

DS #: 5448

APN: 162-03-604-004

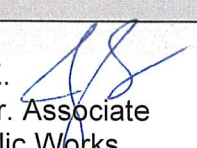
PROJECT: 8th and Franklin

SUBMITTAL: 2nd

SCANNED BY/DATE:

CHECKED BY/DATE:



CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM		DATE: June 24, 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: 8th and Franklin	COPIES TO: TCE
Cross Streets:	SEC of 8 th Street and Franklin Avenue	Kavison Homes
File Number:	F:\Depot\DSMemos\DS5448B.doc	Bart Anderson, P.E., DevCo
Parcel Number:	162-03-604-004	
Zoning Action:	20-0247-TMP1	
FEMA Flood Zone	YES	NO X
Proposed Storm Drain	YES	NO X

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1 st Submittal	4/26/2021	5/11/2021	See Comments Below	\$400.00	4258639: \$400
2 nd Submittal	6/9/2021	6/24/2021	Approved	\$400.00	4329111: \$400
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.

1. Provide a signature line on the Drainage Study Note block on the Grading Plan.

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

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
JKS

T/R/S: T21S/R61E/03
AREA R-03

ADDENDUM #1 TECHNICAL DRAINAGE STUDY FOR 8th AND FRANKLIN

CITY OF LAS VEGAS

TCE# 221-20001

Prepared for:

KAVISON HOMES

237 Chaco Canyon

Henderson, NV 89074

Prepared by:

TCE

7080 La Cienega, Suite 200

Las Vegas, Nevada 89119

(702) 932-6125

FAX (702) 932-6129

June 2021

T **THOMASON**
C **CONSULTING**
E **ENGINEERS**

DRAINAGE STUDY INFORMATION FORM

Name of Development: 8th and Franklin DATE: June 7, 2021

Location of development: a) Descriptive (Cross Streets) North/South 8th Street East/West Franklin Avenue

b) Sect. 3 Twn. 21S Rng 61E

Name of Owner: Kavison Homes Assessors Parcel No.: 162-03-604-004

Telephone No.: (702) 721-6111 Facsimile No.: -

Address: 237 Chaco Canyon
Henderson, NV 89074

Contact Person-Name: Josh Owen Telephone No: 702-932-6125

Email: jowen@tce-lv.com

Firm: TCE

Address: 7080 La Cienega Street, Suite 200 Las Vegas, Nevada 89119

Type of Land Development/Land Disturbance Process:

<input type="checkbox"/>	Rezoning	<input checked="" type="checkbox"/>	Subdivision Map	<input type="checkbox"/>	Clearing and Grading
<input type="checkbox"/>	Parcel Map	<input type="checkbox"/>	Planned Unit Development	<input type="checkbox"/>	Other (Please Specify below)
<input type="checkbox"/>	Large Parcel Map	<input type="checkbox"/>	Building Permit		

1. Total Owned Land Area: At Site: 2.57 Being Developed/Disturbed 2.57

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.)? Residential

5. Approximate upstream land area, which drains to the subject site? 40± acres

6. Has the site drainage been evaluated in the past? YES NO If yes, please documentation:

7. If known, please briefly identify the proposed discharge point(s) of runoff from the site:

Perimeter streets

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



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.

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

	Revision	Date

Local Entity File No.

REFERENCE:

STANDARD FORM 1

June 7, 2021

Jennifer Shinn, P.E.
City of Las Vegas
333 North Rancho Drive
Las Vegas, NV 89106

Re: Addendum #1 to the Technical Drainage Study for 8th and Franklin

Ms. Shinn:

TCE has reviewed the City of Las Vegas letter for the above referenced study dated May 11, 2021. The comments in the subject memorandum have been reproduced in **bold** with accompanying responses as follows:

- 1. Unable to complete the drainage study review. The Detail Sheet (hard copy and digital copy) provided is for a different project. Provide the associated Detail Sheet for this project in order to complete the review of the hydraulic cross sections and Grading Plan references to details.**

The correct detail sheet has been included with this submittal.

- 2. The following finish floors do not meet the Regional Flood Control District minimum criteria of twice the Q100 depth of flow up to 18-inches above the water surface (CCRFCD Manual Section 304.4.E.1) or 6-inch minimum above the highest adjacent top of curb (CCRFCD Manual Section 1602 304.4.E.1). The following finish floors should be revised to alternate flood protection provided.**

Lot	FF shown	Min FF
8	2011.43	2011.85 (6" min. above high side TC)
9	2011.61	2011.85 (6" min. above high side TC)

As an alternate each lot must be discussed in the drainage study, shown to be flood protected, and any necessary flood improvements shown on the grading plan.

The finished floors have been raised to meet criteria.

T **THOMASON**
C **CONSULTING**
E **ENGINEERS**

7080 La Cienega Street, Suite 200
Las Vegas, Nevada 89119

- 3. The proposed residential project consists of lots with 5'-long driveway leading into the individual garage and finish floor. In comparison to the traditional residential lots, normally with 20'-long driveway leading to the garage, a minimum of 0.5' freeboard from the garage elevation to the adjacent top of curb is provided. In the next submittal, revise the garage elevation (GFF) at all lots such that a minimum of 0.5' freeboard is provided with relation to the adjacent high side TC.**

The alley way is designed with a 2% cross fall and has a depth of flow of 0.39ft. With the cross fall alley, the GFF's are set at least twice the depth of flow above the easterly curb flowline and are adequately flood protected.

- 4. DON1 is shown as a single basin that discharges to the northeast corner of the subject site. The Grading Plans indicate that half of each lot drains to 8th Street and the other half drains to the Alley. Revise all pertinent calculations models, and plans accordingly.**

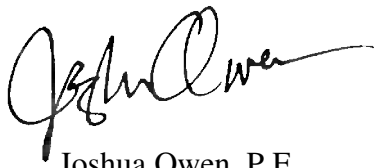
The developed condition HEC-1 analysis has been revised to reflect the center lot high points. Revised calculations are included with this addendum.

- 5. Provide the standard drainage compliance note on the grading plan: "I CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY ON FILE AT THE CITY OF LAS VEGAS FOR THIS PROJECT (DS5448)". The project proposed offsite grading in the adjacent property to the east. Obtain a notarized letter of permission for grading from the adjacent property owner(s) prior to final approval of the drainage study.**

The note has been added to the revised grading plan.

