35 3831.19    6.55 3830.61    6.65 3830.36    6.66 3830.35    6.75  3830.2
    7.06 3829.73    7.26 3829.36    7.77 3829.12    8.13 3829.09    8.17 3829.08
     9.5 3829.29    9.99 3829.38    10.6 3829.46   10.88  3829.5   11.21 3829.56
   11.31 3829.57   11.41 3829.58   11.55 3829.58   12.25 3829.64   12.72 3829.71
   13.63 3829.82   14.14 3829.87   16.53 3830.14   17.15 3830.19   17.56 3830.17
   17.69 3830.16   18.03 3830.14   18.79 3830.06   18.91 3830.04   19.19 3830.01
    19.5 3829.96   20.07 3829.89    20.3 3829.87   20.61 3829.84   22.22 3829.65
    22.4 3829.63   23.34  3829.5   23.64 3829.46   24.25 3829.38   24.73 3829.31
   24.85 3829.29   24.95 3829.28   25.56 3829.17   25.66 3829.16   25.89 3829.12
   26.27 3829.06   26.37 3829.04   27.05 3828.91   27.08  3828.9   27.43 3828.82
   27.68 3828.76   27.78 3828.73   27.88  3828.7   28.22 3828.62   28.49 3828.55
      29 3828.43    29.2 3828.38   29.31 3828.35    29.4 3828.33   29.91  3828.2
   30.41 3828.07   30.61 3828.02   30.79 3827.97   31.32 3827.86    31.7 3827.77
```

31.73	3827.77	32.03	3827.69	32.43	3827.6	32.84	3827.52	32.95	3827.49
33.14	3827.45	33.55	3827.35	33.95	3827.25	34.25	3827.2	34.96	3827.04
35.47	3826.93	35.67	3826.88	35.77	3826.86	36.38	3826.73	37.08	3826.57
37.18	3826.55	38.5	3826.23	38.6	3826.21	39.21	3826.06	39.42	3826.01
39.85	3825.93	39.91	3825.92	40.01	3825.9	40.62	3825.79	41.01	3825.72
41.23	3825.68	41.43	3825.65	41.53	3825.62	42.54	3825.44	42.85	3825.39
43.05	3825.35	43.55	3825.27	43.96	3825.21	44.37	3825.18	46.08	3825.02
46.83	3824.96	47.8	3824.94	48.04	3824.93	48.51	3824.91	49.21	3824.91
49.42	3824.9	49.92	3824.89	50.63	3824.87	50.73	3824.87	51.44	3824.86
51.54	3824.86	51.89	3824.85	52.04	3824.85	52.14	3824.85	52.85	3824.84
53.08	3824.84	53.46	3824.83	53.56	3824.82	53.66	3824.82	53.8	3824.82
54.27	3824.81	54.97	3824.8	55.07	3824.8	55.32	3824.8	55.67	3824.8
55.82	3824.8	56.03	3824.81	56.22	3824.8	56.38	3824.8	56.57	3824.81
56.72	3824.81	56.93	3824.81	57.12	3824.8	57.32	3824.8	57.47	3824.8
58.16	3824.81	58.65	3824.82	58.85	3824.82	58.95	3824.82	59.54	3824.83
59.87	3824.83	60.12	3824.83	60.22	3824.83	60.32	3824.83	60.71	3824.83
60.91	3824.83	61.6	3824.84	61.89	3824.85	62.05	3824.85	62.28	3824.86
62.97	3824.88	63.07	3824.88	63.66	3824.9	64.25	3824.92	64.34	3824.92
64.41	3824.93	65.13	3824.96	65.62	3825	65.82	3825.02	65.87	3825.02
66.01	3825.04	66.5	3825.08	66.89	3825.12	67.06	3825.14	67.19	3825.15
67.88	3825.21	68.17	3825.25	68.26	3825.25	68.56	3825.29	68.96	3825.33
69.25	3825.37	69.54	3825.4	69.94	3825.44	70.43	3825.5	70.62	3825.53
70.82	3825.55	71.31	3825.6	71.86	3825.66	71.9	3825.67	72	3825.69
72.19	3825.7	72.68	3825.73	73.05	3825.76	73.37	3825.79	73.47	3825.79
73.68	3825.81	74.16	3825.86	74.45	3825.89	74.84	3825.94	75.52	3826.01
76.12	3826.07	76.22	3826.08	76.31	3826.08	76.9	3826.15	77.39	3826.19
77.59	3826.21	77.74	3826.23	77.79	3826.23	78.28	3826.29	78.77	3826.34
78.96	3826.36	79.26	3826.39	79.27	3826.39	79.65	3826.41	80.06	3826.44
80.34	3826.46	80.73	3826.48	80.84	3826.49	81.02	3826.49	81.42	3826.5
82.42	3826.52	82.5	3826.52	82.69	3826.52	83.18	3826.52	83.67	3826.52
83.87	3826.52	83.97	3826.52	84.56	3826.53	84.79	3826.53	85.14	3826.53
85.24	3826.53	85.34	3826.54	85.93	3826.55	86.62	3826.57	87.11	3826.57
87.3	3826.57	87.99	3826.59	88.09	3826.58	88.68	3826.58	88.73	3826.58
89.27	3826.57	89.36	3826.57	89.56	3826.57	89.92	3826.56	90.05	3826.56
90.64	3826.56	90.84	3826.56	91.02	3826.56	91.03	3826.56	91.52	3826.6
91.92	3826.63	92.21	3826.66	92.5	3826.68	92.9	3826.71	93.19	3826.73
93.58	3826.76	93.98	3826.78	94.27	3826.81	94.29	3826.81	94.56	3826.83
94.96	3826.86	95.45	3826.9	95.64	3826.91	95.84	3826.93	96.47	3826.98
96.92	3827.02	97.02	3827.02	97.41	3827.06	97.7	3827.08	98.39	3827.12
98.49	3827.13	98.66	3827.14	99.18	3827.17	99.67	3827.2	99.86	3827.21
100.85	3827.25	101.24	3827.28	101.33	3827.29	101.92	3827.34	102.41	3827.39
102.61	3827.4	102.7	3827.4	102.81	3827.41	103.3	3827.46	103.79	3827.51
103.98	3827.54	104.28	3827.57	104.56	3827.6	104.67	3827.61	105.06	3827.65
105.36	3827.68	105.75	3827.73	106.04	3827.77	106.44	3827.8	106.73	3827.84
107.22	3827.89	107.52	3827.92	107.67	3827.93	107.71	3827.94	108.2	3827.99
108.69	3828.04	108.89	3828.06	109.09	3828.08	109.58	3828.12	110.17	3828.17
110.26	3828.18	110.36	3828.19	110.95	3828.26	111.61	3828.35	111.64	3828.35
112.32	3828.44	112.86	3828.51	113.11	3828.55	113.7	3828.62	113.98	3828.65
114.29	3828.68	114.38	3828.68	115.05	3828.7	115.58	3828.69	115.74	3828.69

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.035	5.95	.035	115.05	.035	115.74	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
5.95	115.05	12.82	12.82	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 88.75*

INPUT
Description:
Station Elevation Data num= 315

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3832.37	.15	3832.18	.45	3832.04	.67	3832.02	8.92	3831.88
9.33	3831.42	9.53	3830.69	9.62	3830.35	9.63	3830.33	9.72	3830.11
10.03	3829.4	10.23	3828.86	10.73	3828.49	11.09	3828.45	11.14	3828.44
12.46	3828.77	12.95	3828.89	13.55	3829.02	13.83	3829.08	14.15	3829.15
14.25	3829.17	14.35	3829.17	14.5	3829.17	15.19	3829.18	15.66	3829.2
16.56	3829.2	17.07	3829.19	19.45	3829.2	20.07	3829.19	20.47	3829.16
20.61	3829.15	20.94	3829.12	21.69	3829.04	21.82	3829.02	22.1	3828.99
22.4	3828.95	22.97	3828.88	23.2	3828.85	23.5	3828.82	25.11	3828.64
25.29	3828.61	26.22	3828.47	26.52	3828.44	27.12	3828.36	27.6	3828.27
27.73	3828.25	27.83	3828.25	28.43	3828.14	28.53	3828.13	28.75	3828.09
29.13	3828.02	29.23	3828.01	29.92	3827.86	29.94	3827.86	30.29	3827.78
30.54	3827.73	30.64	3827.7	30.74	3827.67	31.08	3827.59	31.35	3827.53
31.85	3827.41	32.05	3827.37	32.16	3827.34	32.25	3827.32	32.75	3827.2
33.26	3827.08	33.46	3827.02	33.64	3826.98	34.16	3826.87	34.54	3826.78
34.56	3826.78	34.86	3826.7	35.27	3826.62	35.67	3826.54	35.78	3826.52
35.97	3826.47	36.37	3826.38	36.77	3826.27	37.08	3826.22	37.78	3826.07
38.28	3825.95	38.48	3825.91	38.58	3825.88	39.19	3825.75	39.89	3825.6
39.99	3825.57	41.3	3825.24	41.4	3825.22	42	3825.06	42.22	3825.02
42.64	3824.93	42.71	3824.92	42.81	3824.9	43.41	3824.76	43.8	3824.69
44.01	3824.65	44.21	3824.61	44.32	3824.58	45.32	3824.37	45.62	3824.32
45.82	3824.28	46.33	3824.19	46.73	3824.14	47.14	3824.12	48.84	3824.02
49.59	3823.99	50.55	3823.97	50.79	3823.96	51.25	3823.95	51.96	3823.95
52.16	3823.94	52.66	3823.93	53.36	3823.92	53.46	3823.92	54.17	3823.91
54.27	3823.9	54.62	3823.9	54.77	3823.89	54.87	3823.89	55.58	3823.89
55.8	3823.88	56.18	3823.87	56.28	3823.87	56.38	3823.87	56.52	3823.87
56.98	3823.86	57.69	3823.84	57.84	3823.84	58.21	3823.84	58.74	3823.85
58.96	3823.85	59.26	3823.86	59.56	3823.85	59.79	3823.85	60.09	3823.86
60.31	3823.86	60.61	3823.86	60.91	3823.85	61.21	3823.84	61.44	3823.84
62.13	3823.86	62.63	3823.86	62.82	3823.86	62.92	3823.86	63.52	3823.87
63.86	3823.87	64.11	3823.86	64.21	3823.86	64.31	3823.86	64.7	3823.86
64.9	3823.87	65.6	3823.87	65.9	3823.88	66.06	3823.88	66.29	3823.88
66.98	3823.91	67.08	3823.91	67.68	3823.93	68.27	3823.96	68.37	3823.97
68.44	3823.97	69.16	3824.03	69.66	3824.08	69.86	3824.11	69.91	3824.12

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   70.06 3824.14   70.55 3824.21   70.95 3824.27   71.11 3824.29   71.24 3824.31
   71.94  3824.4   72.24 3824.45   72.33 3824.46   72.63 3824.51   73.03 3824.57
   73.32 3824.62   73.62 3824.66   74.02 3824.72   74.51  3824.8   74.71 3824.83
   74.91 3824.86    75.4 3824.92   75.96 3825.01      76 3825.01    76.1 3825.04
    76.3 3825.04   76.79 3825.07   77.17 3825.09   77.49 3825.11   77.58 3825.11
   77.79 3825.12   78.28 3825.14   78.57 3825.17   78.97 3825.19   79.66 3825.23
   80.26 3825.26   80.36 3825.26   80.46 3825.27   81.05  3825.3   81.55 3825.33
   81.74 3825.34    81.9 3825.34   81.94 3825.34   82.44 3825.38   82.93 3825.41
   83.13 3825.42   83.43 3825.42   83.44 3825.42   83.83 3825.43   84.24 3825.44
   84.52 3825.44   84.91 3825.45   85.03 3825.46   85.21 3825.46   85.61 3825.45
   86.62 3825.46    86.7 3825.46    86.9 3825.45   87.39 3825.45   87.89 3825.44
   88.08 3825.43   88.18 3825.43   88.78 3825.44   89.01 3825.43   89.37 3825.43
   89.47 3825.43   89.57 3825.43   90.16 3825.44   90.86 3825.44   91.35 3825.43
   91.55 3825.42   92.25 3825.42   92.34 3825.42   92.94  3825.4      93  3825.4
   93.53 3825.38   93.63 3825.37   93.83 3825.36   94.19 3825.35   94.33 3825.34
   94.92 3825.33   95.12 3825.32    95.3 3825.32   95.32 3825.32   95.81 3825.35
   96.21 3825.37    96.5  3825.4    96.8 3825.41    97.2 3825.43    97.5 3825.45
   97.89 3825.47   98.29 3825.48   98.58 3825.49   98.61  3825.5   98.88 3825.51
   99.28 3825.54   99.77 3825.56   99.97 3825.58  100.17 3825.59  100.81 3825.63
  101.26 3825.66  101.36 3825.66  101.76 3825.68  102.05  3825.7  102.75 3825.73
  102.84 3825.74  103.02 3825.75  103.54 3825.77  104.03  3825.8  104.23 3825.81
  105.22 3825.85  105.62 3825.88  105.72 3825.89  106.31 3825.93  106.81 3825.97
  107.01 3825.98   107.1 3825.98   107.2 3825.99   107.7 3826.03  108.19 3826.06
  108.39 3826.08  108.69  3826.1  108.97 3826.13  109.09 3826.14  109.48 3826.16
  109.78 3826.19  110.17 3826.22  110.47 3826.26  110.87 3826.28  111.17 3826.31
  111.66 3826.34  111.96 3826.36  112.11 3826.38  112.16 3826.38  112.65 3826.42
  113.15 3826.46  113.34 3826.48  113.54 3826.49  114.04 3826.53  114.63 3826.57
  114.73 3826.58  114.83 3826.58  115.43 3826.65  116.09 3826.73  116.12 3826.74
  116.81 3826.81  117.35 3826.89   117.6 3826.92   118.2 3826.99  118.48 3827.02
  118.79 3827.05  118.89 3827.06  119.56 3827.07  119.83 3827.06  119.91 3827.06

Manning's n Values        num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035    8.92    .035  119.56    .035  119.91    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          8.92  119.56             12.83   12.83   12.83             .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 76

INPUT
Description:
Station Elevation Data    num=     253
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3832.73      .2 3832.48      .6 3832.29      .9 3832.27    11.9 3832.08
    12.3 3831.65    12.6 3830.31      13 3829.08    13.2 3828.35    13.7 3827.86
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14.1 3827.8	15.9 3828.41	16.5 3828.58	17.1 3828.75	17.2 3828.77
17.3 3828.77	18.6 3828.69	20 3828.51	24.6 3828.02	25 3827.97
25.3 3827.93	26.1 3827.84	26.4 3827.81	28 3827.62	29.1 3827.45
29.4 3827.41	30 3827.33	30.6 3827.22	30.7 3827.22	30.7 3827.21
31.3 3827.1	31.4 3827.09	32 3826.98	32.1 3826.97	32.1 3826.96
32.8 3826.81	33.4 3826.69	33.5 3826.66	33.6 3826.63	34.2 3826.5
34.7 3826.39	34.9 3826.35	35.1 3826.31	35.6 3826.19	36.1 3826.08
36.3 3826.02	37 3825.88	37.4 3825.79	37.7 3825.71	38.1 3825.64
38.5 3825.57	38.8 3825.5	39.2 3825.4	39.6 3825.29	39.9 3825.24
40.6 3825.09	41.1 3824.97	41.3 3824.93	41.4 3824.9	42 3824.78
42.7 3824.62	42.8 3824.6	44.1 3824.25	44.2 3824.23	44.8 3824.07
45.5 3823.92	45.5 3823.91	45.6 3823.89	46.2 3823.74	46.8 3823.61
47 3823.57	47.1 3823.53	48.1 3823.31	48.4 3823.26	48.6 3823.21
49.1 3823.12	49.5 3823.07	51.6 3823.02	53.3 3823.01	54 3822.99
54.7 3822.99	54.9 3822.98	55.4 3822.97	56.1 3822.96	56.2 3822.96
56.9 3822.95	57 3822.95	57.5 3822.94	57.6 3822.94	58.3 3822.93
58.9 3822.92	59 3822.92	59.1 3822.92	59.7 3822.91	60.4 3822.89
60.6 3822.89	61.1 3822.89	61.8 3822.9	62.1 3822.9	62.5 3822.91
62.9 3822.9	63.2 3822.9	63.6 3822.91	63.9 3822.91	64.3 3822.91
64.7 3822.9	65.1 3822.89	65.4 3822.89	66.1 3822.9	66.6 3822.9
66.8 3822.9	66.9 3822.9	67.5 3822.91	68.1 3822.9	68.2 3822.9
68.3 3822.9	68.9 3822.9	69.6 3822.9	69.6 3822.91	69.9 3822.91
70.3 3822.91	71 3822.94	71.1 3822.94	71.7 3822.97	72.3 3823
72.4 3823.01	73.2 3823.09	73.7 3823.17	73.9 3823.21	74.1 3823.25
74.6 3823.33	75 3823.41	75.3 3823.47	76 3823.59	76.3 3823.66
76.7 3823.73	77.1 3823.81	77.4 3823.87	77.7 3823.92	78.1 3823.99
78.6 3824.09	78.8 3824.13	79 3824.17	79.5 3824.25	80.1 3824.36
80.2 3824.39	80.4 3824.39	80.9 3824.41	81.6 3824.43	81.7 3824.43
82.4 3824.43	82.7 3824.44	83.1 3824.44	83.8 3824.45	84.4 3824.45
84.5 3824.45	84.6 3824.45	85.2 3824.46	85.7 3824.46	85.9 3824.46
86.1 3824.46	86.6 3824.47	87.1 3824.47	87.3 3824.47	87.6 3824.46
88 3824.44	88.7 3824.42	89.1 3824.42	89.4 3824.42	89.8 3824.41
90.9 3824.4	91.1 3824.39	91.6 3824.38	92.1 3824.36	92.3 3824.35
92.4 3824.35	93 3824.35	93.6 3824.33	93.7 3824.33	93.8 3824.33
94.4 3824.32	95.1 3824.31	95.6 3824.29	95.8 3824.27	96.5 3824.26
96.6 3824.25	97.2 3824.21	97.8 3824.18	97.9 3824.17	98.1 3824.16
98.6 3824.13	99.2 3824.1	99.4 3824.09	99.6 3824.08	100.1 3824.1
100.5 3824.12	100.8 3824.14	101.1 3824.15	101.5 3824.16	101.8 3824.17
102.2 3824.18	102.6 3824.17	102.9 3824.18	103.2 3824.19	103.6 3824.21
104.1 3824.23	104.3 3824.24	104.5 3824.25	105.6 3824.3	105.7 3824.3
106.4 3824.32	107.1 3824.34	107.2 3824.34	107.9 3824.37	108.4 3824.4
108.6 3824.41	110 3824.47	110.1 3824.48	110.7 3824.52	111.2 3824.56
111.4 3824.56	111.6 3824.57	112.1 3824.59	112.6 3824.61	112.8 3824.63
113.1 3824.64	113.5 3824.66	113.9 3824.67	114.2 3824.69	114.6 3824.72
114.9 3824.75	115.3 3824.76	115.6 3824.78	116.1 3824.8	116.4 3824.81
116.6 3824.82	117.1 3824.85	117.6 3824.89	117.8 3824.9	118 3824.91
118.5 3824.94	119.1 3824.96	119.2 3824.97	119.3 3824.97	119.9 3825.03
120.6 3825.12	120.6 3825.13	121.3 3825.19	122.1 3825.29	122.7 3825.36
123.3 3825.43	123.4 3825.44	124.0765 3825.44		

Manning's n Values num= 1

Sta	n Val
0	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
11.91	24.07	65 16.8	16.8	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 59.333*

INPUT
Description:
Station Elevation Data num= 362

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3831.5	.13	3831.34	.4	3831.21	.6	3831.2	7.93	3831.07
8.28	3830.7	8.35	3830.6	8.55	3829.92	8.66	3829.55	8.82	3829.17
9.08	3828.58	9.21	3828.24	9.29	3828.04	9.63	3827.79	9.81	3827.68
10.23	3827.64	12.11	3828.03	12.73	3828.14	13.36	3828.25	13.46	3828.26
13.57	3828.26	14.92	3828.2	16.38	3828.07	19.02	3827.87	19.14	3827.87
19.67	3827.75	20.16	3827.51	20.32	3827.38	20.5	3827.16	20.98	3826.65
21.18	3826.58	21.42	3826.49	21.6	3826.49	21.91	3826.51	22.69	3826.54
22.74	3826.54	22.94	3826.55	23.06	3826.54	23.21	3826.54	23.59	3826.5
24.57	3826.4	24.73	3826.38	25.87	3826.21	25.93	3826.2	26.19	3826.17
26.81	3826.09	27.29	3826.02	27.44	3825.99	27.54	3825.99	28.17	3825.88
28.27	3825.87	28.64	3825.81	28.9	3825.77	29	3825.76	29.73	3825.62
30.36	3825.52	30.46	3825.49	30.57	3825.47	31.19	3825.36	31.43	3825.32
31.71	3825.27	31.92	3825.24	32.13	3825.2	32.65	3825.11	33.17	3825.02
33.38	3824.97	34.08	3824.86	34.11	3824.86	34.53	3824.79	34.84	3824.73
35.26	3824.67	35.68	3824.61	35.99	3824.56	36.41	3824.49	36.83	3824.4
37.14	3824.36	37.87	3824.25	38.39	3824.15	38.6	3824.12	38.7	3824.1
39.07	3824.05	39.33	3824	39.93	3823.9	40.06	3823.87	40.16	3823.85
40.33	3823.82	41.52	3823.55	41.62	3823.53	42.25	3823.39	42.55	3823.33
42.98	3823.25	43.08	3823.23	43.58	3823.13	43.71	3823.1	44.33	3822.99
44.54	3822.96	44.65	3822.92	45.69	3822.74	46	3822.69	46.21	3822.65
46.73	3822.57	47.15	3822.52	49.01	3822.42	49.34	3822.4	50.39	3822.34
51.11	3822.28	51.73	3822.21	51.84	3822.2	52.57	3822.13	52.78	3822.1
53	3822.08	53.3	3822.05	54.03	3821.96	54.14	3821.95	54.19	3821.95
54.87	3821.88	54.97	3821.87	55.5	3821.82	55.6	3821.81	55.8	3821.79
56.33	3821.74	56.96	3821.67	57.06	3821.66	57.16	3821.65	57.58	3821.61
57.79	3821.59	58.23	3821.55	58.52	3821.54	58.65	3821.54	58.99	3821.54
59.45	3821.55	59.65	3821.55	59.92	3821.55	60.19	3821.55	60.39	3821.55
60.65	3821.55	60.85	3821.55	61.12	3821.55	61.39	3821.55	61.65	3821.54
61.85	3821.54	62.73	3821.55	63.36	3821.55	63.61	3821.55	63.74	3821.55
64.49	3821.56	65.24	3821.56	65.31	3821.56	65.37	3821.56	65.5	3821.56
66.25	3821.56	67.13	3821.57	67.5	3821.57	68.01	3821.57	68.21	3821.58
68.89	3821.6	69.01	3821.6	69.16	3821.61	69.77	3821.65	70.52	3821.69
70.64	3821.7	71.19	3821.75	71.65	3821.79	72.28	3821.87	72.3	3821.88

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   72.53 3821.91   72.78 3821.94   73.41 3822.02   73.91 3822.08   74.29 3822.14
   74.39 3822.15   75.17 3822.25   75.54 3822.32   75.72 3822.34   76.04 3822.38
   76.55 3822.45   76.72 3822.47   76.92  3822.5    77.3 3822.54    77.8  3822.6
   78.43 3822.68   78.68 3822.72   78.88 3822.74   78.93 3822.75   79.23 3822.79
   79.56 3822.82   79.85 3822.86   80.31 3822.93   80.44 3822.96   80.65 3822.98
   80.69 3822.98   81.32 3823.03   81.78 3823.06    82.2 3823.06   82.32 3823.07
   82.75 3823.07    83.2 3823.07   83.58 3823.08   83.79 3823.09   84.08 3823.09
    84.7 3823.09   84.96 3823.09   85.71 3823.08   85.84 3823.08   85.97 3823.08
   86.27 3823.07   86.72 3823.08   86.92 3823.08   87.35 3823.09    87.6 3823.09
   87.85  3823.1   87.96  3823.1   88.48 3823.12   89.01 3823.14    89.1 3823.14
   89.36 3823.15   89.73 3823.15   90.05 3823.15   90.24 3823.15   91.11 3823.16
   91.48 3823.18   91.62 3823.18   91.99  3823.2   92.45 3823.21    92.5 3823.21
   93.88 3823.22   94.13 3823.21   94.76 3823.22   95.38 3823.21   95.64 3823.21
   95.76 3823.21   95.82 3823.21   96.51 3823.21   96.82 3823.21   97.27  3823.2
   97.39  3823.2   97.52  3823.2   97.83  3823.2   98.27 3823.18   98.42 3823.18
   99.15 3823.11   99.78 3823.05  100.03 3823.02  100.91 3822.94  101.04 3822.92
  101.17 3822.91  101.79 3822.84  102.36 3822.78  102.54 3822.77  102.67 3822.75
  102.92 3822.72  103.11  3822.7  103.55 3822.66   104.3 3822.58  104.55 3822.56
   104.8 3822.53  105.37  3822.5  105.43  3822.5  105.73 3822.49  105.88  3822.5
  105.93  3822.5  106.31 3822.54  106.69 3822.56  106.77 3822.57  107.19  3822.6
  107.57 3822.63  107.96 3822.66  108.07 3822.67  108.57  3822.7   108.9 3822.73
  108.95 3822.74  109.32 3822.77  109.83 3822.81   109.9 3822.82  110.45 3822.87
  110.71  3822.9  110.91 3822.92  110.96 3822.92  111.84    3823  112.34 3823.07
  112.41 3823.07  112.46 3823.08   112.8 3823.09  113.34  3823.1  113.45  3823.1
  113.95 3823.11  114.22 3823.11  114.35  3823.1  114.43  3823.1  115.01 3823.12
  115.23 3823.12  115.54 3823.12  115.85 3823.12  116.09 3823.13  116.11 3823.13
  116.61 3823.11  117.14 3823.12  117.68 3823.13  117.86 3823.13  117.99 3823.12
  118.45 3823.11  118.74 3823.12   119.3 3823.13  119.37 3823.14  119.62 3823.14
  119.87 3823.14  120.04 3823.14   120.5 3823.14  120.86 3823.13  121.13 3823.15
  121.38 3823.18  121.61  3823.2  121.76 3823.22  122.26 3823.28   122.4  3823.3
  122.76 3823.34  122.99 3823.38  123.14  3823.4   123.2  3823.4  123.52 3823.42
  123.64 3823.43  124.02 3823.46  124.52 3823.49  124.58 3823.49   124.9 3823.51
  125.52 3823.54  125.64 3823.55   125.9 3823.55  126.15 3823.56  126.36 3823.56
   126.7 3823.54  126.78 3823.53  127.15 3823.49  127.41 3823.47  127.66 3823.45
  127.91 3823.42  127.94 3823.42  128.41 3823.42  128.54 3823.42  129.04 3823.42
  129.29 3823.42  129.42 3823.43  129.54 3823.43   130.3 3823.47  130.31 3823.47
  130.67 3823.52  131.18 3823.62  132.02 3823.78  132.05 3823.79  132.55 3823.85
  132.68 3823.87  133.06 3823.97  133.08 3823.98  133.47 3824.09  133.81 3824.18
  133.91 3824.21  134.15 3824.26  134.57 3824.36  134.67 3824.39  134.69 3824.39
  135.21  3824.5  135.54 3824.58

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035    7.93    .035  135.54    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          7.93  135.54             16.8    16.8    16.8            .03      .05

CROSS SECTION
```

RIVER: River 1
REACH: Reach 1 RS: 42.667*

INPUT
Description:
Station Elevation Data num= 362

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3830.28	.07	3830.19	.2	3830.13	.3	3830.12	3.97	3830.06
4.32	3829.66	4.4	3829.56	4.61	3829.06	4.73	3828.79	4.89	3828.5
5.16	3828.08	5.29	3827.85	5.38	3827.74	5.74	3827.56	5.92	3827.5
6.36	3827.47	8.31	3827.65	8.96	3827.7	9.61	3827.75	9.72	3827.76
9.83	3827.75	11.24	3827.71	12.76	3827.63	15.51	3827.51	15.63	3827.5
16.18	3827.33	16.7	3826.9	16.87	3826.64	17.05	3826.23	17.55	3825.25
17.76	3825.13	18.01	3824.98	18.19	3825.02	18.52	3825.08	19.33	3825.24
19.39	3825.25	19.59	3825.27	19.71	3825.28	19.88	3825.28	20.27	3825.26
21.29	3825.15	21.45	3825.13	22.65	3824.97	22.7	3824.96	22.97	3824.93
23.62	3824.85	24.12	3824.79	24.28	3824.77	24.38	3824.76	25.04	3824.66
25.14	3824.65	25.53	3824.59	25.8	3824.56	25.9	3824.55	26.67	3824.44
27.32	3824.35	27.43	3824.33	27.53	3824.31	28.19	3824.22	28.44	3824.18
28.73	3824.15	28.95	3824.12	29.16	3824.09	29.71	3824.02	30.25	3823.95
30.47	3823.92	31.19	3823.84	31.23	3823.83	31.66	3823.78	31.99	3823.74
32.42	3823.7	32.86	3823.66	33.18	3823.62	33.62	3823.57	34.05	3823.52
34.38	3823.48	35.14	3823.4	35.68	3823.34	35.9	3823.32	36.01	3823.3
36.38	3823.26	36.66	3823.23	37.29	3823.14	37.42	3823.12	37.53	3823.11
37.7	3823.08	38.94	3822.85	39.05	3822.83	39.7	3822.71	40.01	3822.66
40.46	3822.59	40.57	3822.57	41.09	3822.48	41.22	3822.46	41.87	3822.37
42.09	3822.34	42.2	3822.32	43.28	3822.16	43.61	3822.12	43.82	3822.09
44.37	3822.02	44.8	3821.97	46.74	3821.8	47.08	3821.77	48.18	3821.67
48.93	3821.54	49.57	3821.43	49.69	3821.41	50.45	3821.27	50.67	3821.23
50.9	3821.19	51.21	3821.12	51.97	3820.97	52.08	3820.94	52.13	3820.93
52.84	3820.81	52.95	3820.79	53.49	3820.7	53.6	3820.68	53.81	3820.65
54.36	3820.54	55.01	3820.42	55.12	3820.4	55.23	3820.38	55.66	3820.3
55.88	3820.27	56.34	3820.21	56.64	3820.19	56.71	3820.19	56.87	3820.19
57.11	3820.19	57.21	3820.19	57.34	3820.2	57.47	3820.19	57.57	3820.19
57.71	3820.2	57.81	3820.2	57.94	3820.2	58.07	3820.19	58.21	3820.19
58.31	3820.19	59.36	3820.2	60.12	3820.2	60.42	3820.2	60.57	3820.21
61.48	3820.22	62.39	3820.23	62.46	3820.23	62.54	3820.23	62.69	3820.23
63.6	3820.23	64.66	3820.23	65.11	3820.23	65.71	3820.24	65.96	3820.24
66.77	3820.27	66.92	3820.27	67.11	3820.28	67.83	3820.32	68.74	3820.38
68.89	3820.39	69.54	3820.44	70.1	3820.49	70.85	3820.57	70.88	3820.58
71.16	3820.6	71.46	3820.63	72.21	3820.7	72.82	3820.76	73.27	3820.8
73.39	3820.81	74.33	3820.92	74.78	3820.97	74.99	3820.99	75.39	3821.03
75.99	3821.09	76.2	3821.11	76.45	3821.13	76.9	3821.16	77.5	3821.21
78.26	3821.27	78.56	3821.3	78.8	3821.32	78.87	3821.33	79.23	3821.36
79.62	3821.39	79.97	3821.42	80.53	3821.51	80.68	3821.53	80.94	3821.56
80.98	3821.57	81.74	3821.64	82.3	3821.69	82.8	3821.7	82.95	3821.7
83.46	3821.7	84	3821.71	84.46	3821.73	84.71	3821.73	85.06	3821.74
85.8	3821.74	86.12	3821.73	87.03	3821.71	87.18	3821.7	87.33	3821.7
87.69	3821.69	88.24	3821.69	88.48	3821.69	88.99	3821.71	89.3	3821.72

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    89.6 3821.73   89.74 3821.74   90.35 3821.78   90.99 3821.81   91.11 3821.81
   91.41 3821.83   91.87 3821.84   92.25 3821.85   92.47 3821.86   93.53 3821.91
   93.97 3821.93   94.13 3821.94   94.59 3821.97   95.13    3822   95.19    3822
   96.85 3822.04   97.16 3822.04   97.91 3822.05   98.67 3822.06   98.97 3822.07
   99.12 3822.07    99.2 3822.07  100.03 3822.08   100.4 3822.08  100.94 3822.07
  101.09 3822.07  101.24 3822.07  101.62 3822.07  102.14 3822.05  102.32 3822.04
   103.2 3821.92  103.96 3821.81  104.26 3821.76  105.32 3821.62  105.47 3821.59
  105.64 3821.57  106.38 3821.47  107.06 3821.38  107.28 3821.35  107.44 3821.33
  107.74 3821.28  107.97 3821.25  108.49 3821.18   109.4 3821.06   109.7 3821.02
  110.01 3820.98  110.69 3820.91  110.76  3820.9  111.12 3820.88   111.3 3820.88
  111.37 3820.89  111.82 3820.93  112.27 3820.97  112.38 3820.98  112.88 3821.04
  113.33 3821.09   113.8 3821.14  113.94 3821.16  114.54 3821.23  114.93 3821.29
  114.99 3821.29  115.45 3821.34  116.05 3821.41  116.14 3821.42  116.81 3821.51
  117.11 3821.56  117.35 3821.59  117.41  3821.6  118.47 3821.72  119.08 3821.83
  119.17 3821.85  119.23 3821.85  119.64 3821.88  120.28 3821.87  120.42 3821.87
  121.01 3821.88  121.34 3821.87  121.49 3821.86   121.6 3821.86   122.3 3821.87
  122.55 3821.86  122.93 3821.85  123.31 3821.85  123.59 3821.84  123.61 3821.84
  124.21  3821.8  124.85 3821.79   125.5  3821.8  125.73 3821.78  125.88 3821.77
  126.44 3821.72  126.78 3821.72  127.45 3821.71  127.54 3821.71  127.84 3821.71
  128.15 3821.71  128.34 3821.71   128.9 3821.69  129.34 3821.67  129.66  3821.7
  129.96 3821.73  130.24 3821.77  130.41 3821.79  131.02  3821.9  131.19 3821.93
  131.62 3822.02  131.89 3822.08  132.08  3822.1  132.15 3822.11  132.53 3822.12
  132.68 3822.14  133.13 3822.17  133.74 3822.22  133.81 3822.22  134.19 3822.24
  134.95 3822.29  135.09 3822.29   135.4 3822.29   135.7  3822.3  135.96  3822.3
  136.37 3822.24  136.46 3822.21   136.9  3822.1  137.22 3822.04  137.52 3821.99
  137.82 3821.94  137.85 3821.93  138.42 3821.91  138.58 3821.91  139.18 3821.88
  139.48 3821.89  139.63 3821.89  139.79 3821.89  140.69 3821.91  140.71 3821.91
  141.14 3821.97  141.75 3822.13  142.76 3822.38  142.81 3822.39   143.4 3822.47
  143.56  3822.5  144.02 3822.65  144.05 3822.66  144.52 3822.85  144.92    3823
  145.04 3823.04  145.33 3823.12  145.83  3823.3  145.96 3823.34  145.98 3823.35
   146.6 3823.56  147.01 3823.71

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035    3.97    .035  147.01    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          3.97  147.01             16.8    16.8    16.8            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 26

INPUT
Description:
Station Elevation Data    num=     119
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3829.05     .37 3828.63     .67 3828.19     .96 3827.82    1.38 3827.46
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    1.84 3827.32  11.9983827.142   12.13 3827.14    12.7 3826.91   13.24 3826.29
   13.41 3825.91    13.6  3825.3   14.12 3823.86    14.6 3823.48   15.97 3823.94
   16.24    3824   16.54 3824.03   16.95 3824.01   18.01 3823.91   19.48 3823.72
   20.95 3823.56   22.42 3823.38   25.44 3823.05    28.3 3822.81    33.7 3822.48
   34.64 3822.39   35.07 3822.34   37.47 3821.98   38.59 3821.84   44.47 3821.19
   45.96    3821   47.41 3820.65   48.79 3820.29   50.07 3819.92   51.82  3819.5
   53.74 3818.99   54.45 3818.86   54.76 3818.84   56.89 3818.85   59.62 3818.89
   63.71  3818.9   65.05 3818.94    67.9 3819.13   69.46 3819.28    72.4 3819.48
   74.27 3819.65   75.68 3819.74   78.72  3819.9   79.22 3819.94   80.09 3819.99
   81.22 3820.15   82.81 3820.33   84.17 3820.34   85.63 3820.38   86.91 3820.39
   89.12 3820.31   90.04 3820.31   91.51 3820.38   92.98 3820.48   94.45 3820.55
   96.46 3820.69   97.82  3820.8  102.57 3820.93  103.98 3820.95   105.4 3820.94
  106.22  3820.9   110.1 3820.23  111.77 3819.98  112.83  3819.8  116.01 3819.31
  116.51 3819.26  116.72 3819.26  117.98  3819.4  119.65 3819.62  120.97 3819.84
  122.38 3820.03   123.8 3820.26  125.11 3820.44  125.92 3820.62  126.47 3820.66
  127.38 3820.65  128.08 3820.66  128.76 3820.62  129.58 3820.63  130.32 3820.58
  131.09 3820.56  131.82 3820.48  132.57 3820.46  133.33 3820.47  134.42 3820.33
  135.61 3820.29  136.65 3820.28  137.81  3820.2  138.55 3820.28  138.87 3820.33
  139.98 3820.56   140.8 3820.78   141.1 3820.82  141.55 3820.83  143.04 3820.95
  144.54 3821.04  145.55 3821.03  146.03 3820.93  146.66 3820.71  147.77 3820.44
 148.4313820.402  149.32 3820.35  151.11 3820.35  151.61 3820.42  153.51 3820.98
  154.26 3821.08  154.44 3821.12  155.01 3821.35  155.56 3821.61  156.17 3821.88
  156.51 3821.99  157.25 3822.29     158 3822.62  158.47 3822.85

Manning's n Values        num=       1
     Sta   n Val
       0    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  158.47            18.77   18.77   18.77            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 7.000*

INPUT
Description:
Station Elevation Data    num=     420
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3827.39     .28 3827.09     .51 3826.77     .72 3826.43     .92 3826.22
    1.11 3826.04    1.31  3825.9    1.89 3825.62    2.52 3825.51    6.69 3825.42
    6.96  3825.4     7.3 3825.36    7.41 3825.32    7.79 3824.94    8.01 3824.82
    8.18  3824.8    8.29  3824.8    9.34 3824.94    9.56 3824.96    9.73 3824.97
    9.89 3824.96   10.11 3824.95    10.5 3824.92   13.87 3824.62    14.7 3824.55
   14.81 3824.54   14.92 3824.53    15.2 3824.51   15.97  3824.5    16.3 3824.49
   16.36 3824.49   16.43 3824.49   16.61 3824.49   17.08 3824.39   17.39 3824.33
   18.13 3823.88   18.37  3823.6   18.63 3823.15   19.34 3822.08      20 3821.81
   20.28 3821.87   21.06 3821.99   21.11    3822   21.44 3822.01   21.77 3822.02
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21.83	3822.02	21.87	3822.02	21.89	3822.02	22.24	3822.02	22.55	3821.99
22.6	3821.98	22.65	3821.98	22.71	3821.98	22.99	3821.92	23.21	3821.88
23.32	3821.86	23.43	3821.84	23.82	3821.76	24.1	3821.7	24.67	3821.59
24.87	3821.55	24.98	3821.52	25.09	3821.5	25.37	3821.45	25.64	3821.39
25.75	3821.37	25.86	3821.34	26.14	3821.29	26.36	3821.26	26.53	3821.24
26.68	3821.22	26.69	3821.22	26.91	3821.2	27.3	3821.15	27.47	3821.13
27.69	3821.11	28.69	3821.05	29.46	3821	29.68	3820.98	29.9	3820.97
30.06	3820.95	30.23	3820.94	30.45	3820.92	30.67	3820.9	30.7	3820.9
30.84	3820.89	30.95	3820.88	31.22	3820.86	31.5	3820.84	31.61	3820.83
31.72	3820.82	32	3820.8	32.27	3820.79	32.5	3820.77	32.77	3820.75
33.1	3820.73	33.16	3820.73	33.27	3820.72	33.55	3820.7	33.88	3820.68
33.99	3820.67	34.04	3820.66	34.38	3820.64	34.71	3820.62	34.76	3820.61
34.82	3820.61	34.84	3820.61	35.15	3820.59	35.48	3820.59	35.54	3820.59
38.69	3820.57	38.76	3820.57	39.02	3820.57	39.46	3820.57	39.51	3820.57
39.85	3820.57	40.23	3820.59	40.29	3820.58	40.62	3820.57	40.9	3820.54
41.01	3820.53	41.12	3820.52	41.67	3820.46	41.78	3820.45	41.89	3820.44
42.17	3820.41	42.44	3820.38	42.55	3820.37	42.66	3820.35	43.22	3820.3
43.33	3820.28	43.49	3820.27	43.71	3820.25	43.99	3820.22	44.1	3820.2
44.27	3820.19	44.49	3820.17	44.71	3820.16	45.1	3820.14	45.32	3820.14
45.48	3820.14	45.7	3820.13	46.09	3820.13	46.15	3820.13	46.26	3820.12
46.48	3820.12	46.86	3820.1	47.03	3820.1	47.25	3820.09	47.44	3820.08
47.47	3820.08	48.03	3820.06	48.3	3820.04	48.41	3820.03	48.58	3820.02
48.8	3820.01	49.08	3819.99	49.19	3819.99	49.3	3819.98	49.57	3819.96
49.9	3819.94	50.02	3819.93	50.07	3819.92	50.4	3819.9	50.68	3819.87
50.79	3819.86	50.84	3819.85	51.18	3819.81	51.32	3819.8	51.51	3819.78
51.56	3819.77	51.62	3819.77	51.95	3819.73	52.28	3819.69	52.34	3819.69
52.39	3819.68	52.72	3819.65	52.85	3819.64	53.11	3819.62	53.17	3819.61
53.5	3819.59	53.88	3819.57	54.27	3819.55	54.66	3819.53	54.71	3819.52
55.04	3819.5	55.43	3819.48	55.49	3819.48	55.87	3819.45	56.2	3819.43
56.26	3819.43	56.32	3819.43	56.65	3819.41	56.98	3819.39	57.03	3819.39
57.09	3819.39	57.42	3819.37	57.81	3819.34	57.86	3819.34	58.19	3819.32
58.47	3819.31	58.58	3819.3	58.69	3819.29	58.97	3819.26	59.24	3819.23
59.35	3819.22	59.47	3819.2	59.74	3819.17	60.02	3819.14	60.13	3819.12
60.29	3819.11	60.52	3819.08	60.79	3819.05	60.9	3819.04	60.96	3819.03
61.57	3818.95	61.73	3818.93	61.9	3818.91	62.12	3818.89	62.34	3818.86
62.51	3818.84	62.67	3818.82	62.89	3818.79	62.94	3818.78	63.06	3818.76
63.28	3818.72	63.5	3818.68	63.67	3818.65	63.83	3818.62	64.05	3818.58
64.27	3818.54	64.44	3818.51	64.61	3818.48	64.83	3818.44	64.93	3818.42
65.1	3818.39	65.21	3818.37	65.38	3818.34	65.6	3818.29	65.88	3818.24
65.99	3818.22	66.15	3818.19	66.71	3818.09	66.82	3818.07	66.93	3818.05
67.2	3817.99	67.48	3817.93	67.59	3817.91	67.64	3817.9	67.98	3817.83
68.31	3817.77	68.36	3817.76	68.57	3817.71	68.75	3817.68	69.08	3817.62
69.14	3817.61	69.19	3817.6	69.52	3817.54	69.91	3817.47	69.97	3817.46
70.3	3817.4	70.68	3817.33	70.74	3817.32	70.97	3817.29	71.07	3817.27
71.46	3817.22	71.51	3817.21	71.9	3817.14	72.23	3817.08	72.29	3817.07
72.67	3817.01	73.01	3816.97	73.06	3816.96	73.45	3816.87	73.6	3816.84
73.78	3816.8	73.83	3816.8	73.89	3816.79	74.22	3816.74	74.55	3816.69
74.57	3816.69	74.66	3816.69	74.99	3816.67	76.71	3816.69	77.2	3816.69
77.57	3816.7	78.3	3816.72	78.91	3816.74	80.14	3816.78	82.2	3816.82
82.35	3816.83	82.72	3816.86	83.28	3816.89	83.45	3816.9	85.29	3817.04

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   85.57 3817.06   86.82 3817.18   87.13 3817.21   88.23 3817.28   89.19 3817.35
    90.7 3817.48   91.83 3817.56   92.27 3817.58   93.38 3817.64   94.11 3817.68
   94.28 3817.69   94.68 3817.73   95.38 3817.78   95.95 3817.86   96.29 3817.91
   97.42 3818.04   97.57 3818.06   98.52 3818.07   98.66 3818.08   99.63 3818.11
   99.84 3818.12  100.87 3818.14   101.1 3818.13  102.57 3818.08  102.65 3818.08
  103.39 3818.07  103.67 3818.08  104.57 3818.12  104.78 3818.13  105.75 3818.19
  106.25 3818.22  106.93 3818.25  107.72  3818.3  108.55 3818.35  108.82 3818.37
  109.65 3818.43  111.39 3818.47   112.5 3818.49  113.47 3818.52  113.97 3818.53
   114.6 3818.53  115.44 3818.53  115.75 3818.53  116.41  3818.5  117.64  3818.3
  119.11 3818.06  119.53    3818  120.87 3817.81  121.69 3817.68  121.73 3817.67
  124.28  3817.3  124.63 3817.26  124.69 3817.26  124.86 3817.26  125.87 3817.35
   126.1 3817.38   127.2  3817.5  127.21  3817.5  127.94  3817.6  128.28 3817.65
  129.41  3817.8  129.78 3817.85  130.55 3817.97  131.61 3818.11  132.26 3818.24
  132.35 3818.25   132.7 3818.28  133.08 3818.28  133.43 3818.28     134 3818.29
  134.54 3818.27  134.92 3818.28   135.2 3818.29   135.8 3818.26  136.42 3818.25
  136.76 3818.22  137.01  3818.2  137.61  3818.2  138.22 3818.21   139.1 3818.13
  140.06 3818.13  140.07 3818.13  140.89 3818.14  141.83 3818.11  142.28 3818.16
  142.42 3818.18  142.64 3818.23  142.68 3818.23  143.01 3818.31  143.57 3818.43
  144.23 3818.61  144.47 3818.65  144.84 3818.67  145.22  3818.7  146.04 3818.79
  147.24 3818.88  147.42 3818.89  148.06  3818.9  148.16 3818.88  148.44 3818.83
  148.95 3818.68  149.84  3818.5  150.36 3818.48  151.09 3818.45  152.53 3818.48
  152.93 3818.53  153.31 3818.65  154.46 3818.98  155.06 3819.07  155.21  3819.1
  155.51 3819.22  155.67 3819.28  156.11 3819.48   156.6 3819.69  156.88 3819.77
  157.47 3820.01  158.07 3820.26  158.08 3820.26  158.45 3820.43  158.63 3820.42
  158.78 3820.41   158.8  3820.4  158.98 3820.41  159.15 3820.41  159.16 3820.41

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035  158.45    .035  159.16    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  158.45             18.77   18.77   18.77            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: -12.000*

INPUT
Description:
Station Elevation Data    num=     417
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3825.72     .35 3825.37     .64 3824.91     .91 3824.46    1.17 3824.25
     1.4 3824.07    1.67 3823.97     2.4 3823.78     3.2 3823.69    8.49 3823.57
    8.84 3823.54    9.26 3823.47     9.4 3823.38    9.89 3822.64   10.18 3822.38
   10.39 3822.34   10.53 3822.36   11.86 3822.66   12.14  3822.7   12.35 3822.71
   12.56  3822.7   12.84 3822.68   13.33 3822.62   17.61 3822.06   18.67 3821.94
   18.81 3821.92   18.95  3821.9    19.3 3821.86   20.28 3821.85    20.7 3821.84
   20.77 3821.84   20.87 3821.84   21.09 3821.85   21.68 3821.79   22.09 3821.75
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23.02 3821.47	23.32 3821.29	23.65 3820.99	24.56 3820.3	25.39 3820.13
25.75 3820.18	26.74 3820.25	26.81 3820.24	27.23 3820.19	27.65 3820.12
27.72 3820.11	27.77 3820.11	27.79 3820.11	28.24 3820.04	28.63 3819.96
28.7 3819.94	28.76 3819.94	28.84 3819.92	29.19 3819.81	29.48 3819.75
29.61 3819.72	29.75 3819.69	30.25 3819.55	30.6 3819.46	31.32 3819.27
31.58 3819.2	31.72 3819.17	31.86 3819.13	32.21 3819.05	32.56 3818.97
32.7 3818.92	32.84 3818.88	33.19 3818.81	33.47 3818.76	33.68 3818.75
33.88 3818.73	33.9 3818.72	34.18 3818.69	34.67 3818.63	34.88 3818.6
35.16 3818.59	36.43 3818.55	37.4 3818.51	37.68 3818.5	37.97 3818.48
38.18 3818.46	38.39 3818.45	38.67 3818.44	38.95 3818.42	38.99 3818.42
39.16 3818.41	39.3 3818.4	39.65 3818.37	40 3818.36	40.14 3818.35
40.28 3818.34	40.63 3818.33	40.98 3818.32	41.26 3818.31	41.61 3818.29
42.04 3818.27	42.11 3818.27	42.25 3818.26	42.6 3818.25	43.02 3818.22
43.16 3818.22	43.23 3818.21	43.65 3818.19	44.07 3818.18	44.14 3818.17
44.21 3818.17	44.24 3818.17	44.63 3818.16	45.05 3818.16	45.12 3818.16
49.12 3818.32	49.21 3818.32	49.54 3818.33	50.11 3818.35	50.18 3818.36
50.6 3818.39	51.09 3818.43	51.16 3818.43	51.58 3818.4	51.93 3818.36
52.07 3818.35	52.21 3818.33	52.91 3818.24	53.05 3818.22	53.19 3818.21
53.54 3818.16	53.9 3818.11	54.04 3818.09	54.18 3818.07	54.88 3817.99
55.02 3817.96	55.23 3817.94	55.51 3817.9	55.86 3817.86	56 3817.84
56.21 3817.81	56.49 3817.79	56.77 3817.77	57.26 3817.76	57.55 3817.76
57.76 3817.76	58.04 3817.77	58.53 3817.77	58.61 3817.77	58.74 3817.77
59.02 3817.77	59.51 3817.78	59.72 3817.77	60 3817.78	60.24 3817.78
60.28 3817.78	60.98 3817.78	61.33 3817.77	61.47 3817.77	61.69 3817.77
61.97 3817.76	62.32 3817.76	62.46 3817.76	62.6 3817.76	62.95 3817.75
63.37 3817.74	63.51 3817.74	63.58 3817.73	64 3817.71	64.35 3817.69
64.49 3817.68	64.56 3817.67	64.98 3817.63	65.16 3817.61	65.4 3817.6
65.48 3817.59	65.55 3817.58	65.97 3817.54	66.39 3817.5	66.46 3817.49
66.53 3817.49	66.95 3817.45	67.11 3817.44	67.44 3817.41	67.51 3817.41
67.93 3817.4	68.42 3817.38	68.91 3817.37	69.4 3817.36	69.48 3817.36
69.9 3817.35	70.39 3817.33	70.46 3817.33	70.95 3817.31	71.37 3817.29
71.44 3817.29	71.51 3817.29	71.93 3817.29	72.35 3817.28	72.42 3817.28
72.49 3817.27	72.91 3817.26	73.4 3817.25	73.48 3817.24	73.9 3817.23
74.25 3817.23	74.39 3817.22	74.53 3817.22	74.88 3817.18	75.23 3817.14
75.37 3817.12	75.51 3817.1	75.86 3817.06	76.21 3817.02	76.35 3817
76.56 3816.98	76.84 3816.95	77.19 3816.91	77.34 3816.89	77.41 3816.88
78.18 3816.78	78.39 3816.76	78.6 3816.73	78.88 3816.7	79.16 3816.67
79.37 3816.64	79.58 3816.61	79.86 3816.57	79.93 3816.56	80.07 3816.53
80.35 3816.5	80.63 3816.46	80.84 3816.43	81.05 3816.39	81.33 3816.35
81.62 3816.31	81.83 3816.28	82.04 3816.25	82.32 3816.21	82.45 3816.2
82.67 3816.17	82.81 3816.14	83.02 3816.12	83.3 3816.07	83.65 3816.01
83.79 3815.99	84 3815.97	84.7 3815.87	84.84 3815.85	84.98 3815.83
85.34 3815.77	85.69 3815.71	85.83 3815.69	85.9 3815.68	86.32 3815.62
86.74 3815.56	86.81 3815.55	87.07 3815.5	87.3 3815.47	87.72 3815.41
87.79 3815.4	87.86 3815.39	88.28 3815.33	88.77 3815.25	88.84 3815.24
89.26 3815.18	89.76 3815.1	89.83 3815.1	90.12 3815.07	90.25 3815.06
90.74 3815.03	90.81 3815.03	91.3 3814.96	91.72 3814.91	91.79 3814.9
92.28 3814.85	92.7 3814.83	92.77 3814.82	93.27 3814.72	93.46 3814.69
93.69 3814.64	93.76 3814.63	93.83 3814.62	94.25 3814.57	94.67 3814.53
94.69 3814.52	94.81 3814.52	95.23 3814.5	96.53 3814.52	96.9 3814.53

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   97.18 3814.54   97.74 3814.56   98.19  3814.6   99.13 3814.67  100.68 3814.75
   100.8 3814.76  101.08 3814.79   101.5 3814.83  101.63 3814.85  103.03 3814.97
  103.24 3814.99  104.19 3815.09  104.42 3815.11  105.25 3815.16  105.98 3815.21
  107.12 3815.31  107.98 3815.37  108.32 3815.39  109.15 3815.44  109.71 3815.48
  109.83 3815.49  110.14 3815.52  110.67 3815.56   111.1 3815.63  111.36 3815.66
  112.21 3815.77  112.32 3815.78  113.05 3815.81  113.15 3815.81  113.89 3815.86
  114.04 3815.86  114.82 3815.88     115 3815.88  116.11 3815.85  116.17 3815.84
  116.73 3815.83  116.95 3815.83  117.63 3815.86  117.78 3815.86  118.52 3815.91
   118.9 3815.92  119.42 3815.94  120.01 3815.97  120.64 3816.01  120.85 3816.02
  121.47 3816.06   122.8 3816.08  123.63 3816.09  124.37 3816.11  124.74 3816.11
  125.23 3816.12  125.86 3816.11  126.09 3816.11  126.59 3816.09  127.53 3815.97
  128.64 3815.81  128.96 3815.77  129.97 3815.64  130.59 3815.55  130.62 3815.55
  132.56 3815.28  132.82 3815.26  132.86 3815.25  132.99 3815.25  133.76  3815.3
  133.93 3815.31  134.77 3815.38  135.32 3815.44  135.58 3815.47  136.44 3815.56
  136.72  3815.6  137.31 3815.68   138.1 3815.77   138.6 3815.86  138.67 3815.87
  138.93 3815.89  139.22  3815.9  139.49 3815.91  139.91 3815.93  140.33 3815.92
  140.62 3815.93  140.83 3815.94  141.28 3815.94  141.75 3815.94  142.01 3815.93
  142.19 3815.92  142.65 3815.93  143.11 3815.95  143.78 3815.94   144.5 3815.97
  145.14 3816.01  145.84 3816.01  146.18 3816.07  146.29 3816.09  146.46 3816.13
  146.49 3816.14  146.74  3816.2  147.17  3816.3  147.67 3816.45  147.85 3816.48
  148.12  3816.5  148.41 3816.54  149.03 3816.62  149.95 3816.73  150.08 3816.73
  150.56 3816.76  150.64 3816.75  150.85 3816.73  151.24 3816.64  151.91 3816.55
  152.31 3816.56  152.86 3816.55  153.95  3816.6  154.25 3816.65  154.54 3816.74
  155.41 3816.99  155.87 3817.06  155.98 3817.08  156.21 3817.17  156.33 3817.21
  156.66 3817.35  157.03  3817.5  157.24 3817.56  157.69 3817.72  158.15  3817.9
  158.43 3818.02  158.79    3818  159.08 3817.96  159.14 3817.96  159.49 3817.97
  159.83 3817.97  159.86 3817.97

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035  158.43    .035  159.86    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  158.43            18.77   18.77   18.77             .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: -31.000*

INPUT
Description:
Station Elevation Data    num=     417
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3824.05     .43 3823.64     .78 3823.04    1.11 3822.48    1.41 3822.28
     1.7  3822.1    2.02 3822.05    2.91 3821.94    3.88 3821.88    10.3 3821.73
   10.72 3821.68   11.23 3821.57    11.4 3821.44      12 3820.33   12.34 3819.95
   12.59 3819.89   12.76 3819.91   14.38 3820.37   14.72 3820.44   14.98 3820.46
   15.23 3820.44   15.57  3820.4   16.17 3820.33   21.36  3819.5   22.63 3819.32
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22.8	3819.29	22.97	3819.27	23.4	3819.22	24.59	3819.2	25.1	3819.19
25.19	3819.19	25.3	3819.19	25.58	3819.2	26.29	3819.18	26.78	3819.17
27.92	3819.06	28.28	3818.98	28.68	3818.84	29.77	3818.52	30.79	3818.46
31.23	3818.5	32.42	3818.5	32.5	3818.49	33.01	3818.36	33.52	3818.23
33.61	3818.21	33.67	3818.19	33.7	3818.19	34.24	3818.05	34.72	3817.93
34.8	3817.9	34.88	3817.89	34.97	3817.87	35.4	3817.71	35.74	3817.62
35.91	3817.57	36.08	3817.54	36.67	3817.35	37.1	3817.21	37.98	3816.95
38.29	3816.86	38.46	3816.81	38.63	3816.76	39.06	3816.66	39.48	3816.54
39.65	3816.48	39.82	3816.42	40.25	3816.33	40.59	3816.27	40.84	3816.25
41.07	3816.23	41.1	3816.23	41.44	3816.19	42.03	3816.1	42.29	3816.08
42.63	3816.06	44.17	3816.04	45.35	3816.02	45.69	3816.01	46.03	3816
46.29	3815.98	46.54	3815.97	46.88	3815.95	47.22	3815.94	47.27	3815.94
47.48	3815.93	47.65	3815.92	48.07	3815.89	48.5	3815.88	48.67	3815.87
48.84	3815.87	49.27	3815.86	49.69	3815.86	50.03	3815.84	50.46	3815.83
50.97	3815.82	51.05	3815.81	51.22	3815.81	51.65	3815.79	52.16	3815.77
52.33	3815.77	52.41	3815.76	52.93	3815.74	53.44	3815.73	53.52	3815.73
53.61	3815.73	53.64	3815.73	54.12	3815.72	54.63	3815.74	54.71	3815.74
59.56	3816.07	59.67	3816.08	60.07	3816.1	60.75	3816.14	60.84	3816.15
61.35	3816.2	61.94	3816.27	62.03	3816.27	62.54	3816.24	62.97	3816.19
63.14	3816.17	63.31	3816.15	64.16	3816.02	64.33	3816	64.5	3815.97
64.92	3815.91	65.35	3815.85	65.52	3815.82	65.69	3815.79	66.54	3815.68
66.71	3815.64	66.96	3815.62	67.3	3815.56	67.73	3815.51	67.9	3815.47
68.16	3815.44	68.5	3815.4	68.84	3815.38	69.43	3815.37	69.77	3815.38
70.03	3815.39	70.37	3815.4	70.96	3815.42	71.06	3815.42	71.22	3815.42
71.56	3815.43	72.15	3815.45	72.41	3815.45	72.75	3815.46	73.04	3815.47
73.09	3815.47	73.94	3815.49	74.37	3815.5	74.54	3815.5	74.79	3815.51
75.13	3815.52	75.56	3815.52	75.73	3815.53	75.9	3815.53	76.32	3815.54
76.83	3815.55	77.01	3815.55	77.09	3815.54	77.6	3815.53	78.03	3815.51
78.2	3815.5	78.28	3815.49	78.79	3815.44	79.01	3815.43	79.3	3815.41
79.39	3815.4	79.47	3815.4	79.98	3815.35	80.49	3815.3	80.58	3815.3
80.66	3815.29	81.17	3815.25	81.37	3815.24	81.77	3815.21	81.86	3815.21
82.37	3815.2	82.96	3815.19	83.56	3815.19	84.15	3815.2	84.24	3815.2
84.75	3815.19	85.34	3815.18	85.43	3815.18	86.02	3815.17	86.53	3815.16
86.62	3815.16	86.71	3815.16	87.22	3815.16	87.73	3815.16	87.81	3815.16
87.9	3815.16	88.41	3815.16	89	3815.15	89.09	3815.15	89.6	3815.15
90.02	3815.15	90.19	3815.15	90.36	3815.14	90.79	3815.1	91.21	3815.05
91.38	3815.03	91.56	3815	91.98	3814.94	92.41	3814.89	92.58	3814.87
92.83	3814.85	93.17	3814.81	93.6	3814.76	93.77	3814.74	93.85	3814.73
94.79	3814.6	95.04	3814.58	95.3	3814.54	95.64	3814.51	95.98	3814.47
96.24	3814.44	96.49	3814.4	96.83	3814.36	96.91	3814.34	97.09	3814.31
97.43	3814.27	97.77	3814.23	98.02	3814.2	98.28	3814.17	98.62	3814.13
98.96	3814.08	99.21	3814.06	99.47	3814.03	99.81	3813.99	99.97	3813.97
100.23	3813.94	100.4	3813.92	100.66	3813.89	101	3813.84	101.43	3813.79
101.6	3813.77	101.85	3813.74	102.7	3813.65	102.87	3813.63	103.04	3813.61
103.47	3813.55	103.89	3813.49	104.06	3813.48	104.15	3813.46	104.66	3813.4
105.17	3813.35	105.25	3813.34	105.58	3813.3	105.85	3813.26	106.36	3813.2
106.45	3813.18	106.53	3813.17	107.04	3813.11	107.64	3813.04	107.72	3813.03
108.23	3812.97	108.83	3812.88	108.91	3812.88	109.27	3812.86	109.42	3812.85
110.02	3812.85	110.1	3812.84	110.7	3812.78	111.21	3812.73	111.3	3812.73
111.89	3812.69	112.4	3812.69	112.49	3812.69	113.08	3812.58	113.31	3812.53

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  113.59 3812.48  113.68 3812.47  113.76 3812.46  114.27  3812.4  114.78 3812.36
  114.81 3812.36  114.95 3812.35  115.46 3812.34  116.35 3812.36   116.6 3812.36
  116.79 3812.38  117.17  3812.4  117.48 3812.45  118.11 3812.55  119.17 3812.67
  119.25 3812.68  119.44 3812.73  119.73 3812.78  119.82 3812.79  120.76 3812.91
  120.91 3812.92  121.55 3812.99  121.71 3813.01  122.28 3813.05  122.77 3813.08
  123.55 3813.15  124.13 3813.19  124.36  3813.2  124.93 3813.23   125.3 3813.27
  125.39 3813.28   125.6 3813.31  125.96 3813.35  126.25 3813.39  126.42 3813.42
  127.01  3813.5  127.08 3813.51  127.57 3813.54  127.65 3813.55  128.14  3813.6
  128.25  3813.6  128.78 3813.63   128.9 3813.63  129.66 3813.61   129.7 3813.61
  130.08 3813.59  130.22 3813.59  130.69 3813.59  130.79  3813.6  131.29 3813.62
  131.55 3813.63   131.9 3813.64  132.31 3813.65  132.74 3813.66  132.87 3813.67
   133.3 3813.69   134.2 3813.69  134.77 3813.68  135.27  3813.7  135.52  3813.7
  135.85  3813.7  136.28  3813.7  136.44  3813.7  136.78 3813.69  137.41 3813.63
  138.17 3813.55  138.38 3813.53  139.08 3813.47   139.5 3813.43  139.52 3813.42
  140.83 3813.27  141.01 3813.25  141.04 3813.25  141.13 3813.25  141.65 3813.25
  141.77 3813.25  142.33 3813.26  142.71 3813.27  142.89 3813.28  143.47 3813.33
  143.66 3813.34  144.06 3813.39   144.6 3813.44  144.94 3813.49  144.98 3813.49
  145.16 3813.51  145.36 3813.53  145.54 3813.54  145.83 3813.56  146.11 3813.57
  146.31 3813.59  146.45  3813.6  146.76 3813.61  147.08 3813.64  147.25 3813.64
  147.38 3813.64  147.69 3813.67  148.01  3813.7  148.46 3813.74  148.95 3813.82
  149.38 3813.87  149.86 3813.92  150.09 3813.97  150.17 3813.99  150.28 3814.04
   150.3 3814.04  150.47  3814.1  150.76 3814.17   151.1 3814.28  151.22 3814.31
  151.41 3814.34  151.61 3814.37  152.03 3814.46  152.65 3814.57  152.74 3814.58
  153.07 3814.63  153.12 3814.63  153.27 3814.63  153.53 3814.61  153.99 3814.61
  154.25 3814.63  154.63 3814.66  155.37 3814.73  155.58 3814.76  155.77 3814.83
  156.36 3814.99  156.67 3815.04  156.75 3815.06   156.9 3815.11  156.98 3815.14
  157.21 3815.22  157.46  3815.3  157.61 3815.34  157.91 3815.44  158.22 3815.54
  158.42  3815.6  158.94 3815.57  159.39 3815.52  159.47 3815.51  159.99 3815.53
  160.52 3815.53  160.55 3815.52

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035  158.42    .035  160.55    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.    Expan.
             0  158.42             18.78   18.78   18.78            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: -50

INPUT
Description:
Station Elevation Data    num=     314
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3822.39      .5 3821.91     1.3 3820.51       2 3820.13    12.1 3819.88
    12.6 3819.82    13.2 3819.68    13.4  3819.5    14.1 3818.02    14.5 3817.52
    14.8 3817.44      15 3817.47    16.9 3818.08    17.3 3818.17    17.6  3818.2
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17.9	3818.18	18.3	3818.13	19	3818.03	25.1	3816.94	26.6	3816.71
26.8	3816.67	27	3816.64	27.5	3816.57	28.9	3816.55	29.5	3816.54
29.6	3816.54	30.9	3816.57	36.7	3816.81	38.1	3816.75	38.1	3816.74
38.2	3816.73	38.8	3816.54	39.4	3816.33	39.5	3816.3	39.6	3816.27
40.8	3815.9	40.9	3815.86	41.1	3815.82	41.6	3815.61	42.2	3815.43
42.4	3815.39	43.1	3815.14	43.6	3814.97	45	3814.51	45.2	3814.45
45.4	3814.39	45.9	3814.26	46.4	3814.12	46.6	3814.04	46.8	3813.96
47.3	3813.85	47.7	3813.78	48	3813.76	48.3	3813.73	48.7	3813.68
49.4	3813.58	49.7	3813.55	50.1	3813.54	53.3	3813.53	53.7	3813.52
54.1	3813.51	54.4	3813.49	54.7	3813.48	55.1	3813.47	55.5	3813.46
55.8	3813.45	56	3813.44	56.5	3813.41	57	3813.4	57.2	3813.39
57.4	3813.39	57.9	3813.39	58.4	3813.39	58.8	3813.38	59.3	3813.37
59.9	3813.36	60	3813.35	60.2	3813.35	60.7	3813.34	61.3	3813.32
61.5	3813.32	61.6	3813.31	62.2	3813.29	62.8	3813.29	62.9	3813.29
63	3813.29	63.6	3813.28	64.2	3813.31	64.3	3813.32	70	3813.82
70.6	3813.87	71.4	3813.93	71.5	3813.94	72.1	3814.01	72.8	3814.11
72.9	3814.11	73.5	3814.08	74	3814.01	74.2	3813.99	74.4	3813.96
75.4	3813.8	75.6	3813.77	75.8	3813.74	76.3	3813.66	76.8	3813.58
77	3813.54	77.2	3813.51	78.2	3813.37	78.4	3813.32	78.7	3813.29
79.1	3813.22	79.6	3813.15	79.8	3813.1	80.1	3813.06	80.5	3813.02
80.9	3812.99	81.6	3812.99	82	3813	82.3	3813.02	82.7	3813.03
83.4	3813.06	83.7	3813.07	84.1	3813.09	84.8	3813.12	85.1	3813.13
85.5	3813.15	85.9	3813.17	86.9	3813.21	87.4	3813.23	87.6	3813.24
87.9	3813.25	88.3	3813.27	88.8	3813.29	89	3813.3	89.2	3813.31
89.7	3813.33	90.3	3813.35	90.5	3813.36	90.6	3813.35	91.2	3813.34
91.7	3813.33	91.9	3813.32	92	3813.31	92.6	3813.26	93.2	3813.23
93.3	3813.22	93.4	3813.21	94	3813.16	94.6	3813.1	94.7	3813.1
94.8	3813.09	95.4	3813.05	96.1	3813.01	96.2	3813.01	96.8	3813.01
97.5	3813	98.2	3813.01	98.2	3813.02	98.9	3813.03	99	3813.03
99.6	3813.03	100.3	3813.03	100.4	3813.03	101.1	3813.03	101.7	3813.02
101.8	3813.02	101.9	3813.02	102.5	3813.04	103.1	3813.05	103.2	3813.05
103.3	3813.05	103.9	3813.05	104.6	3813.05	104.7	3813.05	105.3	3813.06
105.8	3813.07	106	3813.07	106.2	3813.07	106.7	3813.02	107.2	3812.96
107.4	3812.93	107.6	3812.9	108.1	3812.83	108.6	3812.77	108.8	3812.74
109.1	3812.72	109.5	3812.67	110	3812.62	110.3	3812.58	111.4	3812.43
111.7	3812.4	112	3812.36	112.4	3812.32	112.8	3812.28	113.1	3812.24
113.4	3812.19	113.8	3812.14	114.1	3812.09	114.5	3812.05	114.9	3812.01
115.2	3811.98	115.5	3811.94	115.9	3811.9	116.3	3811.85	116.6	3811.83
116.9	3811.8	117.3	3811.76	117.8	3811.72	118	3811.69	118.3	3811.67
118.7	3811.61	119.2	3811.56	119.4	3811.54	119.7	3811.52	120.7	3811.43
120.9	3811.41	121.1	3811.39	121.6	3811.33	122.1	3811.27	122.3	3811.26
122.4	3811.24	123	3811.19	123.6	3811.14	123.7	3811.13	124.4	3811.05
125	3810.99	125.1	3810.97	125.2	3810.96	125.8	3810.9	126.5	3810.82
126.6	3810.81	127.2	3810.75	127.9	3810.66	128	3810.66	128.6	3810.64
129.3	3810.66	129.4	3810.66	130.1	3810.6	130.7	3810.56	130.8	3810.56
131.5	3810.53	132.1	3810.55	132.2	3810.55	132.2	3810.54	132.9	3810.43
133.5	3810.32	133.6	3810.31	133.7	3810.29	134.3	3810.23	134.9	3810.19
135.1	3810.18	135.7	3810.17	136.3	3810.2	136.4	3810.22	136.6	3810.24
137.1	3810.44	137.7	3810.61	137.8	3810.67	138	3810.74	138.5	3810.84
139	3810.91	139.3	3810.93	140.4	3811.01	140.7	3811.03	140.9	3811.07

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   141.4 3811.16   141.8 3811.23   142.1 3811.28   142.4 3811.34   142.8 3811.38
   143.2 3811.38   143.5 3811.34   143.8 3811.33   144.2 3811.34   144.6 3811.33
   144.9 3811.32   145.6  3811.3   145.9 3811.28   146.3 3811.29   146.7 3811.28
   147.3  3811.3   147.7  3811.3   148.4  3811.3   149.2 3811.25   149.6 3811.19
   149.9 3811.14   150.1  3811.1   150.6 3811.09   151.3 3811.11   151.5 3811.15
     152 3811.24   152.5 3811.35   152.9 3811.44   153.4 3811.66     154 3811.87
   154.1 3811.94   154.2 3811.99   154.8 3812.21   155.4 3812.43   155.6  3812.5
   156.2 3812.71   156.9 3812.88     157 3812.92   157.6 3813.06   158.3 3813.18
   158.4 3813.18   158.4 3813.19   159.1 3813.14   159.7 3813.07   159.8 3813.06
   159.8 3813.07   160.5 3813.09   161.2 3813.09161.2429 3813.08

Manning's n Values        num=       1
     Sta   n Val
       0    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0   158.4            19.35   19.35   19.35            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: -69.250*

