

Update #1 to the
Technical Drainage Study for

Grand Canyon Village Onsites
Las Vegas, Nevada

W.O. # 8025-2

Prepared for

**Grand Canyon Village
LLC**

10655 Park Run Drive, Suite 160
Las Vegas, NV 89144
PH: (702) 220-4500

Submitted to:

**City of Las Vegas
Public Works**

495 S Main Street
Las Vegas, NV 89101
PH: (702) 229-6251



HYDROLOGIC CRITERIA AND DRAINAGE MANUAL
DRAINAGE STUDY INFORMATION FORM

Name of Development: Grand Canyon Village Onsites Date: June 21st, 2022

Location of Development: a) Descriptive (Cross Streets) North/South: Grand Canyon Drive

East/West: Skye Canyon Park Drive

b) Section: 7 Township: 19S Range: 60E

c) APN : 125-07-611-001

Name of Owner: Grand Canyon Village LLC

Telephone No.: (702)-220-4500 Fax No.: _____ E-Mail Address: _____

Address: 10655 Park Run Drive, Suite 160, Las Vegas, NV 89144

Contact Person-Name: Aaron Yup Telephone No.: 702-873-7550

* E-Mail Address: ayup@vtnnv.com Fax No.: 702-362-2597

Firm: VTN Nevada

Address: 2727 S. Rainbow Blvd Las Vegas, NV 89146

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		Commercial

1. Total Owned Land Area: At Site: ±24.11 Acres Being Developed/Disturbed: ±12.23 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

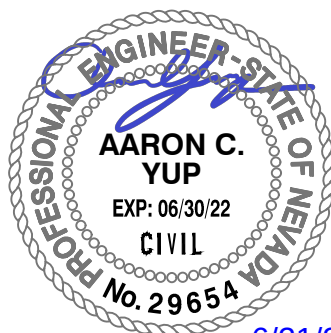
4. Proposed type of development (Residential, Commercial, Etc.): Commercial

5. Approximate upstream land area which drains to the subject site: ±0 Acres

6. Has the site drainage been evaluated in the past? ☒ YES ☐ NO If yes, please identify documentation: Grand Canyon Village (Offsites) (DS5398)

7. If known, please briefly identify the proposed discharge point(s) of runoff from the site: Eastern boundary in regional facility & frontage road of Oso Blanca Road west of US95.

8. Briefly describe your proposed schedule for the subject project: ASAP



6/21/22

Engineer's Seal

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

***New Required Field**

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

	Revision	Date

Local Entity File No.

REFERENCE:

STANDARD FORM 1

UPDATE #1
TO THE TECHNICAL DRAINAGE STUDY
FOR
GRAND CANYON VILLAGE ONSITES
CITY OF LAS VEGAS, NEVADA
W.O. # 8025-2
DS #5462

Prepared for:
GRAND CANYON VILLAGE LLC
10655 Park Run Drive, Suite 200
Las Vegas, Nevada 89144
Ph: 702-220-4500

Submitted To:
CITY OF LAS VEGAS PUBLIC WORKS
495 S Main Street
Las Vegas, Nevada 89109
Ph: 702-229-6251





June 21, 2022
W.O. #8025-2

City of Las Vegas
Public Works Department
495 S. Main Street
Las Vegas, NV 89101

Attention: Albert Sung, P.E.
Flood Control Project Engineer

Subject: Update #1 to the Technical Drainage Study for Grand Canyon Village Onsites

Mr. Sung:

This letter certifies that all items on the *Update #1 to the Technical Drainage Study for Grand Canyon Village Onsites* electronic submittal matches the paper version bound into the study.

Respectfully submitted,

A handwritten signature in blue ink, appearing to read 'Aaron Yup', is written over a horizontal line.

Aaron Yup, P.E.

June 21, 2022
W.O. #8025-2
City of Las Vegas
495 S. Main Street
Las Vegas, NV 89101

Attention: Albert Sung, P.E.
Flood Control Project Engineer

**SUBJECT: UPDATE #1 TO THE TECHNICAL DRAINAGE STUDY FOR GRAND CANYON
VILLAGE ONSITES (DS #5462)**

Mr. Sung:

This Update #1 to the Technical Drainage Study for *Grand Canyon Village Onsites (DS#5462)* is being submitted to the City of Las Vegas to address improvement plan revisions from the initial drainage study which previously received final approval on November 15th, 2021. The revisions made since the approval of the Technical Drainage Study are as follows:

- The pads and locations of onsite Buildings #6 (Pad F) and #7 (Pad G) are now included at the northeast corner of the project site along with the additional grading and details for the accompanying parking lot and driveway areas, replacing the general mass grading shown in the previously approved study. Sections of the northern and central drive aisles were subsequently revised to match into the new grading.
- The grading, size, and location of Building #4 (Pad D) and adjacent drive aisles have been modified at the southeast corner of the project site to incorporate the latest site plan, with limited revisions to the parking stalls adjacent to Building #3 (Pad C).
- The proposed 36" onsite RCP storm drain was revised to match the revisions for the existing 36" RCP slopes and lengths in Oso Blanca submitted within the *Grand Canyon Village Update #2 (DS#5398)*.

The project site was conservatively analyzed assuming full development with commercial land use in the initial study. As such, the increase in flow from the development of the northeast corner of the project site has been accounted for and no new hydrology calculations have been provided within this update.

Assumed drainage patterns remain mostly the same as in the initial study, with the exception of the new northeast parking lot and northern drive aisle. As a result, the areas of subbasins ON1B (2/5-cfs), ON1C (1/3-cfs), and ON1E (3/6-cfs) have been revised to match the latest grading plan. However, the change in area of each subbasin was not significant enough to record any measurable change in the previously analyzed flow magnitudes. As such, the overall site flow and discharge patterns proposed within the initially approved study were assumed to be acceptable and remain unchanged. The revised *Figure 8: Ultimate Condition Drainage Basin Map* has been provided in

Appendix A. Additionally a revised stormwater quality figure has been provided to match the latest parking lot layout showing BMP criteria is still met with . *Figure 9: Storm Water Quality Exhibit* has been provided in *Appendix A*.

Onsite normal depth hydraulic calculations have been updated to reflect the revisions. Specific changes and revisions have been listed below:

- FM7 in the northern drive aisle now has proposed curb and gutter on the south side of the aisle, replacing the earthen graded swale of the previous submittal.
- FM11 has been revised to match the new grades in the drive aisle east of Building #4.
- FM13 has been revised to match the new grades in the concrete U-channel gutter in the parking lot east of Building #4 assuming a flow magnitude of (1/3)ON1H (2-cfs).
- SW1 has been removed and replaced with FM14, analyzing the now improved drive aisle and valley gutter north of SDDI #3.
- FM15 has been added, analyzing the drive aisle and parking lot between the newly proposed Building #6 (Pad F) and Building #7 (Pad G).

Finished floor calculations have been subsequently revised to include the new pads and incorporate grading changes. The revised normal depth and Finished floor calculations have been provided in *Appendix B*.

The Standard Form 6 calculation analyzing the proposed onsite storm drain system and existing downstream 36" RCP in Oso Blanca has been revised to incorporate the adjustment to the storm drain facilities performed in the *Update #2 to Grand Canyon Village(DS#5398)*. HGL criteria is still met and the proposed system is expected to function consistent with the intent of the initial study. The revised Standard Form 6 hydraulic calculations have been provided in *Appendix B*. Reference material from the *Update #2 to Grand Canyon Village* has been provided in *Appendix C*.

The improvement plans submitted with this study show revisions in red with clouding to show the areas of revision.

I hope this addresses your concerns regarding this project. If there are any questions or any additional information is required, please contact this office.

Respectfully Submitted,
VTN Consulting



Aaron Yup, P.E.

**CLV APPROVAL LETTER FOR GRAND
CANYON VILLAGE (DS#5462)**

CITY OF LAS VEGAS			DATE:
INTER-OFFICE MEMORANDUM			November 15, 2021
TO: Land Development Services Department of Building & Safety			FROM: Jennifer Shinn, P.E. Flood Control, Engr. Associate Department of Public Works
SUBJECT:	Drainage Study for:		COPIES TO:
	Grand Canyon Village Onsites		VTN Nevada
Cross Streets:	Grand Canyon Dr. & Skye Canyon Park Dr.		Grand Canyon Village, LLC
File Number:	F:\Depot\DSMemos\DS5462C.doc		Bart Anderson, P.E., DevCo
Parcel Number:	125-07-601-012		CCRFCD NDOT
Zoning Action:	21-0175-SDR1		
FEMA Flood Zone	YES	NO X	
Proposed Storm Drain	YES X	NO	

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1 st Submittal	6/7/2021	6/23/2021	See Comments Below	\$400.00	4324331: \$400
2 nd Submittal	7/19/2021	8/16/2021		\$400.00	4377203: \$400
3 rd Submittal	11/15/2021	11/15/2021	Approved	N/C	N/A
			TOTAL FEES (LDDRS):	\$800.00	----

REMARKS:

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

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

1. All storm drain inlets that are more than 10'-deep require a special structural detail and calculations. Submit structural design and calculations to City Building & Safety Department for review and approval prior to the final approval of the drainage study.
2. Technical Drainage Study Update is required for any development of the future Pads not constructed with this Study.

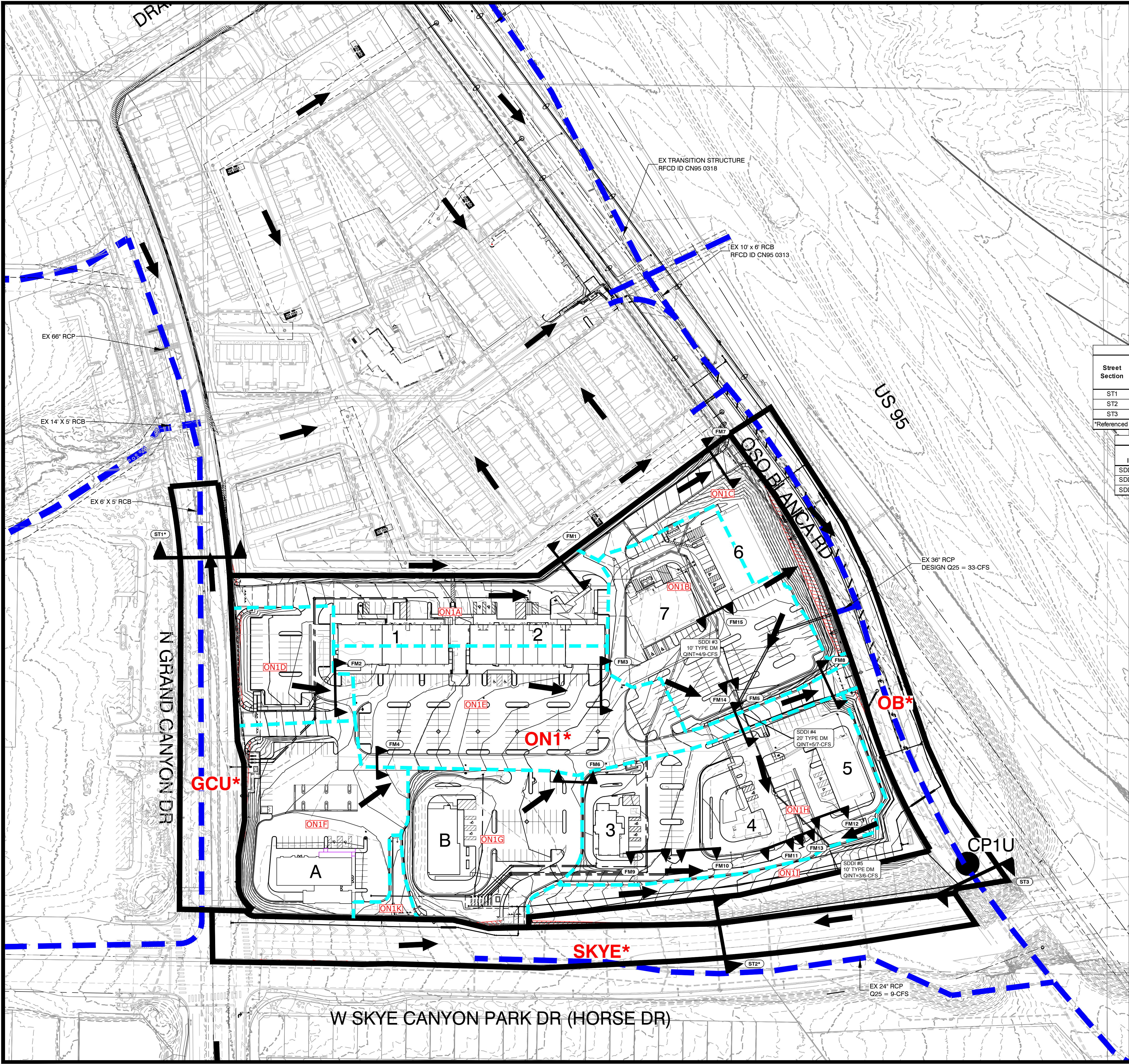
NOTE: Please be advised that all land surface area disturbances over 1 acre or any area adjacent to a water way must submit to the *Nevada Division of Environmental Protection* a "Notice of Intent" to discharge that certifies a stormwater pollution prevention plan has been developed and is maintained 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.

END OF REMARKS
HDR/JKS

T/R/S: T19S/R60E/S7
AREA G-07

APPENDIX A

FIGURES AND EXHIBITS



ULTIMATE CONDITION HEC-1 SUMMARY TABLE			
Basin ID	Area (ac)	Q10 (cfs)	Q100 (cfs)
ON1*	12.23	17	35
GCU*	1.25	2	4
OB*	1.25	3	5
SKYE*	1.61	3	5
CP1U (ON1C + ON1I + SDD#4 BYPASS + OB)	-	8	17

*Referenced from the TDS for Grand Canyon Village (CLV#5398)

PRORATED SUBBASIN SUMMARY ULTIMATE CONDITION				
BASIN	BASIN AREA		Q10	Q100
ON1	12.23		17	35
SUBBASIN	SUB AREA	SUB AREA	Q10	Q100
ON1A	1.26	10.3%	2	4
ON1B	1.68	13.7%	2	5
ON1C	0.85	7.0%	1	3
ON1D	0.67	5.5%	1	2
ON1E	2.15	17.6%	3	6
ON1F	1.48	12.1%	2	4
ON1G	1.31	10.7%	2	4
ON1H	2.08	17.0%	3	6
ON1I	0.64	5.2%	1	1
ON1K	0.11	0.9%	<1	<1
TOTAL	12.23	100.0%	17	35

NORMAL DEPTH PERIMETER STREET SUMMARY (100-YEAR ULTIMATE CONDITION)					
Street Section	Q100 (cfs)	Slope	Velocity (ft/s)	Depth (ft)	Tributary Basin
ST1*	4	0.50%	1.60	0.35	GCU*
ST2*	5	2.25%	3.30	0.35	SKYE*
ST3	17	1.93%	3.76	0.42	CP1U

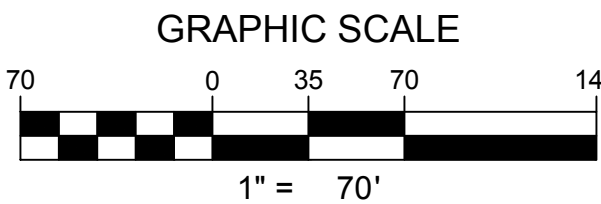
*Referenced from the Technical Drainage Study for Grand Canyon Village (CLV#5398)

10 - YEAR DEVELOPED DRY LANE ANALYSIS SUMMARY								
Street Section	Q100 (cfs)	Slope	Velocity (ft/s)	Depth (ft)	V x D	Max Dry Lane Depth	Req. Dry Lane	Meets Dry Lane, Dry Lane Available
ST1	1	0.50%	1.38	0.29	0.40	0.55	12.00	YES, 25'-ft
ST2	3	2.25%	2.95	0.31	0.91	0.55	12.00	YES, 24'-ft
ST3	4	1.93%	3.14	0.35	1.10	0.45	12.00	YES, 17'-ft

*Referenced from the Technical Drainage Study for Grand Canyon Village (CLV#5398)

ULTIMATE CONDITION 100-YEAR DROP INLET SUMMARY TABLE							
ID	Size	Flow Summary	Q ₁₀ (cfs)			Q ₁₀₀ (cfs)	
			Approach	Intercepted	Bypass	Approach	Intercepted
SDDI #3	10' Type DM	ON1A+ON1B	4	4	0	9	9
SDDI #4	20' Type DM	ON1D+ON1E+ON1F+ON1G	8	5	3	16	8
SDDI #5	10' Type DM	ON1H	3	3	0	6	6

NORMAL DEPTH ONSITE STREET SUMMARY (100-YEAR ULTIMATE CONDITION)					
Street Section	Q100 (cfs)	Slope	Velocity (ft/s)	Depth (ft)	Tributary Basin
FM1	4	2.15%	3.28	0.35	ON1A
FM2	2	3.11%	3.02	0.16	ON1D
FM3	8	3.68%	4.17	0.23	ON1D+ON1E
FM4	4	3.00%	3.37	0.19	ON1F
FM5	16	5.78%	7.57	0.41	ON1D+ON1E+ON1F+ON1G
FM6	4	0.50%	1.51	0.31	ON1G
FM7	3	4.79%	4.01	0.27	ON1C
FM8	8	5.78%	5.01	0.35	SDDI#4 BYPASS
FM9	6	2.34%	3.78	0.28	ON1H
FM10	6	0.79%	2.43	0.33	ON1H
FM11	2	0.50%	1.82	0.30	(1/3)ON1H
FM12	6	0.50%	1.61	0.24	ON1H
FM13	2	0.50%	2.96	0.36	(1/3)ON1H
FM14	5	1.00%	2.06	0.19	ON1B
FM15	5	0.50%	2.06	0.28	ON1B



LEGEND

- CONCENTRATION POINT
- BASIN BOUNDARY
- SUBBASIN BOUNDARY
- EXISTING DRAINAGE FACILITY
- PROPOSED DRAINAGE FACILITY
- BASIN DESIGNATION
- SUBBASIN DESIGNATION
- FLOW ARROW
- NORMAL DEPTH SECTION

CLV

GRAND CANYON VILLAGE LLC
10655 PARK RUN DRIVE, SUITE 100
LAS VEGAS, NV 89144
(702) 226-1000

FIGURE 8: ULTIMATE CONDITION
DRAINAGE BASIN MAP

DRAWN BY: MAY 2022
DESIGNED BY: MAY 2022
CHECKED BY: MAY 2022
PROJECT NO: 9025-2
SCALE: 1" = 70'
HORIZ. VERT.

SHEET
OF SHEETS
DRAWING NO.

REVISION

DATE

BY

REV

###

LAND SURVEYORS

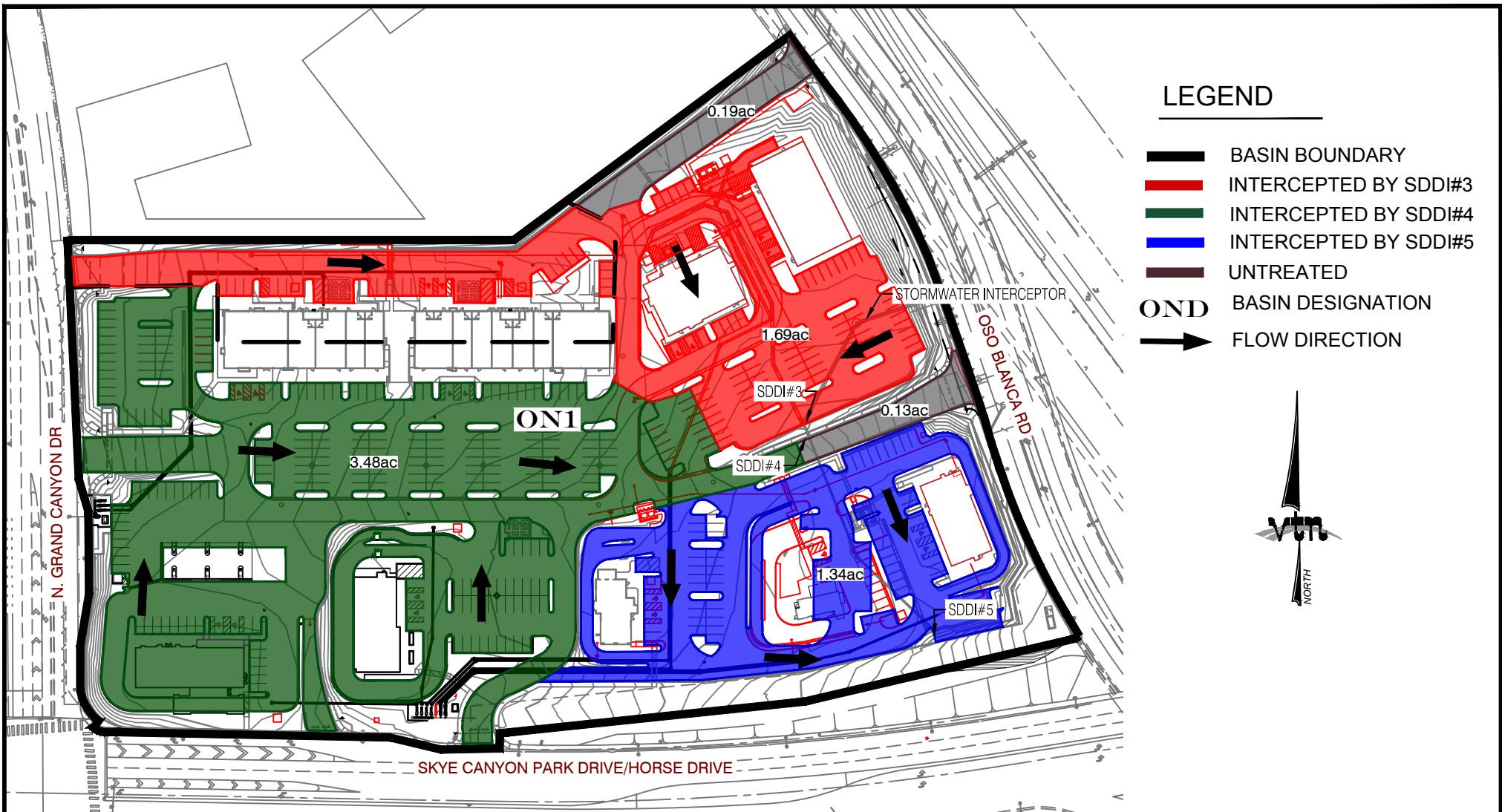
CONSULTING ENGINEERS & PLANNERS

PH: (702) 973-7550 FAX: (702) 382-2587 WEB: WWW.VTNNY.COM

2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5148

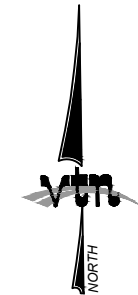
VTNNY

1:38/26/Drainage/Onsite TDS/UP1A_Figures/8025-Figure 7-Developed Condition Basin Map onsite.dwg/126/2022 1:28 PM/9/4/2022

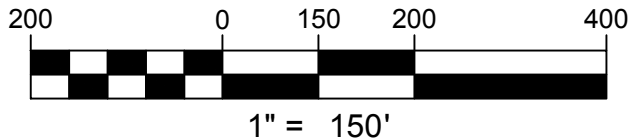


LEGEND

- BASIN BOUNDARY
- INTERCEPTED BY SDDI#3
- INTERCEPTED BY SDDI#4
- INTERCEPTED BY SDDI#5
- UNTREATED
- OND** BASIN DESIGNATION
- FLOW DIRECTION



GRAPHIC SCALE



TREATED ONSITE PARKING LOT IMPERVIOUS AREA		
TOTAL PARKING LOT (AC)	TREATED PARKING LOT IMPERVIOUS AREA (AC)	% OF TREATED PARKING LOT
6.91	6.64	96%

BMP PARKING LOT SUMMARY TABLE		
DESIGNATION	TRIBUTARY AREA (AC)	85-TH PERCENTILE STORM EVENT (CFS)
SDDI#3	1.69	0.79
SDDI#4	3.48	1.63
SDDI#5	1.34	0.63

H:\8025\Drainage\Onsite TDS\UP11A_Figures\8025-Figure 9 - Storm Water Quality.dwg

FIGURE 9 - STORM WATER QUALITY EXHIBIT
GRAND CANYON VILLAGE ONSITES

APPENDIX B

HYDRAULIC CALCULATIONS

APPENDIX B.1
REVISED NORMAL DEPTH CALCULATIONS

Worksheet for FM7

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	4.79000	%
Discharge	3.00	ft ³ /s
Section Definitions		

Station (ft)	Elevation (ft)
0+00.00	37.30
0+00.50	37.30
0+00.50	36.80
0+28.50	36.39
0+28.50	36.35
0+30.50	36.22
0+30.50	36.72
0+31.00	36.72

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 37.30)	(0+00.50, 36.80)	0.013
(0+00.50, 36.80)	(0+28.50, 36.35)	0.016
(0+28.50, 36.35)	(0+31.00, 36.72)	0.013

Options

Current Roughness weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	0.27	ft
Elevation Range	36.22 to 37.30 ft	
Flow Area	0.75	ft ²

Worksheet for FM7

Results

Wetted Perimeter	9.11	ft
Hydraulic Radius	0.08	ft
Top Width	8.80	ft
Normal Depth	0.27	ft
Critical Depth	0.34	ft
Critical Slope	0.00731	ft/ft
Velocity	4.01	ft/s
Velocity Head	0.25	ft
Specific Energy	0.52	ft
Froude Number	2.43	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.27	ft
Critical Depth	0.34	ft
Channel Slope	4.79000	%
Critical Slope	0.00731	ft/ft

Cross Section for FM7

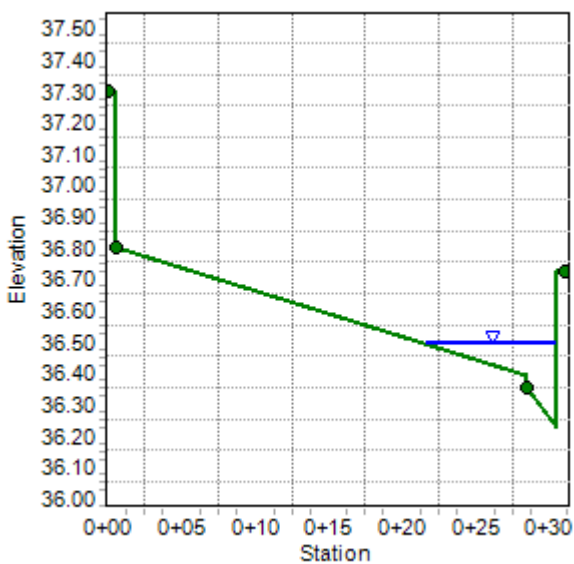
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	4.79000	%
Normal Depth	0.27	ft
Discharge	3.00	ft ³ /s

Cross Section Image



Worksheet for FM11

Project Description

Friction Method Manning Formula
Solve For Normal Depth

Input Data

Channel Slope 0.50000 %
Discharge 2.00 ft³/s
Section Definitions

Station (ft)	Elevation (ft)
0+00.00	39.20
0+00.50	39.20
0+00.50	38.70
0+24.00	37.74
0+24.00	38.24
0+24.50	38.24

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 39.20)	(0+00.50, 38.70)	0.013
(0+00.50, 38.70)	(0+24.00, 37.74)	0.016
(0+24.00, 37.74)	(0+24.50, 38.24)	0.013

Options

Current Roughness weighted Method Pavlovskii's Method
Open Channel Weighting Method Pavlovskii's Method
Closed Channel Weighting Method Pavlovskii's Method

Results

Normal Depth 0.30 ft
Elevation Range 37.74 to 39.20 ft
Flow Area 1.10 ft²
Wetted Perimeter 7.65 ft
Hydraulic Radius 0.14 ft

Worksheet for FM11

Results

Top Width	7.34	ft
Normal Depth	0.30	ft
Critical Depth	0.28	ft
Critical Slope	0.00750	ft/ft
Velocity	1.82	ft/s
Velocity Head	0.05	ft
Specific Energy	0.35	ft
Froude Number	0.83	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.30	ft
Critical Depth	0.28	ft
Channel Slope	0.50000	%
Critical Slope	0.00750	ft/ft

Cross Section for FM11

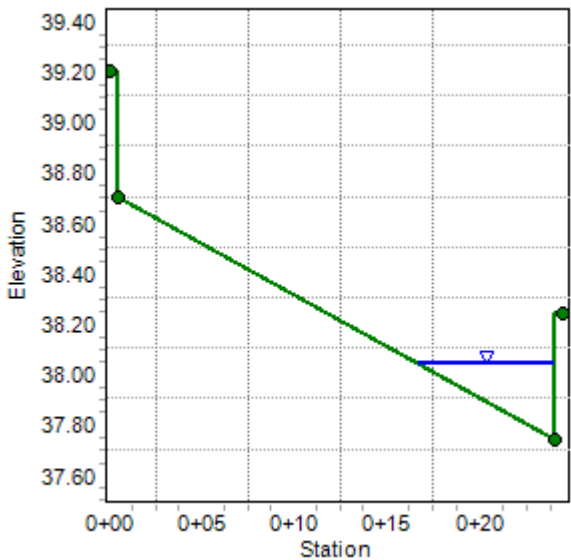
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.50000	%
Normal Depth	0.30	ft
Discharge	2.00	ft ³ /s

Cross Section Image



Worksheet for FM13

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.50000	%
Discharge	2.00	ft³/s
Section Definitions		

Station (ft)	Elevation (ft)
100	100
200	100
300	100
400	100
500	100
600	100
700	100
800	100
900	100
1000	100
1100	100
1200	100
1300	100
1400	100
1500	100
1600	100
1700	100
1800	100
1900	100
2000	100
2100	100
2200	100
2300	100
2400	100
2500	100
2600	100
2700	100
2800	100
2900	100
3000	100
3100	100
3200	100
3300	100
3400	100
3500	100
3600	100
3700	100
3800	100
3900	100
4000	100
4100	100
4200	100
4300	100
4400	100
4500	100
4600	100
4700	100
4800	100
4900	100
5000	100
5100	100
5200	100
5300	100
5400	100
5500	100
5600	100
5700	100
5800	100
5900	100
6000	100
6100	100
6200	100
6300	100
6400	100
6500	100
6600	100
6700	100
6800	100
6900	100
7000	100
7100	100
7200	100
7300	100
7400	100
7500	100
7600	100
7700	100
7800	100
7900	100
8000	100
8100	100
8200	100
8300	100
8400	100
8500	100
8600	100
8700	100
8800	100
8900	100
9000	100
9100	100
9200	100
9300	100
9400	100
9500	100
9600	100
9700	100
9800	100
9900	100
10000	100

0+00.00	38.07
0+00.50	38.07
0+00.50	37.57
0+03.00	37.40
0+03.00	37.90
0+03.50	37.90

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 38.07)	(0+03.50, 37.90)	0.013

Options

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

Results

Normal Depth	0.36	ft
Elevation Range	37.40 to 38.07 ft	
Flow Area	0.68	ft²
Wetted Perimeter	3.05	ft
Hydraulic Radius	0.22	ft
Top Width	2.50	ft
Normal Depth	0.36	ft

Worksheet for FM13

Results

Critical Depth	0.36	ft
Critical Slope	0.00496	ft/ft
Velocity	2.96	ft/s
Velocity Head	0.14	ft
Specific Energy	0.49	ft
Froude Number	1.00	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.36	ft
Critical Depth	0.36	ft
Channel Slope	0.50000	%
Critical Slope	0.00496	ft/ft

Cross Section for FM13

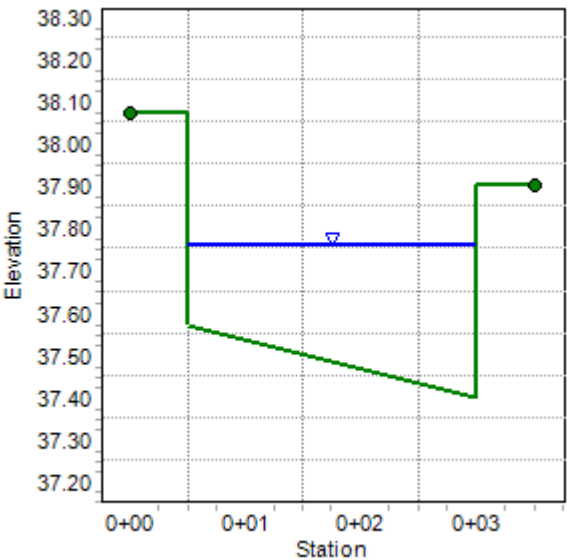
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.50000	%
Normal Depth	0.36	ft
Discharge	2.00	ft ³ /s

Cross Section Image



Worksheet for FM14

Project Description

Friction Method Manning Formula
Solve For Normal Depth

Input Data

Channel Slope 1.00000 %
Discharge 5.00 ft³/s
Section Definitions

Station (ft)	Elevation (ft)
0+00.00	40.76
0+00.50	40.76
0+00.50	40.26
0+11.00	40.16
0+12.50	40.10
0+14.00	40.16
0+24.50	40.19
0+24.50	40.69
0+25.00	40.69

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 40.76)	(0+00.50, 40.26)	0.013
(0+00.50, 40.26)	(0+11.00, 40.16)	0.016
(0+11.00, 40.16)	(0+14.00, 40.16)	0.013
(0+14.00, 40.16)	(0+24.50, 40.19)	0.016
(0+24.50, 40.19)	(0+25.00, 40.69)	0.013

Options

Current Roughness weighted Method Pavlovskii's Method
Open Channel Weighting Method Pavlovskii's Method
Closed Channel Weighting Method Pavlovskii's Method

Worksheet for FM14

Results

Normal Depth		0.19	ft
Elevation Range	40.10 to 40.76 ft		
Flow Area		2.43	ft ²
Wetted Perimeter		24.12	ft
Hydraulic Radius		0.10	ft
Top Width		24.00	ft
Normal Depth		0.19	ft
Critical Depth		0.20	ft
Critical Slope		0.00749	ft/ft
Velocity		2.06	ft/s
Velocity Head		0.07	ft
Specific Energy		0.25	ft
Froude Number		1.14	
Flow Type	Supercritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.19	ft
Critical Depth	0.20	ft
Channel Slope	1.00000	%
Critical Slope	0.00749	ft/ft

Cross Section for FM14

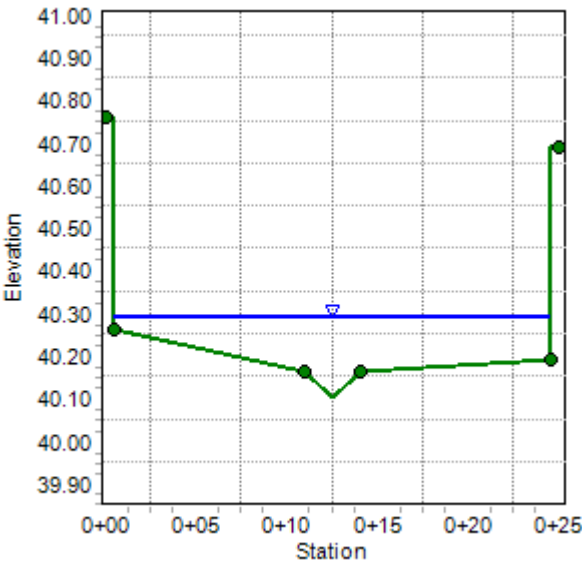
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	1.00000	%
Normal Depth	0.19	ft
Discharge	5.00	ft³/s

Cross Section Image



Worksheet for FM15

Project Description

Friction Method Manning Formula
Solve For Normal Depth

Input Data

Channel Slope 0.50000 %
Discharge 5.00 ft³/s
Section Definitions

Station (ft)	Elevation (ft)
0+00.00	42.50
0+00.50	42.50
0+00.50	42.00
0+14.00	41.58
0+15.50	41.52
0+17.00	41.58
0+30.50	41.98
0+30.50	42.48
0+31.00	42.48

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 42.50)	(0+14.00, 41.58)	0.013
(0+14.00, 41.58)	(0+17.00, 41.58)	0.016
(0+17.00, 41.58)	(0+31.00, 42.48)	0.013

Options

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

Results

Normal Depth 0.28 ft
Elevation Range 41.52 to 42.50 ft

Worksheet for FM15

Results

Flow Area	2.43	ft ²
Wetted Perimeter	17.83	ft
Hydraulic Radius	0.14	ft
Top Width	17.82	ft
Normal Depth	0.28	ft
Critical Depth	0.28	ft
Critical Slope	0.00521	ft/ft
Velocity	2.06	ft/s
Velocity Head	0.07	ft
Specific Energy	0.35	ft
Froude Number	0.98	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.28	ft
Critical Depth	0.28	ft
Channel Slope	0.50000	%
Critical Slope	0.00521	ft/ft

Project Description

Normal Depth

5.00 ft³/s

APPENDIX B.2

FINISHED FLOOR CALCULATIONS

FINISHED FLOOR VERIFICATION

DEVELOPMENT Grand Canyon Village Onsites

W.O. # 8025-2

CALCULATED BY ACY

EQUATIONS AND NOTES

Freeboard requires the set finished floor elevations of all buildings be set twice the depth above the water surface elevation to a maximum of 18" plus the depth of flow.

$$\text{Additional Freeboard} = \text{Actual Freeboard} - \text{Required Freeboard}$$

LOT	FLOW DEPTH (ft)	FLOWLINE (ft)	REQUIRED FF (ft)	ACTUAL FF (ft)	ADDITIONAL FREEBOARD (ft)	FLOWMASTER SECTION
BLDG #1 NW	0.35	52.50	53.20	54.5	1.30	FM1
BLDG #1 NE	0.35	49.90	50.60	52.5	1.90	FM1
BLDG #1 SW	0.16	53.03	53.35	54.5	1.15	FM2
BLDG #1 SE	0.23	49.80	50.26	52.5	2.24	FM3
BLDG #2 NW	0.35	47.20	47.90	49.0	1.10	FM1
BLDG #2 NE	0.35	44.69	45.39	47.0	1.61	FM1
BLDG #2 SW	0.23	48.10	48.56	49.0	0.44	FM3
BLDG #2 SE	0.23	45.17	45.63	47.0	1.37	FM3
BLDG #3 NE	0.28	40.71	41.27	41.8	0.53	FM9
BLDG #3 SE	0.28	40.13	40.69	41.8	1.11	FM9
BLDG #4 NE	0.30	38.63	39.23	39.5	0.27	FM11
BLDG #4 SW	0.33	38.37	39.03	39.5	0.47	FM10
BLDG #4 SE	0.30	38.63	39.23	39.5	0.27	FM11
BLDG #5 NW	0.24	37.75	37.99	38.7	0.71	FM12
BLDG #5 NE	0.35	30.15	30.50	38.7	8.20	FM8
BLDG #5 SW	0.24	37.39	37.63	38.7	1.07	FM12
BLDG #5 SE	0.43	23.24	23.67	38.7	15.03	ST3
BLDG #6 NW	0.17	41.52	41.69	43.0	1.31	FM7
BLDG #6 SW	0.28	41.52	41.80	43.0	1.20	FM15
BLDG #7	0.28	41.52	41.80	44.1	2.30	FM15
PAD A	0.19	51.95	52.14	54.9	2.76	FM4
PAD B	0.31	44.28	44.59	47.0	2.41	FM6

APPENDIX B.3
STANDARD FORM 6 CALCULATIONS

Starting HGL and EGL

Tailwater Elevation	Outlet Invert Elevation	Tailwater Depth (ft)	Critical Depth- Dc (ft)	Pipe Diameter- D (ft)	(Dc+D)/2 (ft)	Starting HGL (ft)	Hv (ft)	Starting EGL (ft)
2717.00	2715.54	1.46	1.54	3.0	2.272	2717.812	0.16	2717.98

Phi Index

n Value	Phi
0.013	0.004925

$$Sf = \frac{\Phi H v}{R^{1.33}}$$

$$\Phi = \frac{2g(n^2)}{2.21}$$

STANDARD FORM 6

DEVELOPMENT:	GRAND CANYON VILLAGE ONSITES	
CALCULATED BY:	VE	WO# 8025-2
STORM DRAIN SEGMENT:	ONSITE DRAIN	
DESCRIPTION:	SDDI#5 TO EX.10'x6' RCB	

$$H_j = (V_2^2 / 2g) - K_j (V_1^2 / 2g) \qquad H_m = K_m (V_2^2 / 2g) \qquad H_b = K_b (V_2^2 / 2g) \qquad H_i = K_i (V_2^2 / 2g)$$