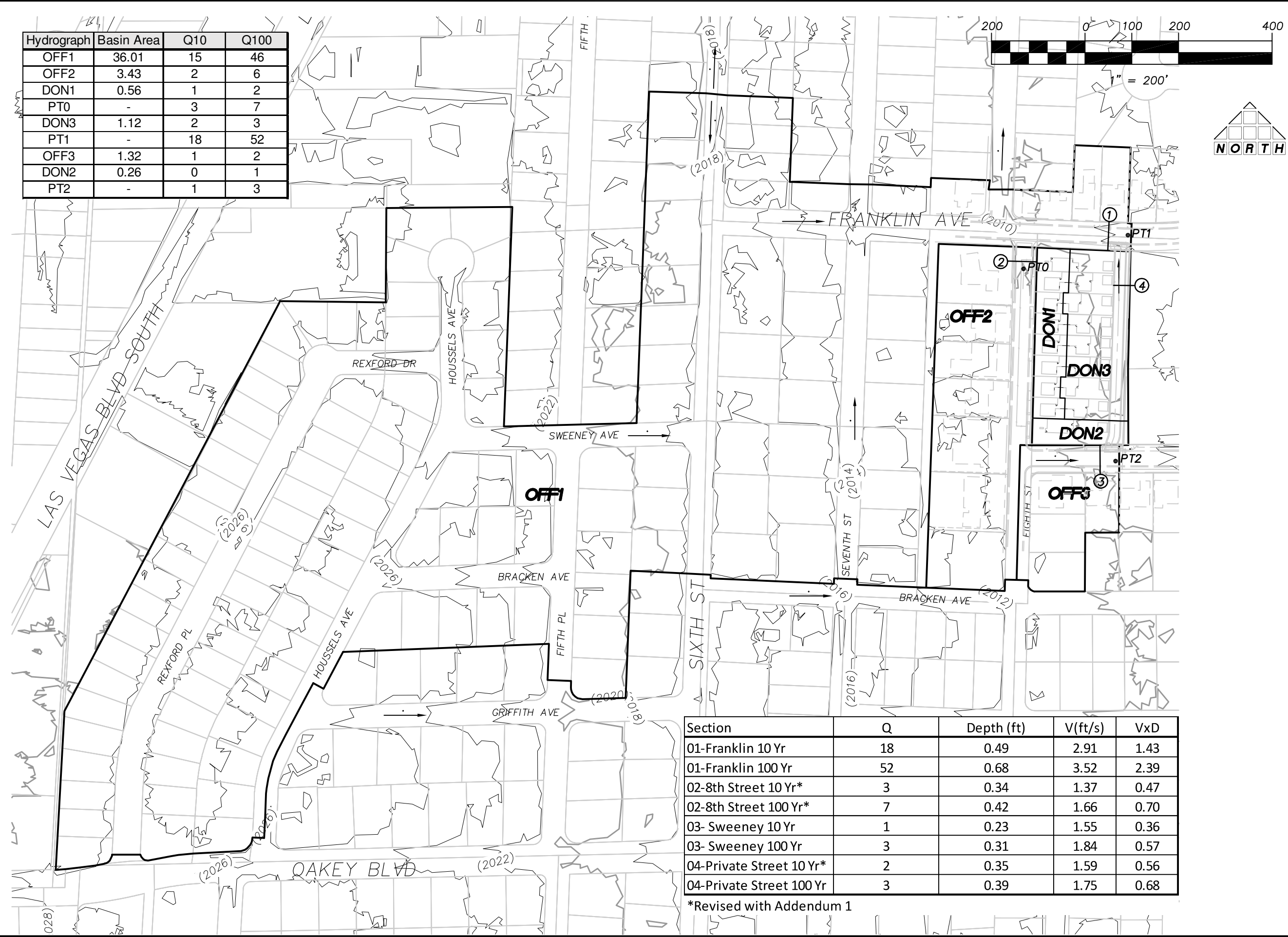
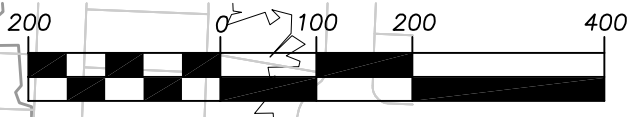
Should you have any questions or concerns, please do not hesitate to contact this office at 932-6125.

Sincerely,
Thomason Consulting Engineers



Joshua Owen, P.E.

Hydrograph	Basin Area	Q10	Q100
OFF1	36.01	15	46
OFF2	3.43	2	6
DON1	0.56	1	2
PT0	-	3	7
DON3	1.12	2	3
PT1	-	18	52
OFF3	1.32	1	2
DON2	0.26	0	1
PT2	-	1	3



Section	Q	Depth (ft)	V(ft/s)	VxD
01-Franklin 10 Yr	18	0.49	2.91	1.43
01-Franklin 100 Yr	52	0.68	3.52	2.39
02-8th Street 10 Yr*	3	0.34	1.37	0.47
02-8th Street 100 Yr*	7	0.42	1.66	0.70
03- Sweeney 10 Yr	1	0.23	1.55	0.36
03- Sweeney 100 Yr	3	0.31	1.84	0.57
04-Private Street 10 Yr*	2	0.35	1.59	0.56
04-Private Street 100 Yr	3	0.39	1.75	0.68