INPUT
Description:
Station Elevation Data    num=     453
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3820.68     .09 3820.69     .12 3820.69     .26 3820.55     .78 3819.83
     .91 3819.57       1 3819.44    1.56 3818.59    1.61 3818.53    2.15 3818.28
    2.33  3818.2   11.32 3817.98   11.89 3817.93   12.45 3817.81   12.63 3817.75
   12.76 3817.73   13.19 3817.63   13.28 3817.62   13.73 3817.54    13.9 3817.53
    14.1 3817.41   14.83 3816.37   14.99 3816.23   15.24 3816.02   15.25 3816.02
   15.55 3815.96   15.76 3815.99   16.41 3816.15   17.72 3816.46   18.13 3816.52
   18.44 3816.54   18.75 3816.53   19.16 3816.49   19.19 3816.49   19.64 3816.44
   19.89  3816.4   20.08 3816.36   20.29 3816.32   24.43 3815.49   25.18 3815.34
   25.74 3815.24   26.19 3815.18   27.05 3815.06   27.72 3814.98   27.74 3814.98
   27.94 3814.95   28.15 3814.92   28.66 3814.87   28.99 3814.86   30.11 3814.84
   30.73 3814.82   30.83 3814.82   31.27 3814.82   32.18 3814.85    32.3 3814.85
   36.44    3815   38.17 3815.05   39.61 3815.01   39.71 3814.99   40.33 3814.85
   40.95 3814.69   41.06 3814.67   41.16 3814.65    42.4 3814.37    42.5 3814.34
   42.71 3814.31   42.89 3814.25   43.23 3814.15   43.85 3814.03   44.05    3814
   44.78 3813.82   45.29  3813.7   45.54 3813.64   46.72 3813.38   46.74 3813.38
   46.94 3813.33   47.15 3813.29   47.67 3813.19   48.03 3813.12   48.18 3813.09
   48.39 3813.03    48.6 3812.97   49.11 3812.89   49.36 3812.86   49.53 3812.83
   49.84 3812.82      50  3812.8   50.15 3812.79   50.56 3812.74   50.66 3812.72
   51.28 3812.63   51.59 3812.59      52 3812.57   53.22  3812.5   54.45 3812.45
   55.31 3812.41   55.72 3812.38   56.14 3812.35   56.44 3812.33   56.75  3812.3
   56.99 3812.29   57.17 3812.28   57.58 3812.25   57.89 3812.23    58.1 3812.21
   58.27 3812.19   58.61 3812.17   59.13 3812.14   59.34 3812.12   59.54 3812.11
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59.83	3812.1	60.06	3812.1	60.58	3812.1	60.99	3812.09	61.51	3812.08
61.62	3812.08	62.12	3812.07	62.23	3812.06	62.43	3812.06	62.91	3812.06
62.95	3812.06	63.57	3812.05	63.76	3812.05	63.78	3812.05	63.88	3812.04
64.5	3812.02	65.12	3812.02	65.22	3812.02	65.33	3812.02	65.91	3812.02
65.95	3812.02	66.57	3812.04	66.67	3812.05	67.18	3812.09	70.32	3812.28
71.63	3812.36	72.56	3812.42	73.17	3812.46	74	3812.5	74.1	3812.51
74.25	3812.52	74.72	3812.56	75.45	3812.63	75.55	3812.63	76.17	3812.6
76.69	3812.55	76.89	3812.54	77.1	3812.51	77.77	3812.43	78.13	3812.39
78.34	3812.36	78.55	3812.34	79.06	3812.27	79.58	3812.2	79.78	3812.17
79.99	3812.14	81.02	3812.01	81.17	3811.98	81.23	3811.97	81.54	3811.94
81.95	3811.88	82.45	3811.81	82.47	3811.81	82.68	3811.77	82.99	3811.74
83.4	3811.7	83.81	3811.67	84.53	3811.66	84.95	3811.66	84.99	3811.66
85.26	3811.66	85.67	3811.66	86.27	3811.66	86.39	3811.67	86.7	3811.67
87.12	3811.68	87.54	3811.68	87.84	3811.68	88.15	3811.68	88.56	3811.69
88.67	3811.69	88.98	3811.69	90.01	3811.71	90.52	3811.71	90.73	3811.71
91.04	3811.72	91.45	3811.72	91.97	3811.73	92.18	3811.73	92.38	3811.74
92.61	3811.74	92.9	3811.74	93.52	3811.75	93.73	3811.76	93.83	3811.75
94.45	3811.73	94.97	3811.72	95.17	3811.71	95.2	3811.71	95.28	3811.7
95.85	3811.65	95.89	3811.65	96.51	3811.61	96.62	3811.6	96.72	3811.59
97.34	3811.53	97.96	3811.47	98.06	3811.47	98.17	3811.46	98.43	3811.43
98.79	3811.41	99.51	3811.35	99.61	3811.35	100.23	3811.33	100.96	3811.3
101.66	3811.29	101.68	3811.29	102.4	3811.28	102.5	3811.28	103.09	3811.27
103.12	3811.27	103.85	3811.24	103.95	3811.24	104.41	3811.23	104.67	3811.22
105.29	3811.2	105.4	3811.2	105.5	3811.19	105.54	3811.19	106.12	3811.19
106.18	3811.19	106.74	3811.18	106.84	3811.18	106.94	3811.17	107.03	3811.17
107.56	3811.15	108.29	3811.13	108.39	3811.13	109.01	3811.12	109.17	3811.11
109.53	3811.11	109.73	3811.11	109.94	3811.1	110.06	3811.09	110.46	3811.05
110.96	3810.99	111.18	3810.97	111.39	3810.94	111.9	3810.89	112.27	3810.85
112.42	3810.84	112.62	3810.81	112.93	3810.8	113.28	3810.77	113.35	3810.76
113.86	3810.72	114.17	3810.69	114.27	3810.68	114.58	3810.66	114.89	3810.66
115.22	3810.65	115.31	3810.64	115.54	3810.62	115.62	3810.61	115.87	3810.58
115.93	3810.57	116.34	3810.53	116.76	3810.49	117.07	3810.45	117.15	3810.44
117.38	3810.41	117.79	3810.38	117.8	3810.37	118.1	3810.33	118.45	3810.3
118.51	3810.3	118.83	3810.27	118.92	3810.27	119.23	3810.24	119.54	3810.21
119.96	3810.18	120.14	3810.17	120.37	3810.15	120.68	3810.14	120.99	3810.12
121.4	3810.1	121.45	3810.1	121.9	3810.07	121.92	3810.07	122.13	3810.06
122.32	3810.05	122.44	3810.05	122.76	3810.02	122.85	3810.01	123.37	3809.98
123.57	3809.96	123.62	3809.96	123.88	3809.95	124.07	3809.95	124.45	3809.92
124.91	3809.9	125.12	3809.89	125.33	3809.88	125.38	3809.87	125.72	3809.84
125.84	3809.82	126.2	3809.77	126.36	3809.75	126.57	3809.73	126.67	3809.71
126.99	3809.67	127.29	3809.63	127.49	3809.61	127.91	3809.56	128	3809.55
128.27	3809.52	128.74	3809.49	129.32	3809.45	129.35	3809.45	129.46	3809.43
129.54	3809.43	129.56	3809.43	130.08	3809.4	130.18	3809.39	130.62	3809.35
130.9	3809.31	131.01	3809.3	131.36	3809.26	131.63	3809.24	132.01	3809.19
132.35	3809.15	132.45	3809.14	133.07	3809.1	133.8	3809.08	133.9	3809.08
133.95	3809.07	134.62	3809.04	134.63	3809.03	135.24	3808.97	135.34	3808.97
135.88	3808.95	136.07	3808.94	136.53	3808.94	136.69	3808.94	136.79	3808.93
137.18	3808.87	137.51	3808.82	138.13	3808.71	138.24	3808.7	138.34	3808.68
138.47	3808.66	138.96	3808.62	139.12	3808.6	139.58	3808.57	139.77	3808.56
139.79	3808.56	140.4	3808.54	140.87	3808.56	141.09	3808.57	141.21	3808.59

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  141.43 3808.61  142.01 3808.77  142.41 3808.86  142.69 3808.92  142.81 3808.97
  143.03 3809.04  143.52 3809.12  143.61 3809.14  144.18 3809.22  144.52 3809.24
  144.64 3809.26  145.48 3809.33  145.78 3809.35  146.12 3809.37  146.33 3809.41
  146.35 3809.41   146.7 3809.44  146.92 3809.45  147.18 3809.46  147.33 3809.49
  147.38  3809.5  147.72 3809.58  148.03 3809.65  148.06 3809.66  148.52 3809.72
  148.88 3809.74  148.98 3809.74  149.32 3809.71  149.66 3809.71  149.89 3809.71
  150.12 3809.72  150.58 3809.71  150.92  3809.7  150.94  3809.7  151.57 3809.69
  151.72 3809.67  152.06 3809.63  152.52 3809.61  152.53  3809.6  152.98 3809.59
  153.12  3809.6  153.66 3809.62  154.12 3809.64  154.39 3809.66  154.81  3809.7
  154.92 3809.71  155.18 3809.71  155.83 3809.72  156.24 3809.69  156.29 3809.69
  156.63 3809.66  156.86 3809.64  157.36 3809.64  157.43 3809.64  158.24 3809.69
  158.37 3809.72  158.46 3809.73  158.63 3809.76  158.93  3809.8  159.04 3809.81
  159.61 3809.91  159.95 3809.96  160.06 3809.99  160.48 3810.13  160.64 3810.18
  160.75 3810.21  161.32 3810.34  161.44 3810.39  161.54 3810.43  162.07 3810.56
  162.24 3810.61  162.45 3810.67  162.86 3810.79  162.92  3810.8  163.15 3810.86
   163.3  3810.9  163.66    3811  163.84 3811.05  164.19 3811.12  164.64 3811.22
  164.75 3811.26  164.99 3811.32  165.25 3811.38  165.44 3811.43  165.84 3811.54
  166.24 3811.62  166.35 3811.63  166.88  3811.6  167.32 3811.55   167.4 3811.54
  167.93 3811.56  168.45 3811.56  168.48 3811.56

Manning's n Values        num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035     .26    .035  166.35    .035  168.48    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           .26  166.35             19.35   19.35   19.35            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: -88.500*

INPUT
Description:
Station Elevation Data    num=     453
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3818.98     .18 3818.99     .23 3818.98     .53 3818.71    1.06 3817.76
     1.2 3817.46    1.28 3817.32    1.87 3816.59    1.92 3816.55    2.47 3816.32
    2.66 3816.27   11.94 3816.05   12.52 3815.96    13.1 3815.72   13.29 3815.63
   13.42 3815.58   13.86 3815.42   13.95 3815.42   14.42 3815.37   14.59 3815.38
   14.81 3815.33   15.55 3814.72   15.73 3814.65   15.98 3814.52   15.99 3814.52
    16.3 3814.49   16.51 3814.51   17.19 3814.63   18.54 3814.83   18.96 3814.88
   19.28 3814.89    19.6 3814.88   20.03 3814.85   20.05 3814.85   20.52 3814.81
   20.77 3814.77   20.97 3814.73   21.19 3814.69   25.46 3813.73   26.23 3813.56
   26.82 3813.47   27.27 3813.42   28.16 3813.32   28.86 3813.25   28.87 3813.24
   29.08 3813.22    29.3 3813.21   29.83 3813.16   30.17 3813.16   31.32 3813.12
   31.96  3813.1   32.07  3813.1   32.52 3813.09   33.45 3813.12   33.58 3813.13
   37.85 3813.26   39.63 3813.29   41.12 3813.26   41.23 3813.25   41.87 3813.16
   42.51 3813.05   42.61 3813.04   42.72 3813.02      44 3812.84   44.11 3812.82
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44.32	3812.8	44.51	3812.76	44.85	3812.7	45.49	3812.62	45.7	3812.61
46.45	3812.5	46.98	3812.42	47.24	3812.39	48.46	3812.24	48.47	3812.24
48.69	3812.21	48.9	3812.19	49.43	3812.13	49.8	3812.08	49.97	3812.06
50.18	3812.02	50.39	3811.98	50.93	3811.93	51.18	3811.9	51.35	3811.89
51.67	3811.87	51.84	3811.86	51.99	3811.85	52.42	3811.8	52.52	3811.78
53.16	3811.68	53.48	3811.64	53.91	3811.59	55.16	3811.47	56.43	3811.37
57.32	3811.28	57.74	3811.24	58.17	3811.2	58.49	3811.16	58.81	3811.13
59.06	3811.11	59.24	3811.09	59.66	3811.04	59.98	3811.01	60.19	3810.98
60.37	3810.96	60.73	3810.92	61.26	3810.87	61.47	3810.85	61.69	3810.83
61.99	3810.81	62.22	3810.81	62.75	3810.8	63.18	3810.8	63.71	3810.79
63.83	3810.78	64.35	3810.78	64.46	3810.78	64.67	3810.78	65.16	3810.78
65.2	3810.78	65.84	3810.77	66.04	3810.77	66.05	3810.77	66.16	3810.77
66.8	3810.76	67.44	3810.76	67.55	3810.76	67.65	3810.76	68.25	3810.76
68.29	3810.76	68.93	3810.78	69.04	3810.78	69.56	3810.81	72.8	3810.94
74.16	3810.98	75.11	3811.02	75.75	3811.04	76.6	3811.07	76.71	3811.08
76.86	3811.09	77.35	3811.11	78.09	3811.15	78.2	3811.15	78.84	3811.13
79.37	3811.09	79.59	3811.08	79.8	3811.07	80.49	3811.01	80.86	3810.98
81.08	3810.95	81.29	3810.93	81.82	3810.88	82.36	3810.82	82.57	3810.79
82.78	3810.77	83.85	3810.66	84	3810.63	84.06	3810.62	84.38	3810.59
84.81	3810.54	85.32	3810.48	85.34	3810.47	85.55	3810.44	85.87	3810.41
86.3	3810.38	86.72	3810.35	87.47	3810.32	87.9	3810.31	87.94	3810.31
88.22	3810.31	88.64	3810.29	89.26	3810.27	89.39	3810.27	89.71	3810.26
90.13	3810.26	90.57	3810.25	90.88	3810.25	91.2	3810.24	91.62	3810.23
91.74	3810.22	92.05	3810.22	93.12	3810.2	93.65	3810.19	93.86	3810.19
94.18	3810.18	94.61	3810.18	95.14	3810.17	95.35	3810.17	95.57	3810.16
95.8	3810.16	96.1	3810.16	96.74	3810.15	96.95	3810.15	97.06	3810.14
97.7	3810.12	98.23	3810.11	98.44	3810.1	98.47	3810.09	98.55	3810.09
99.14	3810.04	99.19	3810.04	99.83	3809.99	99.94	3809.98	100.04	3809.96
100.68	3809.9	101.32	3809.84	101.43	3809.83	101.53	3809.82	101.81	3809.8
102.17	3809.76	102.92	3809.7	103.03	3809.69	103.66	3809.65	104.41	3809.6
105.14	3809.56	105.16	3809.56	105.9	3809.54	106.01	3809.53	106.61	3809.5
106.65	3809.5	107.39	3809.46	107.5	3809.45	107.97	3809.43	108.25	3809.41
108.89	3809.38	108.99	3809.37	109.1	3809.37	109.14	3809.37	109.74	3809.33
109.8	3809.33	110.38	3809.31	110.48	3809.3	110.59	3809.29	110.67	3809.29
111.23	3809.26	111.97	3809.21	112.08	3809.21	112.72	3809.17	112.89	3809.17
113.25	3809.15	113.47	3809.14	113.68	3809.14	113.8	3809.12	114.21	3809.08
114.74	3809.03	114.96	3809.01	115.17	3808.99	115.7	3808.94	116.08	3808.91
116.24	3808.91	116.45	3808.89	116.77	3808.88	117.13	3808.86	117.2	3808.85
117.73	3808.82	118.05	3808.8	118.15	3808.79	118.47	3808.79	118.79	3808.83
119.13	3808.85	119.22	3808.85	119.46	3808.84	119.54	3808.83	119.79	3808.79
119.86	3808.79	120.29	3808.75	120.71	3808.71	121.03	3808.67	121.12	3808.66
121.35	3808.64	121.78	3808.61	121.79	3808.61	122.1	3808.58	122.46	3808.55
122.52	3808.54	122.85	3808.52	122.95	3808.52	123.27	3808.51	123.59	3808.49
124.01	3808.47	124.2	3808.46	124.44	3808.45	124.76	3808.45	125.08	3808.45
125.51	3808.44	125.55	3808.44	126.02	3808.43	126.04	3808.43	126.25	3808.42
126.46	3808.43	126.57	3808.43	126.91	3808.42	127	3808.41	127.53	3808.39
127.74	3808.38	127.79	3808.38	128.06	3808.39	128.26	3808.39	128.65	3808.37
129.13	3808.37	129.34	3808.37	129.55	3808.36	129.61	3808.36	129.96	3808.33
130.09	3808.31	130.46	3808.25	130.62	3808.22	130.83	3808.2	130.94	3808.17
131.27	3808.13	131.58	3808.08	131.79	3808.04	132.22	3807.98	132.32	3807.97

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  132.59 3807.95  133.07 3807.92  133.67  3807.9  133.71  3807.9  133.82  3807.9
   133.9  3807.9  133.92  3807.9  134.45 3807.89  134.56 3807.88  135.02 3807.85
  135.31 3807.81  135.41  3807.8  135.78 3807.75  136.05 3807.73  136.45 3807.68
   136.8 3807.63  136.91 3807.62  137.55 3807.56  138.29  3807.5   138.4 3807.49
  138.45 3807.49  139.14 3807.47  139.16 3807.47  139.78 3807.38  139.89 3807.38
  140.45 3807.36  140.64 3807.35  141.12 3807.33  141.27 3807.32  141.38 3807.32
  141.78 3807.26  142.13  3807.2  142.77 3807.09  142.87 3807.08  142.98 3807.06
  143.11 3807.04  143.62    3807  143.78 3806.99  144.26 3806.95  144.45 3806.94
  144.47 3806.93  145.11  3806.9  145.63 3806.92  145.88 3806.94  146.01 3806.96
  146.27 3806.98  146.91 3807.09  147.37 3807.17  147.68 3807.23  147.81 3807.27
  148.07 3807.33  148.62 3807.42  148.71 3807.44  149.35 3807.52  149.74 3807.56
  149.87 3807.57  150.82 3807.66  151.15 3807.69  151.54 3807.71  151.78 3807.74
   151.8 3807.74  152.19 3807.75  152.44 3807.74  152.73 3807.72   152.9 3807.76
  152.95 3807.77  153.34 3807.88  153.68 3807.97  153.73 3807.98  154.24 3808.05
  154.64 3808.09  154.75  3808.1  155.14 3808.08  155.53 3808.09  155.78 3808.09
  156.04 3808.09  156.55 3808.08  156.94 3808.08  156.96 3808.07  157.67 3808.07
  157.84 3808.05  158.23 3807.99  158.74 3807.92  158.76 3807.92  159.25  3807.9
  159.41 3807.91  160.03 3807.95  160.54 3807.98  160.84 3808.01  161.32 3808.09
  161.44 3808.11  161.73 3808.14  162.47 3808.18  162.93 3808.19  162.98 3808.19
  163.37 3808.18  163.63 3808.17  164.18 3808.19  164.27  3808.2  165.17 3808.28
  165.32  3808.3  165.43 3808.32  165.61 3808.34  165.96 3808.37  166.07 3808.39
  166.71 3808.46   167.1 3808.51  167.23 3808.53   167.7 3808.66  167.87  3808.7
     168 3808.72  168.64 3808.81  168.77 3808.84  168.89 3808.86  169.49 3808.97
  169.67 3809.01  169.91 3809.05  170.37 3809.17  170.44 3809.18   170.7 3809.23
  170.86 3809.26  171.27 3809.35  171.47 3809.39  171.87 3809.45  172.37 3809.57
   172.5  3809.6  172.77 3809.66  173.06 3809.74  173.27 3809.81  173.73 3809.95
  174.17 3810.06   174.3 3810.08  174.65 3810.06  174.95 3810.02     175 3810.02
  175.35 3810.04   175.7 3810.04  175.72 3810.03

Manning's n Values        num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035     .53    .035   174.3    .035  175.72    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           .53   174.3             19.35   19.35   19.35            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: -107.75*

INPUT
Description:
Station Elevation Data    num=     453
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3817.27     .27 3817.29     .35 3817.28     .79 3816.86    1.34 3815.68
    1.48 3815.35    1.57 3815.21    2.17  3814.6    2.22 3814.57     2.8 3814.37
    2.99 3814.34   12.55 3814.11   13.16 3813.98   13.75 3813.64   13.94  3813.5
   14.08 3813.43   14.54 3813.22   14.63 3813.21   15.11 3813.19   15.29 3813.23
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15.51	3813.24	16.28	3813.07	16.46	3813.06	16.72	3813.02	16.73	3813.02
17.05	3813.01	17.27	3813.03	17.96	3813.1	19.35	3813.21	19.79	3813.23
20.12	3813.24	20.45	3813.23	20.89	3813.22	20.92	3813.22	21.4	3813.18
21.66	3813.14	21.87	3813.1	22.09	3813.05	26.49	3811.97	27.29	3811.79
27.89	3811.7	28.36	3811.65	29.28	3811.57	29.99	3811.51	30.01	3811.51
30.23	3811.5	30.45	3811.49	30.99	3811.46	31.34	3811.45	32.53	3811.41
33.19	3811.38	33.3	3811.38	33.76	3811.37	34.73	3811.4	34.86	3811.4
39.26	3811.52	41.1	3811.54	42.63	3811.52	42.74	3811.51	43.4	3811.47
44.06	3811.41	44.17	3811.4	44.28	3811.4	45.6	3811.3	45.71	3811.29
45.93	3811.28	46.12	3811.26	46.48	3811.24	47.14	3811.22	47.36	3811.21
48.13	3811.18	48.67	3811.15	48.94	3811.14	50.19	3811.11	50.21	3811.11
50.43	3811.09	50.65	3811.08	51.2	3811.06	51.58	3811.04	51.75	3811.03
51.97	3811.01	52.19	3810.99	52.74	3810.96	53	3810.95	53.18	3810.94
53.51	3810.93	53.68	3810.92	53.84	3810.9	54.28	3810.85	54.38	3810.84
55.04	3810.73	55.37	3810.68	55.81	3810.62	57.11	3810.44	58.41	3810.28
59.33	3810.16	59.77	3810.09	60.21	3810.04	60.53	3810	60.86	3809.95
61.12	3809.92	61.3	3809.9	61.74	3809.83	62.07	3809.79	62.29	3809.75
62.48	3809.72	62.84	3809.68	63.39	3809.61	63.61	3809.58	63.83	3809.56
64.14	3809.52	64.38	3809.52	64.93	3809.51	65.37	3809.5	65.92	3809.49
66.04	3809.49	66.57	3809.49	66.68	3809.49	66.9	3809.49	67.41	3809.49
67.45	3809.49	68.11	3809.5	68.31	3809.5	68.33	3809.5	68.44	3809.5
69.1	3809.49	69.76	3809.49	69.87	3809.49	69.98	3809.49	70.6	3809.49
70.64	3809.49	71.3	3809.51	71.41	3809.52	71.95	3809.54	75.29	3809.59
76.68	3809.6	77.67	3809.62	78.32	3809.63	79.2	3809.65	79.31	3809.65
79.47	3809.65	79.97	3809.66	80.74	3809.67	80.85	3809.66	81.51	3809.65
82.06	3809.63	82.28	3809.63	82.5	3809.62	83.21	3809.59	83.6	3809.56
83.82	3809.55	84.04	3809.53	84.58	3809.49	85.13	3809.44	85.35	3809.42
85.57	3809.4	86.67	3809.3	86.83	3809.28	86.89	3809.27	87.22	3809.24
87.66	3809.19	88.19	3809.14	88.21	3809.14	88.43	3809.11	88.76	3809.09
89.2	3809.05	89.64	3809.03	90.4	3808.99	90.84	3808.97	90.89	3808.97
91.17	3808.95	91.61	3808.92	92.25	3808.88	92.38	3808.88	92.71	3808.86
93.15	3808.84	93.6	3808.83	93.92	3808.81	94.25	3808.79	94.69	3808.76
94.8	3808.76	95.13	3808.74	96.22	3808.7	96.77	3808.67	96.99	3808.66
97.32	3808.65	97.76	3808.63	98.31	3808.61	98.53	3808.6	98.75	3808.59
98.99	3808.58	99.3	3808.57	99.96	3808.55	100.18	3808.55	100.29	3808.54
100.95	3808.52	101.5	3808.49	101.72	3808.48	101.75	3808.48	101.83	3808.48
102.44	3808.43	102.48	3808.43	103.14	3808.36	103.25	3808.35	103.36	3808.34
104.02	3808.28	104.68	3808.21	104.79	3808.2	104.9	3808.19	105.18	3808.16
105.56	3808.12	106.33	3808.04	106.44	3808.03	107.1	3807.98	107.87	3807.91
108.61	3807.84	108.63	3807.84	109.4	3807.79	109.51	3807.79	110.14	3807.74
110.17	3807.74	110.94	3807.67	111.05	3807.66	111.54	3807.62	111.82	3807.6
112.48	3807.56	112.59	3807.55	112.7	3807.54	112.74	3807.54	113.36	3807.48
113.42	3807.48	114.02	3807.43	114.12	3807.42	114.23	3807.42	114.32	3807.41
114.89	3807.36	115.66	3807.3	115.77	3807.29	116.43	3807.23	116.6	3807.22
116.98	3807.2	117.2	3807.18	117.42	3807.17	117.55	3807.16	117.97	3807.11
118.51	3807.06	118.74	3807.04	118.96	3807.03	119.51	3807	119.9	3806.98
120.05	3806.97	120.27	3806.97	120.6	3806.96	120.97	3806.95	121.04	3806.95
121.59	3806.93	121.92	3806.91	122.02	3806.91	122.35	3806.92	122.68	3807
123.03	3807.06	123.13	3807.05	123.37	3807.05	123.46	3807.04	123.72	3807.01
123.79	3807	124.23	3806.96	124.67	3806.92	125	3806.88	125.09	3806.87

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  125.33 3806.86  125.77 3806.85  125.78 3806.84  126.09 3806.82  126.47 3806.79
  126.53 3806.79  126.87 3806.78  126.97 3806.78   127.3 3806.77  127.63 3806.76
  128.07 3806.75  128.27 3806.75  128.51 3806.75  128.84 3806.76  129.17 3806.77
  129.61 3806.78  129.66 3806.78  130.14 3806.78  130.16 3806.78  130.38 3806.79
  130.59  3806.8  130.71 3806.81  131.05 3806.81  131.15 3806.81   131.7 3806.81
  131.92 3806.81  131.97 3806.81  132.24 3806.82  132.44 3806.83  132.85 3806.82
  133.34 3806.84  133.56 3806.84  133.78 3806.85  133.84 3806.85   134.2 3806.82
  134.33  3806.8  134.71 3806.73  134.88  3806.7   135.1 3806.66  135.21 3806.64
  135.55 3806.58  135.87 3806.52  136.08 3806.48  136.53  3806.4  136.63 3806.38
  136.91 3806.37  137.41 3806.36  138.03 3806.36  138.06 3806.36  138.17 3806.36
  138.26 3806.37  138.28 3806.37  138.83 3806.37  138.94 3806.37  139.41 3806.34
  139.71  3806.3  139.82 3806.29   140.2 3806.24  140.48 3806.21  140.89 3806.17
  141.25 3806.12  141.36  3806.1  142.02 3806.02  142.79 3805.93   142.9 3805.91
  142.95  3805.9  143.67  3805.9  143.68  3805.9  144.32 3805.79  144.43 3805.79
  145.01 3805.78   145.2 3805.76   145.7 3805.73  145.86 3805.71  145.97  3805.7
  146.39 3805.64  146.74 3805.59   147.4 3805.48  147.51 3805.46  147.62 3805.45
  147.76 3805.43  148.28 3805.39  148.45 3805.38  148.94 3805.33  149.14 3805.31
  149.16 3805.31  149.82 3805.27   150.4 3805.28  150.67 3805.31  150.82 3805.33
   151.1 3805.36  151.82 3805.42  152.32 3805.49  152.67 3805.54  152.82 3805.58
   153.1 3805.63  153.71 3805.72  153.82 3805.74  154.53 3805.83  154.96 3805.88
  155.11 3805.89  156.16    3806  156.53 3806.02  156.96 3806.06  157.22 3806.08
  157.25 3806.08  157.69 3806.06  157.96 3806.02  158.29 3805.98  158.47 3806.02
  158.53 3806.04  158.96 3806.17  159.34 3806.29  159.39  3806.3  159.96 3806.39
  160.41 3806.45  160.53 3806.46  160.96 3806.46  161.39 3806.46  161.67 3806.47
  161.96 3806.47  162.53 3806.46  162.96 3806.45  162.99 3806.45  163.77 3806.46
  163.96 3806.42  164.39 3806.34  164.96 3806.24  164.98 3806.23  165.53  3806.2
  165.71 3806.22  166.39 3806.28  166.96 3806.32   167.3 3806.36  167.82 3806.49
  167.96 3806.52  168.29 3806.57   169.1 3806.65  169.61 3806.69  169.68 3806.69
   170.1  3806.7  170.39 3806.71  171.01 3806.74   171.1 3806.75  172.11 3806.86
  172.27 3806.89  172.39  3806.9   172.6 3806.92  172.98 3806.95  173.11 3806.96
  173.82 3807.02  174.25 3807.05  174.39 3807.08  174.91 3807.19  175.11 3807.22
  175.25 3807.24  175.96 3807.27  176.11 3807.29  176.24  3807.3   176.9 3807.37
  177.11  3807.4  177.37 3807.44  177.89 3807.54  177.96 3807.55  178.25 3807.59
  178.43 3807.61  178.89  3807.7  179.11 3807.73  179.55 3807.79  180.11 3807.91
  180.25 3807.95  180.55 3808.01  180.88 3808.09  181.11 3808.18  181.61 3808.37
  182.11  3808.5  182.25 3808.53  182.43 3808.52  182.57  3808.5   182.6  3808.5
  182.77 3808.51  182.95 3808.51  182.96  3808.5

Manning's n Values        num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035     .79    .035  182.25    .035  182.96    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           .79  182.25             19.35   19.35   19.35            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: -127
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INPUT
Description:
Station Elevation Data   num=   158

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3815.56	.36	3815.59	.47	3815.58	1.06	3815.02	1.77	3813.24
1.86	3813.1	2.48	3812.6	3.12	3812.42	13.17	3812.18	13.79	3812.01
14.4	3811.56	14.6	3811.37	15.21	3811.01	15.8	3811.02	17.19	3811.48
17.47	3811.52	18.74	3811.58	21.78	3811.58	22.28	3811.55	22.76	3811.47
22.99	3811.42	27.52	3810.21	28.34	3810.01	28.96	3809.93	30.39	3809.82
31.13	3809.78	32.52	3809.75	35.01	3809.64	36.14	3809.68	40.67	3809.78
47.74	3809.77	50.64	3809.89	51.93	3809.97	53.36	3810	54.82	3810
55.52	3809.98	56.24	3809.9	59.05	3809.41	60.39	3809.2	61.79	3808.95
63.18	3808.74	64.58	3808.49	66.29	3808.23	68.25	3808.2	69.66	3808.21
70.59	3808.23	72.94	3808.23	74.33	3808.26	77.77	3808.25	79.21	3808.22
82.08	3808.22	83.51	3808.18	85.93	3808.17	87.34	3808.1	89.66	3807.93
91.06	3807.8	93.84	3807.62	95.24	3807.49	96.63	3807.4	97.87	3807.29
102.18	3807	105.02	3806.87	105.73	3806.82	108.56	3806.52	112.09	3806.12
113.66	3805.98	115.1	3805.82	116.34	3805.71	117.04	3805.62	117.97	3805.53
120.32	3805.27	121.29	3805.19	122.28	3805.09	123.71	3805.04	124.82	3805.04
125.9	3805.02	126.24	3805.05	126.58	3805.17	126.94	3805.26	127.29	3805.27
127.65	3805.22	129.06	3805.09	129.77	3805.08	130.48	3805.04	130.89	3805.03
132.33	3805.04	133.76	3805.12	134.26	3805.13	134.72	3805.18	135.2	3805.21
136.14	3805.23	136.63	3805.27	137.05	3805.27	138.07	3805.34	138.44	3805.31
138.97	3805.21	139.83	3805.04	140.38	3804.91	140.94	3804.8	141.23	3804.79
142.38	3804.81	142.62	3804.84	143.21	3804.86	143.81	3804.84	144.62	3804.73
145.33	3804.66	147.45	3804.32	148.2	3804.34	148.87	3804.2	149.57	3804.19
150.28	3804.12	150.99	3804.03	152.4	3803.81	153.11	3803.76	153.82	3803.69
154.52	3803.64	155.16	3803.65	155.94	3803.73	156.73	3803.75	157.28	3803.8
158.81	3804.02	160.34	3804.21	161.5	3804.33	162.67	3804.42	163.18	3804.37
163.84	3804.24	164.04	3804.29	165	3804.61	166.17	3804.81	167.56	3804.85
169.01	3804.83	169.87	3804.84	171.2	3804.55	171.81	3804.51	172	3804.53
173.39	3804.66	173.75	3804.72	174.33	3804.89	174.84	3805	176.3	3805.19
177.83	3805.29	179.22	3805.47	179.58	3805.5	1803	3805.523	181.4	3805.6
182.13	3805.72	182.5	3805.75	183.59	3805.74	184.32	3805.78	184.83	3805.83
185.4	3805.92	186	3805.97	186.5	3806.05	187.23	3806.12	188.33	3806.36
188.69	3806.45	189.5	3806.78	190.2	3806.98				

Manning's n Values   num=   1

Sta	n Val
0	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1.06	190.2	56.1	56.1	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1   RS: -183

INPUT
Description:
Station Elevation Data   num=   151

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3808.91	2.55	3809.2	3.97	3809.39	4.68	3809.47	7.82	3809.86
10.34	3810.14	11.61	3810.31	11.75	3810.3	11.88	3810.22	12.46	3809.27
13.17	3807.09	13.24	3806.98	13.88	3806.71	14.57	3806.59	24.95	3806.41
25.2	3806.39	25.91	3806.15	26.43	3806.06	26.62	3806.06	26.79	3806.1
28.03	3806.51	28.74	3806.59	29.5	3806.59	32.21	3806.42	32.99	3806.39
35.32	3806.39	38.99	3806.49	39.36	3806.48	39.76	3806.43	40.34	3806.33
44.31	3805.47	45.69	3805.19	50.14	3804.22	51.18	3804.04	51.39	3804.02
51.62	3804.01	52.54	3804.05	53.1	3804.1	56.35	3804.32	57.76	3804.45
61.3	3804.71	64.95	3804.89	66.44	3804.99	69.09	3805.12	70.88	3805.13
72.36	3805.1	74.04	3805.13	75.46	3805.11	78.29	3805.13	82.53	3804.86
83.24	3804.83	83.71	3804.83	85.7	3804.93	87.18	3805.04	89.61	3805.17
91.63	3805.26	93.11	3805.3	94.57	3805.38	99.52	3805.52	102.35	3805.46
103.77	3805.36	107.92	3804.84	109.41	3804.69	113.85	3804.12	115.09	3804.04
116.82	3804	117.59	3803.95	117.93	3803.91	118.94	3803.85	120.3	3803.73
122.17	3803.53	124.36	3803.34	125	3803.27	125.71	3803.22	126.42	3803.14
127.07	3803.09	128.43	3803.06	129.25	3803.02	130.15	3802.99	134.6	3802.61
136.08	3802.45	137.91	3802.29	139.27	3802.14	140.52	3802.03	143.49	3801.97
144.82	3801.97	145.53	3801.95	147.65	3801.82	149.07	3801.71	150.48	3801.62
151.46	3801.53	152.82	3801.47	154.17	3801.39	155.44	3801.33	159.79	3801.06
161.27	3800.99	162.75	3800.83	167.47	3800.43	168.68	3800.29	171.72	3800.03
173.12	3799.88	174.6	3799.75	176.09	3799.59	179.05	3799.33	179.79	3799.25
180.25	3799.24	182.07	3799.35	183.15	3799.45	184.24	3799.52	185.32	3799.62
187.88	3799.79	189.31	3799.92	191.83	3800.15	195.52	3800.52	198.34	3800.75
200.1	3800.85	204.85	3801.3	205.93	3801.43	206.21	3801.49	207.02	3801.53
207.13	3801.57	207.74	3801.86	208.5	3801.97	209	3802.22	209.19	3802.28
210.27	3802.41	211.36	3802.51	211.55	3802.51	212.02	3802.49	212.44	3802.44
213.53	3802.4	214.61	3802.41	215.7	3802.32	216.14	3802.26	216.49	3802.3
217.66	3802.31	218.43	3802.37	220.04	3802.44	220.72	3802.53	221.12	3802.61
222.25	3802.91	223.29	3803.02	223.77	3803.09	225.46	3803.41	226.55	3803.6
227.63	3803.76	228.72	3803.98	230.07	3804.34	230.89	3804.53	231.41	3804.61
232.44	3804.8								

Manning's n Values   num=   1

Sta	n Val
0	.035

Bank Sta: Left	Right	Coeff Contr.	Expan.
11.75	232.44	.03	.05

SUMMARY OF MANNING'S N VALUES

River:River 1

Reach	River Sta.	n1	n2	n3	n4
Reach 1	1107	.035			
Reach 1	1021	.035	.018		
Reach 1	956	.035	.013		
Reach 1	910	.035	.013		
Reach 1	897	.035	.018		
Reach 1	885	.035	.018		
Reach 1	876	.018			
Reach 1	866	.018			
Reach 1	857	.018			
Reach 1	847	.018			
Reach 1	838	.018			
Reach 1	828	.018			
Reach 1	819	.018			
Reach 1	809	.018			
Reach 1	800	.018			
Reach 1	790	.018			
Reach 1	781	.018			
Reach 1	771	.018			
Reach 1	762	.018			
Reach 1	752	.018			
Reach 1	743	.013			
Reach 1	741	.013			
Reach 1	735.90*	.013	.013		
Reach 1	730.80*	.013	.013		
Reach 1	725.70*	.013	.013		
Reach 1	720.60*	.013	.013		
Reach 1	715.50*	.013	.013		
Reach 1	710.40*	.013	.013		
Reach 1	705.30*	.013	.013		
Reach 1	700.20*	.013	.013		
Reach 1	695.10*	.013	.013		
Reach 1	690	.013			
Reach 1	685.33*	.013	.013		
Reach 1	680.67*	.013	.013		
Reach 1	676.00*	.013	.013		
Reach 1	671.33*	.013	.013		
Reach 1	666.67*	.013	.013		
Reach 1	662	.013			
Reach 1	657.05*	.013	.013		
Reach 1	652.11*	.013	.013		
Reach 1	647.16*	.013	.013		
Reach 1	642.21*	.013	.013		
Reach 1	637.26*	.013	.013		
Reach 1	632.32*	.013	.013		
Reach 1	627.37*	.013	.013		
Reach 1	622.42*	.013	.013		
Reach 1	617.47*	.013	.013		
Reach 1	612.53*	.013	.013		

Reach 1	607.58*	.013	.013
Reach 1	602.63*	.013	.013
Reach 1	597.68*	.013	.013
Reach 1	592.74*	.013	.013
Reach 1	587.79*	.013	.013
Reach 1	582.84*	.013	.013
Reach 1	577.89*	.013	.013
Reach 1	572.95*	.013	.013
Reach 1	568.00*	.013	.013
Reach 1	563.05*	.013	.013
Reach 1	558.11*	.013	.013
Reach 1	553.16*	.013	.013
Reach 1	548.21*	.013	.013
Reach 1	543.26*	.013	.013
Reach 1	538.32*	.013	.013
Reach 1	533.37*	.013	.013
Reach 1	528.42*	.013	.013
Reach 1	523.47*	.013	.013
Reach 1	518.53*	.013	.013
Reach 1	513.58*	.013	.013
Reach 1	508.63*	.013	.013
Reach 1	503.68*	.013	.013
Reach 1	498.74*	.013	.013
Reach 1	493.79*	.013	.013
Reach 1	488.84*	.013	.013
Reach 1	483.89*	.013	.013
Reach 1	478.95*	.013	.013
Reach 1	474	.013	
Reach 1	464.30*	.013	.013
Reach 1	454.61*	.013	.013
Reach 1	444.91*	.013	.013
Reach 1	435.22*	.013	.013
Reach 1	425.52*	.013	.013
Reach 1	415.83*	.013	.013
Reach 1	406.13*	.013	.013
Reach 1	396.43*	.013	.013
Reach 1	386.74*	.013	.013
Reach 1	377.04*	.013	.013
Reach 1	367.35*	.013	.013
Reach 1	357.65*	.013	.013
Reach 1	347.96*	.013	.013
Reach 1	338.26*	.013	.013
Reach 1	328.57*	.013	.013
Reach 1	318.87*	.013	.013
Reach 1	309.17*	.013	.013
Reach 1	299.48*	.013	.013
Reach 1	289.78*	.013	.013
Reach 1	280.09*	.013	.013
Reach 1	270.39*	.013	.013
Reach 1	260.70*	.013	.013

Reach 1	251	.013			
Reach 1	242	.013	.013		
Reach 1	234	.013	.013		
Reach 1	225	.013	.013		
Reach 1	217	.013	.013		
Reach 1	208	.013	.013		
Reach 1	200	.013			
Reach 1	199	.013			
Reach 1	197.00*	.018	.018		
Reach 1	195.00*	.024	.024		
Reach 1	193.00*	.029	.029		
Reach 1	191.00*	.035	.035		
Reach 1	189	.04			
Reach 1	177	.035			
Reach 1	169	.035			
Reach 1	152	.035			
Reach 1	127	.035			
Reach 1	114.25*	.035	.035	.035	.035
Reach 1	101.50*	.035	.035	.035	.035
Reach 1	88.75*	.035	.035	.035	.035
Reach 1	76	.035			
Reach 1	59.333*	.035	.035	.035	
Reach 1	42.667*	.035	.035	.035	
Reach 1	26	.035			
Reach 1	7.000*	.035	.035	.035	
Reach 1	-12.000*	.035	.035	.035	
Reach 1	-31.000*	.035	.035	.035	
Reach 1	-50	.035			
Reach 1	-69.250*	.035	.035	.035	.035
Reach 1	-88.500*	.035	.035	.035	.035
Reach 1	-107.75*	.035	.035	.035	.035
Reach 1	-127	.035			
Reach 1	-183	.035			

SUMMARY OF REACH LENGTHS

River: River 1

Reach	River Sta.	Left	Channel	Right
Reach 1	1107	86.8	86.8	86.8
Reach 1	1021	65	65	65
Reach 1	956	45.9	45.9	45.9
Reach 1	910	12.8	12.8	12.8
Reach 1	897	11.6	11.6	11.6
Reach 1	885	9.5	9.5	9.5
Reach 1	876	9.5	9.5	9.5

Reach 1	866	9.5	9.5	9.5
Reach 1	857	9.5	9.5	9.5
Reach 1	847	9.5	9.5	9.5
Reach 1	838	9.5	9.5	9.5
Reach 1	828	9.5	9.5	9.5
Reach 1	819	9.5	9.5	9.5
Reach 1	809	9.5	9.5	9.5
Reach 1	800	9.5	9.5	9.5
Reach 1	790	9.5	9.5	9.5
Reach 1	781	9.5	9.5	9.5
Reach 1	771	9.5	9.5	9.5
Reach 1	762	9.5	9.5	9.5
Reach 1	752	9.4	9.4	9.4
Reach 1	743	1.9	1.9	1.9
Reach 1	741	5	5	5
Reach 1	735.90*	5	5	5
Reach 1	730.80*	5	5	5
Reach 1	725.70*	5	5	5
Reach 1	720.60*	5	5	5
Reach 1	715.50*	5	5	5
Reach 1	710.40*	5	5	5
Reach 1	705.30*	5	5	5
Reach 1	700.20*	5	5	5
Reach 1	695.10*	5	5	5
Reach 1	690	4.7	4.7	4.7
Reach 1	685.33*	4.7	4.7	4.7
Reach 1	680.67*	4.7	4.7	4.7
Reach 1	676.00*	4.7	4.7	4.7
Reach 1	671.33*	4.7	4.7	4.7
Reach 1	666.67*	4.7	4.7	4.7
Reach 1	662	4.94	4.94	4.94
Reach 1	657.05*	4.94	4.94	4.94
Reach 1	652.11*	4.94	4.94	4.94
Reach 1	647.16*	4.94	4.94	4.94
Reach 1	642.21*	4.94	4.94	4.94
Reach 1	637.26*	4.94	4.94	4.94
Reach 1	632.32*	4.94	4.94	4.94
Reach 1	627.37*	4.94	4.94	4.94
Reach 1	622.42*	4.94	4.94	4.94
Reach 1	617.47*	4.94	4.94	4.94
Reach 1	612.53*	4.94	4.94	4.94
Reach 1	607.58*	4.94	4.94	4.94
Reach 1	602.63*	4.94	4.94	4.94
Reach 1	597.68*	4.94	4.94	4.94
Reach 1	592.74*	4.94	4.94	4.94
Reach 1	587.79*	4.94	4.94	4.94
Reach 1	582.84*	4.94	4.94	4.94
Reach 1	577.89*	4.94	4.94	4.94
Reach 1	572.95*	4.94	4.94	4.94
Reach 1	568.00*	4.94	4.94	4.94

Reach 1	563.05*	4.94	4.94	4.94
Reach 1	558.11*	4.94	4.94	4.94
Reach 1	553.16*	4.94	4.94	4.94
Reach 1	548.21*	4.94	4.94	4.94
Reach 1	543.26*	4.94	4.94	4.94
Reach 1	538.32*	4.94	4.94	4.94
Reach 1	533.37*	4.94	4.94	4.94
Reach 1	528.42*	4.94	4.94	4.94
Reach 1	523.47*	4.94	4.94	4.94
Reach 1	518.53*	4.94	4.94	4.94
Reach 1	513.58*	4.94	4.94	4.94
Reach 1	508.63*	4.94	4.94	4.94
Reach 1	503.68*	4.94	4.94	4.94
Reach 1	498.74*	4.94	4.94	4.94
Reach 1	493.79*	4.94	4.94	4.94
Reach 1	488.84*	4.94	4.94	4.94
Reach 1	483.89*	4.94	4.94	4.94
Reach 1	478.95*	4.94	4.94	4.94
Reach 1	474	9.72	9.72	9.72
Reach 1	464.30*	9.72	9.72	9.72
Reach 1	454.61*	9.72	9.72	9.72
Reach 1	444.91*	9.72	9.72	9.72
Reach 1	435.22*	9.72	9.72	9.72
Reach 1	425.52*	9.72	9.72	9.72
Reach 1	415.83*	9.72	9.72	9.72
Reach 1	406.13*	9.72	9.72	9.72
Reach 1	396.43*	9.72	9.72	9.72
Reach 1	386.74*	9.72	9.72	9.72
Reach 1	377.04*	9.72	9.72	9.72
Reach 1	367.35*	9.72	9.72	9.72
Reach 1	357.65*	9.72	9.72	9.72
Reach 1	347.96*	9.72	9.72	9.72
Reach 1	338.26*	9.72	9.72	9.72
Reach 1	328.57*	9.72	9.72	9.72
Reach 1	318.87*	9.72	9.72	9.72
Reach 1	309.17*	9.72	9.72	9.72
Reach 1	299.48*	9.72	9.72	9.72
Reach 1	289.78*	9.72	9.72	9.72
Reach 1	280.09*	9.72	9.72	9.72
Reach 1	270.39*	9.72	9.72	9.72
Reach 1	260.70*	9.72	9.72	9.72
Reach 1	251	8.1	8.1	8.1
Reach 1	242	8.6	8.6	8.6
Reach 1	234	8.6	8.6	8.6
Reach 1	225	8.5	8.5	8.5
Reach 1	217	8.5	8.5	8.5
Reach 1	208	8.5	8.5	8.5
Reach 1	200	.9	.9	.9
Reach 1	199	1.98	1.98	1.98
Reach 1	197.00*	1.98	1.98	1.98

Reach 1	195.00*	1.98	1.98	1.98
Reach 1	193.00*	1.98	1.98	1.98
Reach 1	191.00*	1.98	1.98	1.98
Reach 1	189	12.2	12.2	12.2
Reach 1	177	7.8	7.8	7.8
Reach 1	169	16.7	16.7	16.7
Reach 1	152	24.99	24.99	24.99
Reach 1	127	12.82	12.82	12.82
Reach 1	114.25*	12.82	12.82	12.82
Reach 1	101.50*	12.82	12.82	12.82
Reach 1	88.75*	12.83	12.83	12.83
Reach 1	76	16.8	16.8	16.8
Reach 1	59.333*	16.8	16.8	16.8
Reach 1	42.667*	16.8	16.8	16.8
Reach 1	26	18.77	18.77	18.77
Reach 1	7.000*	18.77	18.77	18.77
Reach 1	-12.000*	18.77	18.77	18.77
Reach 1	-31.000*	18.78	18.78	18.78
Reach 1	-50	19.35	19.35	19.35
Reach 1	-69.250*	19.35	19.35	19.35
Reach 1	-88.500*	19.35	19.35	19.35
Reach 1	-107.75*	19.35	19.35	19.35
Reach 1	-127	56.1	56.1	56.1
Reach 1	-183			

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: River 1

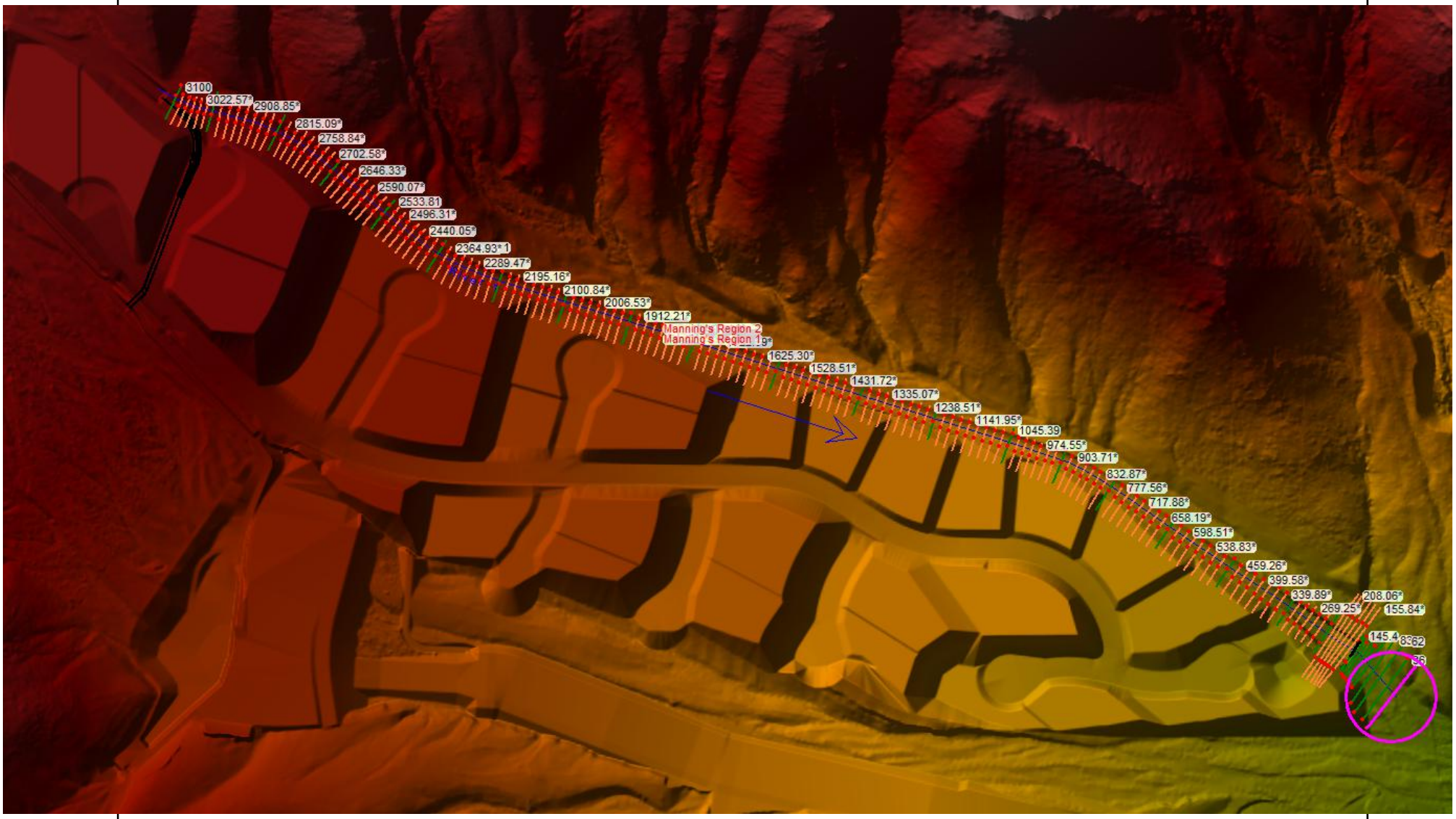
Reach	River Sta.	Contr.	Expan.
Reach 1	1107	.03	.05
Reach 1	1021	.03	.05
Reach 1	956	.03	.05
Reach 1	910	.03	.05
Reach 1	897	.03	.05
Reach 1	885	.03	.05
Reach 1	876	.03	.05
Reach 1	866	.03	.05
Reach 1	857	.03	.05
Reach 1	847	.03	.05
Reach 1	838	.03	.05
Reach 1	828	.03	.05
Reach 1	819	.03	.05
Reach 1	809	.03	.05
Reach 1	800	.03	.05
Reach 1	790	.03	.05

Reach 1	781	.03	.05
Reach 1	771	.03	.05
Reach 1	762	.03	.05
Reach 1	752	.03	.05
Reach 1	743	.03	.05
Reach 1	741	.03	.05
Reach 1	735.90*	.03	.05
Reach 1	730.80*	.03	.05
Reach 1	725.70*	.03	.05
Reach 1	720.60*	.03	.05
Reach 1	715.50*	.03	.05
Reach 1	710.40*	.03	.05
Reach 1	705.30*	.03	.05
Reach 1	700.20*	.03	.05
Reach 1	695.10*	.03	.05
Reach 1	690	.03	.05
Reach 1	685.33*	.03	.05
Reach 1	680.67*	.03	.05
Reach 1	676.00*	.03	.05
Reach 1	671.33*	.03	.05
Reach 1	666.67*	.03	.05
Reach 1	662	.03	.05
Reach 1	657.05*	.03	.05
Reach 1	652.11*	.03	.05
Reach 1	647.16*	.03	.05
Reach 1	642.21*	.03	.05
Reach 1	637.26*	.03	.05
Reach 1	632.32*	.03	.05
Reach 1	627.37*	.03	.05
Reach 1	622.42*	.03	.05
Reach 1	617.47*	.03	.05
Reach 1	612.53*	.03	.05
Reach 1	607.58*	.03	.05
Reach 1	602.63*	.03	.05
Reach 1	597.68*	.03	.05
Reach 1	592.74*	.03	.05
Reach 1	587.79*	.03	.05
Reach 1	582.84*	.03	.05
Reach 1	577.89*	.03	.05
Reach 1	572.95*	.03	.05
Reach 1	568.00*	.03	.05
Reach 1	563.05*	.03	.05
Reach 1	558.11*	.03	.05
Reach 1	553.16*	.03	.05
Reach 1	548.21*	.03	.05
Reach 1	543.26*	.03	.05
Reach 1	538.32*	.03	.05
Reach 1	533.37*	.03	.05
Reach 1	528.42*	.03	.05
Reach 1	523.47*	.03	.05

Reach 1	518.53*	.03	.05
Reach 1	513.58*	.03	.05
Reach 1	508.63*	.03	.05
Reach 1	503.68*	.03	.05
Reach 1	498.74*	.03	.05
Reach 1	493.79*	.03	.05
Reach 1	488.84*	.03	.05
Reach 1	483.89*	.03	.05
Reach 1	478.95*	.03	.05
Reach 1	474	.1	.3
Reach 1	464.30*	.1	.3
Reach 1	454.61*	.1	.3
Reach 1	444.91*	.1	.3
Reach 1	435.22*	.1	.3
Reach 1	425.52*	.1	.3
Reach 1	415.83*	.1	.3
Reach 1	406.13*	.1	.3
Reach 1	396.43*	.1	.3
Reach 1	386.74*	.1	.3
Reach 1	377.04*	.1	.3
Reach 1	367.35*	.1	.3
Reach 1	357.65*	.1	.3
Reach 1	347.96*	.1	.3
Reach 1	338.26*	.1	.3
Reach 1	328.57*	.1	.3
Reach 1	318.87*	.1	.3
Reach 1	309.17*	.1	.3
Reach 1	299.48*	.1	.3
Reach 1	289.78*	.1	.3
Reach 1	280.09*	.1	.3
Reach 1	270.39*	.1	.3
Reach 1	260.70*	.1	.3
Reach 1	251	.03	.05
Reach 1	242	.03	.05
Reach 1	234	.03	.05
Reach 1	225	.03	.05
Reach 1	217	.03	.05
Reach 1	208	.03	.05
Reach 1	200	.03	.1
Reach 1	199	.03	.05
Reach 1	197.00*	.03	.05
Reach 1	195.00*	.03	.05
Reach 1	193.00*	.03	.05
Reach 1	191.00*	.03	.05
Reach 1	189	.03	.05
Reach 1	177	.03	.05
Reach 1	169	.03	.05
Reach 1	152	.03	.05
Reach 1	127	.03	.05
Reach 1	114.25*	.03	.05

Reach 1	101.50*	.03	.05
Reach 1	88.75*	.03	.05
Reach 1	76	.03	.05
Reach 1	59.333*	.03	.05
Reach 1	42.667*	.03	.05
Reach 1	26	.03	.05
Reach 1	7.000*	.03	.05
Reach 1	-12.000*	.03	.05
Reach 1	-31.000*	.03	.05
Reach 1	-50	.03	.05
Reach 1	-69.250*	.03	.05
Reach 1	-88.500*	.03	.05
Reach 1	-107.75*	.03	.05
Reach 1	-127	.03	.05
Reach 1	-183	.03	.05

B.3 North Wall


3100
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2908.85*
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2533.81
2496.31*
2440.05*
2364.93*1
2289.47*
2195.16*
2100.84*
2006.53*
1912.21*
Manning's Region 2
Manning's Region 1
1625.30*
1528.51*
1431.72*
1335.07*
1238.51*
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1045.39
974.55*
903.71*
832.87*
777.56*
717.88*
658.19*
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399.58*
339.89*
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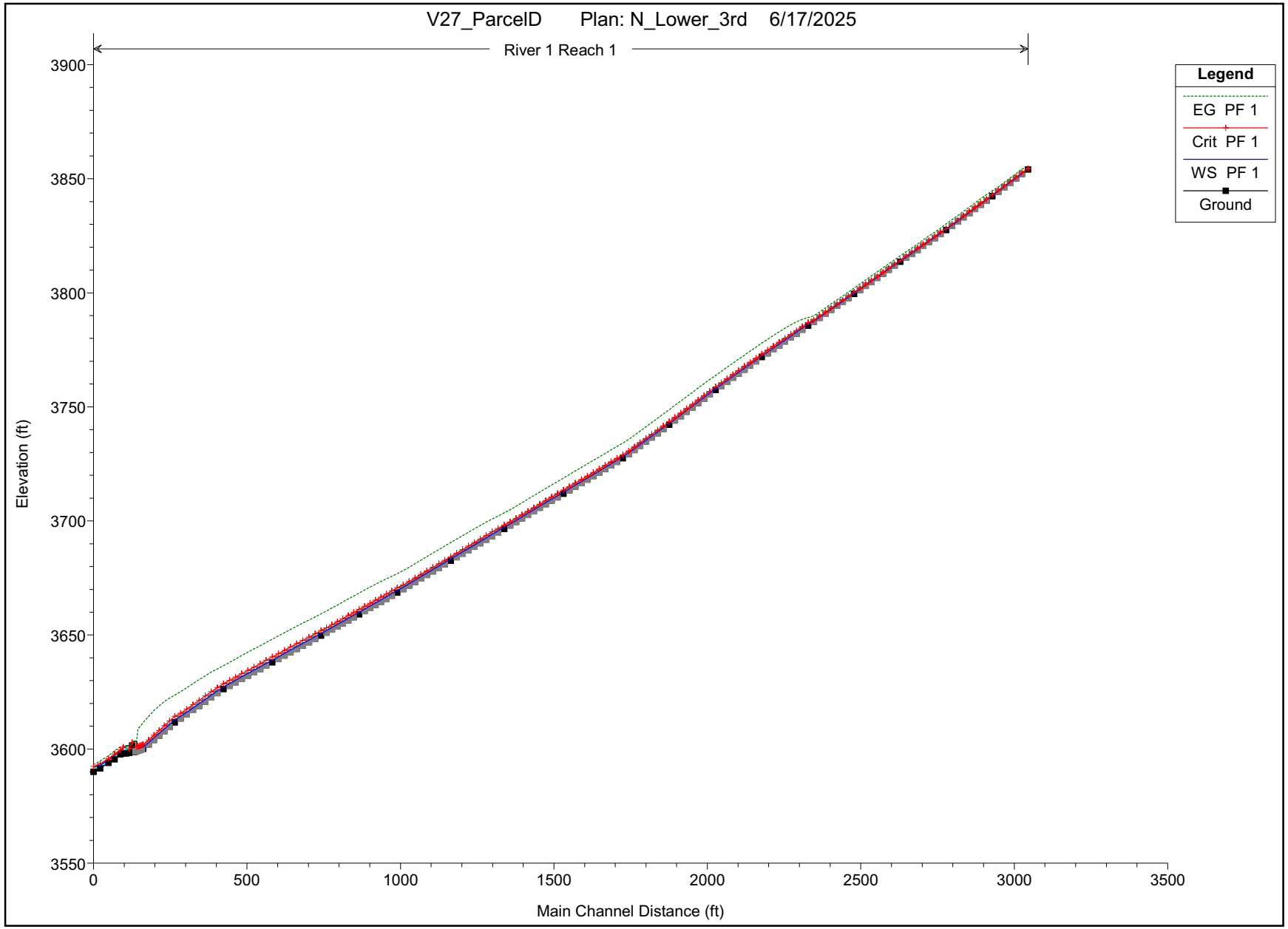
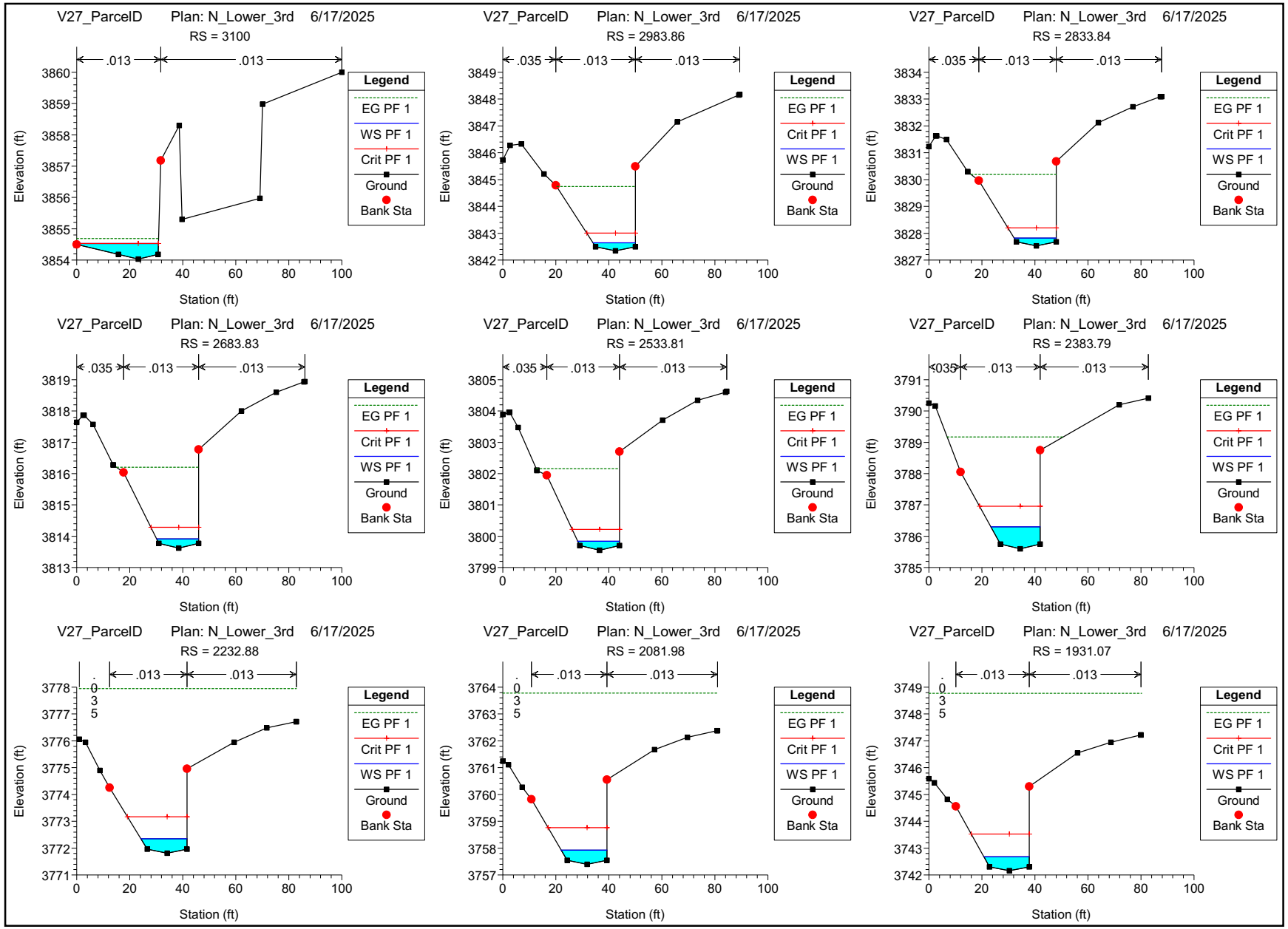
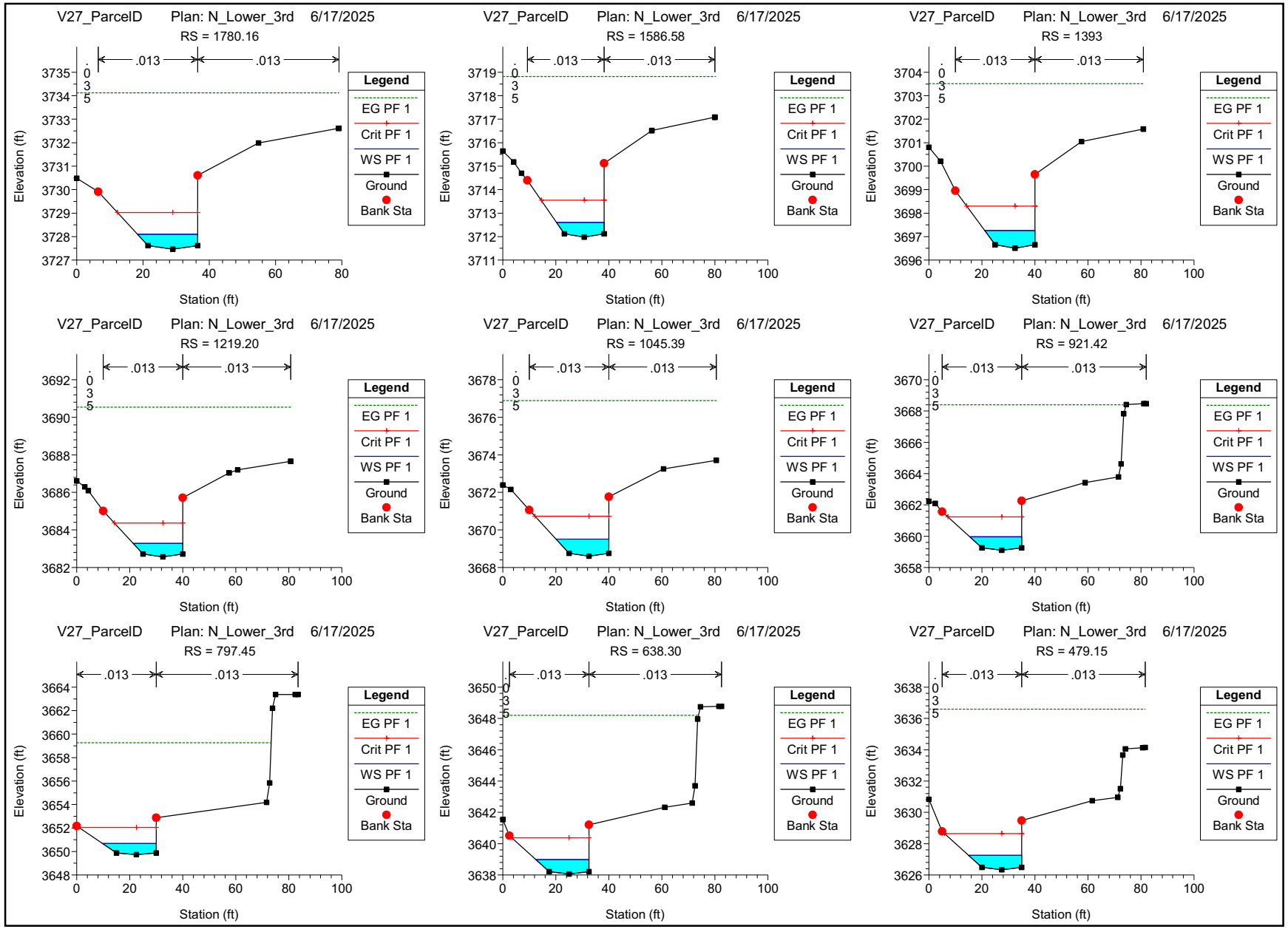
269.25*
155.84*
145.4
8362
36


V27_ParcelID Plan: N_Lower_3rd 6/17/2025
River 1 Reach 1
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Elevation (ft)
3900
3850
3800
3750
3700
3650
3600
3550
0
500
1000
1500
2000
2500
3000
3500
Main Channel Distance (ft)


V27_ParcelID Plan: N_Lower_3rd 6/17/2025
RS = 3100
.013 .013
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
V27_ParcelID Plan: N_Lower_3rd 6/17/2025
RS = 2983.86
.035 .013 .013
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
V27_ParcelID Plan: N_Lower_3rd 6/17/2025
RS = 2833.84
.035 .013 .013
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
V27_ParcelID Plan: N_Lower_3rd 6/17/2025
RS = 2683.83
.035 .013 .013
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
V27_ParcelID Plan: N_Lower_3rd 6/17/2025
RS = 2533.81
.035 .013 .013
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
V27_ParcelID Plan: N_Lower_3rd 6/17/2025
RS = 2383.79
.035 .013 .013
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
V27_ParcelID Plan: N_Lower_3rd 6/17/2025
RS = 2232.88
.035 .013 .013
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
V27_ParcelID Plan: N_Lower_3rd 6/17/2025
RS = 2081.98
.035 .013 .013
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
V27_ParcelID Plan: N_Lower_3rd 6/17/2025
RS = 1931.07
.035 .013 .013
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta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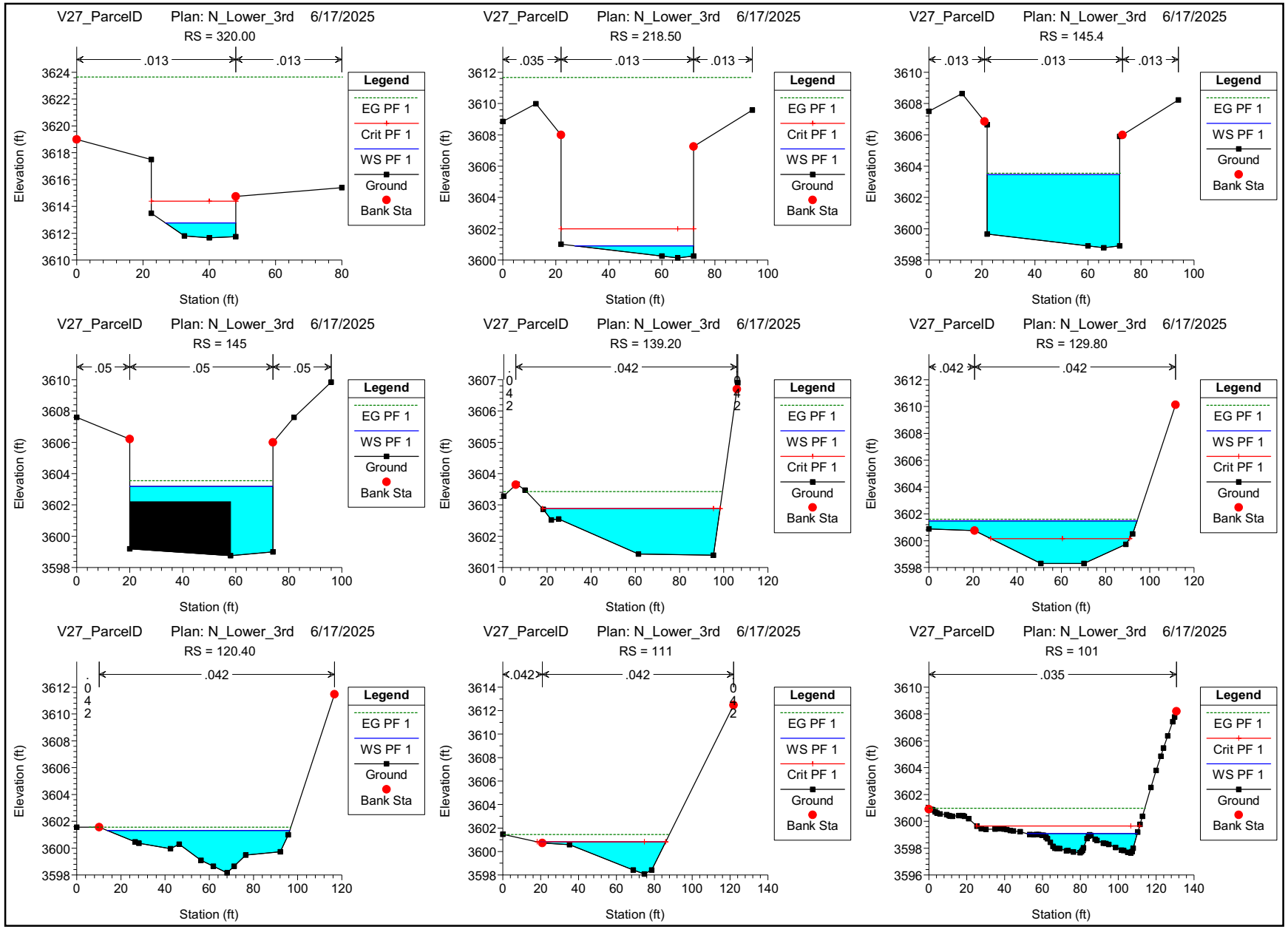
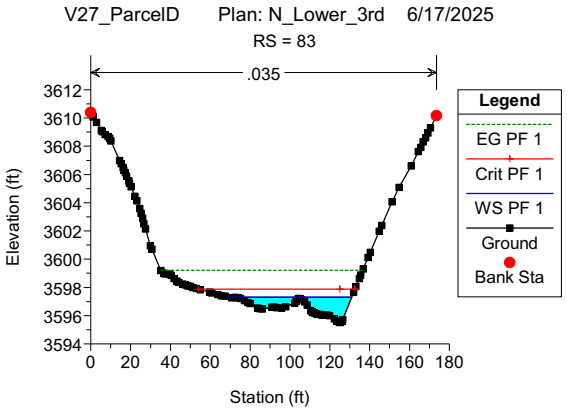
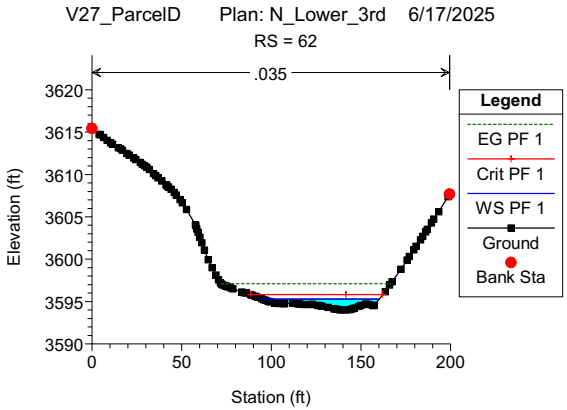
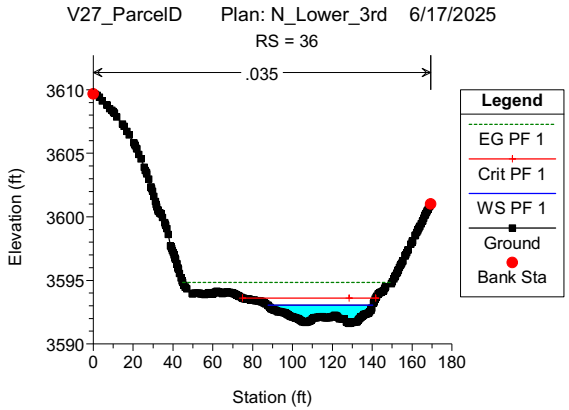
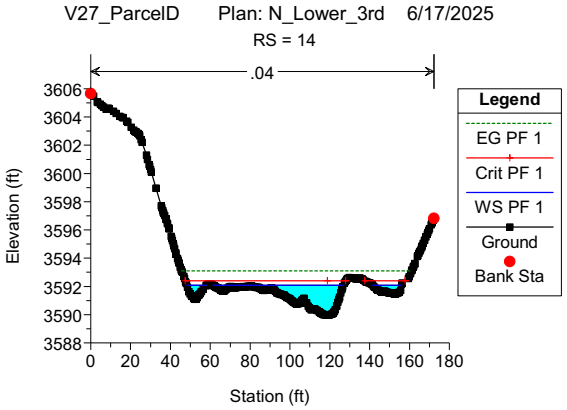
RS = 1780.16
RS = 1586.58
RS = 1393
RS = 1219.20
RS = 1045.39
RS = 921.42
RS = 797.45
RS = 638.30
RS = 479.15
.013
.013
.035
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