Segment Number	Segment Type	Starting Station	Ending Station	Diameter (ft)	D/S Invert	U/S Invert	Length (ft)	Area (sq. ft)	Phi	Flow (cfs)	Slope (%)	Velocity (fps)	Hv (ft)	Sf (ft/ft)	Ave. Sf (ft/ft)	Hf (ft)	Hj (ft)	Hm (ft)	Hb (ft)	Hi (ft)	H_ (ft)	H Total (ft)	U/S EGL Elevation	U/S HGL Elevation	Pressure Flow ?	D/S EGL of U/S Segment	Final U/S EGL	Final U/S HGL
1	EX.PIPE	10+00.00	10+12.51	3	2715.54	2719.32	12.51	7.07	0.00492	23.0	30.22	3.25	0.16	0.00119	0.00119	0.01						0.01	2717.99	2717.83	Yes	2722.48	2722.48	2722.32
2	EX. SDMH	10+12.51	10+12.51	3	2719.32	2723.62	0.00	7.07	0.00492	23.0	N/A	3.25	0.16	0.00119	0.00119	0.00		0.00				0.00	2722.49	2722.32	Yes	2726.78	2726.78	2726.62
3	EX.PIPE	10+12.51	10+48.01	3	2723.62	2723.80	35.50	7.07	0.00492	23.0	0.51	3.25	0.16	0.00119	0.00119	0.04						0.04	2726.83	2726.66	Yes	2726.96	2726.96	2726.80
4	EX. SDMH	10+48.01	10+48.01	3	2723.80	2723.80	0.00	7.07	0.00492	23.0	N/A	3.25	0.16	0.00119	0.00119	0.00		0.00				0.00	2726.97	2726.80	Yes	2726.96	2726.97	2726.80
5	EX.PIPE	10+48.01	10+60.40	3	2723.80	2724.40	12.39	7.07	0.00492	23.0	4.84	3.25	0.16	0.00119	0.00119	0.01						0.01	2726.98	2726.82	Yes	2727.56	2727.56	2727.40
6	PIPE	10+60.40	11+25.72	3	2724.40	2727.58	65.32	7.07	0.00492	23.0	4.87	3.25	0.16	0.00119	0.00119	0.08						0.08	2727.64	2727.48	Yes	2730.74	2730.74	2730.58
7	SDMH#3	11+25.72	11+25.72	3	2727.58	2727.58	0.00	7.07	0.00492	23.0	N/A	3.25	0.16	0.00119	0.00119	0.00		0.22				0.22	2730.96	2730.80	Yes	2730.74	2730.96	2730.80
8	PIPE	11+25.72	12+44.82	3	2727.58	2728.18	119.10	7.07	0.00492	23.0	0.50	3.25	0.16	0.00119	0.00119	0.14						0.14	2731.10	2730.94	Yes	2731.34	2731.34	2731.18
9	SDDI#3	12+44.82	12+44.82	3	2728.18	2728.18	0.00	7.07	0.00492	23.0	N/A	3.25	0.16	0.00119	0.00119	0.00		0.09		0.08		0.18	2731.52	2731.36	Yes	2730.65	2731.52	2731.36
10	PIPE	12+44.82	12+62.05	1.5	2728.18	2728.26	17.23	1.77	0.00492	14.0	0.46	7.92	0.97	0.01769	0.01769	0.30						0.30	2731.83	2730.85	Yes	2730.73	2731.83	2730.85
11	SDDI#4	12+62.05	12+62.05	1.5	2728.26	2728.26	0.00	1.77	0.00492	14.0	N/A	7.92	0.97	0.01769	0.01769	0.00		0.02		0.49		0.51	2732.33	2731.36	Yes	2729.94	2732.33	2731.36
12	PIPE	12+62.05	13+96.32	1.5	2728.26	2728.93	134.27	1.77	0.00492	6.0	0.50	3.40	0.18	0.00325	0.00325	0.44						0.44	2732.77	2732.59	Yes	2730.61	2732.77	2732.59
13	SDMH#2	13+96.32	13+96.32	1.5	2728.93	2728.93	0.00	1.77	0.00492	6.0	N/A	3.40	0.18	0.00325	0.00325	0.00		0.03				0.03	2732.80	2732.62	Yes	2730.61	2732.80	2732.62
14	PIPE	13+96.32	15+07.09	1.5	2728.93	2729.49	110.77	1.77	0.00492	6.0	0.51	3.40	0.18	0.00325	0.00325	0.36						0.36	2733.16	2732.98	Yes	2731.17	2733.16	2732.98
15	SDDI#5	15+07.09	15+07.09	1.5	2729.49	2729.49	0.00	1.77	0.00492	6.0	N/A	3.40	0.18	0.00325	0.00325	0.00				0.09		0.09	2733.25	2733.07				

Manholes/Transition Losses

Segment Number	Straight Through Manhole				Junction Manhole				Bend Losses				Inlet Losses			
	Deflection Angle	Km	Hv (ft)	Hm (ft)	Junction Angle	Kj	D/S Hv (ft)	U/S Hv (ft)	Hj (ft)	Bend Angle	Kb	Hv (ft)	Hb (ft)	Ki	Hv (ft)	Hi (ft)
1																
2	0	0.02	0.164	0.003												
3																
4	0	0.02	0.164	0.003												
5																
6																
7	90	1.33	0.164	0.218												
8																
9	57	0.58	0.164	0.095										0.5	0.164401215	0.0822
10																
11	0	0.02	0.975	0.019										0.5	0.974597751	0.4873
12																
13	25	0.16	0.179	0.028												
14																
15														0.5	0.17900775	0.0895

HGL Criteria Check			
Segment Description	TMH Elevation	Cover (ft)	Criteria Met?
EX.PIPE			
EX. SDMH	2729.4	2.780	Yes
EX.PIPE			
EX. SDMH	2729.6	2.797	Yes
EX.PIPE			
PIPE			
SDMH#3	2741.6	10.802	Yes
PIPE			
SDDI#3	2739.7	8.343	Yes
PIPE			
SDDI#4	2735.6	4.242	Yes
PIPE			
SDMH#2	2738.2	5.582	Yes
PIPE			
SDDI#5	2736.7	3.633	Yes

APPENDIX C
REFERENCE MATERIAL
GRAND CANYON VILLAGE
(DS#5398)

Starting HGL and EGL

Tailwater Elevation	Outlet Invert Elevation	Tailwater Depth (ft)	Critical Depth- Dc (ft)	Pipe Diameter- D (ft)	(Dc+D)/2 (ft)	Starting HGL (ft)	Hv (ft)	Starting EGL (ft)
2717.00	2715.54	1.46	2.75	3.0	2.875	2718.415	0.34	2718.75

TW Referenced from Horse Drive/US95 SD Profile

Phi Index

n Value	Phi
0.013	0.004925

$$Sf = \frac{\Phi H v}{R^{1.33}}$$
$$\Phi = \frac{2g (n^2)}{2.21}$$

STANDARD FORM 6

DEVELOPMENT:	Grand Canyon Village	
CALCULATED BY:	ACY	WO# 8025
STORM DRAIN SEGMENT:	Lateral 1.4	
DESCRIPTION:	36" RCP to EX. 10'x6' RCB	

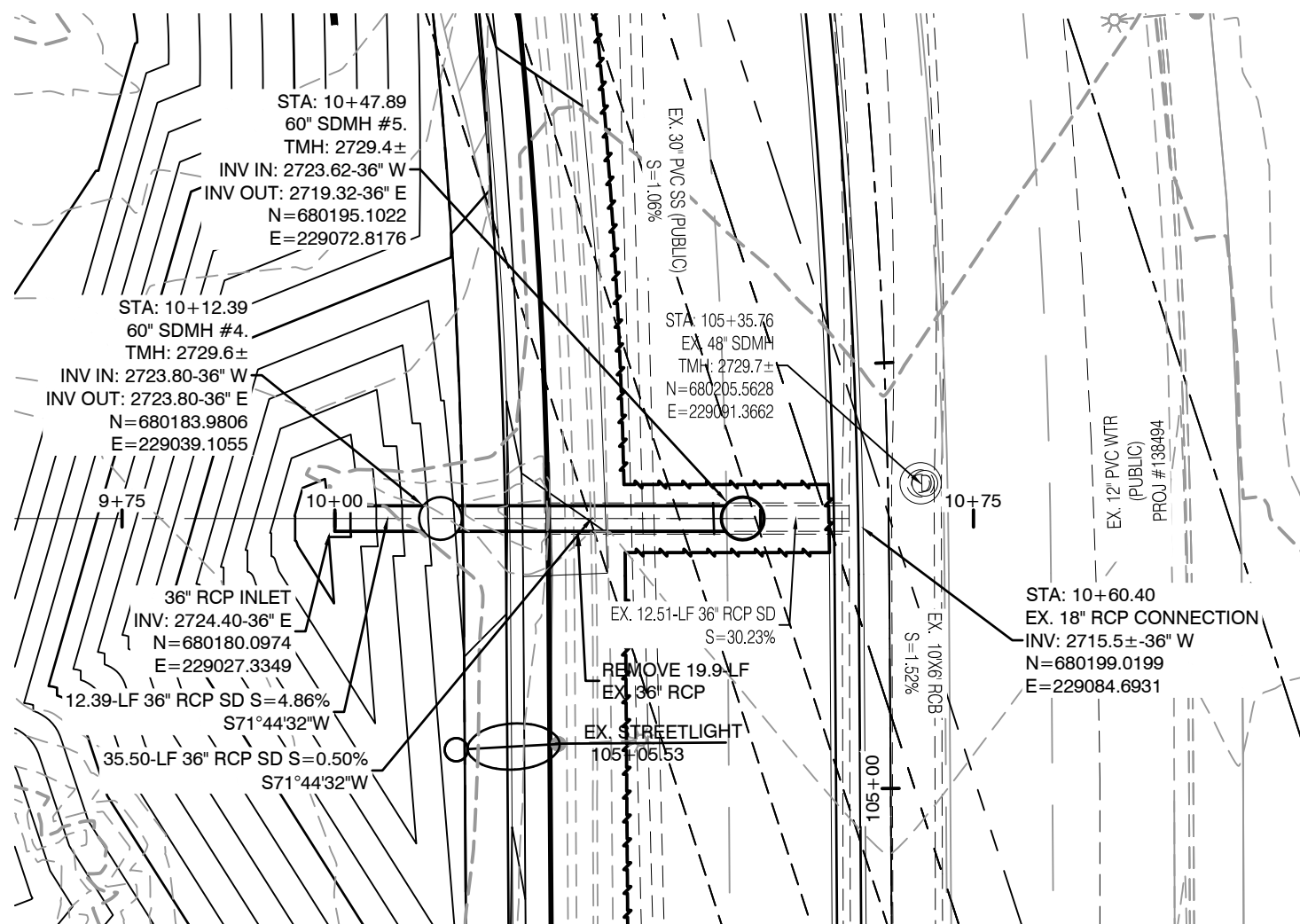
$$H_j = (V_2^2 / 2g) - K_j (V_1^2 / 2g)$$
$$H_m = K_m (V_2^2 / 2g)$$
$$H_b = K_b (V_2^2 / 2g)$$
$$H_i = K_i (V_2^2 / 2g)$$

Segment Number	Segment Type	Starting Station	Ending Station	Diameter (ft)	D/S Invert	U/S Invert	Length (ft)	Area (sq. ft)	Phi	Flow (cfs)	Slope (%)	Velocity (fps)	Hv (ft)	Sf (ft/ft)	Ave. Sf (ft/ft)	Hf (ft)	Hj (ft)	Hm (ft)	Hb (ft)	Hi (ft)	H_ (ft)	H Total (ft)	U/S EGL Elevation	U/S HGL Elevation	Pressure Flow ?	D/S EGL of U/S Segment	Final U/S EGL	Final U/S HGL
1	PIPE	10+60.40	10+47.89	3	2715.54	2719.32	12.51	7.07	0.00492	33.00	30.22	4.67	0.34	0.00244	0.00244	0.03						0.03	2718.78	2718.45	Yes	2722.66	2722.66	2722.32
2	SDMH #5	10+47.89	10+47.89	3	2719.32	2723.62	0.00	7.07	0.00492	33.00	N/A	4.67	0.34	0.00244	0.00244	0.00		0.01				0.01	2722.67	2722.33	Yes	2726.96	2726.96	2726.62
3	PIPE	10+47.89	10+12.39	3	2723.62	2723.80	35.50	7.07	0.00492	33.00	0.51	4.67	0.34	0.00244	0.00244	0.09						0.09	2727.05	2726.71	Yes	2727.14	2727.14	2726.80
4	SDMH #4	10+12.39	10+12.39	3	2723.80	2723.80	0.00	7.07	0.00492	33.00	N/A	4.67	0.34	0.00244	0.00244	0.00		0.01				0.01	2727.15	2726.81	Yes	2727.14	2727.15	2726.81
5	PIPE	10+12.39	10+00.00	3	2723.80	2724.40	12.39	7.07	0.00492	33.00	4.84	4.67	0.34	0.00244	0.00244	0.03						0.03	2727.18	2726.84	Yes	2727.74	2727.74	2727.40
6	INLET	10+00.00	10+00.00	3	2724.40	2724.40	0.00	7.07	0.00492	33.00	N/A	4.67	0.34	0.00244	0.00244	0.00				0.17		0.17	2727.91	2727.57				

Manholes/Transition Losses

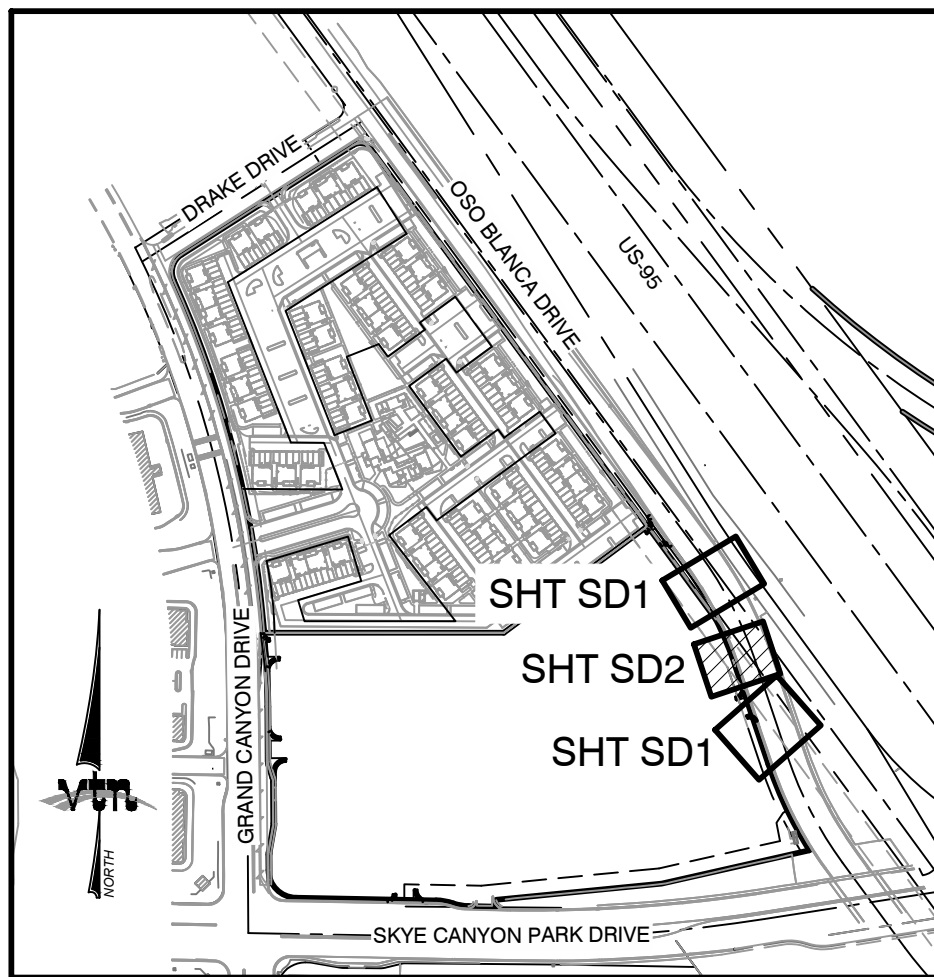
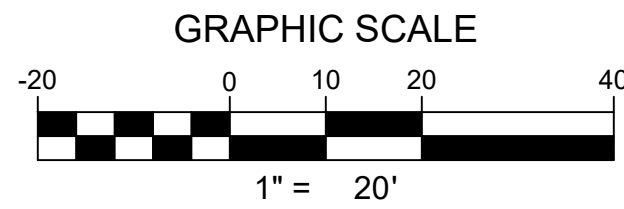
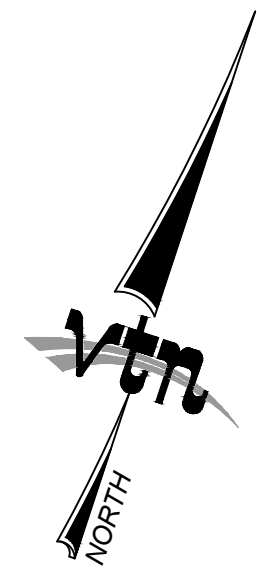
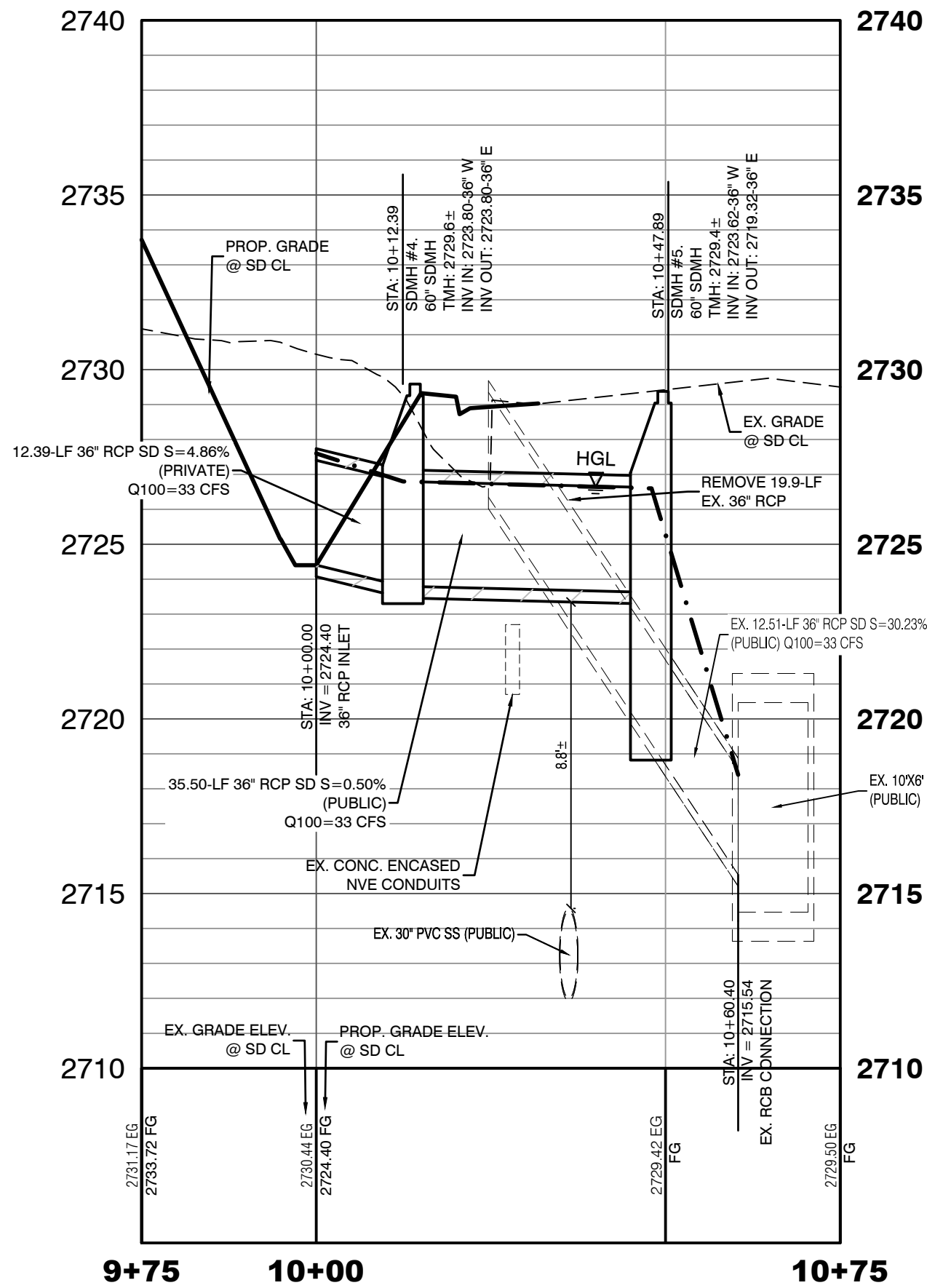
	Straight Through Manhole				Junction Manhole					Bend Losses				Inlet Losses		
Segment Number	Deflection Angle	Km	Hv (ft)	Hm (ft)	Junction Angle	Kj	D/S Hv (ft)	U/S Hv (ft)	Hj (ft)	Bend Angle	Kb	Hv (ft)	Hb (ft)	Ki	Hv (ft)	Hi (ft)
1																
2	0	0.02	0.338	0.007												
3																
4	0	0.02	0.338	0.007												

HGL Criteria Check			
Segment Description	TMH Elevation	Cover (ft)	Criteria Met?
PIPE			
SDMH #5	2729.4	7.073	Yes
PIPE			
SDMH #4	2729.6	2.793	Yes



STORM DRAIN LATERAL 3 (PUBLIC)

PROFILE SCALES:
HORIZ. = 1"=20'
VERT. = 1"=4'



KEY MAP
NTS

NDOT PERMIT NOTE:
NO WORK WITHIN NDOT RIGHT OF WAY UNLIL AN NDOT ENCROACHMENT PERMIT IS ACQUIRED.

UTILITY CROSSING NOTE:
ALL SEWER/STORM DRAINS CROSSING WATER LINES MUST CONFORM TO SECTION 2.22 OF UNIFORM DESIGN AND CONSTRUCTION STANDARDS FOR POTABLE WATER SYSTEMS (UDACS) FOR WATER AND STORM MAIN CROSSINGS AND CLEARANCES.

ENGINEER DISCLAIMER NOTE:
UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND AND OVERHEAD UTILITIES AND NOTIFY THE DESIGN ENGINEER IMMEDIATELY OF ANY DISCREPANCIES 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.

SIGHT VISIBILITY ZONES:
NO STRUCTURE, WALLS, VEGETATION, OR OBJECT OF ANY KIND IS PERMITTED OVER TWENTY-FOUR (24) INCHES IN HEIGHT (MEASURED FROM THE TOP OF ADJACENT CURB IF CURB EXISTS) WITHIN THE SIGHT VISIBILITY ZONES.

BASIS OF BEARING
GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS 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
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: 200,000,000 M (656,166,667 FTUS)
EASTING AT CENTRAL MERIDIAN: 100,000,000 M (328,083,333 FTUS)
SCALE FACTOR ON CENTRAL MERIDIAN: 1.0001 (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
NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) (REVISED 2008)
CITY OF LAS VEGAS BENCHMARK: 6LV807C4
NAVD88 ELEVATION: 841.20 METERS (2759.84 FEET)
RIVET AND PLATE IN TOP OF CURB AT SOUTHEAST CORNER OF HORSE DRIVE AND GRAND CANYON DRIVE.

I CERTIFY THAT THIS GRADING PLAN CONFORMS TO THE APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE WITH CITY OF LAS VEGAS, #DSS598
D.M.O. 5/9/22
DARYN M. OHTA, P.E. No. 15906 DATE

Call before you Dig
Avoid cutting underground utility lines. It's costly.

811
OR
1-800-227-2600
AND
1-702-455-8000
CLARK COUNTY TRAFFIC OPERATIONS

Call before you Dig
Avoid cutting underground utility lines. It's costly.

811
OR
1-800-227-2600
AND
1-702-455-8000
CLARK COUNTY TRAFFIC OPERATIONS

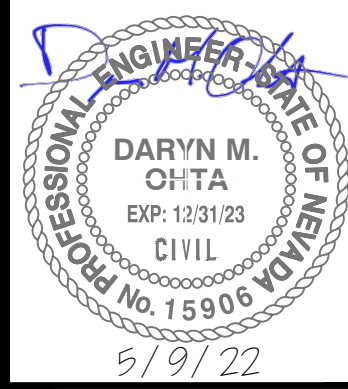
GRAND CANYON VILLAGE LLC
10855 PARK RUN DRIVE, STE 160
LAS VEGAS, NEVADA 89144
702-202-4500

CITY OF LAS VEGAS
2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5146
PH: (702) 973-7550 FAX: (702) 362-2587 WEB: WWW.VTNV.COM
CONSULTING ENGINEERS • PLANNERS • LAND SURVEYORS

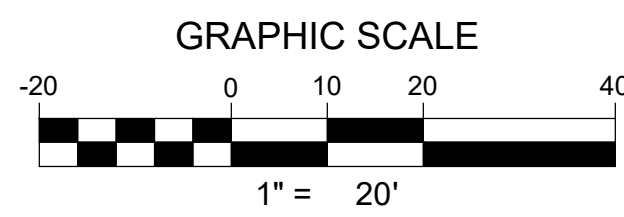
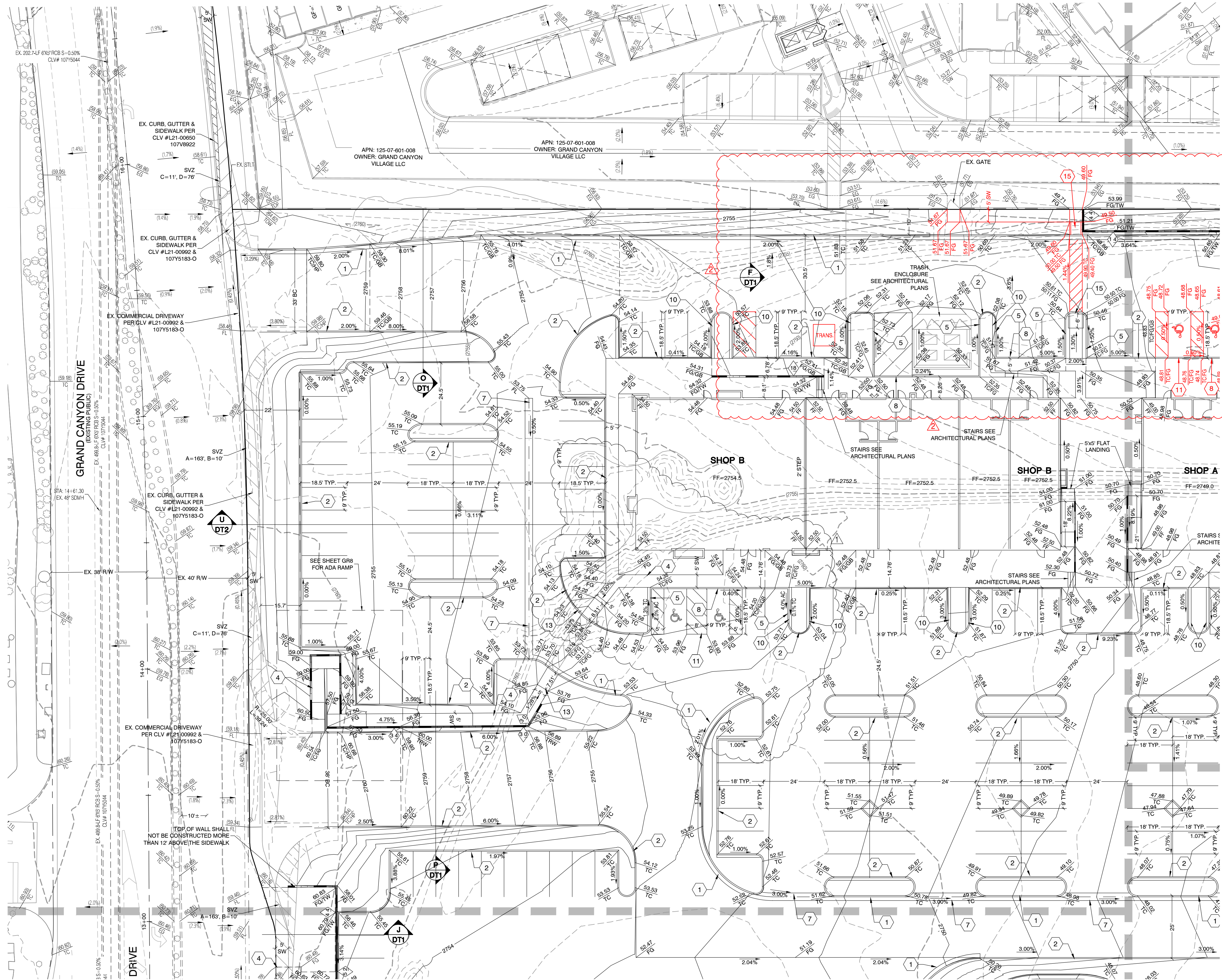
STORM DRAIN PLAN & PROFILE 2

GRAND CANYON COMMERCIAL OFFSITES

DRAWN BY: DMO
DESIGNED BY: DMO
CHECKED BY: DMO
PROJECT NO: 9025
SCALE: 1"=20' HORIZ.
1"=4' VERT.



SHEET SD2
26 OF 33 SHEETS
DRAWING NO.
L21-00992/107Y5183-O



BASIS OF BEARING
GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS) LAS VEGAS ZONE. NORTH AMERICAN DATUM OF 1983. SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.
LINEAR UNIT: US SURVEY FOOT (FT/US)
DATUM (REFERENCE FRAME): NAD 83 (2011) EPOCH 2010.00 SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS) ZONE: LAS VEGAS
PROJECTION: TRANSVERSE MERCATOR STANDARD PARALLEL (AND LATITUDE OF GRID ORIGIN): 36°10'00"N
LONGITUDE OF CENTRAL MERIDIAN: 114°58'00"W
NORTHING AT GRID ORIGIN: 200,000,000 M (656,166,667 FT/US) EASTING AT CENTRAL MERIDIAN: 100,000,000 M (328,083,333 FT/US)
SCALE FACTOR ON CENTRAL MERIDIAN: 1.0001 (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
NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) (REVISED 2008)
CITY OF LAS VEGAS BENCHMARK: 6LV907C4
NAVD88 ELEVATION: 841.20 METERS (2759.84 FEET)
RIVET AND PLATE IN TOP OF CURB AT SOUTHEAST CORNER OF HORSE DRIVE AND GRAND CANYON DRIVE

FLOOD ZONE NOTE:
SITE IS LOCATED IN A ZONE X AS SHOWN IN FIRM MAP #32003C1735E, DATED SEPTEMBER 27, 2002. A ZONE X IS AN AREA OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN.

GRADING PERMIT NOTE
THIS GRADING PERMIT DOES NOT INCLUDE THE CONSTRUCTION OF RETAINING WALLS AND OTHERS STRUCTURES. SEPARATE PERMITS AND APPLICATIONS ARE REQUIRED FOR THESE.

GEOTECHNICAL NOTE:
REFER TO SOILS REPORT: WESTERN TECHNOLOGIES INC. PROJECT #41210010, DATED APRIL 6, 2021
CLV #L21-01618/107Y5183

SIGHT VISIBILITY ZONES:
NO STRUCTURE, WALLS, VEGETATION, OR OBJECT OF ANY KIND IS PERMITTED OVER TWENTY-FOUR (24) INCHES IN HEIGHT (MEASURED FROM THE TOP OF ADJACENT CURB IF CURB EXISTS) WITHIN THE SIGHT VISIBILITY ZONES.

- CONSTRUCTION NOTES**
1. CONSTRUCT 24" TYPE "L" CURB & GUTTER PER CCAUSD #216.
 2. CONSTRUCT PRIVATE TYPE "A" CURB PER DETAIL ON SHEET DT3
 3. CONSTRUCT PRIVATE 4" SIDEWALK PER CCAUSD # 234
 4. CONSTRUCT SIDEWALK PER CCAUSD # 234
 5. CONSTRUCT CURB TRANSITION PER DETAIL ON SHEET DT3
 6. CONSTRUCT CURB "U" CHANNEL PER DETAIL ON SHEET DT3
 7. CONSTRUCT 3" VALLEY GUTTER PER DETAIL ON SHEET DT3
 8. CONSTRUCT ZERO FACE PRIVATE TYPE "A" CURB PER DETAIL ON SHEET DT3
 9. CONSTRUCT 2" CURB CUT PER DETAIL ON SHEET DT3
 10. CONSTRUCT 1" BACKER CURB PER DETAIL ON SHEET DT3
 11. CONSTRUCT ACCESSIBLE PARKING PER DETAIL ON SHEET DT3
 12. CONSTRUCT PRIVATE SIDEWALK RAMP PER RAMP DETAIL 1 ON SHEET DT3
 13. CONSTRUCT PRIVATE SIDEWALK RAMP PER RAMP DETAIL 2 ON SHEET DT3
 14. CONSTRUCT PRIVATE SIDEWALK RAMP PER RAMP DETAIL 3 ON SHEET DT3
 15. CONSTRUCT PRIVATE SIDEWALK RAMP PER RAMP DETAIL 4 ON SHEET DT3
 16. CONSTRUCT PRIVATE SIDEWALK RAMP PER RAMP DETAIL 5 ON SHEET DT3
 17. CONSTRUCT PRIVATE SIDEWALK RAMP PER RAMP DETAIL 6 ON SHEET DT3
 18. CONSTRUCT BLOCK WALL OPENING PER DETAIL ON SHEET DT3
 19. CONSTRUCT PRIVATE SIDEWALK RAMP PER RAMP DETAIL 7 ON SHEET DT3
 20. RETAINING HEIGHT (4=FEET 2=TENTH)

STORM DRAIN NOTE:
ALL ONSITE STORM DRAIN FACILITIES ARE PRIVATELY OWNED AND MAINTAINED BY THE PROPERTY OWNER.

NOTE:
PROPERTY OWNER IS RESPONSIBLE TO MAINTAIN THE BEST MANAGEMENT PRACTICES SUCH AS BUT NOT LIMITED TO THE REMOVAL OF ACCUMULATED SEDIMENT AND DEBRIS AND CARE OF THE VEGETATION.

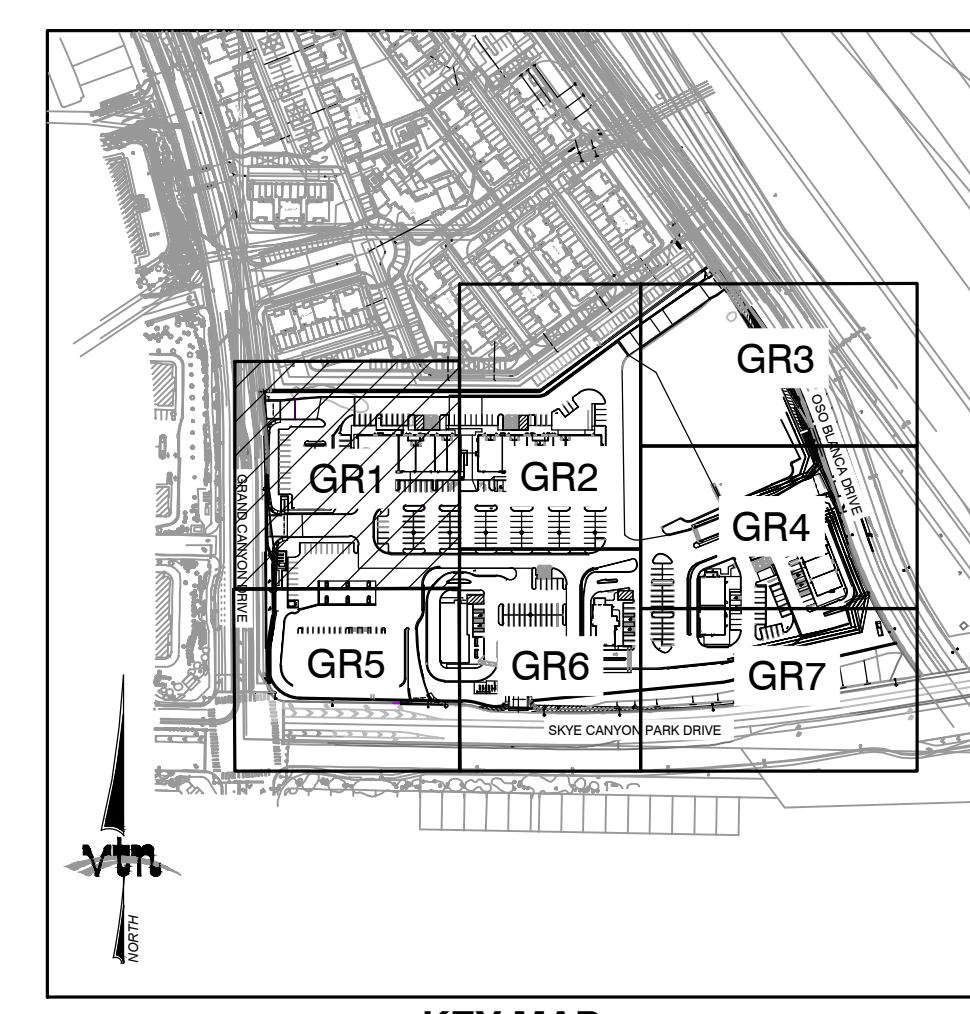
ENGINEER DISCLAIMER NOTE:
UTILITY LOCATIONS SHOWN HERE ON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND AND OVERHEAD UTILITIES AND NOTIFY THE DESIGN ENGINEER IMMEDIATELY OF ANY DISCREPANCIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HERE ON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

I CERTIFY THAT THIS GRADING PLAN CONFORMS TO THE APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE WITH CITY OF LAS VEGAS. #DS05462

DARYN M. OHTA, P.E. No. 15908 DATE 6/16/22

Call before you Dig
1-702-455-7511
CLARK COUNTY TRAFFIC OPERATIONS
Call before you Dig
Avoid cutting underground utility lines. It's costly.