*Revised with Addendum 1

**THOMASON
CONSULTING
ENGINEERS**

7080 LA CIENEGA STREET, SUITE 200
LAS VEGAS, NEVADA 89119
702-932-6125 FAX: 702-932-6129

KAVISON HOMES
8TH AND FRANKLIN

DEVELOPED BASINS
FIGURE 6

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

TIME OF CONCENTRATION

TCE
Project No. : 221-20001

DEVELOPMENT : 8TH AND FRANKLIN

CALCULATED BY : JNO

DATE: June 2021

T THOMASON
 C CONSULTING
 E ENGINEERS

SUB-BASIN DATA					INITIAL / OVERLAND TIME (Ti)			TRAVEL TIME (Tt)						Tc	Tc CHECK URBANIZED BASINS		FINAL Tc	Min Tc	Tag	REMARKS
DESIG:	CN	K	AREA <i>(acres)</i>	AREA <i>(mi²)</i>	LENGTH <i>(ft)</i>	SLOPE <i>(%)</i>	Ti <i>(min)</i>	LENGTH <i>(ft)</i>	SLOPE <i>(%)</i>	LAND COVER <i>k</i>	V1 VELOCITY* <i>(fps)</i> <i>(10a)</i>	V2 VELOCITY* <i>(fps)</i> <i>(10b)</i>	Tt <i>(min)</i>	Tc = Ti + Tt <i>(min)</i>	TOTAL LENGTH <i>(ft)</i>	Tc = <i>(L/180)^{0.10}</i> <i>(min)</i>	<i>(min)</i>	<i>(min)</i>	Tag= <i>0.6Tc/60</i> <i>(hrs)</i>	
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)				(11)	(8)	(12)	(13)	(14)			
EON1	94.9	0.8627	1.50	0.0023	200	0.50	7.61	403	0.50	DEV	1.43	2.16	4.7	12.3	603.2	13.351	12.31	5.00	0.123	
EON2	91.0	0.8112	0.44	0.0007	60	1.00	4.03	3438	0.50	DEV	1.43	2.16	28.5	32.5	3498.3	29.435	29.43	5.00	0.294	
OFF1	83.0	0.7056	36.01	0.0563	100	1.00	7.10	3438	0.76	DEV	1.76	2.66	23.1	30.2	3538.3	29.657	29.66	5.00	0.297	
OFF2	83.0	0.7056	3.43	0.0054	150	1.00	8.69	694	0.29	DEV	1.08	1.64	9.7	18.3	843.9	14.688	14.69	5.00	0.147	
OFF3	83.0	0.7056	1.32	0.0021	120	1.00	7.78	406	0.49	DEV	1.42	2.15	4.8	12.5	525.5	12.919	12.54	5.00	0.125	
DON1	94.0	0.8508	0.56	0.0009	65	1.00	3.62	355	0.50	DEV	1.43	2.16	4.1	7.8	420.0	12.333	7.76	5.00	0.078	
DON2	94.0	0.8508	0.26	0.0004	85	1.00	4.14	51	0.50	DEV	1.43	2.16	0.6	4.7	136.0	10.756	4.73	5.00	0.050	minimum Tc used
DON3	94.0	0.8508	1.12	0.0018	120	1.00	4.91	355	0.58	DEV	1.54	2.33	3.8	8.8	475.0	12.639	8.76	5.00	0.088	

$T_i = 1.8 (1.1 - K) L^{1/2} / S^{1/3}$
 $T_c = T_i + T_t$
 $K = 0.0132 (CN) - 0.39$ $T_{tag} = 0.6T_c$

* The velocity in column 9 was computed using the equation $V = CS^{0.5}$
C is a coefficient and **S** is the travel slope, as outlined in section 602.1 of the CCRFCD Manual.
V1 applies to first 500 ft of travel distance 14.8 (undeveloped) or 20.2 (developed)
V2 applies to travel distance greater than 500 ft, 29.4 (undeveloped) or 30.6 (developed)

REFERENCE :

STANDARD FORM 4

CURVE NUMBERS

Basin	Total Area (acres)	Soil Type / Ground Cover	Acreage	% of Basin	CN	Soil Type / Ground Cover	Acreage	% of Basin	CN	Weighted CN
EON1	1.50	NGA-C	0.66	44.29	91.00	Impervious	0.84	56	98.00	94.9
EON2	0.44	NGA-C	0.44	100.00	91.00	-	-	-	-	91.0
OFF1	36.01	RES10-C	36.01	100.00	83.00	-	-	-	-	83.0
OFF2	3.43	RES10-C	3.43	100.00	83.00	-	-	-	-	83.0
OFF3	1.32	RES10-C	1.32	100.00	83.00	-	-	-	-	83.0
DON1	0.56	COMM-C	0.56	100.00	94.00	-	-	-	-	94.0
DON2	0.26	COMM-C	0.26	100.00	94.00	-	-	-	-	94.0
DON3	1.12	COMM-C	1.12	100.00	94.00	-	-	-	-	94.0

- COMM Commercial and Residential for lots less than 6,000sqft
- DES Desert shrub - poor condition
- Dirt Unimproved Cleared Dirt
- Impervious Impervious Paving
- SCHOOL School
- IND Industrial
- NDL Natural Desert Landscape
- NGA Newly Graded Areas
- Open Open Space (grass cover<50%) lawns, parks, golf courses etc.
- RES10 Residential 10,000sf lots
- RES20 Residential 20,000sf lots
- RES80 Residential 80,000sf lots

```

1*****
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1) *
* JUN 1998 *
* VERSION 4.1 *
*
* RUN DATE 03JUN21 TIME 16:27:56 *
*
*****

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*****
*
* U.S. ARMY CORPS OF ENGINEERS *
* HYDROLOGIC ENGINEERING CENTER *
* 609 SECOND STREET *
* DAVIS, CALIFORNIA 95616 *
* (916) 756-1104 *
*
*****

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X X XXXXXXX XXXXX X
X X X X X XX
X X X X X X
XXXXXXXX XXXX X XXXXX X
X X X X X X
X X X X X X
X X XXXXXXX XXXXX XXX

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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE. THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
 NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
 DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
 KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

*DIAGRAM

*** FREE ***

```

1 ID PREPARED FOR: KAVISON HOMES
2 ID PROJECT NAME: 8TH AND FRANKLIN
3 ID PROJECT# 221-20001
4 ID DEVELOPED DRAINAGE CONDITIONS
5 ID INPUT FILE = DEV
6 ID
7 ID
8 ID STORM DISTRIBUTION = SDN3
9 ID
10 IT 5 0 0 300
11 IO 5 0 0
12 IN 5 0 0
13 JR PREC 0.570 1.000
*

```

```

14 KK OFF1
15 KM
16 BA 0.0563
17 PB 2.77
18 PC 0 0.020 0.057 0.070 0.087 0.108 0.124 0.130 0.130 0.130
19 PC 0.130 0.130 0.130 0.133 0.140 0.142 0.148 0.158 0.172 0.181
20 PC 0.190 0.197 0.199 0.200 0.201 0.204 0.214 0.229 0.241 0.249
21 PC 0.251 0.256 0.270 0.278 0.281 0.283 0.295 0.322 0.352 0.409
22 PC 0.499 0.590 0.710 0.744 0.781 0.812 0.819 0.835 0.851 0.856
23 PC 0.860 0.868 0.876 0.888 0.910 0.926 0.937 0.950 0.970 0.976
24 PC 0.982 0.985 0.987 0.989 0.990 0.993 0.993 0.994 0.995 0.998
25 PC 0.998 0.999 1.000
26 LS 0 83.0
27 UD 0.297
*

```

```

28 KK OFF2
29 BA 0.0054
30 LS 0 83.0
31 UD 0.147
*

```

```

32 KK DON1
33 BA 0.0009
34 LS 0 94.0
35 UD 0.078
*

```

```

36 KK PT0
37 KM
38 HC 2
*

```

LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

```

39      KK   DON3
40      BA  0.0018
41      LS   0      94.0
42      UD  0.088
      *

43      KK   PT1
44      KM
45      HC   3
      *

46      KK   OFF3
47      BA  0.0021
48      LS   0      83.0
49      UD  0.125
      *

50      KK   DON2
51      BA  0.0004
52      LS   0      94.0
53      UD  0.050
      *

54      KK   PT2
55      KM
56      HC   2
      *
57      ZZ

```

1

SCHEMATIC DIAGRAM OF STREAM NETWORK

```

INPUT
LINE  (V) ROUTING      (--->) DIVERSION OR PUMP FLOW
NO.    (.) CONNECTOR  (<---) RETURN OF DIVERTED OR PUMPED FLOW