V27_ParcelID Plan: N_Lower_3rd 6/17/2025
RS = 320.00
.013
.013
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
V27_ParcelID Plan: N_Lower_3rd 6/17/2025
RS = 218.50
.035
.013
.013
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
V27_ParcelID Plan: N_Lower_3rd 6/17/2025
RS = 145.4
.013
.013
.013
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
V27_ParcelID Plan: N_Lower_3rd 6/17/2025
RS = 145
.05
.05
.05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
V27_ParcelID Plan: N_Lower_3rd 6/17/2025
RS = 139.20
.042
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
V27_ParcelID Plan: N_Lower_3rd 6/17/2025
RS = 129.80
.042
.042
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
V27_ParcelID Plan: N_Lower_3rd 6/17/2025
RS = 120.40
.042
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
V27_ParcelID Plan: N_Lower_3rd 6/17/2025
RS = 111
.042
.042
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
V27_ParcelID Plan: N_Lower_3rd 6/17/2025
RS = 101
.035
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


V27_ParcelID Plan: N_Lower_3rd 6/17/2025
RS = 83
.035
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta


V27_ParcelID Plan: N_Lower_3rd 6/17/2025
RS = 62
.035
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta


V27_ParcelID Plan: N_Lower_3rd 6/17/2025
RS = 36
.035
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta


V27_ParcelID Plan: N_Lower_3rd 6/17/2025
RS = 14
.04
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta

HEC-RAS Plan: N_Lower_3rd River: River 1 Reach: Reach 1 Profile: PF 1

Reach	River Sta	Profile	Q Total	W.S. Elev	Top W Act Chan	Mann Wtd Chnl	Invert Slope	Froude # Chl	Hydr Depth	Vel Chnl	Flow Area	R. Freeboard	L. Freeboard
			(cfs)	(ft)	(ft)				(ft)	(ft/s)	(sq ft)	(ft)	(ft)
Reach 1	3100	PF 1	30	3854.53	30.83	0.013	0.1007	1.02	0.30	3.2	9.4	2.65	-0.03
Reach 1	2983.86	PF 1	40	3842.64	15.98	0.013	0.0987	4.41	0.22	11.6	3.4	2.85	2.15
Reach 1	2833.84	PF 1	40	3827.82	15.85	0.013	0.0928	4.83	0.20	12.4	3.2	2.86	2.14
Reach 1	2683.83	PF 1	40	3813.91	15.82	0.013	0.0939	4.69	0.21	12.1	3.3	2.86	2.13
Reach 1	2533.81	PF 1	40	3799.84	15.77	0.013	0.0928	4.72	0.21	12.2	3.3	2.86	2.11
Reach 1	2383.79	PF 1	140	3786.30	18.56	0.013	0.0912	3.22	0.55	13.6	10.3	2.45	1.75
Reach 1	2232.88	PF 1	140	3772.35	17.40	0.013	0.0954	5.14	0.42	19.0	7.4	2.61	1.90
Reach 1	2081.98	PF 1	140	3757.93	17.24	0.013	0.1012	5.29	0.42	19.4	7.2	2.62	1.89
Reach 1	1931.07	PF 1	140	3742.68	17.11	0.013	0.0975	5.43	0.41	19.8	7.1	2.63	1.89
Reach 1	1780.16	PF 1	180	3728.09	18.15	0.013	0.0801	4.89	0.50	19.7	9.1	2.52	1.82
Reach 1	1586.58	PF 1	180	3712.60	17.95	0.013	0.0801	4.98	0.50	20.0	9.0	2.52	1.80
Reach 1	1393	PF 1	230	3697.26	18.97	0.013	0.0801	4.55	0.60	20.1	11.5	2.39	1.69
Reach 1	1219.20	PF 1	230	3683.29	18.70	0.013	0.0801	5.05	0.57	21.6	10.6	2.44	1.73
Reach 1	1045.39	PF 1	310	3669.51	19.90	0.013	0.0768	4.54	0.71	21.8	14.2	2.25	1.55
Reach 1	921.42	PF 1	310	3659.97	19.60	0.013	0.0756	4.98	0.68	23.3	13.3	2.30	1.60
Reach 1	797.45	PF 1	360	3650.69	20.25	0.013	0.0734	4.76	0.76	23.5	15.3	2.19	1.49
Reach 1	638.30	PF 1	360	3638.99	20.08	0.013	0.0739	5.00	0.74	24.3	14.8	2.22	1.52
Reach 1	479.15	PF 1	360	3627.25	20.05	0.013	0.0921	5.05	0.73	24.5	14.7	2.23	1.53
Reach 1	320.00	PF 1	510	3612.78	21.24	0.013	0.1130	4.89	0.91	26.5	19.3	1.97	6.22
Reach 1	218.50	PF 1	510	3600.91	44.84	0.013	0.0438	7.05	0.43	26.3	19.4	6.34	7.09
Reach 1	145.4	PF 1	510	3603.46	50.00	0.013	0.0500	0.20	4.29	2.4	214.3	2.54	3.40
Reach 1	145	PF 1	510	3603.18	54.00	0.050	-0.4242	0.60	1.97	4.8	106.1	2.82	3.02
Reach 1	139.20	PF 1	510	3602.88	80.28	0.042	0.3315	1.01	1.07	5.9	86.0	3.82	0.76
Reach 1	129.80	PF 1	510	3601.48	73.60	0.042	0.0161	0.33	1.98	2.9	186.3	8.65	-0.73
Reach 1	120.40	PF 1	510	3601.32	82.57	0.042	0.0064	0.57	1.54	4.0	127.3	10.16	0.25
Reach 1	111	PF 1	510	3600.82	65.19	0.042	0.0437	1.00	1.19	6.3	81.0	11.65	-0.09
Reach 1	101	PF 1	510	3599.08	58.22	0.035	0.1166	2.18	0.79	11.0	46.2	9.12	1.83
Reach 1	83	PF 1	510	3597.32	61.74	0.035	0.0744	2.25	0.75	11.1	46.1	12.84	13.07
Reach 1	62	PF 1	510	3595.28	65.01	0.035	0.0905	2.26	0.72	10.9	46.9	12.40	20.15
Reach 1	36	PF 1	510	3593.04	52.64	0.035	0.0740	2.00	0.90	10.8	47.4	7.96	16.63
Reach 1	14	PF 1	510	3592.07	89.43	0.040		1.73	0.70	8.2	62.4	4.75	13.60

HEC-RAS HEC-RAS 6.2 March 2022
U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

```
X     X  XXXXXX    XXXX        XXXX       XX      XXXX
X     X  X        X    X      X   X     X  X    X
X     X  X        X           X   X    X    X   X
XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
X     X  X        X           X  X     X    X        X
X     X  X        X    X      X   X    X    X        X
X     X  XXXXXX    XXXX       X    X   X    X   XXXXX
```

PROJECT DATA
Project Title: V27_ParcelD
Project File : V27_ParcelD.prj
Run Date and Time: 6/17/2025 10:51:52 AM

Project in English units

PLAN DATA

Plan Title: N_Lower_3rd
Plan File : C:\Users\pete9576\OneDrive Corp\SNC Lavalin Group\Summerlin West Drainage - Documents\Village 27\100085220 - V27 Parcel D Boundary Drainage\Hydraulics\HEC-RAS\V27_ParcelD.p03

Geometry Title: N_Wall_1D_Add1_3rdSubmittal
Geometry File : C:\Users\pete9576\OneDrive Corp\SNC Lavalin Group\Summerlin West Drainage - Documents\Village 27\100085220 - V27 Parcel D Boundary Drainage\Hydraulics\HEC-RAS\V27_ParcelD.g02

Flow Title : N_100T
Flow File : C:\Users\pete9576\OneDrive Corp\SNC Lavalin Group\Summerlin West Drainage - Documents\Village 27\100085220 - V27 Parcel D Boundary Drainage\Hydraulics\HEC-RAS\V27_ParcelD.f10

Plan Summary Information:

Number of:	Cross Sections	= 170	Multiple Openings	=	0
	Culverts	= 0	Inline Structures	=	0
	Bridges	= 0	Lateral Structures	=	0

Computational Information
    Water surface calculation tolerance = 0.01
    Critical depth calculation tolerance = 0.01
    Maximum number of iterations   = 20
    Maximum difference tolerance   = 0.3
    Flow tolerance factor   = 0.001

Computation Options
    Critical depth computed only where necessary
    Conveyance Calculation Method: At breaks in n values only
    Friction Slope Method: Average Conveyance
    Computational Flow Regime: Mixed Flow

FLOW DATA

Flow Title: N_100T
Flow File : C:\Users\pete9576\OneDrive Corp\SNC Lavalin Group\Summerlin West Drainage - Documents\Village 27\100085220 - V27 Parcel D Boundary Drainage\Hydraulics\HEC-RAS\V27_ParcelD.f10

Flow Data (cfs)

River	Reach	RS	PF 1	PF 2	PF 3
River 1	Reach 1	3100	30	15	7
River 1	Reach 1	2983.86	40	20	10
River 1	Reach 1	2383.79	140	100	50
River 1	Reach 1	1780.16	180	150	60
River 1	Reach 1	1393	230	200	75
River 1	Reach 1	1045.39	310	200	75
River 1	Reach 1	797.45	360	200	75
River 1	Reach 1	320.00	510	300	125

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
River 1	Reach 1	PF 1	Critical	Normal S = 0.08

GEOMETRY DATA

Geometry Title: N_Wall_1D_Add1_3rdSubmittal
Geometry File : C:\Users\pete9576\OneDrive Corp\SNC Lavalin Group\Summerlin West Drainage - Documents\Village 27\100085220 - V27 Parcel D Boundary Drainage\Hydraulics\HEC-RAS\V27_ParcelD.g02

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 3100

INPUT
Description:
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3854.5	15.71	3854.18	23.21	3854.03	30.71	3854.18	31.71	3857.18
38.69	3858.3	39.69	3855.3	69.13	3855.97	70.11	3858.98	100	3860

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.013	0	.013	31.71	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	31.71	19.36	19.36	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 3080.64*

INPUT
Description:
Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3853.04	.46	3853.13	1.16	3853.14	2.58	3852.95	3.33	3852.88
18.92	3852.23	26.42	3852.08	33.92	3852.23	34.76	3855.23	40.58	3856.17

```
   41.41 3853.67   65.94 3854.22   66.76 3856.73   79.39 3857.35   97.93 3858.02
   98.23 3858.03

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .017    3.33    .013   40.58    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          3.33   40.58             19.36   19.36   19.36            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 3061.29*

INPUT
Description:
Station Elevation Data    num=      14
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3851.58     .92 3851.76    2.32 3851.78    5.17  3851.4    6.67 3851.26
   22.14 3850.28   29.64 3850.13   37.14 3850.28   37.81 3853.28   42.46 3854.03
   63.41 3854.48   76.68 3855.31   96.14 3856.04   96.46 3856.06

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .02    6.67    .013   42.46    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          6.67   42.46             19.36   19.36   19.36            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 3041.93*

INPUT
Description:
Station Elevation Data    num=      14
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3850.111.379997 3850.393.480003 3850.42    7.75 3849.85      10 3849.65
   25.35 3848.33   32.85 3848.19   40.35 3848.33   40.85 3851.33   44.35  3851.9
   60.06 3852.23   73.96 3853.27   94.36 3854.07   94.69 3854.08

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .024      10    .013   44.35    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
```

```
           10   44.35            19.36   19.36   19.36            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 3022.57*

INPUT
Description:
Station Elevation Data    num=      14
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3848.65    1.85 3849.02    4.65 3849.05   10.33 3848.31   13.33 3848.03
   28.57 3846.39   36.07 3846.24   43.57 3846.39    43.9 3849.39   46.23 3849.76
    56.7 3849.99   71.24 3851.23   92.57  3852.1   92.92 3852.11

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .028   13.33    .013   46.23    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         13.33   46.23             19.36   19.36   19.36            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 3003.22*

INPUT
Description:
Station Elevation Data    num=      14
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3847.19    2.31 3847.65    5.81 3847.69   12.92 3846.76   16.67 3846.41
   31.78 3844.44   39.28 3844.29   46.78 3844.44   46.95 3847.44   48.12 3847.62
   53.35 3847.74   68.53 3849.19   90.79 3850.12   91.15 3850.14

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .031   16.67    .013   48.12    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         16.67   48.12             19.36   19.36   19.36            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 2983.86
```

```
INPUT
Description:
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3845.73    2.77 3846.28    6.97 3846.33    15.5 3845.21      20 3844.79
      35 3842.49    42.5 3842.34      50 3842.49      50 3845.49   65.81 3847.15
      89 3848.15   89.38 3848.17

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035      20    .013      50    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            20      50             18.75   18.75   18.75             .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 2965.11*

INPUT
Description:
Station Elevation Data    num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3843.92    2.75 3844.45    3.06 3844.45    6.92 3844.48   15.38 3843.35
   15.45 3843.34   19.86 3842.94   34.49 3840.68   34.79 3840.64   42.25 3840.49
   49.75 3840.64   49.75 3843.64   65.57 3845.27   78.51 3845.83   88.79 3846.27
   89.17 3846.28

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035   19.86    .013   49.75    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         19.86   49.75             18.75   18.75   18.75             .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 2946.36*

INPUT
Description:
Station Elevation Data    num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  3842.1    2.73 3842.62    3.04 3842.62    6.87 3842.62   15.27 3841.48
   15.34 3841.48   19.72 3841.08   34.28 3838.82   34.57 3838.79      42 3838.64
    49.5 3838.79    49.5 3841.79   65.34 3843.39   78.29 3843.96   88.58 3844.38
```

```
   88.97  3844.4

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035   19.72    .013    49.5    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         19.72    49.5            18.75   18.75   18.75            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 2927.60*

INPUT
Description:
Station Elevation Data    num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3840.29    2.71 3840.79    3.02 3840.79    6.82 3840.77   15.16 3839.62
   15.22 3839.61   19.57 3839.23   34.06 3836.96   34.36 3836.93   41.75 3836.79
   49.25 3836.94   49.25 3839.94   65.11 3841.51   78.08 3842.08   88.38  3842.5
   88.76 3842.51

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035   19.57    .013   49.25    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         19.57   49.25            18.75   18.75   18.75            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 2908.85*

INPUT
Description:
Station Elevation Data    num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3838.48    2.69 3838.95       3 3838.96    6.77 3838.92   15.05 3837.76
   15.11 3837.75   19.43 3837.38   33.85 3835.11   34.14 3835.08    41.5 3834.94
      49 3835.08      49 3838.08   64.88 3839.63   77.86 3840.21   88.17 3840.62
   88.56 3840.63

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035   19.43    .013      49    .013
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         19.43      49            18.75   18.75   18.75            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 2890.10*

INPUT
Description:
Station Elevation Data    num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3836.67    2.67 3837.12    2.98 3837.12    6.72 3837.06   14.94 3835.89
      15 3835.88   19.29 3835.52   33.64 3833.25   33.93 3833.23   41.25 3833.08
   48.75 3833.23   48.75 3836.23   64.65 3837.76   77.64 3838.33   87.97 3838.74
   88.35 3838.75

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035   19.29    .013   48.75    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         19.29   48.75            18.75   18.75   18.75            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 2871.35*

INPUT
Description:
Station Elevation Data    num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3834.85    2.65 3835.29    2.95 3835.29    6.67 3835.21   14.83 3834.03
   14.89 3834.02   19.15 3833.67   33.43 3831.39   33.72 3831.38      41 3831.23
    48.5 3831.38    48.5 3834.38   64.41 3835.88   77.42 3836.46   87.76 3836.85
   88.15 3836.86

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035   19.15    .013    48.5    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         19.15    48.5            18.75   18.75   18.75            .03      .05

CROSS SECTION
```

RIVER: River 1
REACH: Reach 1 RS: 2852.59*

INPUT
Description:
Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3833.04	2.63	3833.46	2.93	3833.46	6.62	3833.35	14.72	3832.16
14.78	3832.15	19	3831.81	33.21	3829.54	33.5	3829.53	40.75	3829.38
48.25	3829.53	48.25	3832.53	64.18	3834	77.21	3834.58	87.56	3834.97
87.94	3834.98								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	19	.013	48.25	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19	48.25	18.75	18.75	18.75	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 2833.84

INPUT
Description:
Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3831.23	2.61	3831.63	2.91	3831.63	6.57	3831.5	14.61	3830.3
14.67	3830.29	18.86	3829.96	33	3827.68	40.5	3827.53	48	3827.68
48	3830.68	63.95	3832.12	76.99	3832.71	87.35	3833.09	87.74	3833.09

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	18.86	.013	48	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
18.86	48	18.75	18.75	18.75	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 2815.09*

INPUT
Description:
Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

```
       0 3829.53    2.59 3829.91    2.89 3829.91    6.52 3829.76    14.5 3828.55
   14.51 3828.55   14.56 3828.54   18.72 3828.22   32.48 3825.98   32.79 3825.94
   40.25 3825.79   47.75 3825.94   47.75 3828.94   63.72 3830.35   76.77 3830.95
   87.14 3831.32   87.53 3831.32

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035   18.72    .013   47.75    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         18.72   47.75            18.75   18.75   18.75            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 2796.34*

INPUT
Description:
Station Elevation Data    num=      17
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3827.83    2.57 3828.19    2.86 3828.19    6.47 3828.02   14.39  3826.8
    14.4 3826.79   14.45 3826.79   18.57 3826.48   32.27 3824.24   32.57  3824.2
      40 3824.05    47.5  3824.2    47.5  3827.2   63.49 3828.59   76.55 3829.18
   86.94 3829.55   87.33 3829.55

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035   18.57    .013    47.5    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         18.57    47.5            18.75   18.75   18.75            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 2777.59*

INPUT
Description:
Station Elevation Data    num=      17
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3826.13    2.55 3826.47    2.84 3826.47    6.42 3826.28   14.28 3825.04
   14.29 3825.04   14.33 3825.04   18.43 3824.74   32.06 3822.49   32.36 3822.46
   39.75 3822.31   47.25 3822.46   47.25 3825.46   63.25 3826.82   76.34 3827.42
   86.73 3827.78   87.12 3827.78

Manning's n Values        num=       3
```

```
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035   18.43    .013   47.25    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         18.43   47.25            18.75   18.75   18.75            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 2758.84*

INPUT
Description:
Station Elevation Data    num=      17
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3824.44    2.53 3824.75    2.82 3824.75    6.37 3824.54   14.16 3823.29
   14.18 3823.29   14.22 3823.29   18.28    3823   31.85 3820.75   32.15 3820.72
    39.5 3820.58      47 3820.73      47 3823.73   63.02 3825.06   76.12 3825.65
   86.52 3826.01   86.91 3826.02

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035   18.28    .013      47    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         18.28      47            18.75   18.75   18.75            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 2740.08*

INPUT
Description:
Station Elevation Data    num=      17
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3822.74    2.51 3823.03     2.8 3823.03    6.32 3822.79   14.05 3821.54
   14.06 3821.54   14.11 3821.53   18.14 3821.26   31.64    3819   31.93 3818.98
   39.25 3818.84   46.75 3818.99   46.75 3821.99   62.79 3823.29    75.9 3823.89
   86.32 3824.24   86.71 3824.25

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035   18.14    .013   46.75    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         18.14   46.75            18.75   18.75   18.75            .03      .05
```

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 2721.33*

INPUT
Description:
Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3821.04	2.49	3821.31	2.77	3821.31	6.27	3821.05	13.94	3819.79
13.95	3819.78	14	3819.78	18	3819.52	31.42	3817.26	31.72	3817.24
39	3817.1	46.5	3817.25	46.5	3820.25	62.56	3821.53	75.68	3822.13
86.11	3822.47	86.5	3822.48						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	18	.013	46.5	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
18	46.5	18.75	18.75	18.75	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 2702.58*

INPUT
Description:
Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3819.34	2.47	3819.59	2.75	3819.59	6.22	3819.31	13.83	3818.03
13.84	3818.03	13.89	3818.03	17.85	3817.78	31.21	3815.51	31.51	3815.5
38.75	3815.36	46.25	3815.51	46.25	3818.51	62.32	3819.76	75.46	3820.36
85.9	3820.7	86.3	3820.71						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	17.85	.013	46.25	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
17.85	46.25	18.75	18.75	18.75	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 2683.83

```
INPUT
Description:
Station Elevation Data    num=      15
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3817.64    2.45 3817.87    2.73 3817.87    6.17 3817.57   13.73 3816.28
   13.78 3816.28   17.71 3816.04      31 3813.77    38.5 3813.62      46 3813.77
      46 3816.77    62.1    3818   75.25  3818.6    85.7 3818.93   86.09 3818.94

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035   17.71    .013      46    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         17.71      46            18.75   18.75   18.75            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 2665.08*

INPUT
Description:
Station Elevation Data    num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3815.92    2.43 3816.13    2.71 3816.13    6.12 3815.81   13.61 3814.51
   13.67 3814.51   17.57 3814.28   30.47 3812.06   30.79 3812.01   38.25 3811.86
   45.75 3812.01   45.75 3815.01   61.87 3816.21   75.03 3816.82   85.49 3817.14
   85.88 3817.15

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035   17.57    .013   45.75    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         17.57   45.75            18.75   18.75   18.75            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 2646.33*

INPUT
Description:
Station Elevation Data    num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  3814.2    2.41 3814.39    2.69 3814.39    6.07 3814.05    13.5 3812.74
   13.56 3812.74   17.42 3812.52   30.26 3810.29   30.58 3810.25      38  3810.1
    45.5 3810.25    45.5 3813.25   61.63 3814.43   74.81 3815.04   85.29 3815.35
```

```
   85.68 3815.36

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035   17.42    .013    45.5    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         17.42    45.5            18.75   18.75   18.75            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 2627.57*

INPUT
Description:
Station Elevation Data    num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3812.48    2.39 3812.65    2.66 3812.65    6.02 3812.28   13.39 3810.97
   13.44 3810.96   17.28 3810.76   30.05 3808.53   30.37 3808.49   37.75 3808.34
   45.25 3808.49   45.25 3811.49    61.4 3812.64    74.6 3813.25   85.08 3813.56
   85.47 3813.57

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035   17.28    .013   45.25    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         17.28   45.25            18.75   18.75   18.75            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 2608.82*

INPUT
Description:
Station Elevation Data    num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3810.76    2.37 3810.92    2.64 3810.92    5.97 3810.52   13.28  3809.2
   13.33 3809.19   17.14    3809   29.84 3806.76   30.16 3806.73    37.5 3806.58
      45 3806.73      45 3809.73   61.17 3810.85   74.38 3811.47   84.87 3811.77
   85.26 3811.78

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035   17.14    .013      45    .013
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         17.14      45            18.75   18.75   18.75            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 2590.07*

INPUT
Description:
Station Elevation Data    num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3809.05    2.35 3809.18    2.62 3809.18    5.92 3808.76   13.17 3807.42
   13.22 3807.42      17 3807.23   29.63    3805   29.94 3804.97   37.25 3804.83
   44.75 3804.98   44.75 3807.98   60.94 3809.07   74.16 3809.69   84.67 3809.97
   85.06    3810

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035      17    .013   44.75    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            17   44.75            18.75   18.75   18.75            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 2571.32*

INPUT
Description:
Station Elevation Data    num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3807.33    2.33 3807.44     2.6 3807.44    5.87    3807   13.06 3805.65
   13.11 3805.65   16.85 3805.47   29.42 3803.23   29.73 3803.21      37 3803.07
    44.5 3803.22    44.5 3806.22    60.7 3807.28   73.94  3807.9   84.46 3808.18
   84.85 3808.21

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035   16.85    .013    44.5    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         16.85    44.5            18.75   18.75   18.75            .03      .05

CROSS SECTION
```

RIVER: River 1
REACH: Reach 1 RS: 2552.56*

INPUT
Description:
Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3805.61	2.31	3805.7	2.58	3805.7	5.82	3805.23	12.95	3803.88
13	3803.87	16.71	3803.71	29.21	3801.47	29.52	3801.45	36.75	3801.31
44.25	3801.46	44.25	3804.46	60.47	3805.5	73.72	3806.12	84.25	3806.39
84.65	3806.42								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	16.71	.013	44.25	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
16.71	44.25	18.75	18.75	18.75	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 2533.81

INPUT
Description:
Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3803.89	2.3	3803.96	2.56	3803.96	5.78	3803.47	12.84	3802.11
12.89	3802.1	16.57	3801.95	29	3799.7	36.5	3799.55	44	3799.7
44	3802.7	60.24	3803.71	73.51	3804.34	84.05	3804.6	84.44	3804.63

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	16.57	.013	44	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
16.57	44	18.75	18.75	18.75	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 2515.06*

INPUT
Description:
Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

```
       0 3802.18    2.22 3802.24    2.47 3802.24    3.17 3802.14    5.58 3801.76
    12.4 3800.43   12.45 3800.42      16 3800.21   28.63 3797.97    29.5 3797.94
   36.25 3797.81   43.75 3797.96   43.75 3800.96   60.01 3801.94   73.29 3802.57
   83.84 3802.83   84.24 3802.85

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035      16    .013   43.75    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            16   43.75            18.75   18.75   18.75            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 2496.31*

INPUT
Description:
Station Elevation Data    num=      17
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3800.48    2.14 3800.52    2.38 3800.51    3.06 3800.43    5.38 3800.04
   11.95 3798.74      12 3798.73   15.43 3798.48   28.26 3796.25   29.14  3796.2
      36 3796.06    43.5 3796.21    43.5 3799.21   59.78 3800.17   73.07  3800.8
   83.64 3801.05   84.03 3801.07

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035   15.43    .013    43.5    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         15.43    43.5            18.75   18.75   18.75            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 2477.55*

INPUT
Description:
Station Elevation Data    num=      17
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3798.77    2.06  3798.8     2.3 3798.79    2.95 3798.72    5.18 3798.33
   11.51 3797.06   11.56 3797.05   14.86 3796.74   27.89 3794.52   28.79 3794.46
   35.75 3794.32   43.25 3794.47   43.25 3797.47   59.54  3798.4   72.86 3799.04
   83.43 3799.28   83.83  3799.3

Manning's n Values        num=       3
```

```
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035   14.86    .013   43.25    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         14.86   43.25            18.75   18.75   18.75            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 2458.80*

INPUT
Description:
Station Elevation Data    num=      17
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3797.07    1.98 3797.07    2.21 3797.07    2.83    3797    4.98 3796.62
   11.07 3795.38   11.11 3795.37   14.28    3795   27.52  3792.8   28.43 3792.72
    35.5 3792.58      43 3792.73      43 3795.73   59.31 3796.63   72.64 3797.27
   83.23  3797.5   83.62 3797.52

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035   14.28    .013      43    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         14.28      43            18.75   18.75   18.75            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 2440.05*

INPUT
Description:
Station Elevation Data    num=      17
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3795.36     1.9 3795.35    2.12 3795.35    2.72 3795.29    4.78  3794.9
   10.63 3793.69   10.67 3793.68   13.71 3793.26   27.15 3791.07   28.07 3790.97
   35.25 3790.83   42.75 3790.98   42.75 3793.98   59.08 3794.86   72.42  3795.5
   83.02 3795.73   83.42 3795.74

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035   13.71    .013   42.75    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         13.71   42.75            18.75   18.75   18.75            .03      .05
```

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 2421.30*

INPUT
Description:
Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3793.66	1.82	3793.63	2.03	3793.62	2.61	3793.58	4.58	3793.19
10.18	3792.01	10.22	3792	13.14	3791.52	26.77	3789.35	27.71	3789.23
35	3789.09	42.5	3789.24	42.5	3792.24	58.85	3793.09	72.2	3793.73
82.82	3793.95	83.21	3793.96						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	13.14	.013	42.5	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
13.14	42.5	18.75	18.75	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 2402.54*

INPUT
Description:
Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3791.96	1.74	3791.91	1.94	3791.9	2.49	3791.87	4.39	3791.48
9.74	3790.33	9.78	3790.32	12.57	3789.79	26.4	3787.62	27.36	3787.49
34.75	3787.34	42.25	3787.49	42.25	3790.49	58.62	3791.32	71.99	3791.97
82.61	3792.18	83.01	3792.19						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	12.57	.013	42.25	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
12.57	42.25	18.75	18.75	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 2383.79

```
INPUT
Description:
Station Elevation Data    num=       9
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3790.25    2.38 3790.16      12 3788.05      27 3785.75    34.5  3785.6
      42 3785.75      42 3788.75   71.77  3790.2    82.8 3790.41

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035      12    .013      42    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            12      42             18.87   18.87   18.87             .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 2364.93*

INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     .12 3788.48    2.49 3788.38    8.24 3787.14   12.05 3786.32   26.72 3784.06
   26.98 3784.03   34.45 3783.88   41.95 3784.03   41.95 3787.03   59.55  3787.9
   71.76 3788.48   82.69  3788.7   82.81  3788.7

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     .12    .035   12.05    .013   41.95    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         12.05   41.95             18.87   18.87   18.87             .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 2346.06*

INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     .25  3786.7     2.6 3786.61    8.31 3785.39    12.1  3784.6   26.71 3782.33
   26.97  3782.3    34.4 3782.15    41.9  3782.3    41.9  3785.3   59.53 3786.19
   71.76 3786.77    82.7 3786.98   82.82 3786.98

Manning's n Values        num=       3
```

```
     Sta   n Val     Sta   n Val     Sta   n Val
     .25    .035    12.1    .013    41.9    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          12.1    41.9            18.87   18.87   18.87            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 2327.20*

INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     .38 3784.93    2.71 3784.83    8.38 3783.64   12.15 3782.88   26.69  3780.6
   26.95 3780.58   34.36 3780.43   41.86 3780.58   41.86 3783.58    59.5 3784.48
   71.75 3785.05   82.71 3785.27   82.83 3785.27

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     .38    .035   12.15    .013   41.86    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         12.15   41.86            18.87   18.87   18.87            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 2308.34*

INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
      .5 3783.16    2.82 3783.05    8.46  3781.9   12.19 3781.15   26.68 3778.88
   26.94 3778.85   34.31 3778.71   41.81 3778.85   41.81 3781.85   59.48 3782.78
   71.75 3783.34   82.72 3783.56   82.84 3783.56

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
      .5    .035   12.19    .013   41.81    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         12.19   41.81            18.87   18.87   18.87            .03      .05

CROSS SECTION
```

RIVER: River 1
REACH: Reach 1 RS: 2289.47*

INPUT
Description:
Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
.62	3781.38	2.93	3781.28	8.53	3780.15	12.24	3779.43	26.66	3777.15
26.92	3777.13	34.26	3776.98	41.76	3777.13	41.76	3780.13	59.46	3781.07
71.74	3781.62	82.73	3781.85	82.85	3781.85				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
.62	.035	12.24	.013	41.76	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
12.24	41.76	18.87	18.87	18.87	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 2270.61*

INPUT
Description:
Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
.75	3779.61	3.04	3779.5	8.6	3778.4	12.29	3777.7	26.65	3775.42
26.91	3775.4	34.22	3775.26	41.72	3775.41	41.72	3778.41	59.44	3779.36
71.74	3779.91	82.74	3780.13	82.86	3780.14				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
.75	.035	12.29	.013	41.72	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
12.29	41.72	18.87	18.87	18.87	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 2251.74*

INPUT
Description:
Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

```
     .88 3777.83    3.15 3777.73    8.68 3776.65   12.34 3775.98   26.63 3773.69
   26.89 3773.68   34.17 3773.53   41.67 3773.68   41.67 3776.68   59.41 3777.66
   71.73 3778.19   82.75 3778.42   82.87 3778.42

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     .88    .035   12.34    .013   41.67    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         12.34   41.67            18.87   18.87   18.87            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 2232.88

INPUT
Description:
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       1 3776.06    3.26 3775.95    8.75  3774.9   12.39 3774.25   26.62 3771.96
   34.12 3771.81   41.62 3771.96   41.62 3774.96   59.39 3775.95   71.73 3776.48
   82.76 3776.71   82.88 3776.71

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       1    .035   12.39    .013   41.62    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         12.39   41.62            18.87   18.87   18.87            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 2214.02*

INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     .88 3774.21    3.12 3774.09    8.57 3773.07   12.19 3772.45   26.09  3770.2
   26.36 3770.16   33.82 3770.01   41.32 3770.16   41.32 3773.16   59.11 3774.16
   71.47 3774.69   82.52 3774.92   82.64 3774.92

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     .88    .035   12.19    .013   41.32    .013
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         12.19   41.32             18.87   18.87   18.87            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 2195.16*

INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     .75 3772.35    2.98 3772.24    8.39 3771.24   11.99 3770.64   25.82 3768.39
   26.09 3768.36   33.53 3768.21   41.03 3768.36   41.03 3771.36   58.84 3772.38
   71.21 3772.89   82.28 3773.13    82.4 3773.13

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     .75    .035   11.99    .013   41.03    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         11.99   41.03             18.87   18.87   18.87            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 2176.29*

INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     .62  3770.5    2.84 3770.39    8.21 3769.41   11.79 3768.84   25.56 3766.58
   25.83 3766.55   33.23 3766.41   40.73 3766.56   40.73 3769.56   58.57 3770.59
   70.96  3771.1   82.04 3771.34   82.16 3771.34

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     .62    .035   11.79    .013   40.73    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         11.79   40.73             18.87   18.87   18.87            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 2157.43*
```

```
INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
      .5 3768.65     2.7 3768.53    8.04 3767.59   11.59 3767.04    25.3 3764.78
   25.57 3764.75   32.93  3764.6   40.43 3764.75   40.43 3767.75    58.3 3768.81
    70.7  3769.3    81.8 3769.54   81.92 3769.54

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
      .5    .035   11.59    .013   40.43    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         11.59   40.43             18.87   18.87   18.87            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 2138.57*

INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     .38  3766.8    2.56 3766.68    7.86 3765.76   11.38 3765.23   25.04 3762.97
    25.3 3762.95   32.64  3762.8   40.14 3762.95   40.14 3765.95   58.03 3767.02
   70.45 3767.51   81.56 3767.75   81.68 3767.75

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     .38    .035   11.38    .013   40.14    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         11.38   40.14             18.87   18.87   18.87            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 2119.71*

INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     .25 3764.95    2.42 3764.82    7.68 3763.93   11.18 3763.43   24.77 3761.16
   25.04 3761.15   32.34    3761   39.84 3761.15   39.84 3764.15   57.75 3765.24
   70.19 3765.72   81.32 3765.96   81.44 3765.96
```

```
Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     .25    .035   11.18    .013   39.84    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         11.18   39.84            18.87   18.87   18.87            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 2100.84*

INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     .12 3763.09    2.28 3762.97    7.51  3762.1   10.98 3761.62   24.51 3759.36
   24.78 3759.35   32.05  3759.2   39.55 3759.35   39.55 3762.35   57.48 3763.45
   69.94 3763.92   81.08 3764.17    81.2 3764.17

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     .12    .035   10.98    .013   39.55    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         10.98   39.55            18.87   18.87   18.87            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 2081.98

INPUT
Description:
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3761.24    2.14 3761.11    7.33 3760.27   10.78 3759.82   24.25 3757.55
   31.75  3757.4   39.25 3757.55   39.25 3760.55   57.21 3761.67   69.68 3762.13
   80.84 3762.38   80.96 3762.38

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035   10.78    .013   39.25    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         10.78   39.25            18.87   18.87   18.87            .03      .05
```

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 2063.12*

INPUT
Description:
Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3759.28	2.12	3759.15	7.28	3758.34	10.7	3757.91	23.83	3755.69
24.11	3755.64	31.58	3755.49	39.08	3755.64	39.08	3758.64	57.06	3759.78
69.55	3760.23	80.72	3760.48	80.85	3760.48				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	10.7	.013	39.08	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
10.7	39.08	18.87	18.87	18.87	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 2044.25*

INPUT
Description:
Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3757.33	2.11	3757.19	7.23	3756.41	10.63	3756.01	23.7	3753.77
23.98	3753.74	31.41	3753.59	38.91	3753.74	38.91	3756.74	56.91	3757.89
69.42	3758.33	80.61	3758.59	80.73	3758.59				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	10.63	.013	38.91	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
10.63	38.91	18.87	18.87	18.87	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 2025.39*

INPUT
Description:

```
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3755.37    2.09 3755.23    7.17 3754.48   10.55  3754.1   23.56 3751.86
   23.84 3751.83   31.24 3751.68   38.74 3751.83   38.74 3754.83   56.77    3756
   69.29 3756.44   80.49 3756.69   80.61 3756.69

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035   10.55    .013   38.74    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         10.55   38.74            18.87   18.87   18.87            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 2006.53*

INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3753.42    2.08 3753.27    7.12 3752.55   10.48 3752.19   23.42 3749.95
    23.7 3749.92   31.06 3749.78   38.57 3749.93   38.57 3752.93   56.62 3754.11
   69.16 3754.54   80.38  3754.8    80.5  3754.8

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035   10.48    .013   38.57    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         10.48   38.57            18.87   18.87   18.87            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 1987.66*

INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3751.46    2.06 3751.32    7.07 3750.61    10.4 3750.28   23.29 3748.04
   23.56 3748.02   30.89 3747.88   38.39 3748.02   38.39 3751.02   56.47 3752.22
   69.03 3752.64   80.26 3752.91   80.39 3752.91

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
```

```
       0    .035    10.4    .013   38.39    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          10.4   38.39             18.87   18.87   18.87            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 1968.80*

INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  3749.5    2.05 3749.36    7.02 3748.68   10.32 3748.38   23.15 3746.12
   23.43 3746.11   30.72 3745.97   38.22 3746.11   38.22 3749.11   56.32 3750.33
    68.9 3750.74   80.15 3751.01   80.27 3751.01

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035   10.32    .013   38.22    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         10.32   38.22             18.87   18.87   18.87            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 1949.93*

INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3747.55    2.03  3747.4    6.97 3746.75   10.25 3746.47   23.02 3744.21
   23.29  3744.2   30.55 3744.06   38.05 3744.21   38.05 3747.21   56.18 3748.44
   68.77 3748.85   80.03 3749.11   80.15 3749.11

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035   10.25    .013   38.05    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         10.25   38.05             18.87   18.87   18.87            .03      .05

CROSS SECTION
```

RIVER: River 1
REACH: Reach 1 RS: 1931.07

INPUT
Description:
Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3745.59	2.02	3745.44	6.92	3744.82	10.17	3744.56	22.88	3742.3
30.38	3742.16	37.88	3742.3	37.88	3745.3	56.03	3746.55	68.64	3746.95
79.92	3747.22	80.04	3747.22						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	10.17	.013	37.88	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
10.17	37.88	18.87	18.87	18.87	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 1912.21*

INPUT
Description:
Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3743.7	1.93	3743.56	6.61	3742.98	9.71	3742.73	22.6	3740.48
23.38	3740.45	30.21	3740.32	37.71	3740.46	37.71	3743.46	55.88	3744.73
68.51	3745.12	79.8	3745.39	79.93	3745.39				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	9.71	.013	37.71	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
9.71	37.71	18.87	18.87	18.87	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 1893.34*

INPUT
Description:
Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3741.81	1.84	3741.67	6.3	3741.14	9.25	3740.9	22.32	3738.66

```
   23.11 3738.62   30.03 3738.48   37.53 3738.63   37.53 3741.63   55.73 3742.91
   68.38 3743.29   79.69 3743.57   79.81 3743.57

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035    9.25    .013   37.53    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          9.25   37.53             18.87   18.87   18.87             .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 1874.48*

INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3739.93    1.75 3739.79    5.98  3739.3    8.79 3739.07   22.04 3736.84
   22.84 3736.78   29.86 3736.65   37.36 3736.79   37.36 3739.79   55.59 3741.09
   68.25 3741.46   79.57 3741.74   79.69 3741.74

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035    8.79    .013   37.36    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          8.79   37.36             18.87   18.87   18.87             .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 1855.62*

INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3738.04    1.66 3737.91    5.67 3737.46    8.34 3737.23   21.77 3735.02
   22.57 3734.95   29.69 3734.81   37.19 3734.96   37.19 3737.96   55.44 3739.27
   68.12 3739.63   79.46 3739.92   79.58 3739.92

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035    8.34    .013   37.19    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
```

```
          8.34   37.19            18.87   18.87   18.87            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 1836.75*

INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3736.15    1.56 3736.02    5.36 3735.62    7.88  3735.4   21.49  3733.2
    22.3 3733.11   29.52 3732.97   37.02 3733.12   37.02 3736.12   55.29 3737.45
   67.99  3737.8   79.34 3738.09   79.47 3738.09

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035    7.88    .013   37.02    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          7.88   37.02            18.87   18.87   18.87            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 1817.89*

INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3734.26    1.47 3734.14    5.05 3733.78    7.42 3733.57   21.21 3731.38
   22.04 3731.28   29.34 3731.14   36.85 3731.28   36.85 3734.28   55.14 3735.63
   67.86 3735.98   79.23 3736.26   79.35 3736.26

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035    7.42    .013   36.85    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          7.42   36.85            18.87   18.87   18.87            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 1799.02*
```

```
INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3732.38    1.38 3732.26    4.73 3731.94    6.96 3731.74   20.93 3729.56
   21.77 3729.44   29.17  3729.3   36.67 3729.45   36.67 3732.45      55 3733.81
   67.73 3734.15   79.11 3734.44   79.24 3734.44

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035    6.96    .013   36.67    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          6.96   36.67             18.87   18.87   18.87             .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 1780.16

INPUT
Description:
Station Elevation Data    num=       9
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3730.49     6.5 3729.91    21.5 3727.61      29 3727.46    36.5 3727.61
    36.5 3730.61   54.85 3731.99      79 3732.61   79.12 3732.61

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035     6.5    .013    36.5    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           6.5    36.5             19.34   19.34   19.34             .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 1760.80*

INPUT
Description:
Station Elevation Data    num=      14
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0    3729    2.97 3728.73    5.13 3728.52    6.78 3728.36   21.34 3726.11
   21.71 3726.06   29.17 3725.91   36.67 3726.06   36.67 3729.06   54.93 3730.44
   54.99 3730.44   79.09 3731.06   79.17 3731.06   79.21 3731.06

Manning's n Values        num=       3
```

```
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035    6.78    .013   36.67    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          6.78   36.67             19.34   19.34   19.34            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 1741.44*

INPUT
Description:
Station Elevation Data    num=      14
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3727.52     3.1 3727.22    5.34 3726.98    7.06 3726.81   21.56 3724.56
   21.92 3724.51   29.35 3724.36   36.85 3724.51   36.85 3727.51   55.07 3728.89
   55.13  3728.9   79.18 3729.51   79.26 3729.51    79.3 3729.51

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035    7.06    .013   36.85    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          7.06   36.85             19.34   19.34   19.34            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 1722.09*

INPUT
Description:
Station Elevation Data    num=      14
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3726.03    3.22 3725.72    5.55 3725.45    7.34 3725.26   21.77    3723
   22.13 3722.96   29.52 3722.82   37.03 3722.96   37.03 3725.96    55.2 3727.34
   55.26 3727.35   79.27 3727.95   79.35 3727.95   79.39 3727.95

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035    7.34    .013   37.03    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          7.34   37.03             19.34   19.34   19.34            .03      .05

CROSS SECTION
```

RIVER: River 1
REACH: Reach 1 RS: 1702.73*

INPUT
Description:
Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3724.55	3.34	3724.21	5.76	3723.91	7.62	3723.71	21.98	3721.45
22.34	3721.41	29.7	3721.27	37.2	3721.41	37.2	3724.41	55.34	3725.8
55.4	3725.8	79.35	3726.4	79.44	3726.4	79.48	3726.4		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	7.62	.013	37.2	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
7.62	37.2	19.34	19.34	19.34	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 1683.37*

INPUT
Description:
Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3723.06	3.47	3722.71	5.97	3722.38	7.9	3722.15	22.19	3719.89
22.55	3719.86	29.88	3719.72	37.38	3719.87	37.38	3722.87	55.48	3724.25
55.54	3724.25	79.44	3724.85	79.52	3724.85	79.57	3724.85		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	7.9	.013	37.38	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
7.9	37.38	19.34	19.34	19.34	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 1664.01*

INPUT
Description:
Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

```
       0 3721.58    3.59  3721.2    6.18 3720.84    8.18  3720.6    22.4 3718.34
   22.76 3718.31   30.05 3718.17   37.55 3718.32   37.55 3721.32   55.62  3722.7
   55.68 3722.71   79.53  3723.3   79.61  3723.3   79.65  3723.3

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035    8.18    .013   37.55    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          8.18   37.55            19.34   19.34   19.34            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 1644.65*

INPUT
Description:
Station Elevation Data    num=      14
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3720.09    3.71  3719.7     6.4 3719.31    8.46 3719.05   22.61 3716.78
   22.97 3716.76   30.23 3716.62   37.72 3716.77   37.72 3719.77   55.76 3721.15
   55.82 3721.16   79.62 3721.75    79.7 3721.75   79.74 3721.75

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035    8.46    .013   37.72    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          8.46   37.72            19.34   19.34   19.34            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 1625.30*

INPUT
Description:
Station Elevation Data    num=      14
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3718.61    3.83 3718.19    6.61 3717.77    8.74  3717.5   22.83 3715.23
   23.18 3715.21    30.4 3715.08    37.9 3715.22    37.9 3718.22   55.89  3719.6
   55.95 3719.61   79.71 3720.19   79.79 3720.19   79.83 3720.19

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035    8.74    .013    37.9    .013
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          8.74    37.9            19.34   19.34   19.34            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 1605.94*

INPUT
Description:
Station Elevation Data    num=      14
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3717.12    3.96 3716.69    6.82 3716.24    9.02 3715.95   23.04 3713.67
   23.39 3713.66   30.58 3713.53   38.08 3713.67   38.08 3716.67   56.03 3718.06
   56.09 3718.07    79.8 3718.64   79.88 3718.64   79.92 3718.64

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035    9.02    .013   38.08    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          9.02   38.08           19.34   19.34   19.34            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 1586.58

INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3715.64    4.08 3715.18    7.03  3714.7     9.3  3714.4   23.25 3712.12
   30.75 3711.98   38.25 3712.12   38.25 3715.12   56.17 3716.51   56.23 3716.52
   79.89 3717.09   79.97 3717.09   80.01 3717.09

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035     9.3    .013   38.25    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           9.3   38.25           19.34   19.34   19.34            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 1567.22*
```

```
INPUT
Description:
Station Elevation Data    num=      14
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3714.16    4.11 3713.68    7.08 3713.18    9.37 3712.85   23.39 3710.58
   23.74 3710.57   30.92 3710.43   38.42 3710.57   38.42 3713.57   56.31 3714.96
   56.37 3714.97   79.98 3715.54   80.06 3715.54    80.1 3715.54

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035    9.37    .013   38.42    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          9.37   38.42             19.34   19.34   19.34            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 1547.86*

INPUT
Description:
Station Elevation Data    num=      14
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3712.67    4.14 3712.19    7.14 3711.66    9.44 3711.31   23.53 3709.04
   23.88 3709.02    31.1 3708.88    38.6 3709.03    38.6 3712.03   56.45 3713.42
   56.51 3713.43   80.07 3713.99   80.15 3713.99   80.19 3713.99

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035    9.44    .013    38.6    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          9.44    38.6             19.34   19.34   19.34            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 1528.51*

INPUT
Description:
Station Elevation Data    num=      14
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3711.19    4.17 3710.69    7.19 3710.14    9.51 3709.76   23.66  3707.5
   24.02 3707.47   31.27 3707.34   38.78 3707.48   38.78 3710.48   56.58 3711.87
   56.64 3711.88   80.16 3712.44   80.24 3712.44   80.28 3712.44
```

```
Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035    9.51    .013   38.78    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          9.51   38.78            19.34   19.34   19.34            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 1509.15*

INPUT
Description:
Station Elevation Data    num=      14
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3709.71     4.2 3709.19    7.24 3708.62    9.58 3708.22    23.8 3705.95
   24.16 3705.93   31.45 3705.79   38.95 3705.93   38.95 3708.93   56.72 3710.33
   56.78 3710.33   80.25 3710.89   80.33 3710.89   80.37 3710.89

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035    9.58    .013   38.95    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          9.58   38.95            19.34   19.34   19.34            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 1489.79*

INPUT
Description:
Station Elevation Data    num=      14
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3708.23    4.23  3707.7    7.29  3707.1    9.65 3706.67   23.94 3704.41
    24.3 3704.38   31.62 3704.24   39.12 3704.39   39.12 3707.39   56.86 3708.78
   56.92 3708.79   80.34 3709.33   80.42 3709.33   80.46 3709.33

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035    9.65    .013   39.12    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          9.65   39.12            19.34   19.34   19.34            .03      .05
```

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 1470.43*

INPUT
Description:
Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3706.74	4.26	3706.2	7.35	3705.58	9.72	3705.13	24.08	3702.87
24.44	3702.84	31.8	3702.69	39.3	3702.84	39.3	3705.84	57	3707.23
57.06	3707.24	80.43	3707.78	80.5	3707.78	80.54	3707.78		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	9.72	.013	39.3	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
9.72	39.3	19.34	19.34	19.34	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 1451.07*

INPUT
Description:
Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3705.26	4.29	3704.7	7.4	3704.06	9.79	3703.58	24.22	3701.33
24.58	3701.29	31.98	3701.14	39.47	3701.29	39.47	3704.29	57.14	3705.69
57.2	3705.69	80.51	3706.23	80.59	3706.23	80.63	3706.23		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	9.79	.013	39.47	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
9.79	39.47	19.34	19.34	19.34	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 1431.72*

INPUT
Description:

```
Station Elevation Data    num=      14
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3703.78    4.33  3703.2    7.45 3702.54    9.86 3702.04   24.36 3699.79
   24.72 3699.74   32.15  3699.6   39.65 3699.74   39.65 3702.74   57.27 3704.14
   57.33 3704.15    80.6 3704.68   80.68 3704.68   80.72 3704.68

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035    9.86    .013   39.65    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          9.86   39.65            19.34   19.34   19.34            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 1412.36*

INPUT
Description:
Station Elevation Data    num=      14
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3702.29    4.36 3701.71    7.51 3701.02    9.93 3700.49   24.49 3698.25
   24.86  3698.2   32.33 3698.05   39.83  3698.2   39.83  3701.2   57.41  3702.6
   57.47  3702.6   80.69 3703.13   80.77 3703.13   80.81 3703.13

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035    9.93    .013   39.83    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          9.93   39.83            19.34   19.34   19.34            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 1393

INPUT
Description:
Station Elevation Data    num=      10
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3700.81    4.39 3700.21      10 3698.95      25 3696.65    32.5  3696.5
      40 3696.65      40 3699.65   57.55 3701.0580.86565 3701.58    80.9 3701.58

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035      10    .013      40    .013
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            10      40            19.35   19.35   19.35            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 1373.69*

INPUT
Description:
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3699.23    3.02 3698.83    4.39 3698.64      10  3697.4      25  3695.1
    32.5 3694.95      40  3695.1      40  3698.1   57.54 3699.49   60.82 3699.58
   80.84 3700.03   80.88 3700.03

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035      10    .013      40    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            10      40            19.35   19.35   19.35            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 1354.38*

INPUT
Description:
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3697.65    3.02 3697.26    4.39 3697.07      10 3695.85      25 3693.55
    32.5  3693.4      40 3693.55      40 3696.55   57.53 3697.94   60.81 3698.03
   80.82 3698.48   80.86 3698.48

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035      10    .013      40    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            10      40            19.35   19.35   19.35            .03      .05

CROSS SECTION


RIVER: River 1
```

REACH: Reach 1 RS: 1335.07*

INPUT
Description:
Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3696.08	3.02	3695.69	4.39	3695.5	10	3694.3	25	3692.01
32.5	3691.86	40	3692.01	40	3695.01	57.52	3696.38	60.8	3696.48
80.8	3696.94	80.83	3696.94						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	10	.013	40	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
10	40	19.35	19.35	19.35	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 1315.76*

INPUT
Description:
Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3694.5	3.02	3694.13	4.39	3693.93	10	3692.75	25	3690.46
32.5	3690.31	40	3690.46	40	3693.46	57.51	3694.82	60.79	3694.94
80.78	3695.39	80.81	3695.39						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	10	.013	40	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
10	40	19.35	19.35	19.35	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 1296.44*

INPUT
Description:
Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3692.92	3.02	3692.56	4.39	3692.37	10	3691.21	25	3688.91
32.5	3688.76	40	3688.91	40	3691.91	57.5	3693.27	60.78	3693.39

```
   80.75 3693.84   80.79 3693.84

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035      10    .013      40    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            10      40            19.35   19.35   19.35            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 1277.13*

INPUT
Description:
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3691.34    3.02 3690.99    4.39  3690.8      10 3689.66      25 3687.36
    32.5 3687.21      40 3687.36      40 3690.36   57.49 3691.71   60.76 3691.84
   80.73 3692.29   80.77 3692.29

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035      10    .013      40    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            10      40            19.35   19.35   19.35            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 1257.82*

INPUT
Description:
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3689.77    3.02 3689.43    4.39 3689.23      10 3688.11      25 3685.82
    32.5 3685.67      40 3685.82      40 3688.82   57.48 3690.15   60.75 3690.29
   80.71 3690.75   80.74 3690.75

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035      10    .013      40    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            10      40            19.35   19.35   19.35            .03      .05
```

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 1238.51*

INPUT
Description:
Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3688.19	3.02	3687.86	4.39	3687.66	10	3686.56	25	3684.27
32.5	3684.12	40	3684.27	40	3687.27	57.47	3688.6	60.74	3688.75
80.69	3689.2	80.72	3689.2						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	10	.013	40	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
10	40	19.35	19.35	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 1219.20

INPUT
Description:
Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3686.61	3.02	3686.29	4.39	3686.09	10	3685.01	25	3682.72
32.5	3682.57	40	3682.72	40	3685.72	57.46	3687.04	60.73	3687.2
80.67	3687.65	80.7	3687.65						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	10	.013	40	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
10	40	19.35	19.35	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 1199.89*

INPUT

```
Description:
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3685.03    3.02 3684.72    4.39 3684.52      10 3683.46      25 3681.17
    32.5 3681.02      40 3681.17      40 3684.17   57.45 3685.48   60.72 3685.65
   80.65  3686.1   80.68  3686.1

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035      10    .013      40    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            10      40            19.35   19.35   19.35            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 1180.58*

INPUT
Description:
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3683.45    3.02 3683.15    4.39 3682.95      10 3681.91      25 3679.62
    32.5 3679.47      40 3679.62      40 3682.62   57.44 3683.92   60.71  3684.1
   80.63 3684.55   80.66 3684.55

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035      10    .013      40    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            10      40            19.35   19.35   19.35            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 1161.26*

INPUT
Description:
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3681.87    3.02 3681.58    4.39 3681.37      10 3680.36      25 3678.07
    32.5 3677.92      40 3678.07      40 3681.07   57.43 3682.36    60.7 3682.55
    80.6    3683   80.63    3683

Manning's n Values        num=       3
```

```
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035      10    .013      40    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            10      40            19.35   19.35   19.35            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 1141.95*

INPUT
Description:
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3680.29    3.02 3680.01    4.39  3679.8      10 3678.81      25 3676.52
    32.5 3676.37      40 3676.52      40 3679.52   57.42 3680.81   60.68    3681
   80.58 3681.45   80.61 3681.45

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035      10    .013      40    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            10      40            19.35   19.35   19.35            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 1122.64*

INPUT
Description:
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3678.71    3.02 3678.44    4.39 3678.23      10 3677.26      25 3674.96
    32.5 3674.81      40 3674.96      40 3677.96   57.41 3679.25   60.67 3679.45
   80.56 3679.91   80.59 3679.91

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035      10    .013      40    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            10      40            19.35   19.35   19.35            .03      .05

CROSS SECTION
```

RIVER: River 1
REACH: Reach 1 RS: 1103.33*

INPUT
Description:
Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3677.13	3.02	3676.87	4.39	3676.66	10	3675.71	25	3673.41
32.5	3673.26	40	3673.41	40	3676.41	57.4	3677.69	60.66	3677.9
80.54	3678.36	80.57	3678.36						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	10	.013	40	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
10	40	19.35	19.35	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 1084.01*

INPUT
Description:
Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3675.55	3.02	3675.3	4.39	3675.09	10	3674.16	25	3671.86
32.5	3671.71	40	3671.86	40	3674.86	57.39	3676.13	60.65	3676.35
80.51	3676.81	80.54	3676.81						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	10	.013	40	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
10	40	19.35	19.35	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 1064.70*

INPUT
Description:
Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

```
       0 3673.97    3.02 3673.73    4.39 3673.52      10 3672.61      25 3670.31
    32.5 3670.16      40 3670.31      40 3673.31   57.38 3674.57   60.64  3674.8
   80.49 3675.26   80.52 3675.26

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035      10    .013      40    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            10      40            19.35   19.35   19.35            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 1045.39

INPUT
Description:
Station Elevation Data    num=       9
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3672.39    3.02 3672.16      10 3671.06      25 3668.76    32.5 3668.61
      40 3668.76      40 3671.76   60.63 3673.25    80.5 3673.71

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035      10    .013      40    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            10      40            17.72   17.72   17.72            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 1027.68*

INPUT
Description:
Station Elevation Data    num=      15
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3670.94     2.8 3670.73    4.49 3670.48    9.29  3669.7   24.29  3667.4
   31.79 3667.25   39.29  3667.4   39.29  3670.4   60.39 3671.85    71.5 3672.11
   72.38 3672.25   73.23 3672.72    74.1 3672.82   79.86 3672.95   80.71 3672.96

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035    9.29    .013   39.29    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
```

```
          9.29   39.29            17.72   17.72   17.72            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 1009.97*

INPUT
Description:
Station Elevation Data    num=      15
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3669.49    2.59  3669.3    4.15 3669.08    8.57 3668.35   23.57 3666.05
   31.07  3665.9   38.57 3666.05   38.57 3669.05   60.15 3670.44   71.51 3670.73
    72.4 3670.98   73.28 3671.91   74.17 3672.09   80.05  3672.2   80.93 3672.22

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035    8.57    .013   38.57    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          8.57   38.57            17.72   17.72   17.72            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 992.26*

INPUT
Description:
Station Elevation Data    num=      15
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3668.04    2.37 3667.87     3.8 3667.68    7.86 3666.99   22.86 3664.69
   30.36 3664.54   37.86 3664.69   37.86 3667.69   59.91 3669.04   71.52 3669.34
   72.43 3669.71   73.32 3671.09   74.24 3671.35   80.25 3671.46   81.14 3671.47

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035    7.86    .013   37.86    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          7.86   37.86            17.72   17.72   17.72            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 974.55*
```

INPUT
Description:
Station Elevation Data   num=   15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3666.58	2.16	3666.44	3.46	3666.28	7.14	3665.63	22.14	3663.33
29.64	3663.18	37.14	3663.33	37.14	3666.33	59.66	3667.64	71.53	3667.95
72.46	3668.43	73.37	3670.27	74.3	3670.62	80.44	3670.71	81.36	3670.72

Manning's n Values   num=   3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	7.14	.013	37.14	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
7.14	37.14	17.72	17.72	17.72	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1   RS: 956.84*

INPUT
Description:
Station Elevation Data   num=   15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3665.13	1.94	3665	3.11	3664.89	6.43	3664.27	21.43	3661.97
28.93	3661.82	36.43	3661.97	36.43	3664.97	59.42	3666.24	71.53	3666.56
72.49	3667.16	73.42	3669.45	74.37	3669.88	80.64	3669.97	81.57	3669.97

Manning's n Values   num=   3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	6.43	.013	36.43	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
6.43	36.43	17.72	17.72	17.72	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1   RS: 939.13*

INPUT
Description:
Station Elevation Data   num=   15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3663.68	1.73	3663.57	2.77	3663.49	5.71	3662.92	20.71	3660.62
28.21	3660.47	35.71	3660.62	35.71	3663.62	59.18	3664.83	71.54	3665.18
72.51	3665.89	73.46	3668.64	74.43	3669.15	80.83	3669.22	81.79	3669.23

```
Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035    5.71    .013   35.71    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          5.71   35.71             17.72   17.72   17.72            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 921.42

INPUT
Description:
Station Elevation Data    num=      14
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3662.23    2.42 3662.09       5 3661.56      20 3659.26    27.5 3659.11
      35 3659.26      35 3662.26   58.94 3663.43   71.55 3663.79   72.54 3664.62
   73.51 3667.82    74.5 3668.41   81.03 3668.48      82 3668.48

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035       5    .013      35    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             5      35             17.72   17.72   17.72            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 903.71*

INPUT
Description:
Station Elevation Data    num=      14
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3660.79    2.07 3660.67    4.29 3660.22   19.29 3657.92   26.79 3657.77
   34.29 3657.92   34.29 3660.92    58.7 3662.05   71.56 3662.42   72.57 3663.36
   73.56 3667.02   74.56 3667.69   81.23 3667.75   82.21 3667.75

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .032    4.29    .013   34.29    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          4.29   34.29             17.72   17.72   17.72            .03      .05

CROSS SECTION
```

RIVER: River 1
REACH: Reach 1 RS: 886.00*

INPUT
Description:
Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3659.36	1.73	3659.26	3.57	3658.88	18.57	3656.58	26.07	3656.43
33.57	3656.58	33.57	3659.58	58.46	3660.66	71.57	3661.05	72.59	3662.11
73.6	3666.21	74.63	3666.97	81.42	3667.02	82.43	3667.02		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.029	3.57	.013	33.57	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
3.57	33.57	17.72	17.72	17.72	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 868.29*

INPUT
Description:
Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3657.92	1.38	3657.84	2.86	3657.54	17.86	3655.24	25.36	3655.09
32.86	3655.24	32.86	3658.24	58.22	3659.28	71.57	3659.68	72.62	3660.85
73.65	3665.41	73.65	3665.42	74.7	3666.25	81.62	3666.29	82.64	3666.29

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.026	2.86	.013	32.86	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
2.86	32.86	17.72	17.72	17.72	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 850.58*

INPUT
Description:
Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3656.49	1.04	3656.43	2.14	3656.2	17.14	3653.9	24.64	3653.75
32.14	3653.9	32.14	3656.9	57.97	3657.89	71.58	3658.3	72.65	3659.6
73.7	3664.6	73.7	3664.62	74.76	3665.53	81.81	3665.57	82.86	3665.57

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.022	2.14	.013	32.14	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
2.14	32.14	17.72	17.72	17.72	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 832.87*

INPUT
Description:
Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3655.05	.69	3655.01	1.43	3654.86	16.43	3652.56	23.93	3652.41
31.43	3652.56	31.43	3655.56	57.73	3656.51	71.59	3656.93	72.68	3658.34
73.74	3663.8	73.75	3663.81	74.83	3664.82	82.01	3664.84	83.07	3664.84

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.019	1.43	.013	31.43	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1.43	31.43	17.72	17.72	17.72	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 815.16*

INPUT
Description:
Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3653.62	.35	3653.6	.71	3653.52	15.71	3651.22	23.21	3651.07
30.71	3651.22	30.71	3654.22	57.49	3655.12	71.6	3655.56	72.7	3657.09
73.79	3662.99	73.79	3663.01	74.89	3664.1	82.2	3664.11	83.29	3664.11

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.016	.71	.013	30.71	.013

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           .71   30.71            17.72   17.72   17.72            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 797.45

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3652.18      15 3649.88    22.5 3649.73      30 3649.88      30 3652.88
   71.61 3654.19   72.73 3655.83   73.84 3662.21   74.96 3663.38    82.4 3663.38
    83.5 3663.38

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035       0    .013      30    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0      30            19.88   19.88   19.88            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 777.56*

INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3650.85     .31 3650.72   15.31 3648.42   22.81 3648.27   30.31 3648.42
   30.31 3651.42   60.65  3652.4   71.58 3652.74    72.7 3654.31    73.8 3660.43
   74.91 3661.55   82.29 3661.55   83.38 3661.55

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .016     .31    .013   30.31    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           .31   30.31            19.88   19.88   19.88            .03      .05

CROSS SECTION


RIVER: River 1
```

```
REACH: Reach 1            RS: 757.66*

INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3649.52     .62 3649.26   15.62 3646.96   23.12 3646.81   30.62 3646.96
   30.62 3649.96   60.71 3650.96   71.56 3651.29   72.66  3652.8   73.75 3658.64
   74.86 3659.72   82.17 3659.73   83.26 3659.73

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .019     .62    .013   30.62    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           .62   30.62            19.88   19.88   19.88            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 737.77*

INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3648.19     .94  3647.8   15.94  3645.5   23.44 3645.35   30.94  3645.5
   30.94  3648.5   60.78 3649.52   71.53 3649.84   72.63 3651.28   73.71 3656.86
    74.8 3657.89   82.06 3657.91   83.14 3657.91

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .021     .94    .013   30.94    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           .94   30.94            19.88   19.88   19.88            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 717.88*

INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3646.85    1.25 3646.34   16.25 3644.04   23.75  3643.9   31.25 3644.04
   31.25 3647.04   60.84 3648.08   71.51  3648.4   72.59 3649.76   73.67 3655.08
```

```
   74.75 3656.06   81.95 3656.08   83.01 3656.08

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .024    1.25    .013   31.25    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          1.25   31.25             19.88   19.88   19.88            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 697.98*

INPUT
Description:
Station Elevation Data    num=      14
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3645.52    1.56 3644.89   16.56 3642.59   24.06 3642.44   31.56 3642.59
   31.56 3645.59   60.91 3646.64   71.48 3646.95   72.56 3648.25   73.63 3653.29
   73.63 3653.31    74.7 3654.23   81.84 3654.25   82.89 3654.25

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .027    1.56    .013   31.56    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          1.56   31.56             19.88   19.88   19.88            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 678.09*

INPUT
Description:
Station Elevation Data    num=      14
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3644.19    1.87 3643.43   16.88 3641.13   24.38 3640.98   31.88 3641.13
   31.88 3644.13   60.97  3645.2   71.46  3645.5   72.53 3646.73   73.58 3651.51
   73.59 3651.52   74.65  3652.4   81.72 3652.43   82.77 3652.43

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .03    1.87    .013   31.88    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          1.87   31.88             19.88   19.88   19.88            .03      .05
```

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 658.19*

INPUT
Description:
Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3642.86	2.19	3641.97	17.19	3639.67	24.69	3639.52	32.19	3639.67
32.19	3642.67	61.04	3643.76	71.43	3644.05	72.49	3645.21	73.54	3649.73
73.54	3649.74	74.6	3650.57	81.61	3650.6	82.65	3650.6		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.032	2.19	.013	32.19	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
2.19	32.19	19.88	19.88	19.88	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 638.30

INPUT
Description:
Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3641.53	2.5	3640.51	17.5	3638.21	25	3638.06	32.5	3638.21
32.5	3641.21	61.1	3642.32	71.41	3642.6	72.46	3643.7	73.5	3647.96
74.55	3648.74	81.5	3648.78	82.53	3648.78				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	2.5	.013	32.5	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
2.5	32.5	19.88	19.88	19.88	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 618.41*

INPUT

Description:
Station Elevation Data   num=   15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3640.19	2.81	3639.04	17.81	3636.74	25.31	3636.59	32.81	3636.74
32.81	3639.74	61.16	3640.87	71.39	3641.15	72.42	3642.17	73.45	3646.16
73.46	3646.17	74.49	3646.9	74.5	3646.91	81.39	3646.95	82.41	3646.95

Manning's n Values   num=   3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	2.81	.013	32.81	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
2.81	32.81	19.88	19.88	19.88	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1   RS: 598.51*

INPUT
Description:
Station Elevation Data   num=   15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3638.85	3.12	3637.58	18.12	3635.28	25.62	3635.13	33.12	3635.28
33.12	3638.28	61.23	3639.43	71.36	3639.69	72.39	3640.65	73.41	3644.37
73.42	3644.39	74.44	3645.06	74.45	3645.07	81.28	3645.12	82.29	3645.12

Manning's n Values   num=   3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	3.12	.013	33.12	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
3.12	33.12	19.88	19.88	19.88	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1   RS: 578.62*

INPUT
Description:
Station Elevation Data   num=   15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3637.52	3.44	3636.11	18.44	3633.81	25.94	3633.66	33.44	3633.81
33.44	3636.81	61.29	3637.98	71.34	3638.24	72.35	3639.13	73.37	3642.58
73.37	3642.6	74.38	3643.23	74.4	3643.24	81.17	3643.29	82.17	3643.29

Manning's n Values   num=   3

```
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035    3.44    .013   33.44    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          3.44   33.44             19.88   19.88   19.88            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 558.73*

INPUT
Description:
Station Elevation Data    num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3636.18    3.75 3634.65   18.75 3632.34   26.25  3632.2   33.75 3632.34
   33.75 3635.34   61.36 3636.53   71.31 3636.78   72.32 3637.61   72.33 3637.62
   73.33  3640.8   73.33 3640.81   74.33  3641.4   74.35  3641.4   81.05 3641.46
   82.05 3641.46

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035    3.75    .013   33.75    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          3.75   33.75             19.88   19.88   19.88            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 538.83*

INPUT
Description:
Station Elevation Data    num=      15
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3634.84    4.06 3633.18   19.06 3630.88   26.56 3630.73   34.06 3630.88
   34.06 3633.88   61.42 3635.08   71.29 3635.32   72.29 3636.08    72.3  3636.1
   73.29 3639.02   74.28 3639.56   74.29 3639.57   80.94 3639.62   81.93 3639.63

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035    4.06    .013   34.06    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          4.06   34.06             19.88   19.88   19.88            .03      .05