Call before you Dig
1-702-227-2600
AND
1-702-455-6000
CLARK COUNTY TRAFFIC OPERATIONS



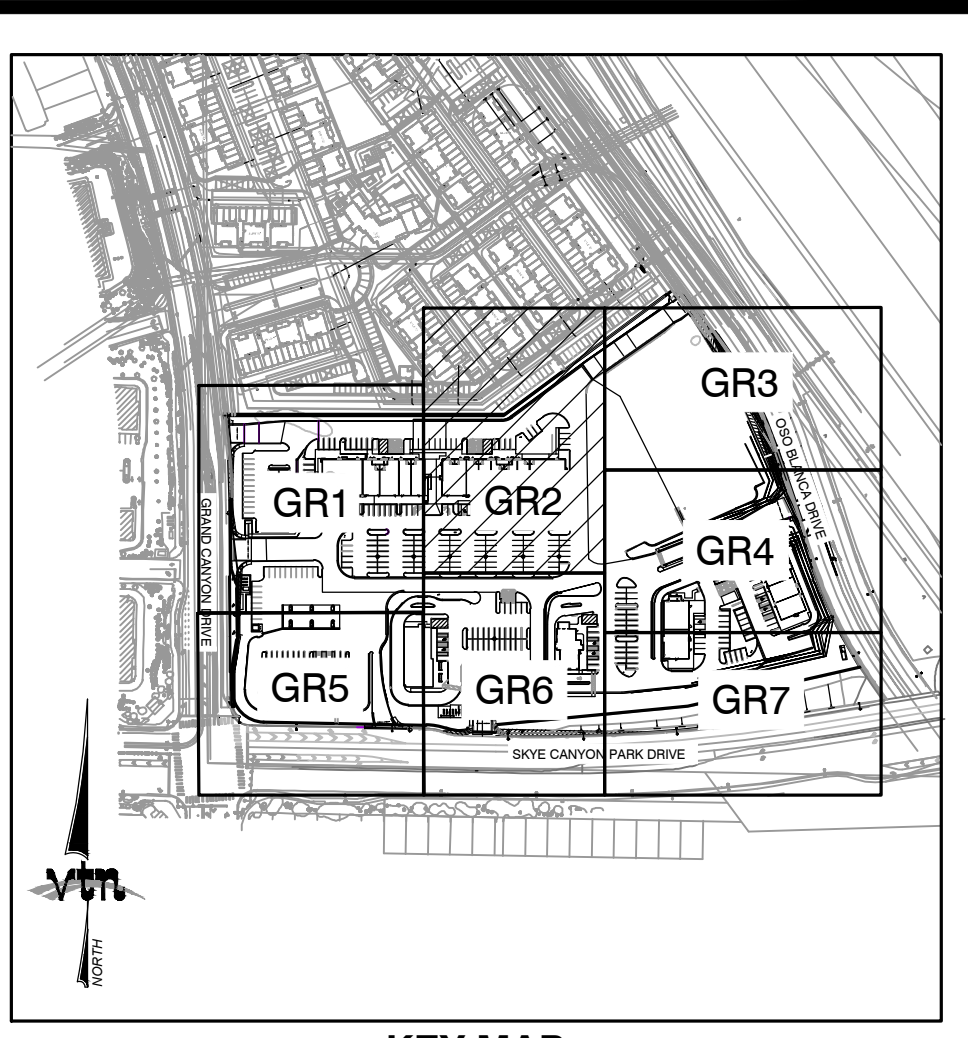
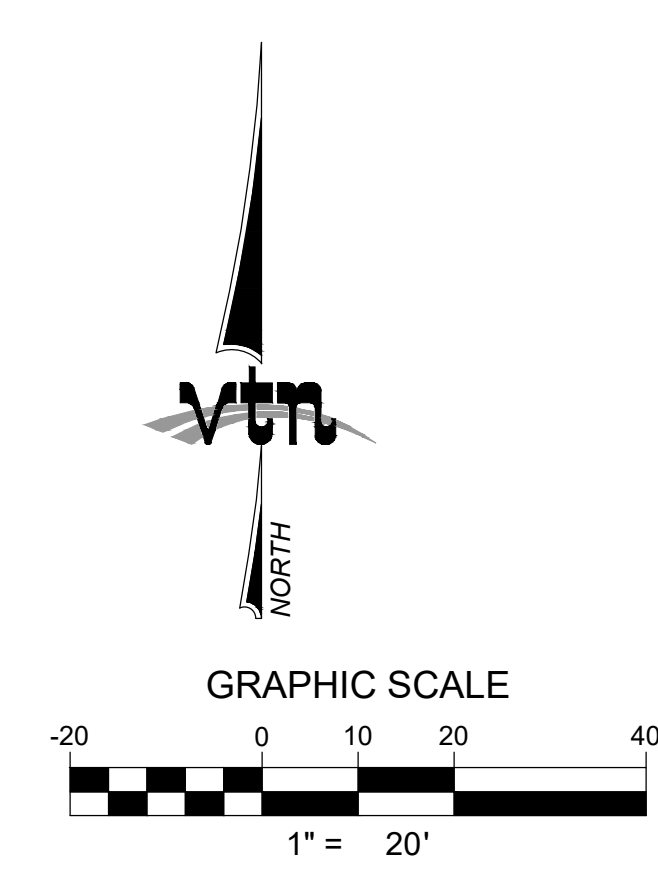
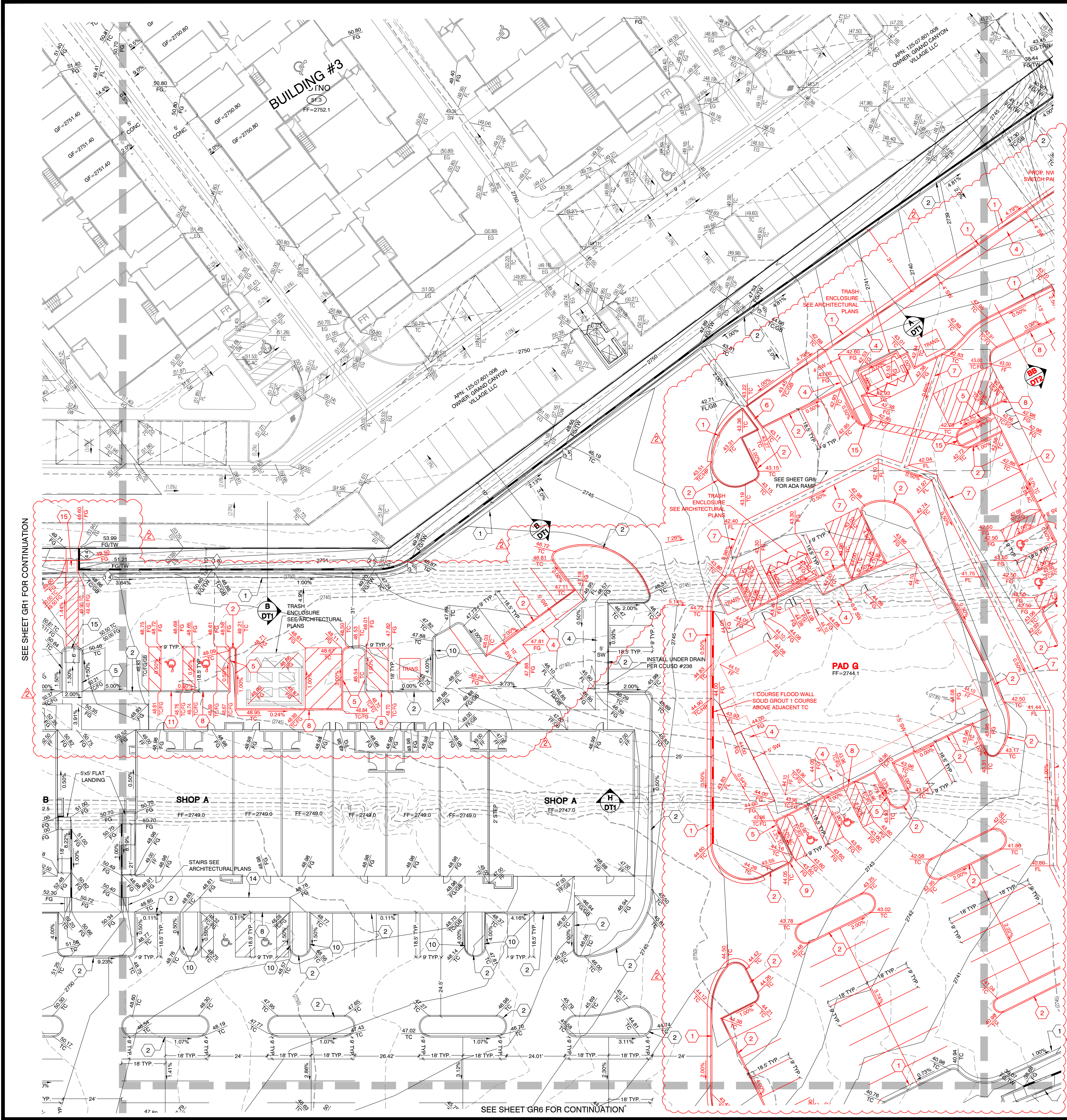
CITY OF LAS VEGAS	
GRAND CANYON VILLAGE LLC	
10655 PARK RUN DRIVE, STE 180 LAS VEGAS, NEVADA 89144 (702) 225-4000	
2727 SOUTH RAINBOW BOULEVARD LAS VEGAS, NEVADA 89146-5148 PH: (702) 373-7550 FAX: (702) 382-2987 WWW.VTNV.COM CONSULTING ENGINEERS & LAND SURVEYORS	
DNO REUSE GRADING, PARKING, CURBS & SIDEWALKS PER NEW ARCHITECTURAL LAYOUT	
2	5-16-22
1	2-9-22
REV	DATE
BY	

GRADING PLAN 1	
GRAND CANYON COMMERCIAL ONSITES	
DRAWN BY:	JUNE 2021
DESIGNED BY:	DMO
CHECKED BY:	
PROJECT NO:	8025
SCALE:	N/A
HORIZ. VERT.	

SHEET
GR-1
4 OF 44 SHEETS
DRAWING NO.
L21-01618/107Y5183

6/16/22

1-702-227-2929



KEY MAP
NTS

BASIS OF BEARING
GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS). LAS VEGAS 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
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: 200,000,000 M (656,166,667 FTUS) EASTING AT CENTRAL MERIDIAN: 100,000,000 M (328,083,333 FTUS)
SCALE FACTOR ON CENTRAL MERIDIAN: 1.0001 (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
NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) (REVISED 2008)
CITY OF LAS VEGAS BENCHMARK: 6LV907C4 NAVD88 ELEVATION: 841.20 METERS (2759.84 FEET)
RIVET AND PLATE IN TOP OF CURB AT SOUTHEAST CORNER OF HORSE DRIVE AND GRAND CANYON DRIVE.

FLOOD ZONE NOTE:
SITE IS LOCATED IN A ZONE X AS SHOWN IN FIRM MAP #32003C1735E, DATED SEPTEMBER 27, 2002. A ZONE X IS AN AREA OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN.

GRADING PERMIT NOTE
THIS GRADING PERMIT DOES NOT INCLUDE THE CONSTRUCTION OF RETAINING WALLS AND OTHERS STRUCTURES. SEPARATE PERMITS AND APPLICATIONS ARE REQUIRED FOR THESE.

GEOTECHNICAL NOTE:
REFER TO SOILS REPORT: WESTERN TECHNOLOGIES INC. PROJECT #4121JD010, DATED APRIL 6, 2021 CLV #L21-01618/107Y5183

SIGHT VISIBILITY ZONES:
NO STRUCTURE, WALLS, VEGETATION, OR OBJECT OF ANY KIND IS PERMITTED OVER TWENTY FOUR (24) INCHES IN HEIGHT (MEASURED FROM THE TOP OF ADJACENT CURB IF CURB EXISTS) WITHIN THE SIGHT VISIBILITY ZONES.

- CONSTRUCTION NOTES**
1. CONSTRUCT 24" TYPE "L" CURB & GUTTER PER CCAUSD #216.
 2. CONSTRUCT PRIVATE TYPE "A" CURB PER DETAIL ON SHEET DT3
 3. CONSTRUCT PRIVATE 4" SIDEWALK PER CCAUSD # 234
 4. CONSTRUCT SIDEWALK PER CCAUSD # 234
 5. CONSTRUCT CURB TRANSITION PER DETAIL ON SHEET DT3
 6. CONSTRUCT CURB "U" CHANNEL PER DETAIL ON SHEET DT3
 7. CONSTRUCT 3" VALLEY GUTTER PER DETAIL ON SHEET DT3
 8. CONSTRUCT ZERO FACE PRIVATE TYPE "A" CURB PER DETAIL ON SHEET DT3
 9. CONSTRUCT 2" CURB CUT PER DETAIL ON SHEET DT3
 10. CONSTRUCT 1" BACKER CURB PER DETAIL ON SHEET DT3
 11. CONSTRUCT ACCESSIBLE PARKING PER DETAIL ON SHEET DT3
 12. CONSTRUCT PRIVATE SIDEWALK RAMP PER RAMP DETAIL 1 ON SHEET DT3
 13. CONSTRUCT PRIVATE SIDEWALK RAMP PER RAMP DETAIL 2 ON SHEET DT3
 14. CONSTRUCT PRIVATE SIDEWALK RAMP PER RAMP DETAIL 3 ON SHEET DT3
 15. CONSTRUCT PRIVATE SIDEWALK RAMP PER RAMP DETAIL 4 ON SHEET DT3
 16. CONSTRUCT PRIVATE SIDEWALK RAMP PER RAMP DETAIL 5 ON SHEET DT3
 17. CONSTRUCT PRIVATE SIDEWALK RAMP PER RAMP DETAIL 6 ON SHEET DT3
 18. CONSTRUCT BLOCK WALL OPENING PER DETAIL ON SHEET DT3
 19. CONSTRUCT PRIVATE SIDEWALK RAMP PER RAMP DETAIL 7 ON SHEET DT3
 20. RETAINING HEIGHT (4=FEET 2=TENTH)

STORM DRAIN NOTE:
ALL ONSITE STORM DRAIN FACILITIES ARE PRIVATELY OWNED AND MAINTAINED BY THE PROPERTY OWNER.

NOTE:
PROPERTY OWNER IS RESPONSIBLE TO MAINTAIN THE BEST MANAGEMENT PRACTICES SUCH AS BUT NOT LIMITED TO THE REMOVAL OF ACCUMULATED SEDIMENT AND DEBRIS AND CARE OF THE VEGETATION.

ENGINEER DISCLAIMER NOTE:
UTILITY LOCATIONS SHOWN HERE ON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND AND OVERHEAD UTILITIES AND NOTIFY THE DESIGN ENGINEER IMMEDIATELY. OF ANY DISCREPANCIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HERE ON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

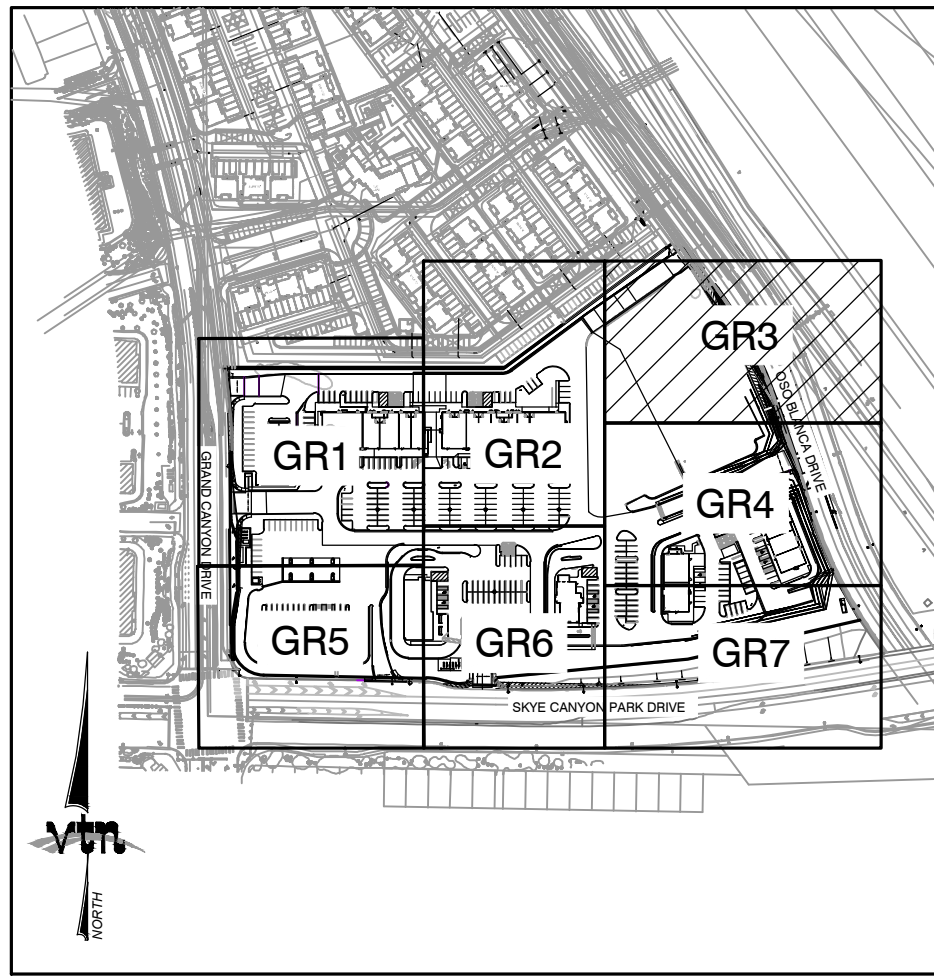
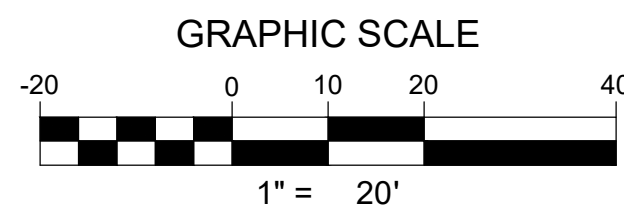
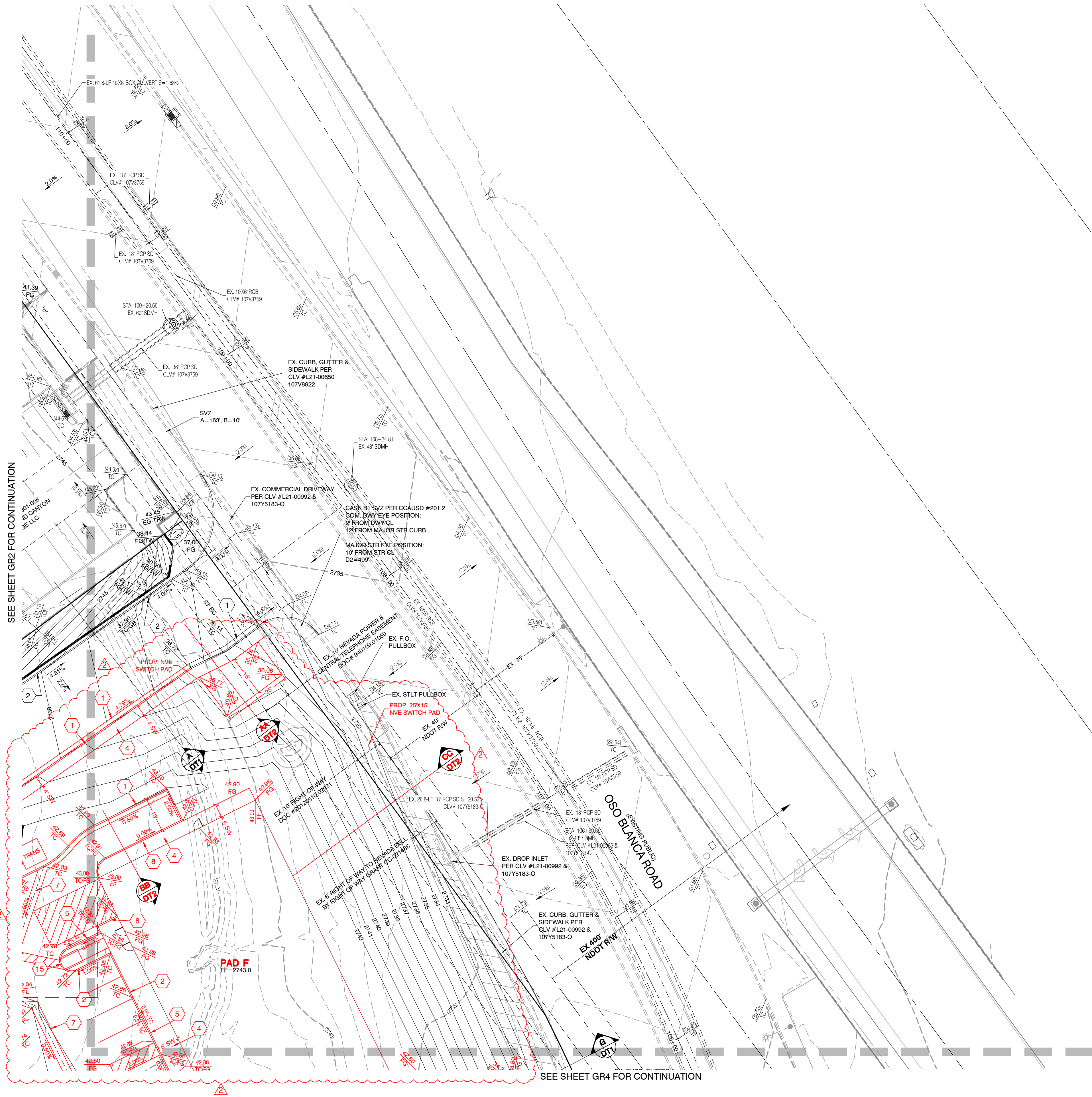
I CERTIFY THAT THIS GRADING PLAN CONFORMS TO THE APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE WITH CITY OF LAS VEGAS, #DS05462

DARYN M. OHTA, P.E. No. 15908 DATE 6/16/22

Call before you Dig
1-702-455-7511
CLARK COUNTY TRAFFIC OPERATIONS

Call before you Dig
1-702-455-7511
CLARK COUNTY TRAFFIC OPERATIONS

Call before you Dig
1-702-455-7511
CLARK COUNTY TRAFFIC OPERATIONS



BASIS OF BEARING
GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS). LAS VEGAS 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
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: 200,000,000 M (656,166,667 FTUS) EASTING AT CENTRAL MERIDIAN: 100,000,000 M (328,083,333 FTUS) SCALE FACTOR ON CENTRAL MERIDIAN: 1.0001 (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
NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) (REVISED 2008)
CITY OF LAS VEGAS BENCHMARK: 6LV907C4 NAVD88 ELEVATION: 841.20 METERS (2759.84 FEET)
RIVET AND PLATE IN TOP OF CURB AT SOUTHEAST CORNER OF HORSE DRIVE AND GRAND CANYON DRIVE.

FLOOD ZONE NOTE:
SITE IS LOCATED IN A ZONE X AS SHOWN IN FIRM MAP #32003C1735E, DATED SEPTEMBER 27, 2002. A ZONE X IS AN AREA OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN.

GRADING PERMIT NOTE
THIS GRADING PERMIT DOES NOT INCLUDE THE CONSTRUCTION OF RETAINING WALLS AND OTHERS STRUCTURES. SEPARATE PERMITS AND APPLICATIONS ARE REQUIRED FOR THESE.

GEOTECHNICAL NOTE:
REFER TO SOILS REPORT: WESTERN TECHNOLOGIES INC. PROJECT #4121JD010, DATED APRIL 6, 2021 CLV #L21-01618/107Y5183

SIGHT VISIBILITY ZONES:
NO STRUCTURE, WALLS, VEGETATION, OR OBJECT OF ANY KIND IS PERMITTED OVER TWENTY FOUR (24) INCHES IN HEIGHT (MEASURED FROM THE TOP OF ADJACENT CURB IF CURB EXISTS) WITHIN THE SIGHT VISIBILITY ZONES.

- CONSTRUCTION NOTES**
1. CONSTRUCT 24" TYPE "L" CURB & GUTTER PER CCAUSD #216.
 2. CONSTRUCT PRIVATE TYPE "A" CURB PER DETAIL ON SHEET DT3
 3. CONSTRUCT PRIVATE 4" SIDEWALK PER CCAUSD # 234
 4. CONSTRUCT SIDEWALK PER CCAUSD # 234
 5. CONSTRUCT CURB TRANSITION PER DETAIL ON SHEET DT3
 6. CONSTRUCT CURB "U" CHANNEL PER DETAIL ON SHEET DT3
 7. CONSTRUCT 3" VALLEY GUTTER PER DETAIL ON SHEET DT3
 8. CONSTRUCT ZERO FACE PRIVATE TYPE "A" CURB PER DETAIL ON SHEET DT3
 9. CONSTRUCT 2" CURB CUT PER DETAIL ON SHEET DT3
 10. CONSTRUCT 1" BACKER CURB PER DETAIL ON SHEET DT3
 11. CONSTRUCT ACCESSIBLE PARKING PER DETAIL ON SHEET DT3
 12. CONSTRUCT PRIVATE SIDEWALK RAMP PER RAMP DETAIL 1 ON SHEET DT3
 13. CONSTRUCT PRIVATE SIDEWALK RAMP PER RAMP DETAIL 2 ON SHEET DT3
 14. CONSTRUCT PRIVATE SIDEWALK RAMP PER RAMP DETAIL 3 ON SHEET DT3
 15. CONSTRUCT PRIVATE SIDEWALK RAMP PER RAMP DETAIL 4 ON SHEET DT3
 16. CONSTRUCT PRIVATE SIDEWALK RAMP PER RAMP DETAIL 5 ON SHEET DT3
 17. CONSTRUCT PRIVATE SIDEWALK RAMP PER RAMP DETAIL 6 ON SHEET DT3
 18. CONSTRUCT BLOCK WALL OPENING PER DETAIL ON SHEET DT3
 19. CONSTRUCT PRIVATE SIDEWALK RAMP PER RAMP DETAIL 7 ON SHEET DT3
 20. RETAINING HEIGHT (4=FEET 2=TENTH)

STORM DRAIN NOTE:
ALL ONSITE STORM DRAIN FACILITIES ARE PRIVATELY OWNED AND MAINTAINED BY THE PROPERTY OWNER.

NOTE:
PROPERTY OWNER IS RESPONSIBLE TO MAINTAIN THE BEST MANAGEMENT PRACTICES SUCH AS BUT NOT LIMITED TO THE REMOVAL OF ACCUMULATED SEDIMENT AND DEBRIS AND CARE OF THE VEGETATION.

ENGINEER DISCLAIMER NOTE:
UTILITY LOCATIONS SHOWN HERE ON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND AND OVERHEAD UTILITIES AND NOTIFY THE DESIGN ENGINEER IMMEDIATELY OF ANY DISCREPANCIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HERE ON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

I CERTIFY THAT THIS GRADING PLAN CONFORMS TO THE APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE WITH CITY OF LAS VEGAS, #D050462

6/16/22

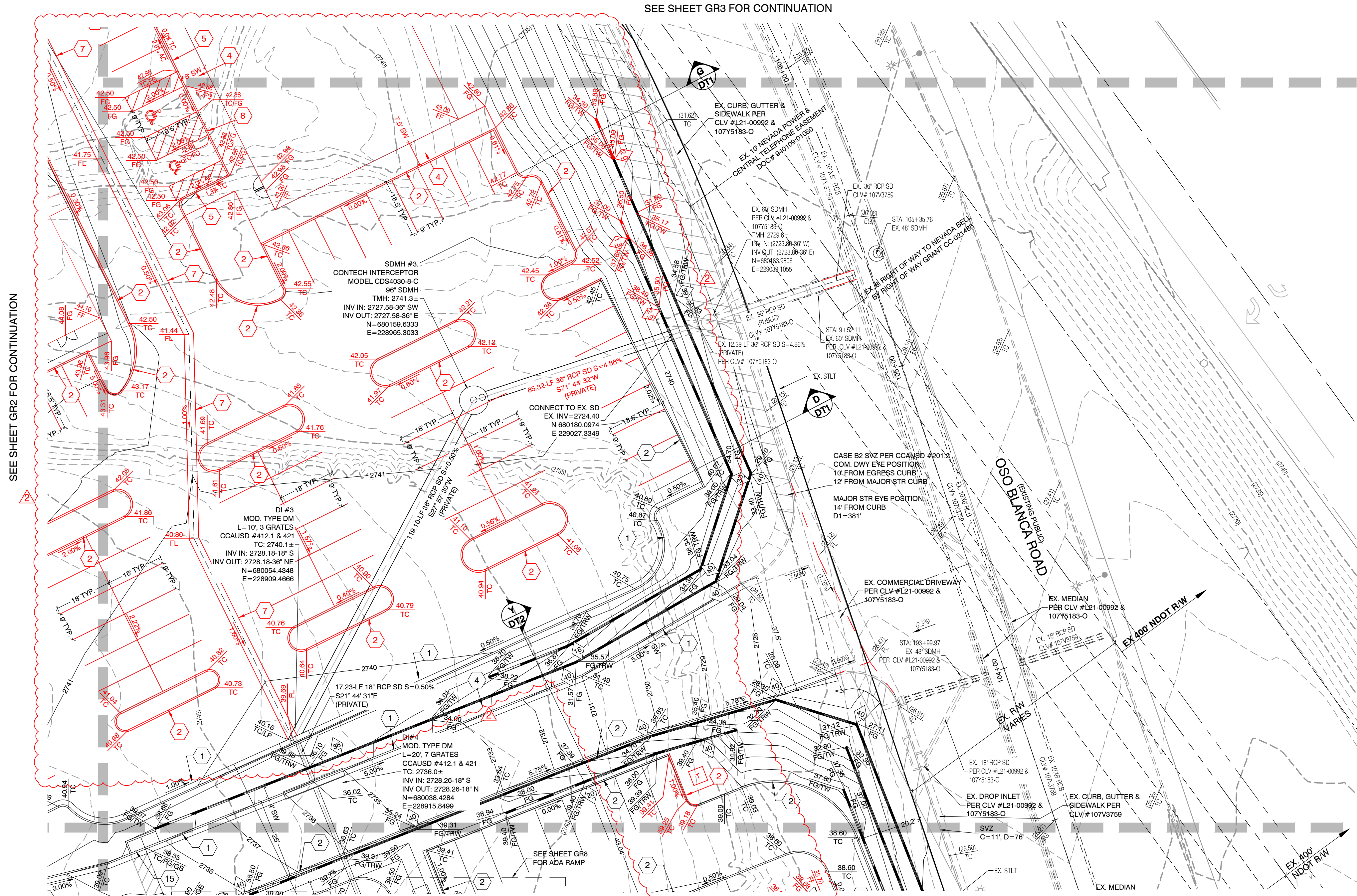
DARYN M. OHTA, P.E. No. 15908 DATE

Call before you Dig
1-702-227-2929
OR
1-800-227-2600
AND
1-702-455-8000
CLARK COUNTY TRAFFIC OPERATIONS

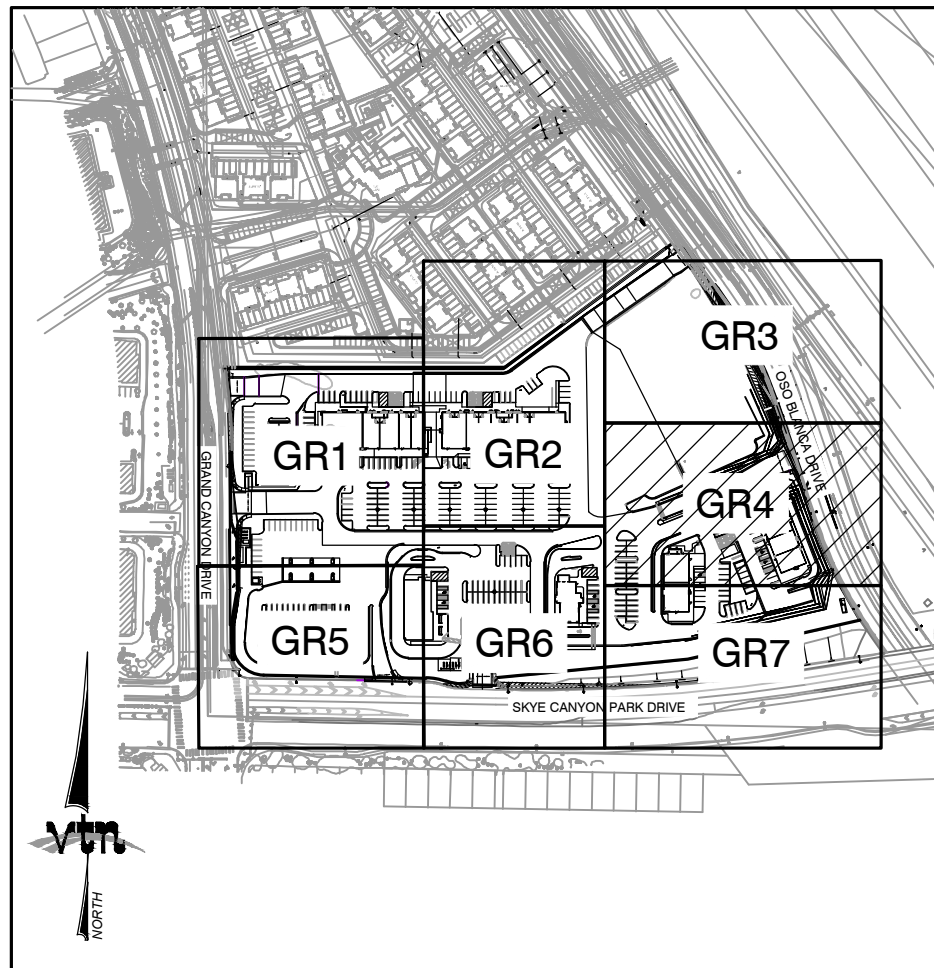
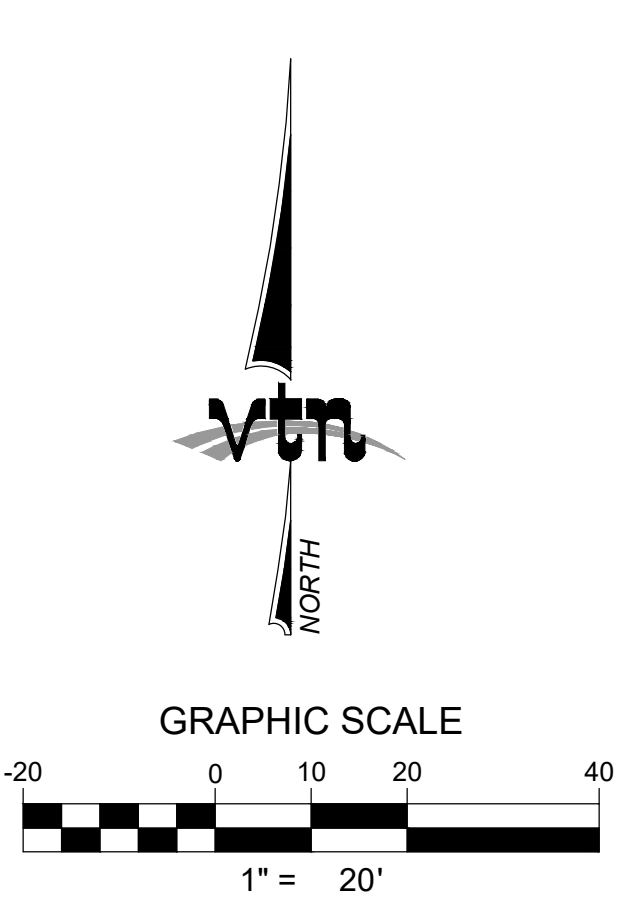
Call before you Dig
1-702-455-7511
CLARK COUNTY TRAFFIC OPERATIONS
1-702-227-2600
CLARK COUNTY TRAFFIC OPERATIONS

CITY OF LAS VEGAS		GRAND CANYON VILLAGE LLC		GRADING PLAN 3		GRAND CANYON COMMERCIAL ONSITES	
2727 SOUTH RAINBOW BOULEVARD LAS VEGAS, NEVADA 89146-5148 PH: (702) 973-7550 FAX: (702) 382-2587 CONSULTING ENGINEERS & LAND SURVEYORS		10655 PARK RUN DRIVE, STE 180 LAS VEGAS, NEVADA 89144 (702) 227-4600		JUNE 2021		SHEET GR-3 6 OF 44 SHEETS DRAWING NO. L21-01618/107Y5183	
DINO 5-16-22		DINO 5-16-22		DESIGNED BY: DINO		CHECKED BY: DINO	
REV		DATE		PROJECT NO: 8025		SCALE: N/A	
BY		DATE		HORIZ. VERT.		DATE	

1:30:02z Sheet Set\ON SITE\DWG\6025-ONSITE-GRD.dwg 5/23/2022 7:16 PM daryno



ESTIMATED DRAINAGE QUANTITIES		
18" RCP	262 LF	0 LF
36" RCP	184 LF	0 LF
48" STORM DRAIN MANHOLE	1 EA	0 EA
20" MOD. TYPE D DROP INLET	1 EA	0 EA
10" MOD. TYPE D DROP INLET	2 EA	0 EA
STORM WATER INTERCEPTOR	1 EA	0 EA
RIPRAP D50=3"	4 CY	0 CY
RIPRAP D50=6"	20 CY	0 CY



BASIS OF BEARING
GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS). LAS VEGAS 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
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: 200,000,000 M (656,166,666 FTUS) EASTING AT CENTRAL MERIDIAN: 100,000,000 M (328,083,333 FTUS) SCALE FACTOR ON CENTRAL MERIDIAN: 1.0001 (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
NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) (REVISED 2008)
CITY OF LAS VEGAS BENCHMARK: 6LV907C4 NAVD88 ELEVATION: 841.20 METERS (2759.84 FEET)
RIVET AND PLATE IN TOP OF CURB AT SOUTHEAST CORNER OF HORSE DRIVE AND GRAND CANYON DRIVE.

FLOOD ZONE NOTE:
SITE IS LOCATED IN A ZONE X AS SHOWN IN FIRM MAP #32003C1735E, DATED SEPTEMBER 27, 2002. A ZONE X IS AN AREA OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN.

GRADING PERMIT NOTE
THIS GRADING PERMIT DOES NOT INCLUDE THE CONSTRUCTION OF RETAINING WALLS AND OTHERS STRUCTURES. SEPARATE PERMITS AND APPLICATIONS ARE REQUIRED FOR THESE.

GEOTECHNICAL NOTE:
REFER TO SOILS REPORT: WESTERN TECHNOLOGIES INC. PROJECT #4121JD010, DATED APRIL 6, 2021 CLV #L21-01618/107Y5183

SIGHT VISIBILITY ZONES:
NO STRUCTURE, WALLS, VEGETATION, OR OBJECT OF ANY KIND IS PERMITTED OVER TWENTY FOUR (24) INCHES IN HEIGHT (MEASURED FROM THE TOP OF ADJACENT CURB IF CURB EXISTS) WITHIN THE SIGHT VISIBILITY ZONES.

- CONSTRUCTION NOTES**
- CONSTRUCT 24" TYPE "L" CURB & GUTTER PER CCAUSD #216.
 - CONSTRUCT PRIVATE TYPE "A" CURB PER DETAIL ON SHEET DT3
 - CONSTRUCT PRIVATE 4" SIDEWALK PER CCAUSD # 234
 - CONSTRUCT SIDEWALK PER CCAUSD # 234
 - CONSTRUCT CURB TRANSITION PER DETAIL ON SHEET DT3
 - CONSTRUCT CURB "U" CHANNEL PER DETAIL ON SHEET DT3
 - CONSTRUCT 3" VALLEY GUTTER PER DETAIL ON SHEET DT3
 - CONSTRUCT ZERO FACE PRIVATE TYPE "A" CURB PER DETAIL ON SHEET DT3
 - CONSTRUCT 2" CURB CUT PER DETAIL ON SHEET DT3
 - CONSTRUCT 1" BACKER CURB PER DETAIL ON SHEET DT3
 - CONSTRUCT ACCESSIBLE PARKING PER DETAIL ON SHEET DT3
 - CONSTRUCT PRIVATE SIDEWALK RAMP PER RAMP DETAIL 1 ON SHEET DT3
 - CONSTRUCT PRIVATE SIDEWALK RAMP PER RAMP DETAIL 2 ON SHEET DT3
 - CONSTRUCT PRIVATE SIDEWALK RAMP PER RAMP DETAIL 3 ON SHEET DT3
 - CONSTRUCT PRIVATE SIDEWALK RAMP PER RAMP DETAIL 4 ON SHEET DT3
 - CONSTRUCT PRIVATE SIDEWALK RAMP PER RAMP DETAIL 5 ON SHEET DT3
 - CONSTRUCT PRIVATE SIDEWALK RAMP PER RAMP DETAIL 6 ON SHEET DT3
 - CONSTRUCT BLOCK WALL OPENING PER DETAIL ON SHEET DT3
 - CONSTRUCT PRIVATE SIDEWALK RAMP PER RAMP DETAIL 7 ON SHEET DT3
 - RETAINING HEIGHT (4=FEET 2=TENTH)

STORM DRAIN NOTE:
ALL ONSITE STORM DRAIN FACILITIES ARE PRIVATELY OWNED AND MAINTAINED BY THE PROPERTY OWNER.

NOTE:
PROPERTY OWNER IS RESPONSIBLE TO MAINTAIN THE BEST MANAGEMENT PRACTICES SUCH AS BUT NOT LIMITED TO THE REMOVAL OF ACCUMULATED SEDIMENT AND DEBRIS AND CARE OF THE VEGETATION.