14     OFF1
      .
      .
28     .      OFF2
      .      .
      .      .
32     .      .      DON1
      .      .      .
      .      .      .
36     .      PT0.....
      .      .
      .      .
39     .      .      DON3
      .      .      .
      .      .      .
43     PT1.....
      .
      .
46     .      OFF3
      .      .
      .      .
50     .      .      DON2
      .      .      .
      .      .      .
54     .      PT2.....

```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```

1*****
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1) *
*   JUN 1998                *
*   VERSION 4.1             *
*
* RUN DATE 03JUN21 TIME 16:27:56 *
*
*****

```

```

*****
*
* U.S. ARMY CORPS OF ENGINEERS *
* HYDROLOGIC ENGINEERING CENTER *
* 609 SECOND STREET            *
* DAVIS, CALIFORNIA 95616     *
* (916) 756-1104              *
*
*****

```

PREPARED FOR: KAVISON HOMES
PROJECT NAME: 8TH AND FRANKLIN
PROJECT# 221-20001
DEVELOPED DRAINAGE CONDITIONS
INPUT FILE = DEV

STORM DISTRIBUTION = SDN3

```

11 IO      OUTPUT CONTROL VARIABLES
          IPRNT      5  PRINT CONTROL
          IPLOT      0  PLOT CONTROL
          QSCAL      0. HYDROGRAPH PLOT SCALE

```

IT HYDROGRAPH TIME DATA
 NMIN 5 MINUTES IN COMPUTATION INTERVAL
 IDATE 1 0 STARTING DATE
 ITIME 0000 STARTING TIME
 NQ 300 NUMBER OF HYDROGRAPH ORDINATES
 NDDATE 2 0 ENDING DATE
 NDTIME 0055 ENDING TIME
 ICENT 19 CENTURY MARK

 COMPUTATION INTERVAL .08 HOURS
 TOTAL TIME BASE 24.92 HOURS

ENGLISH UNITS
 DRAINAGE AREA SQUARE MILES
 PRECIPITATION DEPTH INCHES
 LENGTH, ELEVATION FEET
 FLOW CUBIC FEET PER SECOND
 STORAGE VOLUME ACRE-FEET
 SURFACE AREA ACRES
 TEMPERATURE DEGREES FAHRENHEIT

JP MULTI-PLAN OPTION
 NPLAN 1 NUMBER OF PLANS

JR MULTI-RATIO OPTION
 RATIOS OF PRECIPITATION
 .57 1.00

1

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
 FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
 TIME TO PEAK IN HOURS

OPERATION	STATION	AREA	PLAN	RATIOS APPLIED TO PRECIPITATION	
				RATIO 1	RATIO 2
				.57	1.00
HYDROGRAPH AT +	OFF1	.06	1 FLOW TIME	15. 3.75	46. 3.75
HYDROGRAPH AT +	OFF2	.01	1 FLOW TIME	2. 3.58	6. 3.58
HYDROGRAPH AT +	DON1	.00	1 FLOW TIME	1. 3.50	2. 3.50
2 COMBINED AT +	PT0	.01	1 FLOW TIME	3. 3.58	7. 3.58
HYDROGRAPH AT +	DON3	.00	1 FLOW TIME	2. 3.50	3. 3.50
3 COMBINED AT +	PT1	.06	1 FLOW TIME	18. 3.75	52. 3.75
HYDROGRAPH AT +	OFF3	.00	1 FLOW TIME	1. 3.58	2. 3.58
HYDROGRAPH AT +	DON2	.00	1 FLOW TIME	0. 3.50	1. 3.50
2 COMBINED AT +	PT2	.00	1 FLOW TIME	1. 3.50	3. 3.50

*** NORMAL END OF HEC-1 ***

Worksheet for 02-8th Street 10 Yr*

Results

Normal Depth		0.34	ft
Elevation Range	0.00 to 0.63 ft		
Flow Area		2.19	ft ²
Wetted Perimeter		20.37	ft
Hydraulic Radius		0.11	ft
Top Width		19.60	ft
Normal Depth		0.34	ft
Critical Depth		0.31	ft
Critical Slope		0.00797	ft/ft
Velocity		1.37	ft/s
Velocity Head		0.03	ft
Specific Energy		0.37	ft
Froude Number		0.72	
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	0.34	ft
Critical Depth	0.31	ft
Channel Slope	0.00400	ft/ft
Critical Slope	0.00797	ft/ft

Cross Section for 02-8th Street 10 Yr*

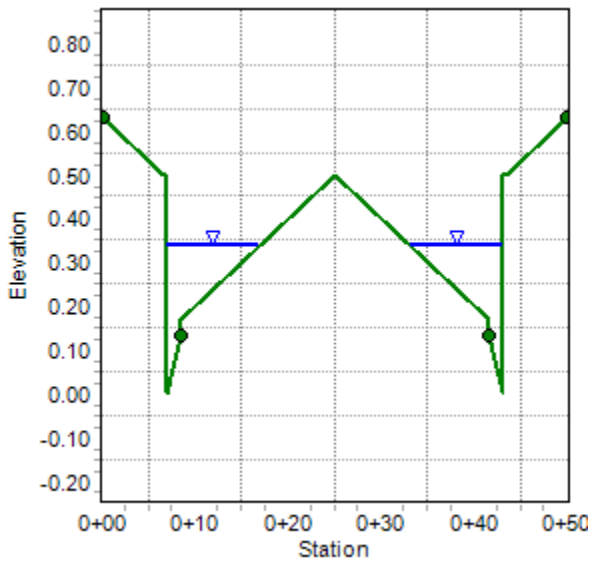
Project Description

Friction Method Manning Formula
Solve For Normal Depth

Input Data

Channel Slope	0.00400	ft/ft
Normal Depth	0.34	ft
Discharge	3.00	ft ³ /s

Cross Section Image



Worksheet for 02-8th Street 100 Yr*

Results

Normal Depth		0.42	ft
Elevation Range	0.00 to 0.63 ft		
Flow Area		4.22	ft ²
Wetted Perimeter		29.05	ft
Hydraulic Radius		0.15	ft
Top Width		28.11	ft
Normal Depth		0.42	ft
Critical Depth		0.39	ft
Critical Slope		0.00727	ft/ft
Velocity		1.66	ft/s
Velocity Head		0.04	ft
Specific Energy		0.46	ft
Froude Number		0.75	
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	0.42	ft
Critical Depth	0.39	ft
Channel Slope	0.00400	ft/ft
Critical Slope	0.00727	ft/ft