CROSS SECTION
```

RIVER: River 1
REACH: Reach 1 RS: 518.94*

INPUT
Description:
Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3633.51	4.38	3631.71	19.38	3629.41	26.88	3629.26	34.38	3629.41
34.38	3632.41	61.49	3633.64	71.27	3633.87	72.26	3634.56	72.26	3634.58
73.24	3637.23	74.23	3637.73	74.24	3637.73	80.83	3637.79	81.81	3637.8

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	4.38	.013	34.38	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
4.38	34.38	19.88	19.88	19.88	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 499.04*

INPUT
Description:
Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3632.17	4.69	3630.25	19.69	3627.95	27.19	3627.8	34.69	3627.95
34.69	3630.95	61.55	3632.19	71.24	3632.42	72.22	3633.04	72.23	3633.05
73.2	3635.45	74.18	3635.89	74.19	3635.9	80.72	3635.96	81.69	3635.97

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	4.69	.013	34.69	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
4.69	34.69	19.88	19.88	19.88	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 479.15

INPUT
Description:
Station Elevation Data num= 13

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3630.83       5 3628.78      20 3626.48    27.5 3626.33      35 3626.48
      35 3629.48   61.62 3630.74   71.22 3630.96   72.19 3631.52   73.16 3633.66
   74.13 3634.06   80.61 3634.13   81.57 3634.14

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035       5    .013      35    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             5      35            19.88   19.88   19.88            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 459.26*

INPUT
Description:
Station Elevation Data    num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3629.35    4.38 3627.56    17.5 3625.54   20.31 3625.36   20.31 3624.86
   21.56 3624.65   29.06  3624.5   36.62 3624.64   36.62 3627.64    62.2 3628.79
   71.43    3629   72.36 3629.49   73.29 3631.36   74.22 3631.71   80.45 3631.79
   81.37  3631.8

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .032    4.38    .013   36.62    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          4.38   36.62            19.88   19.88   19.88            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 439.36*

INPUT
Description:
Station Elevation Data    num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3627.87    3.75 3626.33      15 3624.61   20.62 3624.23   20.62 3623.23
   23.12 3622.81   30.62 3622.66   38.25  3622.8   38.25  3625.8   62.79 3626.84
   71.64 3627.03   72.53 3627.46   73.43 3629.07   74.32 3629.37   80.29 3629.44
   81.18 3629.45

Manning's n Values        num=       3
```

```
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .03    3.75    .013   38.25    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          3.75   38.25            19.88   19.88   19.88            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 419.47*

INPUT
Description:
Station Elevation Data    num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3626.39    3.12 3625.11    12.5 3623.68   20.94 3623.11   20.94 3621.61
   24.69 3620.98   32.19 3620.82   39.88 3620.96   39.88 3623.96   63.37 3624.88
   71.85 3625.07    72.7 3625.43   73.56 3626.77   74.41 3627.02   80.13  3627.1
   80.98 3627.11

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .027    3.12    .013   39.88    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          3.12   39.88            19.88   19.88   19.88            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 399.58*

INPUT
Description:
Station Elevation Data    num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3624.92     2.5 3623.89      10 3622.74   21.25 3621.99   21.25 3619.99
   26.25 3619.14   33.75 3618.99    41.5 3619.11    41.5 3622.11   63.96 3622.93
   72.05 3623.11   72.87 3623.39   73.69 3624.47   74.51 3624.68   79.98 3624.76
   80.79 3624.77

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .024     2.5    .013    41.5    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           2.5    41.5            19.88   19.88   19.88            .03      .05
```

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 379.68*

INPUT
Description:
Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3623.44	1.88	3622.67	7.5	3621.8	21.56	3620.87	21.56	3618.37
27.81	3617.3	35.31	3617.16	43.12	3617.27	43.12	3620.27	64.54	3620.98
72.26	3621.14	73.04	3621.36	73.82	3622.17	74.6	3622.33	79.82	3622.42
80.59	3622.43								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.021	1.88	.013	43.12	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1.88	43.12	19.88	19.88	19.88	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 359.79*

INPUT
Description:
Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3621.96	1.25	3621.45	5	3620.87	21.88	3619.75	21.88	3616.75
29.38	3615.47	36.88	3615.32	44.75	3615.43	44.75	3618.43	65.12	3619.03
72.47	3619.18	73.21	3619.33	73.96	3619.88	74.7	3619.99	79.66	3620.07
80.39	3620.08								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.019	1.25	.013	44.75	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1.25	44.75	19.88	19.88	19.88	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 339.89*

```
INPUT
Description:
Station Elevation Data    num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3620.48     .63 3620.22     2.5 3619.94   22.19 3618.62   22.19 3615.12
   30.94 3613.64   38.44 3613.48   46.38 3613.59   46.38 3616.59   65.71 3617.07
   72.68 3617.22   73.38  3617.3   74.09 3617.58   74.79 3617.64    79.5 3617.73
    80.2 3617.74

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .016     .63    .013   46.38    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           .63   46.38            19.88   19.88   19.88            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 320.00

INPUT
Description:
Station Elevation Data    num=       8
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0    3619    22.5  3617.5    22.5  3613.5    32.5  3611.8      40 3611.65
      48 3611.75      48 3614.75      80  3615.4

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .013       0    .013      48    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0      48            16.99   16.99   16.99            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 303.08*

INPUT
Description:
Station Elevation Data    num=      10
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3617.31    2.09  3617.5    3.67 3617.17   22.42 3615.92   22.42 3611.42
   37.08 3609.88   44.33 3609.73      52 3609.83      52  3613.5   82.35 3614.43

Manning's n Values        num=       3
```

```
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .017    3.67    .013      52    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          3.67      52            16.99   16.99   16.99            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 286.17*

INPUT
Description:
Station Elevation Data    num=      10
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3615.62    4.17    3616    7.33 3615.33   22.33 3614.33   22.33 3609.34
   41.67 3607.95   48.67 3607.81      56 3607.92      56 3612.25    84.7 3613.46

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .02    7.33    .013      56    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          7.33      56            16.99   16.99   16.99            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 269.25*

INPUT
Description:
Station Elevation Data    num=      10
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3613.93    6.26  3614.5      11  3613.5   22.25 3612.75   22.25 3607.25
   46.25 3606.02      53 3605.89      60    3606      60    3611   87.04 3612.49

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .024      11    .013      60    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           11      60            16.99   16.99   16.99            .03      .05

CROSS SECTION


RIVER: River 1
```

REACH: Reach 1 RS: 252.33*

INPUT
Description:
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3612.24	8.35	3612.99	14.67	3611.67	22.17	3611.17	22.17	3605.17
50.83	3604.1	57.33	3603.97	64	3604.08	64	3609.75	89.39	3611.52

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.028	14.67	.013	64	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
14.67	64	16.99	16.99	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 235.42*

INPUT
Description:
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3610.55	10.43	3611.49	18.33	3609.83	22.08	3609.58	22.08	3603.09
55.42	3602.18	61.67	3602.05	68	3602.17	68	3608.5	91.74	3610.55

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.031	18.33	.013	68	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
18.33	68	16.99	16.99	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 218.50

INPUT
Description:
Station Elevation Data num= 9

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3608.86	12.52	3609.99	22	3608	22	3601.01	60	3600.25
66	3600.13	72	3600.25	72	3607.25	94.09	3609.58		

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035      22    .013      72    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            22      72             4.34    4.34    4.34            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 208.06*

INPUT
Description:
Station Elevation Data    num=      15
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3608.67   12.44 3609.79   13.03 3609.69   21.86 3607.84   21.86 3601.85
   22.84  3601.8   22.84  3600.8   59.98 3600.06   60.11 3600.05      66 3599.94
   71.27 3600.04   71.27 3601.04   72.14 3601.07   72.14 3607.07   94.09 3609.39

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .032   21.86    .013   72.14    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         21.86   72.14             4.34    4.34    4.34            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 197.61*

INPUT
Description:
Station Elevation Data    num=      15
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3608.47   12.36 3609.59   12.95 3609.51   21.71 3607.67   21.71 3602.68
    22.7 3602.61    22.7 3600.61   59.96 3599.86    60.1 3599.86      66 3599.74
   71.39 3599.85   71.39 3601.85   72.29 3601.89   72.29 3606.89   94.09 3609.19

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .029   21.71    .013   72.29    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         21.71   72.29             4.34    4.34    4.34            .03      .05

CROSS SECTION
```

RIVER: River 1
REACH: Reach 1 RS: 187.17*

INPUT
Description:
Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3608.28	12.28	3609.39	12.86	3609.34	21.57	3607.51	21.57	3603.52
22.56	3603.42	22.56	3600.42	59.94	3599.67	60.08	3599.67	66	3599.55
71.51	3599.66	71.51	3602.66	72.43	3602.71	72.43	3606.71	94.09	3609

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.026	21.57	.013	72.43	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
21.57	72.43	4.34	4.34	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 176.73*

INPUT
Description:
Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3608.09	12.19	3609.19	12.78	3609.16	21.43	3607.35	21.43	3604.35
22.42	3604.22	22.42	3600.23	59.92	3599.48	60.06	3599.48	66	3599.36
71.63	3599.47	71.63	3603.47	72.57	3603.54	72.57	3606.54	94.09	3608.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.022	21.43	.013	72.57	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
21.43	72.57	4.34	4.34	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 166.29*

INPUT
Description:
Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

```
       0  3607.9   12.11 3608.99   12.69 3608.99   21.29 3607.19   21.29 3605.19
   22.28 3605.03   22.28 3600.04    59.9 3599.29   60.04 3599.28      66 3599.17
   71.76 3599.28   71.76 3604.28   72.71 3604.36   72.71 3606.36   94.09 3608.62

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .019   21.29    .013   72.71    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         21.29   72.71             4.34    4.34    4.34            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 155.84*

INPUT
Description:
Station Elevation Data    num=      15
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  3607.7   12.03 3608.79   12.61 3608.81   21.14 3607.02   21.14 3606.02
   22.14 3605.84   22.14 3599.85   59.88 3599.09   60.02 3599.09      66 3598.97
   71.88 3599.09   71.88 3605.09   72.86 3605.18   72.86 3606.18   94.09 3608.42

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .016   21.14    .013   72.86    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         21.14   72.86             4.34    4.34    4.34            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 145.4

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3607.51   12.52 3608.64      21 3606.86      22 3606.65      22 3599.66
      60  3598.9      66 3598.78      72  3598.9      72  3605.9      73    3606
   94.09 3608.23

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .013      21    .013      73    .013
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            21      73               .4      .4      .4            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 145

INPUT
Description:
Station Elevation Data    num=       8
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  3607.6      20  3606.2      20  3599.2      58 3598.76      74    3599
      74    3606      823607.598      96 3609.85

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .05      20     .05      74     .05

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            20      74              6.2     6.2     6.2            .03      .05
Blocked Obstructions     num=       1
   Sta L   Sta R    Elev
      20      58  3602.2

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 139.20

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     .44 3603.28     5.93603.642    6.45 3603.66   10.05 3603.47   18.31 3602.86
   21.92 3602.52   25.31 3602.55   61.41 3601.43   95.34 3601.39     1063606.698
   106.4  3606.9

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     .44    .042     5.9    .042     106    .042

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           5.9     106             9.32    9.32    9.32            .03      .05

CROSS SECTION
```

RIVER: River 1
REACH: Reach 1 RS: 129.80

INPUT
Description:
Station Elevation Data num= 7

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3600.87	20.64	3600.75	50.67	3598.3	70.2	3598.3	89.11	3599.73
92.3	3600.51	111.6	3610.13						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.042	20.64	.042	111.6	.042

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
20.64	111.6	9.32	9.32	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 120.40

INPUT
Description:
Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3601.57	10.21	3601.56	26.5	3600.47	28.21	3600.36	42.43	3599.96
46.36	3600.29	56.29	3599.1	61.87	3598.65	68.07	3598.15	71.22	3598.65
76.46	3599.48	92.19	3599.72	95.81	3601	116.7	3611.47		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.042	10.21	.042	116.7	.042

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
10.21	116.7	9.32	9.32	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 111

INPUT
Description:
Station Elevation Data num= 9

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3601.46	20.85	3600.73	35.23	3600.58	68.83	3598.424	74.69	3598.09
78.66	3598.424	121.93	3612.475	121.925	43612.488	121.93	3612.49		

```
Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .042   20.85    .042   121.9    .042

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         20.85   121.9             10.3    10.3    10.3            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 101

INPUT
Description:
Station Elevation Data    num=      74
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3600.91     .71 3600.88    1.55 3600.88    2.13 3600.85    3.34  3600.7
    4.23 3600.62    5.86 3600.55    9.42  3600.5   10.63 3600.42   11.26 3600.39
   12.33 3600.37   15.92 3600.43   17.93 3600.42    18.8 3600.38   20.96  3600.2
   25.34 3599.64   27.65 3599.46   30.08 3599.41   34.94 3599.42   36.05 3599.45
   36.73 3599.45   39.65 3599.42   41.18 3599.39   42.94 3599.32   44.66 3599.28
   48.31 3599.22    53.3 3599.02   55.25 3598.99   56.82 3599.02   58.03 3599.02
   59.77 3598.96   60.49 3598.96   61.93 3598.81   62.65  3598.7   64.09 3598.44
   65.52 3598.14   66.54    3598   67.76 3597.97   68.97 3597.97   72.62  3597.8
   73.43 3597.81   76.37 3597.71   79.91 3597.66   80.62 3597.74   81.12 3597.85
   81.65 3598.02   83.55 3598.71   84.21 3598.89   84.93 3598.99   85.65 3598.94
   87.81 3598.66   88.69 3598.57   92.12 3598.37   93.56 3598.34      95 3598.27
   98.59 3598.04  101.79 3597.86   102.9 3597.82  105.06  3597.7  106.65 3597.64
  107.22 3597.75  107.86    3598  110.29  3599.2  111.51 3599.77  112.72 3600.37
  117.28 3602.52  120.02  3603.8  122.45 3604.86  123.88 3605.47  126.09 3606.37
  128.78 3607.43  129.74 3607.78 130.7453608.199  130.77 3608.21

Manning's n Values        num=       1
     Sta   n Val
       0    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0 130.745             18.1    18.1    18.1            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 83

INPUT
Description:
Station Elevation Data    num=     109
```

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3610.39	1.2	3610.08	2.91	3609.68	5.32	3609.13	5.82	3609.03
7.26	3608.82	8.7	3608.69	9.42	3608.57	10.14	3608.38	14.47	3606.98
15.19	3606.76	16.17	3606.48	16.63	3606.32	17.38	3606.13	18.07	3605.87
19.1	3605.53	19.51	3605.37	20.23	3605.12	22.2	3604.46	23.11	3604.13
24.55	3603.59	25.27	3603.26	25.99	3602.9	26.71	3602.5	27.43	3602.13
29.84	3600.96	30.64	3600.71	35.2	3599.2	36.67	3599	36.99	3598.97
38.24	3598.96	39.68	3598.91	40.4	3598.85	41.84	3598.63	43.28	3598.44
44.15	3598.36	46.17	3598.23	47.52	3598.18	48.73	3598.11	49.93	3598.07
51.31	3597.99	53.1	3597.93	54.89	3597.84	59.58	3597.68	60.79	3597.6
63.84	3597.5	65.63	3597.41	67.42	3597.38	70.66	3597.27	72.1	3597.29
72.78	3597.28	74.05	3597.26	75.26	3597.21	77.14	3597.07	78.87	3596.92
80.02	3596.85	83.7	3596.53	84.9	3596.49	86.11	3596.48	90.93	3596.61
92.27	3596.61	93.34	3596.56	95.75	3596.54	97.84	3596.63	102.36	3596.89
103.21	3597.01	104.2	3597.2	104.52	3597.21	105.24	3597.19	105.96	3597.13
107.4	3596.96	108.58	3596.75	110.37	3596.35	111	3596.27	111.43	3596.23
112.15	3596.21	113.16	3596.12	113.84	3596.09	115.32	3596.09	116.25	3596.05
117.46	3596.03	118.67	3596.03	119.87	3596	122.28	3595.76	123.49	3595.62
124.69	3595.53	125.41	3595.53	126.13	3595.62	126.47	3595.72	131.93	3597.65
133.14	3598.05	134.78	3598.63	135.55	3598.88	136.75	3599.31	139.16	3600.11
140.37	3600.48	144.86	3601.98	146.16	3602.39	151.22	3604.07	154.84	3605.08
160.87	3606.61	164.49	3607.62	165.69	3607.93	166.9	3608.3	168.1	3608.6
169.31	3608.94	170.52	3609.31	173.573	610.162	173.6	3610.17		

Manning's n Values num= 1

Sta	n Val
0	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	173.57	20.7	20.7	.03	.05

CROSS SECTION

RIVER: River 1
REACH: Reach 1 RS: 62

INPUT
Description:
Station Elevation Data num= 110

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	3615.43	3.98	3614.76	4.7	3614.66	6.35	3614.36	8.43	3614.02
10.43	3613.73	11.5	3613.59	14.58	3613.17	15.81	3613.03	16.88	3612.86
19.51	3612.49	20.74	3612.29	23.2	3611.95	24.43	3611.75	26.89	3611.41
28.12	3611.21	29.35	3611.04	30.49	3610.85	31.93	3610.59	34.27	3610.1
35.52	3609.87	36.74	3609.62	38.95	3609.22	41.24	3608.76	41.96	3608.64
42.68	3608.5	44.09	3608.25	45.81	3607.88	46.98	3607.56	49.04	3607.05
50.27	3606.68	52.73	3605.87	57.66	3604.05	57.82	3603.97	58.44	3603.58
59.16	3603.17	60.12	3602.58	61.25	3601.94	62.74	3601.06	64.89	3599.92
67.04	3599.01	69.19	3598.12	70.62	3597.57	71.54	3597.23	72.06	3597.06

```
   72.77 3596.96   74.21 3596.84   74.89 3596.81   75.64 3596.74   77.35 3596.61
   78.51  3596.5    83.5 3596.12   84.73 3596.04   85.96 3595.99   88.42 3595.82
   89.26 3595.73   90.89 3595.62   92.13  3595.5   94.58 3595.33   95.71 3595.22
   97.04 3595.13   98.27 3595.01   99.29 3594.95  101.96 3594.81  104.31 3594.76
  107.17 3594.73  111.81 3594.78  113.62 3594.76  115.05 3594.73  116.15 3594.67
  117.96 3594.63  121.65 3594.64  122.94 3594.68   125.8 3594.55  126.58 3594.53
  128.16 3594.44  131.54 3594.31  135.02 3594.13  136.55 3594.08  137.99 3594.06
  138.88 3594.02  141.57 3593.99  143.81 3594.04  145.04  3594.1  146.27 3594.23
  148.73 3594.41  149.96 3594.54  152.42 3594.67  153.04 3594.69  154.47 3594.66
  156.62 3594.55  157.32 3594.53   163.5 3596.17  165.96 3596.95  167.37 3597.33
  172.38  3598.8   175.8 3599.89  177.03 3600.31   179.5 3601.09  180.73 3601.51
  183.13 3602.27  184.42 3602.71     186 3603.21  186.88 3603.52  189.34  3604.3
  190.57 3604.72  193.35 3605.61   198.5 3607.37 199.4633607.675  199.51 3607.69

Manning's n Values        num=       1
     Sta   n Val
       0    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0 199.463             26.4    26.4    26.4            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 36

INPUT
Description:
Station Elevation Data    num=     373
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3609.67       1 3609.64       2 3609.57     3.1 3609.41     4.5 3609.12
     6.8 3608.82     6.9 3608.79     8.2 3608.52     9.4 3608.39      10 3608.29
    10.3 3608.21    10.6 3608.16    11.8 3607.87    14.6  3607.3    15.4 3607.13
    16.8 3606.72      18 3606.45    20.4 3605.83    20.7 3605.72    21.1  3605.6
    21.7  3605.4    21.8 3605.35    22.9 3604.91      24 3604.55    25.5 3603.91
    26.1 3603.66    26.6 3603.49    26.8 3603.38    27.8 3602.96      29 3602.35
      29 3602.33    29.2 3602.22    29.7 3602.01    30.4 3601.62    31.1  3601.2
    31.5 3600.99    31.9 3600.79    32.4 3600.55    32.6 3600.47    32.7 3600.43
    33.3 3600.31    33.5 3600.29    33.9 3600.25      34 3600.25    34.1 3600.22
    34.7 3599.96    35.8 3599.54    36.2 3599.41    36.4 3599.32    36.9 3599.06
    37.6 3598.61    38.8 3597.71      39 3597.63    39.3 3597.51    39.7 3597.34
    40.1 3597.18    40.5 3597.01      41 3596.77    41.2  3596.7    41.3 3596.65
    41.9 3596.33      42 3596.27    42.5 3595.99    42.6 3595.94    42.7 3595.87
    43.3 3595.55      44 3595.18    44.5 3594.97    44.8 3594.84    45.5 3594.61
    46.2 3594.47    46.3 3594.46    46.9 3594.33    49.6 3593.96    49.8 3593.96
    49.9 3593.96    50.5 3593.97    51.1 3593.98    51.3 3593.99    51.9 3593.99
    52.3 3593.99    52.6 3593.99    53.1 3593.98    53.4 3593.97    53.6 3593.96
    54.1 3593.94    54.8 3593.94    55.5 3593.91      56 3593.89    56.2  3593.9
    56.5 3593.92    56.9 3593.94    57.2 3593.96    57.7    3594    58.2 3594.02
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58.4 3594.02	58.5 3594.01	59.1 3593.94	59.7 3593.91	59.8 3593.92
60 3593.94	60.5 3593.98	60.9 3594.02	61.2 3594.07	61.7 3594.11
62 3594.13	62.1 3594.14	62.7 3594.11	63.3 3594.07	63.4 3594.06
64.1 3594.01	64.8 3593.95	65.5 3593.97	66.3 3594.02	66.9 3594.06
67 3594.07	67.1 3594.07	67.5 3594.06	67.7 3594.06	68.4 3594.05
68.6 3594.04	69.1 3594.03	69.5 3594.02	69.8 3594.01	70.3 3593.98
70.6 3593.96	70.7 3593.95	71.3 3593.9	71.8 3593.86	72 3593.84
72.7 3593.8	73.2 3593.76	73.4 3593.73	74.4 3593.64	74.9 3593.61
75.5 3593.57	75.6 3593.57	76 3593.56	76.3 3593.55	76.9 3593.52
77 3593.53	77.7 3593.54	78.1 3593.52	78.4 3593.5	78.9 3593.46
79.2 3593.45	79.3 3593.44	80.6 3593.44	80.7 3593.44	81.3 3593.41
81.8 3593.4	82.4 3593.39	82.8 3593.39	83 3593.37	83.5 3593.37
84.1 3593.34	84.2 3593.34	84.2 3593.33	84.5 3593.32	84.9 3593.3
85.5 3593.26	85.6 3593.24	85.8 3593.22	86.3 3593.18	86.7 3593.16
87.6 3593.05	87.8 3593.02	87.9 3592.99	88.5 3592.89	88.8 3592.85
89.1 3592.79	89.2 3592.78	89.3 3592.77	89.9 3592.71	90.4 3592.69
90.6 3592.67	91 3592.65	91.4 3592.64	91.6 3592.62	92.1 3592.59
92.7 3592.54	92.8 3592.53	93 3592.54	93.5 3592.55	94 3592.53
94.2 3592.52	94.9 3592.49	95.3 3592.48	95.7 3592.47	96.2 3592.45
96.4 3592.44	96.5 3592.43	97.1 3592.36	97.3 3592.34	97.7 3592.29
97.8 3592.28	98.5 3592.22	99 3592.17	99.6 3592.14	100 3592.13
100.2 3592.12	100.7 3592.09	101.4 3592.04	101.4 3592.03	101.5 3592.03
102.1 3592.02	102.6 3591.99	102.8 3591.98	103.1 3591.95	103.5 3591.91
103.9 3591.86	104.3 3591.82	104.8 3591.77	105 3591.76	105.1 3591.75
105.8 3591.73	106.3 3591.71	106.5 3591.7	107.1 3591.71	107.5 3591.74
107.8 3591.75	108.3 3591.78	108.6 3591.8	108.8 3591.82	109.3 3591.87
110 3591.97	110.7 3592.03	111.2 3592.06	111.4 3592.06	111.7 3592.07
112.1 3592.07	112.5 3592.09	112.9 3592.09	113.4 3592.11	113.6 3592.11
113.7 3592.11	114.3 3592.12	114.3 3592.13	114.9 3592.14	115 3592.14
115.2 3592.13	115.7 3592.09	116.1 3592.07	116.4 3592.07	116.9 3592.06
117.2 3592.06	117.4 3592.06	117.9 3592.07	118.6 3592.06	119.3 3592.11
119.8 3592.14	120 3592.15	120.3 3592.17	121 3592.24	121.5 3592.23
122.1 3592.18	122.2 3592.17	122.3 3592.17	122.8 3592.1	123.5 3591.99
123.6 3591.98	123.8 3591.98	124.7 3591.96	125 3591.96	125.5 3591.96
125.8 3591.96	126 3591.95	127.1 3591.74	127.2 3591.72	127.2 3591.71
127.9 3591.64	128.4 3591.6	129 3591.64	129.3 3591.66	129.6 3591.68
130.1 3591.69	130.7 3591.72	130.8 3591.72	130.9 3591.73	131.3 3591.73
131.5 3591.73	132.1 3591.73	132.2 3591.75	132.4 3591.77	132.9 3591.86
133.3 3591.93	133.7 3592	134.1 3592.07	134.4 3592.11	134.5 3592.12
135.1 3592.2	135.6 3592.27	135.8 3592.3	135.8 3592.31	136.5 3592.34
137 3592.36	137.2 3592.38	137.6 3592.39	138 3592.41	138.2 3592.42
138.7 3592.51	139.3 3592.64	139.4 3592.66	139.4 3592.67	139.8 3592.82
140.7 3593.19	140.8 3593.25	141 3593.32	141.5 3593.52	141.9 3593.66
142.3 3593.76	143 3593.91	143.1 3593.94	143.7 3594.01	144.4 3594.06
144.5 3594.07	145.1 3594.13	145.6 3594.15	145.8 3594.21	146.2 3594.36
146.6 3594.47	146.8 3594.52	149.6 3594.73	150.1 3594.88	150.9 3595.11
151.4 3595.27	151.6 3595.34	151.7 3595.38	152.3 3595.56	152.6 3595.65
152.9 3595.77	153 3595.79	153.1 3595.82	153.7 3596.01	154.2 3596.16
154.4 3596.24	154.8 3596.36	155.2 3596.47	155.4 3596.54	156.5 3596.93
156.6 3596.95	156.6 3596.96	156.8 3597.02	157.3 3597.18	157.9 3597.35

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     158  3597.4   159.5 3597.85     160 3598.02   160.2 3598.08   160.3 3598.12
   161.5 3598.51   161.6 3598.53   161.7 3598.57   162.3 3598.76   162.8  3598.9
     163 3598.99   163.4 3599.11   163.8 3599.21     164 3599.28   164.5 3599.44
   165.2 3599.66   165.3 3599.71   165.9 3599.91   166.4 3600.09   166.6 3600.15
   166.9 3600.23   167.3 3600.37   167.7 3600.48   168.1  3600.6   168.6 3600.77
   168.8 3600.83   168.9 3600.86169.3317    3601

Manning's n Values        num=       1
     Sta   n Val
       0    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0169.3317             21.9    21.9    21.9            .03      .05

CROSS SECTION


RIVER: River 1
REACH: Reach 1            RS: 14

INPUT
Description:
Station Elevation Data    num=     380
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 3605.67     1.4 3605.47     3.2 3605.08     3.6 3605.02     4.8 3604.92
     5.7 3604.79     6.4 3604.71     7.7 3604.55     7.9 3604.54     8.6 3604.61
     8.9 3604.62     9.3  3604.6    11.4 3604.41    12.7 3604.25    14.7 3604.04
    15.7 3603.99    16.3 3603.94      18 3603.72    18.6 3603.62    20.3 3603.27
    21.5 3603.07    22.1 3602.98    22.3 3602.97    22.8 3602.93    22.9 3602.92
    23.6 3602.85      24  3602.8    24.3 3602.75    24.6 3602.67    25.3  3602.4
    25.7 3602.21    27.9  3601.3    28.5 3600.98    29.3 3600.63    29.5 3600.52
      30 3600.29    30.3 3600.11    32.8 3598.96    32.8 3598.94    35.4  3597.7
    35.7 3597.56    36.1 3597.38    36.4 3597.26    36.6 3597.17    37.1 3597.03
    37.7 3596.79    37.8 3596.76    37.9 3596.73    38.4 3596.48    38.5 3596.44
    39.2 3596.16    39.2 3596.11    39.4 3596.06    40.4 3595.55    40.7 3595.41
      41 3595.23    41.4 3595.03    41.7 3594.87    42.1 3594.66    42.7 3594.37
    42.8 3594.29    43.5 3593.99    43.8 3593.86    44.2  3593.7    44.3 3593.65
    44.9 3593.37    45.4 3593.16    45.7 3593.08    45.9    3593    46.7 3592.71
    47.1 3592.55    47.6 3592.34    47.8 3592.26      48 3592.19    48.5 3591.94
    49.2 3591.63    49.2 3591.62    49.9 3591.46    50.5 3591.35    50.7 3591.32
    50.9 3591.28    51.7 3591.12    52.1  3591.1    52.5 3591.09    52.8 3591.11
      53 3591.13    53.5 3591.23    54.2 3591.37    54.2 3591.38    54.3 3591.39
    54.6 3591.45    54.9 3591.52    55.5 3591.63    55.6 3591.65    56.4  3591.8
    57.8 3592.04      58 3592.08    58.5  3592.1    59.1 3592.16    59.2 3592.16
    59.3 3592.17    59.9 3592.15      60 3592.15    60.6 3592.14    60.7 3592.13
    61.4 3592.08    61.8 3592.04    62.1 3592.02    62.4 3591.99    62.8 3591.95
    63.1 3591.93    63.5 3591.91      64 3591.87    64.2 3591.86    64.3 3591.85
    64.9 3591.79    65.3 3591.74    65.6 3591.72    65.6 3591.71    65.7 3591.71
    66.3 3591.68    66.9 3591.68    67.1  3591.7    67.3 3591.74    67.8 3591.79
    68.1 3591.83    68.5 3591.85      69  3591.9    69.2 3591.92    69.4 3591.94
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69.9	3591.98	70.6	3592	71.3	3591.94	71.9	3591.91	72	3591.9
72.3	3591.91	72.8	3591.91	73.2	3591.92	73.5	3591.95	73.9	3591.97
74.2	3591.97	74.4	3591.97	74.9	3591.96	75.5	3591.96	75.6	3591.97
75.7	3591.97	76.1	3591.97	76.3	3591.98	76.9	3591.97	77	3591.96
77.2	3591.96	77.8	3591.97	78.2	3591.98	78.5	3591.99	78.8	3592
79.2	3592.01	79.4	3592	79.9	3592.02	80.5	3592.04	80.6	3592.04
80.7	3592.03	81.5	3591.99	82	3591.97	82.1	3591.96	82.7	3591.94
83.2	3591.93	83.5	3591.93	83.8	3591.94	84.2	3591.93	84.5	3591.92
84.9	3591.88	85.4	3591.84	85.6	3591.82	85.7	3591.8	86.3	3591.74
86.9	3591.72	87	3591.72	87.7	3591.73	88.3	3591.73	88.4	3591.73
88.7	3591.73	89.2	3591.76	89.5	3591.8	89.9	3591.83	90.3	3591.87
90.6	3591.89	90.8	3591.89	91.3	3591.86	92	3591.76	92	3591.75
92.2	3591.72	92.7	3591.64	93.3	3591.56	93.4	3591.55	93.6	3591.54
94.2	3591.5	94.6	3591.49	94.9	3591.47	95.3	3591.45	95.6	3591.43
95.8	3591.42	96.9	3591.38	97	3591.38	97.1	3591.37	97.6	3591.3
98.3	3591.22	98.4	3591.21	99.1	3591.18	99.6	3591.16	99.9	3591.13
100.2	3591.08	100.6	3591.02	100.9	3590.99	101.3	3590.94	101.8	3590.87
102	3590.85	102.7	3590.79	103.4	3590.75	103.5	3590.75	104.1	3590.76
104.6	3590.81	104.9	3590.83	105.1	3590.88	105.6	3590.93	105.9	3591
106.3	3591.05	106.8	3591.15	107.2	3591.16	108.4	3590.83	108.4	3590.81
109.1	3590.6	109.7	3590.49	109.8	3590.46	110.1	3590.42	110.6	3590.35
110.9	3590.33	111.7	3590.38	112	3590.4	112.2	3590.4	112.7	3590.39
113.4	3590.31	113.7	3590.28	114.7	3590.19	114.8	3590.18	115	3590.16
115.5	3590.1	116	3590.06	116.3	3590.04	116.6	3590.01	117	3590
117.2	3589.99	117.7	3589.99	118.3	3589.98	118.4	3589.98	119.1	3589.98
119.7	3589.99	119.8	3589.99	119.9	3590	120.5	3590.01	121	3590.03
121.3	3590.06	121.6	3590.11	122	3590.18	122.3	3590.25	122.7	3590.33
123.4	3590.58	123.5	3590.64	124.1	3590.89	124.5	3591.07	124.8	3591.2
124.9	3591.24	125.5	3591.54	126	3591.77	126.2	3591.85	126.5	3591.96
127.3	3592.23	127.7	3592.33	128.2	3592.44	128.6	3592.51	129.1	3592.58
129.8	3592.63	129.9	3592.62	130.5	3592.61	131.1	3592.59	131.2	3592.58
131.4	3592.58	132	3592.57	132.3	3592.57	132.7	3592.55	133.1	3592.54
133.4	3592.54	133.6	3592.53	134.1	3592.54	134.7	3592.57	134.8	3592.57
134.9	3592.57	135.3	3592.57	135.5	3592.56	136.1	3592.54	136.2	3592.53
136.4	3592.52	136.9	3592.45	137.7	3592.38	138	3592.34	138.4	3592.31
138.6	3592.3	139.1	3592.29	139.7	3592.27	139.8	3592.27	139.9	3592.27
140.5	3592.21	140.6	3592.19	141.2	3592.14	141.3	3592.12	141.9	3592.02
142.4	3591.94	143.4	3591.82	143.7	3591.78	144.1	3591.74	144.6	3591.72
145.5	3591.64	146	3591.6	146.2	3591.59	147.4	3591.67	147.6	3591.66
147.9	3591.64	148.4	3591.61	148.7	3591.58	149.1	3591.58	149.5	3591.55
149.8	3591.54	150	3591.52	150.5	3591.53	151.2	3591.53	151.4	3591.52
151.9	3591.48	152.6	3591.44	152.8	3591.45	153.3	3591.49	153.7	3591.52
154.1	3591.54	154.5	3591.56	154.8	3591.58	155	3591.59	155.5	3591.72
156.1	3592.18	156.2	3592.22	156.3	3592.24	159.4	3592.55	159.8	3592.67
160.5	3592.9	161	3593.09	161.2	3593.14	161.3	3593.17	161.9	3593.37
162.2	3593.45	162.6	3593.59	162.6	3593.61	162.7	3593.63	164	3594.11
164.3	3594.2	164.8	3594.34	165.1	3594.45	165.5	3594.57	166	3594.74
166.2	3594.81	166.3	3594.86	166.9	3595.04	167.5	3595.25	167.6	3595.28
168.3	3595.51	168.9	3595.69	169.3	3595.82	169.7	3595.98	170.1	3596.1
170.9	3596.36	171.2	3596.45	171.4	3596.52	171.9	3596.69	172.28	3596.82

Manning's n Values num= 1

Sta	n Val
0	.04

Bank Sta: Left	Right	Coeff	Contr.	Expan.
0	172.28		.03	.05

SUMMARY OF MANNING'S N VALUES

River:River 1

Reach	River Sta.	n1	n2	n3
Reach 1	3100	.013	.013	.013
Reach 1	3080.64*	.017	.013	.013
Reach 1	3061.29*	.02	.013	.013
Reach 1	3041.93*	.024	.013	.013
Reach 1	3022.57*	.028	.013	.013
Reach 1	3003.22*	.031	.013	.013
Reach 1	2983.86	.035	.013	.013
Reach 1	2965.11*	.035	.013	.013
Reach 1	2946.36*	.035	.013	.013
Reach 1	2927.60*	.035	.013	.013
Reach 1	2908.85*	.035	.013	.013
Reach 1	2890.10*	.035	.013	.013
Reach 1	2871.35*	.035	.013	.013
Reach 1	2852.59*	.035	.013	.013
Reach 1	2833.84	.035	.013	.013
Reach 1	2815.09*	.035	.013	.013
Reach 1	2796.34*	.035	.013	.013
Reach 1	2777.59*	.035	.013	.013
Reach 1	2758.84*	.035	.013	.013
Reach 1	2740.08*	.035	.013	.013
Reach 1	2721.33*	.035	.013	.013
Reach 1	2702.58*	.035	.013	.013
Reach 1	2683.83	.035	.013	.013
Reach 1	2665.08*	.035	.013	.013
Reach 1	2646.33*	.035	.013	.013
Reach 1	2627.57*	.035	.013	.013
Reach 1	2608.82*	.035	.013	.013
Reach 1	2590.07*	.035	.013	.013
Reach 1	2571.32*	.035	.013	.013
Reach 1	2552.56*	.035	.013	.013
Reach 1	2533.81	.035	.013	.013
Reach 1	2515.06*	.035	.013	.013
Reach 1	2496.31*	.035	.013	.013
Reach 1	2477.55*	.035	.013	.013

Reach 1	2458.80*	.035	.013	.013
Reach 1	2440.05*	.035	.013	.013
Reach 1	2421.30*	.035	.013	.013
Reach 1	2402.54*	.035	.013	.013
Reach 1	2383.79	.035	.013	.013
Reach 1	2364.93*	.035	.013	.013
Reach 1	2346.06*	.035	.013	.013
Reach 1	2327.20*	.035	.013	.013
Reach 1	2308.34*	.035	.013	.013
Reach 1	2289.47*	.035	.013	.013
Reach 1	2270.61*	.035	.013	.013
Reach 1	2251.74*	.035	.013	.013
Reach 1	2232.88	.035	.013	.013
Reach 1	2214.02*	.035	.013	.013
Reach 1	2195.16*	.035	.013	.013
Reach 1	2176.29*	.035	.013	.013
Reach 1	2157.43*	.035	.013	.013
Reach 1	2138.57*	.035	.013	.013
Reach 1	2119.71*	.035	.013	.013
Reach 1	2100.84*	.035	.013	.013
Reach 1	2081.98	.035	.013	.013
Reach 1	2063.12*	.035	.013	.013
Reach 1	2044.25*	.035	.013	.013
Reach 1	2025.39*	.035	.013	.013
Reach 1	2006.53*	.035	.013	.013
Reach 1	1987.66*	.035	.013	.013
Reach 1	1968.80*	.035	.013	.013
Reach 1	1949.93*	.035	.013	.013
Reach 1	1931.07	.035	.013	.013
Reach 1	1912.21*	.035	.013	.013
Reach 1	1893.34*	.035	.013	.013
Reach 1	1874.48*	.035	.013	.013
Reach 1	1855.62*	.035	.013	.013
Reach 1	1836.75*	.035	.013	.013
Reach 1	1817.89*	.035	.013	.013
Reach 1	1799.02*	.035	.013	.013
Reach 1	1780.16	.035	.013	.013
Reach 1	1760.80*	.035	.013	.013
Reach 1	1741.44*	.035	.013	.013
Reach 1	1722.09*	.035	.013	.013
Reach 1	1702.73*	.035	.013	.013
Reach 1	1683.37*	.035	.013	.013
Reach 1	1664.01*	.035	.013	.013
Reach 1	1644.65*	.035	.013	.013
Reach 1	1625.30*	.035	.013	.013
Reach 1	1605.94*	.035	.013	.013
Reach 1	1586.58	.035	.013	.013
Reach 1	1567.22*	.035	.013	.013
Reach 1	1547.86*	.035	.013	.013
Reach 1	1528.51*	.035	.013	.013

Reach 1	1509.15*	.035	.013	.013
Reach 1	1489.79*	.035	.013	.013
Reach 1	1470.43*	.035	.013	.013
Reach 1	1451.07*	.035	.013	.013
Reach 1	1431.72*	.035	.013	.013
Reach 1	1412.36*	.035	.013	.013
Reach 1	1393	.035	.013	.013
Reach 1	1373.69*	.035	.013	.013
Reach 1	1354.38*	.035	.013	.013
Reach 1	1335.07*	.035	.013	.013
Reach 1	1315.76*	.035	.013	.013
Reach 1	1296.44*	.035	.013	.013
Reach 1	1277.13*	.035	.013	.013
Reach 1	1257.82*	.035	.013	.013
Reach 1	1238.51*	.035	.013	.013
Reach 1	1219.20	.035	.013	.013
Reach 1	1199.89*	.035	.013	.013
Reach 1	1180.58*	.035	.013	.013
Reach 1	1161.26*	.035	.013	.013
Reach 1	1141.95*	.035	.013	.013
Reach 1	1122.64*	.035	.013	.013
Reach 1	1103.33*	.035	.013	.013
Reach 1	1084.01*	.035	.013	.013
Reach 1	1064.70*	.035	.013	.013
Reach 1	1045.39	.035	.013	.013
Reach 1	1027.68*	.035	.013	.013
Reach 1	1009.97*	.035	.013	.013
Reach 1	992.26*	.035	.013	.013
Reach 1	974.55*	.035	.013	.013
Reach 1	956.84*	.035	.013	.013
Reach 1	939.13*	.035	.013	.013
Reach 1	921.42	.035	.013	.013
Reach 1	903.71*	.032	.013	.013
Reach 1	886.00*	.029	.013	.013
Reach 1	868.29*	.026	.013	.013
Reach 1	850.58*	.022	.013	.013
Reach 1	832.87*	.019	.013	.013
Reach 1	815.16*	.016	.013	.013
Reach 1	797.45	.035	.013	.013
Reach 1	777.56*	.016	.013	.013
Reach 1	757.66*	.019	.013	.013
Reach 1	737.77*	.021	.013	.013
Reach 1	717.88*	.024	.013	.013
Reach 1	697.98*	.027	.013	.013
Reach 1	678.09*	.03	.013	.013
Reach 1	658.19*	.032	.013	.013
Reach 1	638.30	.035	.013	.013
Reach 1	618.41*	.035	.013	.013
Reach 1	598.51*	.035	.013	.013
Reach 1	578.62*	.035	.013	.013

Reach 1	558.73*	.035	.013	.013
Reach 1	538.83*	.035	.013	.013
Reach 1	518.94*	.035	.013	.013
Reach 1	499.04*	.035	.013	.013
Reach 1	479.15	.035	.013	.013
Reach 1	459.26*	.032	.013	.013
Reach 1	439.36*	.03	.013	.013
Reach 1	419.47*	.027	.013	.013
Reach 1	399.58*	.024	.013	.013
Reach 1	379.68*	.021	.013	.013
Reach 1	359.79*	.019	.013	.013
Reach 1	339.89*	.016	.013	.013
Reach 1	320.00	.013	.013	.013
Reach 1	303.08*	.017	.013	.013
Reach 1	286.17*	.02	.013	.013
Reach 1	269.25*	.024	.013	.013
Reach 1	252.33*	.028	.013	.013
Reach 1	235.42*	.031	.013	.013
Reach 1	218.50	.035	.013	.013
Reach 1	208.06*	.032	.013	.013
Reach 1	197.61*	.029	.013	.013
Reach 1	187.17*	.026	.013	.013
Reach 1	176.73*	.022	.013	.013
Reach 1	166.29*	.019	.013	.013
Reach 1	155.84*	.016	.013	.013
Reach 1	145.4	.013	.013	.013
Reach 1	145	.05	.05	.05
Reach 1	139.20	.042	.042	.042
Reach 1	129.80	.042	.042	.042
Reach 1	120.40	.042	.042	.042
Reach 1	111	.042	.042	.042
Reach 1	101	.035		
Reach 1	83	.035		
Reach 1	62	.035		
Reach 1	36	.035		
Reach 1	14	.04		

SUMMARY OF REACH LENGTHS

River: River 1

Reach	River Sta.	Left	Channel	Right
Reach 1	3100	19.36	19.36	19.36
Reach 1	3080.64*	19.36	19.36	19.36
Reach 1	3061.29*	19.36	19.36	19.36
Reach 1	3041.93*	19.36	19.36	19.36

Reach 1	3022.57*	19.36	19.36	19.36
Reach 1	3003.22*	19.36	19.36	19.36
Reach 1	2983.86	18.75	18.75	18.75
Reach 1	2965.11*	18.75	18.75	18.75
Reach 1	2946.36*	18.75	18.75	18.75
Reach 1	2927.60*	18.75	18.75	18.75
Reach 1	2908.85*	18.75	18.75	18.75
Reach 1	2890.10*	18.75	18.75	18.75
Reach 1	2871.35*	18.75	18.75	18.75
Reach 1	2852.59*	18.75	18.75	18.75
Reach 1	2833.84	18.75	18.75	18.75
Reach 1	2815.09*	18.75	18.75	18.75
Reach 1	2796.34*	18.75	18.75	18.75
Reach 1	2777.59*	18.75	18.75	18.75
Reach 1	2758.84*	18.75	18.75	18.75
Reach 1	2740.08*	18.75	18.75	18.75
Reach 1	2721.33*	18.75	18.75	18.75
Reach 1	2702.58*	18.75	18.75	18.75
Reach 1	2683.83	18.75	18.75	18.75
Reach 1	2665.08*	18.75	18.75	18.75
Reach 1	2646.33*	18.75	18.75	18.75
Reach 1	2627.57*	18.75	18.75	18.75
Reach 1	2608.82*	18.75	18.75	18.75
Reach 1	2590.07*	18.75	18.75	18.75
Reach 1	2571.32*	18.75	18.75	18.75
Reach 1	2552.56*	18.75	18.75	18.75
Reach 1	2533.81	18.75	18.75	18.75
Reach 1	2515.06*	18.75	18.75	18.75
Reach 1	2496.31*	18.75	18.75	18.75
Reach 1	2477.55*	18.75	18.75	18.75
Reach 1	2458.80*	18.75	18.75	18.75
Reach 1	2440.05*	18.75	18.75	18.75
Reach 1	2421.30*	18.75	18.75	18.75
Reach 1	2402.54*	18.75	18.75	18.75
Reach 1	2383.79	18.87	18.87	18.87
Reach 1	2364.93*	18.87	18.87	18.87
Reach 1	2346.06*	18.87	18.87	18.87
Reach 1	2327.20*	18.87	18.87	18.87
Reach 1	2308.34*	18.87	18.87	18.87
Reach 1	2289.47*	18.87	18.87	18.87
Reach 1	2270.61*	18.87	18.87	18.87
Reach 1	2251.74*	18.87	18.87	18.87
Reach 1	2232.88	18.87	18.87	18.87
Reach 1	2214.02*	18.87	18.87	18.87
Reach 1	2195.16*	18.87	18.87	18.87
Reach 1	2176.29*	18.87	18.87	18.87
Reach 1	2157.43*	18.87	18.87	18.87
Reach 1	2138.57*	18.87	18.87	18.87
Reach 1	2119.71*	18.87	18.87	18.87
Reach 1	2100.84*	18.87	18.87	18.87

Reach 1	2081.98	18.87	18.87	18.87
Reach 1	2063.12*	18.87	18.87	18.87
Reach 1	2044.25*	18.87	18.87	18.87
Reach 1	2025.39*	18.87	18.87	18.87
Reach 1	2006.53*	18.87	18.87	18.87
Reach 1	1987.66*	18.87	18.87	18.87
Reach 1	1968.80*	18.87	18.87	18.87
Reach 1	1949.93*	18.87	18.87	18.87
Reach 1	1931.07	18.87	18.87	18.87
Reach 1	1912.21*	18.87	18.87	18.87
Reach 1	1893.34*	18.87	18.87	18.87
Reach 1	1874.48*	18.87	18.87	18.87
Reach 1	1855.62*	18.87	18.87	18.87
Reach 1	1836.75*	18.87	18.87	18.87
Reach 1	1817.89*	18.87	18.87	18.87
Reach 1	1799.02*	18.87	18.87	18.87
Reach 1	1780.16	19.34	19.34	19.34
Reach 1	1760.80*	19.34	19.34	19.34
Reach 1	1741.44*	19.34	19.34	19.34
Reach 1	1722.09*	19.34	19.34	19.34
Reach 1	1702.73*	19.34	19.34	19.34
Reach 1	1683.37*	19.34	19.34	19.34
Reach 1	1664.01*	19.34	19.34	19.34
Reach 1	1644.65*	19.34	19.34	19.34
Reach 1	1625.30*	19.34	19.34	19.34
Reach 1	1605.94*	19.34	19.34	19.34
Reach 1	1586.58	19.34	19.34	19.34
Reach 1	1567.22*	19.34	19.34	19.34
Reach 1	1547.86*	19.34	19.34	19.34
Reach 1	1528.51*	19.34	19.34	19.34
Reach 1	1509.15*	19.34	19.34	19.34
Reach 1	1489.79*	19.34	19.34	19.34
Reach 1	1470.43*	19.34	19.34	19.34
Reach 1	1451.07*	19.34	19.34	19.34
Reach 1	1431.72*	19.34	19.34	19.34
Reach 1	1412.36*	19.34	19.34	19.34
Reach 1	1393	19.35	19.35	19.35
Reach 1	1373.69*	19.35	19.35	19.35
Reach 1	1354.38*	19.35	19.35	19.35
Reach 1	1335.07*	19.35	19.35	19.35
Reach 1	1315.76*	19.35	19.35	19.35
Reach 1	1296.44*	19.35	19.35	19.35
Reach 1	1277.13*	19.35	19.35	19.35
Reach 1	1257.82*	19.35	19.35	19.35
Reach 1	1238.51*	19.35	19.35	19.35
Reach 1	1219.20	19.35	19.35	19.35
Reach 1	1199.89*	19.35	19.35	19.35
Reach 1	1180.58*	19.35	19.35	19.35
Reach 1	1161.26*	19.35	19.35	19.35
Reach 1	1141.95*	19.35	19.35	19.35

Reach 1	1122.64*	19.35	19.35	19.35
Reach 1	1103.33*	19.35	19.35	19.35
Reach 1	1084.01*	19.35	19.35	19.35
Reach 1	1064.70*	19.35	19.35	19.35
Reach 1	1045.39	17.72	17.72	17.72
Reach 1	1027.68*	17.72	17.72	17.72
Reach 1	1009.97*	17.72	17.72	17.72
Reach 1	992.26*	17.72	17.72	17.72
Reach 1	974.55*	17.72	17.72	17.72
Reach 1	956.84*	17.72	17.72	17.72
Reach 1	939.13*	17.72	17.72	17.72
Reach 1	921.42	17.72	17.72	17.72
Reach 1	903.71*	17.72	17.72	17.72
Reach 1	886.00*	17.72	17.72	17.72
Reach 1	868.29*	17.72	17.72	17.72
Reach 1	850.58*	17.72	17.72	17.72
Reach 1	832.87*	17.72	17.72	17.72
Reach 1	815.16*	17.72	17.72	17.72
Reach 1	797.45	19.88	19.88	19.88
Reach 1	777.56*	19.88	19.88	19.88
Reach 1	757.66*	19.88	19.88	19.88
Reach 1	737.77*	19.88	19.88	19.88
Reach 1	717.88*	19.88	19.88	19.88
Reach 1	697.98*	19.88	19.88	19.88
Reach 1	678.09*	19.88	19.88	19.88
Reach 1	658.19*	19.88	19.88	19.88
Reach 1	638.30	19.88	19.88	19.88
Reach 1	618.41*	19.88	19.88	19.88
Reach 1	598.51*	19.88	19.88	19.88
Reach 1	578.62*	19.88	19.88	19.88
Reach 1	558.73*	19.88	19.88	19.88
Reach 1	538.83*	19.88	19.88	19.88
Reach 1	518.94*	19.88	19.88	19.88
Reach 1	499.04*	19.88	19.88	19.88
Reach 1	479.15	19.88	19.88	19.88
Reach 1	459.26*	19.88	19.88	19.88
Reach 1	439.36*	19.88	19.88	19.88
Reach 1	419.47*	19.88	19.88	19.88
Reach 1	399.58*	19.88	19.88	19.88
Reach 1	379.68*	19.88	19.88	19.88
Reach 1	359.79*	19.88	19.88	19.88
Reach 1	339.89*	19.88	19.88	19.88
Reach 1	320.00	16.99	16.99	16.99
Reach 1	303.08*	16.99	16.99	16.99
Reach 1	286.17*	16.99	16.99	16.99
Reach 1	269.25*	16.99	16.99	16.99
Reach 1	252.33*	16.99	16.99	16.99
Reach 1	235.42*	16.99	16.99	16.99
Reach 1	218.50	4.34	4.34	4.34
Reach 1	208.06*	4.34	4.34	4.34

Reach 1	197.61*	4.34	4.34	4.34
Reach 1	187.17*	4.34	4.34	4.34
Reach 1	176.73*	4.34	4.34	4.34
Reach 1	166.29*	4.34	4.34	4.34
Reach 1	155.84*	4.34	4.34	4.34
Reach 1	145.4	.4	.4	.4
Reach 1	145	6.2	6.2	6.2
Reach 1	139.20	9.32	9.32	9.32
Reach 1	129.80	9.32	9.32	9.32
Reach 1	120.40	9.32	9.32	9.32
Reach 1	111	10.3	10.3	10.3
Reach 1	101	18.1	18.1	18.1
Reach 1	83	20.7	20.7	20.7
Reach 1	62	26.4	26.4	26.4
Reach 1	36	21.9	21.9	21.9
Reach 1	14			

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: River 1

Reach	River Sta.	Contr.	Expan.
Reach 1	3100	.03	.05
Reach 1	3080.64*	.03	.05
Reach 1	3061.29*	.03	.05
Reach 1	3041.93*	.03	.05
Reach 1	3022.57*	.03	.05
Reach 1	3003.22*	.03	.05
Reach 1	2983.86	.03	.05
Reach 1	2965.11*	.03	.05
Reach 1	2946.36*	.03	.05
Reach 1	2927.60*	.03	.05
Reach 1	2908.85*	.03	.05
Reach 1	2890.10*	.03	.05
Reach 1	2871.35*	.03	.05
Reach 1	2852.59*	.03	.05
Reach 1	2833.84	.03	.05
Reach 1	2815.09*	.03	.05
Reach 1	2796.34*	.03	.05
Reach 1	2777.59*	.03	.05
Reach 1	2758.84*	.03	.05
Reach 1	2740.08*	.03	.05
Reach 1	2721.33*	.03	.05
Reach 1	2702.58*	.03	.05
Reach 1	2683.83	.03	.05
Reach 1	2665.08*	.03	.05

Reach 1	2646.33*	.03	.05
Reach 1	2627.57*	.03	.05
Reach 1	2608.82*	.03	.05
Reach 1	2590.07*	.03	.05
Reach 1	2571.32*	.03	.05
Reach 1	2552.56*	.03	.05
Reach 1	2533.81	.03	.05
Reach 1	2515.06*	.03	.05
Reach 1	2496.31*	.03	.05
Reach 1	2477.55*	.03	.05
Reach 1	2458.80*	.03	.05
Reach 1	2440.05*	.03	.05
Reach 1	2421.30*	.03	.05
Reach 1	2402.54*	.03	.05
Reach 1	2383.79	.03	.05
Reach 1	2364.93*	.03	.05
Reach 1	2346.06*	.03	.05
Reach 1	2327.20*	.03	.05
Reach 1	2308.34*	.03	.05
Reach 1	2289.47*	.03	.05
Reach 1	2270.61*	.03	.05
Reach 1	2251.74*	.03	.05
Reach 1	2232.88	.03	.05
Reach 1	2214.02*	.03	.05
Reach 1	2195.16*	.03	.05
Reach 1	2176.29*	.03	.05
Reach 1	2157.43*	.03	.05
Reach 1	2138.57*	.03	.05
Reach 1	2119.71*	.03	.05
Reach 1	2100.84*	.03	.05
Reach 1	2081.98	.03	.05
Reach 1	2063.12*	.03	.05
Reach 1	2044.25*	.03	.05
Reach 1	2025.39*	.03	.05
Reach 1	2006.53*	.03	.05
Reach 1	1987.66*	.03	.05
Reach 1	1968.80*	.03	.05
Reach 1	1949.93*	.03	.05
Reach 1	1931.07	.03	.05
Reach 1	1912.21*	.03	.05
Reach 1	1893.34*	.03	.05
Reach 1	1874.48*	.03	.05
Reach 1	1855.62*	.03	.05
Reach 1	1836.75*	.03	.05
Reach 1	1817.89*	.03	.05
Reach 1	1799.02*	.03	.05
Reach 1	1780.16	.03	.05
Reach 1	1760.80*	.03	.05
Reach 1	1741.44*	.03	.05
Reach 1	1722.09*	.03	.05

Reach 1	1702.73*	.03	.05
Reach 1	1683.37*	.03	.05
Reach 1	1664.01*	.03	.05
Reach 1	1644.65*	.03	.05
Reach 1	1625.30*	.03	.05
Reach 1	1605.94*	.03	.05
Reach 1	1586.58	.03	.05
Reach 1	1567.22*	.03	.05
Reach 1	1547.86*	.03	.05
Reach 1	1528.51*	.03	.05
Reach 1	1509.15*	.03	.05
Reach 1	1489.79*	.03	.05
Reach 1	1470.43*	.03	.05
Reach 1	1451.07*	.03	.05
Reach 1	1431.72*	.03	.05
Reach 1	1412.36*	.03	.05
Reach 1	1393	.03	.05
Reach 1	1373.69*	.03	.05
Reach 1	1354.38*	.03	.05
Reach 1	1335.07*	.03	.05
Reach 1	1315.76*	.03	.05
Reach 1	1296.44*	.03	.05
Reach 1	1277.13*	.03	.05
Reach 1	1257.82*	.03	.05
Reach 1	1238.51*	.03	.05
Reach 1	1219.20	.03	.05
Reach 1	1199.89*	.03	.05
Reach 1	1180.58*	.03	.05
Reach 1	1161.26*	.03	.05
Reach 1	1141.95*	.03	.05
Reach 1	1122.64*	.03	.05
Reach 1	1103.33*	.03	.05
Reach 1	1084.01*	.03	.05
Reach 1	1064.70*	.03	.05
Reach 1	1045.39	.03	.05
Reach 1	1027.68*	.03	.05
Reach 1	1009.97*	.03	.05
Reach 1	992.26*	.03	.05
Reach 1	974.55*	.03	.05
Reach 1	956.84*	.03	.05
Reach 1	939.13*	.03	.05
Reach 1	921.42	.03	.05
Reach 1	903.71*	.03	.05
Reach 1	886.00*	.03	.05
Reach 1	868.29*	.03	.05
Reach 1	850.58*	.03	.05
Reach 1	832.87*	.03	.05
Reach 1	815.16*	.03	.05
Reach 1	797.45	.03	.05
Reach 1	777.56*	.03	.05

Reach 1	757.66*	.03	.05
Reach 1	737.77*	.03	.05
Reach 1	717.88*	.03	.05
Reach 1	697.98*	.03	.05
Reach 1	678.09*	.03	.05
Reach 1	658.19*	.03	.05
Reach 1	638.30	.03	.05
Reach 1	618.41*	.03	.05
Reach 1	598.51*	.03	.05
Reach 1	578.62*	.03	.05
Reach 1	558.73*	.03	.05
Reach 1	538.83*	.03	.05
Reach 1	518.94*	.03	.05
Reach 1	499.04*	.03	.05
Reach 1	479.15	.03	.05
Reach 1	459.26*	.03	.05
Reach 1	439.36*	.03	.05
Reach 1	419.47*	.03	.05
Reach 1	399.58*	.03	.05
Reach 1	379.68*	.03	.05
Reach 1	359.79*	.03	.05
Reach 1	339.89*	.03	.05
Reach 1	320.00	.03	.05
Reach 1	303.08*	.03	.05
Reach 1	286.17*	.03	.05
Reach 1	269.25*	.03	.05
Reach 1	252.33*	.03	.05
Reach 1	235.42*	.03	.05
Reach 1	218.50	.03	.05
Reach 1	208.06*	.03	.05
Reach 1	197.61*	.03	.05
Reach 1	187.17*	.03	.05
Reach 1	176.73*	.03	.05
Reach 1	166.29*	.03	.05
Reach 1	155.84*	.03	.05
Reach 1	145.4	.03	.05
Reach 1	145	.03	.05
Reach 1	139.20	.03	.05
Reach 1	129.80	.03	.05
Reach 1	120.40	.03	.05
Reach 1	111	.03	.05
Reach 1	101	.03	.05
Reach 1	83	.03	.05
Reach 1	62	.03	.05
Reach 1	36	.03	.05
Reach 1	14	.03	.05

Appendix C. Plans

SUMMERLIN WEST VILLAGE 27
IMPROVEMENT PLANS FOR:

PARCEL D DRAINAGE INFRASTRUCTURE

APN 137-15-210-001

SUMMERLIN®

SHEET INDEX

1	COVER SHEET	
2	LEGEND AND ABBREVIATIONS	
3	GENERAL NOTES	
4	HORIZONTAL CONTROL PLAN	BEGIN TO STA 621+00
5	HORIZONTAL CONTROL PLAN	END TO STA 621+00
6	MASTER UTILITIES PLAN	STA 605+00 TO 600+00
7	OVERALL GRADING	STA 648+86 TO BEGIN
8	GRADING PLAN AND PROFILE	STA 637+00 TO STA 642+00
9	GRADING PLAN AND PROFILE	STA 642+00 TO STA 649+00
10	GRADING PLAN AND PROFILE	STA 637+00 TO STA 630+00
11	GRADING PLAN AND PROFILE	STA 630+00 TO STA 623+00
12	GRADING PLAN AND PROFILE	STA 623+00 TO STA 616+00
13	GRADING PLAN AND PROFILE	STA 616+00 TO STA 609+00
14	GRADING PLAN AND PROFILE	STA 609+00 TO STA 603+00
15	GRADING PLAN AND PROFILE	STA 603+00 TO STA 600+00
16	WEST WALL PLAN AND PROFILE	STA 637+00 TO STA 641+00
17	WEST WALL PLAN AND PROFILE	STA 641+00 TO STA 646+00
18	WEST WALL PLAN AND PROFILE	STA 646+00 TO STA 648+85.51
19	NORTH WALL PLAN AND PROFILE	STA 637+00 TO STA 632+50
20	NORTH WALL PLAN AND PROFILE	STA 632+50 TO STA 627+50
21	NORTH WALL PLAN AND PROFILE	STA 627+50 TO STA 622+50
22	NORTH WALL PLAN AND PROFILE	STA 622+55 TO STA 617+50
23	NORTH WALL PLAN AND PROFILE	STA 617+50 TO STA 612+50
24	NORTH WALL PLAN AND PROFILE	STA 612+50 TO STA 607+50
25	NORTH WALL PLAN AND PROFILE	STA 607+50 TO STA 603+00
26	EAST WALL PLAN AND PROFILE	STA 603+00 TO STA 600+00
27	STORM DRAIN PLAN AND PROFILE	
28	STORM DRAIN DETAILS	
29	TYPICAL SECTIONS	
30	STRUCTURAL DETAILS	
31	GRADING DETAILS	

UTILITY NOTE

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

CALL BEFORE YOU DIG: 1-800-642-2444

THIS PROPERTY MAY HAVE STATIC WATER PRESSURE IN EXCESS OF 80 PSI. THE UNIFORM PLUMBING CODE REQUIRES THAT INDIVIDUAL, ON-SITE (PRIVATE) PRESSURE REDUCING VALVES BE INSTALLED WHENEVER THE PRESSURE EXCEEDS 80 PSI. PRV'S ARE THE DEVELOPER'S RESPONSIBILITY AND WILL NOTE BE INSPECTED OR INCLUDED IN THE ACCEPTANCE OF THE LAS VEGAS VALLEY WATER DISTRICT FACILITIES.

NOTICE OF INTENT NOTE

NOTE: ALL LAND SURFACE AREA DISTURBANCES OVER 1 ACRE REQUIRE A STORMWATER DISCHARGE PERMIT ISSUED BY THE NEVADA DIVISION OF ENVIRONMENTAL PROTECTION (NDEP). A PHASED CONSTRUCTION UNIT IN A CONTIGUOUS SUBDIVISION IS CONSIDERED UNDER CONSTRUCTION UNTIL ALL STRIPPED SURFACE AREAS HAVE BEEN COVERED BY PAVING, BUILDING CONSTRUCTION OR PLANTING. A STORMWATER DISCHARGE PERMIT APPLICATION AND ASSOCIATED INFORMATION MAY BE DOWNLOADED FROM THE WEB SITE: HTTP://WWW.STATE.NV.US/SWPC/STORM01.HTM PROJECTS THAT DISTURB MORE THAN ONE ACRE OF LAND MUST SUBMIT TO NDEP A "NOTICE OF INTENT" FOR INCLUSION UNDER STORMWATER PERMIT NO. NVR100000 ALONG WITH APPROPRIATE FILLING FEE.

NPDES PERMIT NOTE

THE ENGINEER SHOULD CONTACT THE NEVADA DIVISION OF ENVIRONMENTAL PROTECTION (NDEP) TO OBTAIN A NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT PRIOR TO CONSTRUCTION. ALL CONSTRUCTION PROJECTS ONE ACRE OR LARGER MUST APPLY FOR THE PERMIT THROUGH NDEP. ALL QUESTIONS REGARDING THE NPDES PERMIT REQUIREMENTS SHOULD BE DIRECTED TO THE NDEP AT (775) 687-9429.

DISCLAIMER NOTE

EXISTING UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

FEMA FLOOD ZONE INFORMATION

THE PROJECT SITE IS LOCATED WITHIN A FEMA DESIGNATED ZONE X (UNSHADED) AS DEPICTED ON FLOOD INSURANCE RATE MAP (FIRM) PANEL 32003C2150E, DATED 9/27/2002. A ZONE X (UNSHADED) IS DESCRIBED AS AN AREA DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN.

PROPOSED RIGHT-OF-WAY ACREAGE
6.21 AC.

PROPOSED DISTURBED AREA ACREAGE
5.13 AC.

GEOTECHNICAL ENGINEER
PREPARED BY: UNIVERSAL ENGINEERING SERVICES (UES)
4480 W. HACIENDA AVENUE, SUITE 104, LAS VEGAS, NV 89118
PHONE: 702-873-3478
PROJECT NO.: 4030.2300173
DATED: SEPTEMBER 8, 2023 AND SUBSEQUENT UPDATE LETTER DATED: XXXX X, XXXX

PUBLIC EARTHWORK QUANTITIES (RAW)
CUT: 13,800
FILL: 4,100

OWNER /DEVELOPER

CONTACT: BRIAN WALSH, P.E
HOWARD HUGHES COMPANY LLC, A DELAWARE LIMITED LIABILITY COMPANY
1700 SOUTH. PAVILION CENTER DRIVE, SUITE 250
LAS VEGAS, NV 89135

BRIAN WALSH, VICE PRESIDENT DATE

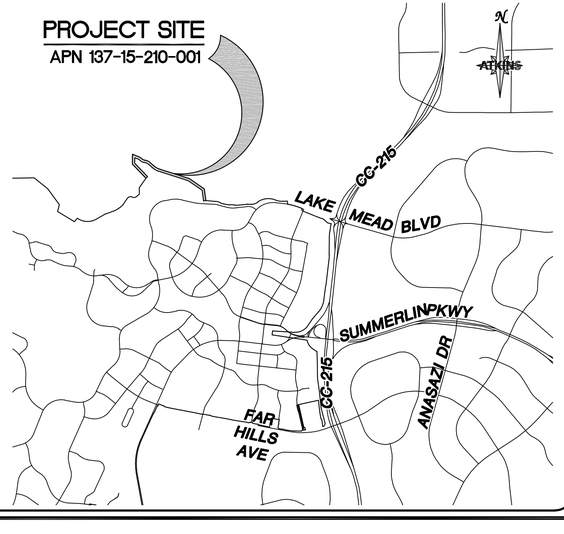
ENGINEER / CONSULTANT

CIVIL

CONTACT: JORDAN TORRELLA P.E.
ATKINSRÉALIS
2360 CORPORATE CIRCLE SUITE 300
HENDERSON, NEVADA 89074
702-551-0286

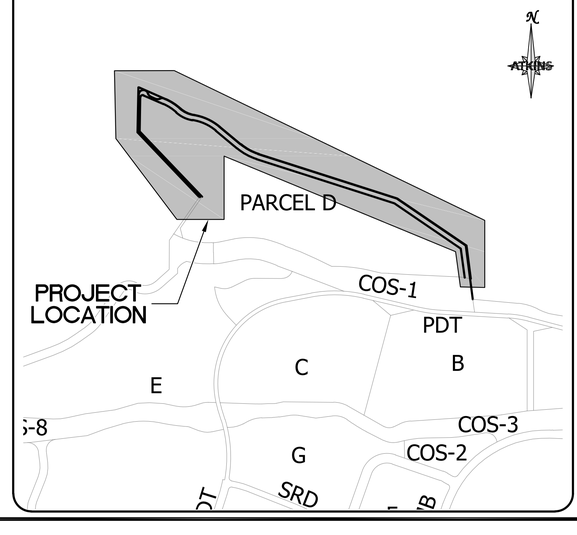
LOCATION MAP

N.T.S.



VICINITY MAP

N.T.S.



APPROVALS

CITY OF LAS VEGAS ENGINEERING

DEPARTMENT OF COMMUNITY DEVELOPMENT | PLANNING DIVISION

NOTE:
THIS PLAN CONFORMS TO THE APPLICABLE STANDARDS OF THE DEPARTMENT OF COMMUNITY DEVELOPMENT | PLANNING DIVISION

LAS VEGAS FIRE AND RESCUE

CENTRAL TELEPHONE COMPANY d/b/a CENTURYLINK DATE

THE AFFIXED CENTRAL TELEPHONE COMPANY d/b/a CENTURYLINK APPROVAL DOES NOT ASSUME OR GUARANTEE LIABILITY FOR KNOWN OR UNKNOWN CONFLICTS WITH EXISTING OR PROPOSED IMPROVEMENTS. RESOLUTION OF ANY CONFLICTS WILL BE ACCOMPLISHED PURSUANT TO LOCAL ORDINANCES, NEVADA REVISED STATUTES, AND/OR PUBLIC UTILITY COMMISSION RULES AND REGULATIONS.

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT PLANNING AND ENGINEERING SERVICES

PROJECT NO. _____ FIRST APPROVED DATE:

LVVWD APPROVED FIRE FLOW _____ GPM AT 20 PSI RESIDUAL

SHEETS:

NV ENERGY DATE

NV ENERGY HAS ACKNOWLEDGED WE HAVE RECEIVED YOUR PLANS AND WILL PROVIDE SERVICE TO ALL ELECTRICAL NEEDS ASSOCIATED WITH THIS PROJECT. NV ENERGY RESERVES THE RIGHT TO ADDRESS ANY EXISTING OR FUTURE CONFLICTS ONCE THE FINAL DESIGN IS COMPLETED. THE NEW SERVICE AND THE RESOLUTION OF ANY CONFLICTS WILL BE ACCOMPLISHED PURSUANT TO THE NEVADA UTILITY COMMISSION'S RULES AND REGULATIONS.

SOUTHWEST GAS CORPORATION

COX COMMUNICATIONS OF LAS VEGAS, INC DATE

BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

LINEAR UNIT: US SURVEY FOOT (FTUS)
DATUM (REFERENCE FRAME): NAD 83 (2011) EPOCH 2010.00
SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)
ZONE: LAS VEGAS HIGH ELEVATION ZONE
PROJECTION: TRANSVERSE MERCATOR
STANDARD PARALLEL (AND LATITUDE OF GRID ORIGIN): 36°15'00"N
LONGITUDE OF CENTRAL MERIDIAN: 114°58'00"W
NORTHING AT GRID ORIGIN: 400,000.00 M (1,312,333.3333 FTUS)
EASTING AT CENTRAL MERIDIAN: 300,000 M (984,250.0000 FTUS)
SCALE FACTOR ON CENTRAL MERIDIAN: 1.000135 (EXACT)

NOTES:
1. ALL DISTANCES AND BEARINGS SHOWN HEREON ARE PROJECTED (GRID) VALUES BASED ON THE PRECEDING PROJECTION DEFINITION. THE PROJECTION WAS DEFINED SUCH THAT PROJECTED (GRID) DISTANCES ARE EQUIVALENT TO "GROUND" DISTANCES IN THE PROJECT AREA
2. GRID BEARINGS SHOWN HEREON (OR IMPLIED BY GRID COORDINATES) DO NOT EQUAL GEODETIC BEARINGS DUE TO MERIDIAN CONVERGENCE.

BENCHMARK

PROJECT DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)
CITY OF LAS VEGAS BENCHMARK: D368 (REVISED 2008)
NAVD88 ELEVATION: 989.574 METERS (3,246.63 FEET)
FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN.
T21S,R59E,S03

LEGAL DESCRIPTION

BEING A PORTION OF LOT 4 AS SHOWN ON THE MAP THEREOF IN BOOK 126 OF PLATS, PAGE 16, OFFICIAL RECORDS, CITY OF LAS VEGAS CLARK COUNTY, NEVADA.