ENGINEER DISCLAIMER NOTE:
UTILITY LOCATIONS SHOWN HERE ON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND AND OVERHEAD UTILITIES AND NOTIFY THE DESIGN ENGINEER IMMEDIATELY OF ANY DISCREPANCIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HERE ON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

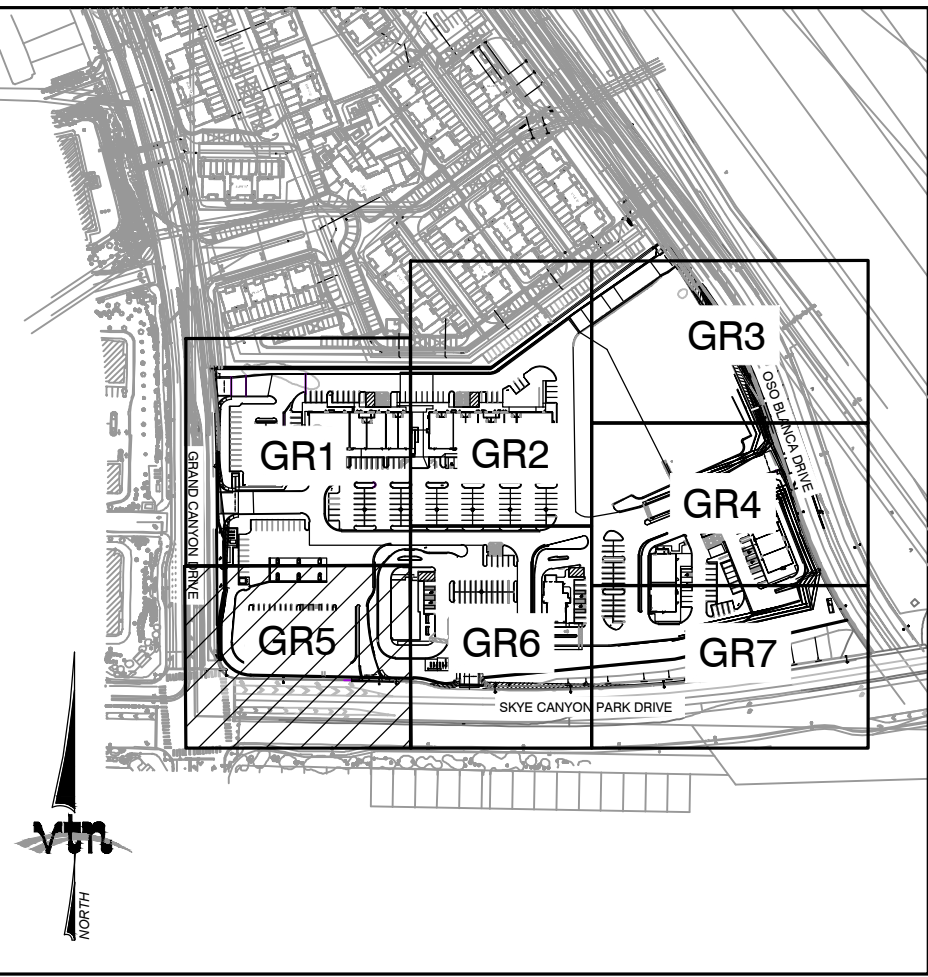
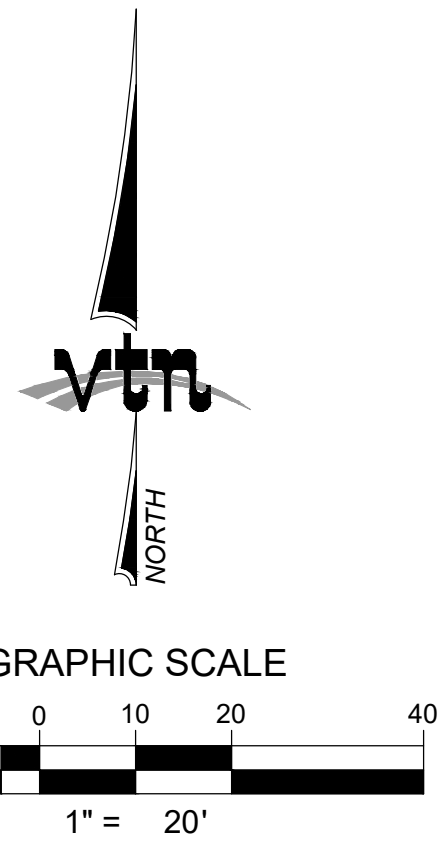
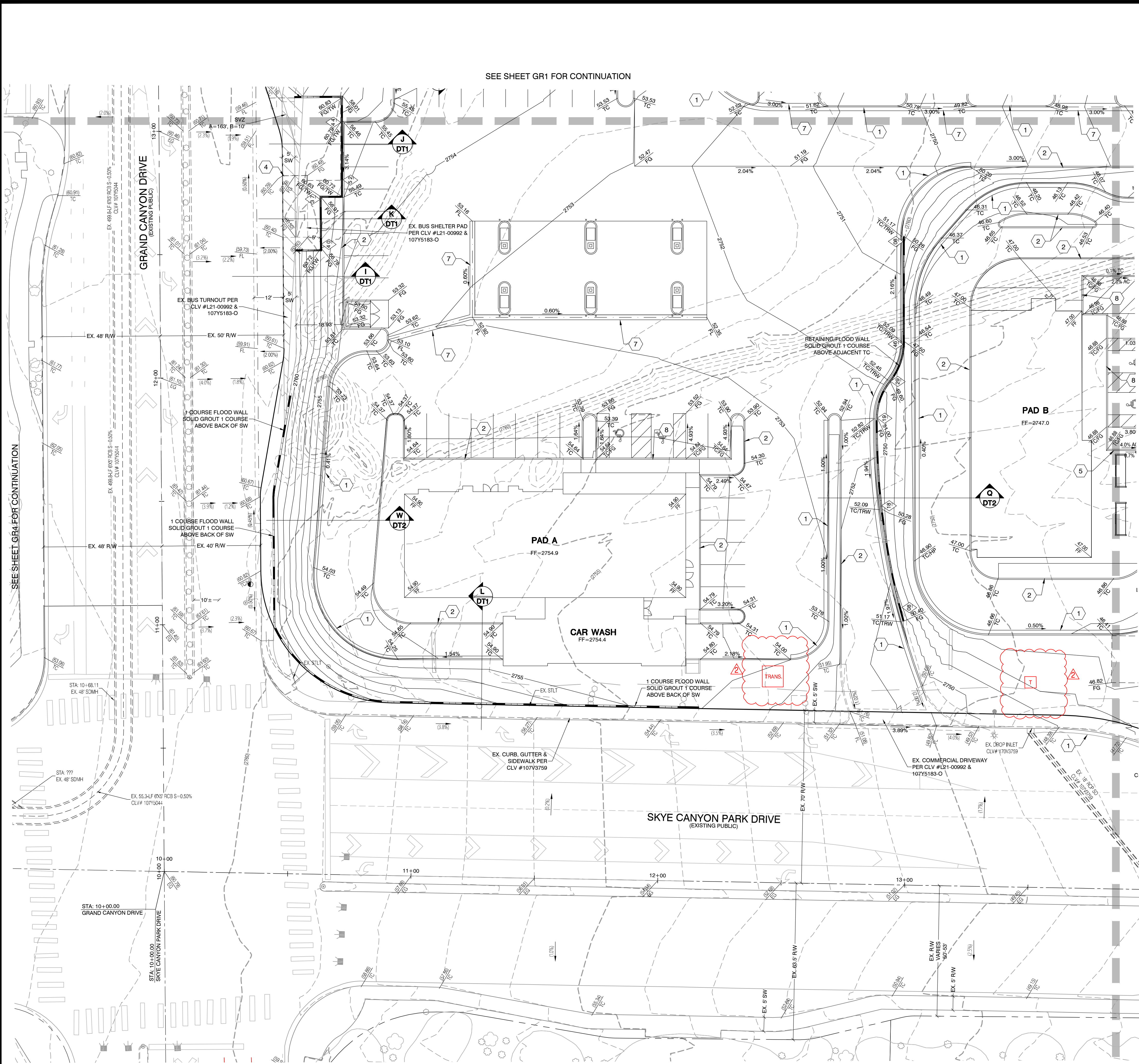
I CERTIFY THAT THIS GRADING PLAN CONFORMS TO THE APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE WITH CITY OF LAS VEGAS, #DS05462

6/16/22
DARYN M. OHTA, P.E. No. 15908 DATE

Call before you Dig
1-702-455-7511
CLARK COUNTY TRAFFIC OPERATIONS
1-702-226-6811
CLARK COUNTY TRAFFIC OPERATIONS

Call before you Dig
1-702-227-2600
AND
1-702-455-8000
CLARK COUNTY TRAFFIC OPERATIONS

CITY OF LAS VEGAS		GRAND CANYON VILLAGE LLC		GRADING PLAN 4		GRAND CANYON COMMERCIAL ONSITES	
2727 SOUTH RAINBOW BOULEVARD LAS VEGAS, NEVADA 89146-5148 PH: (702) 773-7550 FAX: (702) 362-2887 WEB: WWW.VTNNV.COM CONSULTING ENGINEERS & LAND SURVEYORS		10655 PARK RUN DRIVE, STE 180 LAS VEGAS, NEVADA 89144 (702) 226-4000		JUNE 2021		JUNE 2021	
DRAWN BY: MAK		DESIGNED BY: DMO		CHECKED BY: ---		PROJECT NO: 8025	
SCALE: ---		HORIZ. VERT.		N/A		N/A	
SHEET 7 OF 44 SHEETS		DRAWING NO. L21-01618/107Y5183		DATE 6/16/22		DATE 6/16/22	



BASIS OF BEARING
GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS). LAS VEGAS 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
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: 200,000,000 M (656,166,667 FTUS) EASTING AT CENTRAL MERIDIAN: 100,000,000 M (328,083,333 FTUS) SCALE FACTOR ON CENTRAL MERIDIAN: 1.0001 (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
NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) (REVISED 2008)
CITY OF LAS VEGAS BENCHMARK: 6LV907C4 NAVD88 ELEVATION: 841.20 METERS (2759.84 FEET)
RIVET AND PLATE IN TOP OF CURB AT SOUTHEAST CORNER OF HORSE DRIVE AND GRAND CANYON DRIVE.

FLOOD ZONE NOTE:
SITE IS LOCATED IN A ZONE X AS SHOWN IN FIRM MAP #32003C1735E, DATED SEPTEMBER 27, 2002. A ZONE X IS AN AREA OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN.

GRADING PERMIT NOTE
THIS GRADING PERMIT DOES NOT INCLUDE THE CONSTRUCTION OF RETAINING WALLS AND OTHERS STRUCTURES. SEPARATE PERMITS AND APPLICATIONS ARE REQUIRED FOR THESE.

GEOTECHNICAL NOTE:
REFER TO SOILS REPORT: WESTERN TECHNOLOGIES INC. PROJECT #4121JD010, DATED APRIL 6, 2021 CLV #L21-01618/107Y5183

SIGHT VISIBILITY ZONES:
NO STRUCTURE, WALLS, VEGETATION, OR OBJECT OF ANY KIND IS PERMITTED OVER TWENTY FOUR (24) INCHES IN HEIGHT (MEASURED FROM THE TOP OF ADJACENT CURB IF CURB EXISTS) WITHIN THE SIGHT VISIBILITY ZONES.

- KEY MAP**
NTS
- CONSTRUCTION NOTES**
1. CONSTRUCT 24" TYPE "L" CURB & GUTTER PER CCAUSD #216.
 2. CONSTRUCT PRIVATE TYPE "A" CURB PER DETAIL ON SHEET DT3
 3. CONSTRUCT PRIVATE 4" SIDEWALK PER CCAUSD # 234
 4. CONSTRUCT SIDEWALK PER CCAUSD # 234
 5. CONSTRUCT CURB TRANSITION PER DETAIL ON SHEET DT3
 6. CONSTRUCT CURB "U" CHANNEL PER DETAIL ON SHEET DT3
 7. CONSTRUCT 3" VALLEY GUTTER PER DETAIL ON SHEET DT3
 8. CONSTRUCT ZERO FACE PRIVATE TYPE "A" CURB PER DETAIL ON SHEET DT3
 9. CONSTRUCT 2" CURB CUT PER DETAIL ON SHEET DT3
 10. CONSTRUCT 1" BACKER CURB PER DETAIL ON SHEET DT3
 11. CONSTRUCT ACCESSIBLE PARKING PER DETAIL ON SHEET DT3
 12. CONSTRUCT PRIVATE SIDEWALK RAMP PER RAMP DETAIL 1 ON SHEET DT3
 13. CONSTRUCT PRIVATE SIDEWALK RAMP PER RAMP DETAIL 2 ON SHEET DT3
 14. CONSTRUCT PRIVATE SIDEWALK RAMP PER RAMP DETAIL 3 ON SHEET DT3
 15. CONSTRUCT PRIVATE SIDEWALK RAMP PER RAMP DETAIL 4 ON SHEET DT3
 16. CONSTRUCT PRIVATE SIDEWALK RAMP PER RAMP DETAIL 5 ON SHEET DT3
 17. CONSTRUCT PRIVATE SIDEWALK RAMP PER RAMP DETAIL 6 ON SHEET DT3
 18. CONSTRUCT BLOCK WALL OPENING PER DETAIL ON SHEET DT3
 19. CONSTRUCT PRIVATE SIDEWALK RAMP PER RAMP DETAIL 7 ON SHEET DT3
 20. RETAINING HEIGHT (4=FEET 2=TENTH)

STORM DRAIN NOTE:
ALL ONSITE STORM DRAIN FACILITIES ARE PRIVATELY OWNED AND MAINTAINED BY THE PROPERTY OWNER.

NOTE:
PROPERTY OWNER IS RESPONSIBLE TO MAINTAIN THE BEST MANAGEMENT PRACTICES SUCH AS BUT NOT LIMITED TO THE REMOVAL OF ACCUMULATED SEDIMENT AND DEBRIS AND CARE OF THE VEGETATION.

ENGINEER DISCLAIMER NOTE:
UTILITY LOCATIONS SHOWN HERE ON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND AND OVERHEAD UTILITIES AND NOTIFY THE DESIGN ENGINEER IMMEDIATELY OF ANY DISCREPANCIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HERE ON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

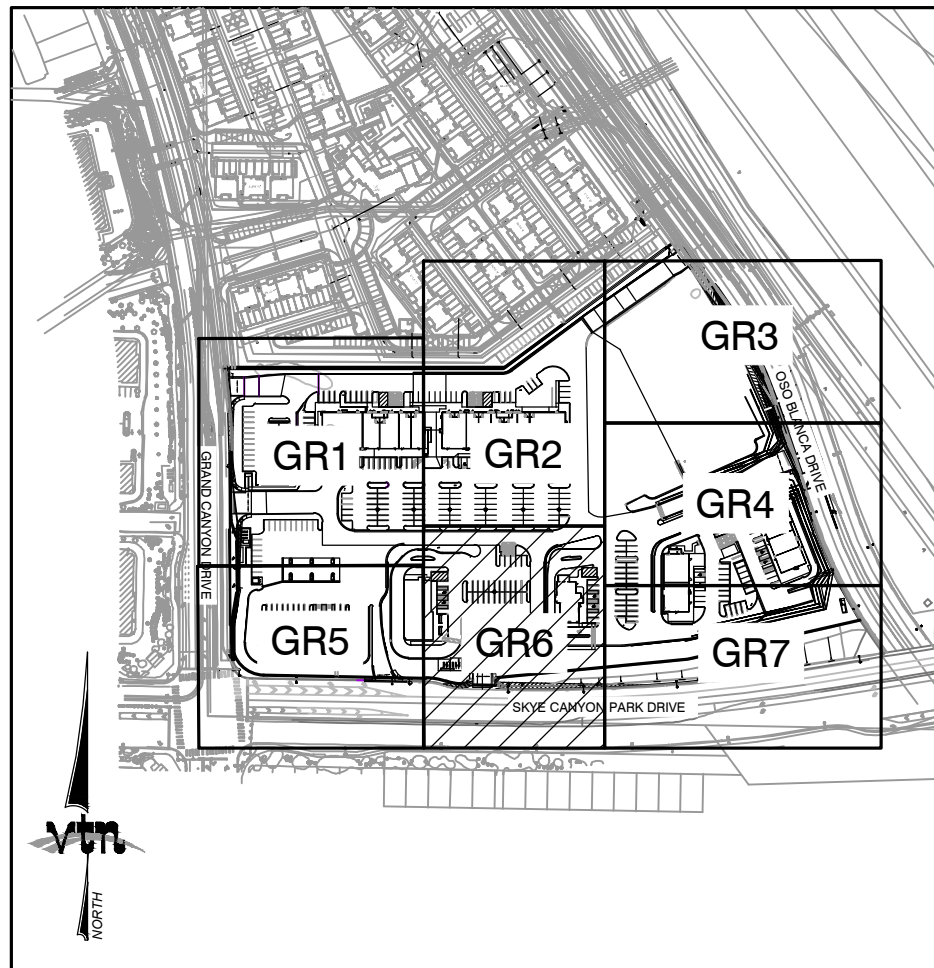
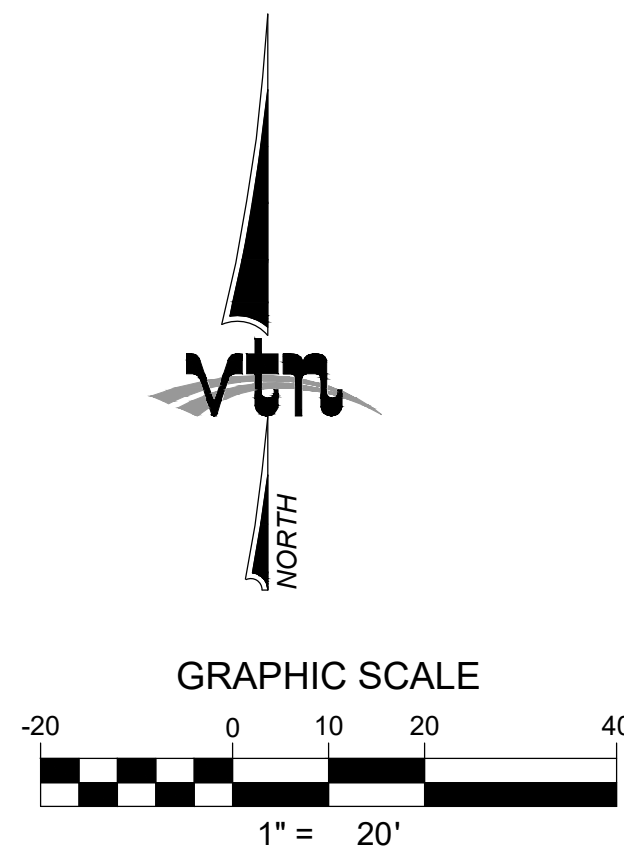
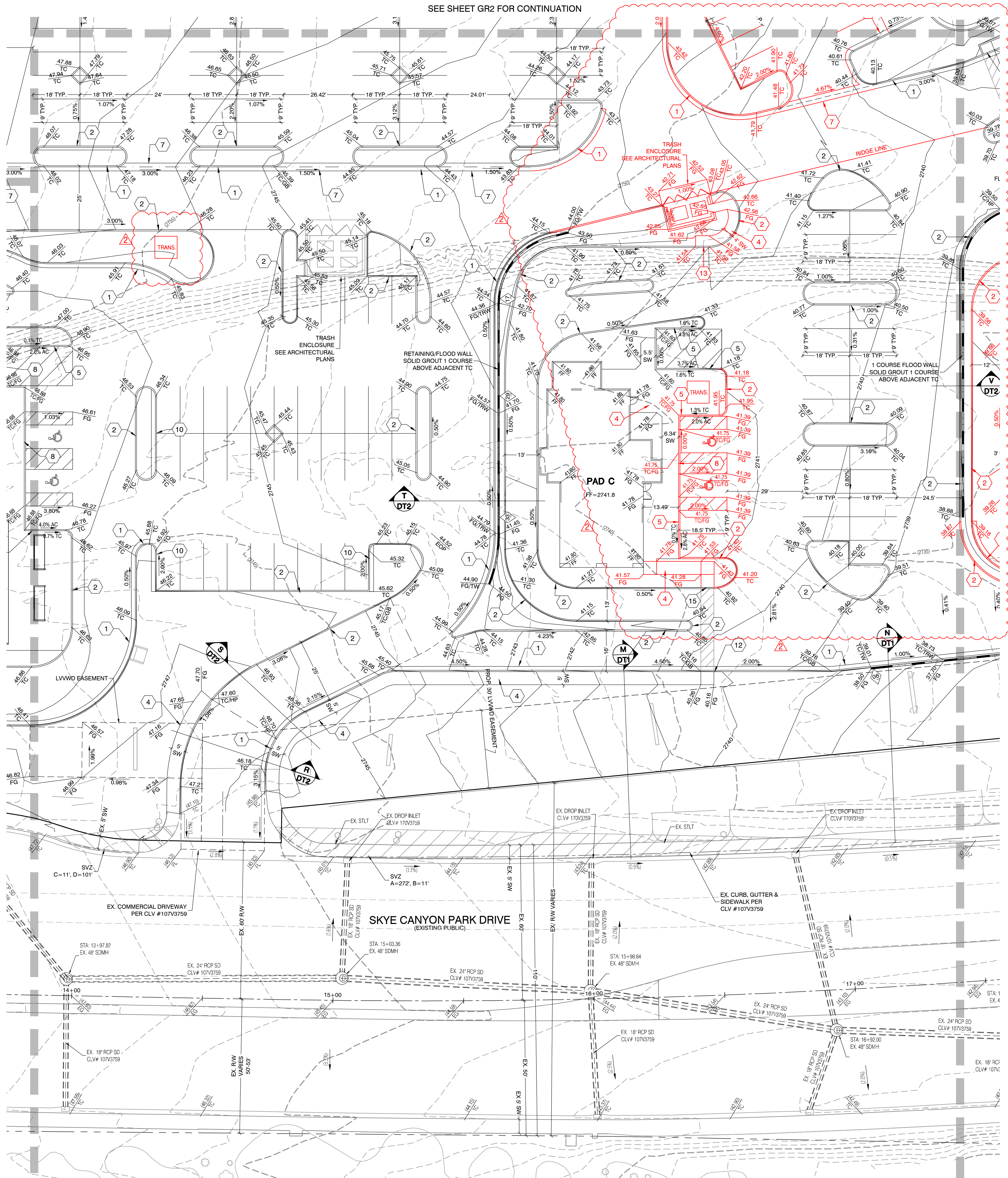
I CERTIFY THAT THIS GRADING PLAN CONFORMS TO THE APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE WITH CITY OF LAS VEGAS, #DS05462

DARYN M. OHTA, P.E. No. 15908 DATE 6/16/22

Call before you Dig
1-702-455-7511
CLARK COUNTY TRAFFIC OPERATIONS
1-702-226-6811
CLARK COUNTY TRAFFIC OPERATIONS
Call before you Dig
Avoid cutting underground utility lines. It's costly.

Call before you Dig
1-702-455-7511
CLARK COUNTY TRAFFIC OPERATIONS
1-702-226-6811
CLARK COUNTY TRAFFIC OPERATIONS
Call before you Dig
Avoid cutting underground utility lines. It's costly.

SEE SHEET GR5 FOR CONTINUATION



BASIS OF BEARING
GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS). LAS VEGAS 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
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: 200,000,000 M (656,166,667 FTUS) EASTING AT CENTRAL MERIDIAN: 100,000,000 M (328,083,333 FTUS) SCALE FACTOR ON CENTRAL MERIDIAN: 1.0001 (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
NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) (REVISED 2008)
CITY OF LAS VEGAS BENCHMARK: 6LV907C4 NAVD88 ELEVATION: 841.20 METERS (2759.84 FEET)
RIVET AND PLATE IN TOP OF CURB AT SOUTHEAST CORNER OF HORSE DRIVE AND GRAND CANYON DRIVE.

FLOOD ZONE NOTE:
SITE IS LOCATED IN A ZONE X AS SHOWN IN FIRM MAP #S2003C1735E, DATED SEPTEMBER 27, 2002. A ZONE X IS AN AREA OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN.

GRADING PERMIT NOTE
THIS GRADING PERMIT DOES NOT INCLUDE THE CONSTRUCTION OF RETAINING WALLS AND OTHERS STRUCTURES. SEPARATE PERMITS AND APPLICATIONS ARE REQUIRED FOR THESE.

GEOTECHNICAL NOTE:
REFER TO SOILS REPORT: WESTERN TECHNOLOGIES INC. PROJECT #4121JD010, DATED APRIL 6, 2021 CLV #L21-01618/107Y5183

SIGHT VISIBILITY ZONES:
NO STRUCTURE, WALLS, VEGETATION, OR OBJECT OF ANY KIND IS PERMITTED OVER TWENTY FOUR (24) INCHES IN HEIGHT (MEASURED FROM THE TOP OF ADJACENT CURB IF CURB EXISTS) WITHIN THE SIGHT VISIBILITY ZONES.

- CONSTRUCTION NOTES**
1. CONSTRUCT 24" TYPE "L" CURB & GUTTER PER CCAUSD #216.
 2. CONSTRUCT PRIVATE TYPE "A" CURB PER DETAIL ON SHEET DT3
 3. CONSTRUCT PRIVATE 4" SIDEWALK PER CCAUSD # 234
 4. CONSTRUCT SIDEWALK PER CCAUSD # 234
 5. CONSTRUCT CURB TRANSITION PER DETAIL ON SHEET DT3
 6. CONSTRUCT CURB "U" CHANNEL PER DETAIL ON SHEET DT3
 7. CONSTRUCT 3" VALLEY GUTTER PER DETAIL ON SHEET DT3
 8. CONSTRUCT ZERO FACE PRIVATE TYPE "A" CURB PER DETAIL ON SHEET DT3
 9. CONSTRUCT 2" CURB CUT PER DETAIL ON SHEET DT3
 10. CONSTRUCT 1" BACKER CURB PER DETAIL ON SHEET DT3
 11. CONSTRUCT ACCESSIBLE PARKING PER DETAIL ON SHEET DT3
 12. CONSTRUCT PRIVATE SIDEWALK RAMP PER RAMP DETAIL 1 ON SHEET DT3
 13. CONSTRUCT PRIVATE SIDEWALK RAMP PER RAMP DETAIL 2 ON SHEET DT3
 14. CONSTRUCT PRIVATE SIDEWALK RAMP PER RAMP DETAIL 3 ON SHEET DT3
 15. CONSTRUCT PRIVATE SIDEWALK RAMP PER RAMP DETAIL 4 ON SHEET DT3
 16. CONSTRUCT PRIVATE SIDEWALK RAMP PER RAMP DETAIL 5 ON SHEET DT3
 17. CONSTRUCT PRIVATE SIDEWALK RAMP PER RAMP DETAIL 6 ON SHEET DT3
 18. CONSTRUCT BLOCK WALL OPENING PER DETAIL ON SHEET DT3
 19. CONSTRUCT PRIVATE SIDEWALK RAMP PER RAMP DETAIL 7 ON SHEET DT3
 20. RETAINING HEIGHT (4=FEET 2=TENTH)

STORM DRAIN NOTE:
ALL ONSITE STORM DRAIN FACILITIES ARE PRIVATELY OWNED AND MAINTAINED BY THE PROPERTY OWNER.

NOTE:
PROPERTY OWNER IS RESPONSIBLE TO MAINTAIN THE BEST MANAGEMENT PRACTICES SUCH AS BUT NOT LIMITED TO THE REMOVAL OF ACCUMULATED SEDIMENT AND DEBRIS AND CARE OF THE VEGETATION.

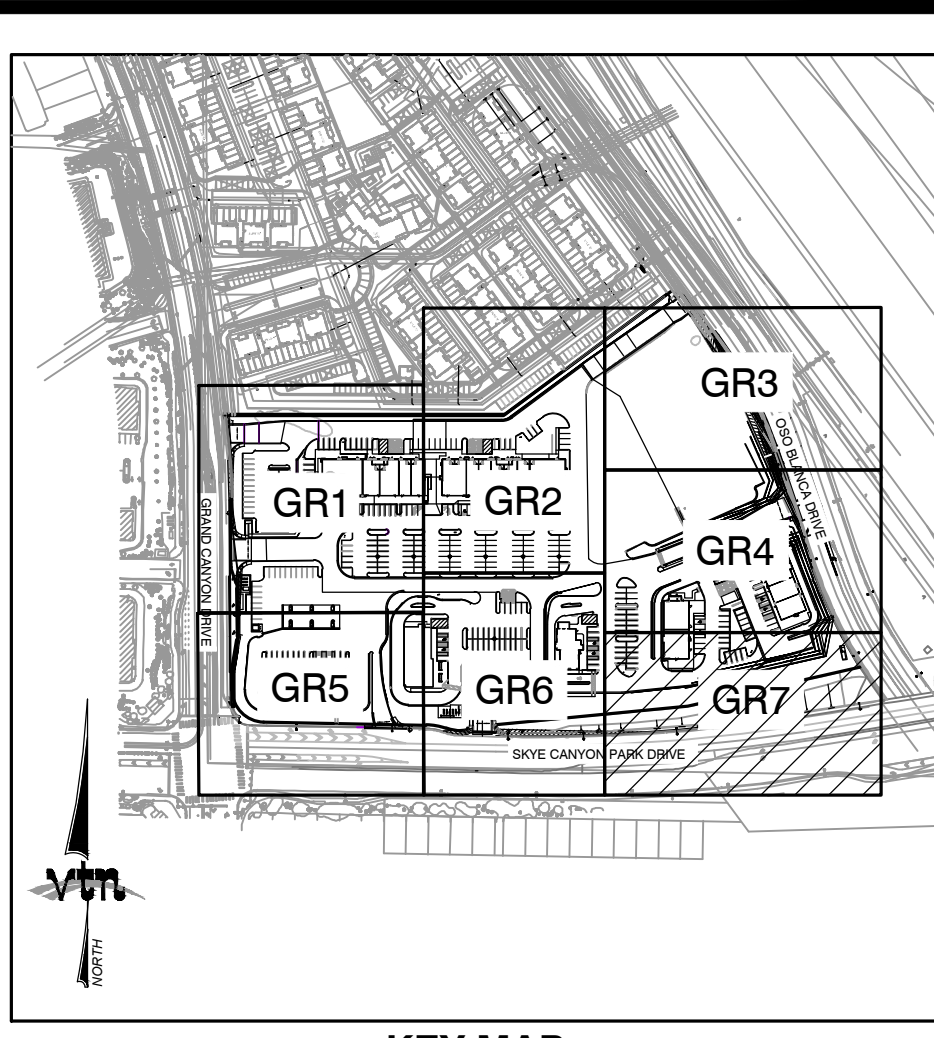
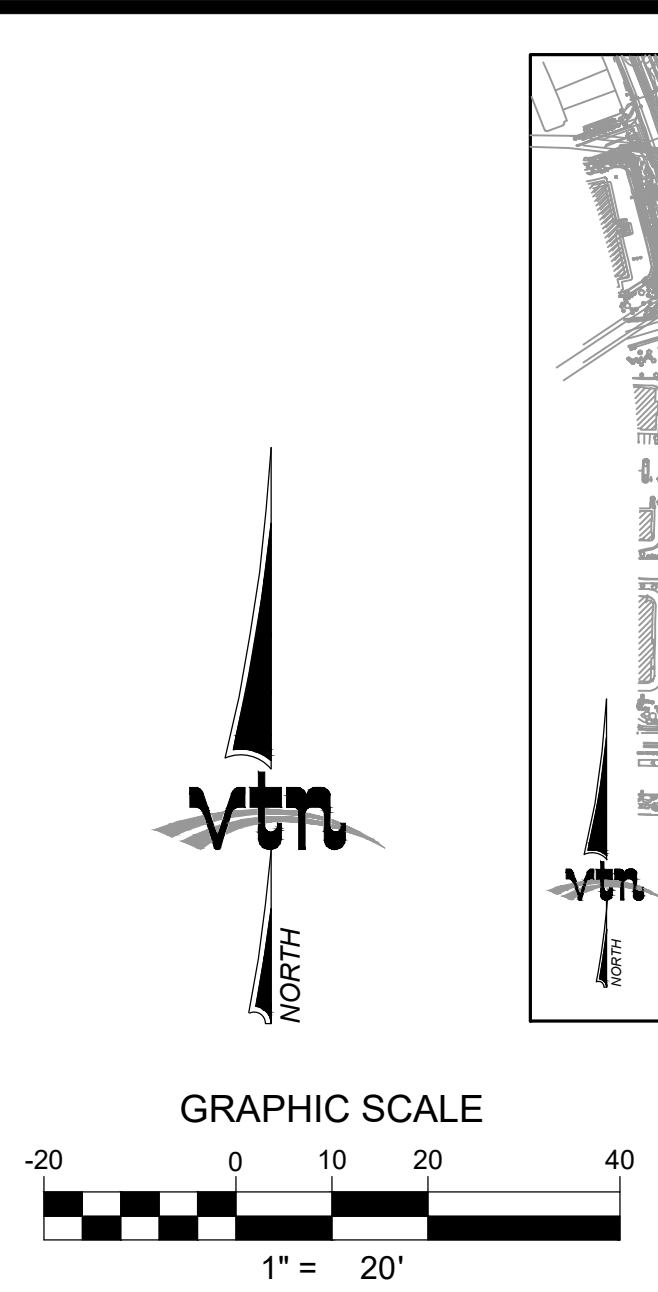
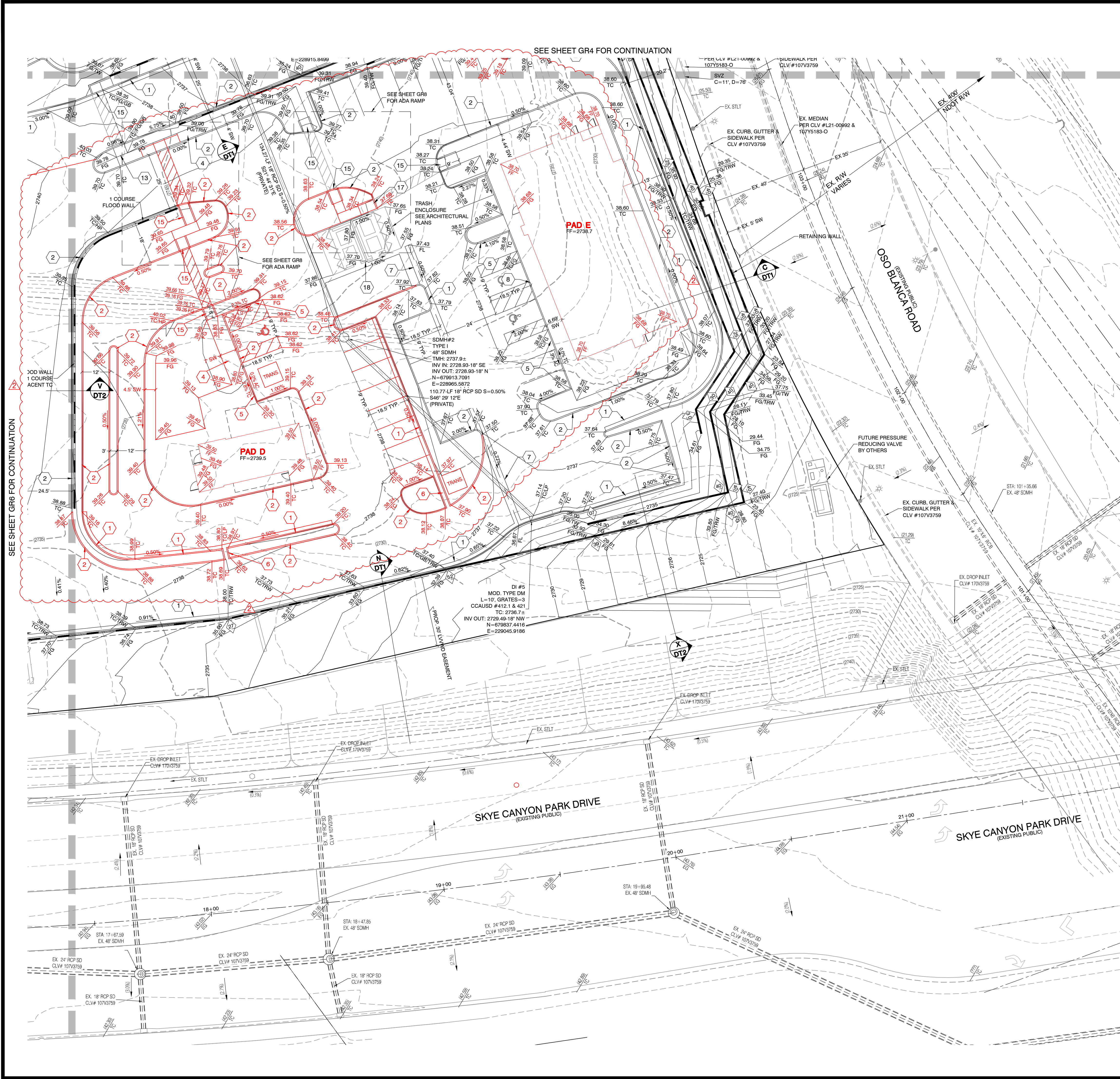
ENGINEER DISCLAIMER NOTE:
UTILITY LOCATIONS SHOWN HERE ON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND AND OVERHEAD UTILITIES AND NOTIFY THE DESIGN ENGINEER IMMEDIATELY OF ANY DISCREPANCIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HERE ON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

I CERTIFY THAT THIS GRADING PLAN CONFORMS TO THE APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE WITH CITY OF LAS VEGAS, #DS05462

DARYN M. OHTA, P.E. No. 15908 DATE 6/16/22

Call before you Dig
1-702-455-7511
CLARK COUNTY TRAFFIC OPERATIONS
1-702-227-2600
1-702-455-8000
CLARK COUNTY TRAFFIC OPERATIONS

CITY OF LAS VEGAS	
GRAND CANYON VILLAGE LLC 10655 PARK RUN DRIVE, STE 180 LAS VEGAS, NEVADA 89144 2727 SOUTH RAINBOW BOULEVARD LAS VEGAS, NEVADA 89146-5148 PH: (702) 973-7550 FAX: (702) 382-2987 WEB: WWW.VTNNV.COM CONSULTING ENGINEERS & LAND SURVEYORS	2 5-16-22 REVISE GRADING, PARKING, CURBS & SIDEWALKS PER NEW ARCHITECTURAL LAYOUT DATE BY REV
GRADING PLAN 6	GRAND CANYON COMMERCIAL ONSITES
DRAWN BY: JUNE 2021	DESIGNED BY: DMO
CHECKED BY:	PROJECT NO: 8025
SCALE: N/A	HORIZ. VERT.
SHEET GR-6 9 OF 44 SHEETS DRAWING NO. L21-01618/107Y5183	



BASIS OF BEARING
GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS 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
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: 200,000,000 M (656,166,667 FTUS)
EASTING AT CENTRAL MERIDIAN: 100,000,000 M (328,083,333 FTUS)
SCALE FACTOR ON CENTRAL MERIDIAN: 1.0001 (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
NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) (REVISED 2008)
CITY OF LAS VEGAS BENCHMARK: 6LV907C4
NAVD88 ELEVATION: 841.20 METERS (2759.84 FEET)
RIVET AND PLATE IN TOP OF CURB AT SOUTHEAST CORNER OF HORSE DRIVE AND GRAND CANYON DRIVE.

FLOOD ZONE NOTE:
SITE IS LOCATED IN A ZONE X AS SHOWN IN FIRM MAP #32003C1735E, DATED SEPTEMBER 27, 2002. A ZONE X IS AN AREA OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN.

GRADING PERMIT NOTE
THIS GRADING PERMIT DOES NOT INCLUDE THE CONSTRUCTION OF RETAINING WALLS AND OTHERS STRUCTURES. SEPARATE PERMITS AND APPLICATIONS ARE REQUIRED FOR THESE.

GEOTECHNICAL NOTE:
REFER TO SOILS REPORT: WESTERN TECHNOLOGIES INC. PROJECT #4121JD010, DATED APRIL 6, 2021
CLV #L21-01618/107Y5183

SIGHT VISIBILITY ZONES:
NO STRUCTURE, WALLS, VEGETATION, OR OBJECT OF ANY KIND IS PERMITTED OVER TWENTY-FOUR (24) INCHES IN HEIGHT (MEASURED FROM THE TOP OF ADJACENT CURB IF CURB EXISTS) WITHIN THE SIGHT VISIBILITY ZONES.

- CONSTRUCTION NOTES**
1. CONSTRUCT 24" TYPE "L" CURB & GUTTER PER CCAUSD #216.
 2. CONSTRUCT PRIVATE TYPE "A" CURB PER DETAIL ON SHEET DT3
 3. CONSTRUCT PRIVATE 4" SIDEWALK PER CCAUSD # 234
 4. CONSTRUCT SIDEWALK PER CCAUSD # 234
 5. CONSTRUCT CURB TRANSITION PER DETAIL ON SHEET DT3
 6. CONSTRUCT CURB "U" CHANNEL PER DETAIL ON SHEET DT3
 7. CONSTRUCT 3" VALLEY GUTTER PER DETAIL ON SHEET DT3
 8. CONSTRUCT ZERO FACE PRIVATE TYPE "A" CURB PER DETAIL ON SHEET DT3
 9. CONSTRUCT 2" CURB CUT PER DETAIL ON SHEET DT3
 10. CONSTRUCT 1" BACKER CURB PER DETAIL ON SHEET DT3
 11. CONSTRUCT ACCESSIBLE PARKING PER DETAIL ON SHEET DT3
 12. CONSTRUCT PRIVATE SIDEWALK RAMP PER RAMP DETAIL 1 ON SHEET DT3
 13. CONSTRUCT PRIVATE SIDEWALK RAMP PER RAMP DETAIL 2 ON SHEET DT3
 14. CONSTRUCT PRIVATE SIDEWALK RAMP PER RAMP DETAIL 3 ON SHEET DT3
 15. CONSTRUCT PRIVATE SIDEWALK RAMP PER RAMP DETAIL 4 ON SHEET DT3
 16. CONSTRUCT PRIVATE SIDEWALK RAMP PER RAMP DETAIL 5 ON SHEET DT3
 17. CONSTRUCT PRIVATE SIDEWALK RAMP PER RAMP DETAIL 6 ON SHEET DT3
 18. CONSTRUCT BLOCK WALL OPENING PER DETAIL ON SHEET DT3
 19. CONSTRUCT PRIVATE SIDEWALK RAMP PER RAMP DETAIL 7 ON SHEET DT3
 20. RETAINING HEIGHT (4=FEET 2=TENTH)

STORM DRAIN NOTE:
ALL ONSITE STORM DRAIN FACILITIES ARE PRIVATELY OWNED AND MAINTAINED BY THE PROPERTY OWNER.

NOTE:
PROPERTY OWNER IS RESPONSIBLE TO MAINTAIN THE BEST MANAGEMENT PRACTICES SUCH AS BUT NOT LIMITED TO THE REMOVAL OF ACCUMULATED SEDIMENT AND DEBRIS AND CARE OF THE VEGETATION.