Worksheet for 04-Private Street 10 Yr*

Project Description

Friction Method Manning Formula
 Solve For Normal Depth

Input Data

Channel Slope 0.00500 ft/ft
 Discharge 2.00 ft³/s
 Section Definitions

Station (ft)	Elevation (ft)
0+00.00	0.90
0+01.50	0.52
0+02.50	0.60
0+24.00	0.17
0+24.00	0.13
0+25.50	0.00
0+25.50	0.50
0+26.00	0.50
0+31.00	0.60

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 0.90)	(0+02.50, 0.60)	0.013
(0+02.50, 0.60)	(0+24.00, 0.17)	0.016
(0+24.00, 0.17)	(0+31.00, 0.60)	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 0.35 ft
 Elevation Range 0.00 to 0.90 ft

Worksheet for 04-Private Street 10 Yr*

Results

Flow Area	1.26	ft ²
Wetted Perimeter	10.98	ft
Hydraulic Radius	0.11	ft
Top Width	10.58	ft
Normal Depth	0.35	ft
Critical Depth	0.33	ft
Critical Slope	0.00771	ft/ft
Velocity	1.59	ft/s
Velocity Head	0.04	ft
Specific Energy	0.39	ft
Froude Number	0.82	
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	0.35	ft
Critical Depth	0.33	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.00771	ft/ft

Cross Section for 04-Private Street 10 Yr*

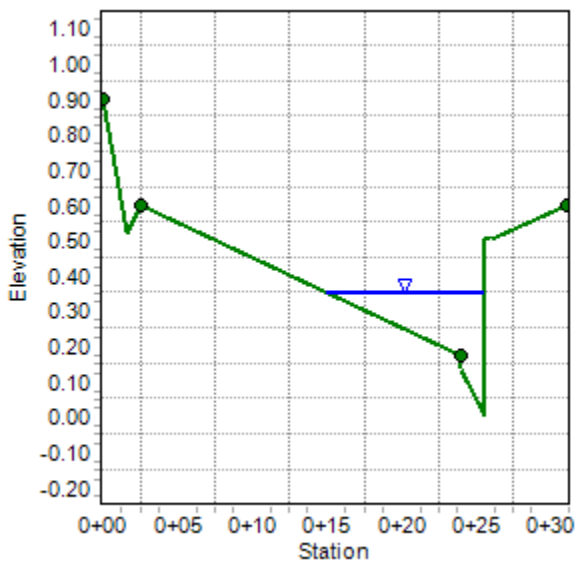
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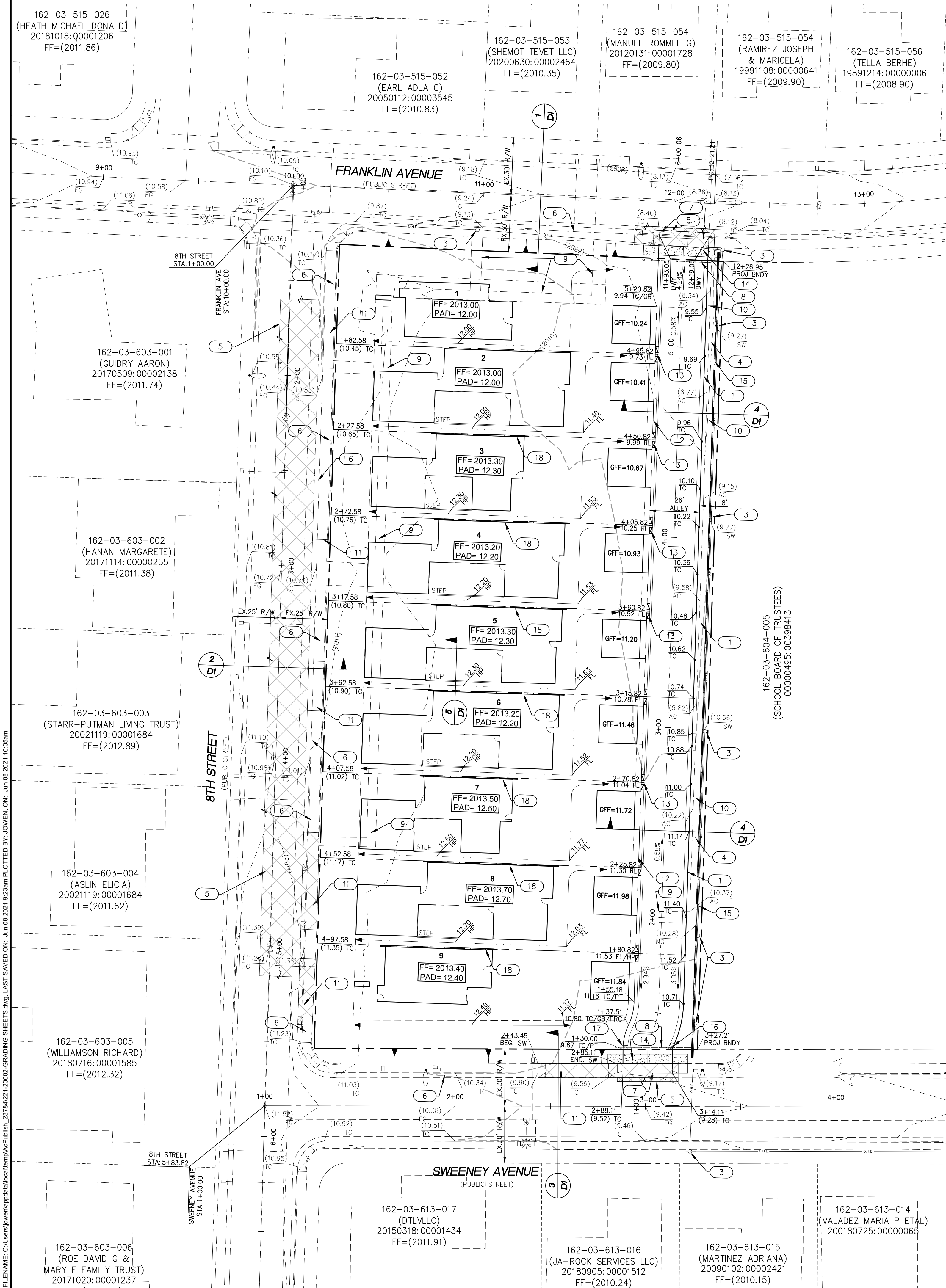
Friction Method Manning Formula
Solve For Normal Depth