FAST Call before you UnderGround 1-702-432-5300 FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

Call before you D g AVOID CUTTING UNDERGROUND UTILITY LINES ITS COSTLY. Call 811 OR 1-800-642-2444

AVOID HITTING OVERHEAD POWER LINES ITS COSTLY. CALL BEFORE YOU DO OVERHEAD 1-702-227-2929

PROFESSIONAL ENGINEER STATE OF NEVADA JORDAN M. TORRELLA EXP. 06-30-26 CIVIL No. 26305

REVISIONS

REV.	DESCRIPTION	BY	DATE	APPROVAL

AtkinsRéalis
2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1.702.263.7275
Fax: +1.702.263.7200

SUMMERLIN®

SUMMERLIN WEST VILLAGE 27
PARCEL D DRAINAGE INFRASTRUCTURE

COVER SHEET

DESIGNED BY:	A. OLIVARES
DRAWN BY:	C. HONEY
CHECKED BY:	J. TORRELLA
DRAWING NO.	1/31
HORIZ.:	NONE
VERT.:	NONE
XXXXXXXX LXX-XXXXX	
DATE:	JUNE, 2025
JOB NO.	100085220

C:\pw_work\atkinsnA01\dms23301\85220-01-TTL-C1.dwg LAYOUT: 1 COVER SHEET Jun 18, 2025 - 11:55AM

@	AT
#	NUMBER
AB	ABANDONED
AC	ASPHALTIC CONCRETE
ACP	ASBESTOS CEMENT PIPE
AGG	AGGREGATE
AIP	ABANDON IN PLACE
ALT	ALTERNATE
AP	ANGLE POINT
APPROX	APPROXIMATE
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS INTERNATIONAL
AV/AR	AIR VACUUM AIR RELIEF VALVE
BC	BACK OF CURB
BCR	BACK OF CURB RETURN
BLK	BLOCK
BLVD	BOULEVARD
BM	BENCHMARK
BO	BLOW OFF
BP	BOTTOM OF PIPE
BVC	BEGIN VERTICAL CURVE
BVCE	BEGINNING OF VERTICAL CURVE ELEVATION
BVCS	BEGINNING OF VERTICAL CURVE STATION
BOW	BACK OF WALL
BW	BOTTOM OF WALL
C&G	CURB AND GUTTER
C–C	CENTER TO CENTER
CATV	CABLE TELEVISION
CCAUSD	CLARK COUNTY AREA UNIFORM STANDARD DRAWING
CCRFCD	CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT
CCWRD	CLARK COUNTY WATER RECLAMATION DISTRICT
CF	CUBIC FOOT
CIP	CAST IRON PIPE OR CAST IN PLACE
CL	CENTERLINE
CLR	CLEAR
CLV	CITY OF LAS VEGAS
CM	CONSTRUCTION MANAGER
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNIT
CNDT	CONDUIT
CNLV	CITY OF NORTH LAS VEGAS
CO	CLEANOUT
COH	CITY OF HENDERSON
COL	COLUMN
COS	COMMUNITY OPEN SPACE
CON'T	CONTINUATION
CONC	CONCRETE
CONST	CONSTRUCT OR CONSTRUCTION
COR	CORNER
COS	COMMUNITY OPEN SPACE
CPP	CORRUGATED PLASTIC PIPE
CSP	CORRUGATED STEEL PIPE
CU	CUBIC
CULV	CULVERT
CY	CUBIC YARD
D	DEPTH
DCSWCS	DESIGN AND CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS
DET, DTL	DETAIL
DEPT	DEPARTMENT
DG	DESIGN GRADE
DI	DROP INLET
DIA	DIAMETER
DIAG	DIAGONAL
DIP	DUCTILE IRON PIPE
DOC	DOCUMENT
DW	DRIVEWAY
DWG	DRAWING
E	EAST
EA	EACH
EB	EASTBOUND
EC	END OF CURVE
ECR	END CURB RETURN
EF	EACH FACE
EG	EXISTING GROUND
ELEC	ELECTRICAL
ELEV	ELEVATION
EMBK	EMBANKMENT
EOP	EDGE OF PAVEMENT
EP	EDGE OF PAVEMENT ALIGNMENT END
EQ	EQUAL
ESMT	EASEMENT
EVC	END VERTICAL CURVE
EVCS	END VERTICAL CURVE STATION
EW	EACH WAY
EX, EXST	EXISTING
EXP, JT	EXPANSION JOINT
FA	FIRE ALARM
FC	FACE OF CURB
FF	FINISHED FLOOR ELEVATION
FH	FIRE HYDRANT
FL	FLOW LINE
FO	FIBER OPTIC
FT	FOOT OR FEET
G	GAS LINE
GALV	GALVANIZED
GB	GRADE BREAK
GL	GRATE LENGTH
GM	GAS METER
GUT	GUTTER
GV	GATE VALVE
H	HEIGHT
HDPE	HIGH DENSITY POLYETHYLENE PIPE
HDWL	HEADWALL
HE	HORIZONTAL ELLIPTICAL
HGL	HYDRAULIC GRADE LINE
HOA	HOMEOWNER'S ASSOCIATION
HOR	HORIZONTAL
HP	HIGH POINT
ID	INSIDE DIAMETER
IN	INCH(ES)
INT	INTERSECTION/INTERIM
INV	INVERT
IQAC	INTERAGENCY QUALITY ASSURANCE COMMITTEE
IRR	IRRIGATION
ISL	ISLAND
JB	JUNCTION BOX
JCT	JUNCTION
JT	JOINT
K	VERTICAL CURVE K VALUE
L	LENGTH
LB	POUND(S)
LF	LINEAR FEET
LIN	LINEAR
LIN #	CCWRD MANHOLE NUMBER
LOC	LENGTH OF CURVE
LOL	LAYOUT LINE
LP	LOW POINT
LS	LANDSCAPE
LT	LEFT
LVC	LENGTH OF VERTICAL CURVE
LVVWD	LAS VEGAS VALLEY WATER DISTRICT
MAS	MASONRY
MAX	MAXIMUM
MH	MANHOLE
MIN	MINIMUM
MON	MONOLITHIC, MONUMENT
MTL	MATERIAL
ME	MATCH EXISTING
MUE	MUNICIPAL UTILITY EASEMENT
N	NORTH
NAP	NOT A PART
NDOT	NEVADA DEPARTMENT OF TRANSPORTATION
NF	NEAR FACE
NG	NUMBER OF GRATES, NATURAL GRADE
NIC	NOT IN CONTRACT
No.	NUMBER
NTS	NOT TO SCALE
NVE	NV ENERGY
OC	ON CENTER
OD	OUTSIDE DIAMETER
OG	OPEN GRADE
OH	OVERHEAD
OHP	OVERHEAD POWER
OS	OFFSET
P	POWER
PB	PULL BOX
PBS	PLANTMIX BITUMINOUS SURFACE
PC	POINT OF CURVATURE
PCC	PORTLAND CEMENT CONCRETE OR POINT OF COMPOUND CURVATURE
PE	POLYETHYLENE
PG	PROPOSED GRADE
PGL	PROFILE GRADE LINE
PH	POT HOLE
PI	POINT OF INTERSECTION
PIP	PROTECT IN PLACE
PL	PROPERTY LINE
PLCS	PLACES
PMF	PAVEMENT MARKING FILM
POC	POINT OF CONNECTION
PP	POWER POLE
PRC	POINT OF REVERSE CURVATURE
PROP	PROPOSED
PSI	POUNDS PER SQUARE INCH
PT	POINT, POINT OF TANGENCY
PUE	PUBLIC UTILITY EASEMENT
PVC	POLYVINYL CHLORIDE
PVI	POINT OF VERTICAL INTERSECTION
PVMT	PAVEMENT
QTY	QUANTITY
(R)	RADIAL
R/W,ROW	RIGHT OF WAY
R	RADIUS
RC	REINFORCED CONCRETE
RCB	REINFORCED CONCRETE BOX
RCC	ROLLER COMPACTED CONCRETE
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
REINF	REINFORCED OR REINFORCEMENT
RELOC	RELOCATE
REV	REVISION
RG	ROUGH GRADE
RP	RADIUS POINT
RPM	RAISED PAVEMENT MARKER
RR	RAILROAD
RT	RIGHT
SCHED	SCHEDULE
SD	STORM DRAIN
SDMH	STORM DRAIN MANHOLE
SF	SQUARE FOOT/SQUARE FEET
SHLD	SHOULDER
SHT	SHEET
SHP	STEEL HIGH PRESSURE PIPE
SMFO	SINGLE MODE FIBER OPTIC
SNWA	SOUTHERN NEVADA WATER AUTHORITY
SQ	SQUARE
SS	SANITARY SEWER OR SIDE SLOPE
SSD	SUMMERLIN STANDARD DRAWING
SST	STAINLESS STEEL
ST	STREET
STA	STATION
STD	STANDARD
STL	STEEL
STLT	STREETLIGHT
SDHW	STORM DRAIN HEADWALL
STRUCT	STRUCTURAL OR STRUCTURE
SUM #	CCWRD MANHOLE NUMBER
SURV	SURVEY
SVZ	SIGHT VISIBILITY ZONE
SW	SIDEWALK
SY	SQUARE YARD
T	TELEPHONE LINE
TAN	TANGENT
TB	TOP OF BOX
TBA	TO BE ADJUSTED
TBC	TOP OF BACK OF CURB
TBR	TO BE REMOVED
TC	TOP OF CURB
TCD	TRAFFIC CONTROL DEVICE
TDS	TECHNICAL DRAINAGE STUDY
TEL	TELEPHONE
TEMP	TEMPORARY
TF	TOP OF FOOTING
THK	THICK
THR	THRUST
THW	TOP OF HEADWALL
TOF	TOP OF FACE
TW/TOW	TOP OF WALL
TP	TOP OF PIPE
TRANS	TRANSITION
TS	TRAFFIC SIGNAL
TSI	TRAFFIC SIGNAL INTERCONNECT
TW	TOP OF WALL
TYP	TYPICAL
UDACS	UNIFORM DESIGN AND CONSTRUCTION STANDARDS FOR WATER DISTRIBUTION SYSTEMS
UG	UNDERGROUND
UGP	UNDERGROUND POWER
UIE	UPPER INVERT ELEVATION
ULT	ULTIMATE
UNO	UNLESS NOTED OTHERWISE
UPRR	UNION PACIFIC RAILROAD
USD	UNIFORM STANDARD DRAWING
UTACS	ULTRA THIN ASPHALT CONCRETE SURFACE
USTCDE	UTILITY, STREETLIGHT, TRAFFIC CONTROL DEVICE EASEMENT
V	VOLT
VAR	VARIABLE
VC	VERTICAL CURVE
VCP	VITRIFIED CLAY PIPE
VERT	VERTICAL
VG	VALLEY GUTTER
W	WEST, WATER
W/	WITH
WB	WEST BOUND
WL	WATER LINE
WM	WATER METER
W/O	WITHOUT
WPJ	WEAKENED PLANE JOINT
WV	WATER VALVE
WW	WING WALL
YD	YARD(S)

	EXISTING	PROPOSED
DAYLIGHT LINE		
FLOWLINE		
CENTERLINE		
PARCEL LINE		
RIGHT OF WAY		
PAVEMENT STRIPING		
OVERHEAD POWER	—OHP—	—OHP—
UNDERGROUND POWER	—UGP—	—UGP—
SANITARY SEWER	—S—	15" SS
WATER		24"W (3550)
STORM DRAIN		
GAS	—G—	—G—
CABLE T.V.	—CATV—	—CATV—
TELEPHONE	—T—	—T—
STREETLIGHT CONDUIT	—STLT—	STLT
STOP BAR		
CONCRETE ENCASEMENT		
FENCE		
BLOCK WALL		
RETAINING WALL		
SAWCUT PAVEMENT		
CONTOUR	(3000)	3005
SPOT ELEVATION	3011.6	3011.6
CURB AND GUTTER		
EDGE OF PAVEMENT		
EASEMENT		
MATCHLINE		
SIGN		
DOUBLE POST SIGN		
STORM DRAIN MANHOLE	SD	
STORM DRAIN STRUCTURE		
DROP INLET		
BEEHIVE INLET		
SEWER MANHOLE	S	S
FIRE HYDRANT		
CAP AND BLOWOFF		
GATE VALVE		
REDUCER		
STREETLIGHT	OR	
PULLBOX		
SIGNAL POLE		
ELEVATION	(0000.0) FG	0000.0 FG
WATER PRESSURE ZONE BOUNDARY		
WATER PRESSURE ZONE		3550
RIP–RAP		
		FUTURE
HARDSCAPE		

NOTE TO CONTRACTOR

- QUANTITIES SHOWN ARE ESTIMATES ONLY AND ARE INTENDED TO ILLUSTRATE SCOPE OF WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE EXACT QUANTITIES INVOLVED.

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT PLANNING AND ENGINEERING SERVICES

PROJECT NO. XXXXXX FIRST APPROVED DATE: _____

LVVWD APPROVED FIRE FLOW 1500 GPM AT 20 PSI RESIDUAL

BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK: D368 (REVISED 2008)
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T21S,R59E,S03

FAST Call before you UnderGround 1-702-432-5300 FEDERAL AID ARTERIAL SYSTEM OF TRANSPORTATION

Call before you Dig AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY. Call 811 OR 1-800-642-2444

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY. CALL BEFORE YOU DO OVERHEAD 1-702-227-2929

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EXACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

PROFESSIONAL ENGINEER STATE OF NEVADA JORDAN M. TORRELLA EXP. 06-30-26 CIVIL No. 28305

REVISIONS

REV.	DESCRIPTION	BY	DATE	APPROVAL

AtkinsRéalis
2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1.702.263.7275
Fax: +1.702.263.7200

SUMMERLIN

SUMMERLIN WEST VILLAGE 27
PARCEL D DRAINAGE INFRASTRUCTURE

LEGEND AND ABBREVIATIONS

DESIGNED BY: A. OLIVARES
DRAWN BY: C. HONEY
CHECKED BY: J. TORRELLA
HORIZ.: NONE
VERT.: NONE

XXXXXXXX
LXX–XXXXX

DATE: JUNE, 2025

DRAWING NO. 2 / 31

JOB NO. 100085220

C:\pw_work\atkinsn01\dms72301\85220-02-LNGD-C2.dwg LAYOUT: LEGEND AND ABBREVIATIONS Jun 18, 2025 – 11:55AM

CITY OF LAS VEGAS GENERAL NOTES

1. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE "UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA NEVADA", LATEST ISSUE; THE "UNIFORM STANDARD DRAWINGS FOR PUBLIC WORKS CONSTRUCTION, CLARK COUNTY AREA NEVADA", LATEST REVISED EDITION; THE "SUMMERLIN IMPROVEMENT STANDARDS" FOR WORK IN THE SUMMERLIN AREA; AND OTHER APPLICABLE APPROVED STANDARDS ISSUED BY THE CONTROLLING AGENCY; THE UNIFORM BUILDING CODE; AND ALL LOCAL CITY CODES AND ORDINANCES APPLICABLE, EXCEPT AS NOTED ON THIS SHEET AS "DEVIATIONS FROM STANDARDS".
2. THE EXISTENCE AND LOCATION OF ANY OVERHEAD OR UNDERGROUND UTILITY LINES, PIPES, OR STRUCTURES SHOWN ON THESE PLANS ARE OBTAINED BY A RESEARCH OF THE AVAILABLE RECORDS. EXISTING UTILITIES AS SHOWN FROM CLV PLANS LIBRARY AND APPROXIMATE AS TO MAP PURPOSES. EXISTING UTILITIES ARE LOCATED ON PLANS ONLY FOR THE CONVENIENCE OF THE CONTRACTOR. EXISTING UTILITY SERVICE LATERALS MAY NOT BE SHOWN ON THE PLANS. THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, LOCATE ALL UNDERGROUND AND OVERHEAD INTERFERENCE'S WHICH MAY AFFECT HIS OPERATION DURING CONSTRUCTION AND SHALL TAKE ALL NECESSARY PRECAUTIONS TO AVOID DAMAGE TO SAME. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING NEAR OVERHEAD UTILITIES SO AS TO SAFELY PROTECT ALL PERSONNEL AND EQUIPMENT, AND SHELL BE RESPONSIBLE FOR ALL COST AND LIABILITY IN CONNECTION THEREWITH.
3. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT EXISTING UTILITY LINES, STRUCTURES AND STREET IMPROVEMENTS WHICH ARE TO REMAIN IN PLACE, FROM DAMAGE, AND ALL SUCH IMPROVEMENTS OR STRUCTURES DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR REPLACED SATISFACTORY TO THE CITY ENGINEER AND OWNING UTILITY COMPANY AT THE EXPENSE OF THE CONTRACTOR.
4. ALL CONSTRUCTION SHALL BE AS SHOWN ON THESE PLANS, ANY REVISIONS SHALL HAVE THE PRIOR WRITTEN APPROVAL OF THE CITY ENGINEER.
5. TYPE V CEMENT SHALL BE USED IN ALL OFF-SITE CONCRETE WORK. CONCRETE TO BE 3000 P.S.I. MINIMUM @ 28 DAYS. MIX DESIGNS TO BE APPROVED BY THE CITY, PRIOR TO THE USE ON THE PROJECT.
6. PERMITS ARE REQUIRED FOR ANY WORK IN THE PUBLIC RIGHT-OF-WAY. THE CONTRACTOR SHALL SECURE ALL PERMITS AND INSPECTIONS REQUIRED FOR THIS CONSTRUCTION.
7. EXPANSION JOINTS REQUIRED, MAXIMUM EVERY 300' IN EXTRUDED-TYPE CURB.
8. AC PAVEMENT TO BE ONE-HALF INCH (½") ABOVE LIP OF ALL GUTTERS AFTER COMPACTION, EXCEPT AT SIDEWALK RAMPS AND CROSS GUTTERS.
9. CURB AND GUTTER FOUND TO BE UNACCEPTABLE TO THE CITY OF LAS VEGAS SHALL BE REMOVED AND REPLACED PER STANDARD DRAWING 216.
10. SIDEWALK RAMPS SHALL BE CONSTRUCTED IN EACH QUADRANT OF AN INTERSECTION PER STANDARD DRAWING 235. EXACT LOCATION OF RAMPS MAY BE ADJUSTED IN THE FIELD BY A CITY INSPECTOR.
11. CONTRACTOR SHALL PROVIDE ALL NECESSARY HORIZONTAL AND VERTICAL TRANSITIONS BETWEEN NEW CONSTRUCTION AND EXISTING SURFACES TO PROVIDE FOR PROPER DRAINAGE AND FOR INGRESS AND EGRESS TO NEW CONSTRUCTION. THE EXTENT OF THE TRANSITIONS TO BE AS SHOWN ON PLANS.
12. ALL GRADING WORK SHALL CONFORM TO THE SOILS REPORT AS PREPARED BY THE (COMPANY, REPORT #, DATE) APPROVED BY THE CITY ENGINEER, AND AS SHOWN ON THESE PLANS.
13. EXACT LOCATION OF ALL SAWCUT LINES MAY BE ADJUSTED OR DETERMINED IN THE FIELD BY A CITY OF LAS VEGAS ENGINEER IF LOCATION ON PLANS IS NOT CLEARLY SHOWN, OR EXISTING PAVEMENT CONDITION REQUIRES RELOCATIONS.
14. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PROTECT EXISTING PERMANENT SURVEY MONUMENTS. ANY MONUMENTS DISTURBED SHALL BE REPLACED AND ADJUSTED PER AVAILABLE RECORDS IN ACCORDANCE WITH STATUTE NO. 625.380 & CITY OF LAS VEGAS TITLE 18, APPENDIX D.
15. UTILITY COMPANY METER BOXES, MANHOLE LIDS, VALVE COVERS, ETC., SHALL BE LOCATED OUT OF DRIVEWAYS, DRIVEWAY APRONS, PLANTERS, AND CROSS GUTTERS UNLESS WRITTEN APPROVAL IS GRANTED BY THE UTILITY COMPANY AND THE CITY ENGINEER.
16. WALL NOTES: ALL WALLS, NEW OR EXISTING, ARE ONLY SHOWN ON CIVIL PLANS FOR THE PURPOSE OF REVIEWING GRADING RELATIONSHIPS; FLOOD CONTROL AND SIGHT DISTANCE AT INTERSECTIONS. NEW WALLS REQUIRE A SEPARATE PERMIT AND INSPECTION BY THE BUILDING DEPARTMENT.
17. ASPHALT MIX DESIGN MUST BE SUBMITTED AND APPROVED BY THE CITY ENGINEER PRIOR TO THE PLACEMENT OF ASPHALT WITHIN CITY RIGHT OF WAY.
18. CONTRACTOR SHALL ADJUST ALL NEW AND EXISTING INLETS, VALVE BOXES, MANHOLE RIMS, AND SEWER CLEAN OUTS, ETC. TO FINISH GRADE AS APPLICABLE WHETHER OR NOT THEY ARE SHOWN ON THE PLANS.
19. MATERIALS, HANDLING AND PLACEMENT OF PORTLAND CEMENT CONCRETE SHALL BE IN ACCORDANCE WITH APPLICABLE SECTIONS OF NDOT OR THE CLARK COUNTY AREA SPECIFICATIONS (AS APPLICABLE) AND THE PLANS AND DETAILS SHOWN HEREON.
20. WHEN INSTALLING UNDERGROUND FACILITIES THAT REQUIRE UNDERGROUND LOCATING DEVICES SUCH AS MARKER BALLS, LOCATING RIBBON, ETC, THE CONTRACTOR SHALL PROVIDE WRITTEN DOCUMENTATION TO OFFSITE INSPECTION AND TESTING CERTIFYING THAT ALL DEVICES HAVE BEEN PLACED AND VERIFIED TO BE IN GOOD WORKING CONDITION PRIOR TO THE CONSTRUCTION OF ANY ROAD BASE.
21. ~~AFTER HAUNCHING AND PRIOR TO BACKFILL OPERATIONS WHICH WOULD COVER SANITARY SEWER AND STORM DRAIN FACILITIES, CONTRACTOR IS REQUIRED TO SCHEDULE CLV OPEN-TRENCH UTILITY SURVEY INSPECTION FOR DETERMINATION OF FINAL LOCATION COORDINATES. FACILITIES TO BE LOCATED BY CLV SHALL INCLUDE AT A MINIMUM THE HORIZONTAL AND VERTICAL (INVERT) LOCATION OF PUBLIC SEWER MANHOLES, STORM DRAIN MANHOLES AND TRANSITION STRUCTURES; STORM DRAIN LATERALS AT THE CONNECTION TO THE STORM DRAIN MAIN AND AT THE CONNECTION TO A DROP INLET, THE CONNECTION OF SEWER SERVICE LATERALS TO THE SEWER MAIN AND WHERE THE SEWER SERVICE LATERALS EXIT THE PUBLIC RIGHT-OF-WAY, SEWER AND STORM DRAIN MAIN ALIGNMENT, INCLUDING DEFLECTION POINTS.~~

    SANITARY SEWER AND STORM DRAIN FINAL LOCATION MAP(S) SHALL BE PROVIDED TO THE CITY AND APPROVED PRIOR TO ACCEPTANCE OF FACILITY VIDEO INSPECTION. THE MAP(S) SHALL INCLUDE THE HORIZONTAL AND VERTICAL (INVERT) LOCATION OF PUBLIC SEWER MANHOLES, STORM DRAIN MANHOLES AND TRANSITION STRUCTURES, STORM DRAIN LATERALS AT THE CONNECTION TO THE STORM DRAIN MAIN AND AT THE CONNECTION TO A DROP INLET, THE CONNECTION OF SEWER SERVICE LATERALS TO THE SEWER MAIN AND WHERE THE SEWER SERVICE LATERALS EXIT THE PUBLIC RIGHT-OF-WAY, SEWER AND STORM DRAIN ALIGNMENT, INCLUDING DEFLECTION POINTS. THE LOCATION SHALL BE DESCRIBED BY COORDINATES WHICH SHALL BE BASED ON THE OFFICIAL HORIZONTAL AND VERTICAL CONTROL NETWORKS OF THE CITY OF LAS VEGAS. FINAL LOCATION MAPS MUST BE SEALED AND CERTIFIED BY A NEVADA PROFESSIONAL LAND SURVEYOR TO HAVE POSITIONAL CERTAINTIES OF ± 0.09 METERS (± 0.3 FEET) HORIZONTALLY AND VERTICALLY. A SEPARATE ELECTRONIC COMMA DELIMITED FILE FOR THE SANITARY SEWER AND STORM DRAIN COORDINATES SHALL ALSO ACCOMPANY THE SANITARY SEWER AND STORM DRAIN FINAL LOCATION MAP(S).
22. CCTV VIDEO INSPECTION IS REQUIRED FOR ALL SEWER AND STORM DRAINS. THE CCTV VIDEO INSPECTIONS NEED TO BE PERFORMED PER THE DESIGN AND CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS LATEST EDITION.
23. A SEPARATE BORING PERMIT IS REQUIRED FOR ALL BORING ACTIVITIES.

REVISED 06/04/2018

CITY OF LAS VEGAS GRADING NOTES

1. IN THE EVENT THAT ANY UNFORESEEN CONDITIONS NOT COVERED BY THESE NOTES ARE ENCOUNTERED DURING GRADING OPERATIONS, THE OWNER/ENGINEER SHALL BE IMMEDIATELY NOTIFIED FOR DIRECTION.
2. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PERFORM ALL NECESSARY CUTS AND FILLS WITHIN THE LIMITS OF THIS PROJECT AND THE RELATED OFF-SITE WORK, SO AS TO GENERATE THE DESIRED SUBGRADE, FINISH GRADES AND SLOPES SHOWN.
3. CONTRACTOR SHALL TAKE FULL RESPONSIBILITY FOR ALL EXCAVATION. ADEQUATE SHORING SHALL BE DESIGNED AND PROVIDED BY THE CONTRACTOR TO PREVENT UNDERMINING OF ANY ADJACENT FEATURES OR FACILITIES AND/OR CAVING OF THE EXCAVATION.
4. THE CONTRACTOR IS WARNED THAT AN EARTHWORK BALANCE WAS NOT NECESSARILY THE INTENT OF THIS PROJECT. ANY ADDITIONAL MATERIAL REQUIRED OR LEFTOVER MATERIAL FOLLOWING EARTHWORK OPERATIONS BECOMES THE RESPONSIBILITY OF THE CONTRACTOR.
5. THE GRADING CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH THE OWNER TO PROVIDE FOR THE REQUIREMENTS OF THE PROJECT STORM WATER POLLUTION PREVENTION PLAN (SWPPP) AND ASSOCIATED PERMIT.
6. CONTRACTOR SHALL GRADE TO THE LINES AND ELEVATIONS SHOWN ON THE PLANS WITHIN THE FOLLOWING HORIZONTAL AND VERTICAL TOLERANCES AND DEGREES OF COMPACTION, IN THE AREAS INDICATED:

	HORIZONTAL	VERTICAL	COMPACTION
A. PAVEMENT AREA SUBGRADE	0.1'+	+0.0' TO −0.1'	SEE SOILS REPORT
B. ENGINEERED FILL	0.5'+	+0.1' TO −0.1'	SEE SOILS REPORT

    COMPACTION TESTING WILL BE PERFORMED BY THE OWNER OR HIS REPRESENTATIVE.

7. ALL CUT AND FILL SLOPES SHALL BE PROTECTED UNTIL EFFECTIVE EROSION CONTROL HAS BEEN ESTABLISHED.
8. THE USE OF POTABLE WATER WITHOUT A SPECIAL PERMIT FOR BUILDING OR CONSTRUCTION PURPOSES INCLUDING CONSOLIDATION OF BACKFILL OR DUST CONTROL IS PROHIBITED. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS FOR CONSTRUCTION WATER.
9. THE CONTRACTOR SHALL MAINTAIN THE STREETS, SIDEWALKS AND ALL OTHER PUBLIC RIGHT-OF-WAY IN A CLEAN, SAFE AND USABLE CONDITION. ALL SPILLS OF SOIL, ROCK OR CONSTRUCTION DEBRIS SHALL BE PROMPTLY REMOVED FROM THE PUBLICLY OWNED PROPERTY DURING CONSTRUCTION AND UPON COMPLETION OF THE PROJECT. ALL ADJACENT PROPERTY, PRIVATE OR PUBLIC SHALL BE MAINTAINED IN A CLEAN, SAFE AND USABLE CONDITION.
10. IN THE EVENT THAT ANY TEMPORARY CONSTRUCTION ITEM IS REQUIRED THAT IS NOT SHOWN ON THESE DRAWINGS, THE OWNER AGREES TO PROVIDE AND INSTALL SUCH ITEM AT HIS OWN EXPENSE AND AT THE DIRECTION OF THE CITY ENGINEER. TEMPORARY CONSTRUCTION INCLUDES DITCHES, BERMS, ROAD SIGNS AND BARRICADES, ETC.

REVISED 04/15/10

PLAN CONCURRENCE NOTE

THE FOLLOWING SEPARATE SUMMERLIN WEST ROADWAY IMPROVEMENT PLANS ARE TO BE CONSTRUCTED CONCURRENTLY AND ARE SHOWN AS FUTURE (BY OTHERS):

1. *V27 PARK DRIFT TRAIL*
2. *V27 DEBRIS BASIN*
3. *V27 COS-1 DRAINAGE IMPROVEMENTS*
4. *V27 PARCEL D ROUGH GRADE*
5. *V27 PARCEL D IMPROVEMENT PLANS*

CITY OF LAS VEGAS FIRE DEPARTMENT NOTES

1. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH THE LAS VEGAS FIRE AND RESCUE ADOPTED FIRE CODE ORDINANCE #6631 FOR HYDRANT SPECIFICATIONS AND HYDRANT INSTALLATION SPECIFICATIONS.
2. ONLY FIRE HYDRANTS THAT ARE ON THE LAS VEGAS VALLEY WATER DISTRICT'S APPROVED PRODUCTS LIST ARE ALLOWED TO BE INSTALLED.
3. A PERMIT IS REQUIRED FROM LAS VEGAS FIRE AND RESCUE FOR THE INSTALLATION OF ON-SITE WATER LINES AND FIRE HYDRANTS. THE PERMIT AND CONTRACTORS MATERIAL TEST CERTIFICATE FOR UNDERGROUND PIPING FORM SHALL BE OBTAINED FROM THE FIRE PROTECTION ENGINEER BEFORE COMMENCEMENT OF WORK. IFC § 105.6.15
4. ON ANY RESIDENTIAL OR COMMERCIAL INSTALLATIONS, FIRE HYDRANTS SHALL BE INSTALLED AND FIRE APPARATUS ACCESS ROADS SHALL BE MAINTAINED BEFORE COMMENCEMENT OF ANY COMBUSTIBLE CONSTRUCTION. ALL FIRE HYDRANTS SHALL BE IN GOOD WORKING ORDER AND SHALL BE CAPABLE OF DELIVERING THE REQUIRED FIRE FLOW. IFC § 3310, § 3312
5. TO IDENTIFY THE FIRE HYDRANT LOCATIONS, THE CONTRACTOR SHALL PLACE A BLUE REFLECTIVE MARKER AT THE CENTER LINE OF THE STREET ADJACENT TO THE FIRE HYDRANTS. IFC § 507.5.7.3
6. ALL UNDERGROUND INSPECTIONS, PRESSURE AND FLUSH VERIFICATIONS OF ALL FIRE HYDRANTS AND FIRE LINES, SHALL BE CONDUCTED BEFORE COVERING THE LINES. CENTER LOADING IS ACCEPTABLE FOR THE HYDRO TESTS WITH PRIOR FIRE PREVENTION APPROVAL. IFC § 106.3
7. ALL ON-SITE UNDERGROUND WATER MAINS AND MATERIALS SHALL BE U.L. LISTED, A.W.W.A APPROVED AND SHALL BE RATED FOR THE APPROPRIATE WORKING PRESSURE. IFC § 507.2.1, NFPA 24
8. PAINTING OF CURBS, FIRE HYDRANTS, PADS, PROTECTION OF FIRE HYDRANTS FROM PHYSICAL DAMAGE, AND ALL OTHER WORK NECESSARY PER PLANS SHALL BE COMPLETED BEFORE APPROVAL BY LAS VEGAS FIRE AND RESCUE, FIRE PREVENTION DIVISION. IFC § 507
9. PRIVATE HYDRANTS SHALL BE PAINTED RED. IFC § 507.5.7.1
10. PRIOR TO THE FINAL OCCUPANCY, A FIRE FLOW TEST SHALL BE WITNESSED BY LAS VEGAS FIRE AND RESCUE, FIRE PREVENTION DIVISION TO VERIFY AVAILABILITY OF THE REQUIRED FIRE FLOW. IFC § 507
11. FIRE HYDRANT SPACING SHALL BE AS FOLLOWS: IFC § C102
    - RESIDENTIAL – 500 FT UNSPRINKLERED; 600 FT SPRINKLERED.
    - COMMERCIAL – 300 FT UNSPRINKLERED; 400 FT SPRINKLERED.
12. WHERE THE WATER MAINS ARE EXTENDED ALONG STREETS OR NEW STREETS ARE INSTALLED WHERE FIRE HYDRANTS ARE NOT NEEDED FOR PROTECTION OF THE STRUCTURES, FIRE HYDRANTS SHALL BE INSTALLED AT A MAXIMUM OF 1000 FT SPACING, TO PROVIDE FOR FUTURE TRANSPORTATION HAZARDS. WHERE STREETS ARE PROVIDED WITH MEDIAN DIVIDERS OR HAVE FOUR (4) OR MORE TRAFFIC LANES AND HAVE A TRAFFIC COUNT OF MORE THAN 30,000 PER DAY, HYDRANTS ARE REQUIRED ON EACH SIDE OF THE STREET SPACED AT 500 FT ON AN ALTERNATING BASIS. IFC § C102.8
13. NO FIRE HYDRANTS SHALL BE LOCATED WITHIN THE RADIUS OF A CUL-DE-SAC OR WITHIN 20 FT OF THE PERIMETER OF THE RADIUS OF THE CUL-DE-SAC.
14. NO FIRE HYDRANTS SHALL BE LOCATED WITHIN 6 FT OF ANY CURB RETURN, DRIVEWAY, POWER POLE, STREETLIGHT OR ANY OTHER OBSTRUCTION. IFC § C102.10
15. A MAXIMUM DISTANCE FROM A FIRE HYDRANT TO A ONE-TWO FAMILY DWELLING SHALL NOT EXCEED 300 FT, AS MEASURED BY AN APPROVED ROUTE. IFC § 102.4
16. THE MAXIMUM DISTANCE FROM A FIRE HYDRANT TO A FIRE DEPARTMENT CONNECTION (FDC) SHALL NOT EXCEED 100 FT, AS MEASURED BY AN APPROVED ROUTE. IFC § C102.7
17. THE MAXIMUM DISTANCE FROM A HYDRANT TO THE END OF A DEAD-END STREET SHALL NOT EXCEED 200 FT. IFC § C102.6
18. TWO (2) SOURCES OF SUPPLY ARE REQUIRED WHENEVER THERE IS 4 OR MORE FIRE HYDRANTS/SPRINKLER LEAD-INS ARE INSTALLED ON A SINGLE SYSTEM. FOR SYSTEMS REQUIRED TO HAVE TWO (2) SOURCES OF WATER SUPPLY, SECTIONAL CONTROL VALVES SHALL BE INSTALLED SO THAT NO MORE THAN 2 FIRE HYDRANTS AND/OR FIRE SPRINKLER LEAD-INS CAN BE OUT OF SERVICE DUE TO A SINGLE INTERRUPTION. FOR SYSTEMS PERMITTED TO HAVE ONE SOURCE OF WATER SUPPLY, SECTIONAL CONTROL VALVES SHALL BE INSTALLED SO THAT NO MORE THAN 3 FIRE HYDRANTS AND/OR FIRE SPRINKLER LEAD-IN CAN BE OUT OF SERVICE DUE TO A SERVICE INTERRUPTION. IFC § C104
19. ALL FIRE APPARATUS ACCESS ROADS SHALL BE PAVED TO PROVIDE ALL-WEATHER DRIVING CAPABILITIES, AND SHALL BE DESIGNED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF THE FIRE APPARATUS. IFC § 503.2.3
20. THE GRADIENT FOR THE FIRE APPARATUS ACCESS ROADS SHALL NOT EXCEED 12% ANGLES OF APPROACH AND ANGLES OF DEPARTURE SHALL NOT EXCEED 6% FOR 25 FT PRIOR TO OR AFTER THE GRADE CHANGE. ADJACENT TO THE STRUCTURES GRADIENT SHALL NOT EXCEED 6%. IFC § 503.2.7; 503.2.8
21. THE TURNING RADIUS OF THE FIRE APPARATUS ACCESS ROADS SHALL BE NO LESS THAN 52 FT OUTSIDE AND 28 FT INSIDE TURNING RADIUS. IFC § 503.2.4
22. VERTICAL CLEARANCE OF ALL FIRE APPARATUS ACCESS ROADS SHALL NOT BE LESS THAN 13FT 6 INS. IFC § 503.2.1
23. FIRE DEPARTMENT ACCESS ROADS SHALL HAVE A MINIMUM UNOBSTRUCTED WIDTH OF NOT LESS THAN 33 FT WITH PARKING ON BOTH SIDES MEASURED TO FACE OF CURB. NOT LESS THAN 28 FT WIDE WITH PARKING RESTRICTED TO ONE SIDE MEASURED TO FACE OF CURB. NOT LESS THAN 24 FT WIDE WITH NO PARKING ON EITHER SIDE MEASURED TO FACE OF CURB. FIRE LANES THROUGH PARKING LOTS SHALL BE NOT LESS THAN 24 FT. IFC § 503.2.1.1
24. A FIRE APPARATUS ACCESS ROAD SHALL BE REQUIRED WHEN ANY PORTION OF AN EXTERIOR WALL OF THE FIRST STORY IS LOCATED MORE THAN 150 FT FROM A FIRE DEPARTMENT VEHICLE ACCESS. IFC § 503.1.1
25. APPROVED SECONDARY FIRE APPARATUS ACCESS SHALL BE PROVIDED FOR 200 OR MORE DWELLING UNITS, ROAD(S) WITH DEAD-ENDS OR A SINGLE POINT OF ACCESS IN EXCESS OF 600 FT. CLV REGULATION AND MOU
26. ALL DEAD-END FIRE APPARATUS ROADS AND/OR FIRE LANES, PUBLIC OR PRIVATE, IN EXCESS OF 150 FT IN LENGTH SHALL BE PROVIDED WITH AN APPROVED TURN AROUND HAVING A MINIMUM DIAMETER OF 81 FT. CLV REGULATION
27. ALL FIRE APPARATUS ACCESS ROADS SHALL BE MARKED BY PLACING APPROVED SIGNS AT THE START OF THE DESIGNATED FIRE LANE, ONE SIGN AT THE END OF THE FIRE LANE AND WITH SIGNS AT INTERVALS OF 100 FT ALONG THE DESIGNATED FIRE LANES. SIGNS TO BE PLACED ON BOTH SIDES OF AN ACCESS ROADWAY IF NEEDED TO PREVENT PARKING ON EITHER SIDE. SIGNS TO BE INSTALLED NO HIGHER THAN 10 FT OR LESS THAN 6 FT FROM ROADWAY LEVEL. THE CURB ALONG OR ON THE PAVEMENT OR CEMENT (IF NO CURB IS PROVIDED) SHALL BE PAINTED WITH A RED WEATHER RESISTANT PAINT IN ADDITION TO THE SIGNS. IFC § 503.3
28. ELECTRICALLY CONTROLLED ACCESS GATES SHALL BE PROVIDED WITH AN APPROVED EMERGENCY VEHICLE DETECTOR/RECEIVER SYSTEM. IFC § 503.6
29. WHERE STREETS ARE PROVIDED WITH MEDIAN DIVIDERS, OR HAVING FOUR OR MORE TRAVEL LANES AND A TRAFFIC COUNT OF MORE THAN 30,000 VEHICLES PER DAY, ALL HYDRANTS BEINGS UTILIZED TO DELIVER FIRE FLOW TO THE PROPOSED LOCATION SHALL BE LOCATED ON THE SAME SIDE OF THE SD EMERGENCY VEHICLE DETECTOR/RECEIVER SYSTEM. IFC § 503.6

REVISED MARCH 23, 2023

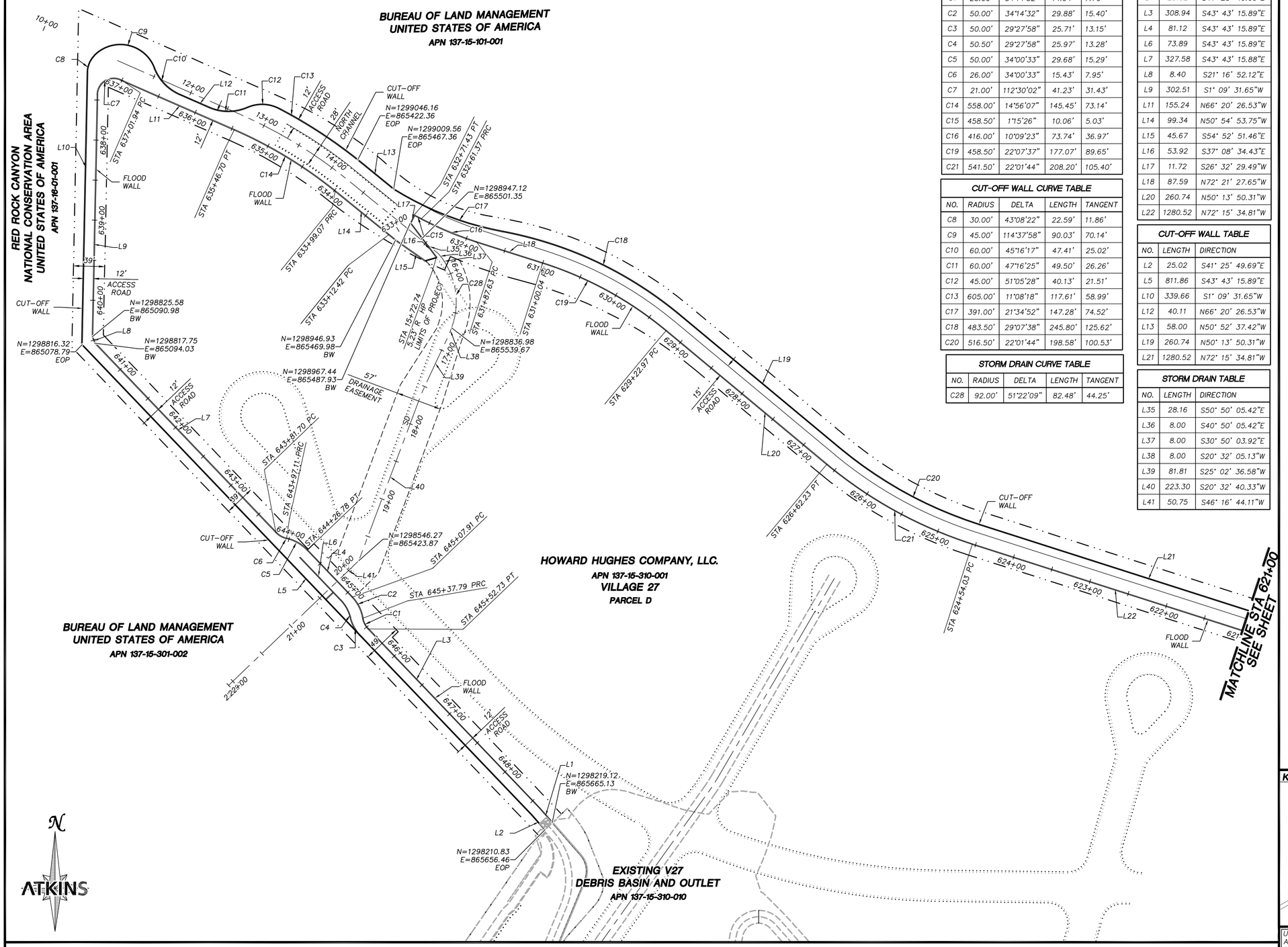
CITY OF LAS VEGAS TRAFFIC NOTES

1. ALL CONSTRUCTION SIGNING, BARRICADING, AND TRAFFIC DELINEATION SHALL CONFORM TO THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", LATEST EDITION.
2. THE STREET SIGN CONTRACTOR SHALL OBTAIN STREET NAMES AND BLOCK NUMBERING FROM THE PLANNING DEPARTMENT PRIOR TO CONSTRUCTION.
3. BEFORE ANY WORK IS STARTED IN THE RIGHT-OF-WAY, THE CONTRACTOR SHALL INSTALL ALL ADVANCE WARNING SIGNS FOR THE CONSTRUCTION ZONE. THE CONTRACTOR SHALL INSTALL TEMPORARY STOP SIGNS AT ALL NEW STREET ENCROACHMENTS INTO EXISTING CITY STREETS WHERE WARRANTED IMMEDIATELY AFTER FIRST GRADING WORK IS ACCOMPLISHED, AND SHALL MAINTAIN SAID SIGNS UNTIL PERMANENT SIGNS ARE INSTALLED.
4. WHEN A DESIGNATED "SUGGESTED ROUTE TO SCHOOL" IS ENCROACHED UPON BY A CONSTRUCTION WORK ZONE AND PUBLIC WORKS STAFF IDENTIFIES A NEED FOR STUDENTS TO BE ASSISTED IN THE SAFE CROSSING THROUGH THAT WORK ZONE, THE CONTRACTOR SHALL BE REQUIRED TO PROVIDE A QUALIFIED "CROSSING GUARD". THE GUARD SHALL BE PRESENT FOR THE FULL DURATION OF TIME THAT CHILDREN ARE LIKELY TO BE PRESENT.
5. IF THE IMPROVEMENTS NECESSITATE THE OBLITERATION, TEMPORARY OBSTRUCTION, TEMPORARY REMOVAL OR RELOCATION OF ANY EXISTING TRAFFIC PAVEMENT MARKING, SUCH PAVEMENT MARKING SHALL BE RESTORED OR REPLACED WITH LIKE MATERIALS TO THE SATISFACTION OF THE CITY TRAFFIC ENGINEER.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING ALL PERMANENT SIGNS SHOWN ON THE PLANS. ALL NEW TRAFFIC SIGNS SHALL UTILIZE TYPE XI RETROREFLECTIVE SHEETING IN ACCORDANCE WITH CCAUSS 627 AND 716 AND SHALL HAVE AN ANTI-GRAFFITI PROTECTIVE OVERLAY FILM THAT IS A MATCHING COMPONENT TO, AND OF THE SAME MANUFACTURER AS THE RETROREFLECTIVE SHEETING TO WHICH IT IS APPLIED. STREET NAME SIGNS SHALL CONFORM IN THEIR ENTIRETY TO CURRENT CITY STANDARDS. ALL OTHER SIGNS SHALL BE STANDARD SIZE UNLESS OTHERWISE SPECIFIED ON THE PLANS. ALL SIGN POSTS SHALL BE INSTALLED IN ACCORDANCE WITH THE CURRENT CITY STANDARDS.
7. WHEN A PROPOSED STREET LIGHT STANDARD IS LOCATED WITHIN FIVE (5') FEET OF ANY PROPOSED SIGN SHOWN ON THE PLANS TO BE MOUNTED ON A SIGNPOST, THE SIGN SHALL BE MOUNTED ON THE STREET LIGHT STANDARD AND THE SIGNPOST SHALL BE ELIMINATED.
8. ALL PERMANENT TRAFFIC CONTROL DEVICES CALLED FOR HEREON SHALL BE IN PLACE AND IN FINAL POSITION PRIOR TO ALLOWING ANY PUBLIC TRAFFIC ONTO THE PORTIONS OF THE ROAD(S) BEING IMPROVED HERE UNDER, REGARDLESS OF THE STATUS OF COMPLETION OF PAVING OR OTHER OFF-SITE IMPROVEMENTS CALLED FOR BY THESE PLANS.
9. STREET SIGNS AND STOP SIGNS SHALL BE INSTALLED PER CITY STANDARD SPECIFICATIONS FOR PLACEMENT OF STREET NAME SIGNS.
10. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY TRAFFIC CONTROL DEVICES AND FLAGGERS TO INSURE THE SAFETY OF THE PUBLIC IN OR AROUND THE WORK THE CONTRACTOR SHALL HAVE A CERTIFIED ATSSA TRAFFIC CONTROL TECHNICIAN OR IMSA WORK ZONE SAFETY SPECIALIST SET UP, MAINTAIN AND/OR REMOVE ALL TRAFFIC CONTROL DEVICES IN THE CITY OF LAS VEGAS RIGHT OF WAY.
11. WORK IN PUBLIC STREETS, ONCE BEGUN, SHALL BE EXPEDITED TO COMPLETION SO AS TO PROVIDE MINIMUM INCONVENIENCE TO ADJACENT PROPERTY OWNERS AND TO THE TRAVELING PUBLIC.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING REGIONAL TRANSPORTATION COMMISSION OF SOUTHERN NEVADA (RTC). IF THE CONSTRUCTION INTERRUPTS OR RELOCATES A BUS STOP OR HAS AN ADVERSE EFFECT ON BUS SERVICE ON THAT STREET TO ARRANGE FOR TEMPORARY RELOCATION OF STOP.
13. GUARDS SHALL BE OBTAINED BY CONTACTING THE METROPOLITAN POLICE DEPARTMENT SPECIAL EVENTS UNIT (PHONE # 828-3442) WHO WILL PROVIDE OFFICERS PROPERLY TRAINED IN TRAFFIC CONTROL. FEES FOR THE USE OF THESE OFFICERS SHALL BE SET BY METRO AND WILL BE PAID BY THE CONTRACTOR. THE CONTRACTOR IS RESPONSIBLE FOR ALL ARRANGEMENTS WITH METRO.
14. ANY WORK WITHIN 300' OF A SIGNALIZED INTERSECTION WILL BE NIGHT WORK, UNLESS DIRECTED BY THE CITY OF LAS VEGAS TRAFFIC ENGINEER.
15. THE CONTRACTOR SHALL CONTACT THE TRAFFIC ENGINEERING DIVISION (TRANSPORTATION SECTION) THROUGH THE PROJECT'S OFFSITE INSPECTOR PRIOR TO INITIATING PAVING TO RECEIVE DIRECTION FOR ANY PERMANENT OR TEMPORARY MODIFICATIONS TO THE APPROVED DRAWINGS REGARDING FINAL PAVEMENT TRANSITIONS, MARKINGS AND SIGNING THAT ARE REQUIRED TO MATCH ADJACENT ROADWAY SEGMENTS. THE CONTRACTOR SHALL PROVIDE A DRAWING FOR APPROVAL BY THE TRAFFIC ENGINEERING DIVISION DEPICTING ANY ADJUSTMENTS TO THE FINAL PAVEMENT MARKINGS AND SIGNAGE, WHICH MAY INCLUDE OMITTING, ADDING OR MODIFYING PAVEMENT MARKINGS AND TRAFFIC CONTROL SIGNS SUCH THAT ADEQUATE TRANSITIONS AND LANE TERMINATIONS BETWEEN ADJACENT ROADWAY SEGMENTS ARE CONSTRUCTED.

REVISED JUNE 4, 2018

CITY OF LAS VEGAS SEWER NOTES

1. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE DESIGN AND CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS AND THE UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS' CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA, AS AMENDED. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO BE AWARE OF THE CONTENTS OF THE ABOVE SPECIFICATIONS.
2. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PERFORM CONSTRUCTION AS PER PLANS. ANY ADDITIONS, DELETIONS, OR CHANGES SHALL FIRST MEET WITH THE APPROVAL OF THE CITY ENGINEER.
3. CHISEL "S" OR "G" IN CURBS WHERE SEWER OR GAS LATERALS PASS UNDER THE CURB.
4. POLYVINYL (PVC) SEWER PIPE SHALL MEET ASTM D-3034 SDR 35 SPECIFICATIONS, INSTALLED WITH SAND BEDDING AND BACKFILL OF TYPE II AGGREGATE BASE.
5. ALL MANHOLES PAVED IN STREETS EIGHTY (80') FOOT R/W AND LARGER SHALL HAVE CONCRETE COLLARS. STREETS LESS THAN EIGHTY (80') FOOT R/W WILL REQUIRE RETROFIT IF PAVING DOES NOT CONFORM TO CITY STANDARDS AT THE MANHOLE.
6. TEE SADDLES SHALL BE USED TO CONNECT SEWER LATERALS TO EXISTING MAIN LINES UP TO TWELVE INCH (12") DIAMETER. CONNECTIONS TO FIFTEEN INCH (15") OR LARGER MAINS SHALL REQUIRE SPECIAL PROCEDURES. IN LINE "Y"'S SHALL BE USED ON LINES TWELVE INCHES (12") OR ABOVE.
7. WATER MAINS SHALL BE PROTECTED IN ACCORDANCE WITH LVVWD STANDARDS WHENEVER A SEWER MAIN CROSSES OVER A WATER MAIN OR THE SEWER IS LESS THAN EIGHTEEN INCH (18") UNDER A WATER MAIN.
8. ALL CONTRACTORS INSTALLING SEWER MAINS THAT WILL BE UNDER THE JURISDICTION OF THE CITY OF LAS VEGAS MUST BE STATE OF NEVADA CLASS "A" CONTRACTORS.
9. THE CITY OF LAS VEGAS WILL NOT ACCEPT ANY SEWER MAINS WHICH HAVE A VERTICAL DEFLECTION OF MORE THAN ONE TENTH (0.1) OF A FOOT FROM THE APPROVED CONSTRUCTION PLANS AT ANY LOCATION. SEWER MAINS FOUND TO EXCEED THIS TOLERANCE WILL HAVE TO BE REPAIRED OR REMOVED OR REPLACED TO THE SATISFACTION OF THE CITY ENGINEER PRIOR TO ACCEPTANCE BY THE CITY OF LAS VEGAS.
10. INSTALLATION OF CURVED SEWER REQUIRES THE USE OF C-900 PIPE WHICH ALLOWS FOR PIPE DEFLECTION AT THE JOINTS.
11. SEWER SERVICES AS APPROVED ON THIS PLAN, ARE INTENDED SPECIFICALLY FOR THE LOT AND USE SHOWN, AND ARE NOT INTENDED TO SERVE ADDITIONAL PARCELS OR LOTS WHICH MAY BE CREATED IN THE FUTURE. IN THE EVENT THAT THE PARCEL AND/OR LOTS SHOWN ON THIS PLAN ARE FURTHER DIVIDED TO CREATE ADDITIONAL PARC



FLOODWALL CURVE TABLE				
NO.	RADIUS	DELTA	LENGTH	TANGENT
C1	25.00'	34°14'32"	14.94'	7.70'
C2	50.00'	34°14'32"	29.88'	15.40'
C3	50.00'	29°27'58"	25.71'	13.15'
C4	50.50'	29°27'58"	25.97'	13.28'
C5	50.00'	34°00'33"	29.68'	15.29'
C6	26.00'	34°00'33"	15.43'	7.95'
C7	21.00'	112°30'02"	41.23'	31.43'
C14	558.00'	14°56'07"	145.45'	73.14'
C15	458.50'	1°15'26"	10.06'	5.03'
C16	416.00'	10°09'23"	73.74'	36.97'
C19	458.50'	22°07'37"	177.07'	89.65'
C21	541.50'	22°01'44"	208.20'	105.40'

CUT-OFF WALL CURVE TABLE				
NO.	RADIUS	DELTA	LENGTH	TANGENT
C8	30.00'	43°08'22"	22.59'	11.86'
C9	45.00'	114°37'58"	90.03'	70.14'
C10	60.00'	45°16'17"	47.41'	25.02'
C11	60.00'	47°16'25"	49.50'	26.26'
C12	45.00'	51°05'28"	40.13'	21.51'
C13	605.00'	11°08'18"	117.61'	58.99'
C17	391.00'	21°34'52"	147.28'	74.52'
C18	483.50'	29°07'38"	245.80'	125.62'
C20	516.50'	22°01'44"	198.58'	100.53'

STORM DRAIN CURVE TABLE				
NO.	RADIUS	DELTA	LENGTH	TANGENT
C28	92.00'	51°22'09"	82.48'	44.25'

FLOODWALL TABLE		
NO.	LENGTH	DIRECTION
L1	25.02	S41° 25' 49.69"E
L3	308.94	S43° 43' 15.89"E
L4	81.12	S43° 43' 15.89"E
L6	73.89	S43° 43' 15.89"E
L7	327.58	S43° 43' 15.88"E
L8	8.40	S21° 16' 52.12"E
L9	302.51	S1° 09' 31.65"W
L11	155.24	N66° 20' 26.53"W
L14	99.34	N50° 54' 53.75"W
L15	45.67	S54° 52' 51.46"E
L16	53.92	S37° 08' 34.43"E
L17	11.72	S26° 32' 29.49"W
L18	87.59	N72° 21' 27.65"W
L20	260.74	N50° 13' 50.31"W
L22	1280.52	N72° 15' 34.81"W

CUT-OFF WALL TABLE		
NO.	LENGTH	DIRECTION
L2	25.02	S41° 25' 49.69"E
L5	811.86	S43° 43' 15.89"E
L10	339.66	S1° 09' 31.65"W
L12	40.11	N66° 20' 26.53"W
L13	58.00	N50° 52' 37.42"W
L19	260.74	N50° 13' 50.31"W
L21	1280.52	N72° 15' 34.81"W

STORM DRAIN TABLE		
NO.	LENGTH	DIRECTION
L35	28.16	S50° 50' 05.42"E
L36	8.00	S40° 50' 05.42"E
L37	8.00	S30° 50' 03.92"E
L38	8.00	S20° 32' 05.13"W
L39	81.81	S25° 02' 36.58"W
L40	223.30	S20° 32' 40.33"W
L41	50.75	S46° 16' 44.11"W

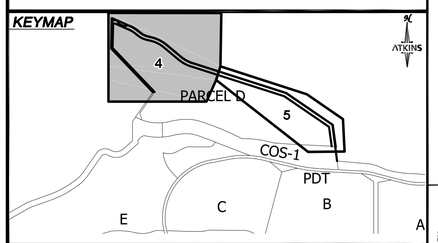
ROADWAY NOTES

1. SEE SHEET 29 FOR TYPICAL SECTIONS, DETAILS.
2. SEE SHEET 3 FOR ROADWAY ALIGNMENT ABBREVIATIONS.

SUMMARY OF QUANTITIES

DESCRIPTION	QUANTITY	UNIT
DRAINAGE		
PLANTIMIX BITUMINOUS PAVEMENT (2")	2350	SY
CONCRETE PAVEMENT (6")	9260	SY
TYPE II AGGREGATE BASE (4")	265	CY
TYPE II AGGREGATE BASE (6")	1545	CY

KEYMAP



UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EXACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK: D368
(REVISED 2008)
NAVD88 ELEVATION: 989.574 METERS
(3,246.63 FEET)
FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN.
T21S,R59E,S03

FAST Call before you UnderGround 1-702-432-5300 FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

Call before you Dig AVOID CUTTING, BLASTING OR UTILITY DAMAGE. IT'S COURTLY. Call 811 OR 1-800-642-2444

AVOID HITTING OVERHEAD POWER LINES. IT'S COURTLY. CALL BEFORE YOU DO OVERHEAD 1-702-227-2929

REVISIONS

REV.	DESCRIPTION	BY	DATE	APPROVAL

AtkinsRéalis
2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1.702.263.7275
Fax: +1.702.263.7200

SUMMERLIN

SUMMERLIN WEST VILLAGE 27
PARCEL D DRAINAGE INFRASTRUCTURE

HORIZONTAL CONTROL

DESIGNED BY: A. GUTIERREZ
DRAWN BY: C. HONEY
CHECKED BY: J. TORRELLA
HORIZ.: NONE
VERT.: NONE

XXXXXXXX
LXX-XXXXX

DATE: JUNE, 2025

DRAWING NO. 4/31

JOB NO. 100085220

PROFESSIONAL ENGINEER STATE OF NEVADA
JORDAN M. TORRELLA
EXP. 06-30-26
CIVIL
No. 29035

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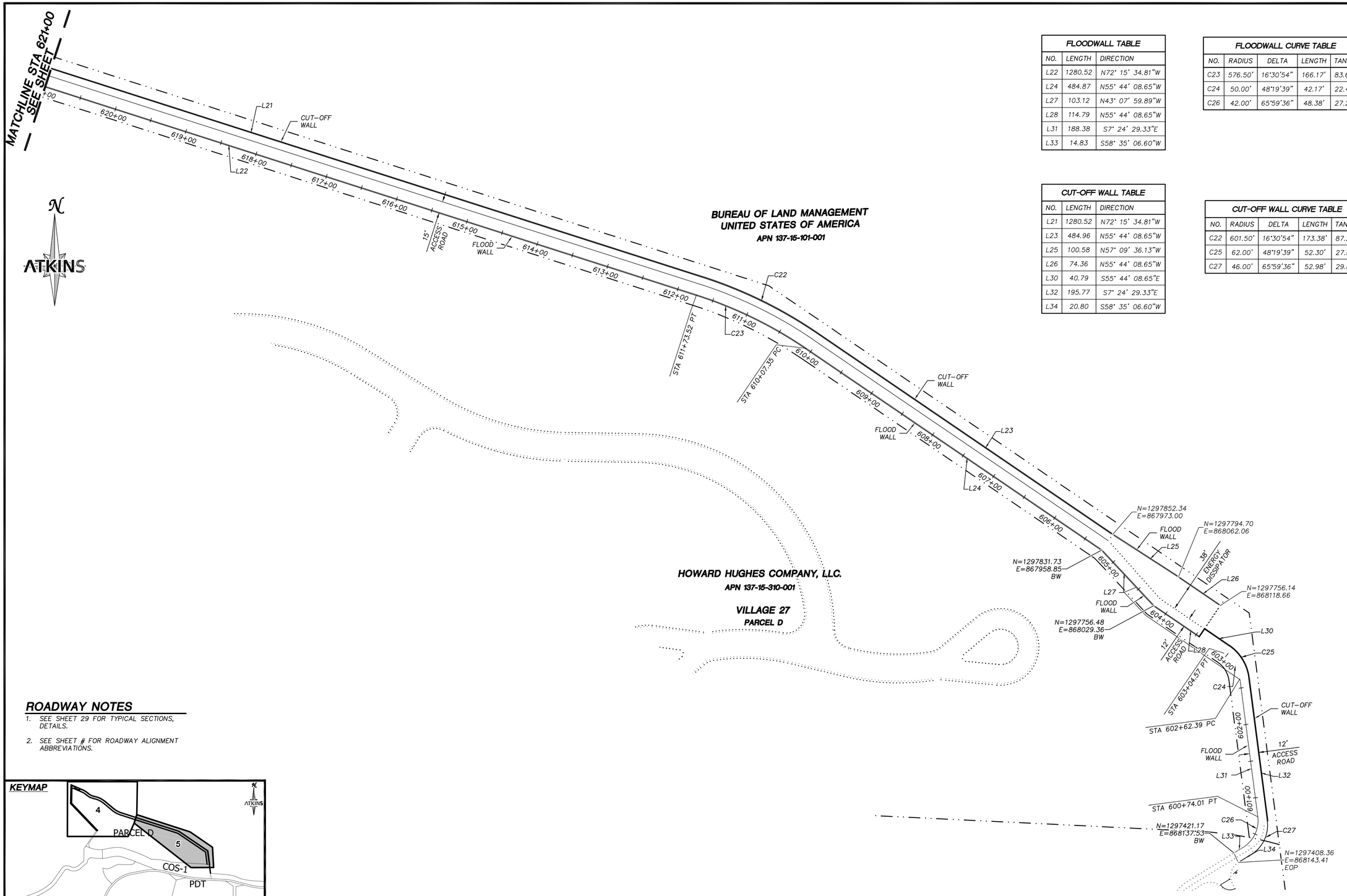


FLOODWALL TABLE		
NO.	LENGTH	DIRECTION
L22	1280.52	N72° 15' 34.81"W
L24	484.87	N55° 44' 08.65"W
L27	103.12	N43° 07' 59.89"W
L28	114.79	N55° 44' 08.65"W
L31	188.38	S7° 24' 29.33"E
L33	14.83	S58° 35' 06.60"W

FLOODWALL CURVE TABLE				
NO.	RADIUS	DELTA	LENGTH	TANGENT
C23	576.50'	16°30'54"	166.17'	83.66'
C24	50.00'	48°19'39"	42.17'	22.43'
C26	42.00'	65°59'36"	48.38'	27.27'

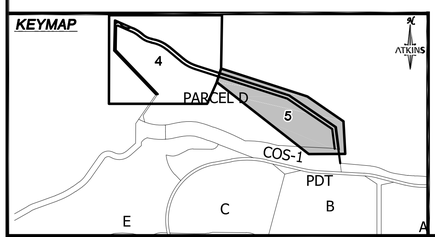
CUT–OFF WALL TABLE		
NO.	LENGTH	DIRECTION
L21	1280.52	N72° 15' 34.81"W
L23	484.96	N55° 44' 08.65"W
L25	100.58	N57° 09' 36.13"W
L26	74.36	N55° 44' 08.65"W
L30	40.79	S55° 44' 08.65"E
L32	195.77	S7° 24' 29.33"E
L34	20.80	S58° 35' 06.60"W

CUT–OFF WALL CURVE TABLE				
NO.	RADIUS	DELTA	LENGTH	TANGENT
C22	601.50'	16°30'54"	173.38'	87.29'
C25	62.00'	48°19'39"	52.30'	27.82'
C27	46.00'	65°59'36"	52.98'	29.87'

ROADWAY NOTES

1. SEE SHEET 29 FOR TYPICAL SECTIONS, DETAILS.
2. SEE SHEET # FOR ROADWAY ALIGNMENT ABBREVIATIONS.

KEYMAP



GRAPHIC SCALE

60 0 30 60 120

HORIZONTAL: 1"=60'

BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK: D368
(REVISED 2008)
NAVD88 ELEVATION: 989.574 METERS
(3,246.63 FEET)
FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN.
T21S,R59E,S03

FAST Call before you UnderGround 1-702-432-5300 FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

Call before you Dig AVOID OUTAGES, INJURIES AND COSTLY UTILITY LINES. IT'S COSTLY. Call 811 OR 1-800-642-2444

AVOID VICTIMS! OVERHEAD POWER LINES. IT'S COSTLY. CALL BEFORE YOU DIG OVERHEAD 1-702-227-2929

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PROFESSIONAL ENGINEER STATE OF NEVADA JORDAN M. TORRELLA EXP. 06-30-26 CIVIL No. 28035

REVISIONS

REV.	DESCRIPTION	BY	DATE	APPROVAL

AtkinsRéalis
2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1.702.263.7275
Fax: +1.702.263.7200

SUMMERLIN

SUMMERLIN WEST VILLAGE 27
PARCEL D DRAINAGE INFRASTRUCTURE

HORIZONTAL CONTROL

DESIGNED BY: A. QUIJARES	DRAWN BY: C. HONEY	CHECKED BY: J. TORRELLA	HORIZ.: NONE
XXXXXXXX LXX–XXXXX	DATE: JUNE, 2025	DRAWING NO. 5/31	VERT.: NONE

JOB NO. 100085220

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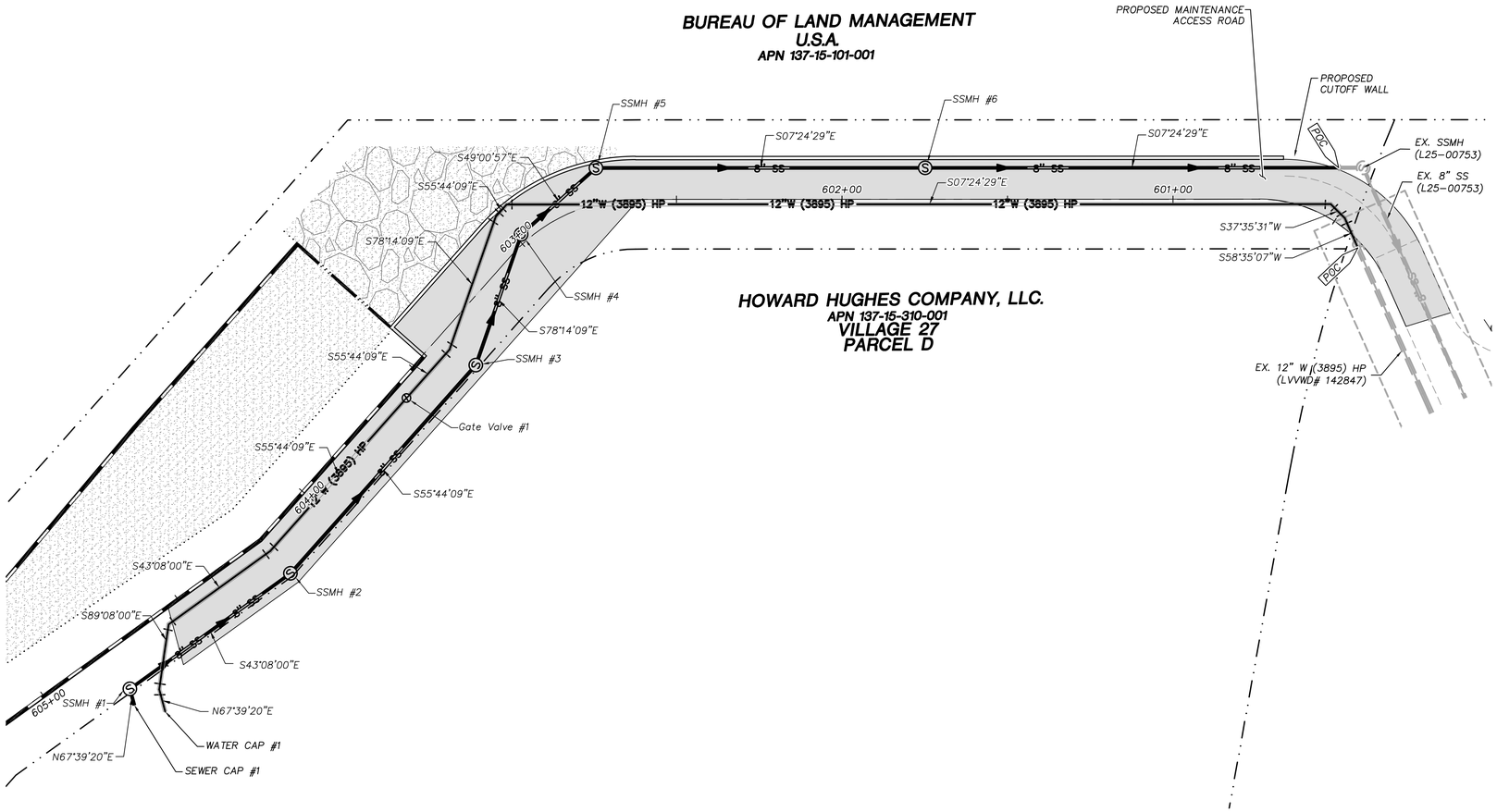


SUMMARY OF QUANTITIES

DESCRIPTION	QUANTITY	UNIT
WATER		
12" DIP	460	LF
12" CAP WITH 2" BLOWOFF ASSEMBLY	1	EA
12" GATE VALVE	1	EA
12" 11.25° BEND	1	EA
12" 22.5° BEND	4	EA
12" 45° BEND	3	EA
8" C900 SEWER PIPE	450	LF
48" SEWER MANHOLE	6	EA
SEWER CAP	1	EA

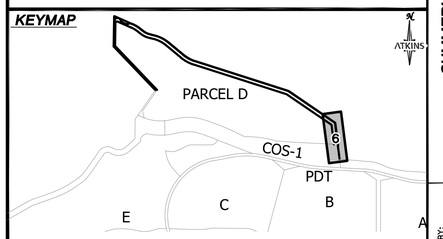
MASTER PLAN NOTE

THIS SHEET IS FOR INFORMATIONAL PURPOSES ONLY. IT IS AN OVERALL REPRESENTATION OF THE UTILITY FOR REVIEW AND COORDINATION WITH OTHER PROJECT DETAILS WITHIN THIS PLAN SET.

LAS VEGAS FIRE & RESCUE APPROVAL

LAS VEGAS FIRE & RESCUE — DATE

KEYMAP



APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT PLANNING AND ENGINEERING SERVICES

PROJECT NO. 141719 FIRST APPROVED DATE: _____

BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

BENCHMARK

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T21S,R59E,S03

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PROFESSIONAL ENGINEER STATE OF NEVADA JORDAN M. TORRELLA EXP. 06-30-26 CIVIL No. 28305

REVISIONS

REV.	DESCRIPTION	BY	DATE	APPROVAL

AtkinsRéalis
2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1.702.263.7275
Fax: +1.702.263.7200

SUMMERLIN

SUMMERLIN WEST VILLAGE 27
PARCEL D DRAINAGE INFRASTRUCTURE

MASTER UTILITIES PLAN

DESIGNED BY: O. OLIVARES
DRAWN BY: C. HONEY
CHECKED BY: J. TORRELLA
HORIZ.: NONE
VERT.: NONE
XXXXXXXX
LXX-XXXXX
DATE: JUNE, 2025
DRAWING NO. 6/31
JOB NO. 100085220

C:\pw_work\atkinsnv01\dms72301\85220-05-UTIL-UTI.dwg LAYOUT: MASTER UTILITIES PLAN Jun 18, 2025 - 11:55AM

SUMMARY OF QUANTITIES

DESCRIPTION	QUANTITY	UNIT
DRAINAGE		
CHANNEL TRANSITION FROM 28'X7' RCB TO 9'X6' RCB	50	LF
9'X6' RCB	500	LF
CONCRETE 6" F'c=4,000 PSI	1,490	CY
GROUTED RIP-RAP (D50=24", T=48")	370	CY
FLOOD WALL (3')	3,320	LF
FLOOD WALL (4')	1,020	LF
FLOOD WALL (6')	370	LF
FLOOD WALL (7')	230	LF
CUTOFF WALL (4')	3,080	LF
CUTOFF WALL (5')	840	LF
CUTOFF WALL (6')	340	LF
CUTOFF WALL (8')	470	LF
CONCRETE LOW FLOW CHANNEL	300	LF
CHANNEL EXCAVATION	1	EA
HEADWALL	3,600	CY

STORM DRAIN NOTES

1. SEE GRADING PLAN AND PROFILE SHEETS FOR CONSTRUCTION DETAILS.
2. CONTRACTOR TO PROVIDE 6" MINIMUM OF CLEARANCE BETWEEN OUTSIDE OF PIPE TO INSIDE WALL OF STORM DRAIN STRUCTURES.

INTERIM FLOOD CONTROL FACILITIES NOTE

ALL OFFSITE INTERIM FLOOD CONTROL FACILITIES SUCH AS BUT NOT LIMITED TO BERMS/DITCHES AND TEMPORARY SUMP ARE PRIVATELY OWNED AND TO BE PRIVATELY MAINTAINED BY THE HOWARD HUGHES COMPANY.