ENGINEER DISCLAIMER NOTE:
UTILITY LOCATIONS SHOWN HERE ON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND AND OVERHEAD UTILITIES AND NOTIFY THE DESIGN ENGINEER IMMEDIATELY. OF ANY DISCREPANCIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HERE ON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

I CERTIFY THAT THIS GRADING PLAN CONFORMS TO THE APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE WITH CITY OF LAS VEGAS, #DS05462

DARYN M. OHTA, P.E. No. 15908 DATE 6/16/22

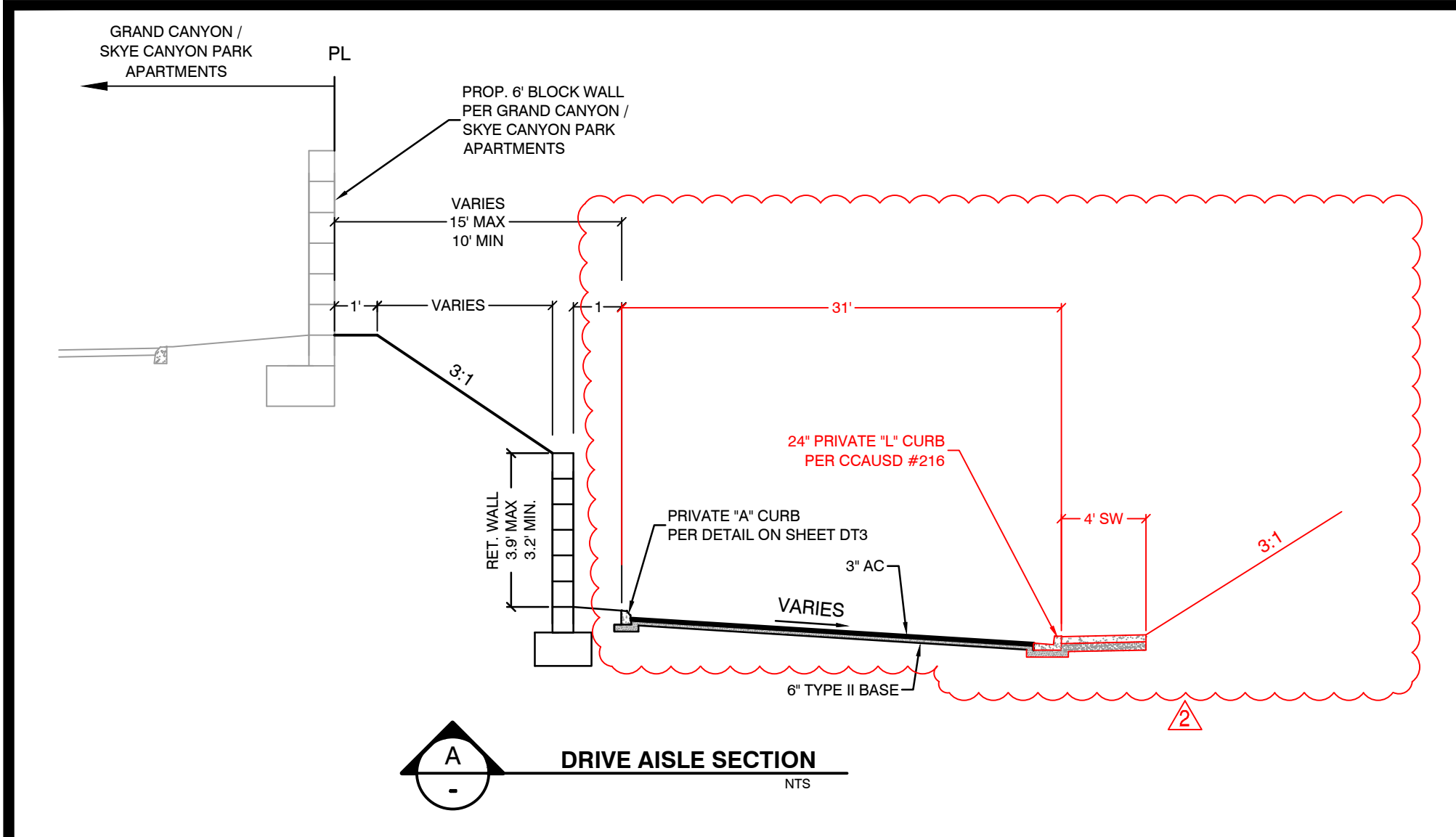
Call before you Dig
Avoid cutting underground utility lines. It's costly.

Call before you Dig
1-702-227-2600
AND
1-702-455-6000
CLARK COUNTY TRAFFIC OPERATIONS

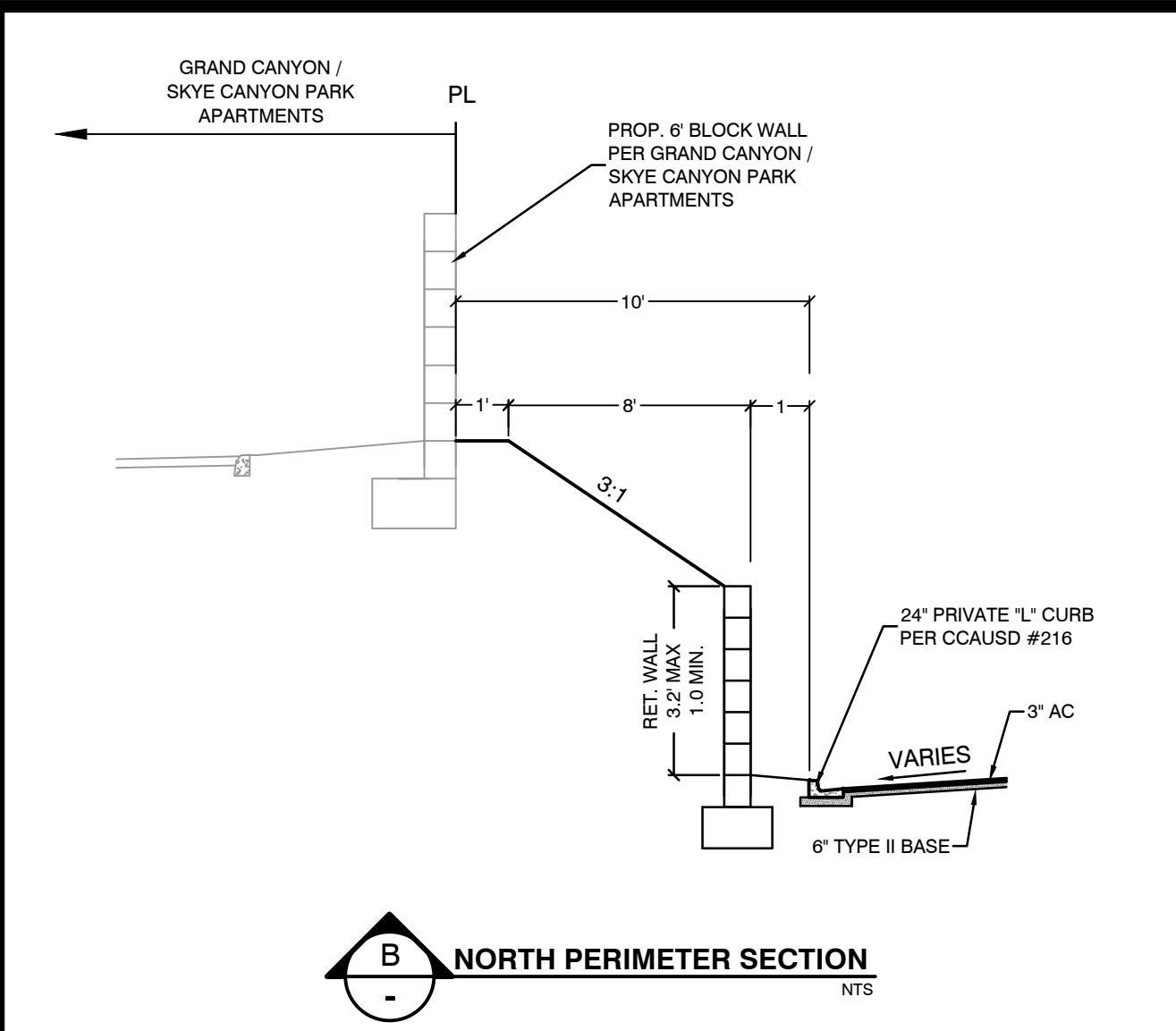
Call before you Dig
1-702-455-7511
CLARK COUNTY TRAFFIC OPERATIONS

Call before you Dig
1-702-455-6011
CLARK COUNTY TRAFFIC OPERATIONS

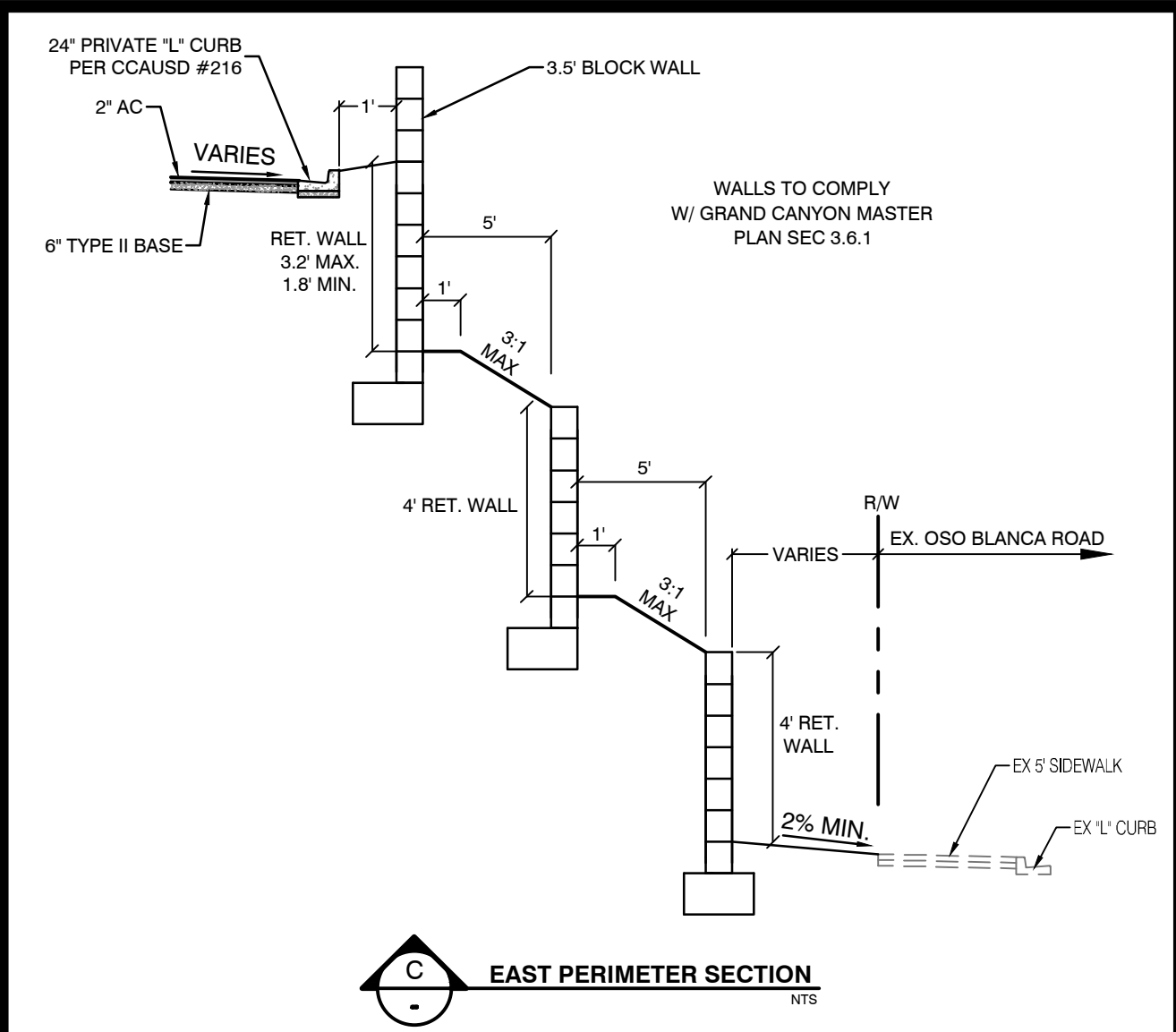
CITY OF LAS VEGAS	
GRAND CANYON VILLAGE LLC	
10655 PARK RUN DRIVE, STE 180 LAS VEGAS, NEVADA 89144 702-227-4600	
2727 SOUTH RAINBOW BOULEVARD LAS VEGAS, NEVADA 89146-5148 PH: (702) 973-7550 FAX: (702) 382-2587 WWW.VTNN.COM CONSULTING ENGINEERS & LAND SURVEYORS	
GRADING PLAN 7	
GRAND CANYON COMMERCIAL ONSITES	
DRAWN BY: MAK	JUNE 2021
DESIGNED BY: DMO	
CHECKED BY: ---	
PROJECT NO: 8025	SCALE: N/A
SHEET GR-7 10 OF 44 SHEETS DRAWING NO. L21-01618/107Y5183	