Input Data

Channel Slope	0.00500	ft/ft
Normal Depth	0.35	ft
Discharge	2.00	ft ³ /s

Cross Section Image





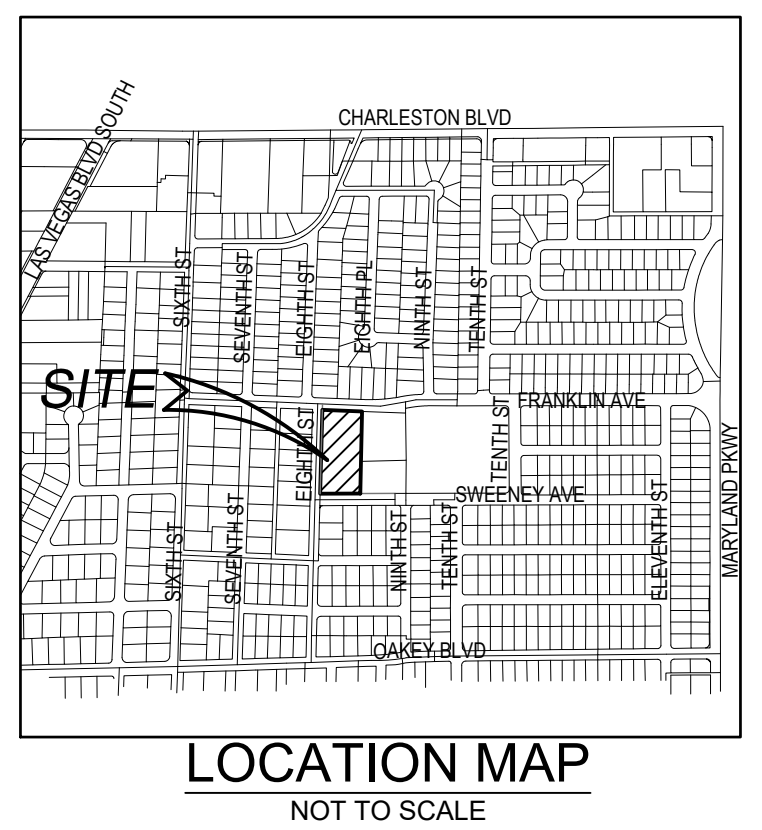
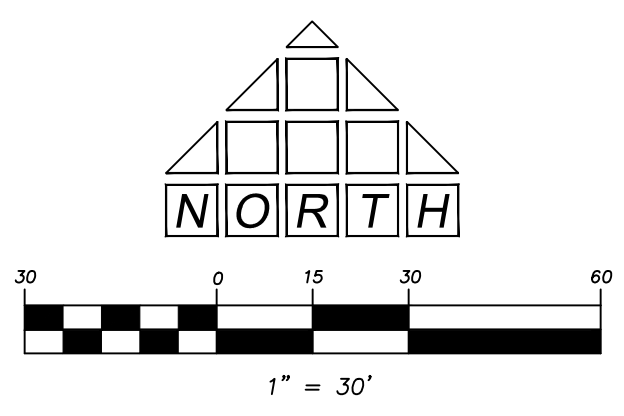
BENCHMARK
 CITY OF LAS VEGAS VERTICAL CONTROL
 BENCHMARK ID: 2LV1103C4
 RIVET & PLATE IN TOP OF CURB ON THE NE CORNER OF OAKLEY & 6TH STREET.
 ELEVATION: 614.76 METERS (PUBLISHED NAVD 88 DATUM)
 ELEVATION: 2016.93 US SURVEY FEET (PUBLISHED NAVD 88 DATUM)

FLOOD ZONE
 THE SUBJECT PROPERTY IS LOCATED WITHIN AN AREA HAVING A ZONE "X" AND "SHADED ZONE X" DESIGNATION, ON FLOOD INSURANCE RATE MAP NO. 32000C2107 DATED NOVEMBER 16, 2011. ZONE "X" IS DEFINED AS AREAS OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN. "SHADED ZONE X" IS DEFINED AS 0.2% ANNUAL CHANCE FLOOD AREAS OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTH LESS THAN ONE FOOT OR WITH DRAINAGE AREAS OF LESS THAN ONE SQUARE MILE.

Call before you Dig
 Avoid cutting underground utility lines. It's costly.
 Call 1-800-227-2600

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY.
 CALL BEFORE YOU DIG
 1-702-227-2929

FAST
 Call before you Underground
 1-702-432-5300
 PROVIDE AND INSTALL SYSTEM OF TRANSPORTATION



BASIS OF BEARING

SOUTH 01°47'59" WEST, BEING THE CENTERLINE OF 8TH STREET, AS SHOWN IN FILE 179, PAGE 48 OF SURVEYS, IN THE OFFICE OF THE COUNTY RECORDER, CLARK COUNTY, NEVADA.

CONSTRUCTION NOTES

- 1 CONSTRUCT "L" TYPE CURB AND GUTTER PER CCAUSD 216.
- 2 CONSTRUCT 30" ROLL TYPE CURB AND GUTTER PER CCAUSD 217.2.51
- 3 EXIST. POWER POLES AND GUY ANCHORS TO BE REMAIN IN PLACE. (NOTIFY GOVERNING AGENCIES BEFORE CONSTRUCTION AND SEE NV ENERGY PLANS FOR LOCATION.)
- 4 CONSTRUCT 4-INCH THICK SIDEWALK PER CCAUSD 234.
- 5 SAW CUT, REMOVE AND MATCH EDGE OF EXISTING A.C. TRENCH BACK FILL AND AC PAVEMENT RESTORATION PER CCAUSD # 503, 500.3, 500.4 AND 500.5.
- 6 EXISTING SIDEWALK, "L" CURB AND GUTTER TO BE REMAIN
- 7 CONSTRUCT COMMERCIAL DRIVEWAY (OPTION A) PER CCAUSD # 224
- 8 CONSTRUCT ACCESS SLIDE GATE (BY OTHERS) (SEPARATE PERMIT THROUGH BUILDING DEPARTMENT.)
- 9 EXISTING SIDEWALK TO BE REMOVED
- 10 EXISTING SIDEWALK TO BE REMOVED AND REPLACED
- 11 SAW CUT, REMOVE AND REPLACE SIDEWALK PER CCAUSD # 234 AND CONSTRUCT "L" TYPE CURB AND GUTTER PER CCAUSD 216.
- 12 RESERVED
- 13 CONSTRUCT 2' CURB CUT OPENING PER DETAIL B ON SHEET D1.
- 14 CONSTRUCT 5' SIDEWALK PER CCAUSD #234.
- 15 REMOVE AND REPLACE EXISTING 6' CMU BLOCK WALL
- 16 CONSTRUCT 3" "L" CURB TRANSITION TO "O" LIP CURB
- 17 CONSTRUCT 3" "ROLL" CURB TRANSITION TO "O" LIP CURB
- 18 CONSTRUCT DEEPENED FOOT 0.7' TO 1.7' MAX

EARTHWORK QUANTITIES

NOTE: THE EARTHWORK QUANTITIES PROVIDED ARE RAW VOLUMES AND FOR INFORMATION ONLY. ALL CONTRACTORS ARE RESPONSIBLE FOR VERIFYING THEIR OWN EARTHWORK QUANTITIES. THESE ESTIMATES ARE SUBJECT TO CHANGE BASED ON SITE SPECIFIC GEOTECHNICAL EVALUATIONS.