BUREAU OF LAND MANAGEMENT
UNITED STATES OF AMERICA
APN 137-15-101-001

BUREAU OF LAND MANAGEMENT
UNITED STATES OF AMERICA
APN 137-15-301-002

HOWARD HUGHES COMPANY, LLC.
APN 137-15-310-001
VILLAGE 27
PARCEL D

NORTH CHANNEL/ WEST FLOOD WALL DELINEATION

NORTH/EAST FLOOD WALL DELINATION

CUT-OFF WALL

DRAINAGE CHANNEL

FLOOD WALL

CUTOFF WALL

30' DRAINAGE EASEMENT

8 9 10 11 12 13 14 15

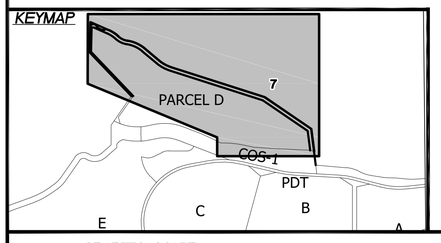
N

ATKINS

LEGEND

- CONCRETE PAVEMENT
- GROUTED RIP-RAP
- SHEET MATCHLINE
- ASPHALT PAVEMENT

KEYMAP



GRAPHIC SCALE
100 0 50 100 200
HORIZONTAL: 1"=100'

MASTER PLAN NOTE

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GRADING PLAN CERTIFICATION

JORDAN TORRELLA PE#26305 DATE

CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE AT THE CITY OF LAS VEGAS FOR THIS PROJECT.

DS#XXXX

BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

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T21S,R59E,S03

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PROFESSIONAL ENGINEER STATE OF NEVADA JORDAN MICHAEL TORRELLA EXP. 06-30-26 CIVIL No. 26305

REVISIONS

REV.	DESCRIPTION	BY	DATE	APPROVAL

AtkinsRéalis
2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1.702.263.7275
Fax: +1.702.263.7200

SUMMERLIN

SUMMERLIN WEST VILLAGE 27
PARCEL D DRAINAGE INFRASTRUCTURE

OVERALL GRADING

DESIGNED BY: A. OLIVARES
DRAWN BY: C. HONEY
CHECKED BY: J. TORRELLA
HORIZ.:
VERT.:

XXXXXXXX
LXX-XXXXX

DATE: JUNE, 2025

DRAWING NO. 7/31

JOB NO. 100085220

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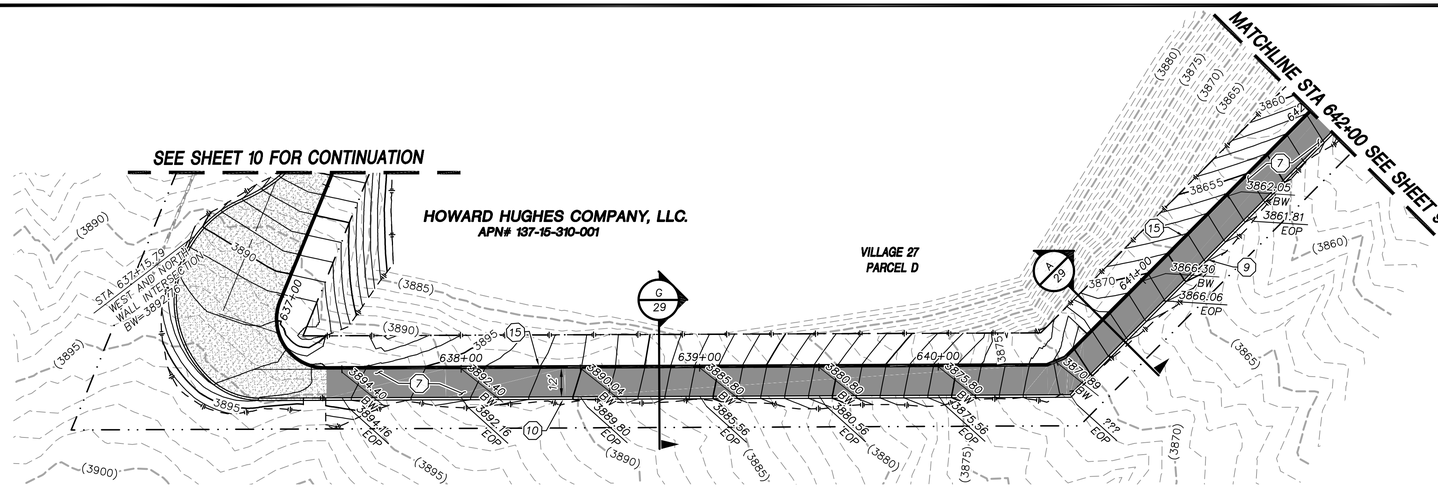

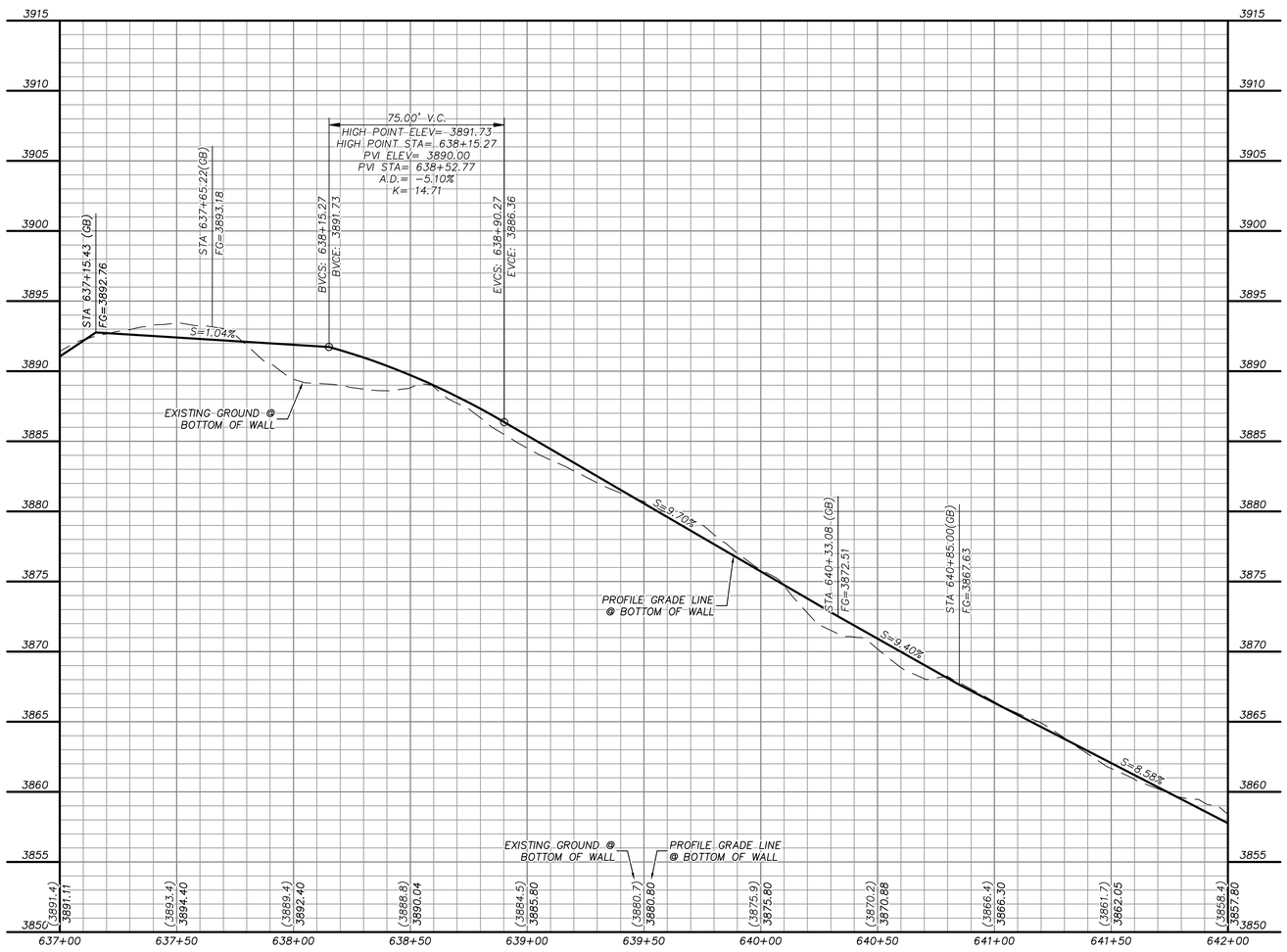

CONSTRUCTION NOTES

1. INSTALL 6" CONCRETE PAVEMENT F'c MIN=4,000 PSI
2. INSTALL WARNING SIGN, SEE DETAIL A SHEET 28
3. INSTALL GROUTED RIP-RAP (D50=24", THICKNESS=48")
4. CONSTRUCT 7' FLOOD WALL SEE WALL PLAN FOR START AND END
5. INSTALL PRECAST REINFORCED CONCRETE BOX PER NDOT SPEC.# 502 AND 505 DETAILS CH-1, CH-2A, AND CH-2B. TRENCHING AND BACK FILL PER CCAUSD 503 SEE PLAN AND PROFILE SHEETS FOR RCB NOTES AND INFORMATION
6. CONSTRUCT ENERGY DISSIPATOR PER DETAIL C ON SHEET 31
7. CONSTRUCT PLANTMIX BITUMINOUS SURFACE OVER TYPE II AGGREGATE BASE PER TYPICAL SECTIONS ON SHEET 29
8. CONSTRUCT 4' CUT-OFF WALL PER DETAIL A SHEET 30 SEE PLAN FOR START AND END
9. CONSTRUCT 5' CUT-OFF WALL PER DETAIL B SHEET 30 SEE PLAN FOR START AND END
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11. CONSTRUCT RCB HEADWALL PER NDOT SPEC #502
12. CONSTRUCT DRAINAGE CHANNEL
13. CONSTRUCT 8' CUT-OFF WALL PER DETAIL F SHEET 30 SEE PLAN FOR START AND END
14. CONSTRUCT 3' FLOOD WALL SEE WALL PLAN FOR START AND END
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16. CONSTRUCT 6' FLOOD WALL SEE WALL PLAN FOR START AND END
17. INSTALL TYPE II SD MANHOLE RISER PER CCAUSD #405.2. INSTALL MANHOLE STEPS ON INSDIE OF RCB OFFSET FROM CONNECTION OPENING PER CCAUSD #405.2 AND #410. DISTANCE BETWEEN TOP OF MANHOLE AND FIRST STEP SHALL BE A MAXIMUM OF 16". DISTANCE BETWEEN SUBSEQUENT STEPS SHALL BE 12" MAXIMUM. MANHOLE STEPS TO HAVE A MINIMUM HORIZONTAL SEPARATION OF 18" FROM OC TO INNER DIAMETER OF STORM DRAIN LATERAL OPENINGS
18. INSTALL STEPS FOR CHANNEL ACCESS PER CCASD #410

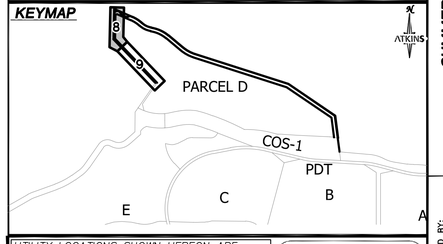
SEWER CONSTRUCTION NOTES

1. INSTALL STANDARD MANHOLE WITH WATERTIGHT JOINTS (PER DCSWCS SD-1, SD-3, SD-4, AND SD-5) WITH SINGLE 24" LID.
2. INSTALL SEWER MAIN PER DCSWCS SD-17
3. STUB AND CAP SEWER PIPE. PLACE 4"X4" POST, DOUGLAS FIR, OVER END OF PIPE AND INSTALL THRUST BLOCK (1 CUBIC FT. MINIMUM).
4. REMOVE EXISTING CAP AND CONNECT TO EXISTING SS LINE
5. INSTALL STEEL SLEEVE PER UDACS PLATES #22 AND #23

WATERLINE CONSTRUCTION NOTES

1. INSTALL DIP WATER LINE PER UDACS PLATES #17 AND PLATE#19
2. INSTALL GATE VALVE PER UDACS PLATE #39 AND SECTION 2.15
3. INSTALL CAP AND 2" MANUAL BLOWOFF ASSEMBLY PER UDACS PLATE #36
4. INSTALL 45° BEND PER UDACS SECTION 2.15
5. CONNECT TO EXISTING WATERLINE
6. INSTALL 11.25° BEND PER UDACS SECTION 2.15
7. INSTALL 22.5° BEND PER UDACS SECTION 2.15

KEYMAP



REVISIONS

REV.	DESCRIPTION	BY	DATE	APPROVAL

AtkinsRéalis
2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1.702.263.7275
Fax: +1.702.263.7200

SUMMERLIN

SUMMERLIN WEST VILLAGE 27
PARCEL D DRAINAGE INFRASTRUCTURE

GRADING PLAN AND PROFILE 637+00 TO 642+00

GRAPHIC SCALE
30 0 15 30 60
HORIZONTAL: 1"=30'
5 0 2.5 5 10
HORIZONTAL: 1"=5'

GRADING PLAN CERTIFICATION

JORDAN TORRELLA PE#26305 DATE

CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE AT THE CITY OF LAS VEGAS FOR THIS PROJECT.

DS#XXXX

BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

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PROFESSIONAL ENGINEER STATE OF NEVADA JORDAN MICHAEL TORRELLA EXP. 06-30-26 CIVIL No. 26305

DESIGNED BY:	A. OLIVARES
DRAWN BY:	C. HONEY
CHECKED BY:	J. TORRELLA
HORIZ.:	NONE
VERT.:	NONE
XXXXXXXX	
LXX-XXXXX	
DATE:	JUNE, 2025
DRAWING NO.	8/31

JOB NO. 100085220

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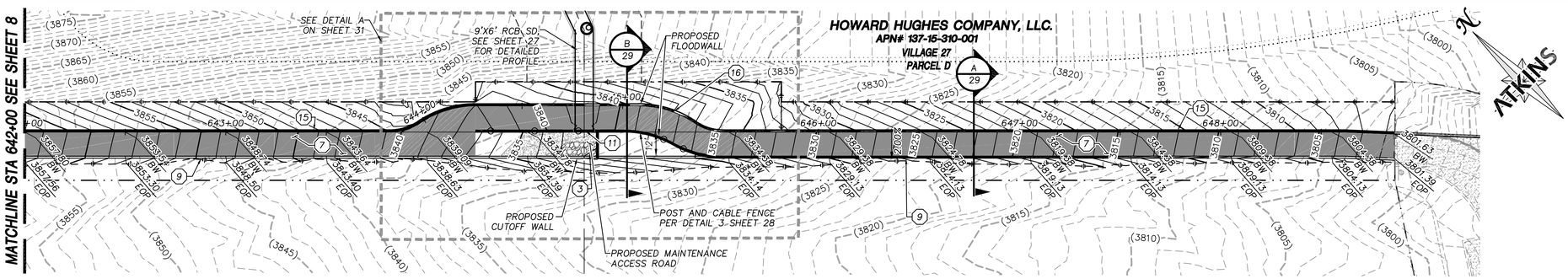

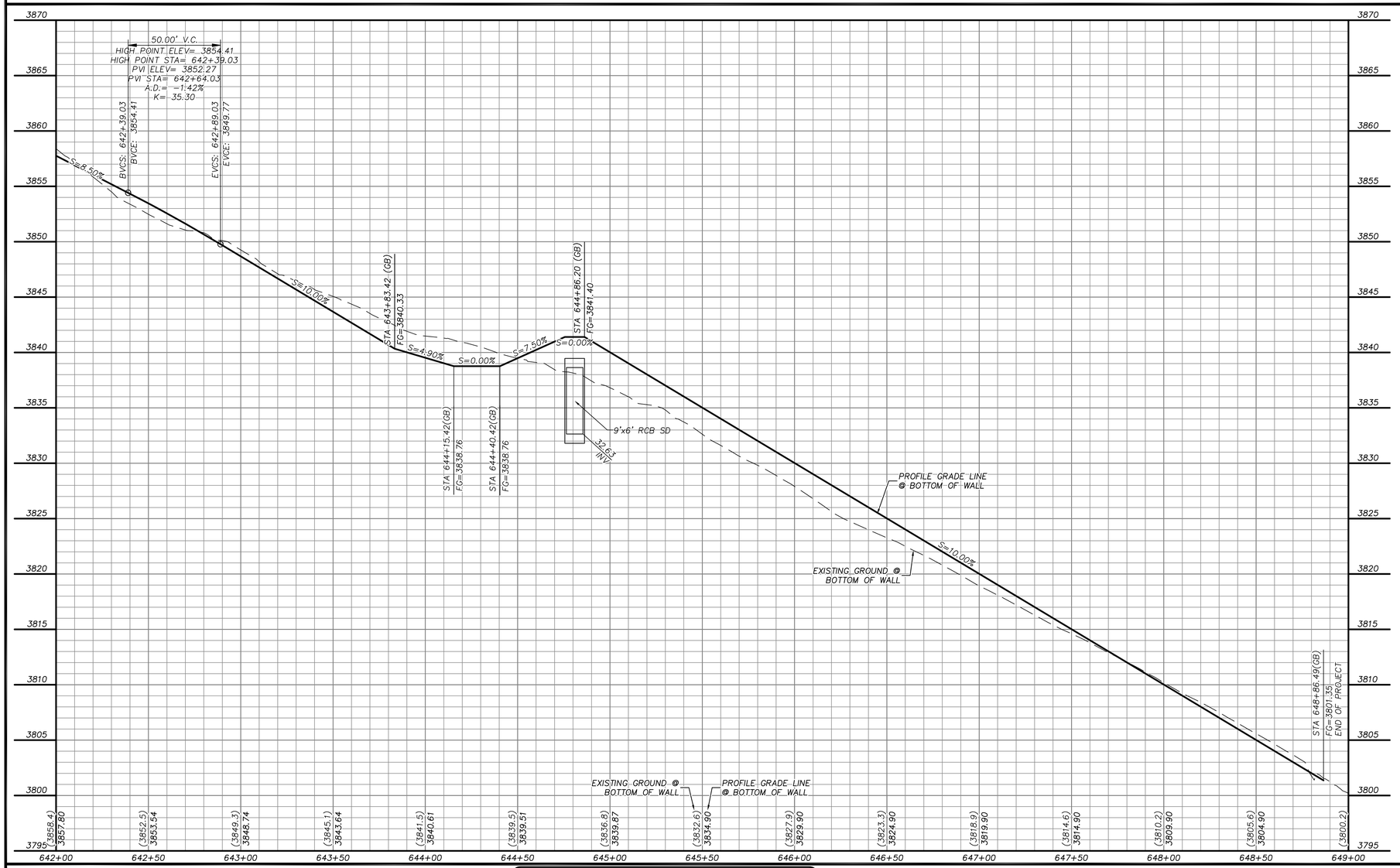

GRAPHIC SCALE

30 0 15 30 60

HORIZONTAL: 1"=30'

5 0 2.5 5 10

HORIZONTAL: 1"=5'

GRADING PLAN CERTIFICATION

JORDAN TORRELLA PE#26305 DATE

CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE AT THE CITY OF LAS VEGAS FOR THIS PROJECT.

DS#XXXX

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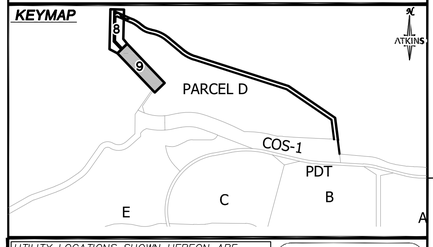
7. INSTALL 22.5° BEND PER UDACS SECTION 2.15

KEYMAP



REVISIONS				
REV.	DESCRIPTION	BY	DATE	APPROVAL

AtkinsRéalis
2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1.702.263.7275
Fax: +1.702.263.7200

SUMMERLIN

SUMMERLIN WEST VILLAGE 27
PARCEL D DRAINAGE INFRASTRUCTURE

GRADING PLAN AND PROFILE 637+00 TO 642+00

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PROFESSIONAL ENGINEER STATE OF NEVADA JORDAN MICHAEL TORRELLA EXP. 06-30-26 CIVIL No. 26305

DESIGNED BY:	A. OLIVARES
DRAWN BY:	C. HONEY
CHECKED BY:	J. TORRELLA
HORIZ.:	NONE
VERT.:	NONE
XXXXXXXX	
LXX-XXXXX	
DATE:	JUNE, 2025
DRAWING NO.	9/31
JOB NO.	100085220

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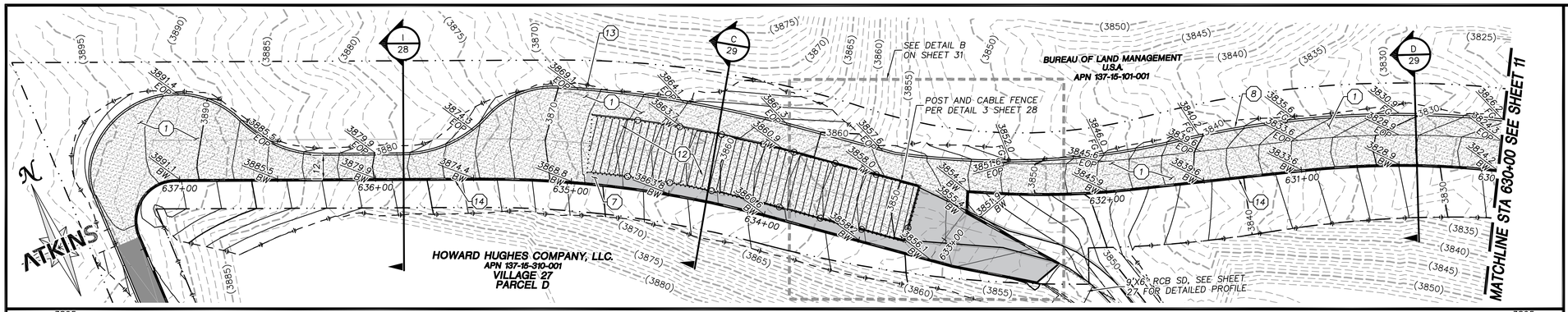

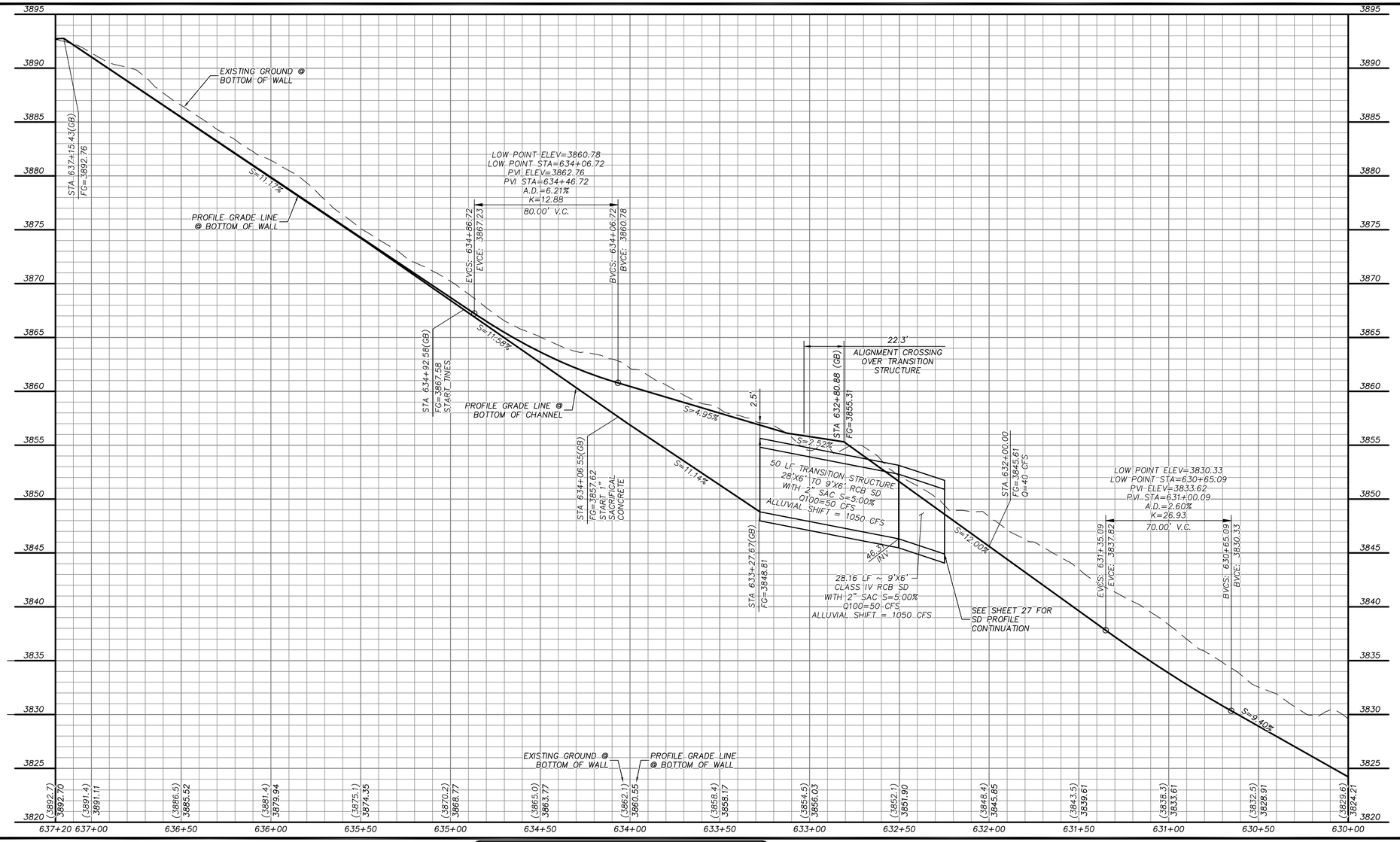

GRAPHIC SCALE

30 0 15 30 60

HORIZONTAL: 1"=30'

5 0 2.5 5 10

VERTICAL: 1"=5'

GRADING PLAN CERTIFICATION

JORDAN TORRELLA PE#26305 DATE

CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE AT THE CITY OF LAS VEGAS FOR THIS PROJECT.

DS#XXXX

BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK: D368
(REVISED 2008)
NAVD88 ELEVATION: 989.574 METERS
(3,246.63 FEET)
FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN.
T21S,R59E,S03

FAST Call before you UnderGround 1-702-432-5300 REGIONAL AND ARTERIAL SYSTEM OF TRANSPORTATION

Call before you Dig AVOID CUTTING UNDERGROUND UTILITY LINES. ITS COSTLY. Call 811 or 1-800-642-2444

AVOID HITTING OVERHEAD POWER LINES. ITS COSTLY. CALL BEFORE YOU DO OVERHEAD 1-702-227-2929

CONSTRUCTION NOTES

1. INSTALL 6" CONCRETE PAVEMENT F'c MIN=4,000 PSI
2. INSTALL WARNING SIGN, SEE DETAIL A SHEET 28
3. INSTALL GROUTED RIP-RAP (D50=24", THICKNESS=48")
4. CONSTRUCT 7' FLOOD WALL SEE WALL PLAN FOR START AND END
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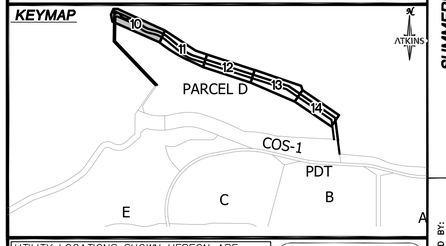

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NEVADA JORDAN M. TORRELLA EXP. 06-30-26 CIVIL No. 26305 PROFESSIONAL ENGINEER STATE OF

REVISIONS

REV.	DESCRIPTION	BY	DATE	APPROVAL

AtkinsRéalis
2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1.702.263.7275
Fax: +1.702.263.7200

SUMMERLIN

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PARCEL D DRAINAGE INFRASTRUCTURE

GRADING PLAN AND PROFILE 637+00 TO 630+00

DESIGNED BY:	A. OLIVARES
DRAWN BY:	C. HONEY
CHECKED BY:	J. TORRELLA
HORIZ.:	NONE
VERT.:	NONE
XXXXXXXX	
LXX-XXXXX	
DATE:	JUNE, 2025
DRAWING NO.	10/31
JOB NO.	100085220

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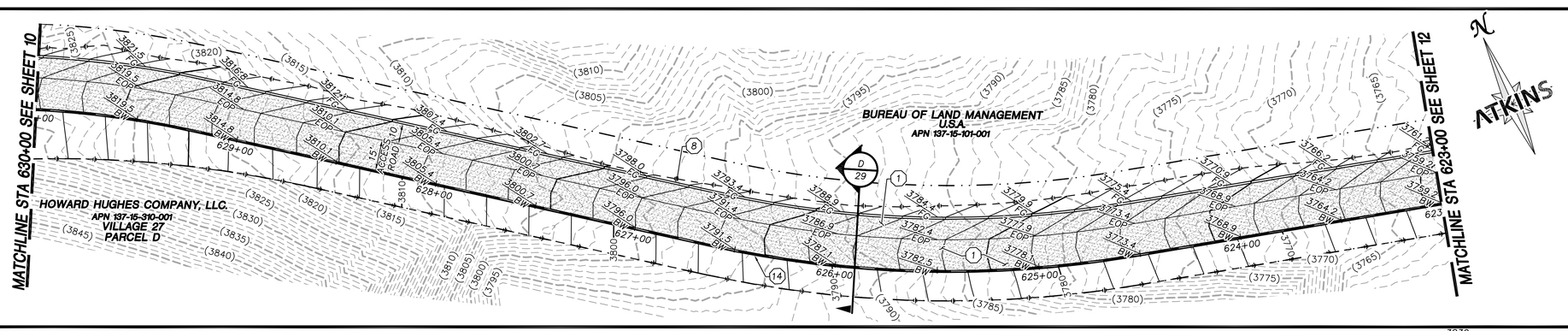

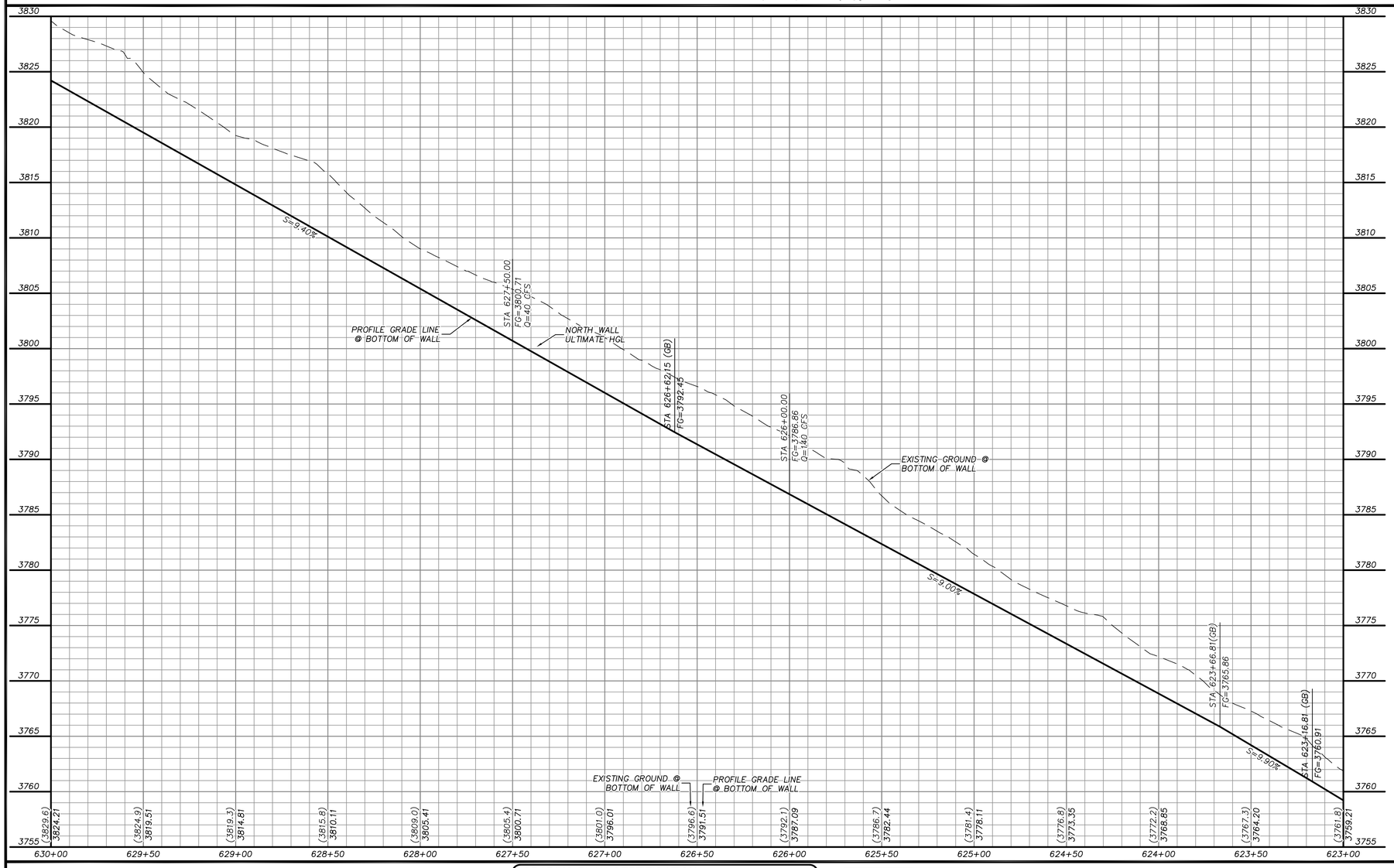

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JORDAN TORRELLA PE#26305 DATE

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DS#XXXX

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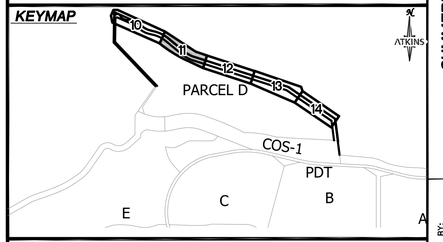
KEYMAP



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PROFESSIONAL ENGINEER STATE OF NEVADA JORDAN M. TORRELLA EXP. 06-30-26 CIVIL No. 26305

REV.	DESCRIPTION	BY	DATE	APPROVAL

REVISIONS

AtkinsRéalis
2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1.702.263.7275
Fax: +1.702.263.7200

SUMMERLIN

SUMMERLIN WEST VILLAGE 27
PARCEL D DRAINAGE INFRASTRUCTURE

GRADING PLAN AND PROFILE 637+00 TO 630+00

DESIGNED BY: A. OLIVARES
DRAWN BY: C. HONEY
CHECKED BY: J. TORRELLA
HORIZ.: NONE
VERT.: NONE

XXXXXXXX
LXX-XXXXX

DATE: JUNE, 2025

DRAWING NO. 10/31

JOB NO. 100085220

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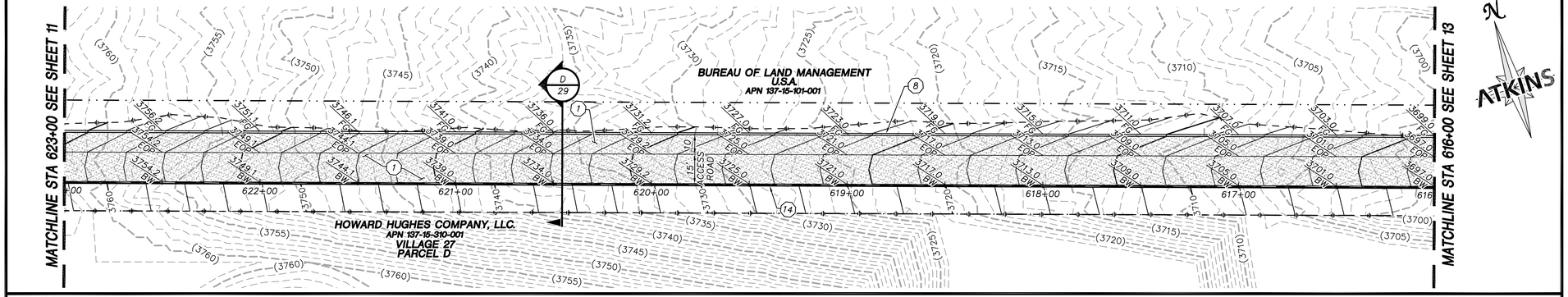

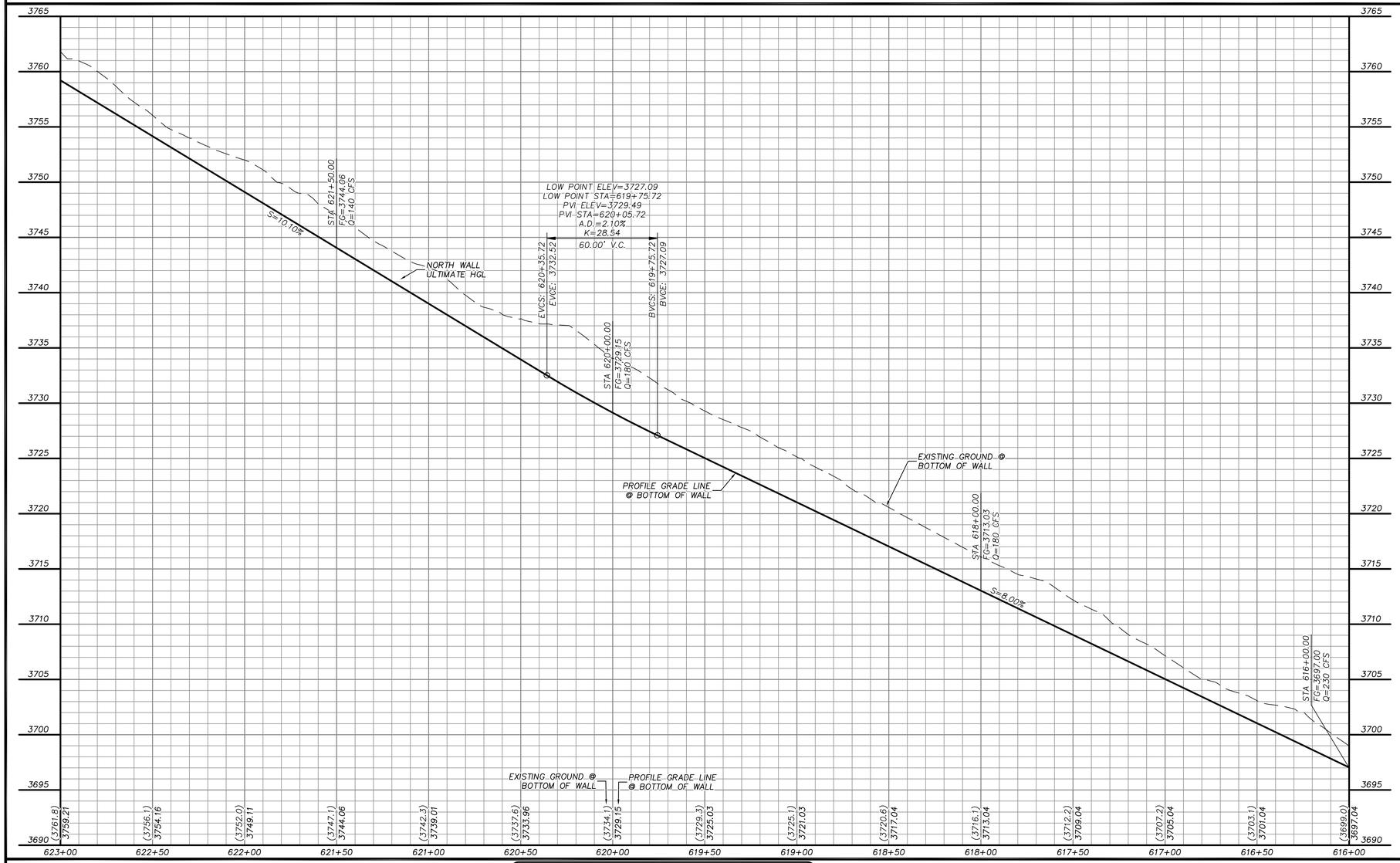

GRAPHIC SCALE

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GRADING PLAN CERTIFICATION

JORDAN TORRELLA PE#26305 DATE

CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE AT THE CITY OF LAS VEGAS FOR THIS PROJECT.

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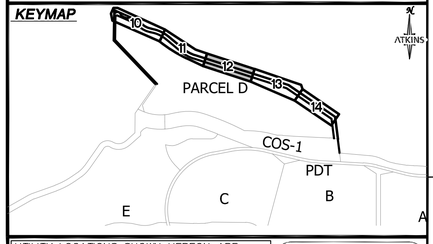

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PROFESSIONAL ENGINEER STATE OF NEVADA JORDAN M. TORRELLA CIVIL No. 26305 EXP. 06-30-26

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVAL

AtkinsRéalis
2270 Corporate Circle Suite 200
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Telephone: +1.702.263.7275
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PARCEL D DRAINAGE INFRASTRUCTURE

GRADING PLAN AND PROFILE 630+00 TO 623+00

DESIGNED BY:	A. OLIVARES
DRAWN BY:	C. HONEY
CHECKED BY:	J. TORRELLA
HORIZ.:	NONE
VERT.:	NONE
XXXXXXXX LXX-XXXXX	
DATE:	JUNE, 2025
DRAWING NO.	11/31
JOB NO.	100085220

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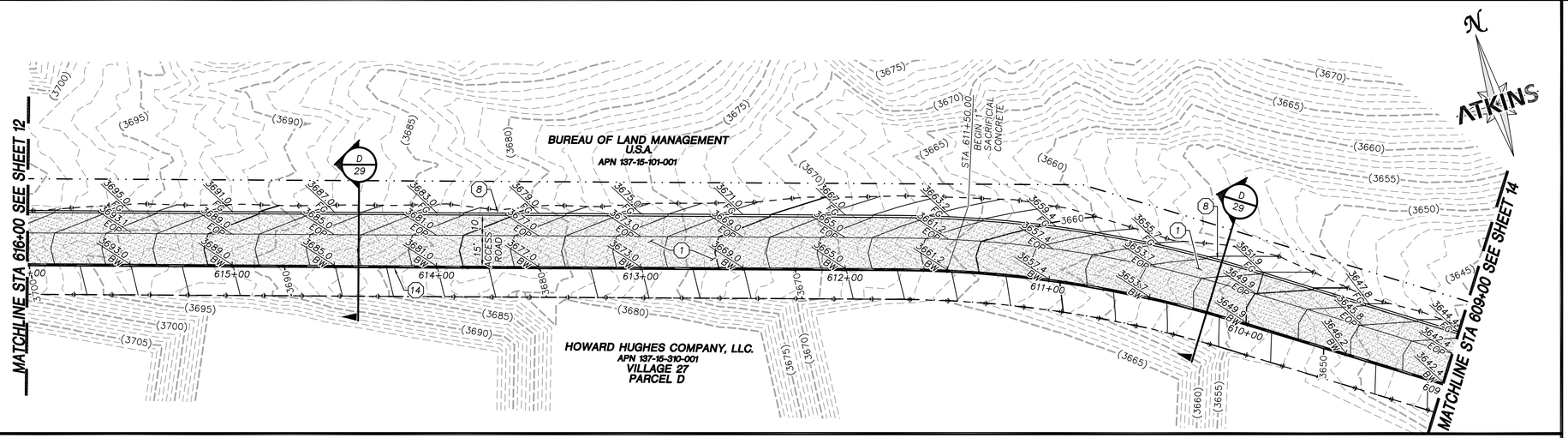

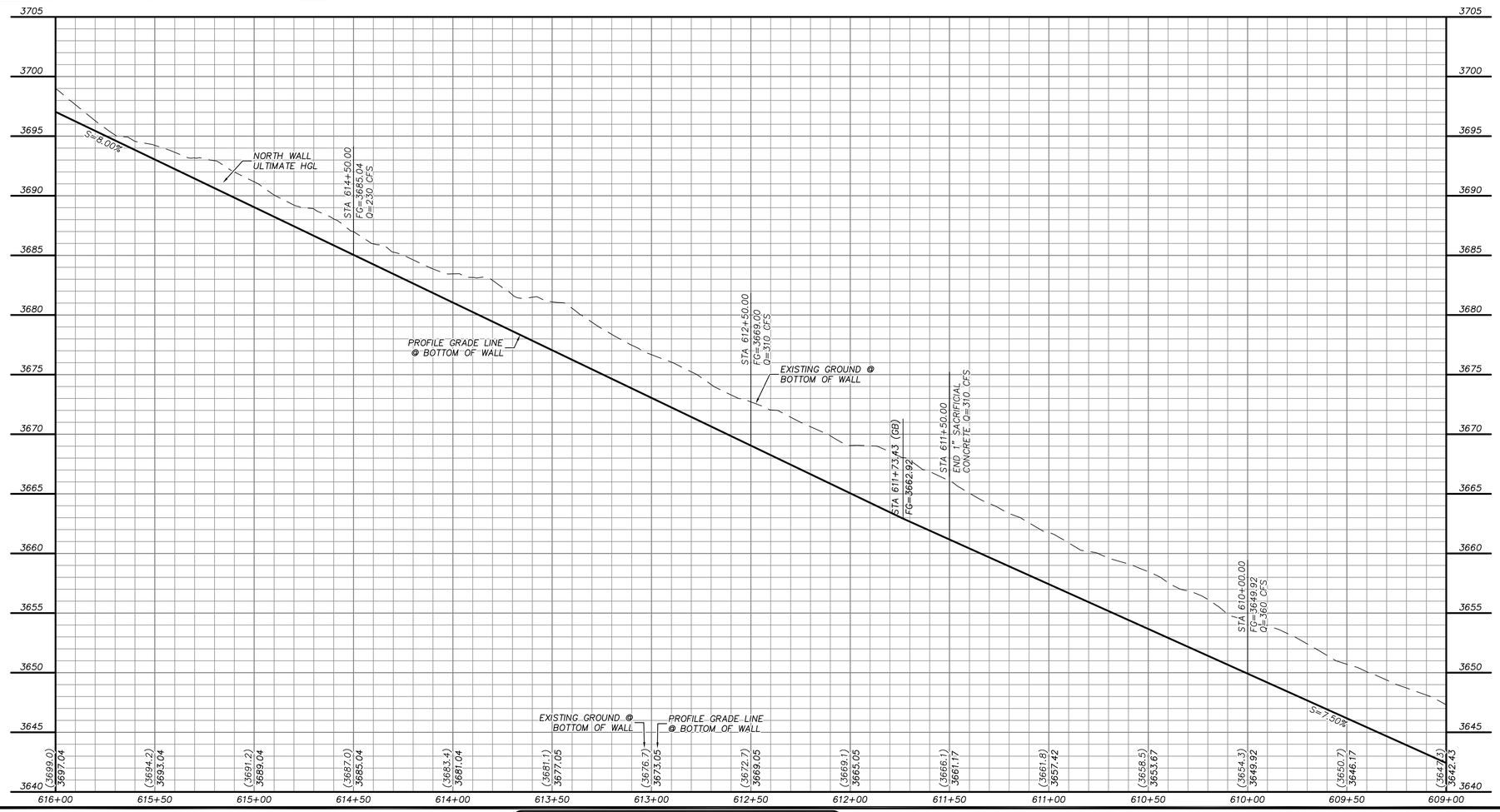

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3. INSTALL GROUTED RIP-RAP (D50=24", THICKNESS=48")
4. CONSTRUCT 7' FLOOD WALL SEE WALL PLAN FOR START AND END
5. INSTALL PRECAST REINFORCED CONCRETE BOX PER NDOT SPEC.# 502 AND 505 DETAILS CH-1, CH-2A, AND CH-2B. TRENCHING AND BACK FILL PER CCAUSD 503 SEE PLAN AND PROFILE SHEETS FOR RCB NOTES AND INFORMATION
6. CONSTRUCT ENERGY DISSIPATOR PER DETAIL C ON SHEET 31
7. CONSTRUCT PLANTMIX BITUMINOUS SURFACE OVER TYPE II AGGREGATE BASE PER TYPICAL SECTIONS ON SHEET 29
8. CONSTRUCT 4' CUT-OFF WALL PER DETAIL A SHEET 30 SEE PLAN FOR START AND END
9. CONSTRUCT 5' CUT-OFF WALL PER DETAIL B SHEET 30 SEE PLAN FOR START AND END
10. CONSTRUCT 6' CUT-OFF WALL PER DETAIL C SHEET 30 SEE PLAN FOR START AND END
11. CONSTRUCT RCB HEADWALL PER NDOT SPEC #502
12. CONSTRUCT DRAINAGE CHANNEL
13. CONSTRUCT 8' CUT-OFF WALL PER DETAIL F SHEET 30 SEE PLAN FOR START AND END
14. CONSTRUCT 3' FLOOD WALL SEE WALL PLAN FOR START AND END
15. CONSTRUCT 4' FLOOD WALL SEE WALL PLAN FOR START AND END
16. CONSTRUCT 6' FLOOD WALL SEE WALL PLAN FOR START AND END
17. INSTALL TYPE II SD MANHOLE RISER PER CCAUSD #405.2. INSTALL MANHOLE STEPS ON INSDIE OF RCB OFFSET FROM CONNECTION OPENING PER CCAUSD #405.2 AND #410. DISTANCE BETWEEN TOP OF MANHOLE AND FIRST STEP SHALL BE A MAXIMUM OF 16". DISTANCE BETWEEN SUBSEQUENT STEPS SHALL BE 12" MAXIMUM. MANHOLE STEPS TO HAVE A MINIMUM HORIZONTAL SEPARATION OF 18" FROM OC TO INNER DIAMETER OF STORM DRAIN LATERAL OPENINGS
18. INSTALL STEPS FOR CHANNEL ACCESS PER CCASD #410

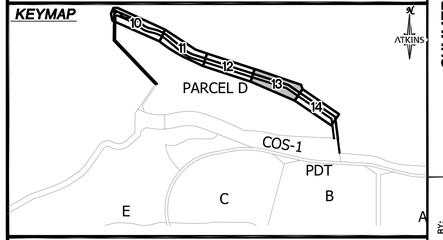
SEWER CONSTRUCTION NOTES

1. INSTALL STANDARD MANHOLE WITH WATERTIGHT JOINTS (PER DCSWCS SD-1, SD-3, SD-4, AND SD-5) WITH SINGLE 24" LID.
2. INSTALL SEWER MAIN PER DCSWCS SD-17
3. STUB AND CAP SEWER PIPE. PLACE 4"X4" POST, DOUGLAS FIR, OVER END OF PIPE AND INSTALL THRUST BLOCK (1 CUBIC FT. MINIMUM).
4. REMOVE EXISTING CAP AND CONNECT TO EXISTING SS LINE
5. INSTALL STEEL SLEEVE PER UDACS PLATES #22 AND #23

WATERLINE CONSTRUCTION NOTES

1. INSTALL DIP WATER LINE PER UDACS PLATES #17 AND PLATE#19
2. INSTALL GATE VALVE PER UDACS PLATE #39 AND SECTION 2.15
3. INSTALL CAP AND 2" MANUAL BLOWOFF ASSEMBLY PER UDACS PLATE #36
4. INSTALL 45° BEND PER UDACS SECTION 2.15
5. CONNECT TO EXISTING WATERLINE
6. INSTALL 11.25° BEND PER UDACS SECTION 2.15
7. INSTALL 22.5° BEND PER UDACS SECTION 2.15

KEYMAP



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PROFESSIONAL ENGINEER STATE OF NEVADA JORDAN M. TORRELLA Exp. 06-30-26 CIVIL No. 26305

REV.	DESCRIPTION	BY	DATE	APPROVAL

REVISIONS

AtkinsRéalis
2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1.702.263.7275
Fax: +1.702.263.7200

SUMMERLIN

SUMMERLIN WEST VILLAGE 27
PARCEL D DRAINAGE INFRASTRUCTURE

GRADING PLAN AND PROFILE 623+00 TO 616+00

DESIGNED BY:	A. OLIVARES
DRAWN BY:	C. HONEY
CHECKED BY:	J. TORRELLA
HORIZ.:	NONE
VERT.:	NONE
XXXXXXXX LXX-XXXXX	
DATE:	JUNE, 2025
DRAWING NO.	12/31
JOB NO.	100085220

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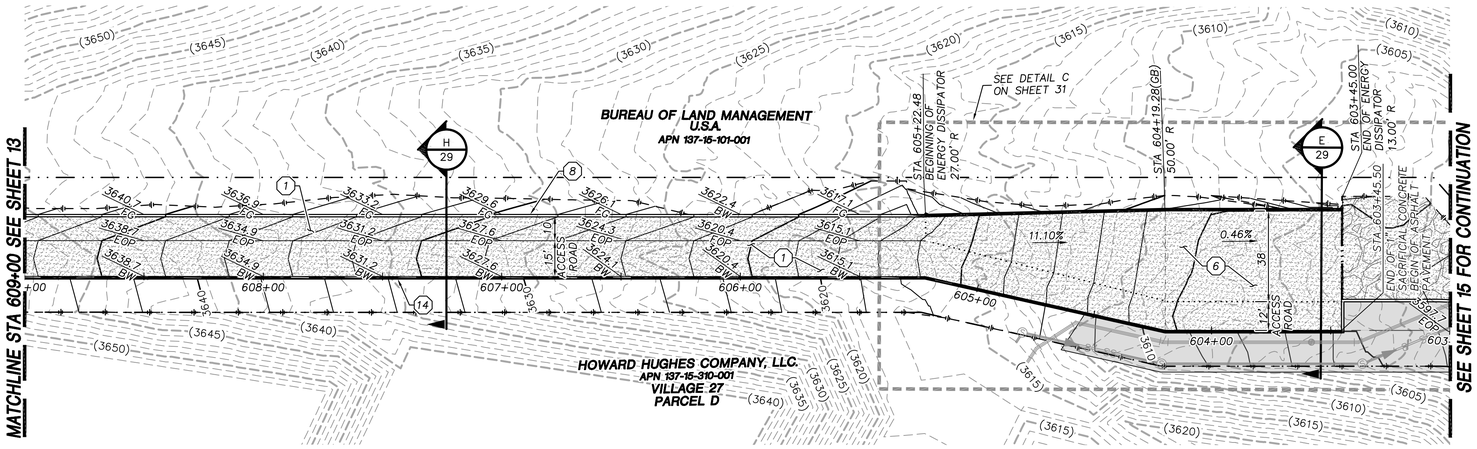
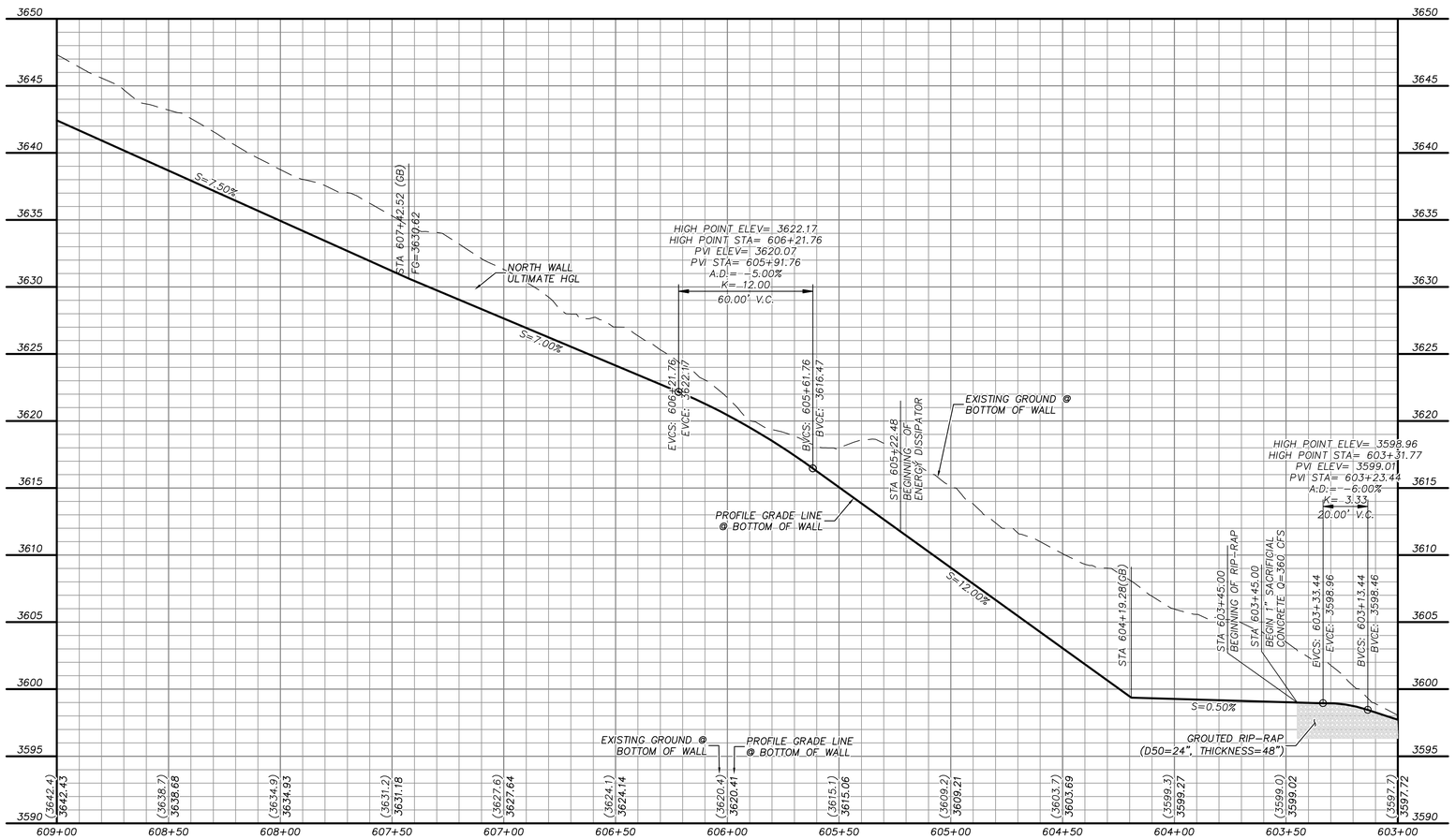

MATCHLINE STA 609+00 SEE SHEET 13
SEE SHEET 15 FOR CONTINUATION
BUREAU OF LAND MANAGEMENT
U.S.A.
APN 137-15-101-001
HOWARD HUGHES COMPANY, LLC.
APN 137-15-310-001
VILLAGE 27
PARCEL D
SEE DETAIL C ON SHEET 31
STA 605+22.48 BEGINNING OF ENERGY DISSIPATOR 27.00' R
STA 604+19.28(GB) 50.00' R
STA 603+45.00 END OF ENERGY DISSIPATOR 13.00' R
STA 603+45.50 END OF 1" SACRIFICIAL CONCRETE BEGIN TOP ASPHALT PAVEMENT
11.10%
0.46%
15' ACCESS ROAD
12' ACCESS ROAD
608+00
607+00
606+00
605+00
604+00
603+00


S=7.50%
S=7.00%
S=12.00%
S=0.50%
NORTH WALL ULTIMATE HGL
STA 607+42.52 (GB) FG=3630.62
HIGH POINT ELEV= 3622.17
HIGH POINT STA= 606+21.76
PVI ELEV= 3620.07
PVI STA= 605+91.76
A.D.= -5.00%
K= -12.00
60.00' V.C.
EVCS: 606+21.76
EVCE: 3622.17
BVCS: 605+61.76
BVCE: 3616.47
STA 605+22.48 BEGINNING OF ENERGY DISSIPATOR
EXISTING GROUND @ BOTTOM OF WALL
PROFILE GRADE LINE @ BOTTOM OF WALL
STA 604+19.28(GB)
HIGH POINT ELEV= 3598.96
HIGH POINT STA= 603+31.77
PVI ELEV= 3599.01
PVI STA= 603+23.44
A.D.= -6.00%
K= 3.33
20.00' V.C.
STA 603+45.00 BEGINNING OF RIP-RAP
STA 603+45.00 BEGIN 1" SACRIFICIAL CONCRETE, Q=360 CFS
EVCS: 603+33.44
EVCE: 3598.96
BVCS: 603+13.44
BVCE: 3598.46
GROUTED RIP-RAP (D50=24", THICKNESS=48")
3650
3645
3640
3635
3630
3625
3620
3615
3610
3605
3600
3595
3590
609+00
608+50
608+00
607+50
607+00
606+50
606+00
605+50
605+00
604+50
604+00
603+50
603+00

CONSTRUCTION NOTES

1. INSTALL 6" CONCRETE PAVEMENT F'c MIN=4,000 PSI
2. INSTALL WARNING SIGN, SEE DETAIL A SHEET 28
3. INSTALL GROUTED RIP-RAP (D50=24", THICKNESS=48")
4. CONSTRUCT 7' FLOOD WALL SEE WALL PLAN FOR START AND END
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18. INSTALL STEPS FOR CHANNEL ACCESS PER CCASD #410

SEWER CONSTRUCTION NOTES

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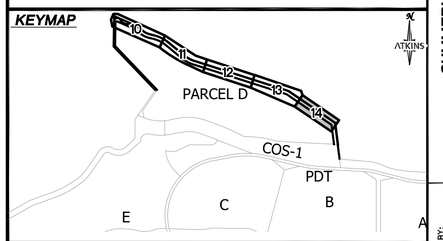
6. INSTALL 11.25° BEND PER UDACS SECTION 2.15
7. INSTALL 22.5° BEND PER UDACS SECTION 2.15

KEYMAP



GRAPHIC SCALE

30 0 15 30 60

HORIZONTAL: 1"=30'

5 0 2.5 5 10

VERTICAL: 1"=5'

GRADING PLAN CERTIFICATION

JORDAN TORRELLA PE#26305 DATE

CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE AT THE CITY OF LAS VEGAS FOR THIS PROJECT.

DS#XXXX

BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK: D368
(REVISED 2008)
NAVD88 ELEVATION: 989.574 METERS
(3,246.63 FEET)
FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN.
1215,859E,503

FAST Call before you UnderGround 1-702-432-5300 REGIONAL AND ARTERIAL SYSTEMS OF TRANSPORTATION

Call before you Dig AVOID CUTTING, BREAKING OR DISCONNECTING UTILITY LINES. IT'S COSTLY. Call 811 or 1-800-642-2444

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY. CALL BEFORE YOU DO OVERHEAD 1-702-227-2929

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NEVADA PROFESSIONAL ENGINEER JORDAN M. TORRELLA EXP. 06-30-26 CIVIL No. 26305

REV.	DESCRIPTION	BY	DATE	APPROVAL
	REVISIONS			

AtkinsRéalis
2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1.702.263.7275
Fax: +1.702.263.7200

SUMMERLIN

SUMMERLIN WEST VILLAGE 27
PARCEL D DRAINAGE INFRASTRUCTURE

GRADING PLAN AND PROFILE 609+00 TO 603+00

DESIGNED BY:	A. GUTIERES
DRAWN BY:	C. HONEY
CHECKED BY:	J. TORRELLA
HORIZ.:	NONE
VERT.:	NONE
XXXXXXXX	
LXX-XXXXX	
DATE:	JUNE, 2025
DRAWING NO.	14/31
JOB NO.	100085220

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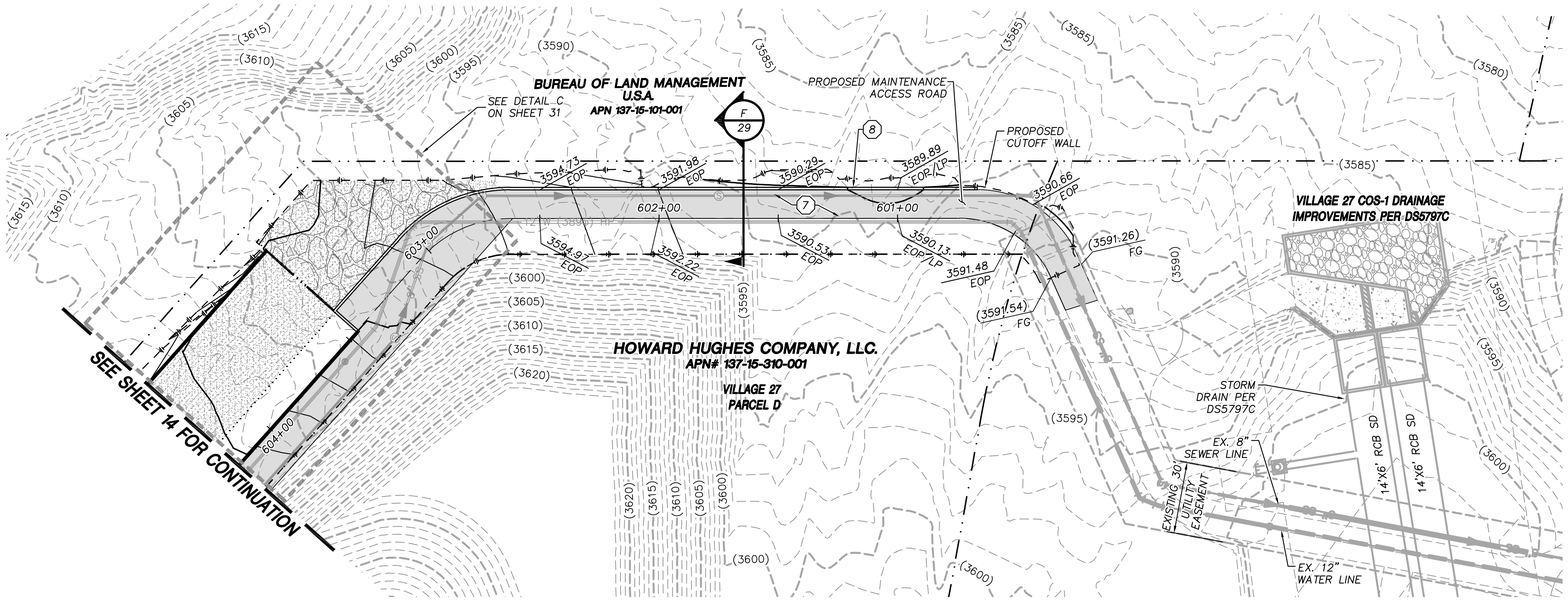

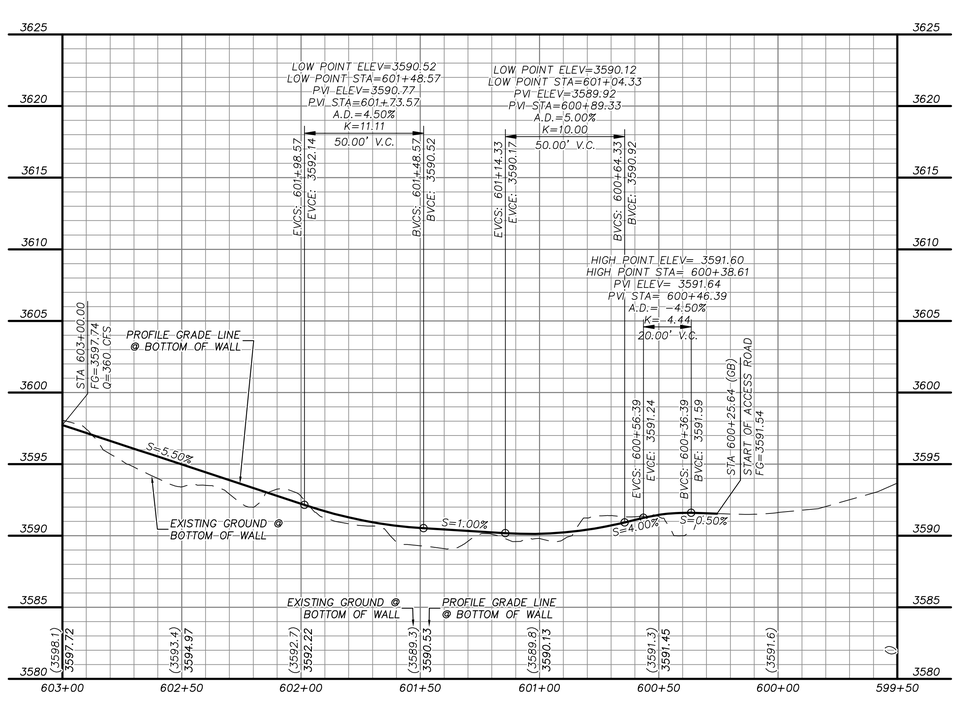

CONSTRUCTION NOTES

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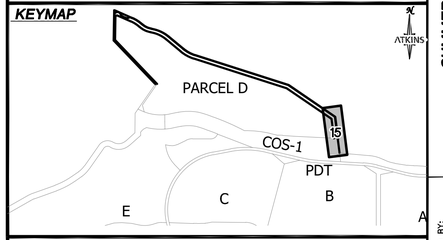
KEYMAP



GRAPHIC SCALE

30 0 15 30 60

HORIZONTAL: 1"=30'

5 0 2.5 5 10

VERTICAL: 1"=5'

GRADING PLAN CERTIFICATION

JORDAN TORRELLA PE#26305 DATE

CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE AT THE CITY OF LAS VEGAS FOR THIS PROJECT.

DS#XXXX

BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK: D368
(REVISED 2008)
NAVD88 ELEVATION: 989.574 METERS
(3,246.63 FEET)
FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN.
T21S,R59E,S03

FAST Call before you UnderGround 1-702-432-5300 FLEXIBLY AND ARTERIAL SYSTEM OF TRANSPORTATION

Call before you Dig AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COURTLY. Call 811 OR 1-800-642-2444

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PROFESSIONAL ENGINEER STATE OF NEVADA JORDAN M. TORRELLA EXP. 06-30-26 CIVIL No. 26305

REVISIONS				
REV.	DESCRIPTION	BY	DATE	APPROVAL

AtkinsRéalis
2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1.702.263.7275
Fax: +1.702.263.7200

SUMMERLIN

SUMMERLIN WEST VILLAGE 27
PARCEL D DRAINAGE INFRASTRUCTURE

GRADING PLAN AND PROFILE 603+00 TO 600+00

DESIGNED BY: A. OLIVARES
DRAWN BY: C. HONEY
CHECKED BY: J. TORRELLA
HORIZ.: NONE
VERT.: NONE

XXXXXXXX
LXX-XXXXX

DATE: JUNE, 2025

DRAWING NO. 15/31

JOB NO. 100085220

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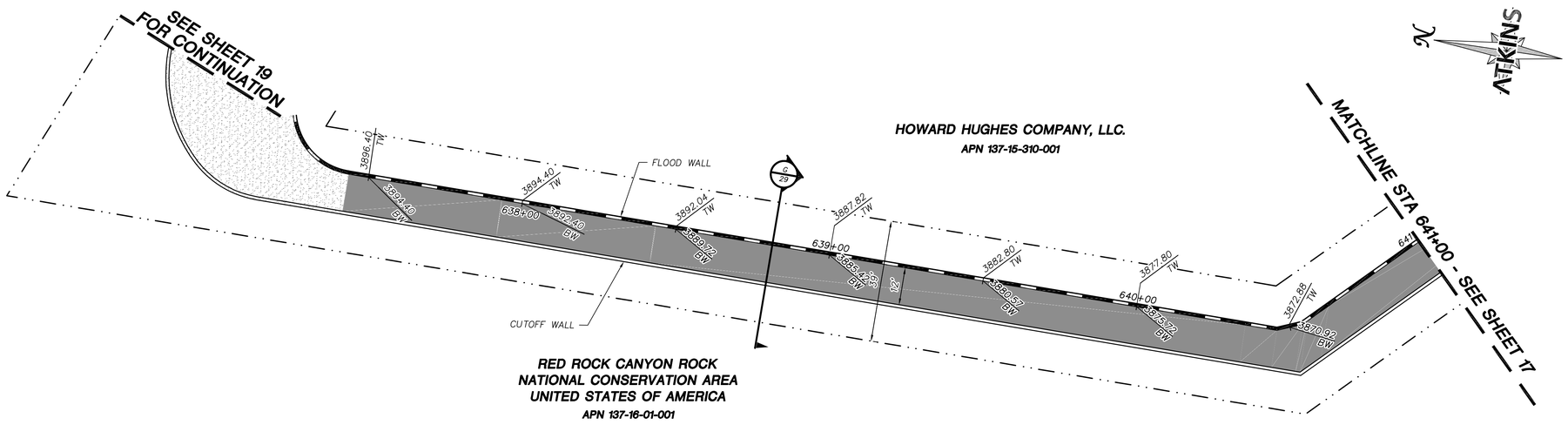

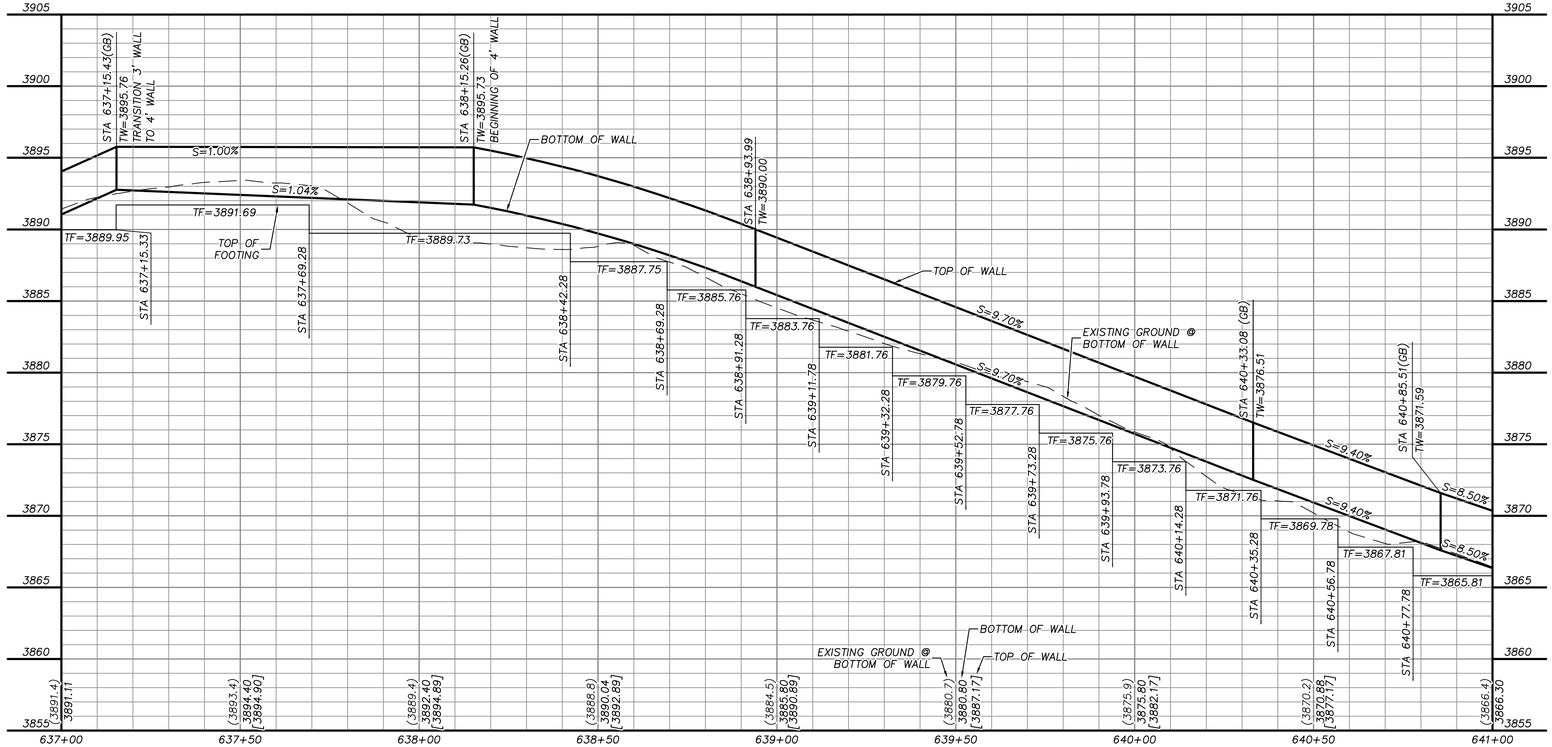

GRAPHIC SCALE

20 0 10 20 40

HORIZONTAL: 1"=20'

5 0 2.5 5 10

VERTICAL: 1"=5'

GRADING PLAN CERTIFICATION

JORDAN TORRELLA PE#26305 DATE

CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE AT THE CITY OF LAS VEGAS FOR THIS PROJECT.