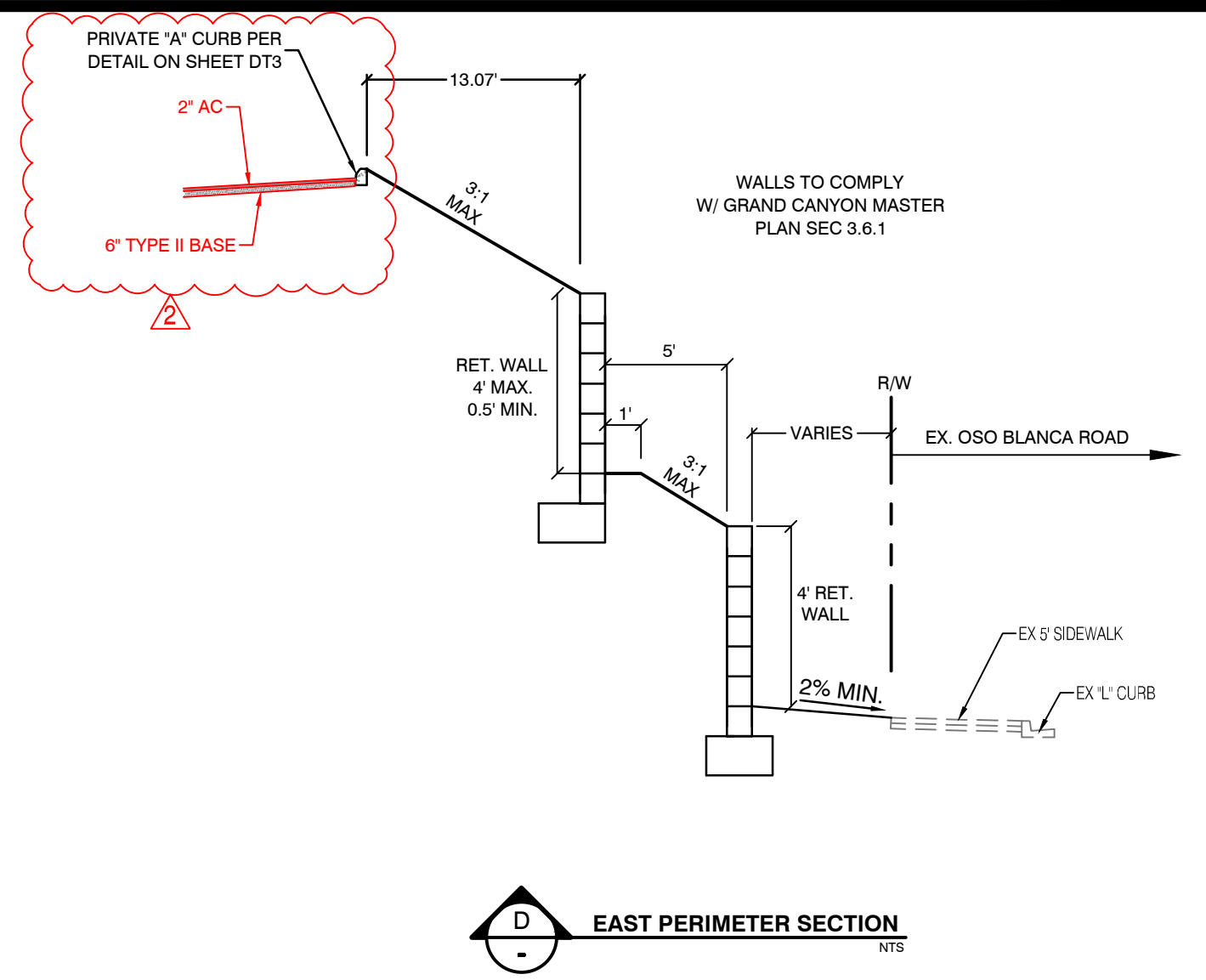
A
-
DRIVE AISLE SECTION
NTS



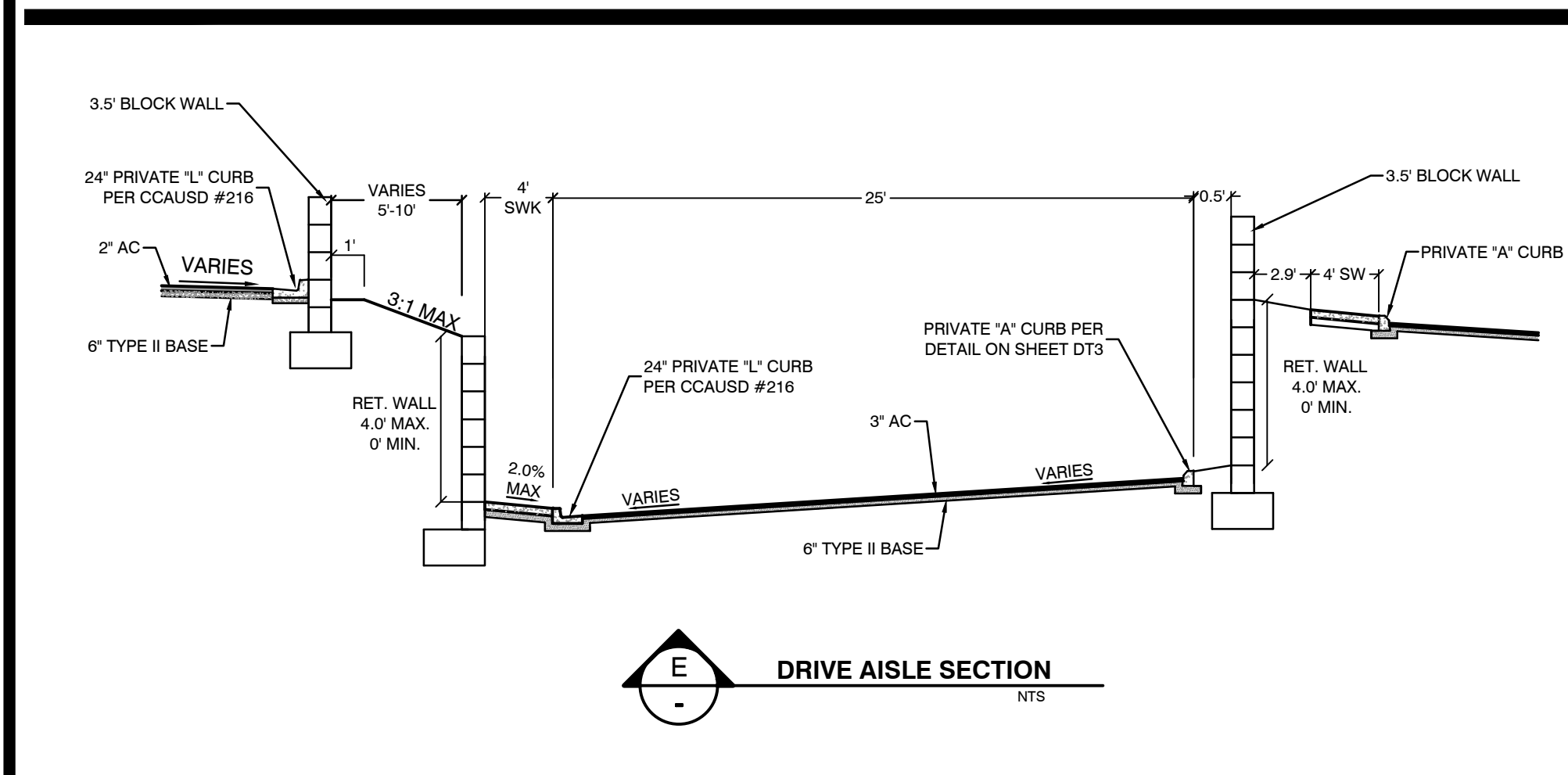
B
-
NORTH PERIMETER SECTION
NTS



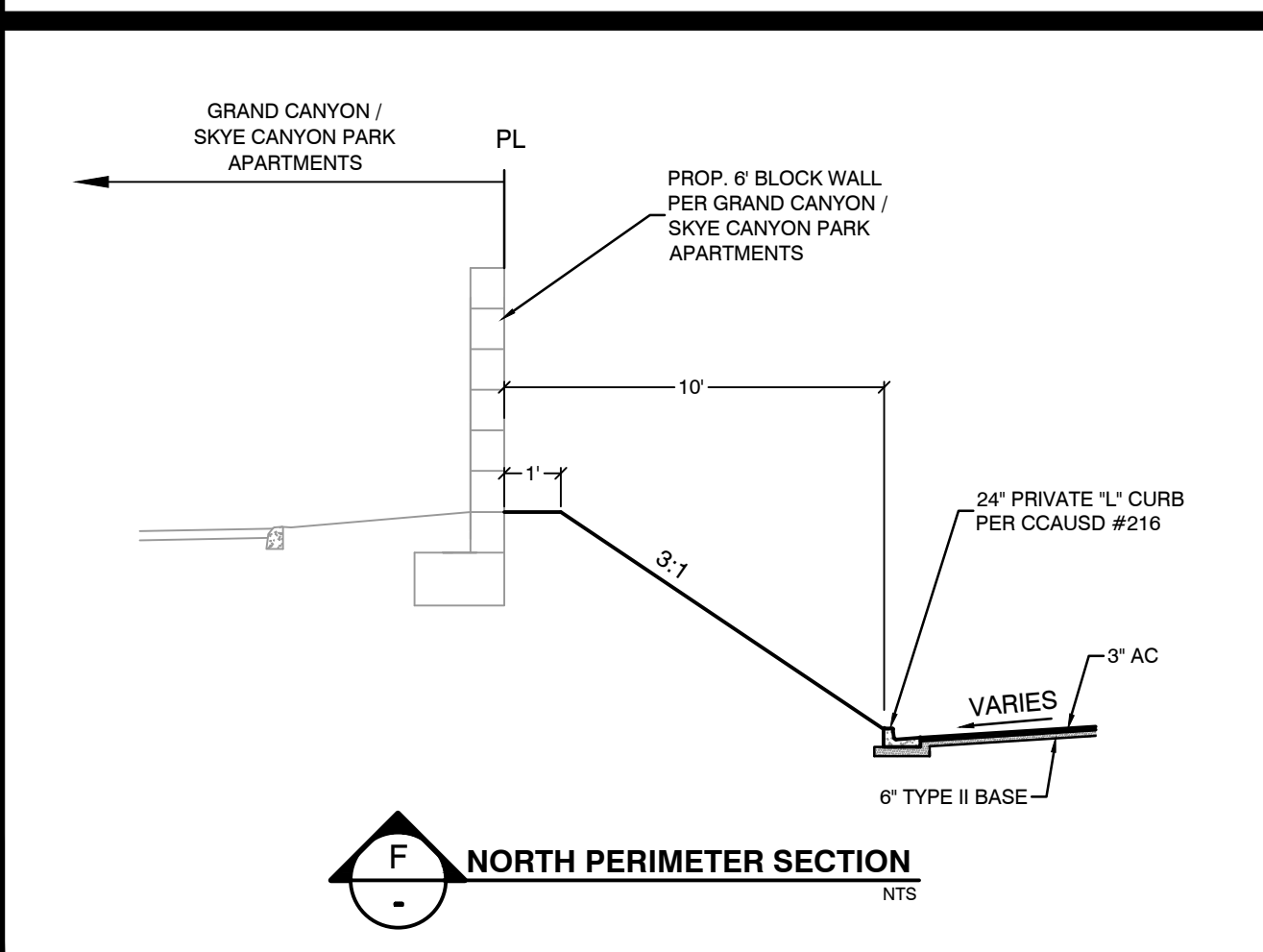
C
-
EAST PERIMETER SECTION
NTS



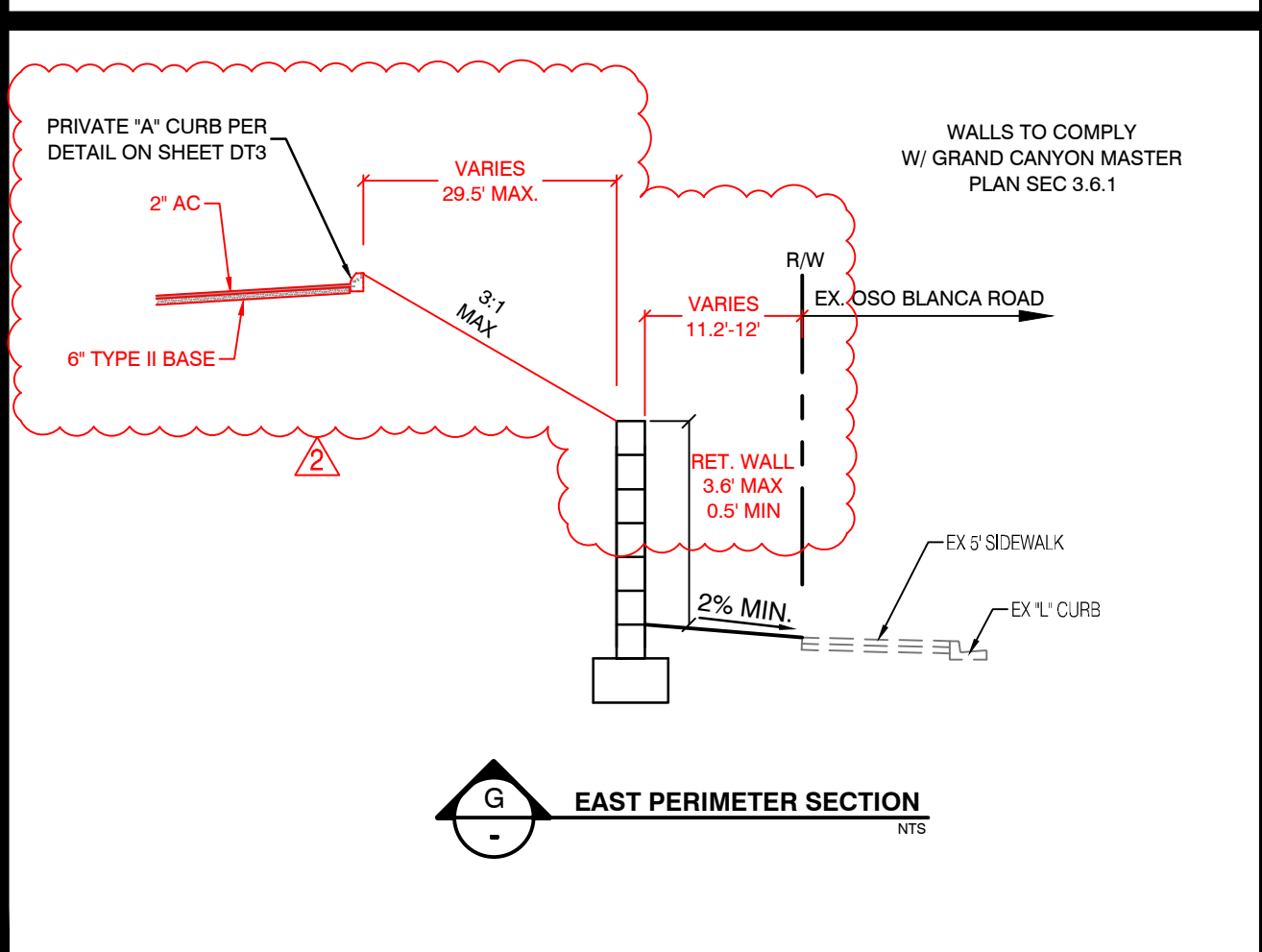
D
-
EAST PERIMETER SECTION
NTS



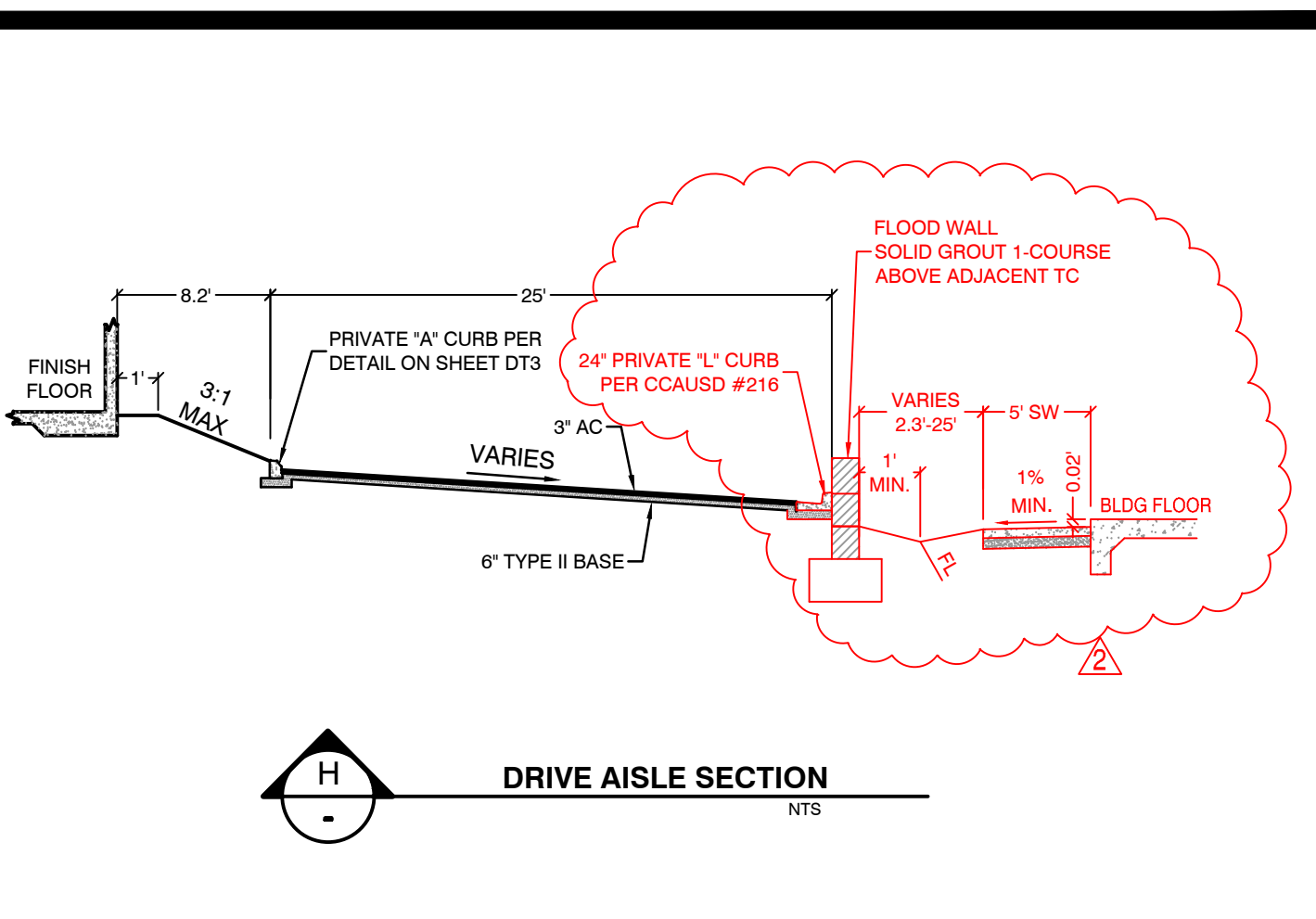
E
-
DRIVE AISLE SECTION
NTS



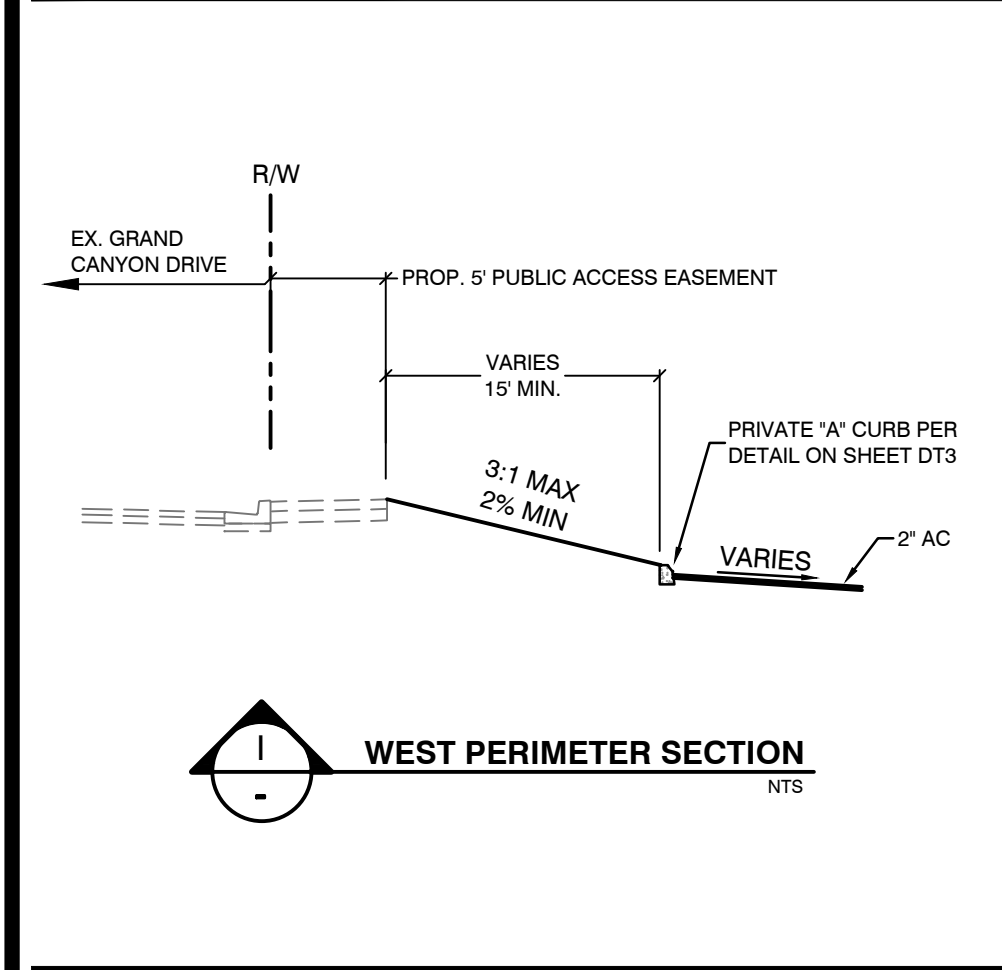
F
-
NORTH PERIMETER SECTION
NTS



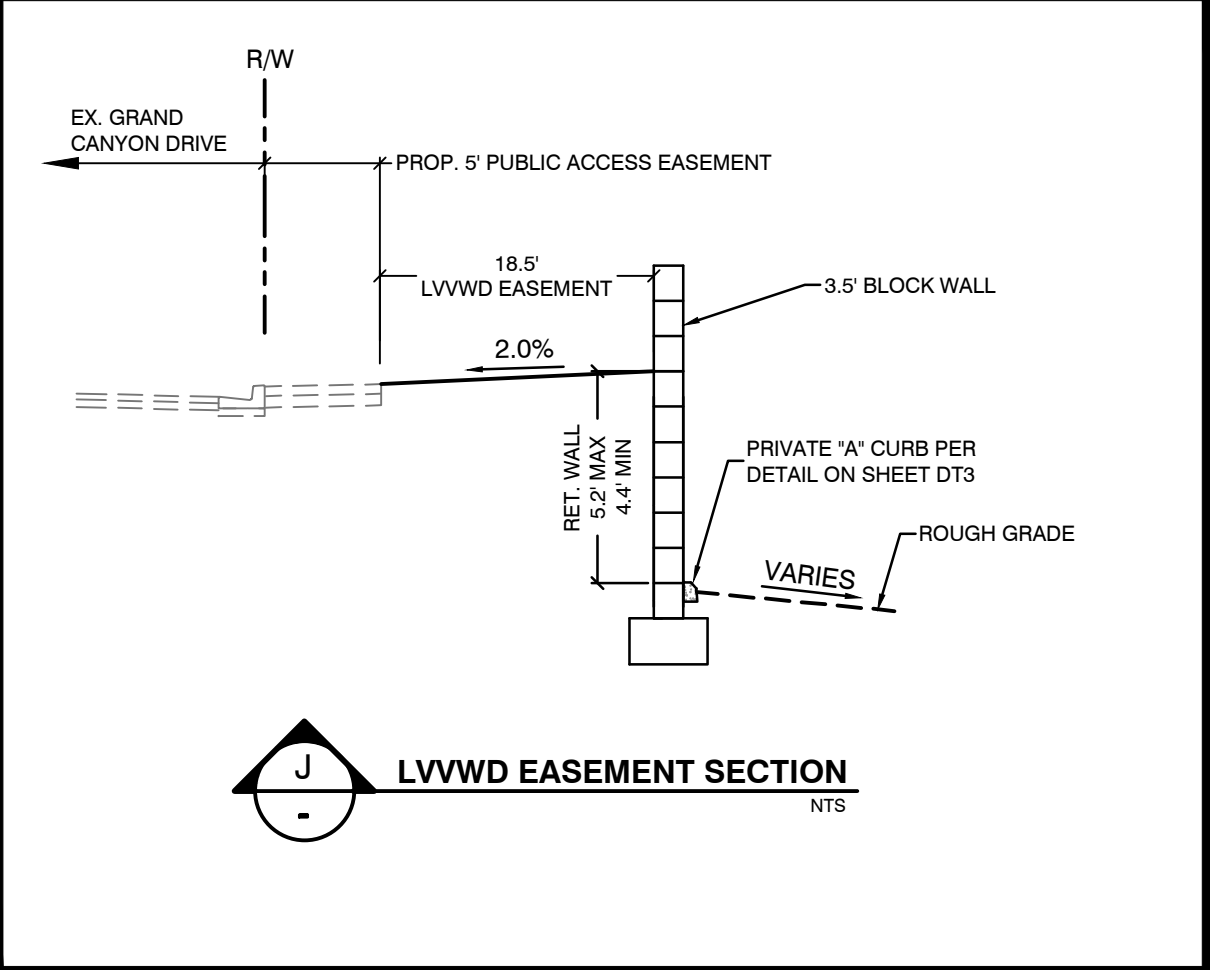
G
-
EAST PERIMETER SECTION
NTS



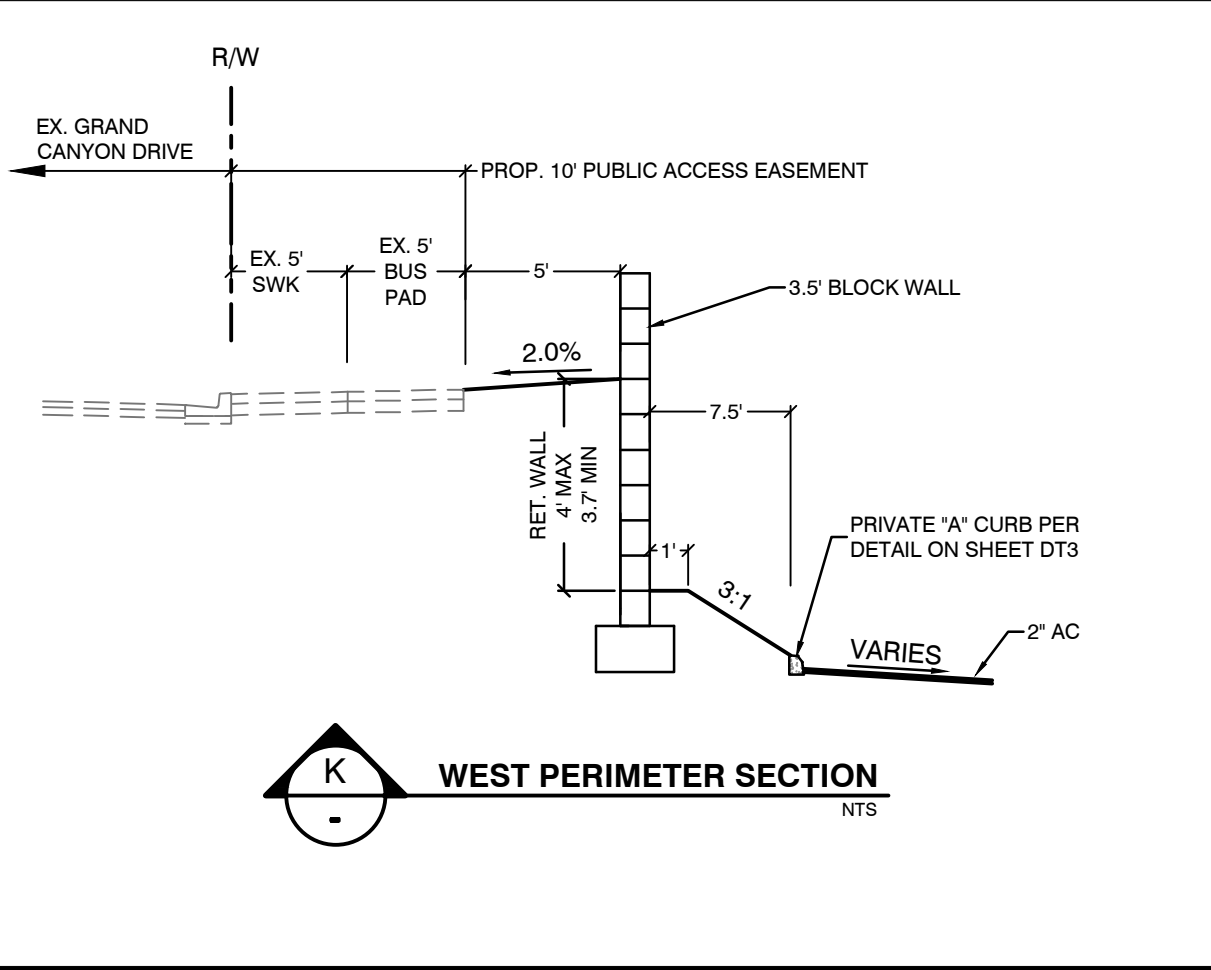
H
-
DRIVE AISLE SECTION
NTS



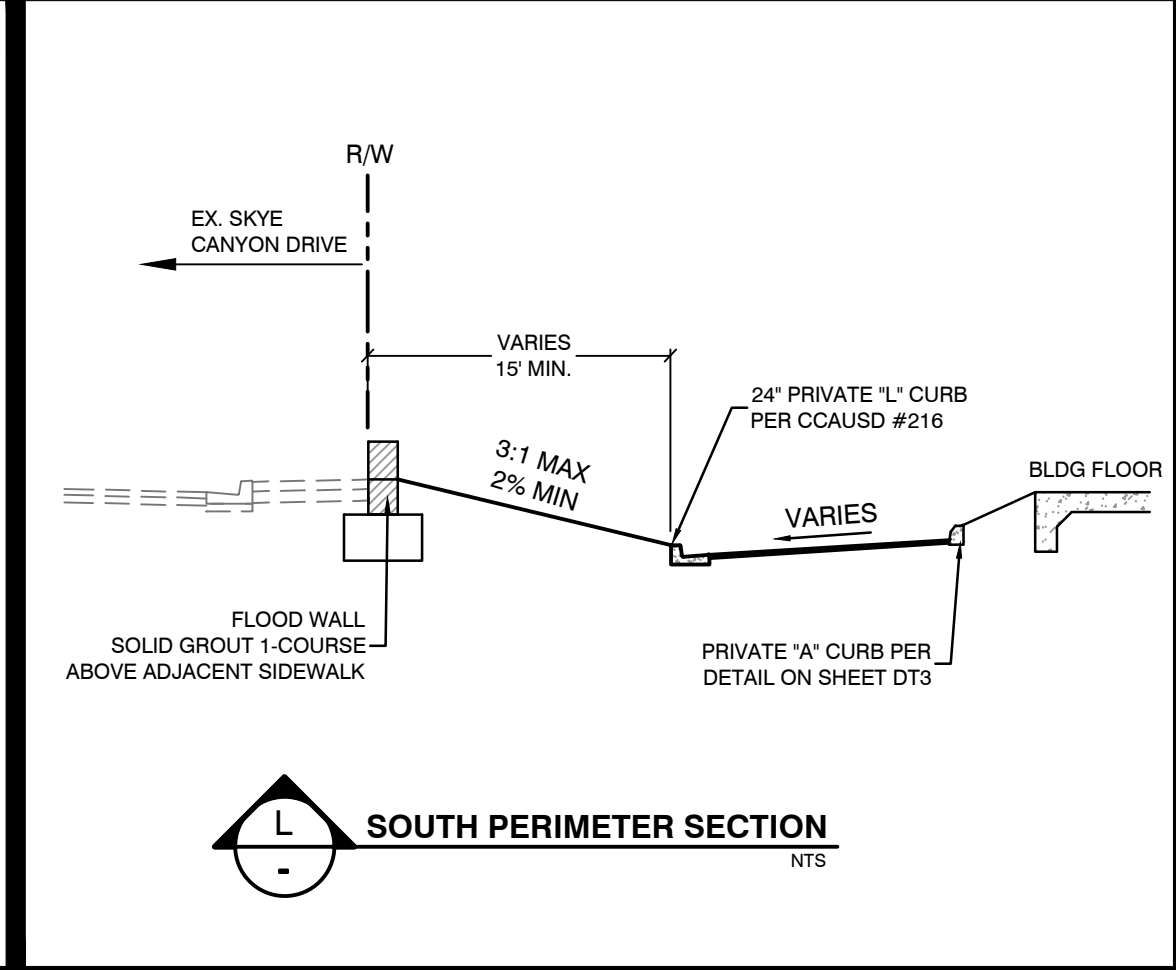
I
-
WEST PERIMETER SECTION
NTS



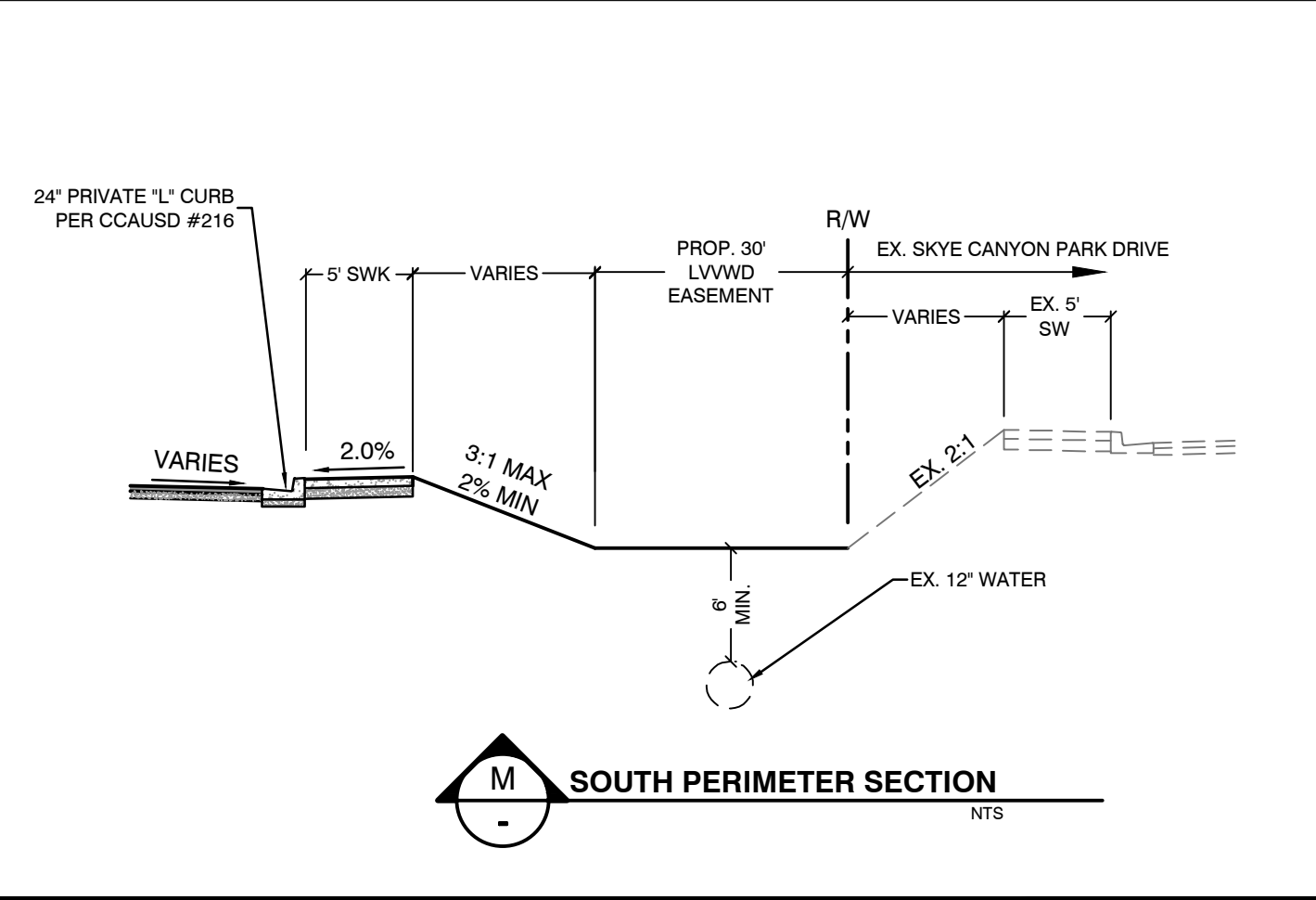
J
-
LVWD EASEMENT SECTION
NTS



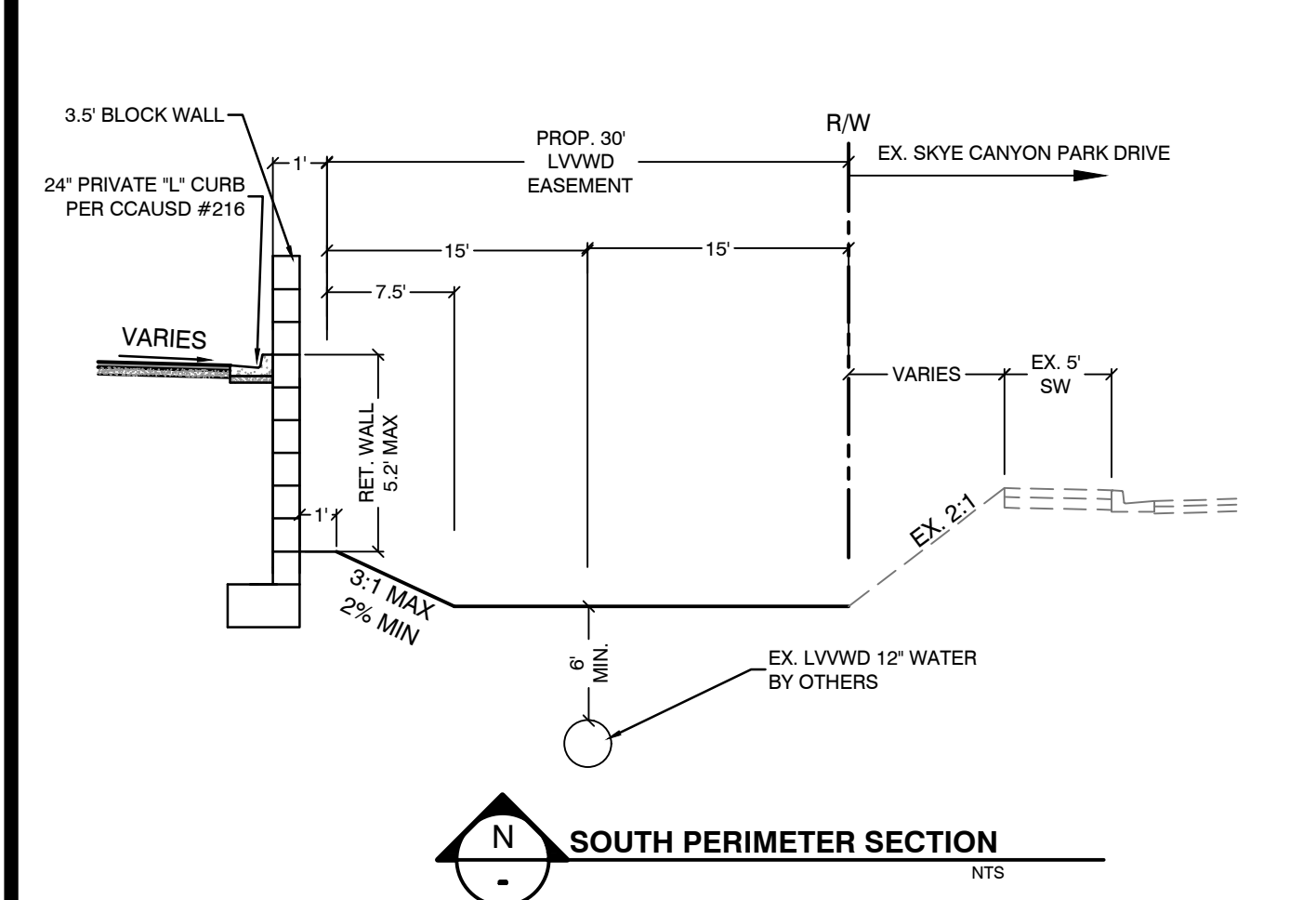
K
-
WEST PERIMETER SECTION
NTS



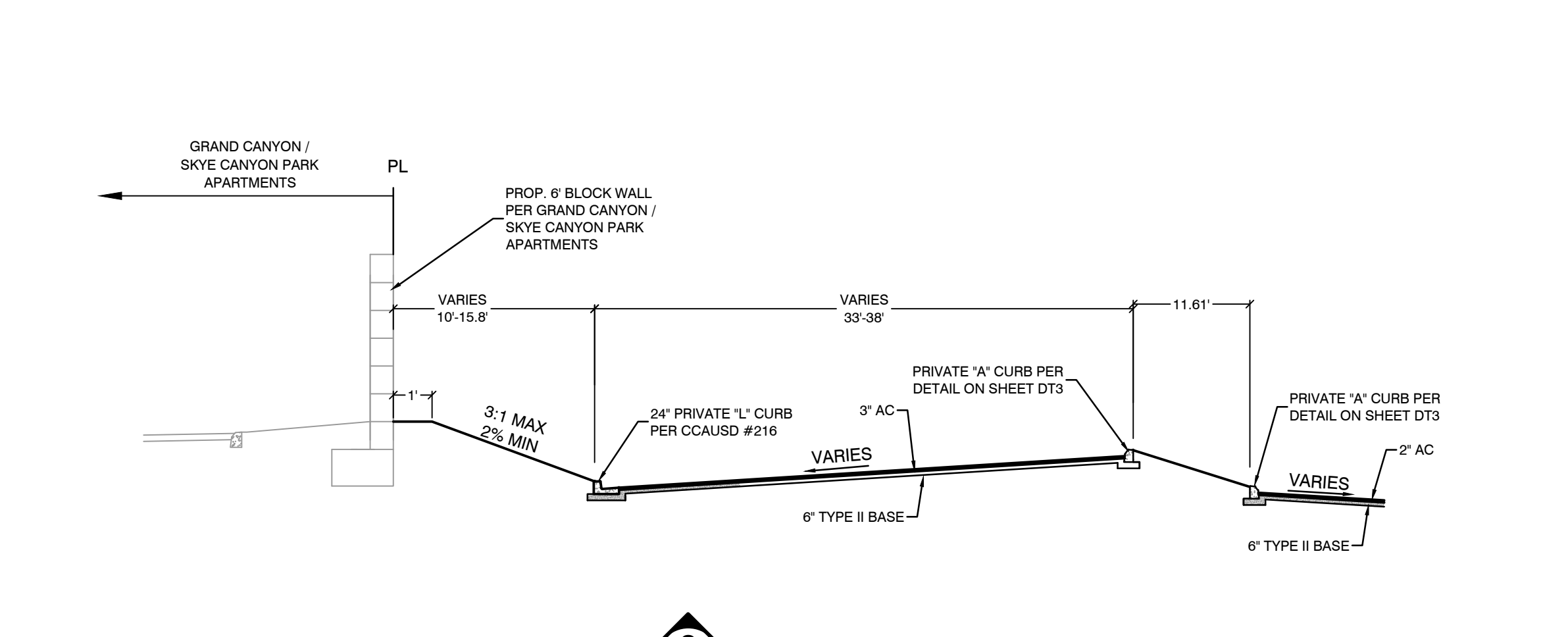
L
-
SOUTH PERIMETER SECTION
NTS



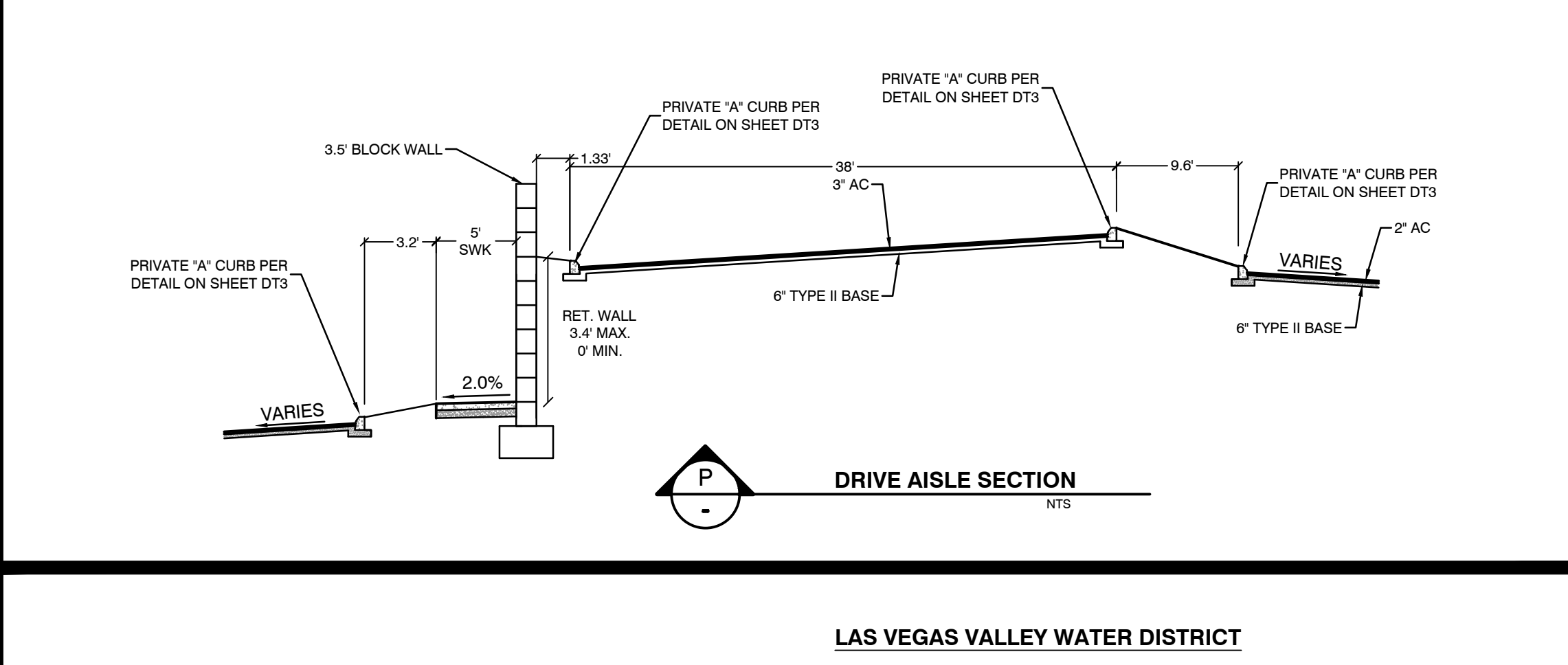
M
-
SOUTH PERIMETER SECTION
NTS



N
-
SOUTH PERIMETER SECTION
NTS



O
-
DRIVE AISLE SECTION
NTS

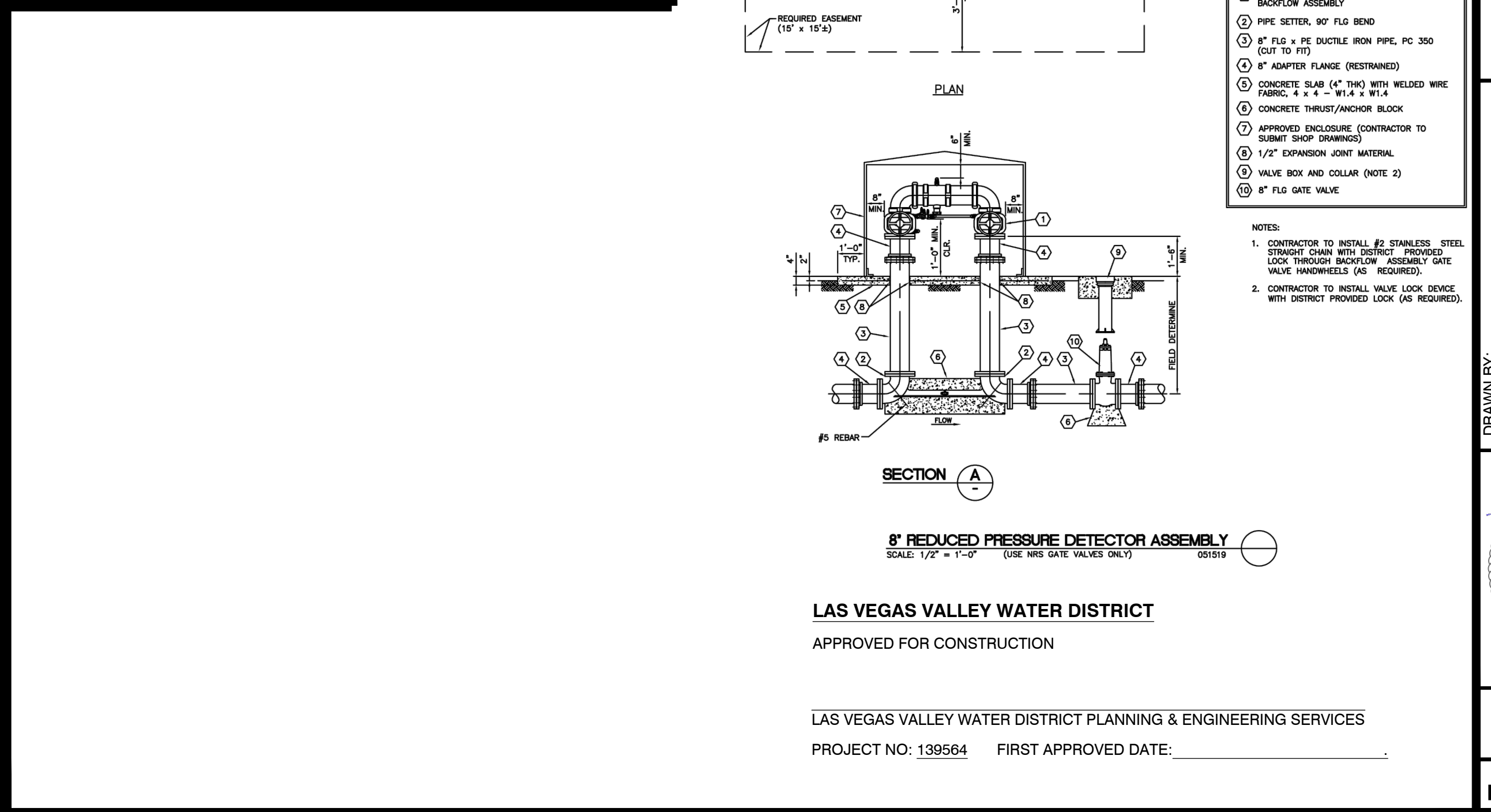
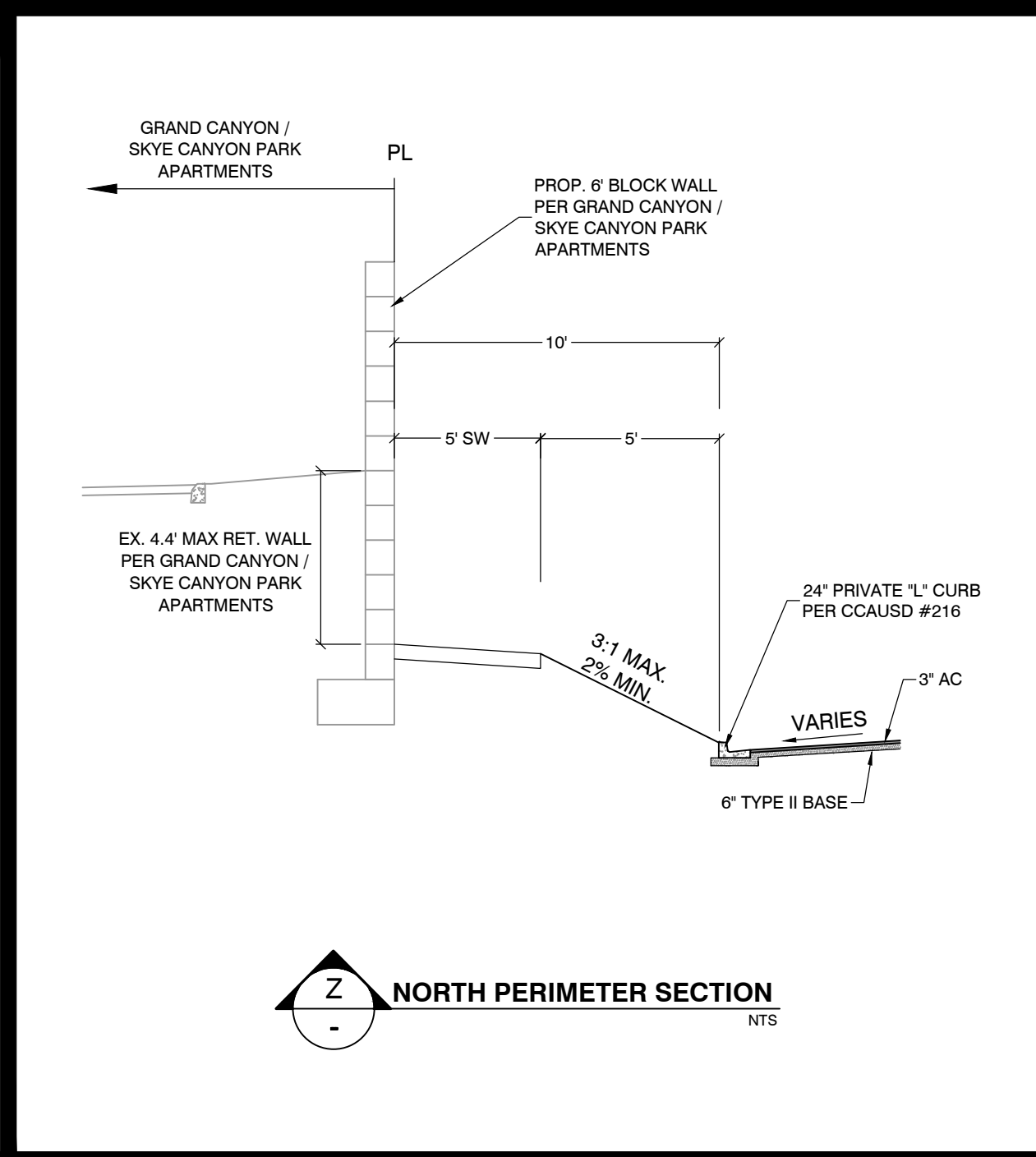
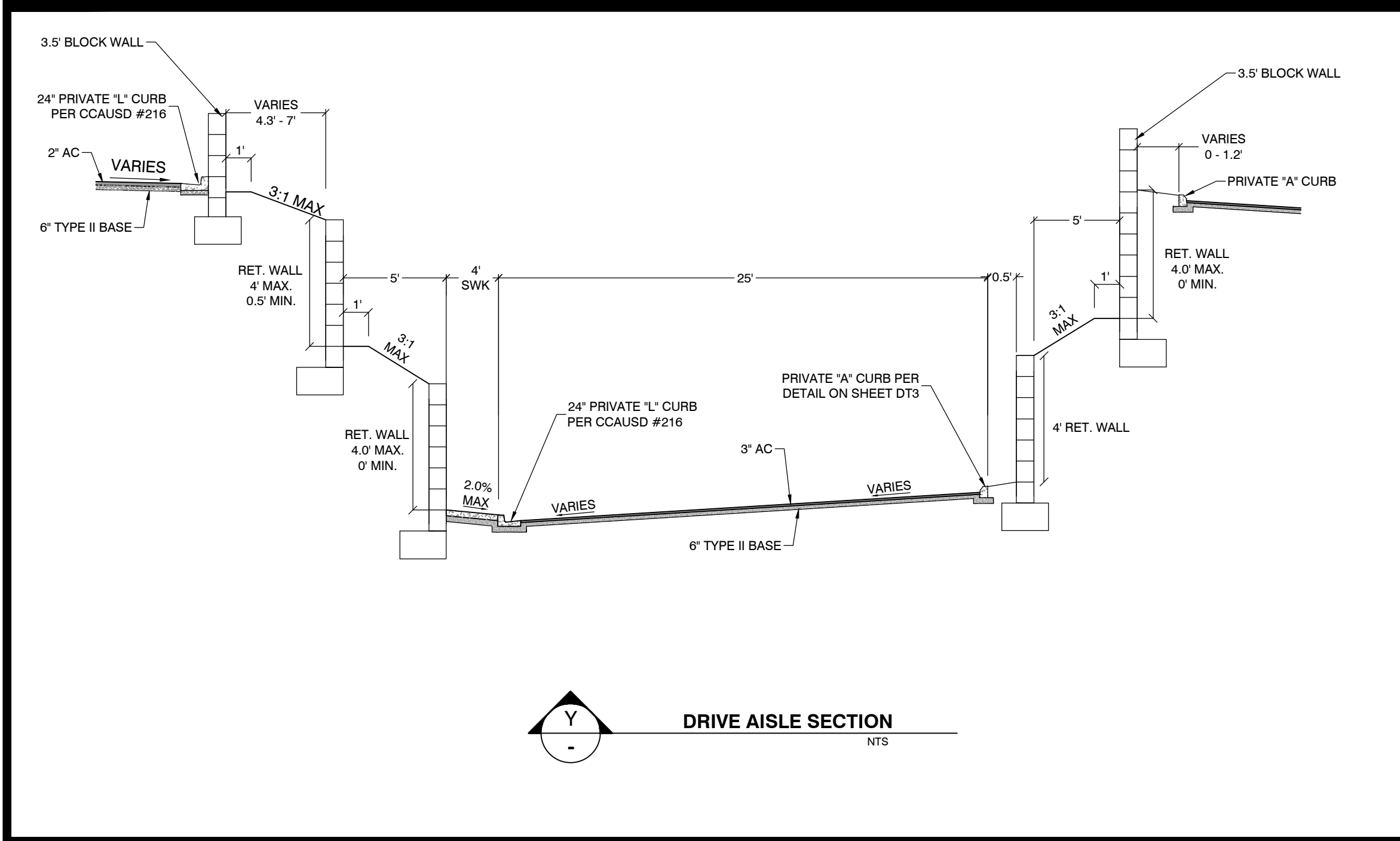
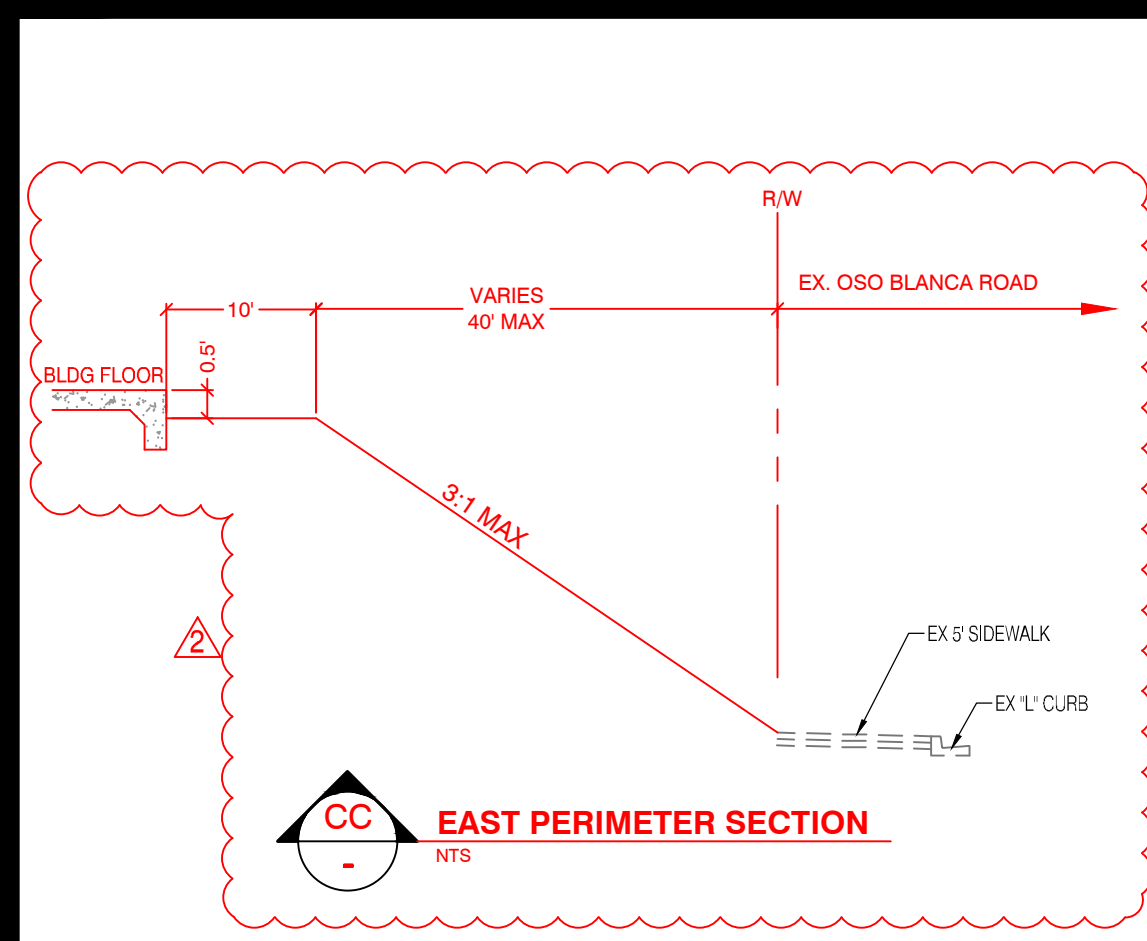
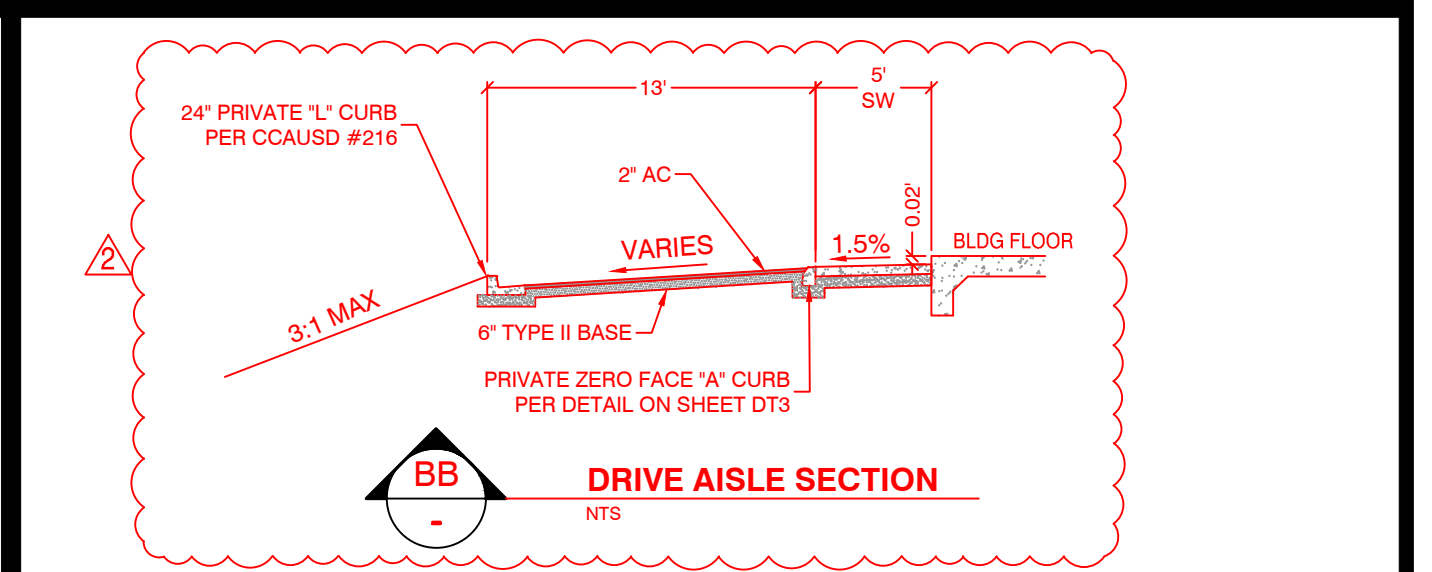
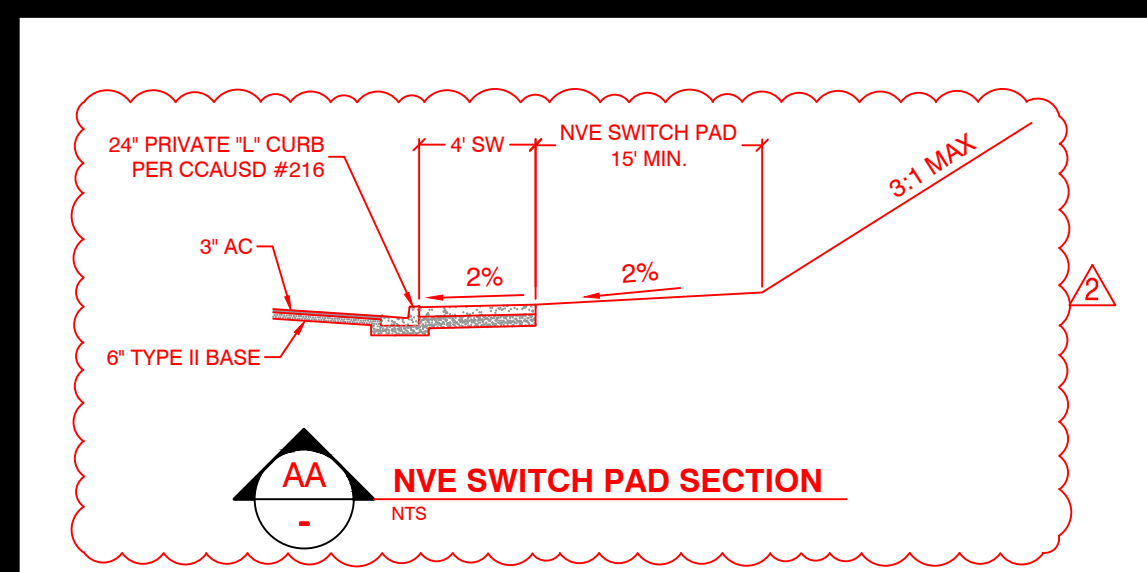
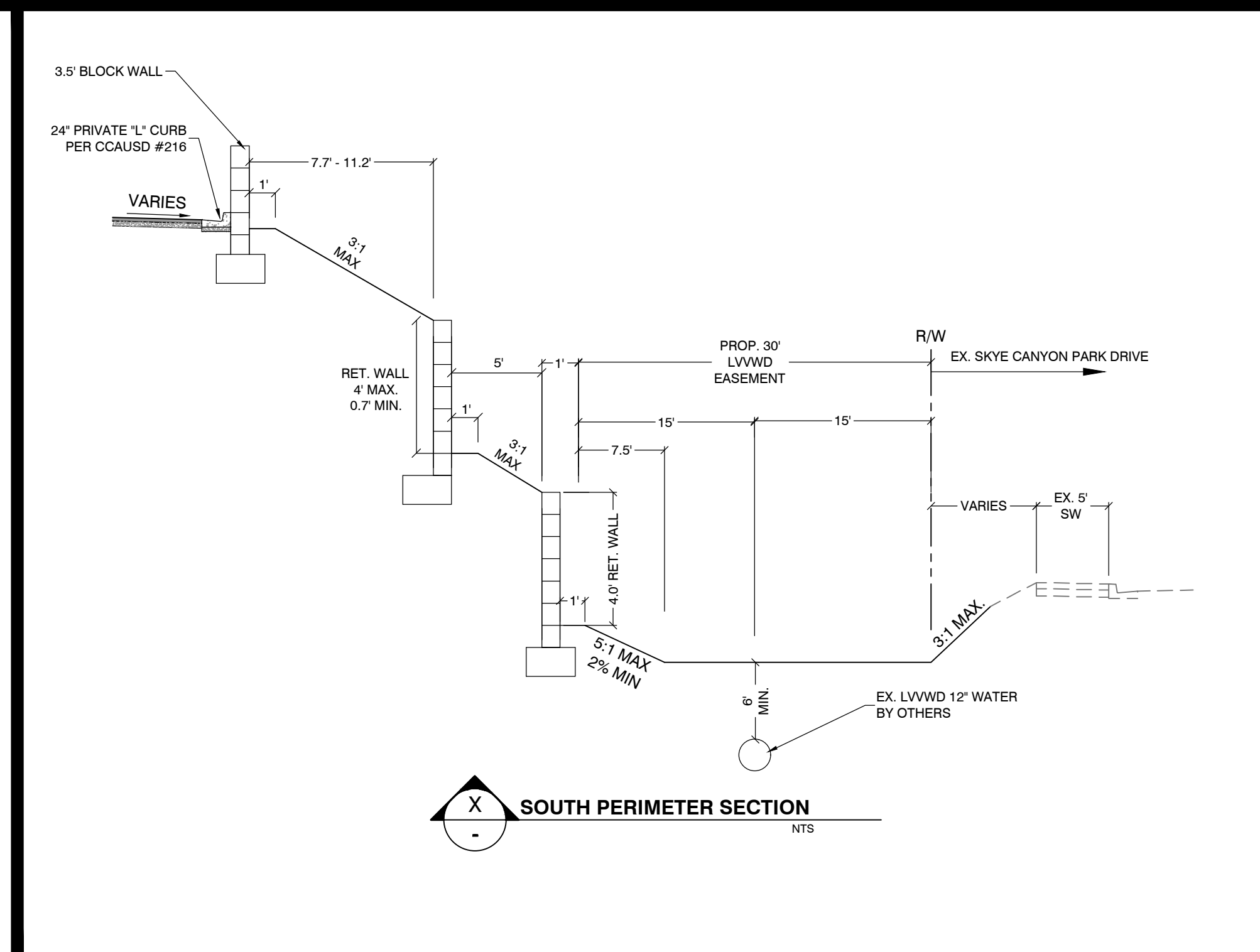
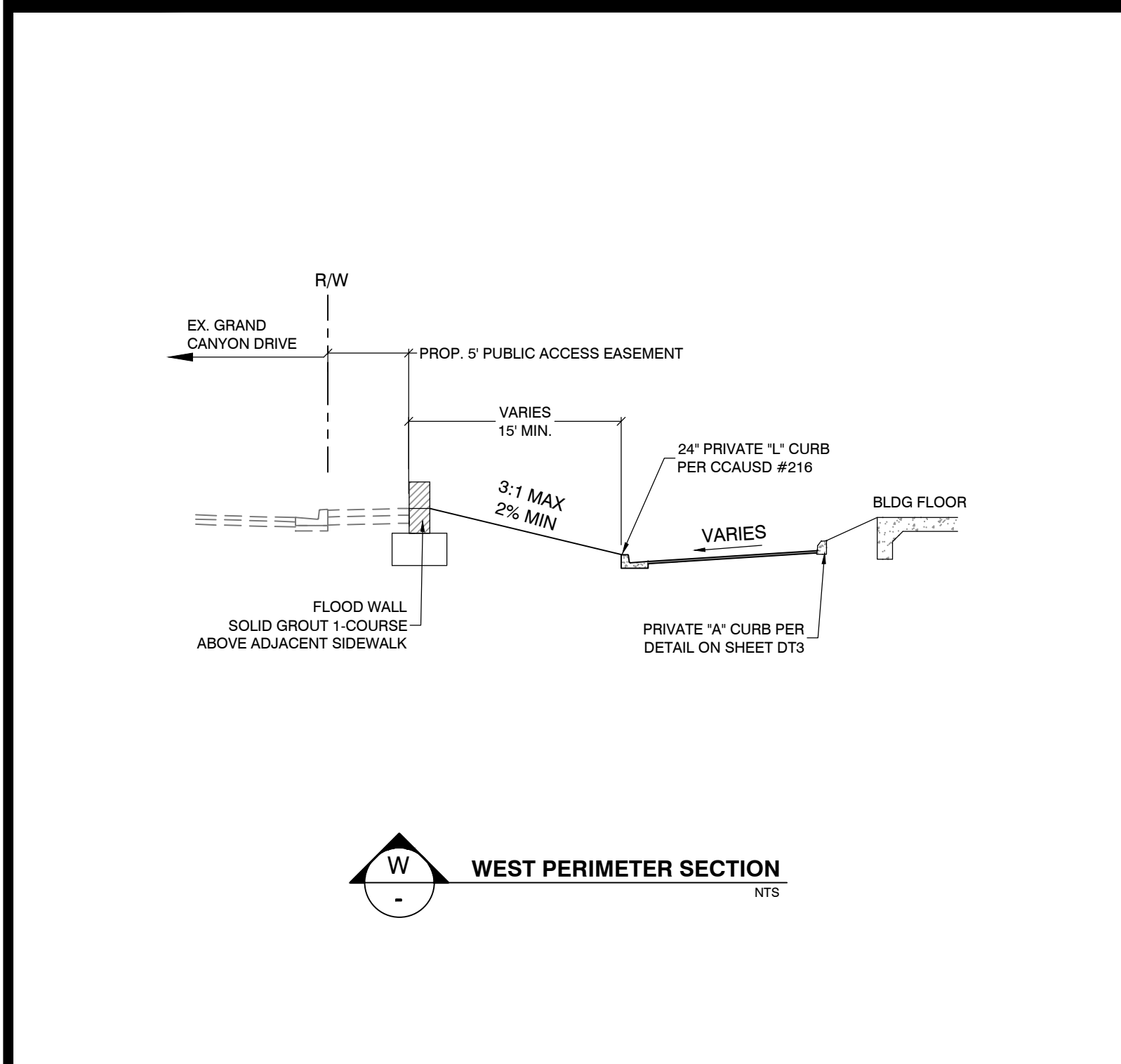
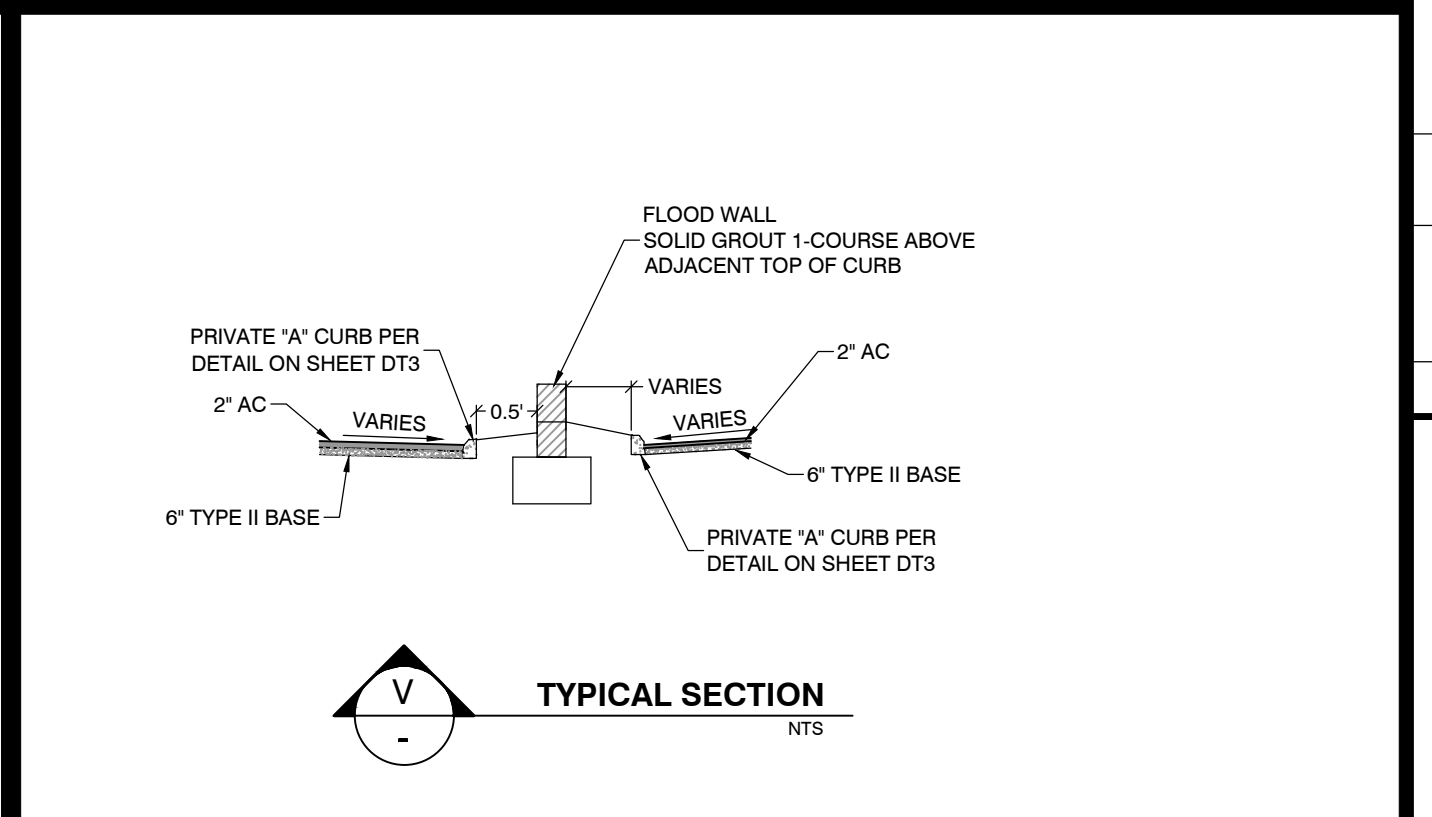
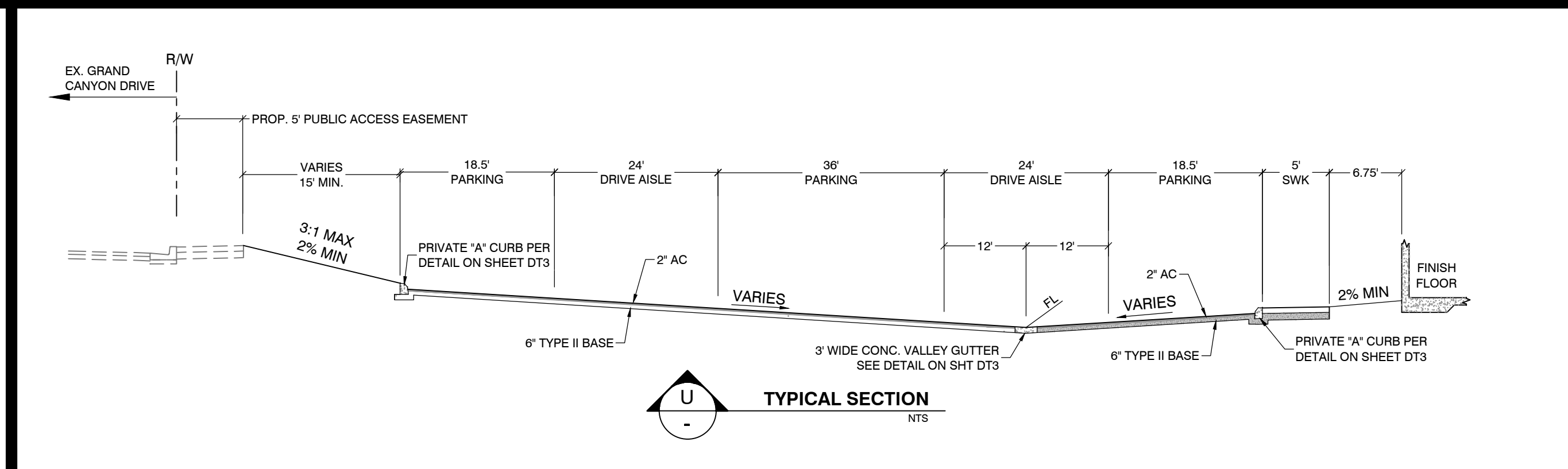
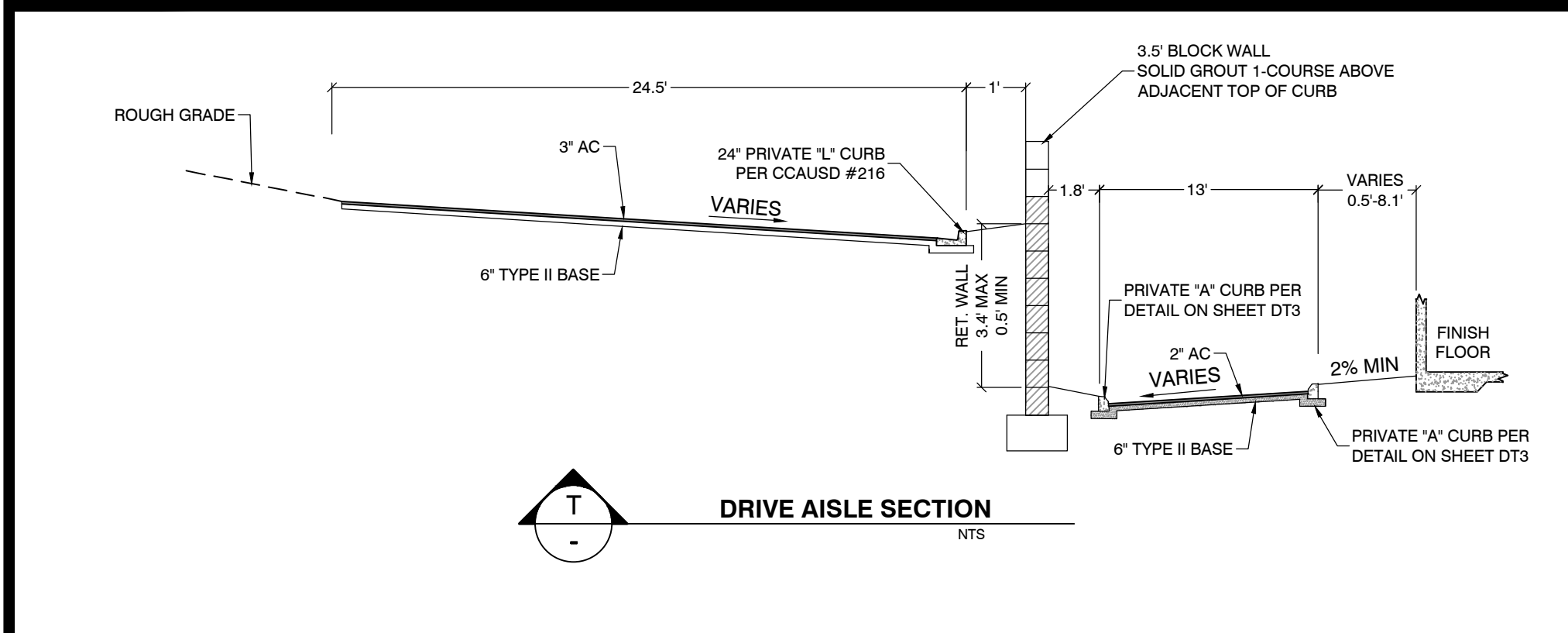
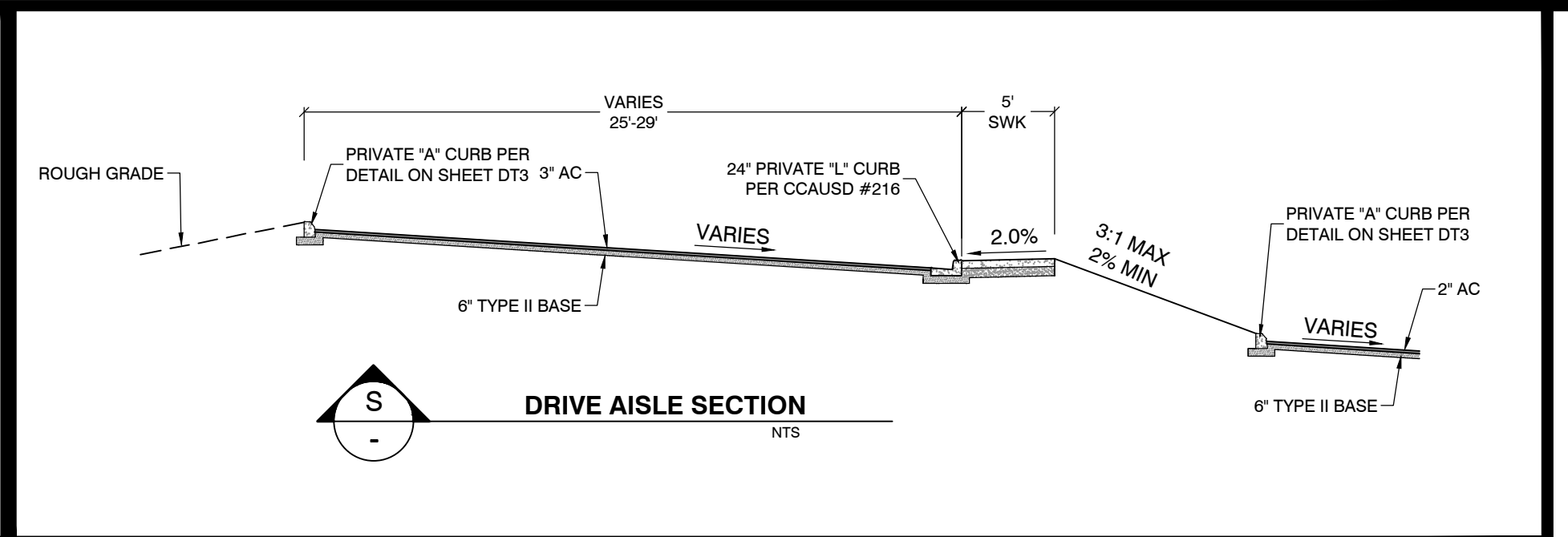
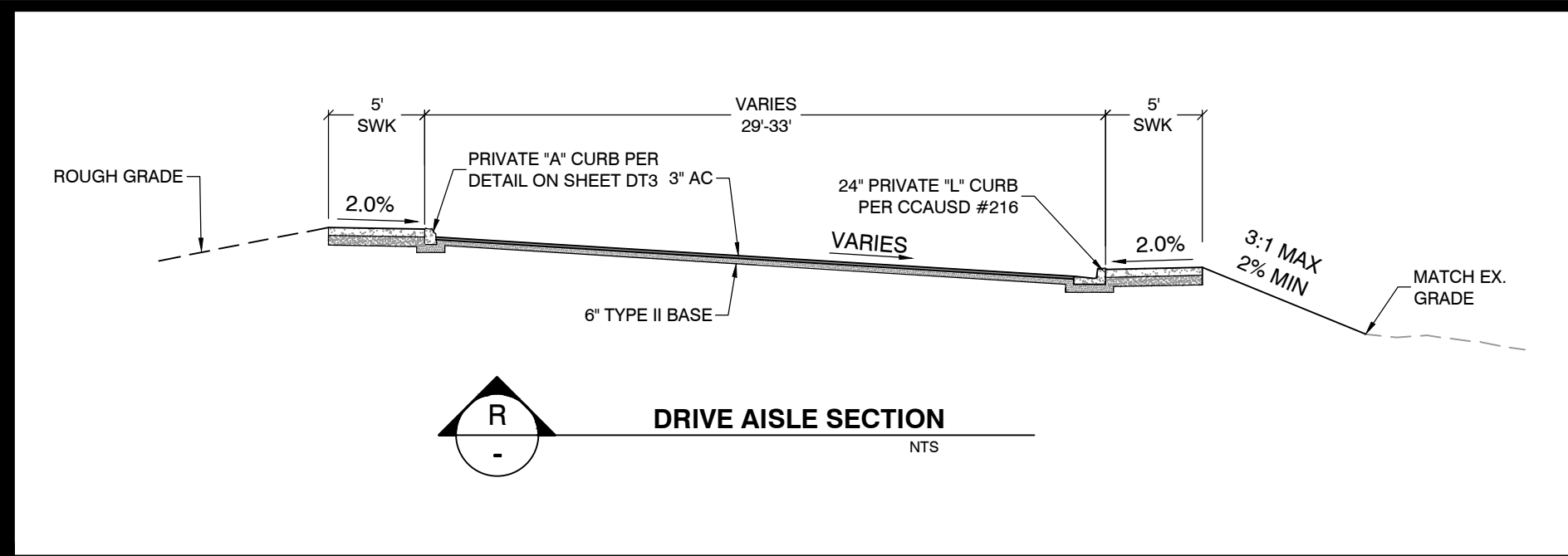
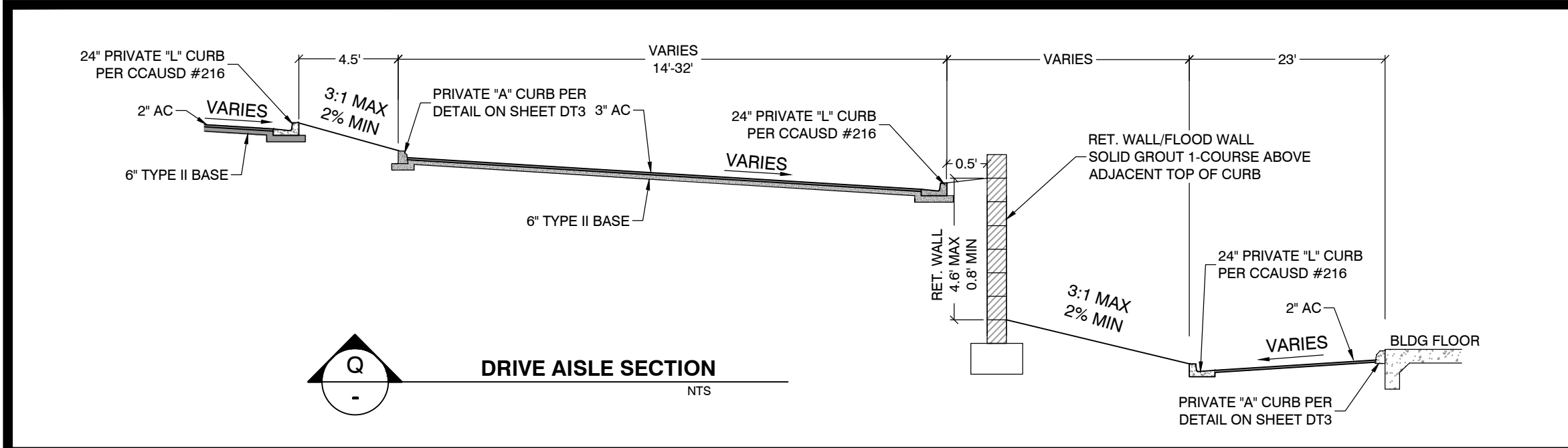