CUT:	CY
FILL:	CY
TOTAL:	CY IMPORT (RAW)

SOILS REPORT

GEO TEK RESIDENTIAL, LLC
 6835 SOUTH ESCONDIDO STREET
 LAS VEGAS, NEVADA 89119
 PHONE: (702) 897-1424
 FAX: (702) 897-2215
 GEO TEK PROJECT NO. 16006-LVR
 DATED: APRIL 1, 2021

NOTE: EACH STRUCTURE INCLUDED IN THIS PLAN SET (BUILDINGS, FENCES, WALLS, ETC.) AND UTILITIES REQUIRES A SEPARATE PERMIT.
 GRADING NOTE: SITE SHALL BE GRADED IN ACCORDANCE WITH THE APPROVED GEOTECHNICAL REPORT.

STORM WATER MANAGEMENT NOTES

1. THE OWNER, SITE DEVELOPER, CONTRACTOR, AND/OR THEIR AUTHORIZED AGENTS SHALL EACH DAY REMOVE ALL SEDIMENT, MUD, CONSTRUCTION DEBRIS, OR OTHER POTENTIAL POLLUTANTS THAT MAY HAVE BEEN DISCHARGED TO OR ACCUMULATED IN THE PUBLIC RIGHTS OF WAY OF CITY OF LAS VEGAS AS A RESULT OF CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS SITE DEVELOPMENT OR CONSTRUCTION PROJECT. SUCH MATERIALS SHALL BE PREVENTED FROM ENTERING THE STORM DRAIN SYSTEM.
2. ADDITIONAL CONSTRUCTION SITE DISCHARGE BEST MANAGEMENT PRACTICES MAY BE REQUIRED OF THE OWNER AND HIS OR HER AGENTS DUE TO UNFORESEEN EROSION PROBLEMS OR IF THE SUBMITTED PLAN DOES NOT MEET THE PERFORMANCE STANDARDS SPECIFIED IN TITLE 14.18 AND THE LAS VEGAS VALLEY CONSTRUCTION SITE BMP GUIDANCE MANUAL.
3. TEMPORARY OR PERMANENT STABILIZATION PRACTICES WILL BE INSTALLED ON DISTURBED AREAS AS SOON AS PRACTICAL AND NO LATER THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED. SOME EXCEPTIONS TO WEEKLY INSPECTIONS MAY APPLY, SUCH AS SUSPENSION OF LAND DISTURBANCE ACTIVITIES. REFER TO THE NEVADA STORM WATER GENERAL PERMIT FOR CONSTRUCTION ACTIVITY NVR100000, SECTION III.A.5.
4. AT A MINIMUM, THE CONTRACTOR OR HIS AGENT SHALL INSPECT ALL DISTURBED AREAS, AREAS USED FOR STORAGE OF MATERIALS AND EQUIPMENT THAT ARE EXPOSED TO PRECIPITATION, VEHICLE ENTRANCE AND EXIT LOCATIONS, AND ALL BMPs WEEKLY, AND WITHIN 24 HOURS AFTER A RAIN EVENT OF 0.5 INCHES OR MORE. THE CONTRACTOR OR HIS AGENT SHALL UPDATE AND MODIFY THE STORM WATER POLLUTION PREVENTION PLAN AS NECESSARY. SOME EXCEPTIONS TO WEEKLY INSPECTIONS MAY APPLY, SUCH AS SUSPENSION OF LAND DISTURBANCE ACTIVITIES REFER TO NEVADA STORM WATER GENERAL PERMIT FOR CONSTRUCTION ACTIVITY NVR100000, SECTION III.A.12.
5. ACCUMULATED SEDIMENT IN BMPs SHALL BE REMOVED WITHIN SEVEN DAYS AFTER A STORM WATER RUNOFF EVENT OR PRIOR TO THE NEXT RAINFALL EVENT, WHICHEVER IS EARLIER. SEDIMENT MUST BE REMOVED WHEN BMP DESIGN CAPACITY HAS BEEN REDUCED BY 50 PERCENT OR MORE.

NOTE:
 ADD 2000 TO ALL SPOT GRADES ELEVATIONS.

DISCLAIMER NOTE
 EXISTING 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 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 LOCATIONS.
 NOTIFY ENGINEER IMMEDIATELY IF DISCREPANCIES ARE ENCOUNTERED.

DRAINAGE STUDY NOTE
 I CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY ON FILE THE CITY OF LAS VEGAS DS#5448.

- GRADING NOTES**
1. THOMASON CONSULTING ENGINEER'S SHALL BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES IN THE PLANS OR CONDITIONS IN THE FIELD.
 2. ALL WORK TO BE PERFORMED OUTSIDE OF THE PROJECT BOUNDARY AND ON PRIVATE PROPERTY SHALL NOT BE PERFORMED UNTIL WRITTEN PERMISSION AND EASEMENT HAVE BEEN OBTAINED FROM THE OFFSITE OWNER.
 3. FOR AREAS THAT ARE FLATTER THAN 2:1 SLOPE, OR LESS THAN 1' ELEVATION DIFFERENCE, SCARPS ARE NOT SHOWN ON PLAN FOR CLARITY PURPOSES.
 4. ALL SLOPE AREAS SHALL HAVE A MINIMUM ONE FOOT SHOULDER NEXT TO WALL PRIOR TO STARTING SLOPE.
 5. PAD SECTION SHOWN ON PLANS IS FOR REFERENCE ONLY. FOR ACTUAL SECTION, REFER GEOTECHNICAL REPORT FOR SOILS ENGINEERS' RECOMMENDATION.
 6. ALL SIDEWALK INSTALLATIONS SHALL CONFORM TO ADA REQUIREMENTS.
 7. RETAINING WALL ELEVATIONS ARE SHOWN FOR CONVENIENCE ONLY. CONTRACTOR MUST VERIFY EXACT TOP OF FOOTINGS, STEPPED FOOTINGS, AND TOP OF RETAINING WALLS TO MATCH FIELD CONDITIONS, PRIOR TO COMMENCEMENT OF WORK.