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CITY OF LAS VEGAS BENCHMARK: D368
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1215,859E,503

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AVOID HITTING OVERHEAD POWER LINES, IT'S COSTLY. CALL BEFORE YOU DO OVERHEAD 1-702-227-2929

REVISIONS

REV.	DESCRIPTION	BY	DATE	APPROVAL

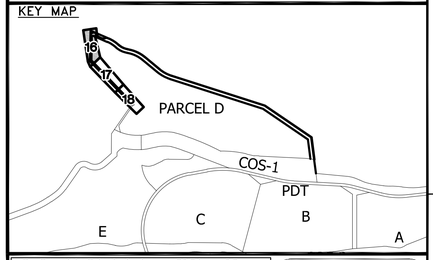
AtkinsRéalis
2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1.702.263.7275
Fax: +1.702.263.7200

SUMMERLIN

SUMMERLIN WEST VILLAGE 27
PARCEL D DRAINAGE INFRASTRUCTURE

WALL PLAN & PROFILE WEST 637+00 TO 641+00

KEY MAP



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PROFESSIONAL ENGINEER JORDAN M. TORRELLA EXP. 06-30-26 CIVIL No. 26305 STATE OF NEVADA

XXXXXXXX. LXX-XXXXX	DESIGNED BY: A. OLIVARES	DRAWN BY: C. HONEY	CHECKED BY: J. TORRELLA
DATE: JUNE, 2025	DRAWING NO. 16 / 31	HORIZ.:NONE	VERT.: NONE

JOB NO. 100085220

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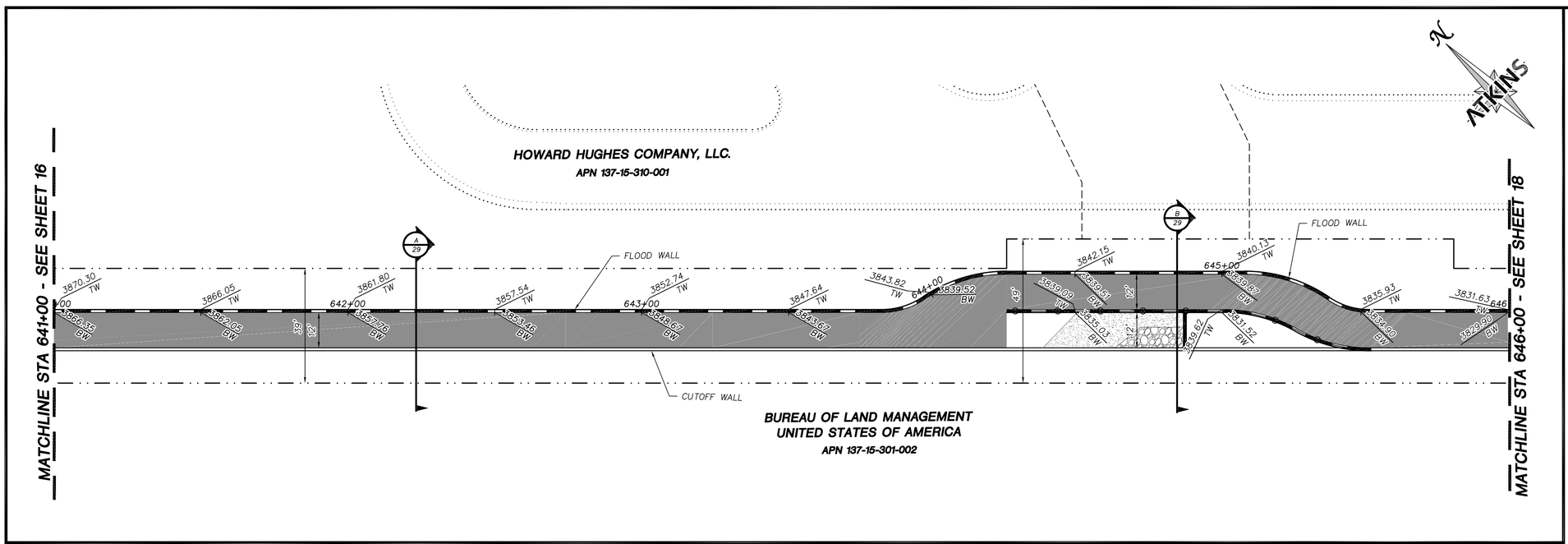
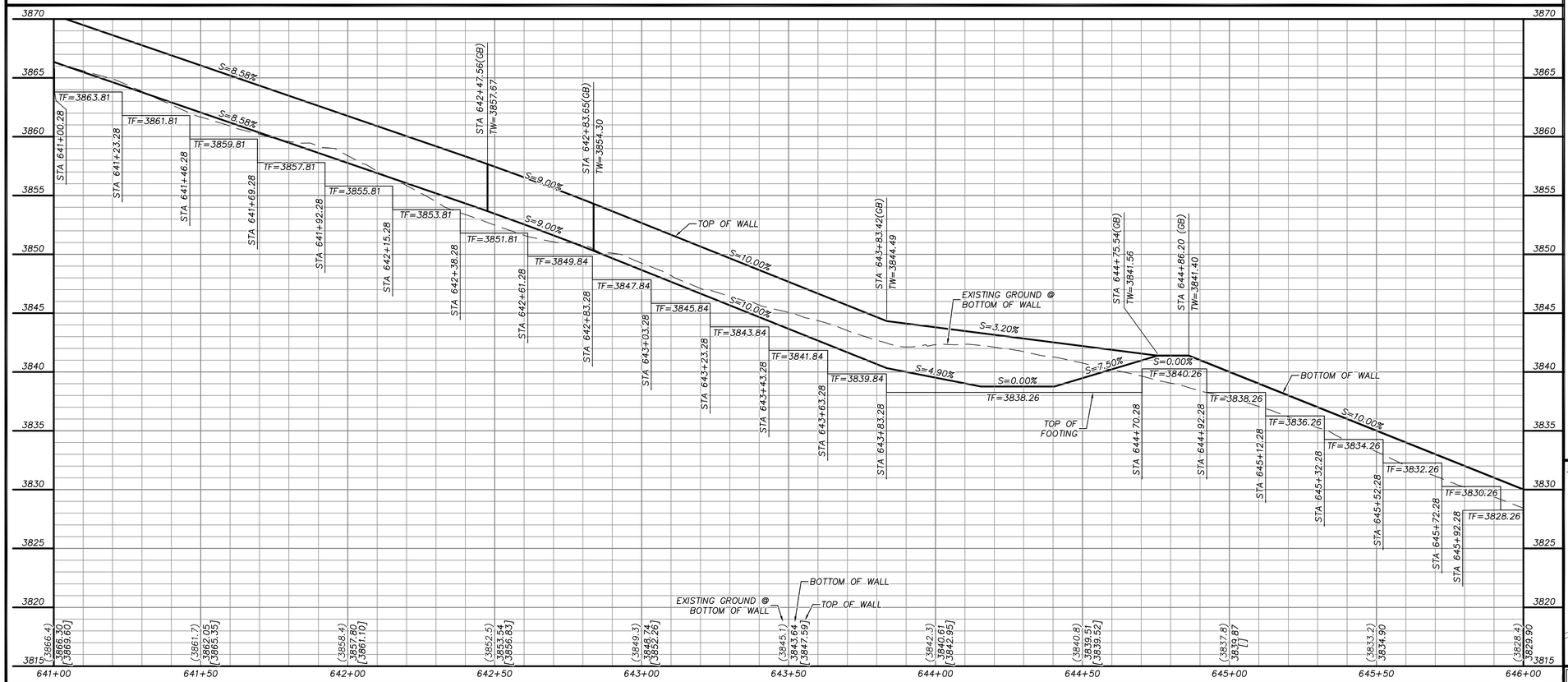




GRAPHIC SCALE

20 0 10 20 40

HORIZONTAL: 1"=20'

5 0 2.5 5 10

VERTICAL: 1"=5'

GRADING PLAN CERTIFICATION

JORDAN TORRELLA PE#26305 DATE

CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE AT THE CITY OF LAS VEGAS FOR THIS PROJECT.

DS#XXXX

BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK: D368
(REVISED 2008)
NAVD88 ELEVATION: 989.574 METERS
(3,246.63 FEET)
FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN.
T21S,R59E,S03

FAST Call before you UnderGround 1-702-432-5300 FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

Call before you Dig AND OUTSIDE NEVADA DIAL 811 UTILITY LINES. IT'S COSTLY. Call 811 OR 1-800-642-2444

AVOID VICTIMS OVERHEAD POWER LINES. IT'S COSTLY. CALL BEFORE YOU DO OVERHEAD 1-702-227-2929

REVISIONS

REV.	DESCRIPTION	BY	DATE	APPROVAL

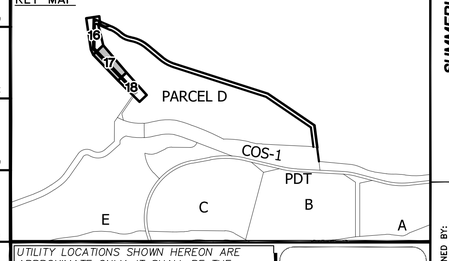
AtkinsRéalis
2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1.702.263.7275
Fax: +1.702.263.7200

SUMMERLIN

SUMMERLIN WEST VILLAGE 27
PARCEL D DRAINAGE INFRASTRUCTURE

WALL PLAN & PROFILE WEST 641+00 TO 646+00

KEY MAP



UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EXACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

PROFESSIONAL ENGINEER STATE OF NEVADA JORDAN M. TORRELLA EXP. 06-30-26 CIVIL No. 26305

DESIGNED BY: A. OLIVARES
DRAWN BY: C. HONEY
CHECKED BY: J. TORRELLA
HORIZ.:NONE
VERT.: NONE

XXXXXXXX
LXX-XXXXX

DATE: JUNE, 2025

DRAWING NO. 17/31

JOB NO. 100085220

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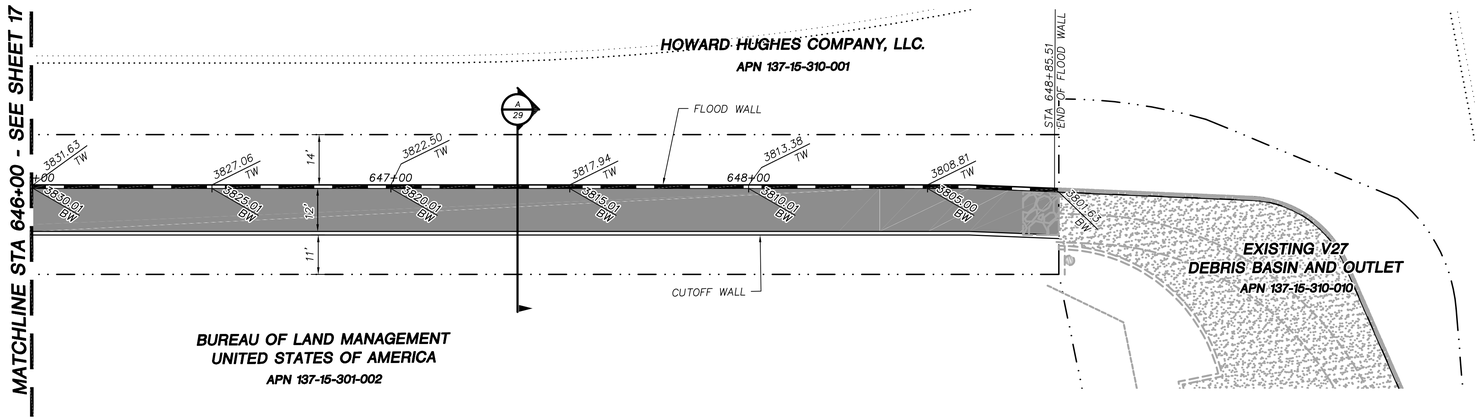
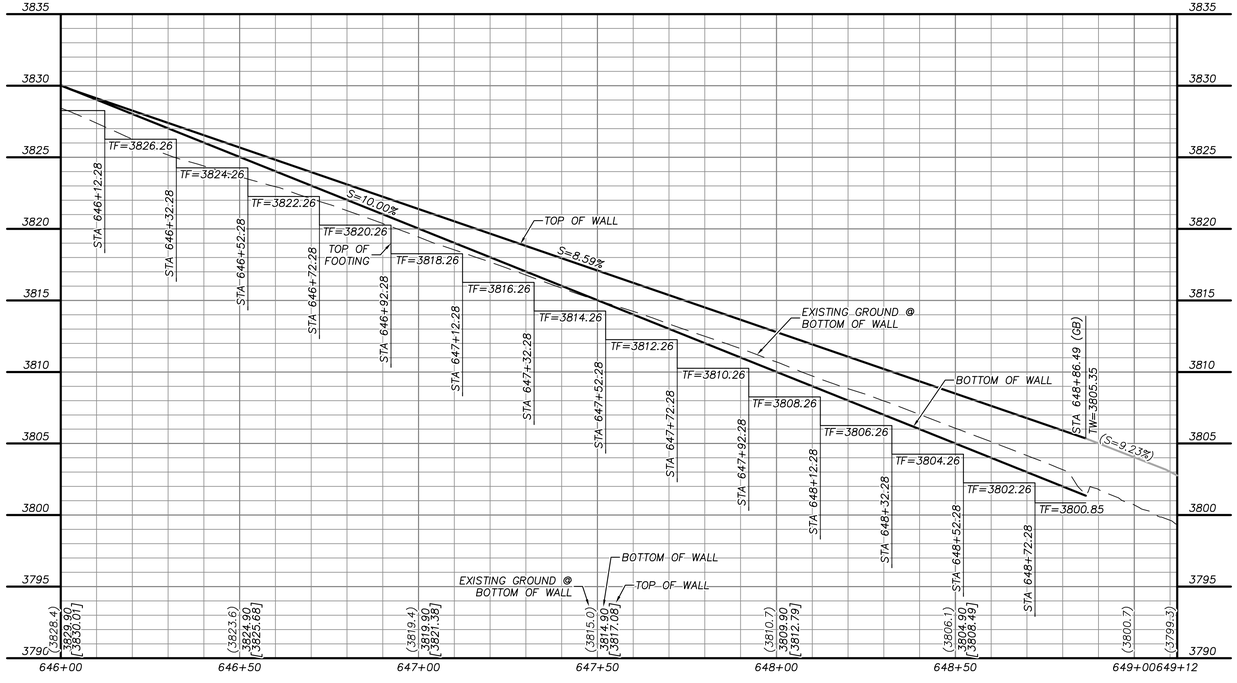




GRAPHIC SCALE

20 0 10 20 40

HORIZONTAL: 1"=20'

5 0 2.5 5 10

VERTICAL: 1"=5'

GRADING PLAN CERTIFICATION

JORDAN TORRELLA PE#26305 DATE

CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE AT THE CITY OF LAS VEGAS FOR THIS PROJECT.

DS#XXXX

BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK: D368 (REVISED 2008)
NAVD88 ELEVATION: 989.574 METERS (3,246.63 FEET)
FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN.
T21S,R59E,S03

FAST Call before you UnderGround 1-702-432-5300 FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

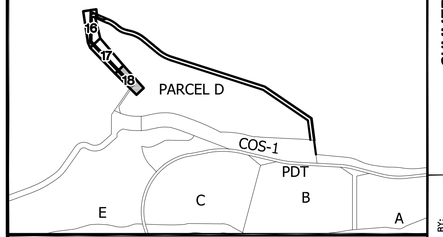
Call before you Dig AVOID CUTTING UNDERGROUND UTILITY LINES, IT'S COSTLY. Call 811 OR 1-800-642-2444

AVOID HITTING OVERHEAD POWER LINES, IT'S COSTLY. CALL BEFORE YOU DO OVERHEAD 1-702-227-2929

REVISIONS			
REV.	DESCRIPTION	BY	DATE	APPROVAL

AtkinsRéalis
2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1.702.263.7275
Fax: +1.702.263.7200

KEY MAP



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STATE OF NEVADA — PROFESSIONAL ENGINEER — JORDAN M. TORRELLA — EXP. 06-30-26 — CIVIL — No. 26305

SUMMERLIN

SUMMERLIN WEST VILLAGE 27
PARCEL D DRAINAGE INFRASTRUCTURE

WALL PLAN & PROFILE WEST 646+00 TO 648+86

DESIGNED BY:	L. OLIVARES
DRAWN BY:	C. HONEY
CHECKED BY:	J. TORRELLA
HORIZ.:	NONE
VERT.:	NONE
XXXXXXXX LXX-YXXXX	
DATE:	JUNE, 2025
DRAWING NO.	18 /31
JOB NO.	100085220

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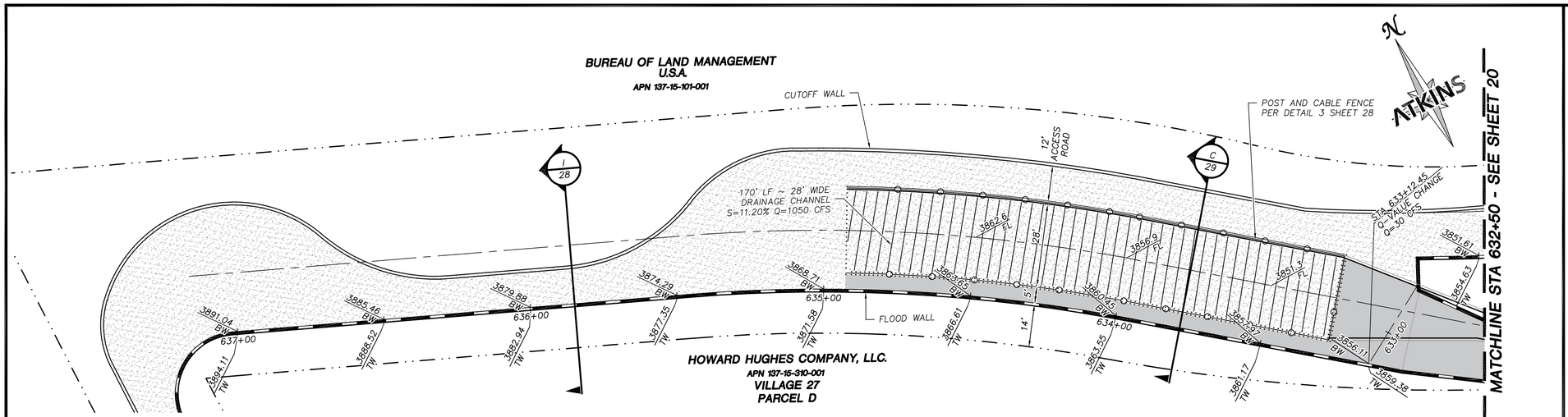
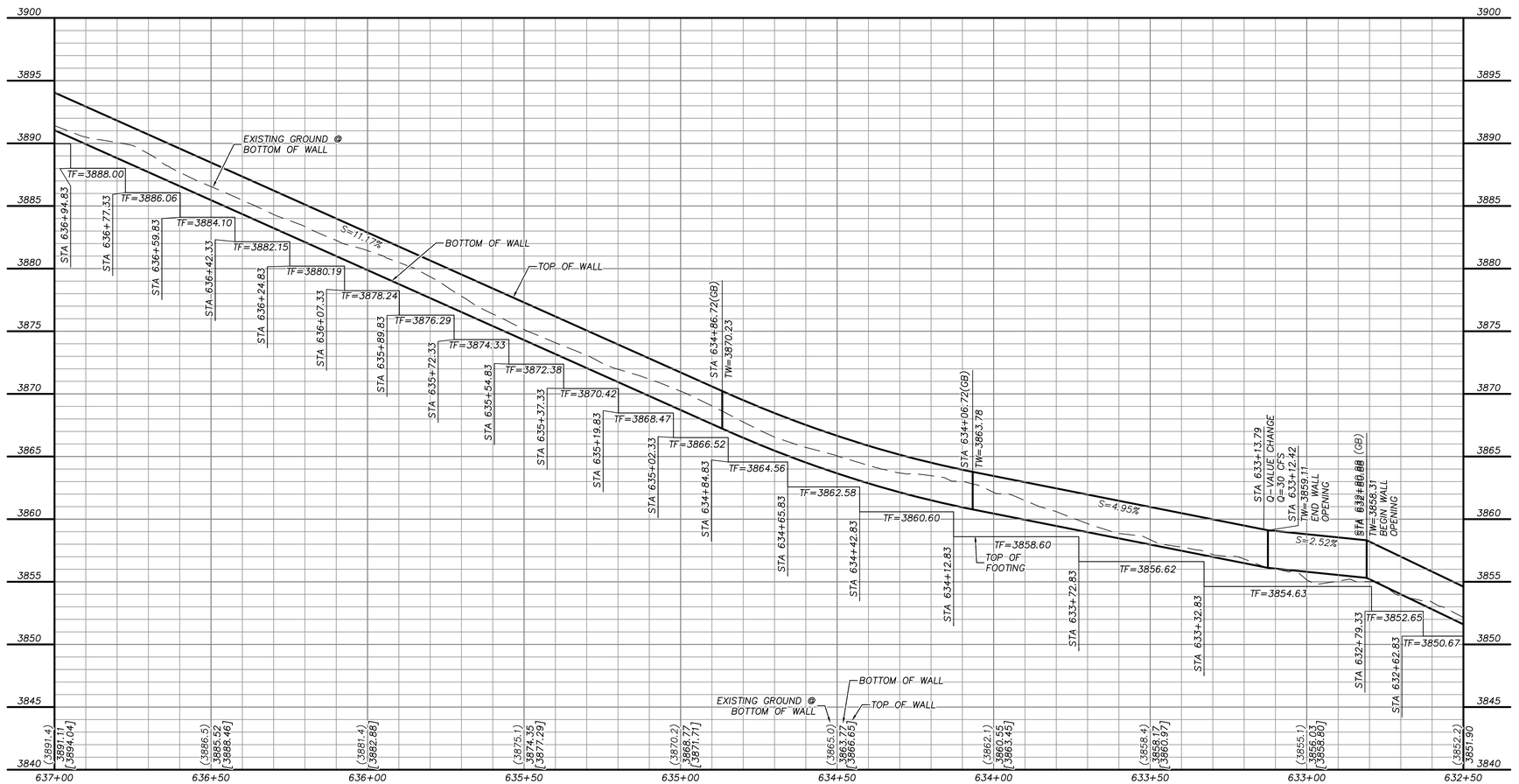




GRAPHIC SCALE

20 0 10 20 40

HORIZONTAL: 1"=20'

5 0 2.5 5 10

VERTICAL: 1"=5'

GRADING PLAN CERTIFICATION

JORDAN TORRELLA PE#26305 DATE

CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE AT THE CITY OF LAS VEGAS FOR THIS PROJECT.

DS#XXXX

BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK: D368
(REVISED 2008)
NAVD88 ELEVATION: 989.574 METERS
(3,246.63 FEET)
FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN.
T21S,R59E,S03

FAST Call before you UnderGround 1-702-432-5300 (NEVADA'S AUTOMATED SYSTEM OF TRANSPORTATION)

Call before you Dig AVOID CUTTING THROUGH LIVE UTILITY LINES. IT'S COSTLY. Call 811 OR 1-800-642-2444

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY. CALL BEFORE YOU DO OVERHEAD 1-702-227-2929

REVISIONS

REV.	DESCRIPTION	BY	DATE	APPROVAL

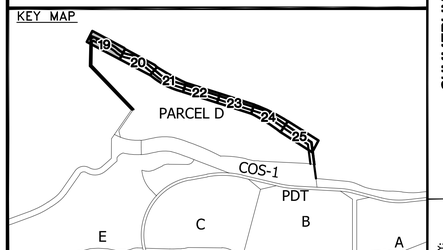
AtkinsRéalis
2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1.702.263.7275
Fax: +1.702.263.7200

SUMMERLIN

SUMMERLIN WEST VILLAGE 27
PARCEL D DRAINAGE INFRASTRUCTURE

WALL PLAN & PROFILE - 637+00 TO 632+50

KEY MAP



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PROFESSIONAL ENGINEER STATE OF NEVADA JORDAN M. TORRELLA EXP. 06-30-26 CIVIL No. 26305

DESIGNED BY: A. OLIVARES
DRAWN BY: C. HONEY
CHECKED BY: J. TORRELLA
HORIZ:NONE
VERT.: NONE

XXXXXXXX
LXX-XXXXX
DATE: JUNE, 2025
DRAWING NO. 19/31

JOB NO. 100085220

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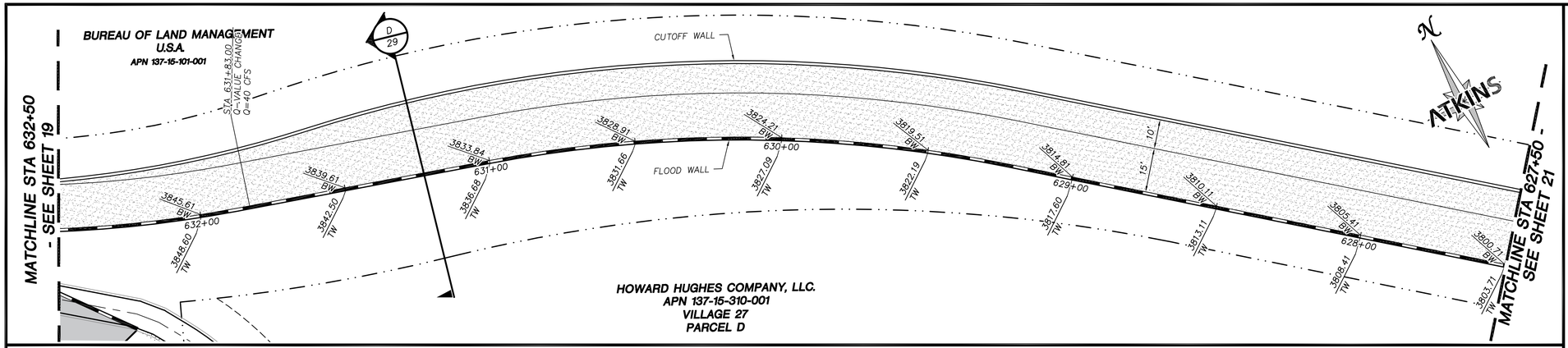
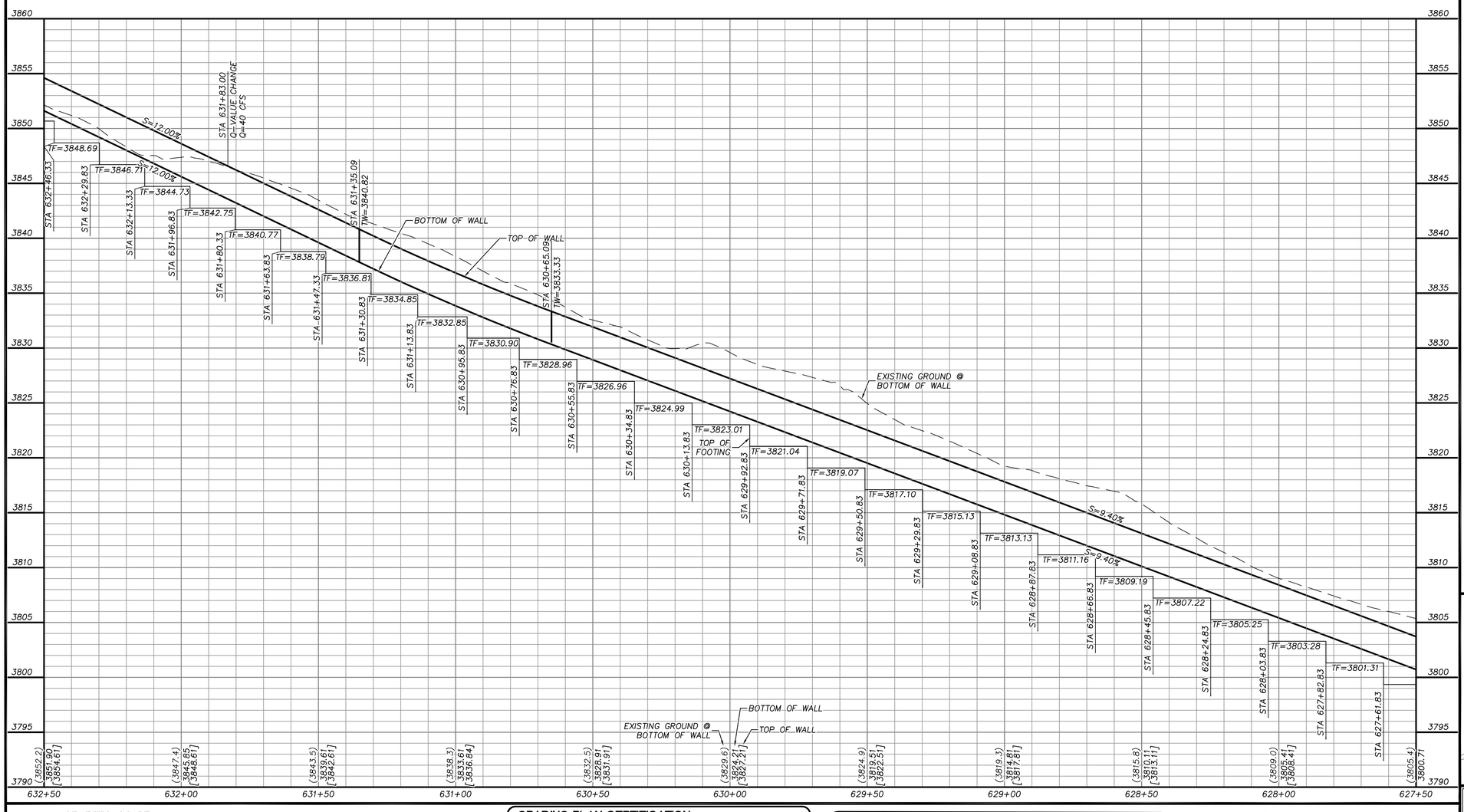




GRAPHIC SCALE

20 0 10 20 40

HORIZONTAL: 1"=20'

5 0 2.5 5 10

VERTICAL: 1"=5'

GRADING PLAN CERTIFICATION

JORDAN TORRELLA PE#26305 DATE

CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE AT THE CITY OF LAS VEGAS FOR THIS PROJECT.

DS#XXXX

BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

BENCHMARK

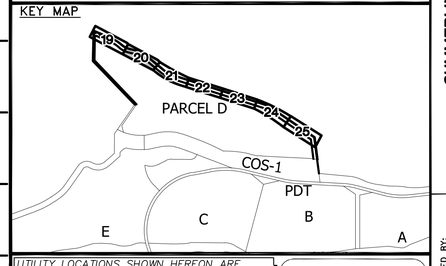
CITY OF LAS VEGAS BENCHMARK: D368
(REVISED 2008)
NAVD88 ELEVATION: 989.574 METERS
(3,246.63 FEET)
FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN.
T21S,R59E,S03

FAST Call before you UnderGround 1-702-432-5300 FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

Call before you Dig AVOID CUTTING UNDERGROUND UTILITY LINES. ITS COSTLY. Call 811 OR 1-800-642-2444

AVOID HITTING OVERHEAD POWER LINES. ITS COSTLY. CALL BEFORE YOU DO OVERHEAD 1-702-227-2929

KEY MAP



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PROFESSIONAL ENGINEER STATE OF NEVADA JORDAN M. TORRELLA EXP. 06-30-26 CIVIL No. 26305

REVISIONS				
REV.	DESCRIPTION	BY	DATE	APPROVAL

AtkinsRéalis
2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1.702.263.7275
Fax: +1.702.263.7200

SUMMERLIN

SUMMERLIN WEST VILLAGE 27
PARCEL D DRAINAGE INFRASTRUCTURE

WALL PLAN & PROFILE - 632+50 TO 627+50

DESIGNED BY: A. OLIVARES
DRAWN BY: C. HONEY
CHECKED BY: J. TORRELLA
HORIZ.:NONE
VERT.: NONE

XXXXXXXX
LXX-XXXXX

DATE: JUNE, 2025

DRAWING NO. 20/31

JOB NO. 100085220

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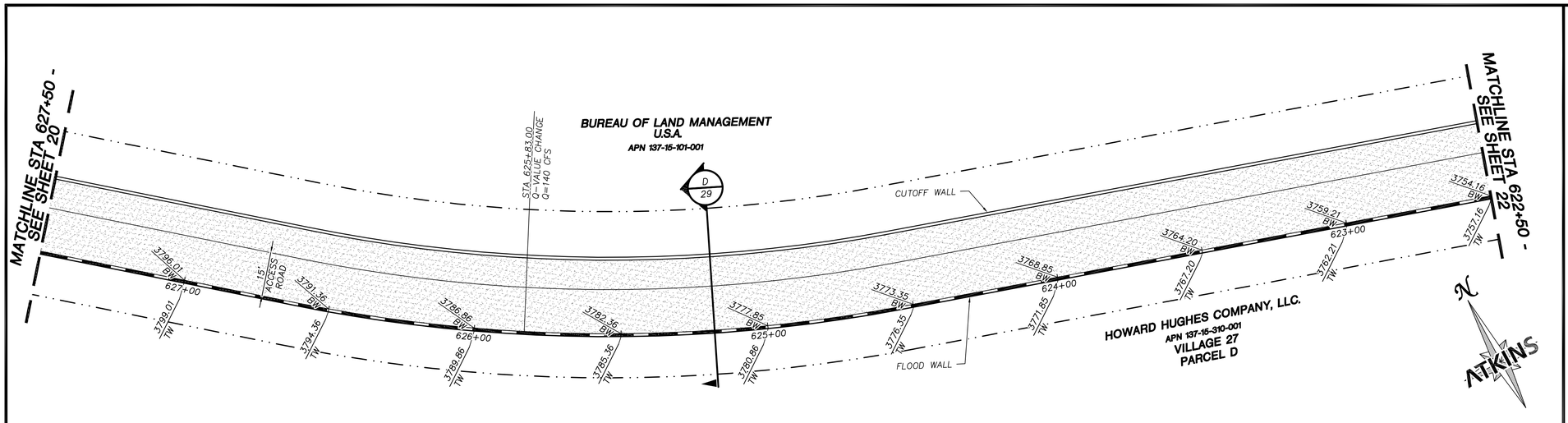
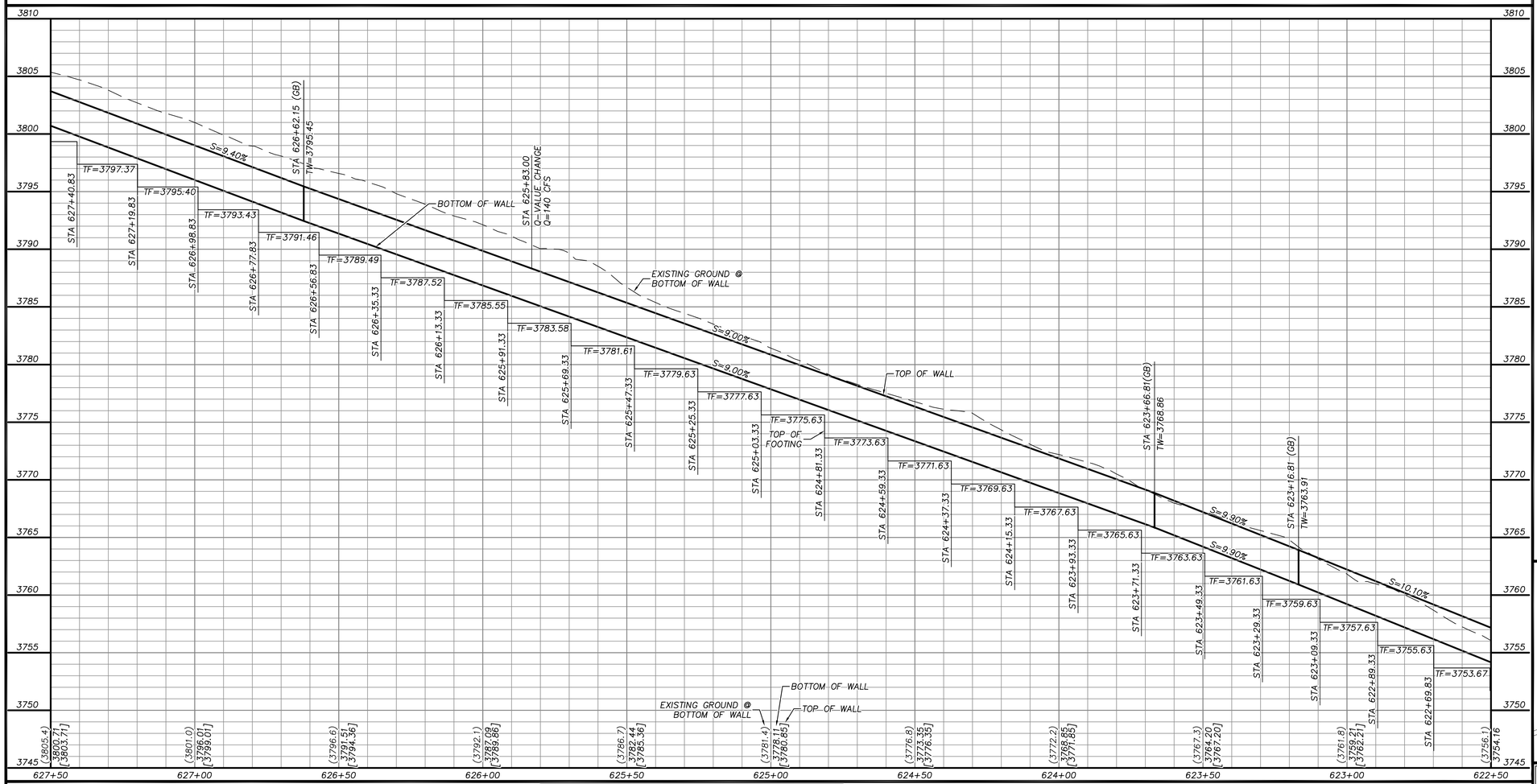




GRAPHIC SCALE

20 0 10 20 40

HORIZONTAL: 1"=20'

5 0 2.5 5 10

VERTICAL: 1"=5'

GRADING PLAN CERTIFICATION

JORDAN TORRELLA PE#26305 DATE

CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE AT THE CITY OF LAS VEGAS FOR THIS PROJECT.

DS#XXXX

BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

BENCHMARK

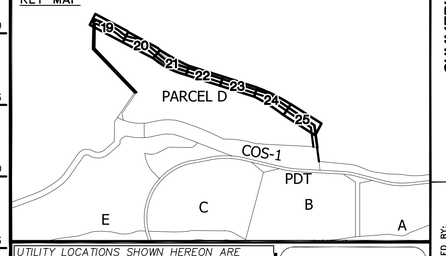
CITY OF LAS VEGAS BENCHMARK: D368
(REVISED 2008)
NAVD88 ELEVATION: 989.574 METERS
(3,246.63 FEET)
FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN.
T21S,R59E,S03

FAST Call before you UnderGround 1-702-432-5300 EMERGENCY AND NOTIFICATION SYSTEM OF TRANSPORTATION

Call before you Dig AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY. Call 811 or 1-800-642-2444

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY. CALL BEFORE YOU DIG OVERHEAD 1-702-227-2929

KEY MAP



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PROFESSIONAL ENGINEER STATE OF NEVADA JORDAN MICHAEL TORRELLA EXP. 06-30-26 CIVIL No. 26305

REVISIONS

REV.	DESCRIPTION	BY	DATE	APPROVAL

AtkinsRéalis
2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1.702.263.7275
Fax: +1.702.263.7200

SUMMERLIN

SUMMERLIN WEST VILLAGE 27
PARCEL D DRAINAGE INFRASTRUCTURE

WALL PLAN & PROFILE - 627+50 TO 622+50

DESIGNED BY:	A. ALVAREZ
DRAWN BY:	C. HONEY
CHECKED BY:	J. TORRELLA
HORIZ.:	NONE
VERT.:	NONE
XXXXXXXX	
LXX-XXXXX	
DATE:	JUNE, 2025
DRAWING NO.	21/31
JOB NO.	100085220

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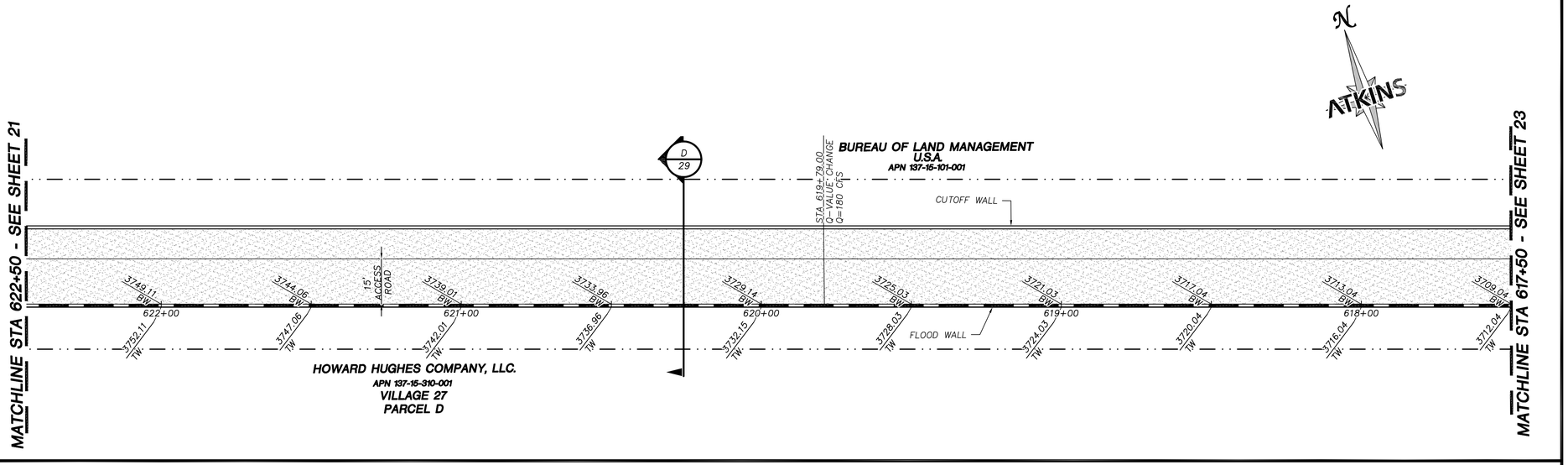

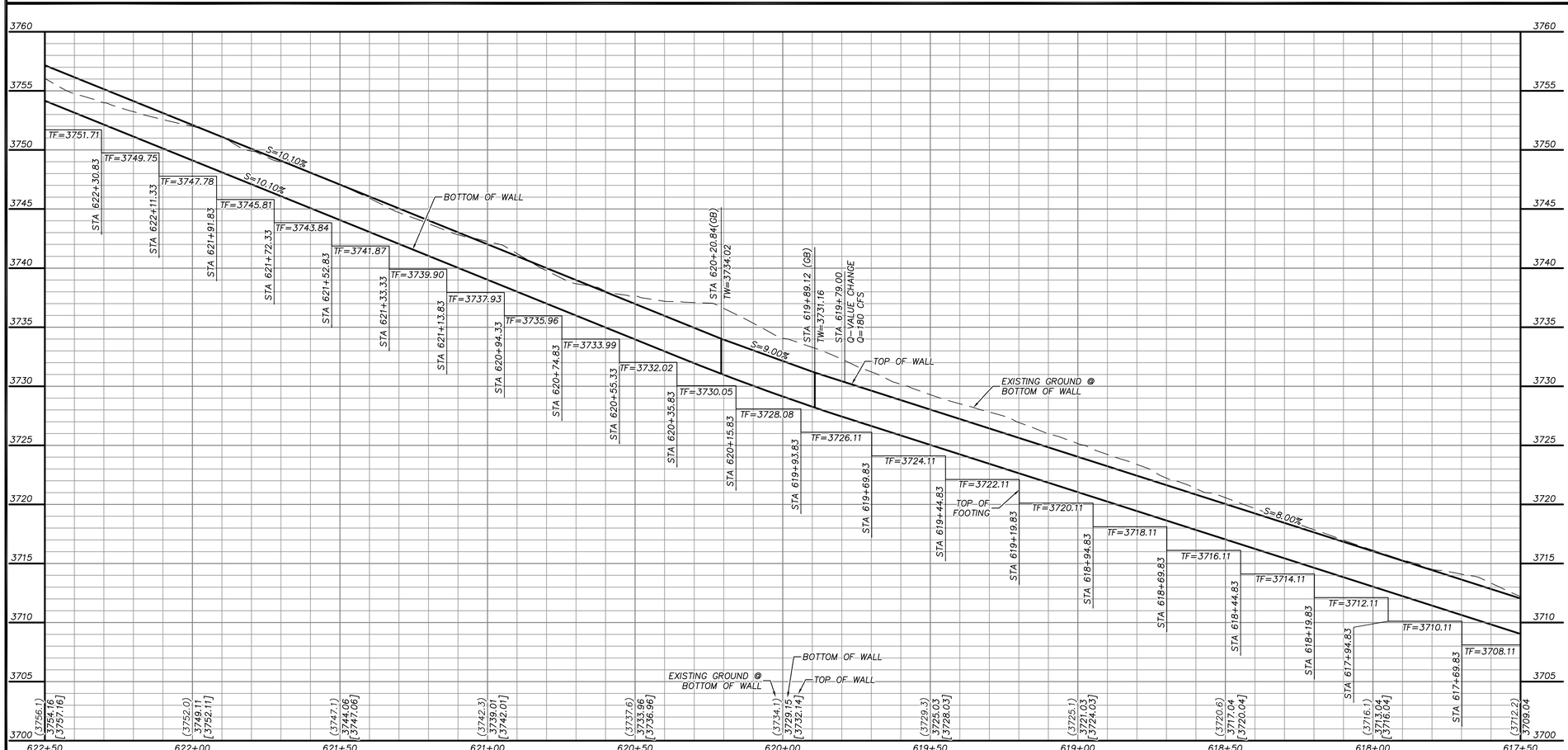

GRAPHIC SCALE

20 0 10 20 40

HORIZONTAL: 1"=20'

5 0 2.5 5 10

VERTICAL: 1"=5'

GRADING PLAN CERTIFICATION

JORDAN TORRELLA PE#26305 DATE

CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE AT THE CITY OF LAS VEGAS FOR THIS PROJECT.

DS#XXXX

BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK: D368
(REVISED 2008)
NAVD88 ELEVATION: 989.574 METERS
(3,246.63 FEET)
FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN.
T21S,R59E,S03

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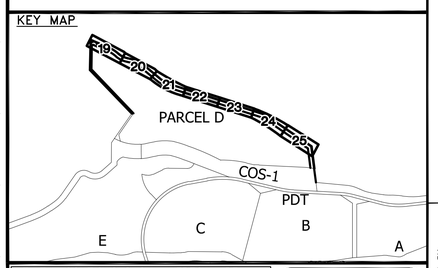
Call before you Dig AVOID CUTTING UNDERGROUND UTILITY LINES. ITS SIMPLE. Call 811 or 1-800-642-2444

AVOID HITTING OVERHEAD POWER LINES. ITS SIMPLE. CALL BEFORE YOU DIG OVERHEAD 1-702-227-2929

REVISIONS			
REV.	DESCRIPTION	BY	DATE	APPROVAL

KEY MAP



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PROFESSIONAL ENGINEER STATE OF NEVADA JORDAN M. TORRELLA EXP. 06-30-26 CIVIL No. 26305

AtkinsRéalis
2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1.702.263.7275
Fax: +1.702.263.7200

SUMMERLIN

SUMMERLIN WEST VILLAGE 27
PARCEL D DRAINAGE INFRASTRUCTURE

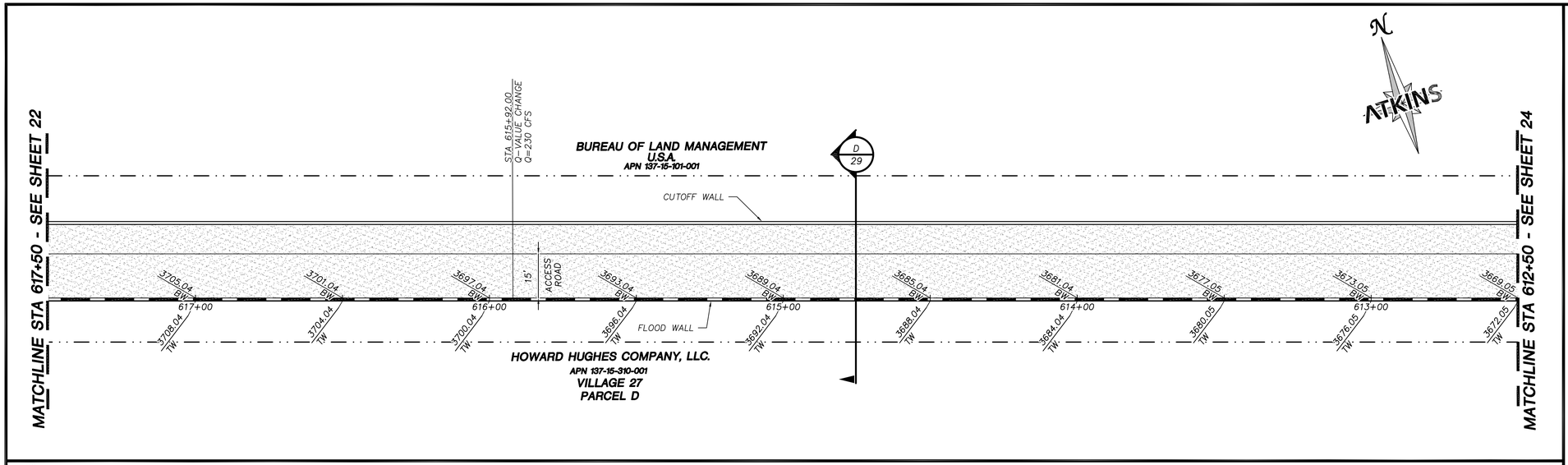
WALL PLAN & PROFILE - 622+50 TO 617+50

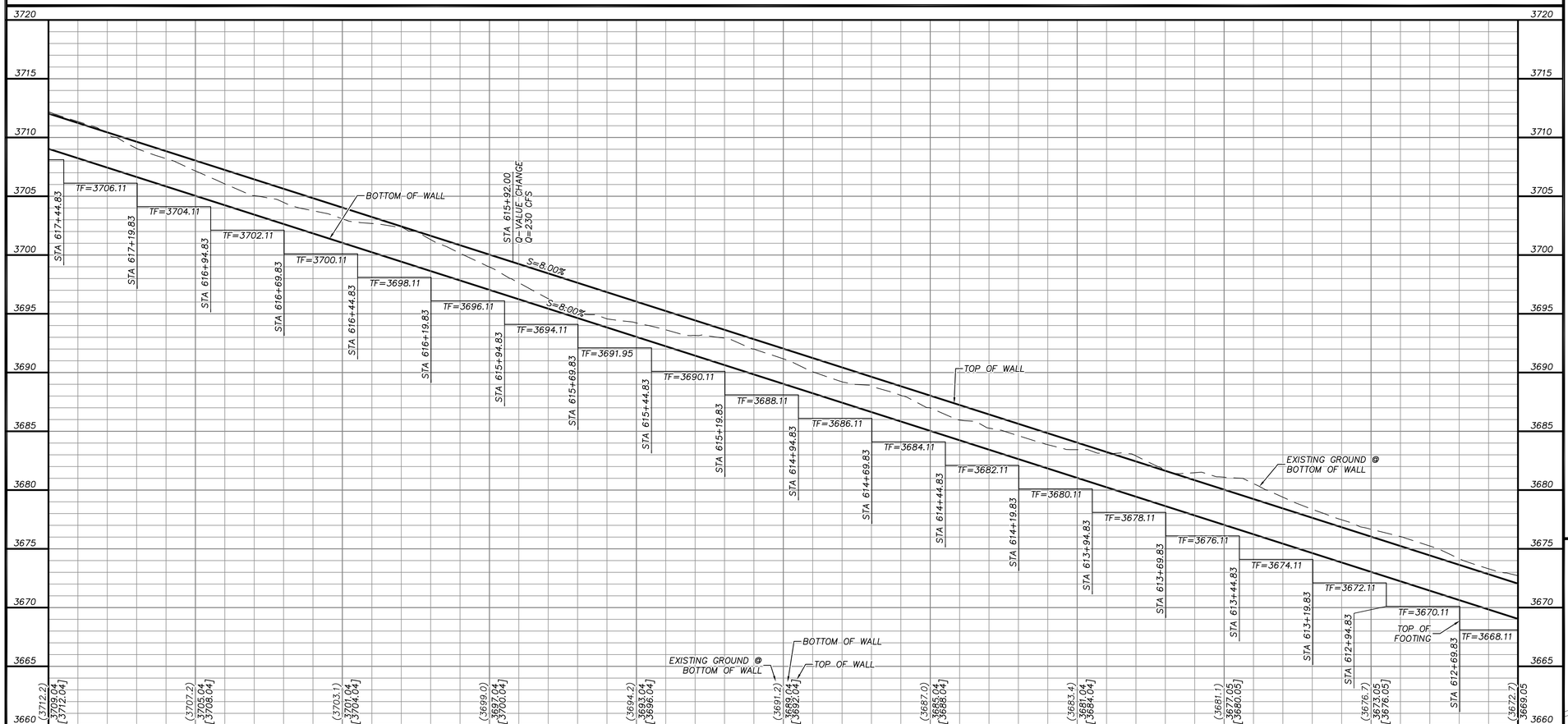
DESIGNED BY: D.A. OLIVARES
DRAWN BY: C. HONEY
CHECKED BY: J. TORRELLA
HORIZ.NONE
VERT.: NONE

XXXXXXXX
LXX-XXXXX

DATE: JUNE, 2025
DRAWING NO. 22 /31
JOB NO. 100085220

C:\pw_work\dkronon01\dms72301\85220-18-_FLOOD WALL-_NORTH.dwg LAYOUT: WALL PLAN & PROFILE - 622+50 TO 617+50 Jun 18, 2025 - 11:58AM





GRAPHIC SCALE

HORIZONTAL: 1"=20'

VERTICAL: 1"=5'

GRADING PLAN CERTIFICATION

JORDAN TORRELLA PE#26305 DATE

CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE AT THE CITY OF LAS VEGAS FOR THIS PROJECT.

DS#XXXX

BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK: D368
(REVISED 2008)
NAVD88 ELEVATION: 989.574 METERS
(3,246.63 FEET)
FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN.
T21S,R59E,S03

FAST Call before you UnderGround 1-702-432-5300 811 Call before you Dig 1-800-642-2444 AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY. CALL BEFORE YOU DO OVERHEAD 1-702-227-2929

REVISIONS

REV.	DESCRIPTION	BY	DATE	APPROVAL

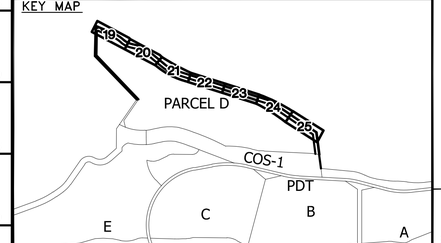
AtkinsRéalis
2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1.702.263.7275
Fax: +1.702.263.7200

SUMMERLIN

SUMMERLIN WEST VILLAGE 27
PARCEL D DRAINAGE INFRASTRUCTURE

WALL PLAN & PROFILE-617+50 TO 612+50

KEY MAP



UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EXACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

PROFESSIONAL ENGINEER STATE OF NEVADA JORDAN M. TORRELLA EXP. 06-30-26 CIVIL No. 26305

DESIGNED BY: A. OLIVARES
DRAWN BY: C. HONEY
CHECKED BY: J. TORRELLA
HORIZ.:NONE
VERT.: NONE

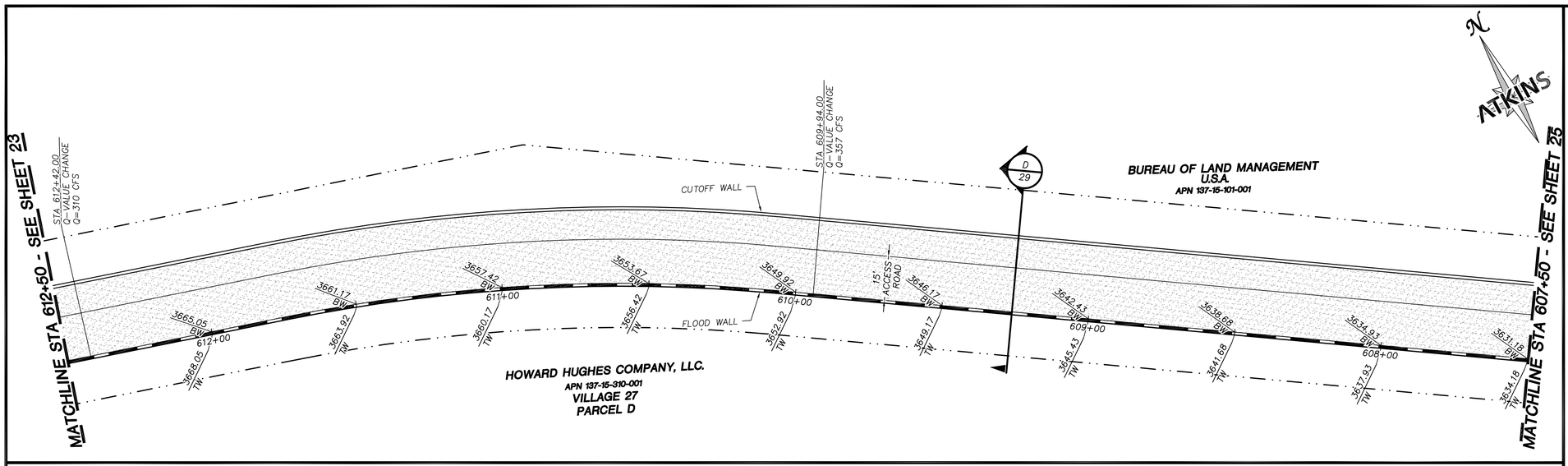
XXXXXXXX
LXX-XXXXX

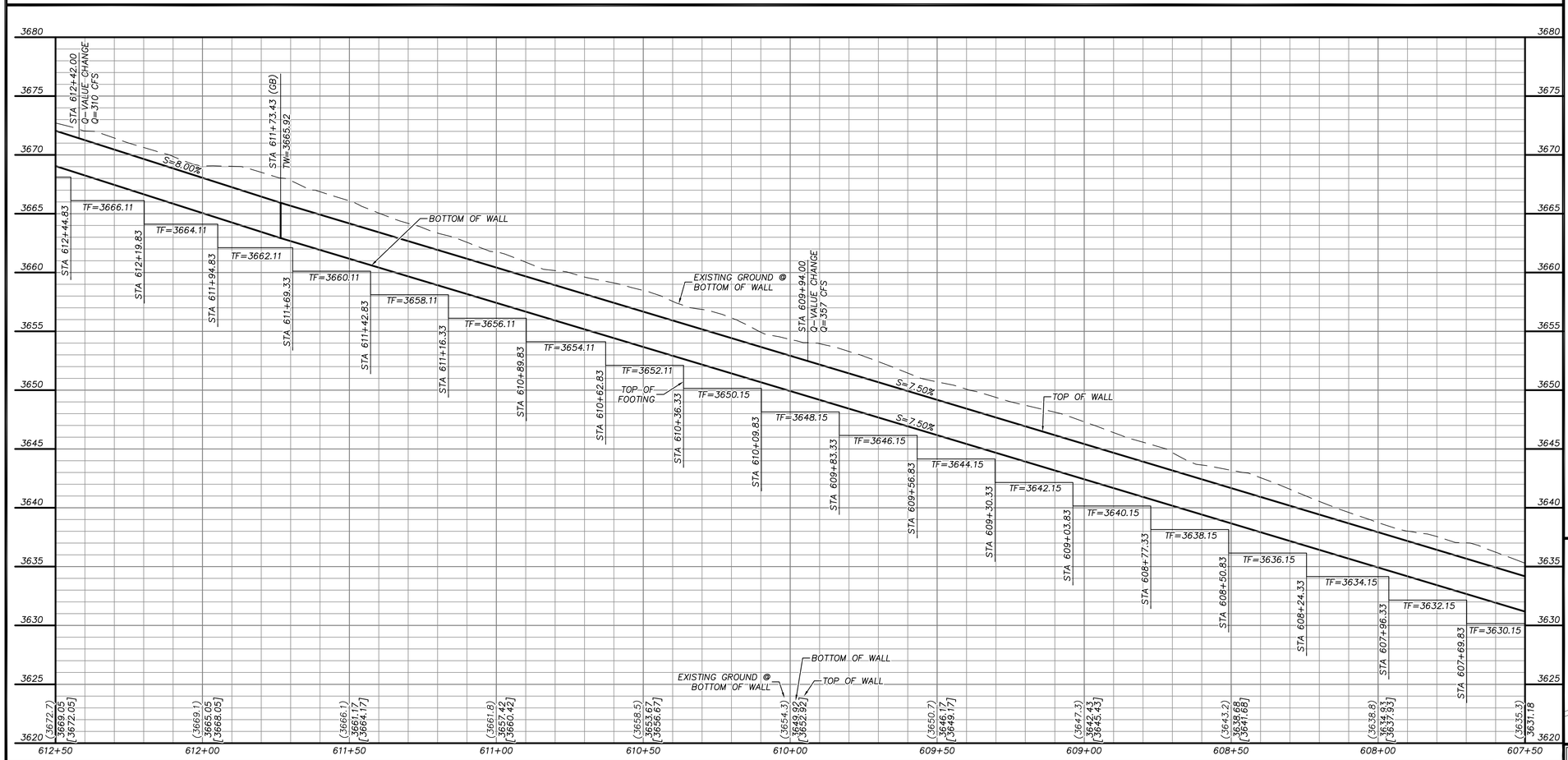
DATE: JUNE, 2025

DRAWING NO. 23/31

JOB NO. 100085220

C:\pw_work\atkinsn01\dms72301\85220-18- FLOOD WALL- NORTH.dwg LAYOUT: WALL PLAN & PROFILE-617+50 TO 612+50 Jun 18, 2025 - 11:58AM





GRAPHIC SCALE

20 0 10 20 40

HORIZONTAL: 1"=20'

5 0 2.5 5 10

VERTICAL: 1"=5'

GRADING PLAN CERTIFICATION

JORDAN TORRELLA PE#26305 DATE

CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE AT THE CITY OF LAS VEGAS FOR THIS PROJECT.

DS#XXXX

BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

BENCHMARK

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(REVISED 2008)
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(3,246.63 FEET)
FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN.
T21S,R59E,S03

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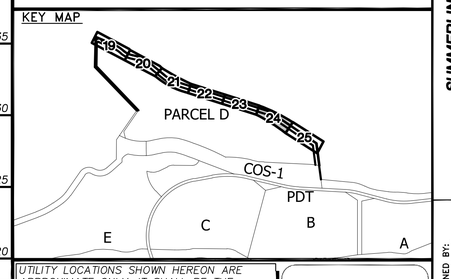
Call before you Dig AND OUTSIDE NEVADA DIAL UTILITY LINES ITS CORTLY. Call 811 OR 1-800-642-2444

AVOID VICTIMS OVERHEAD POWER LINES. ITS COSTLY. CALL BEFORE YOU DO OVERHEAD 1-702-227-2929

KEY MAP



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PROFESSIONAL ENGINEER STATE OF NEVADA JORDAN M. TORRELLA EXP. 06-30-26 CIVIL No. 26305

REVISIONS

REV.	DESCRIPTION	BY	DATE	APPROVAL

AtkinsRéalis
2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1.702.263.7275
Fax: +1.702.263.7200

SUMMERLIN

SUMMERLIN WEST VILLAGE 27
PARCEL D DRAINAGE INFRASTRUCTURE

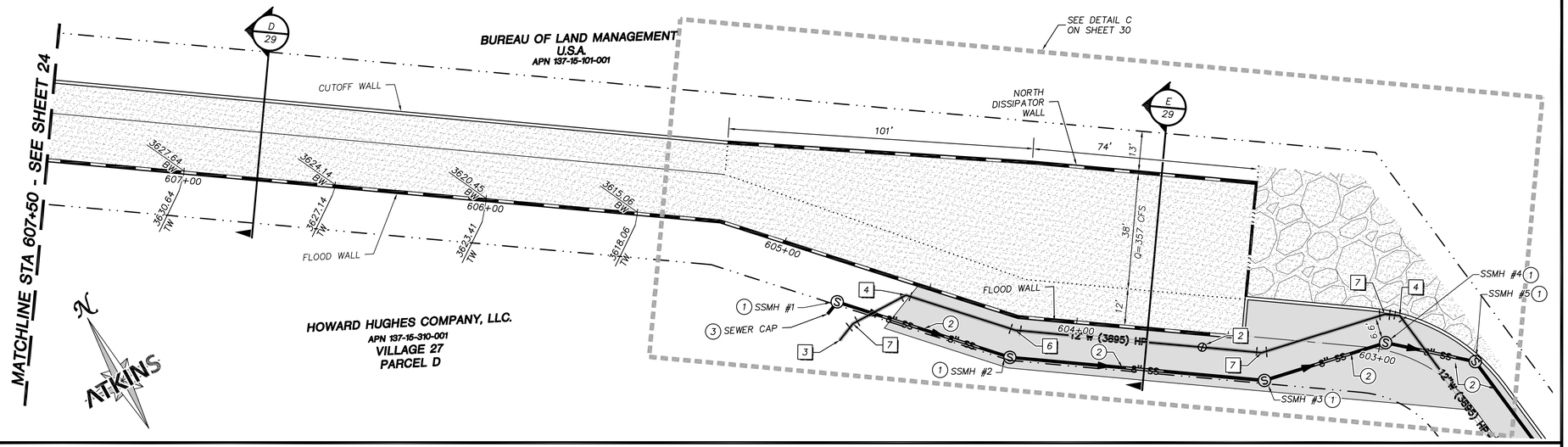
WALL PLAN & PROFILE - 612+50 TO 607+50

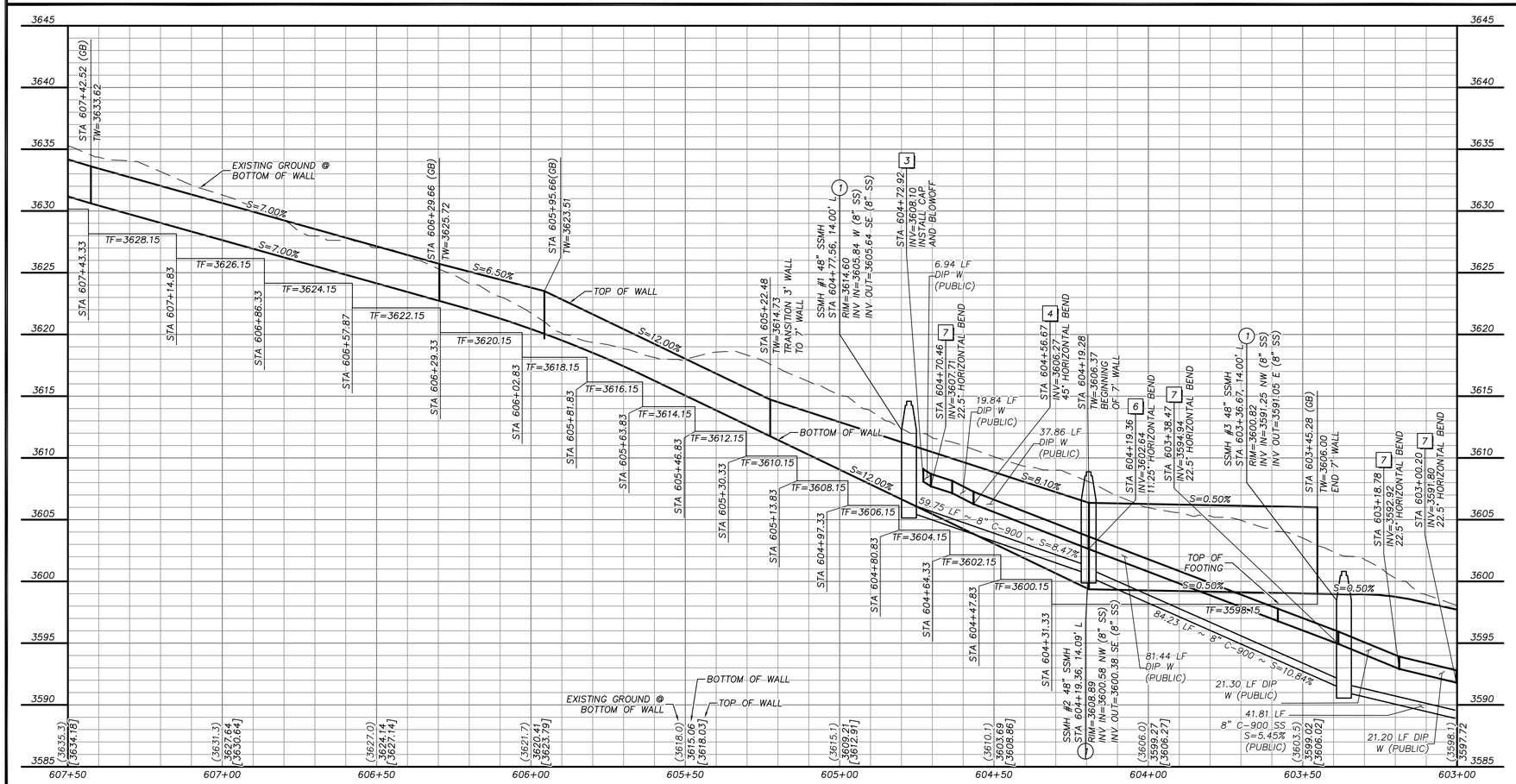
DESIGNED BY:	DRAWN BY:	CHECKED BY:	HORIZ.: NONE
JE. OLIVARES	C. HONEY	J. TORRELLA	VERT.: NONE

XXXXXXXX	DATE:	DRAWING NO.
LXX-XXXXX	JUNE, 2025	24/31

JOB NO. 100085220

C:\pw_work\atkinsna01\dms72301\85220-18- FLOOD WALL- NORTH.dwg LAYOUT: WALL PLAN & PROFILE - 612+50 TO 607+50 Jun 18, 2025 - 11:58AM





CONSTRUCTION NOTES

1. INSTALL 6" CONCRETE PAVEMENT F'c MIN=4,000 PSI
2. INSTALL WARNING SIGN, SEE DETAIL A SHEET 28
3. INSTALL GROUTED RIP-RAP (D50=24", THICKNESS=48")
4. CONSTRUCT 7' FLOOD WALL SEE WALL PLAN FOR START AND END
5. INSTALL PRECAST REINFORCED CONCRETE BOX PER NDOT SPEC.# 502 AND 505 DETAILS CH-1, CH-2A, AND CH-2B. TRENCHING AND BACK FILL PER CCAUSD 503 SEE PLAN AND PROFILE SHEETS FOR RCB NOTES AND INFORMATION
6. CONSTRUCT ENERGY DISSIPATOR PER DETAIL C ON SHEET 31
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16. CONSTRUCT 6' FLOOD WALL SEE WALL PLAN FOR START AND END
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18. INSTALL STEPS FOR CHANNEL ACCESS PER CCASD #410

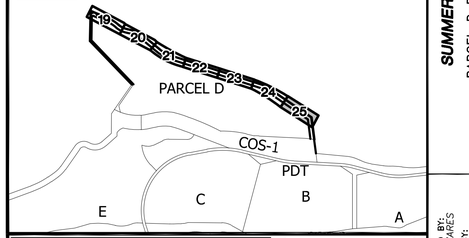
SEWER CONSTRUCTION NOTES

1. INSTALL STANDARD MANHOLE WITH WATERTIGHT JOINTS (PER DCSWCS SD-1, SD-3, SD-4, AND SD-5) WITH SINGLE 24" LID.
2. INSTALL SEWER MAIN PER DCSWCS SD-17
3. STUB AND CAP SEWER PIPE. PLACE 4"X4" POST, DOUGLAS FIR, OVER END OF PIPE AND INSTALL THRUST BLOCK (1 CUBIC FT. MINIMUM).
4. REMOVE EXISTING CAP AND CONNECT TO EXISTING SS LINE
5. INSTALL STEEL SLEEVE PER UDACS PLATES #22 AND #23

WATERLINE CONSTRUCTION NOTES

1. INSTALL DIP WATER LINE PER UDACS PLATES #17 AND PLATE#19
2. INSTALL GATE VALVE PER UDACS PLATE #39 AND SECTION 2.15
3. INSTALL CAP AND 2" MANUAL BLOWOFF ASSEMBLY PER UDACS PLATE #36
4. INSTALL 45° BEND PER UDACS SECTION 2.15
5. CONNECT TO EXISTING WATERLINE
6. INSTALL 11.25° BEND PER UDACS SECTION 2.15
7. INSTALL 22.5° BEND PER UDACS SECTION 2.15

KEY MAP



GRAPHIC SCALE
20 0 10 20 40
HORIZONTAL: 1"=20'
5 0 2.5 5 10
VERTICAL: 1"=5'

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT PLANNING AND ENGINEERING SERVICES

PROJECT NO. 141719 FIRST APPROVED DATE: _____

GRADING PLAN CERTIFICATION

JORDAN TORRELLA PE#26305 DATE

CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE AT THE CITY OF LAS VEGAS FOR THIS PROJECT.