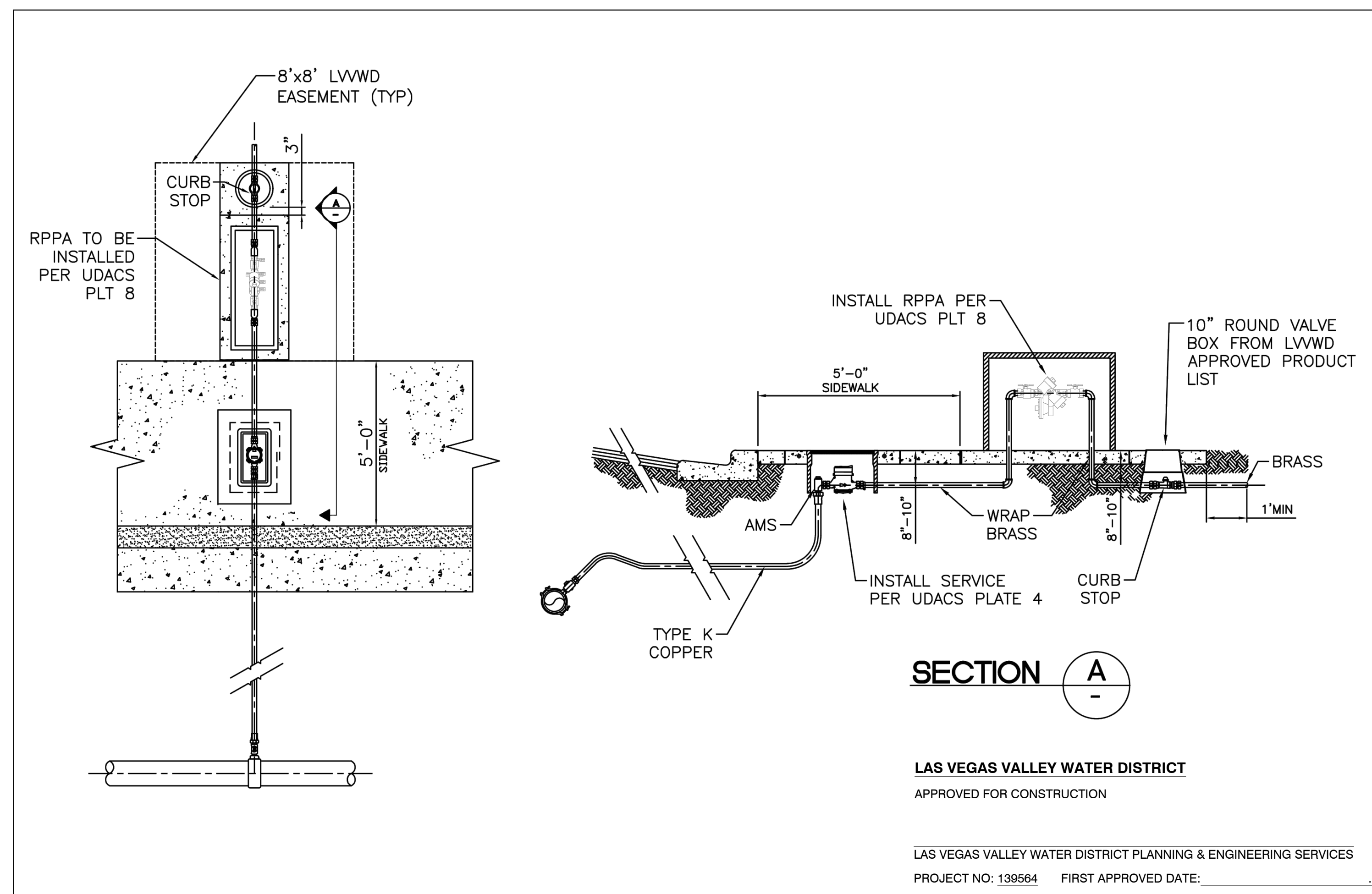
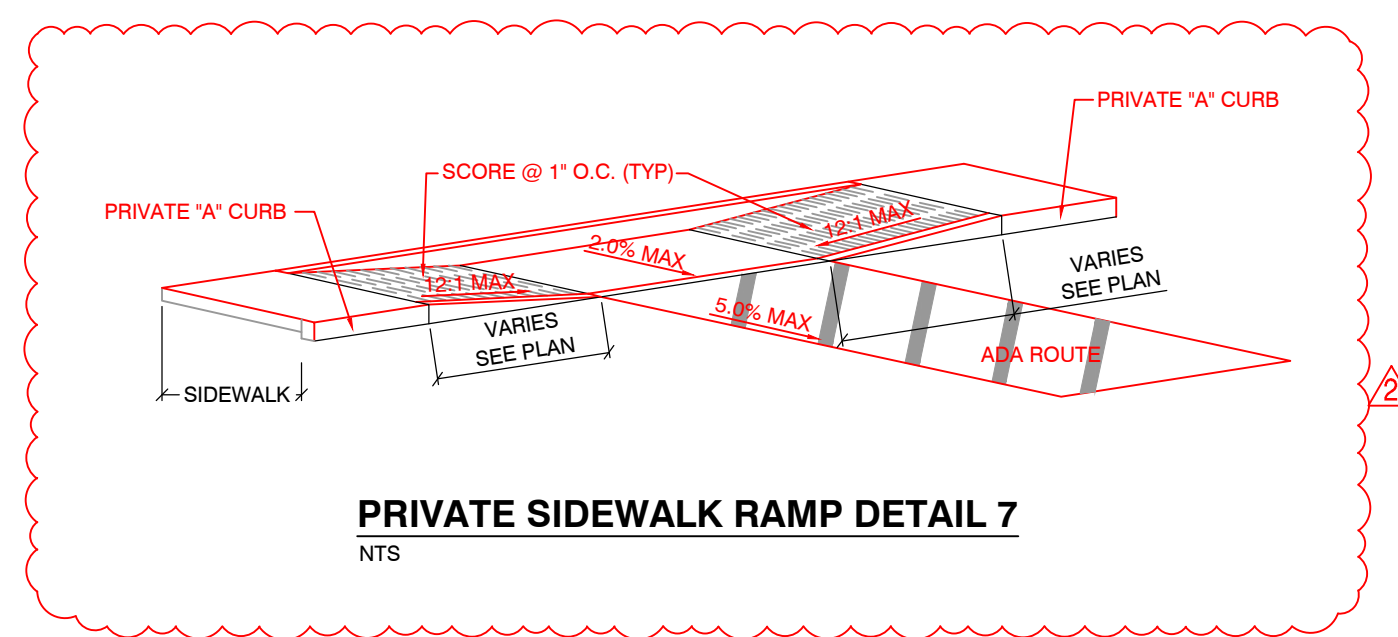
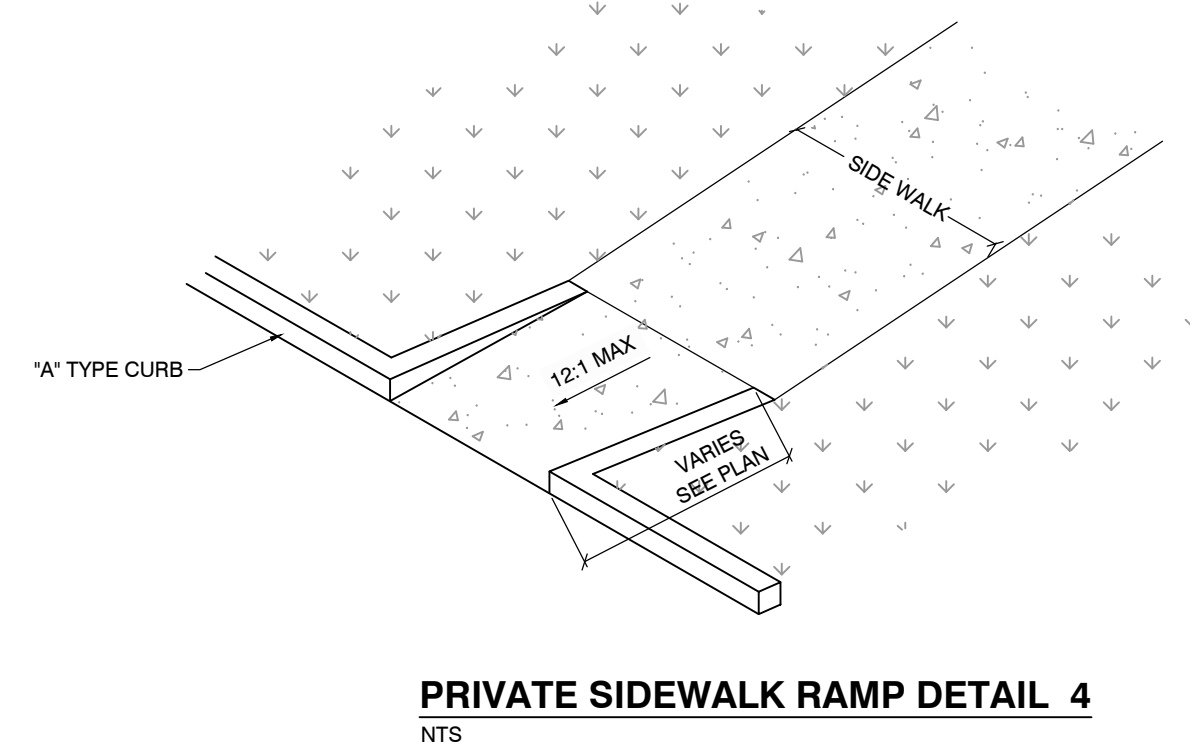
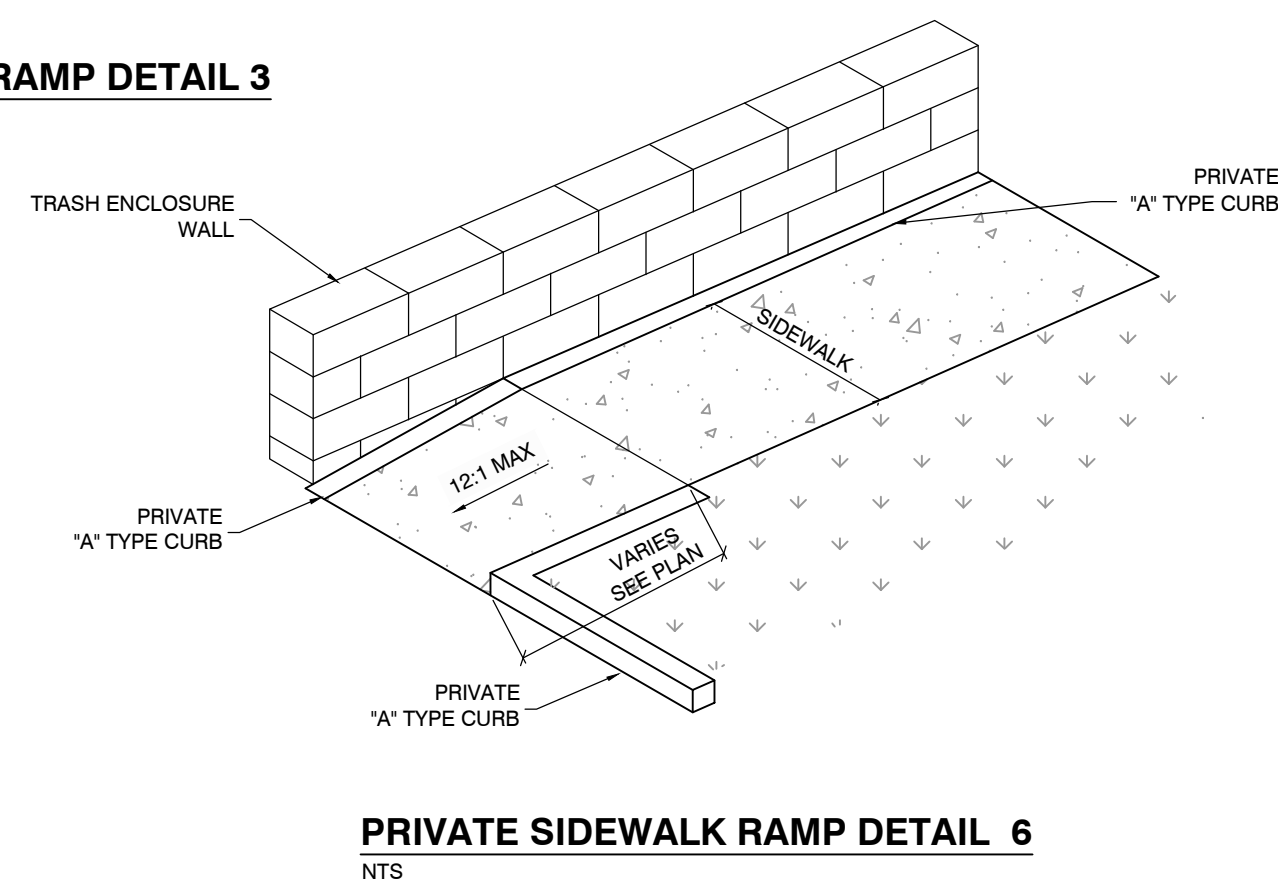
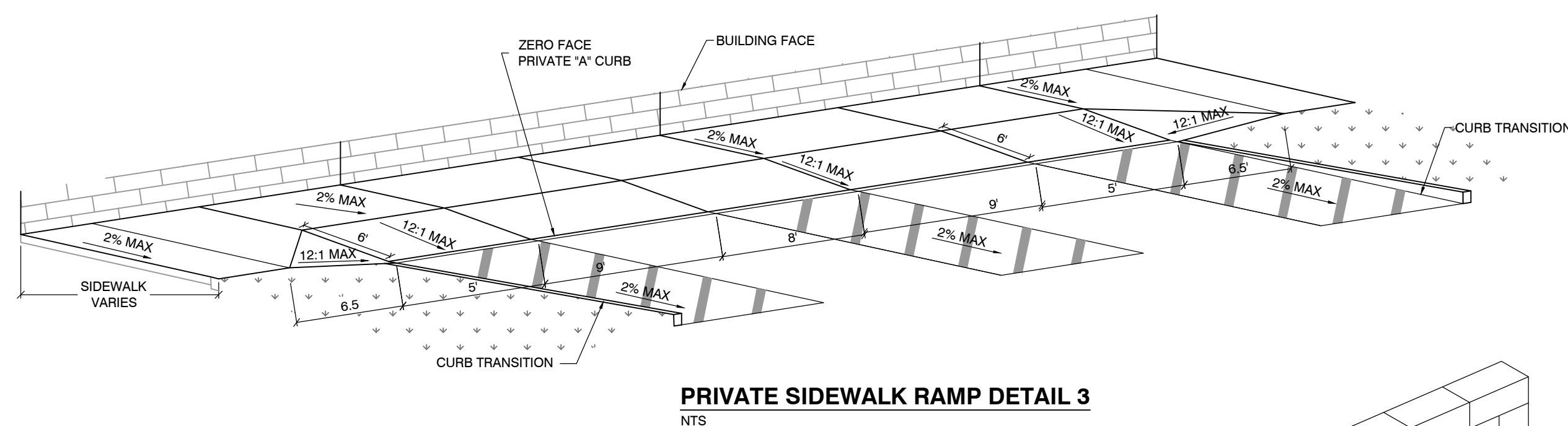
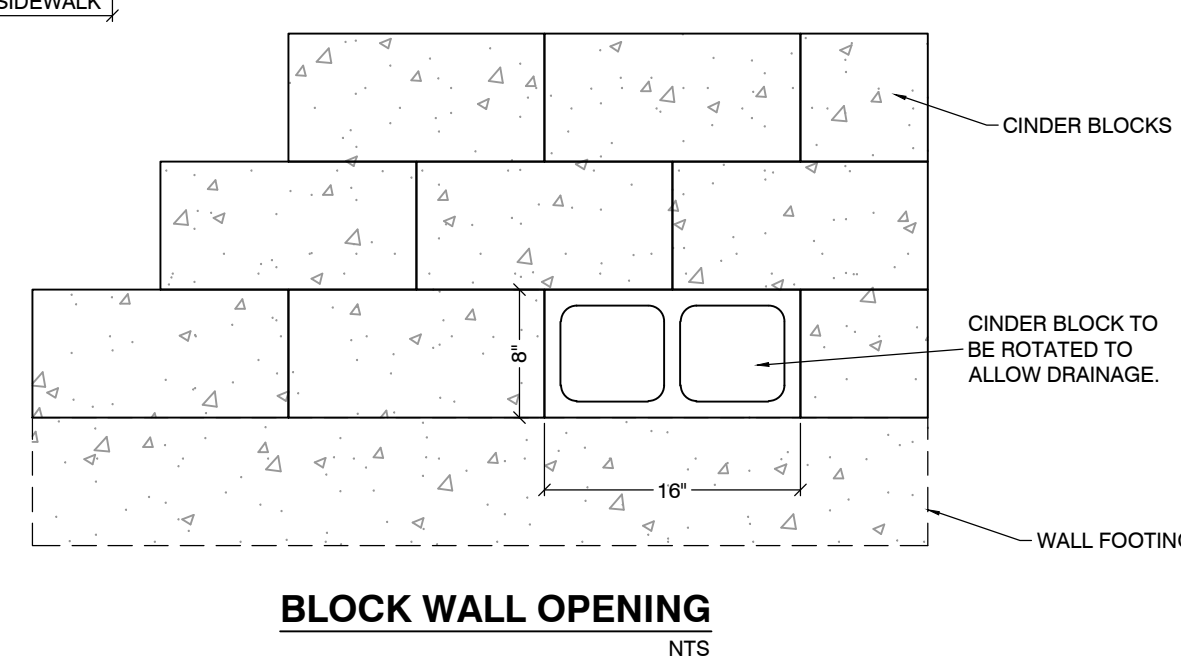
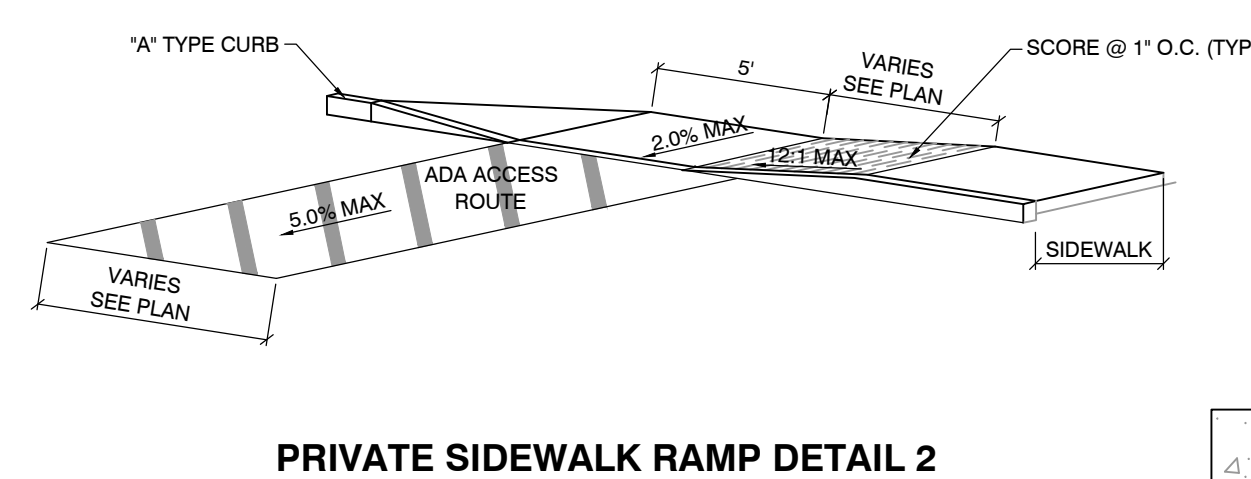
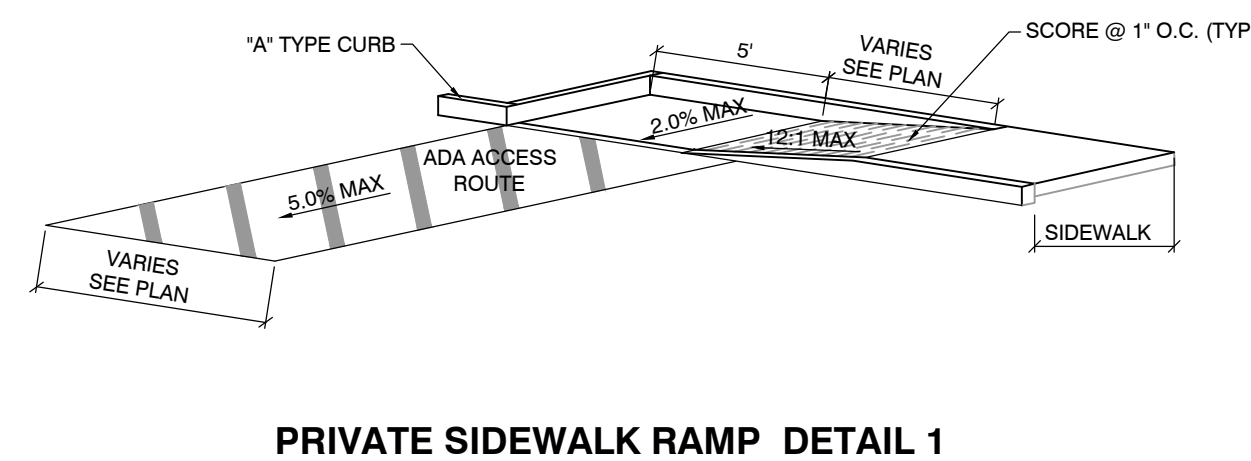
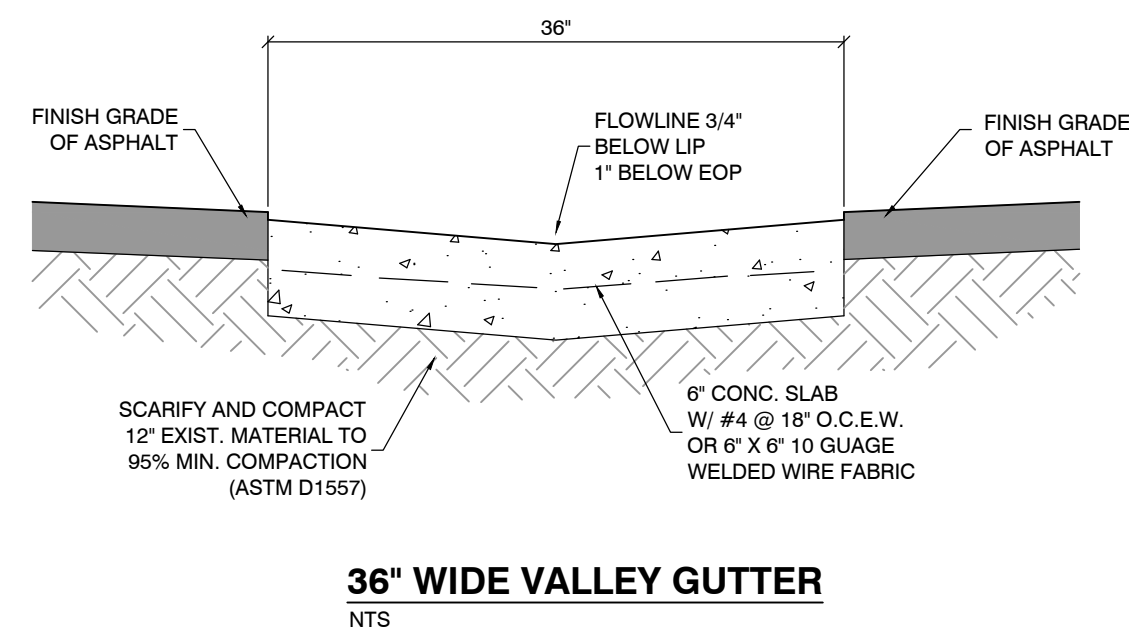
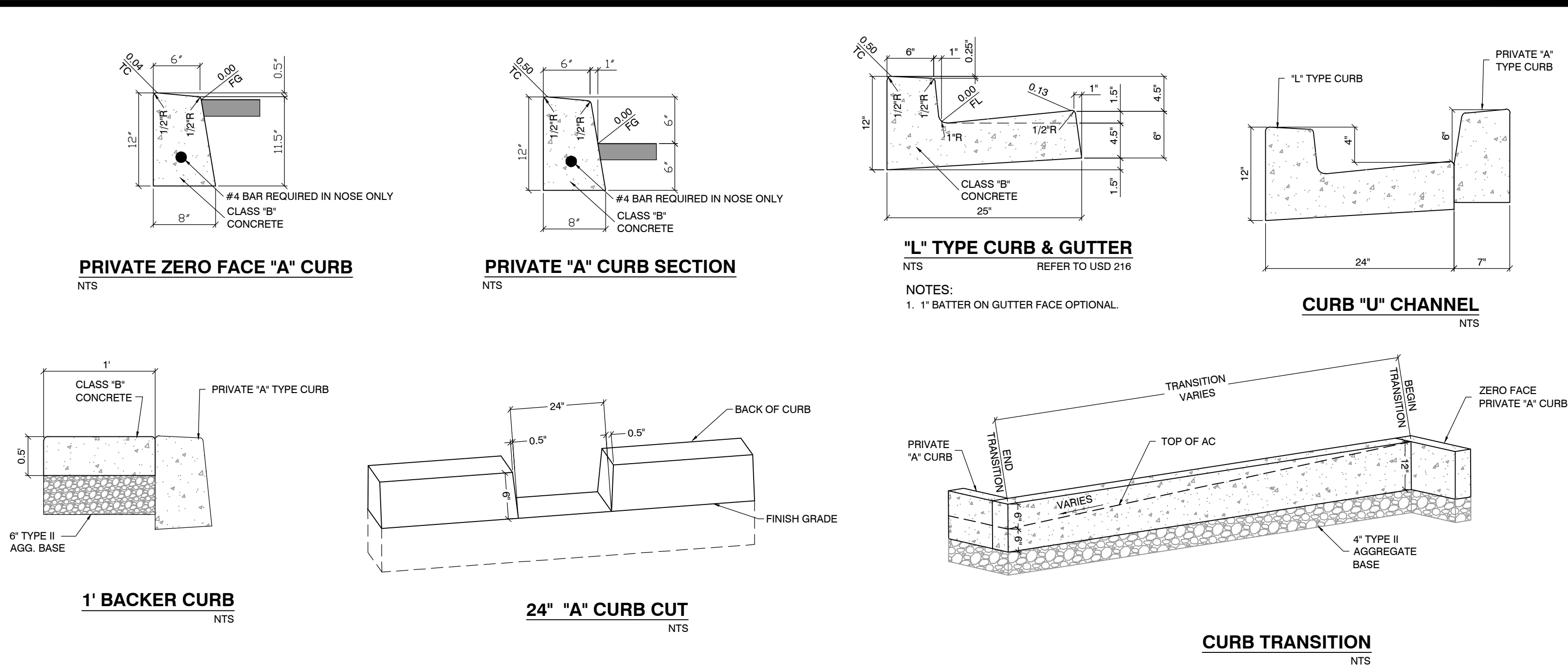
P
-
DRIVE AISLE SECTION
NTS