DS#XXXX

BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

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1215,859E,503

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Call before you Dig AVOID CUTTING OR DAMAGING UTILITY LINES. IT'S COSTLY. Call 811 or 1-800-642-2444

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REVISIONS

REV.	DESCRIPTION	BY	DATE	APPROVAL

AtkinsRéalis
2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1.702.263.7275
Fax: +1.702.263.7200

SUMMERLIN

SUMMERLIN WEST VILLAGE 27
PARCEL D DRAINAGE INFRASTRUCTURE

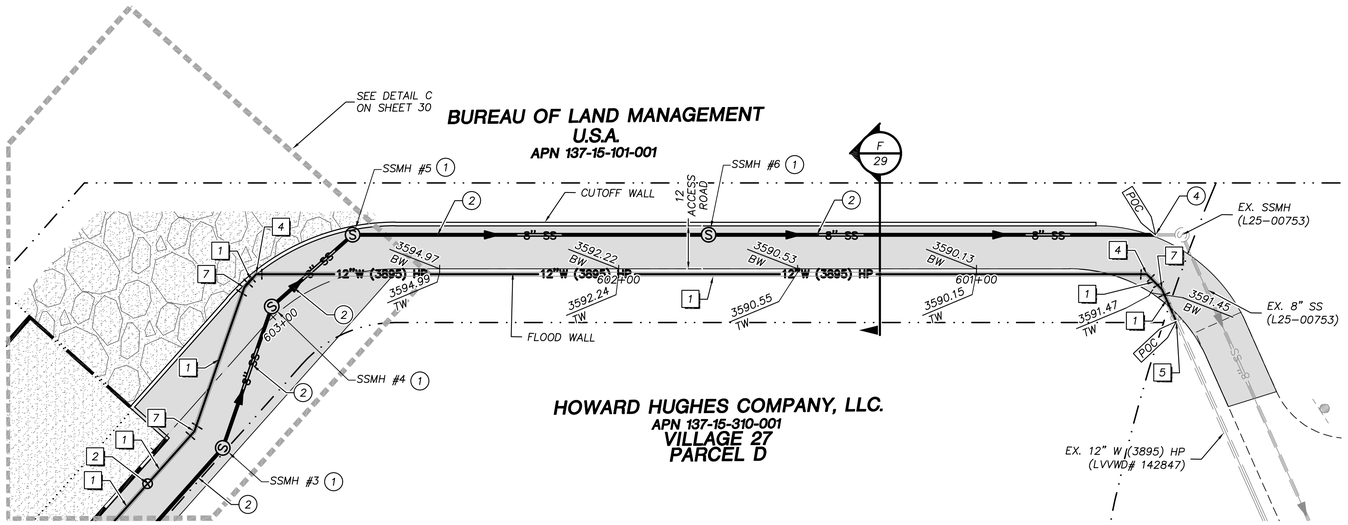
WALL PLAN & PROFILE - 607+50 TO 603+00

DESIGNED BY: A. GUTIERES
DRAWN BY: C. HONEY
CHECKED BY: J. TORRELLA
HORIZ:NONE
VERT.: NONE

XXXXXXXX
LXX-XXXXX
DATE: JUNE, 2025
DRAWING NO. 25/31
JOB NO. 100085220

PROFESSIONAL ENGINEER JORDAN M. TORRELLA EXP. 06-30-26 CIVIL No. 26305

C:\pw_work\atkinsrv01\dms72301\85220-18-FLOOD WALL-NORTH.dwg LAYOUT: WALL PLAN & PROFILE - 607+50 TO 603+00 Jun 18, 2025 - 11:58AM



CONSTRUCTION NOTES

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18. INSTALL STEPS FOR CHANNEL ACCESS PER CCASD #410

SEWER CONSTRUCTION NOTES

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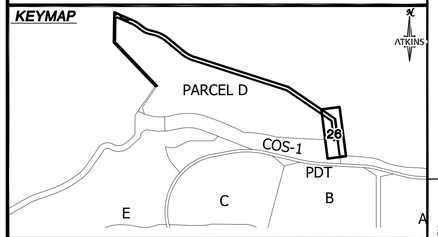
KEYMAP



GRAPHIC SCALE
20 0 10 20 60
HORIZONTAL: 1"=20'
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APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT PLANNING AND ENGINEERING SERVICES

PROJECT NO. 141719 FIRST APPROVED DATE: _____

GRADING PLAN CERTIFICATION

JORDAN TORRELLA PE#26305 DATE

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PROFESSIONAL ENGINEER STATE OF NEVADA JORDAN M. TORRELLA EXP. 06-30-26 CIVIL No. 26305

REVISIONS				
REV.	DESCRIPTION	BY	DATE	APPROVAL

AtkinsRéalis
2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1.702.263.7275
Fax: +1.702.263.7200

SUMMERLIN

SUMMERLIN WEST VILLAGE 27
PARCEL D DRAINAGE INFRASTRUCTURE

WALL PLAN & PROFILE EAST - 603+00 TO 600+00

DESIGNED BY: A. CHAVARES
DRAWN BY: C. HONEY
CHECKED BY: J. TORRELLA
HORIZ.:NONE
VERT.: NONE
XXXXXXXX
LXX-XXXXX
DATE: JUNE, 2025
DRAWING NO. 26 /31
JOB NO. 100085220

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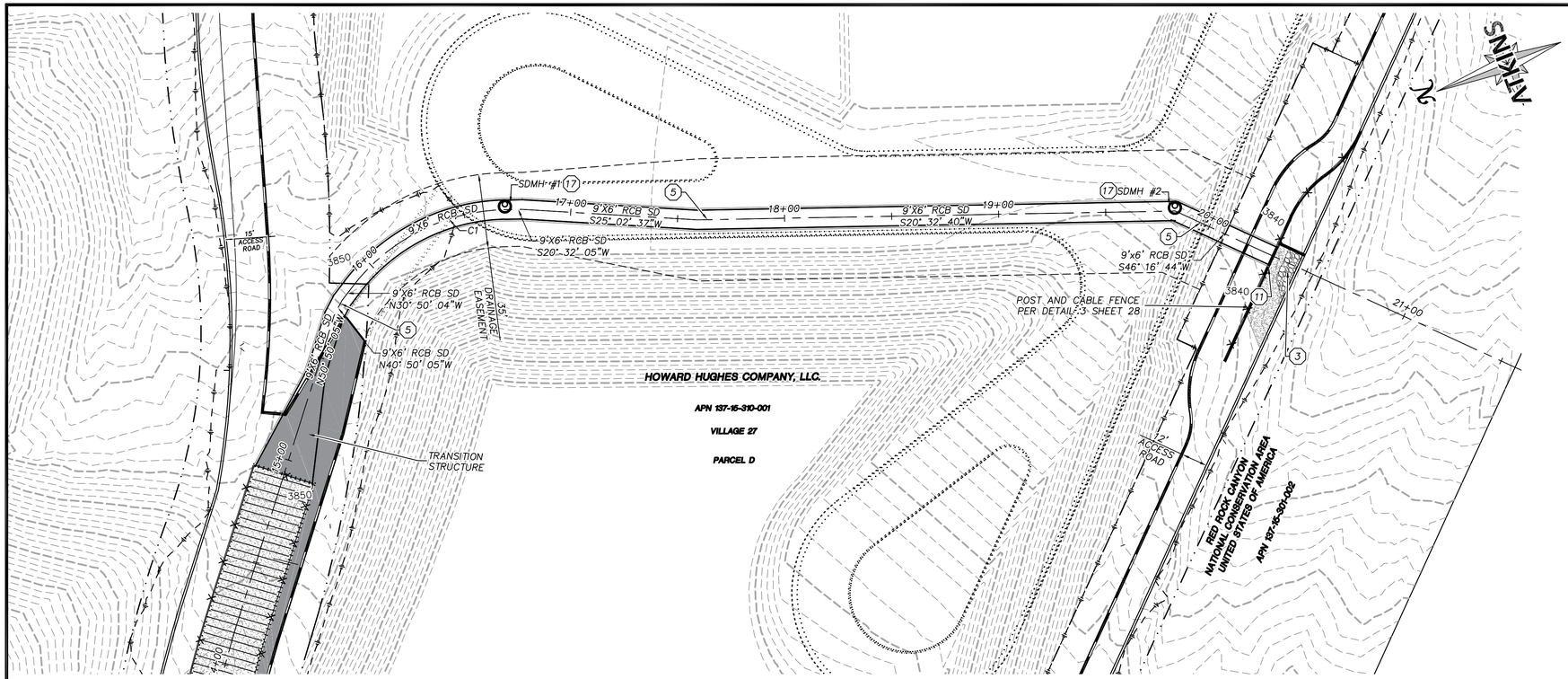

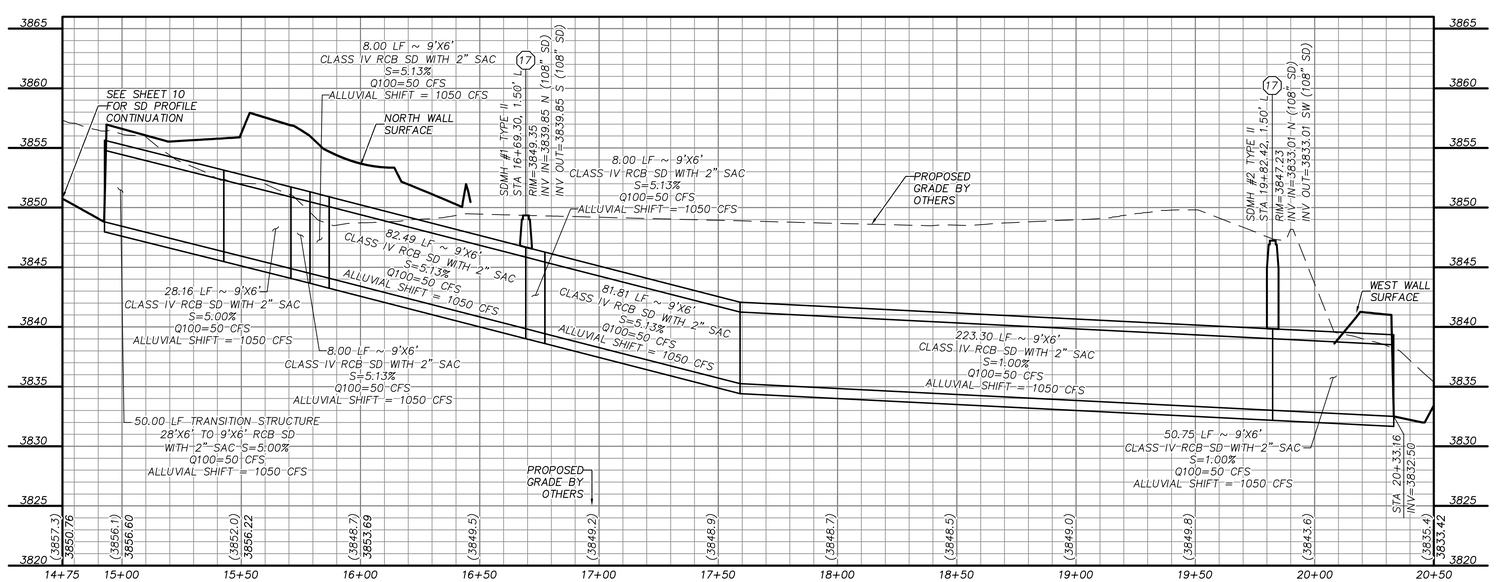

STORM DRAIN CURVE TABLE				
NO.	RADIUS	DELTA	LENGTH	TANGENT
C1	92.00'	51°22'09"	82.48'	44.25'

CONSTRUCTION NOTES

1. INSTALL 6" CONCRETE PAVEMENT F'c MIN=4,000 PSI
2. INSTALL WARNING SIGN, SEE DETAIL A SHEET 28
3. INSTALL GROUTED RIP-RAP (D50=24", THICKNESS=48")
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18. INSTALL STEPS FOR CHANNEL ACCESS PER CCASD #410

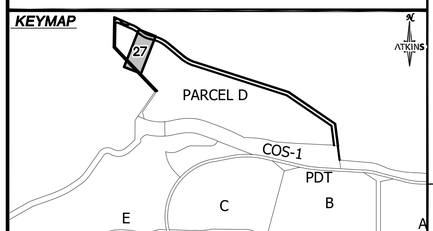
SEWER CONSTRUCTION NOTES

1. INSTALL STANDARD MANHOLE WITH WATERTIGHT JOINTS (PER DCSWCS SD-1, SD-3, SD-4, AND SD-5) WITH SINGLE 24" LID.
2. INSTALL SEWER MAIN PER DCSWCS SD-17
3. STUB AND CAP SEWER PIPE. PLACE 4"X4" POST, DOUGLAS FIR, OVER END OF PIPE AND INSTALL THRUST BLOCK (1 CUBIC FT. MINIMUM).
4. REMOVE EXISTING CAP AND CONNECT TO EXISTING SS LINE
5. INSTALL STEEL SLEEVE PER UDACS PLATES #22 AND #23

WATERLINE CONSTRUCTION NOTES

1. INSTALL DIP WATER LINE PER UDACS PLATES #17 AND PLATE#19
2. INSTALL GATE VALVE PER UDACS PLATE #39 AND SECTION 2.15
3. INSTALL CAP AND 2" MANUAL BLOWOFF ASSEMBLY PER UDACS PLATE #36
4. INSTALL 45° BEND PER UDACS SECTION 2.15
5. CONNECT TO EXISTING WATERLINE
6. INSTALL 11.25° BEND PER UDACS SECTION 2.15
7. INSTALL 22.5° BEND PER UDACS SECTION 2.15

KEYMAP



GRAPHIC SCALE

20 0 10 20 40
HORIZONTAL: 1"=20'
5 0 2.5 5 10
VERTICAL: 1"=5'

GRADING PLAN CERTIFICATION

JORDAN TORRELLA PE#26305 DATE

CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE AT THE CITY OF LAS VEGAS FOR THIS PROJECT.

DS#XXXX

BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK: D368
(REVISED 2008)
NAVD88 ELEVATION: 989.574 METERS (3,246.63 FEET)
FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN.
T21S,R59E,S03

FAST Call before you UnderGround 1-702-432-5300 EMERGENCY AND INTERNAL SYSTEM OF TRANSPORTATION

Call before you Dig AVOID CUTTING HAZARDOUS UTILITY LINES, ITS COSTLY. Call or 1-800-642-2444

AVOID HITTING OVERHEAD POWER LINES, ITS COSTLY. CALL BEFORE YOU DO OVERHEAD 1-702-227-2929

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PROFESSIONAL ENGINEER STATE OF NEVADA JORDAN MARK TORRELLA EXP. 06-30-26 CIVIL No. 26305

REVISIONS

REV.	DESCRIPTION	BY	DATE	APPROVAL

AtkinsRéalis
2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1.702.263.7275
Fax: +1.702.263.7200

SUMMERLIN

SUMMERLIN WEST VILLAGE 27
PARCEL D DRAINAGE INFRASTRUCTURE

STROM DRAIN PLAN + PROFILE

DESIGNED BY: A. OLIVARES
DRAWN BY: C. HONEY
CHECKED BY: J. TORRELLA
HORIZ.: NONE
VERT.: NONE

XXXXXXXX
LXX-XXXXX
DATE: JUNE, 2025
DRAWING NO. 27/31
JOB NO. 100085220

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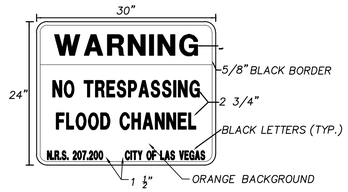
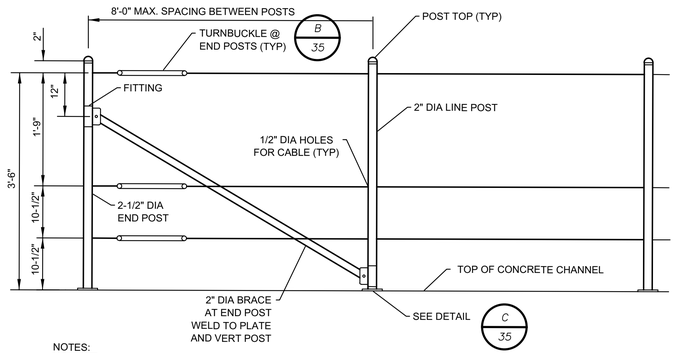


NOTE: LETTERS TO BE CENTERED

WARNING SIGN - FLOOD CHANNEL DETAIL

N.T.S

A / 28



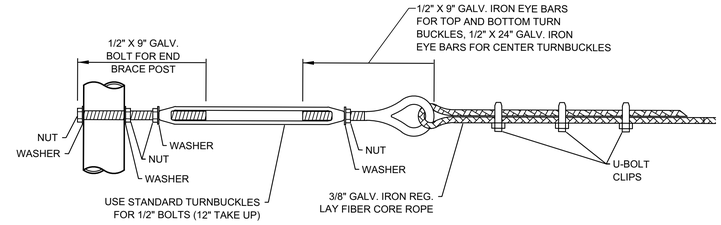
NOTES:

1. ALL POSTS SHALL BE SET PLUMB.
2. RAILING POSTS AND FITTINGS SHALL BE HOT DIPPED GALVANIZED MALLEABLE, CAST IRON, OR PRESSED STEEL.
3. ATTACH TO TOP OF CONCRETE WALL PER DETAIL 3 AS SHOWN ON THIS SHEET.
4. BRACE POST SHALL NOT BE INSTALLED ACROSS EXPANSION JOINTS.
5. WHEN AN EXPANSION JOINT OCCURS AT A HORIZONTAL ANGLE POINT THE CONCTRACTOR SHALL INSTALL TWO END POSTS, ONE ON EACH SIDE OF EXPANSION JOINT, WITH A MAX. 6" GAP BETWEEN THE POSTS.
6. BRACE POSTS SHALL BE PLACED AT A MAXIMUM OF 100' INTERVALS AND AT END POSTS.

POST AND CABLE FENCE ELEVATION VIEW

N.T.S.

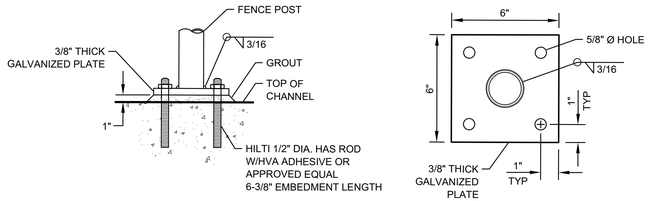
A / 28



TURNBUCKLE @ END POST DETAIL

N.T.S.

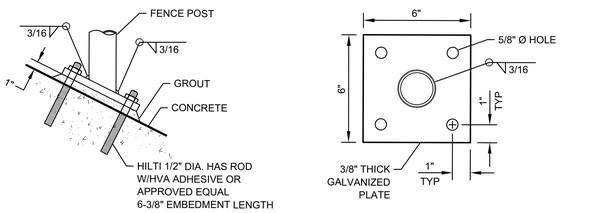
B / 28



MOUNTING DETAIL

N.T.S.

C / 28



ANGLED MOUNTING DETAIL

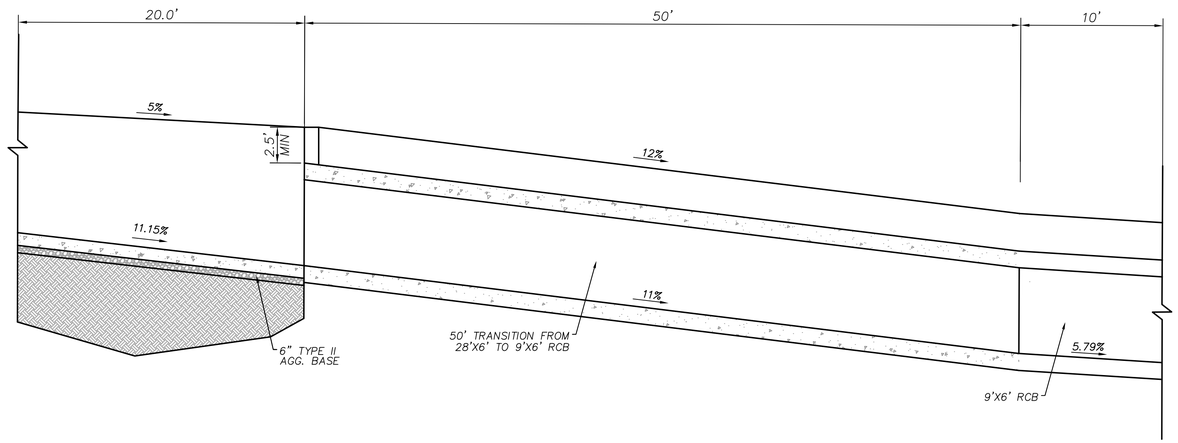
N.T.S.

D / 28

POST AND CABLE FENCE DETAIL

N.T.S.

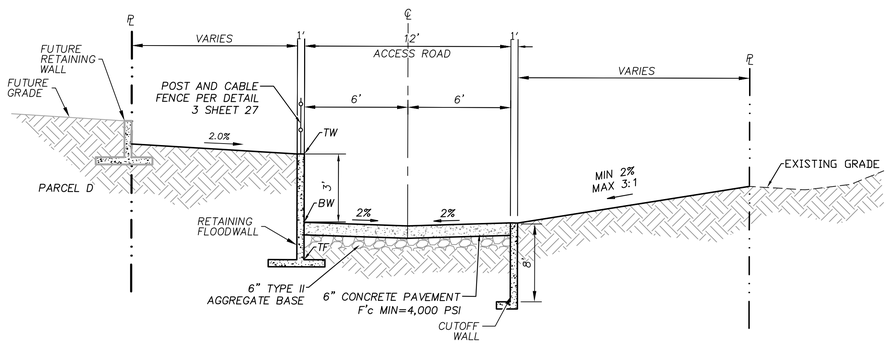
3 / 28



9'X6' RCB OUTLET HEADWALL SECTION

1" = 10'

2 / 28



ACCESS ROAD AND FLOODWALL

N.T.S.

1 / 28

10 0 2.5 5 10

HORIZONTAL: 1"=5'

BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

BENCHMARK

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FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN.
T21S,R59E,S03

FAST Call before you UnderGround 1-702-432-5300 REGIONAL AND NATIONAL SYSTEM OF TRANSPORTATION

Call before you Dig AVOID CUTTING & DAMAGING UTILITY LINES, IT'S COSTLY. Call OR 1-800-642-2444

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PROFESSIONAL ENGINEER STATE OF NEVADA JORDAN MICHAEL TORRELLA EXP. 06-30-26 CIVIL No. 26305

REVISIONS

REV.	DESCRIPTION	BY	DATE	APPROVAL

AtkinsRéalis
2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1.702.263.7275
Fax: +1.702.263.7200

SUMMERLIN

SUMMERLIN WEST VILLAGE 27
PARCEL D DRAINAGE INFRASTRUCTURE

STORM DRAIN AND FENCE DETAILS

DESIGNED BY: A. OLIVARES
DRAWN BY: C. HONEY
CHECKED BY: J. TORRELLA
HORIZ.: NONE
VERT.: NONE

XXXXXXXX
LXX-XXXXX

DATE: JUNE, 2025

DRAWING NO. 28/31

JOB NO. 100085220

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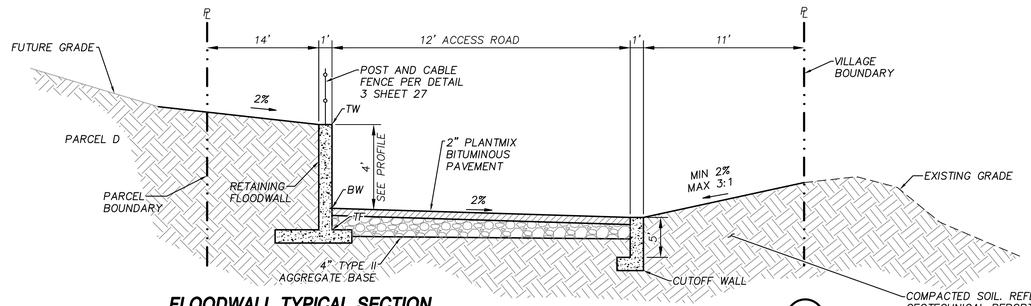
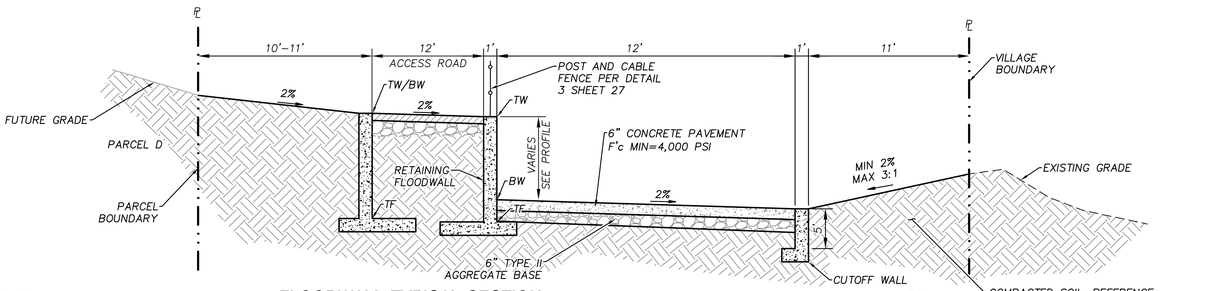


FLOODWALL TYPICAL SECTION

N.T.S.

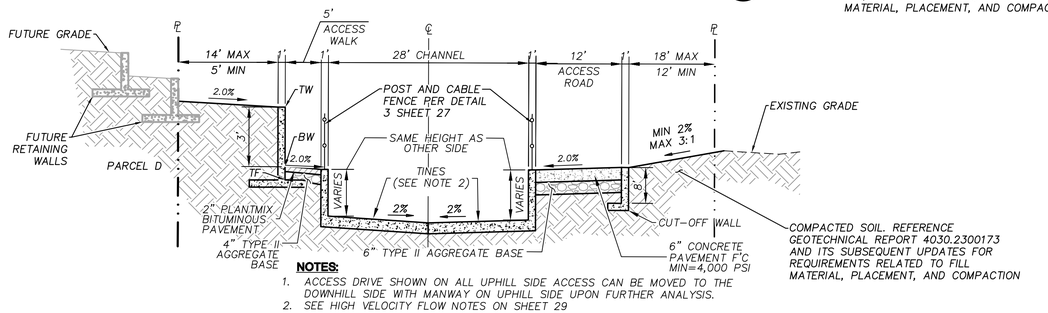
A / 29



FLOODWALL TYPICAL SECTION

N.T.S.

B / 29



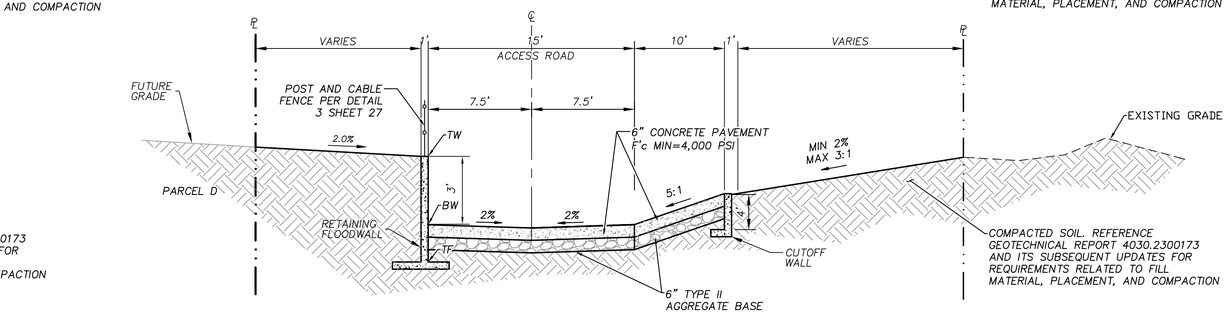
NOTES:

1. ACCESS DRIVE SHOWN ON ALL UPHILL SIDE ACCESS CAN BE MOVED TO THE DOWNHILL SIDE WITH MANWAY ON UPHILL SIDE UPON FURTHER ANALYSIS.
2. SEE HIGH VELOCITY FLOW NOTES ON SHEET 29

CHANNEL AND FLOODWALL

N.T.S.

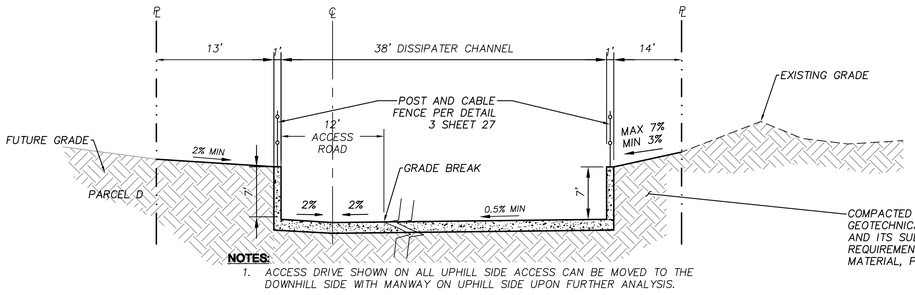
C / 29



FLOODWALL TYPICAL SECTION

N.T.S.

D / 29



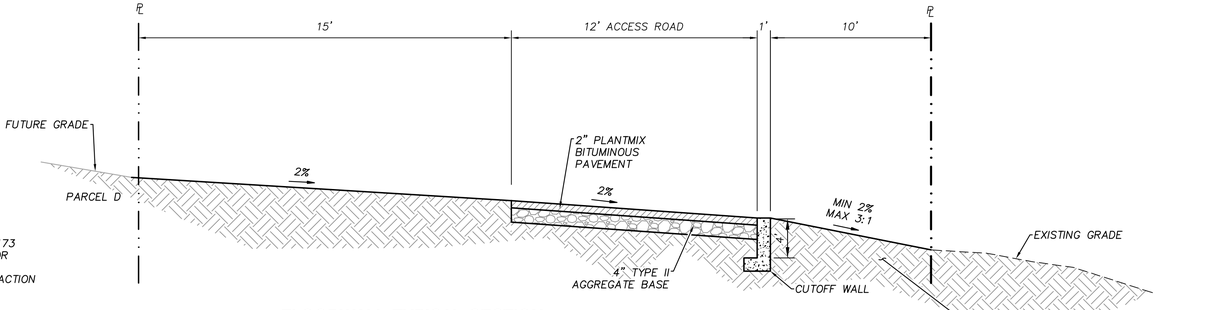
NOTES:

1. ACCESS DRIVE SHOWN ON ALL UPHILL SIDE ACCESS CAN BE MOVED TO THE DOWNHILL SIDE WITH MANWAY ON UPHILL SIDE UPON FURTHER ANALYSIS.

DISSIPATOR CHANNEL

N.T.S.

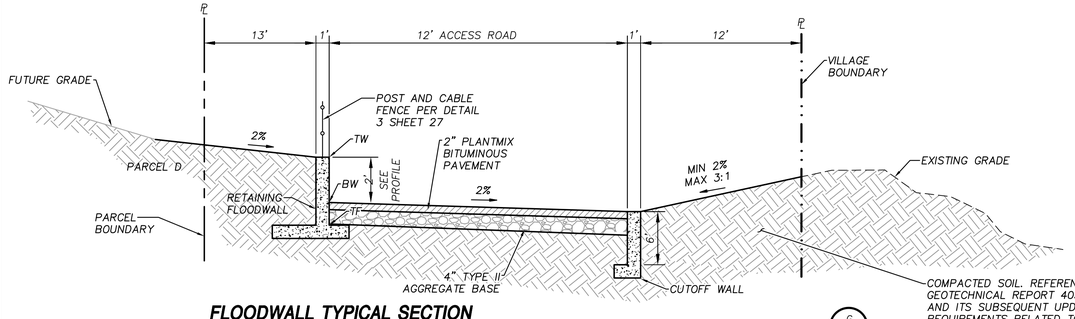
E / 29



FLOODWALL TYPICAL SECTION

N.T.S.

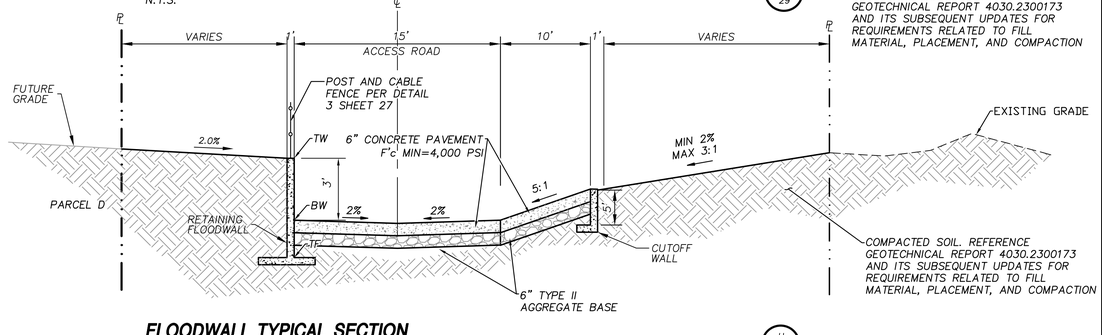
F / 29



FLOODWALL TYPICAL SECTION

N.T.S.

G / 29



FLOODWALL TYPICAL SECTION

N.T.S.

H / 29

BASIS OF BEARING

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T21S,R59E,S03

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PROFESSIONAL ENGINEER — JORDAN M. TORRELLA — EXP. 06-30-26 — CIVIL — No. 26305 — STATE OF NEVADA

REV.	DESCRIPTION	BY	DATE	APPROVAL
	REVISIONS			

AtkinsRéalis
2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1.702.263.7275
Fax: +1.702.263.7200

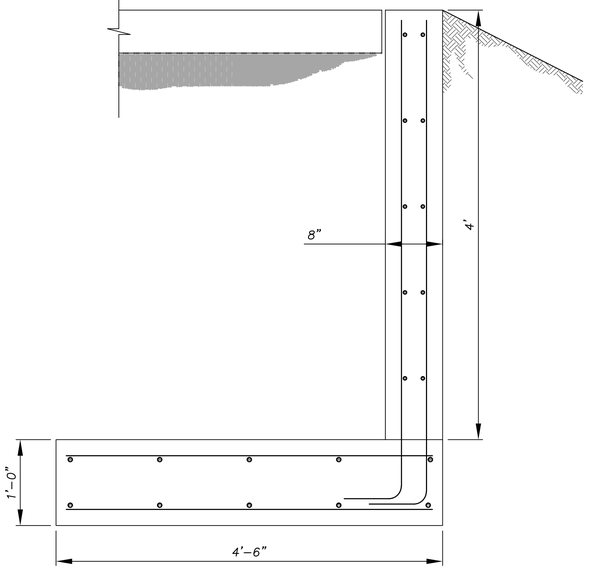
SUMMERLIN

SUMMERLIN WEST VILLAGE 27
PARCEL D DRAINAGE INFRASTRUCTURE

TYPICAL SECTIONS

DESIGNED BY: A. OLIVARES
DRAWN BY: C. HONEY
CHECKED BY: J. TORRELLA
HORIZ.: NONE
VERT.: NONE
DATE: JUNE, 2025
DRAWING NO. 29/31
XXXXXXXX
LXX-XXXXX
JOB NO. 100085220

C:\pw_work\atkinsnv01\dms72301\85220-XX-DETL-D1.dwg LAYOUT: TYPICAL SECTIONS Jun 18, 2025 - 12:07PM



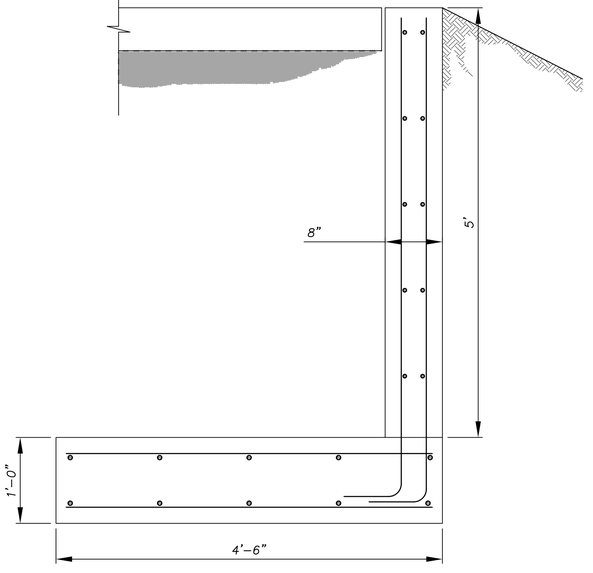
CUTOFF WALL TYPICAL SECTION

A 30

N.T.S.

NOTES:

1. FOR CUTOFF WALL LAYOUT SEE CIVIL SHEETS 10 TO 15
2. EXPANSION JOINTS SHALL BE PLACED AT 120' ON CENTERS. CONSTRUCTION JOINTS SHALL BE AT A MAXIMUM SPACING OF 30' ON CENTERS.



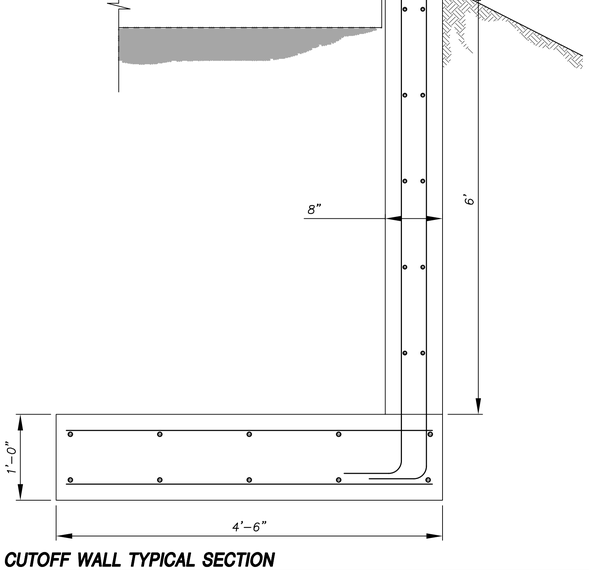
CUTOFF WALL TYPICAL SECTION

B 30

N.T.S.

NOTES:

1. FOR CUTOFF WALL LAYOUT SEE CIVIL SHEETS 8, 13, 14
2. EXPANSION JOINTS SHALL BE PLACED AT 120' ON CENTERS. CONSTRUCTION JOINTS SHALL BE AT A MAXIMUM SPACING OF 30' ON CENTERS.



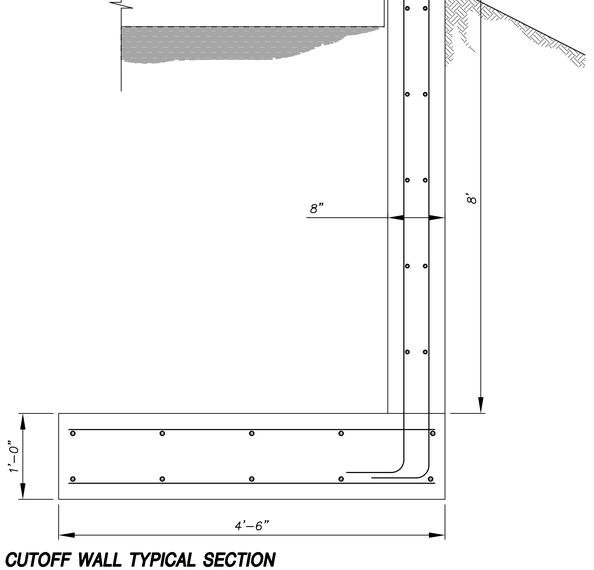
CUTOFF WALL TYPICAL SECTION

C 30

N.T.S.

NOTES:

1. FOR CUTOFF WALL LAYOUT SEE CIVIL SHEETS 9
2. EXPANSION JOINTS SHALL BE PLACED AT 120' ON CENTERS. CONSTRUCTION JOINTS SHALL BE AT A MAXIMUM SPACING OF 30' ON CENTERS.



CUTOFF WALL TYPICAL SECTION

F 30

N.T.S.

NOTES:

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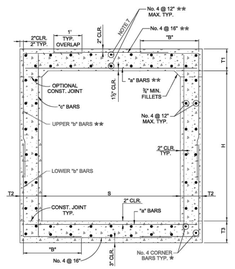
2. EXPANSION JOINTS SHALL BE PLACED AT 120' ON CENTERS. CONSTRUCTION JOINTS SHALL BE AT A MAXIMUM SPACING OF 30' ON CENTERS.



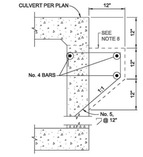
TYPICAL SECTION

NOTES:

1. DESIGN SPECIFICATIONS: "AASHTO LRFD Bridge Design Specifications 2012"
2. CONSTRUCTION SPECIFICATIONS: "State of Nevada Department of Transportation Standard Specifications for Road and Bridge Construction 2014"
3. LIVE LOADS:
   HL-93 Design Truck, 32.0 KIP Axle
   HL-93 Design Tandem, Two 25.0 KIP Axles
   Spaced 4-Feet Apart
   Live Load Impact Factor for Top Slab is 33% up to 2-Feet of Cover
   LATERAL LIVE LOAD PRESSURE:
   Equivalent to 4 feet of Earth Surcharge and K_a=0.5
   Applied Horizontally = 240 PSF
   DEAD LOADS:
   Soil Unit Weight = 120 PCF
   Min. Lateral Earth Pressure = 30 PCF
   Max. Lateral Earth Pressure = 60 PCF
4. CONCRETE: Class DA Modified, Major.
   $f'c$ = 4,500 PSI @ 28 Days.
   Class D Modified in Clark County.
5. REINFORCING STEEL: All reinforcing steel to be ASTM A615 grade 60 or A706 grade 60. Dimension relating to bar spacing are center to center.
6. DESIGNATION: Box culverts are shown on plans as span times height times length, 10' x 6' x 156' RCB.
7. Where traffic loads will be placed directly on the top surface of the culvert, and/or up to 2-feet of fill (at edge of pavement), increase top slab thickness by $\frac{1}{2}$-inch and cover for top reinforcement from 2-inches to 2 $\frac{1}{2}$-inches. Provide epoxy coated reinforcement in top slab, except in Clark County. Replace top slab bottom longitudinal bars, No. 4 @ 12" MAX. to the following:

SPAN, "S"	5	6-10	12-14
REINFORCING	# 6 @ 7	# 6 @ 6	# 6 @ 5

   Use EA Modified (Major) concrete, Class E Modified in Clark County, in lieu of Class DA.
   $f'c$ = 4,000 PSI @ 28 Days.
   Approved waterproofing membrane may be used in lieu of epoxy coated reinforcing at the discretion of the NDOT Structures Division.
8. Provide paving notch when the top slab is exposed and when pavement is concrete. Adjust quantities accordingly.
9. For additional notes, see detail CH-1.



PAVING NOTCH DETAIL

BENT BARS

SPAN, "S"	FT.	5			6				7				8				10			
HEIGHT, "H"	FT.	3	4	5	3	4	5	6	3	4	5	6	7	3	4	5	6	7	8	3	4	5	6	8
MAXIMUM EARTH COVER	FT.	10	20	10	20	10	20	10	20	10	20	10	20	10	20	10	20	10	20	10	20	10	20	10	20	10	20	10	20
CONC. ROOF T1	IN.	9½	9½	9½	9½	9½	9½	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10½	10½	10½	10½	10½	10½
WALLS T2	IN.	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
INVERT T3	IN.	8	8	8	8	8	8	9	9	9	9	9	9	9	10	10	10	10	10	10	10	10	10	10½	10½	10½	10½	10½	10½
REINFORCEMENT "a" BAR SIZE	#	4	5	4	5	4	5	5	5	5	5	5	5	5	6	5	6	5	6	5	6	5	6	5	7	5	7	5	7
REINFORCEMENT "a" SPACING	IN.	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
REINFORCEMENT "a" LENGTH	FT.-IN.	5.7	5.7	6.1	6.1	6.2	6.7	5.9	5.9	6.3	6.3	6.6	6.6	7.3	7.3	7.3	7.3	7.7	7.7	8.4	8.4	8.4	8.4	9.1	9.1	9.8	9.8	9.8	9.8
REINFORCEMENT "b" BAR SIZE	#	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
REINFORCEMENT "b" SPACING	IN.	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
REINFORCEMENT "b" LENGTH	FT.-IN.	2.6	2.6	2.6	2.6	2.6	2.6	2-10	2-10	2-10	2-10	2-10	2-10	3-10	3-10	3-10	3-10	3-10	3-10	3-11	3-11	3-11	3-11	3-11	3-11	3	3-5	3	3-5
REINFORCEMENT "c" BAR SIZE	#	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	5	4	4	4
REINFORCEMENT "c" SPACING	IN.	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
REINFORCEMENT "c" LENGTH	FT.-IN.	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
No. 4 @ 12" NUMBER*	#	40	40	44	44	48	48	44	44	48	48	52	52	56	56	48	48	52	52	56	56	60	60	64	64	68	68	72	72
No. 4 @ 12" LENGTH	FT.-IN.	4	4	5	5	5	5	4-10	4-10	5-3	5-3	5-8	5-8	6-2	6-2	5-3	5-3	5-8	5-8	6-2	6-2	6-7	6-7	7-1	7-1	6-7	7-3	7-3	7-3
CONC. COVER (CAISSON) DA CONCRETE	C.F.A.F.	19.2	19.2	19.6	19.6	19.9	19.9	19.6	19.6	19.9	19.9	19.9	19.9	19.6	19.6	19.9	19.9	19.9	19.9	19.6	19.6	19.9	19.9	19.9	19.9	19.6	19.9	19.9	19.9
CONC. COVER (CAISSON) REINFORCEMENT	LB.S.F.	81	90	88	97	95	104	99	99	106	106	113	113	119	119	108	123	115	129	121	136	128	143	135	154	116	174	124	183
CONC. COVER (CAISSON) D CONCRETE	C.F.A.F.	8.1	N/A	9.5	N/A	10.8	N/A	9.4	N/A	10.8	N/A	12.1	N/A	13.4	N/A	10.9	N/A	12.2	N/A	13.5	N/A	14.9	N/A	16.2	N/A	12.1	N/A	13.4	N/A
CONC. COVER (CAISSON) E CONCRETE	LB.S.F.	4.6	N/A	4.8	N/A	4.8	N/A	5.9	N/A	5.9	N/A	5.9	N/A	5.9	N/A	7.4	N/A	7.4	N/A	7.4	N/A	7.4	N/A	7.4	N/A	8.6	N/A	8.6	N/A
CONC. COVER (CAISSON) REINFORCEMENT	LB.S.F.	84	N/A	91	N/A	98	N/A	106	N/A	114	N/A	121	N/A	128	N/A	117	N/A	124	N/A	130	N/A	137	N/A	144	N/A	128	N/A	134	N/A
CONC. COVER (OTHER) DA CONCRETE	C.F.A.F.	8.1	N/A	9.5	N/A	10.8	N/A	9.4	N/A	10.8	N/A	12.1	N/A	13.4	N/A	10.9	N/A	12.2	N/A	13.5	N/A	14.9	N/A	16.2	N/A	12.1	N/A	13.4	N/A
CONC. COVER (OTHER) EA CONCRETE	C.F.A.F.	4.6	N/A	4.8	N/A	4.8	N/A	5.9	N/A	5.9	N/A	5.9	N/A	5.9	N/A	7.4	N/A	7.4	N/A	7.4	N/A	7.4	N/A	7.4	N/A	8.6	N/A	8.6	N/A
CONC. COVER (OTHER) REINFORCEMENT	LB.S.F.	37	N/A	39	N/A	39	N/A	51	N/A	52	N/A	54	N/A	55	N/A	57	N/A	58	N/A	59	N/A	61	N/A	62	N/A	64	N/A	65	N/A
CONC. COVER (OTHER) EPOXY REINF. **	LB.S.F.	37	N/A	39	N/A	39	N/A	51	N/A	52	N/A	54	N/A	55	N/A	57	N/A	58	N/A	59	N/A	61	N/A	62	N/A	64	N/A	65	N/A

SPAN, "S"	FT.	7	8	9	10	3	4	5	6	7	8	9	10	11	12	6	7	8	9	10	11	12	13	14
HEIGHT, "H"	FT.	10	20	10	20	10	20	10	20	10	20	10	20	10	20	10	20	10	20	10	20	10	20	10	20	10	20	10	20
MAXIMUM EARTH COVER	FT.	10	20	10	20	10	20	10	20	10	20	10	20	10	20	10	20	10	20	10	20	10	20	10	20	10	20	10	20
CONC. ROOF T1	IN.	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
WALLS T2	IN.	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
INVERT T3	IN.	12	13	12	13	12	13	12	13	12	13	12	15	12	15	12	15	12	15	12	15	12	15	12	15	14	17	14	17
REINFORCEMENT "a" BAR SIZE	#	5	6	5	6	5	6	5	7	6	7	6	7	6	7	6	7	6	7	6	7	6	7	6	7	6	7	6	7
REINFORCEMENT "a" SPACING	IN.	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
REINFORCEMENT "a" LENGTH	FT.-IN.	9.1	9.9	9.7	10.3	10.1	10.8	10.7	11.0	11.0	11.5	11.4	11.9	11.8	12.4	12.3	12.8	12.7	13.3	13.2	13.7	13.6	14.2	14.1	14.6	14.5	15.0	15.0	15.5
REINFORCEMENT "b" BAR SIZE	#	5	6	5	6	5	6	5	7	6	7	6	7	6	7	6	7	6	7	6	7	6	7	6	7	6	7	6	7
REINFORCEMENT "b" SPACING	IN.	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
REINFORCEMENT "b" LENGTH	FT.-IN.	3-10	4-3	3-10	4-3	3-10	4-3	3-10	4-8	4-8	5	4-8	5	4-8	5	4-8	5	4-8	5	4-8	5	4-8	5	4-8	5	4-8	5	4-8	5
REINFORCEMENT "c" BAR SIZE	#	4	5	4	5	4	5	4	5	4	5	4	5	4	5	4	5	4	5	4	5	4	5	4	5	4	5	4	6
REINFORCEMENT "c" SPACING	IN.	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
REINFORCEMENT "c" LENGTH	FT.-IN.	5-8	6-7	5-8	6-7	10-8	10-7	11-0	11-7	4-6	4-11	5-6	6-11	6-11	7-11	8-4	8-11	9-4	9-11	10-4	10-11	11-4	12-5	11-11	12-11	12-5	13-4	13-0	14-0
No. 4 @ 18" LENGTH	FT.-IN.	5-8	6-11	5-8	6-11	5-8	6-11	5-8	6-11	4-1	5-6	5-8	6-6	5-8	6-6	5-8	6-6	5-8	6-6	5-8	6-6	5-8	6-6	5-8	6-6	5-8	6-6	5-8	6-6
No. 4 @ 12" NUMBER*	#	76	80	80	84	84	88	88	88	68	68	72	76	76	80	80	84	84	88	88	92	92	96	96	100	100	104	104	108
CONC. COVER (CAISSON) DA/DA CONCRETE	C.F.A.F.	34.0	35.0	35.7	36.7	37.4	38.3	39.0	40.0	31.2	32.0	32.8	33.7	34.5	35.4	36.2	37.0	37.8	38.7	39.5	40.4	41.2	42.1	42.9	43.8	44.6	45.5	46.3	47.2
CONC. COVER (CAISSON) REINFORCEMENT	LB.S.F.	214	285	222	296	230	307	238	376	263	354	273	367	283	379	295	394	306	407	315	420	325	433	335	446	345	459	355	485
CONC. COVER (CAISSON) D CONCRETE	C.F.A.F.	23.2	N/A	24.9	N/A	26.6	N/A	28.2	N/A	18.6	N/A	20.2	N/A	21.9	N/A	23.6	N/A	25.2	N/A	26.9	N/A	28.6	N/A	30.2	N/A	31.9	N/A	33.6	N/A
CONC. COVER (CAISSON) E CONCRETE	LB.S.F.	13.3	N/A	12.3	N/A	13.3	N/A	13.3	N/A	14.3	N/A	14.3	N/A	14.3	N/A	14.3	N/A	14.3	N/A	14.3	N/A	14.3	N/A	14.3	N/A	14.3	N/A	14.3	N/A
CONC. COVER (CAISSON) REINFORCEMENT	LB.S.F.	226	N/A	234	N/A	243	N/A	251	N/A	292	N/A	302	N/A	312	N/A	322	N/A	332	N/A	342	N/A	352	N/A	362	N/A	372	N/A	382	N/A
CONC. COVER (OTHER) DA CONCRETE	C.F.A.F.	23.2	N/A	24.9	N/A	26.6	N/A	28.2	N/A	18.6	N/A	20.2	N/A	21.9	N/A	23.6	N/A	25.2	N/A	26.9	N/A	28.6	N/A	30.2	N/A	31.9	N/A	33.6	N/A
CONC. COVER (OTHER) EA CONCRETE	C.F.A.F.	13.3	N/A	12.3	N/A	13.3	N/A	13.3	N/A	14.3	N/A	14.3	N/A	14.3	N/A	14.3	N/A	14.3	N/A	14.3	N/A	14.3	N/A	14.3	N/A	14.3	N/A	14.3	N/A
CONC. COVER (OTHER) REINFORCEMENT	LB.S.F.	131	N/A	127	N/A	134	N/A	140	N/A	139	N/A	146	N/A	153	N/A	160	N/A	167	N/A	174	N/A	181	N/A	188	N/A	195	N/A	212	N/A
CONC. COVER (OTHER) EPOXY REINF. **	LB.S.F.	105	N/A	107	N/A	109	N/A	111	N/A	103	N/A	105	N/A	109	N/A	152	N/A	155	N/A	159	N/A	171	N/A	174	N/A	177	N/A	183	N/A

SPAN, "S"	FT.	8	9	10	11	12	6	7	8	9	10	11	12	13	14
HEIGHT, "H"	FT.	10	20	10	20	10	20	10	20	10	20	10	20	10	20	10	20	10	20	10	20	10	20	10	20	10	20	10	20
MAXIMUM EARTH COVER	FT.	10	20	10	20	10	20	10	20	10	20	10	20	10	20	10	20	10	20	10	20	10	20	10	20	10	20	10	20
CONC. ROOF T1	IN.	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
WALLS T2	IN.	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
INVERT T3	IN.	12	15	12	15	12	15	12	15	12	15	12	15	12	15	14	17	14	17	14	17	14	17	14	17	14	17	14	17
REINFORCEMENT "a" BAR SIZE	#	6	7	6	7	6	7	6	7	6	7	6	7	6	7	6	7	6	7	6	7	6	7	6	7	6	7	6	7
REINFORCEMENT "a" SPACING	IN.	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
REINFORCEMENT "a" LENGTH	FT.-IN.	15-4	15-10	15-8	15-10	15-8	15-10	15-9	16-0	15-9	16-0	15-10	16-1	15-10	16-1	16-0	16-5	16-4	16-5	16-4	16-5	16-4	16-5	16-4	16-5	16-4	16-5	16-4	16-5
REINFORCEMENT "b" BAR SIZE	#	6	7	6	7	6	7	6	7	6	7	6	7	6	7	6	7	6	7	6	7	6	7	6	7	6	7	6	7
REINFORCEMENT "b" SPACING	IN.	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
REINFORCEMENT "b" LENGTH	FT.-IN.	9-0	9-10	9-8	10-0	10-1	11-0	10-5	11-0	10-5	11-0	10-6	11-1	10-6	11-1	11-0	11-7	11-6	12-1	11-6	12-1	11-7	12-2	11-7	12-2	11-7	12-2	11-7	12-2
REINFORCEMENT "c" BAR SIZE	#	4	5	4	5	4	5	4	5	4	5	4	5	4	5	4	5	4	5	4	5	4	5	4	5	4	5	4	6
REINFORCEMENT "c" SPACING	IN.	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
REINFORCEMENT "c" LENGTH	FT.-IN.	5-8	6-7	5-8	6-7	10-8	10-7	11-0	11-7	4-6	4-11	5-6	6-11	6-11	7-11	8-4	8-11	9-4	9-11	10-4	10-11	11-4	12-5	11-11	12-11	12-5	13-4	13-0	14-0
No. 4 @ 18" LENGTH	FT.-IN.	5-8	6-11	5-8	6-11	5-8	6-11	5-8	6-11	4-1	5-6	5-8	6-6	5-8	6-6	5-8	6-6	5-8	6-6	5-8	6-6	5-8	6-6	5-8	6-6	5-8	6-6	5-8	6-6
No. 4 @ 12" NUMBER*	#	76	80	80	84	84	88	88	88	68	68	72	76	76	80	80	84	84	88	88	92	92	96	96	100	100	104	104	108
CONC. COVER (CAISSON) DA/DA CONCRETE	C.F.A.F.	34.0	35.0	35.7	36.7	37.4	38.3	39.0	40.0	31.2	32.0	32.8	33.7	34.5	35.4	36.2	37.0	37.8	38.7	39.5	40.4	41.2	42.1	42.9	43.8	44.6	45.5	46.3	47.2
CONC. COVER (CAISSON) REINFORCEMENT	LB.S.F.	214	285	222	296	230	307	238	376	263	354	273	367	283	379	295	394	306	407	315	420	325	433	335	446	345	459	355	485
CONC. COVER (CAISSON) D CONCRETE	C.F.A.F.	23.2	N/A	24.9	N/A	26.6	N/A	28.2	N/A	18.6	N/A	20.2	N/A	21.9	N/A	23.6	N/A	25.2	N/A	26.9	N/A	28.6	N/A	30.2	N/A	31.9	N/A	33.6	N/A
CONC. COVER (CAISSON) E CONCRETE	LB.S.F.	13.3	N/A	12.3	N/A	13.3	N/A	13.3	N/A	14.3	N/A	14.3	N/A	14.3	N/A	14.3	N/A	14.3	N/A	14.3	N/A	14.3	N/A	14.3	N/A	14.3	N/A	14.3	N/A
CONC. COVER (CAISSON) REINFORCEMENT	LB.S.F.	226	N/A	234	N/A	243	N/A	251	N/A	292	N/A	302	N/A	312	N/A	322	N/A	332	N/A	342	N/A	352	N/A	362	N/A	372	N/A	382	N/A
CONC. COVER (OTHER) DA CONCRETE	C.F.A.F.	23.2	N/A	24.9	N/A	26.6	N/A	28.2	N/A	18.6	N/A	20.2	N/A	21.9	N/A	23.6	N/A	25.2	N/A	26.9	N/A	28.6	N/A	30.2	N/A	31.9	N/A	33.6	N/A
CONC. COVER (OTHER) EA CONCRETE	C.F.A.F.	13.3	N/A	12.3	N/A	13.3	N/A	13.3	N/A	14.3	N/A	14.3	N/A	14.3	N/A	14.3	N/A	14.3	N/A	14.3	N/A	14.3	N/A	14.3	N/A	14.3	N/A	14.3	N/A
CONC. COVER (OTHER) REINFORCEMENT	LB.S.F.	131	N/A	127	N/A	134	N/A	140	N/A	139	N/A	146	N/A	153	N/A	160	N/A	167	N/A	174	N/A	181	N/A	188	N/A	195	N/A	212	N/A
CONC. COVER (OTHER) EPOXY REINF. **	LB.S.F.	105	N/A	107	N/A	109	N/A	111	N/A	103	N/A	105	N/A	109	N/A	152	N/A	155	N/A	159	N/A	171	N/A	174	N/A	177	N/A	183	N/A

*QUANTITY INCLUDES No. 4 CORNER BARS.

**SEE CH-2A FOR REINFORCEMENT DESIGNATED TO BE EPOXY COATED.

RCB DETAILS PER NDOT

D 30

N.T.S.

HIGH VELOCITY FLOW NOTES:

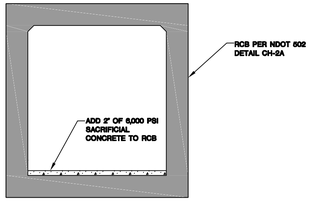
HIGH VELOCITY FLOWS ARE ANTICIPATED IN CHANNEL. THE FOLLOWING MEASURES SHALL BE TAKEN TO MITIGATE DAMAGE FROM HIGH VELOCITY FLOWS:

1. USE 3" SACRIFICIAL CONCRETE WEARING SURFACE WITH REINFORCING BARS IN THE SACRIFICIAL CONCRETE LAYER. FOOTING THICKNESS IS ALSO INCREASED TO ALLOW FOR THE SACRIFICIAL WEARING SURFACE.

2. TINE SURFACE OF INVERT SLAB. IN ADVANCE OF CURING OPERATIONS, USE A MECHANICAL STEEL TINE DEVICE TO FORM GROOVES PERPENDICULAR TO THE CENTERLINE. DO NOT PERFORM TINING TOO EARLY, WHERE BY THE GROOVES MAY CLOSE UP. MAKE TINES OF RECTANGULAR CROSS SECTION AND OF SUFFICIENT THICKNESS AND RESILIENCE TO RESULT IN GROOVES SPACED APPROXIMATELY 2" ON CENTER, $\frac{3}{32}$" TO $\frac{1}{8}$" WIDE, AND $\frac{1}{8}$" TO $\frac{1}{4}$" DEEP IN THE FINISHED CONCRETE PAVEMENT. TINE CONCRETE WITHIN 12" OF WALLS AND JOINTS BUT NO CLOSER THAN 6".

3. USE 1" DEEP TRAPEZOIDAL FORMLINER ON EXPOSED FACE OF CHANNEL WALLS PER DETAIL 2 ON DRAWING S2.

4. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS OF $f'c$=6,000 PSI.



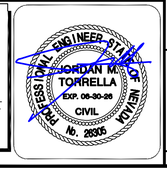
TYPICAL SECTION
RCB PER NDOT 502 WITH ADDITION 2" SACRIFICIAL CONCRETE

RCB CULVERT WITH SACRIFICIAL CONCRETE

E 29

N.T.S.

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EXACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.



REV.	DESCRIPTION	BY	DATE	APPROVAL

REVISIONS

STATE OF NEVADA DEPARTMENT OF TRANSPORTATION
SIGNED ORIGINAL ON FILE
11/19/20
2022
RCB CULVERTS SINGLE
"B"
SPEC.# 502.505
DETAIL NUMBER CH-2A

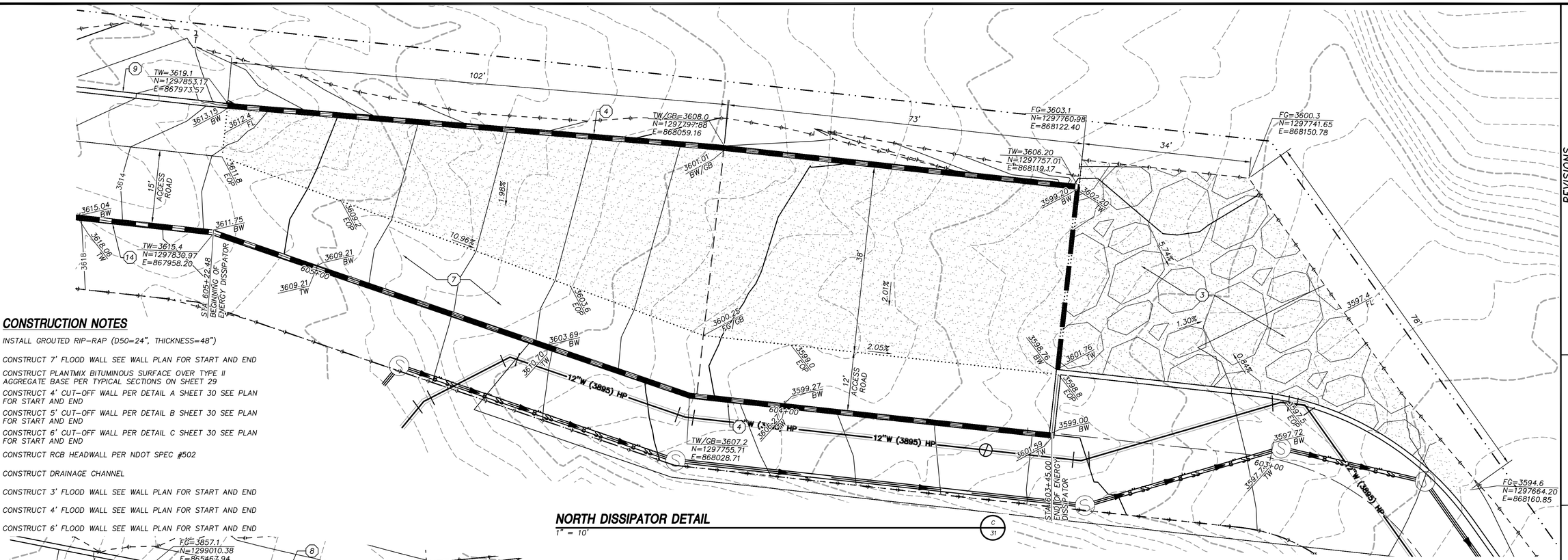
AtkinsRéalis
2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1.702.263.7275
Fax: +1.702.263.7200

SUMMERLIN

SUMMERLIN WEST VILLAGE 27
PARCEL D DRAINAGE INFRASTRUCTURE

STRUCTURAL DETAILS

DESIGNED BY: A. OLIVARES
DRAWN B



CONSTRUCTION NOTES

(3) INSTALL GROUTED RIP-RAP (D50=24", THICKNESS=48")

(4) CONSTRUCT 7' FLOOD WALL SEE WALL PLAN FOR START AND END

(7) CONSTRUCT PLANTMIX BITUMINOUS SURFACE OVER TYPE II AGGREGATE BASE PER TYPICAL SECTIONS ON SHEET 29

(8) CONSTRUCT 4' CUT-OFF WALL PER DETAIL A SHEET 30 SEE PLAN FOR START AND END

(9) CONSTRUCT 5' CUT-OFF WALL PER DETAIL B SHEET 30 SEE PLAN FOR START AND END

(10) CONSTRUCT 6' CUT-OFF WALL PER DETAIL C SHEET 30 SEE PLAN FOR START AND END

(11) CONSTRUCT RCB HEADWALL PER NDOT SPEC #502

(12) CONSTRUCT DRAINAGE CHANNEL

(14) CONSTRUCT 3' FLOOD WALL SEE WALL PLAN FOR START AND END

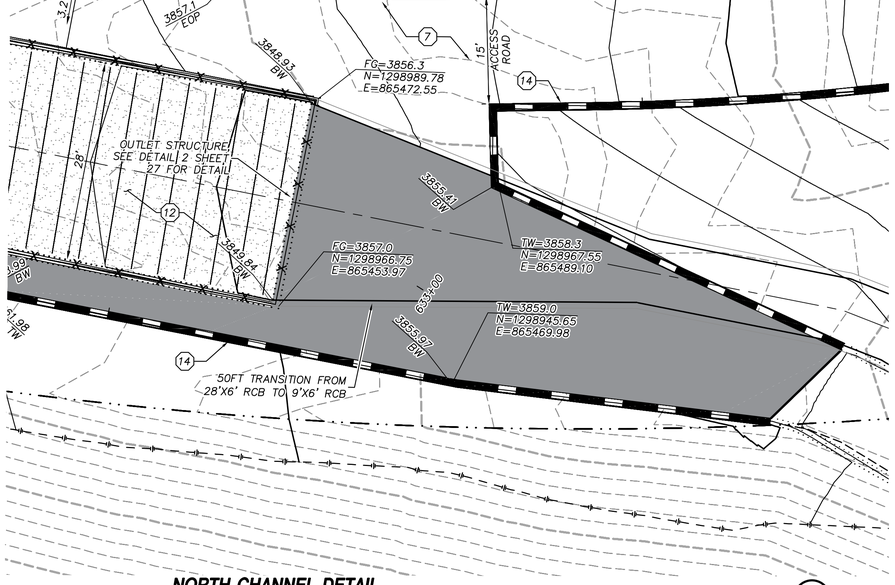
(15) CONSTRUCT 4' FLOOD WALL SEE WALL PLAN FOR START AND END

(16) CONSTRUCT 6' FLOOD WALL SEE WALL PLAN FOR START AND END

NORTH DISSIPATOR DETAIL

1" = 10'

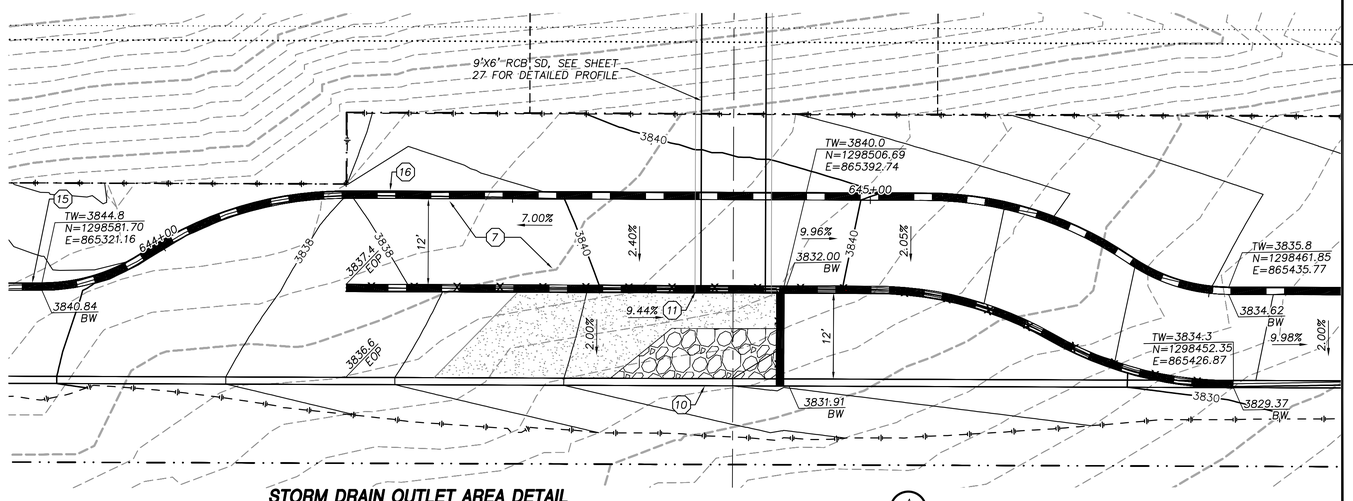
C / 31



NORTH CHANNEL DETAIL

1" = 10'

B / 31



STORM DRAIN OUTLET AREA DETAIL

1" = 10'

A / 31

HORIZONTAL: 1"=10'

BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK: D368
(REVISED 2008)
NAVD88 ELEVATION: 989.574 METERS
(3,246.63 FEET)
FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN.
T21S,R59E,S03

FAST Call before you UnderGround 1-702-432-5300 FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

Call before you Dig AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY. Call OR 1-800-642-2444

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY. CALL BEFORE YOU DO OVERHEAD 1-702-227-2929

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EXACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

PROFESSIONAL ENGINEER STATE OF NEVADA JORDAN M. TORRELLA EXP. 06-30-26 CIVIL No. 28305

REVISIONS

REV.	DESCRIPTION	BY	DATE	APPROVAL

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2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1.702.263.7275
Fax: +1.702.263.7200

SUMMERLIN

SUMMERLIN WEST VILLAGE 27

PARCEL D DRAINAGE INFRASTRUCTURE

GRADING DETAILS

DESIGNED BY:	A. OLIVARES
DRAWN BY:	C. HONEY
CHECKED BY:	J. TORRELLA
HORIZ.:	NONE
VERT.:	NONE
XXXXXXXX	LXX-XXXXX
DATE:	JUNE, 2025
DRAWING NO.	31/31
JOB NO.	100085220

C:\pw_work\atkinsn01\dms72301\85220-XX-DETL-01.dwg LAYOUT: GRADING DETAILS Jun 18, 2025 - 12:07PM

AtkinsRéalis

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