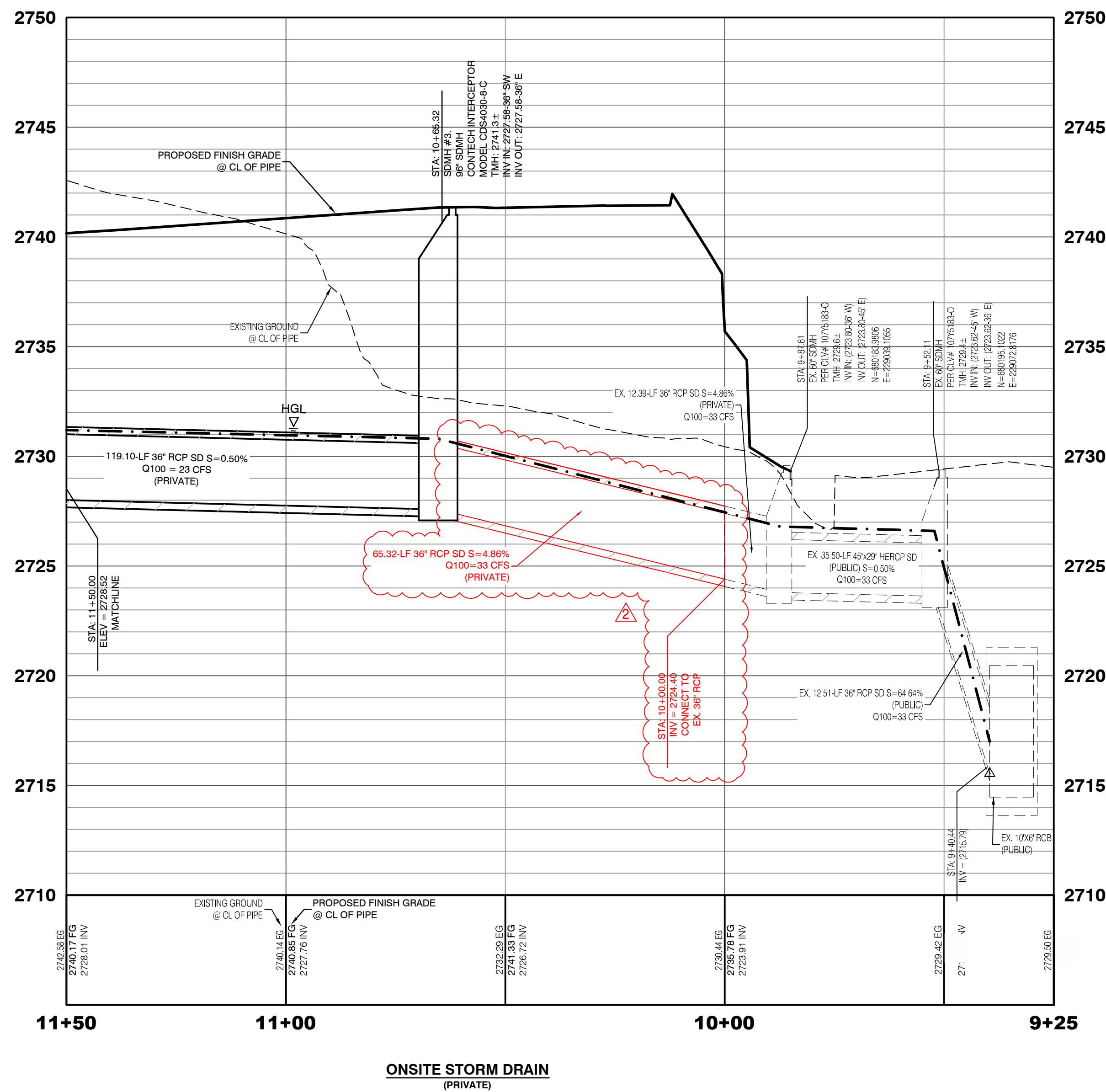
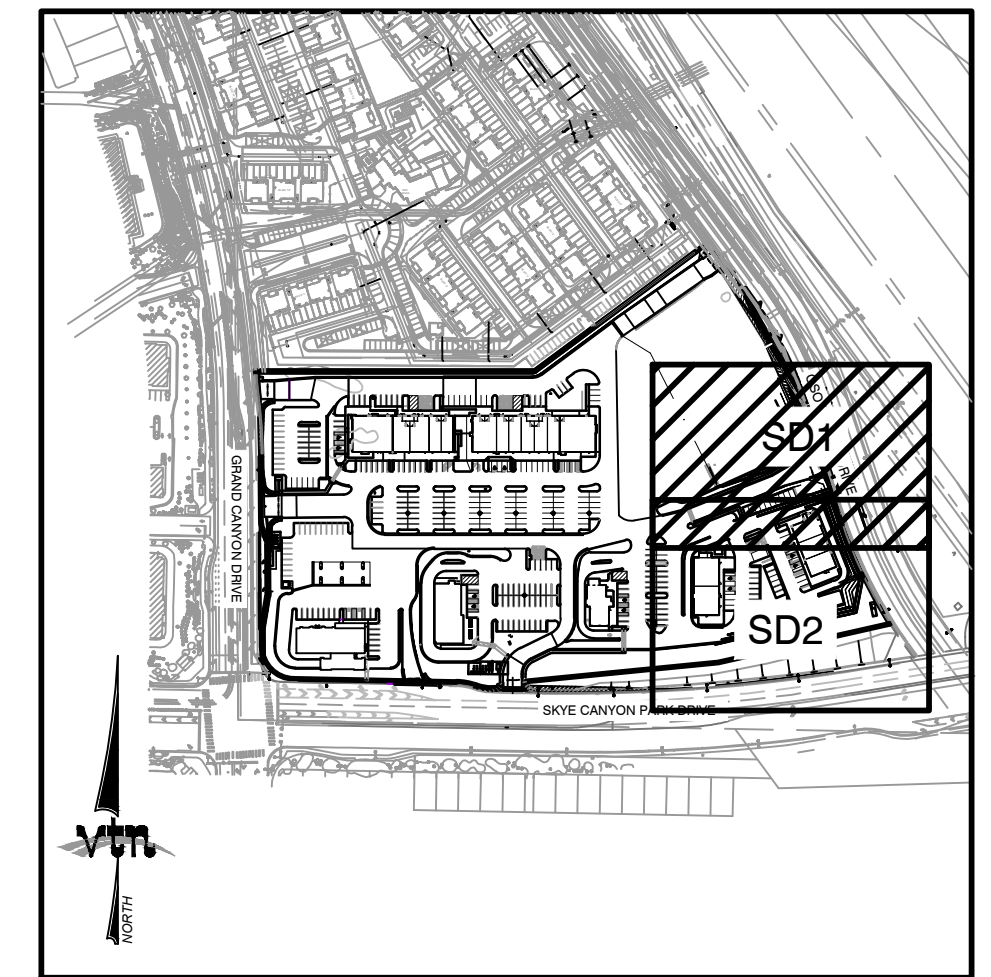
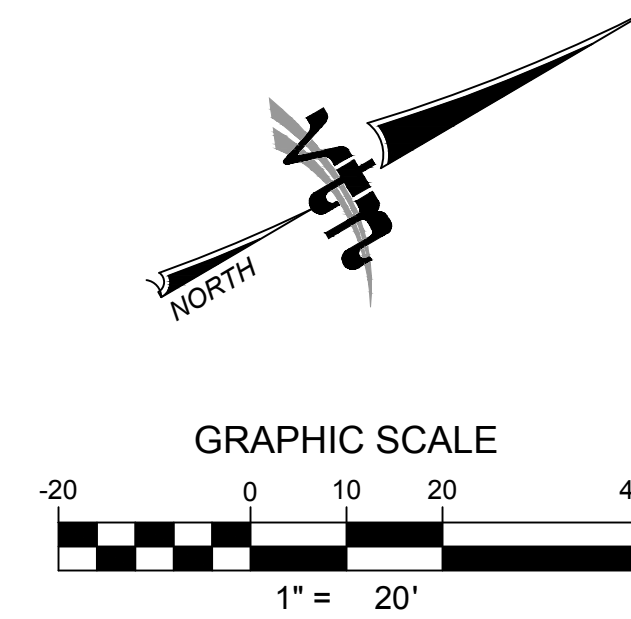
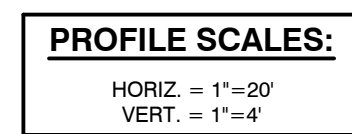
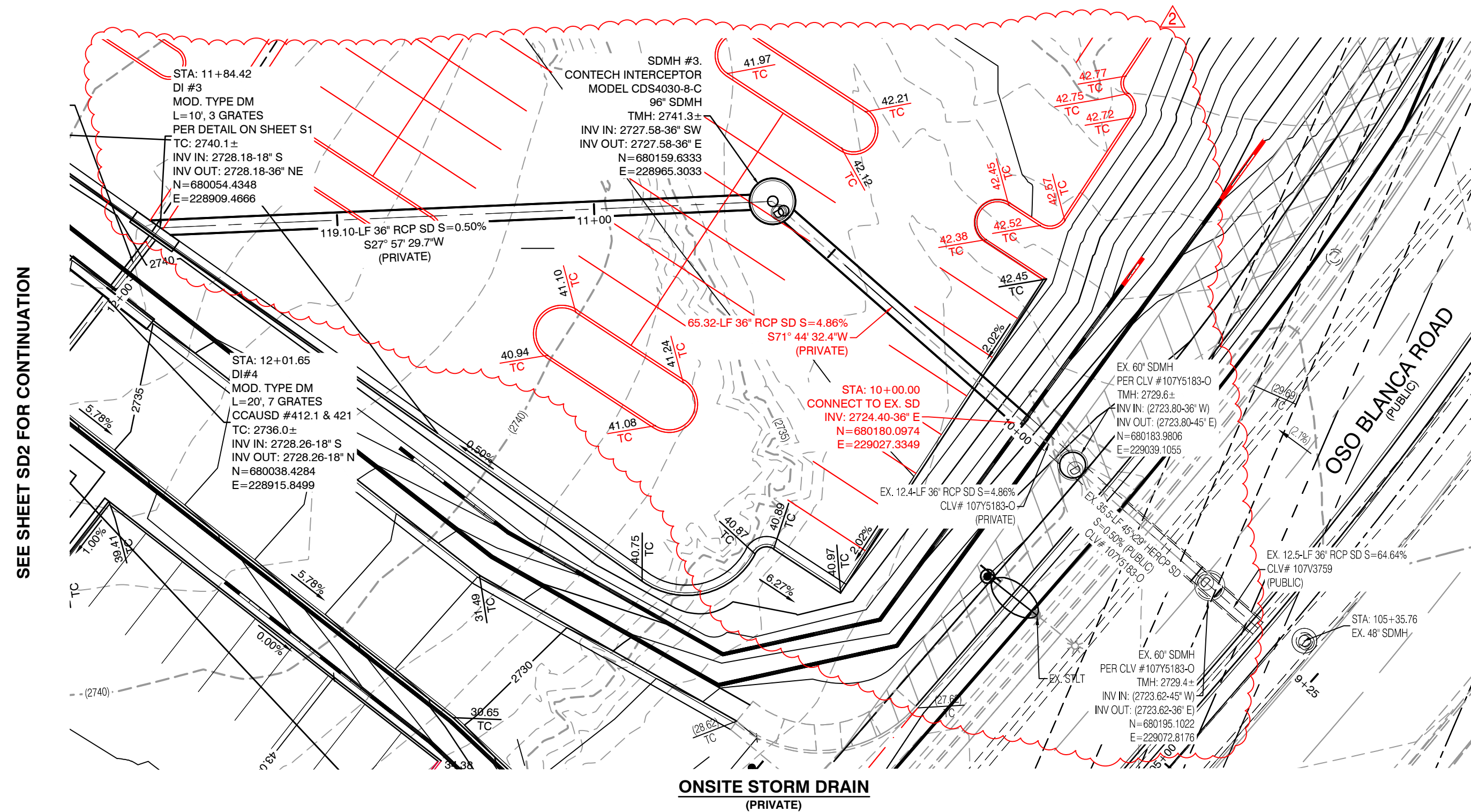
LAS VEGAS VALLEY WATER DISTRICT
APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT PLANNING & ENGINEERING SERVICES
PROJECT NO: 139584 FIRST APPROVED DATE:

CITY OF LAS VEGAS	
GRAND CANYON VILLAGE LLC 10655 PARK RUN DRIVE, STE 180 LAS VEGAS, NEVADA 89144 702.226.4600	
2727 SOUTH RAINBOW BOULEVARD LAS VEGAS, NEVADA 89146-5148 PH: (702) 973-7550 FAX: (702) 382-2887 WEB: WWW.VTNVY.COM CONSULTING ENGINEERS & PLANNERS LAND SURVEYORS	
REVISION	
DATE	BY
5-16-22	DMO
2	2
REVISION	
DETAIL SHEET 1	
GRAND CANYON COMMERCIAL ONSITES	
DRAWN BY: MAM	JUNE 2021
DESIGNED BY: DMO	
CHECKED BY:	
PROJECT NO: 9025	SCALE: N/A
HORIZ. VERT.	
DARYN M. OHTA EXP: 12/31/23 CIVIL PROFESSIONAL ENGINEER STATE OF NEVADA NO. 15908 6/16/22	
SHEET DT1 12 OF 44 SHEETS	
DRAWING NO. 21-01618/107Y5183	







BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS 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

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: 200,000,000 M (656,166.6667 FTUS)
EASTING AT CENTRAL MERIDIAN: 100,000,000 M (328,083.3333
FTUS)
SCALE FACTOR ON CENTRAL MERIDIAN: 1.0001 (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.

BENCHMARK

NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)
(REVISED 2008)

CITY OF LAS VEGAS BENCHMARK: 6LV907C4
NAVD88 ELEVATION: 841.20 METERS (2759.84 FEET)

RIVET AND PLATE IN TOP OF CURB AT SOUTHEAST CORNER OF
HORSE DRIVE AND GRAND CANYON DRIVE.

STORM DRAIN NOTE:

ALL ONSITE STORM DRAIN FACILITIES ARE PRIVATELY OWNED AND MAINTAINED BY THE PROPERTY OWNER.

FLOOD ZONE NOTE:

SITE IS LOCATED IN A ZONE X AS SHOWN IN FIRM MAP #32003C1735E, DATED SEPTEMBER 27, 2002. A ZONE X IS AN AREA OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN.

GRADING PERMIT NOTE

THIS GRADING PERMIT DOES NOT INCLUDE THE CONSTRUCTION OF RETAINING WALLS AND OTHERS STRUCTURES. SEPARATE PERMITS AND APPLICATIONS ARE REQUIRED FOR THESE.

GEOTECHNICAL NOTE:

REFER TO SOILS REPORT: WESTERN TECHNOLOGIES INC.
PROJECT #4121JD010, DATED APRIL 6, 2021
CLV #L21-01618/107Y5183

SIGHT VISIBILITY ZONES:

NO STRUCTURE, WALLS, VEGETATION, OR OBJECT OF ANY KIND IS PERMITTED OVER TWENTY-FOUR (24) INCHES IN HEIGHT (MEASURED FROM THE TOP OF ADJACENT CURB IF CURB EXISTS) WITHIN THE SIGHT VISIBILITY ZONES.

NOTE:

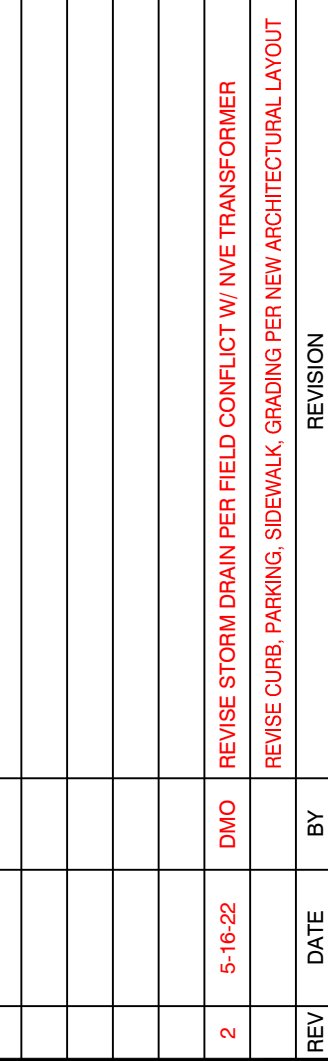
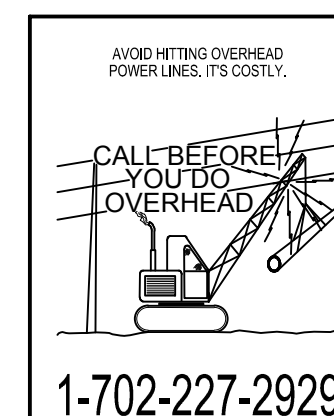
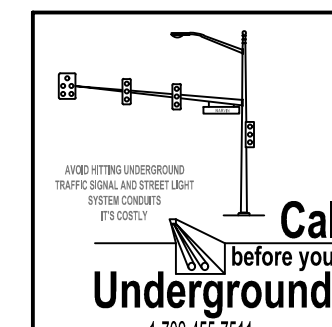
PROPERTY OWNER IS RESPONSIBLE TO MAINTAIN THE BEST MANAGEMENT PRACTICES SUCH AS BUT NOT LIMITED TO THE REMOVAL OF ACCUMULATED SEDIMENT AND DEBRIS AND CARE OF THE VEGETATION.

ENGINEER DISCLAIMER NOTE:

UTILITY LOCATIONS SHOWN HERE ON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND AND OVERHEAD UTILITIES AND NOTIFY THE DESIGN ENGINEER IMMEDIATELY OF ANY DISCREPANCIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HERE ON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

I CERTIFY THAT THIS GRADING PLAN CONFORMS TO THE
APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE WITH
CITY OF LAS VEGAS, #DS05462

D. M. Ohta 6/21/22
DARYN M. OHTA, P.E. No. 15906 DATE



CITY OF LAS VEGAS

GRAND CANYON VILLAGE LLC

STORM DRAIN PLAN & PROFILE 1

GRAND CANYON COMMERCIAL

DESIGNED BY: _____

CHECKED BY:

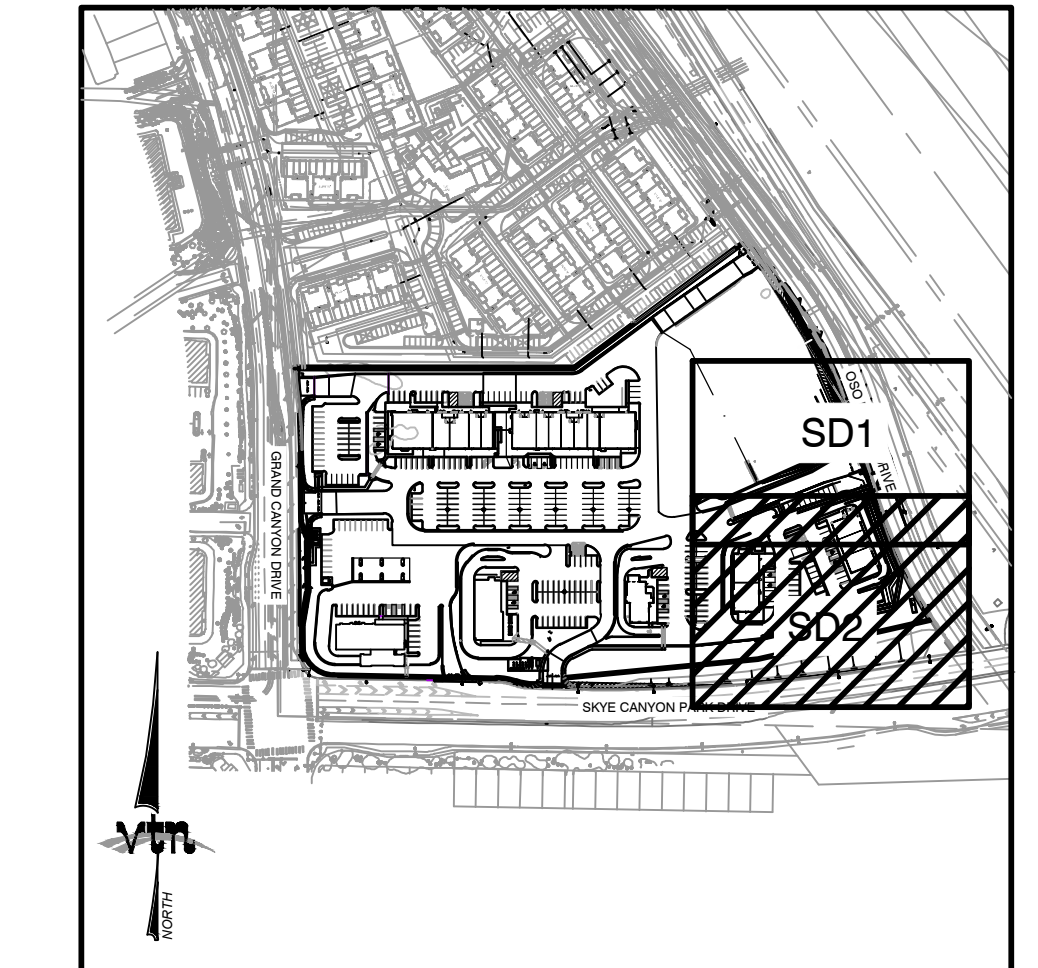
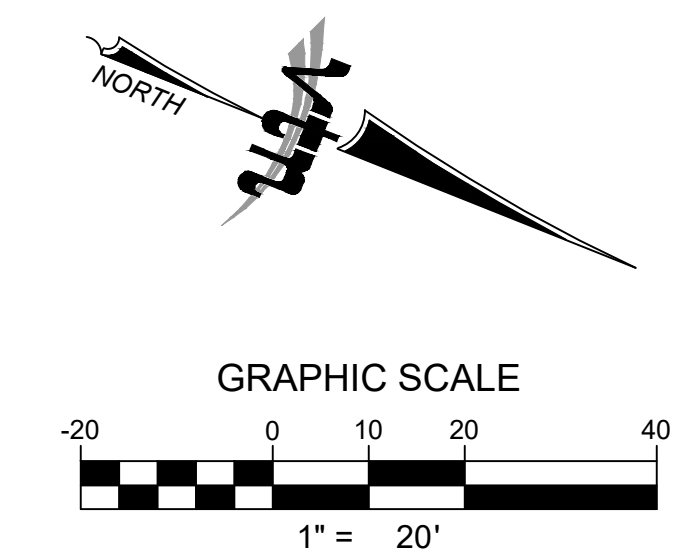
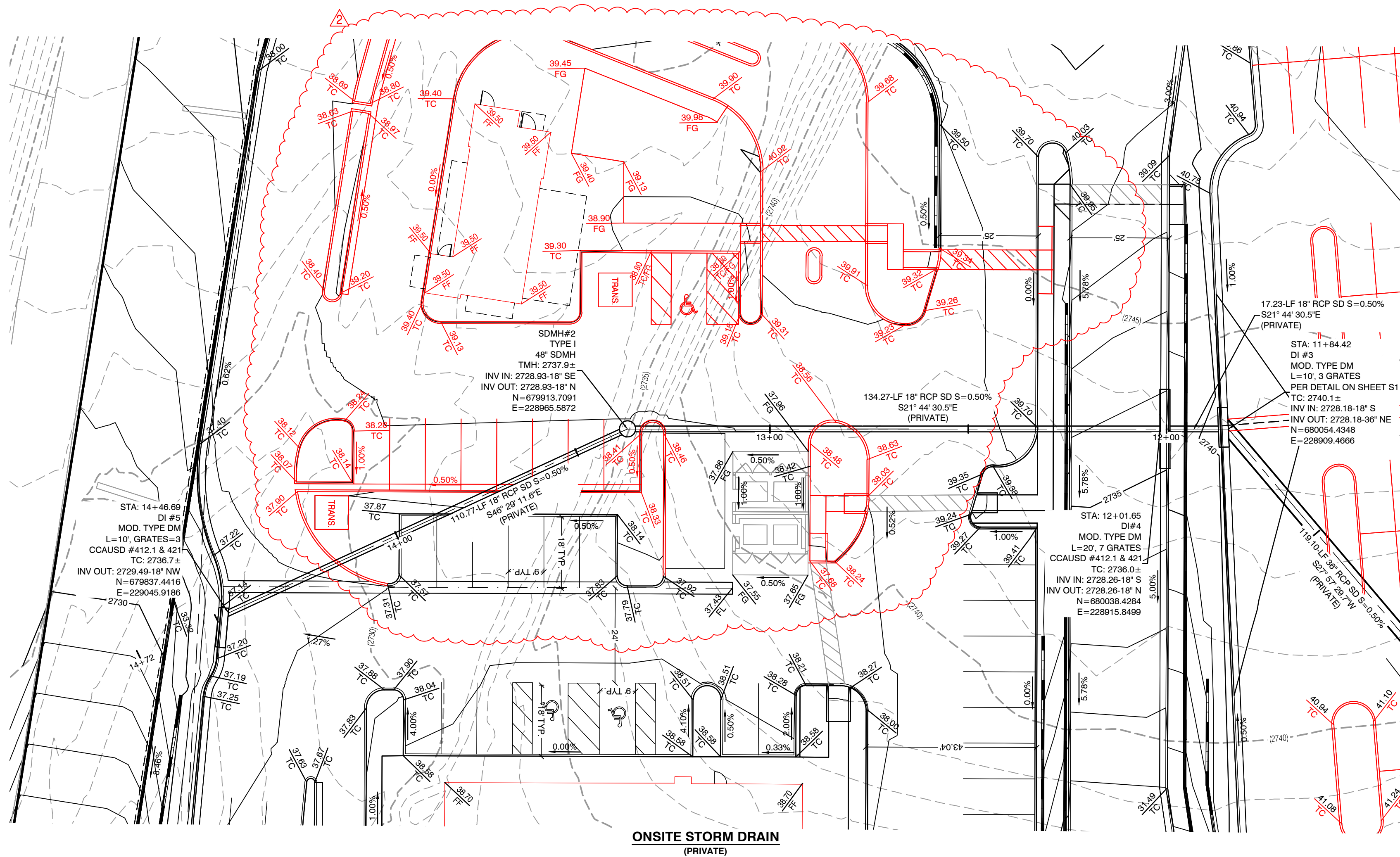
PROJECT NO. _____ SCALE: _____



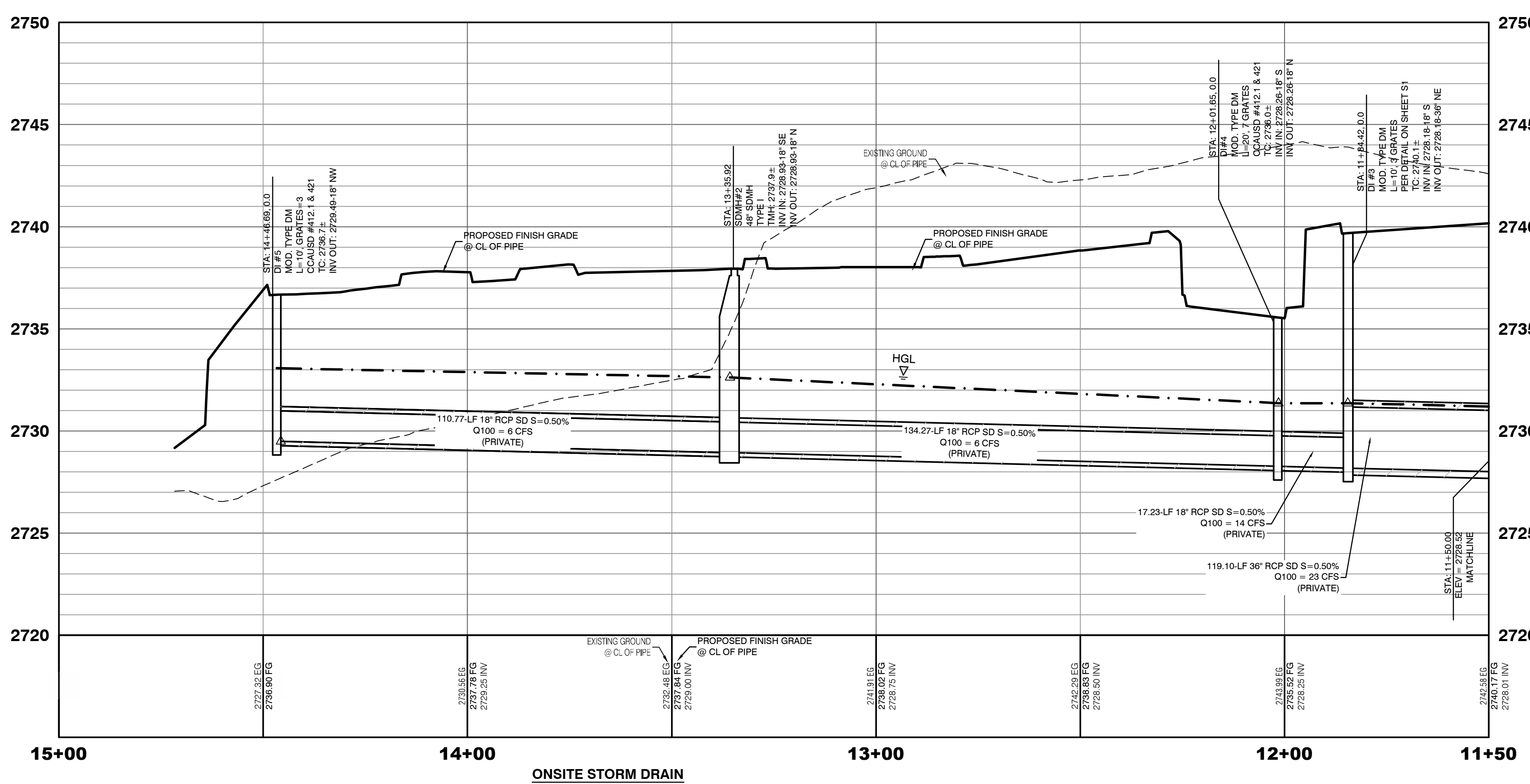
6/21/22

SHEET
SD1
15 OF 44 SHEETS
DRAWING NO.
L21-01618/107Y5183

H:\8025\Sheet Set\ONSITE\DWG\8025-ONSITE-SD.dwg:6/21/2022 8:33 PM:darvno



PROFILE SCALES:
HORIZ. = 1"=20'
VERT. = 1"=4'



BASIS OF BEARING
GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS 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
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: 200,000,000 M (656,166,666.67 FTUS)
EASTING AT CENTRAL MERIDIAN: 100,000,000 M (328,083,333.33 FTUS)
SCALE FACTOR ON CENTRAL MERIDIAN: 1.0001 (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
NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) (REVISED 2008)
CITY OF LAS VEGAS BENCHMARK: 6LV907C4
NAVD88 ELEVATION: 841.20 METERS (2759.84 FEET)
RIVET AND PLATE IN TOP OF CURB AT SOUTHEAST CORNER OF HORSE DRIVE AND GRAND CANYON DRIVE.

STORM DRAIN NOTE:
ALL ONSITE STORM DRAIN FACILITIES ARE PRIVATELY OWNED AND MAINTAINED BY THE PROPERTY OWNER.

FLOOD ZONE NOTE:
SITE IS LOCATED IN A ZONE X AS SHOWN IN FIRM MAP #32003C1735E, DATED SEPTEMBER 27, 2002. A ZONE X IS AN AREA OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN.

GRADING PERMIT NOTE
THIS GRADING PERMIT DOES NOT INCLUDE THE CONSTRUCTION OF RETAINING WALLS AND OTHERS STRUCTURES. SEPARATE PERMITS AND APPLICATIONS ARE REQUIRED FOR THESE.

GEOTECHNICAL NOTE:
REFER TO SOILS REPORT: WESTERN TECHNOLOGIES INC. PROJECT #4121.D010, DATED APRIL 8, 2021
CLV #L21-01618/107Y5183

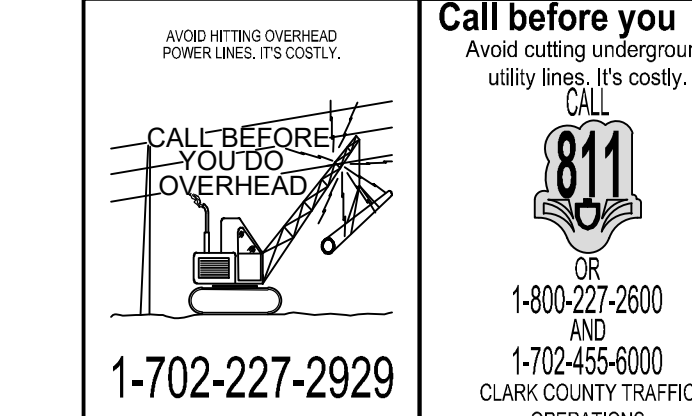
SIGHT VISIBILITY ZONES:
NO STRUCTURE, WALLS, VEGETATION, OR OBJECT OF ANY KIND IS PERMITTED OVER TWENTY-FOUR (24) INCHES IN HEIGHT (MEASURED FROM THE TOP OF ADJACENT CURB IF CURB EXISTS) WITHIN THE SIGHT VISIBILITY ZONES.

NOTE:
PROPERTY OWNER IS RESPONSIBLE TO MAINTAIN THE BEST MANAGEMENT PRACTICES SUCH AS BUT NOT LIMITED TO THE REMOVAL OF ACCUMULATED SEDIMENT AND DEBRIS AND CARE OF THE VEGETATION.

ENGINEER DISCLAIMER NOTE:
UTILITY LOCATIONS SHOWN HERE ON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND AND OVERHEAD UTILITIES AND NOTIFY THE DESIGN ENGINEER IMMEDIATELY OF ANY DISCREPANCIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HERE ON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

I CERTIFY THAT THIS GRADING PLAN CONFORMS TO THE APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE WITH CITY OF LAS VEGAS, #DS05462

DARYN M. OHTA, P.E. No. 15908 DATE 6/16/22



CITY OF LAS VEGAS		GRAND CANYON VILLAGE LLC	
10655 PARK RUN DRIVE, SUITE 180 LAS VEGAS, NEVADA 89144 702-227-4000		2727 SOUTH RAINBOW BOULEVARD LAS VEGAS, NEVADA 89146-5148 PH: (702) 973-7550 FAX: (702) 382-2887 WEB: WWW.VTNV.COM CONSULTING ENGINEERS • PLANNERS • LAND SURVEYORS	
DESIGNED BY: DMO	CHECKED BY: ---	DRAWN BY: ---	PROJECT NO: 9025
SHEET SD2 16 OF 44 SHEETS DRAWING NO. L21-01618/107Y5183		DATE 6/16/22	