CITY OF LAS VEGAS GRADING NOTE

1. IN THE EVENT THAT ANY UNFORESEEN CONDITIONS NOT COVERED BY THESE NOTES ARE ENCOUNTERED DURING GRADING OPERATIONS, THE OWNER/ENGINEER SHALL BE IMMEDIATELY NOTIFIED FOR DIRECTION.
 2. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PERFORM ALL NECESSARY CUTS AND FILLS WITHIN THE LIMITS OF THIS PROJECT AND THE RELATED OFF-SITE WORK, SO AS TO GENERATE THE DESIRED SUBGRADE, FINISH GRADES AND SLOPES SHOWN.
 3. CONTRACTOR SHALL TAKE FULL RESPONSIBILITY FOR ALL EXCAVATION. ADEQUATE SHORING SHALL BE DESIGNED AND PROVIDED BY THE CONTRACTOR TO PREVENT UNDERMINING OF ANY ADJACENT FEATURES OR FACILITIES AND/OR CAVING OF THE EXCAVATION.
 4. THE CONTRACTOR IS WARNED THAT AN EARTHWORK BALANCE WAS NOT NECESSARILY THE INTENT OF THIS PROJECT. ANY ADDITIONAL MATERIAL REQUIRED OR LEFTOVER MATERIAL FOLLOWING EARTHWORK OPERATIONS BECOMES THE RESPONSIBILITY OF THE CONTRACTOR.
 5. THE GRADING CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH THE OWNER TO PROVIDE FOR THE REQUIREMENTS OF THE PROJECT STORM WATER POLLUTION PREVENTION PLAN (SWPPP) AND ASSOCIATED PERMIT.
 6. CONTRACTOR SHALL GRADE TO THE LINES AND ELEVATIONS SHOWN ON THE PLANS WITHIN THE FOLLOWING HORIZONTAL AND VERTICAL TOLERANCES AND DEGREES OF COMPACTION, IN THE AREAS INDICATED:

A. PAVEMENT AREA SUBGRADE	0.1"	+0.0' TO -0.1'	SEE SOILS REPORT
B. ENGINEERED FILL	0.5"	+0.1' TO -0.1'	SEE SOILS REPORT

 COMPACTION TESTING WILL BE PERFORMED BY THE OWNER OR HIS REPRESENTATIVE.
 7. ALL CUT AND FILL SLOPES SHALL BE PROTECTED UNTIL EFFECTIVE EROSION CONTROL HAS BEEN ESTABLISHED.
 8. THE USE OF POTABLE WATER WITHOUT A SPECIAL PERMIT FOR BUILDING OR CONSTRUCTION PURPOSES INCLUDING OF BACKFILL OR DUST CONTROL IS PROHIBITED. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS FOR CONSTRUCTION WATER.
 9. THE CONTRACTOR SHALL MAINTAIN THE STREETS, SIDEWALKS AND ALL OTHER PUBLIC RIGHT-OF-WAY IN A CLEAN, SAFE AND USABLE CONDITION. ALL SPILLS OF SOIL, ROCK OR CONSTRUCTION DEBRIS SHALL BE PROMPTLY REMOVED FROM THE PUBLICLY OWNED PROPERTY DURING CONSTRUCTION AND UPON COMPLETION OF THE PROJECT. ALL ADJACENT PROPERTY, PRIVATE OR PUBLIC SHALL BE MAINTAINED IN A CLEAN, SAFE AND USABLE CONDITION.
 10. IN THE EVENT THAT ANY TEMPORARY CONSTRUCTION ITEM IS REQUIRED THAT IS NOT SHOWN ON THESE DRAWINGS, THE OWNER AGREES TO PROVIDE AND INSTALL TEMPORARY CONSTRUCTION INCLUDING DITCHES, BERM, ROAD SIGNS AND SUCH ITEM AT HIS OWN EXPENSE AND AT THE DIRECTION OF THE CITY ENGINEER, BARRICADES, ETC.
- REVISED 04/15/10
 UPDATED 2/2021

REVISION

SCALE: 1"=30'

DRAWN BY: D.L.C.
 DESIGNED BY: D.L.C.
 CHECKED BY:
 COMMENTS ADDRESSED BY:

PROJECT NO. 221-20002

THOMASON CONSULTING ENGINEERS

7080 LA CIENEGA STREET, SUITE 200
 LAS VEGAS, NEVADA 89119
 702-632-6125 FAX: 702-632-6129

KAIVISON HOMES
 237 CHACO CANYON, HENDERSON, NEVADA, 89074

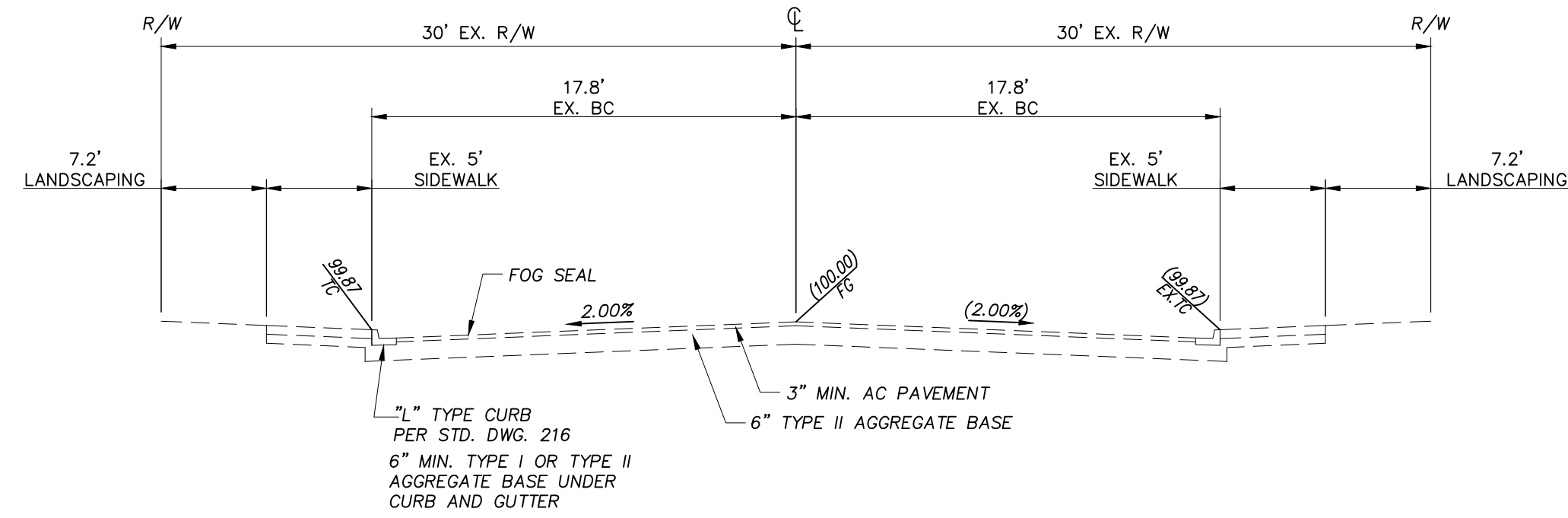
PH: (702) 721-6111

8TH / FRANKLIN GRADING PLAN

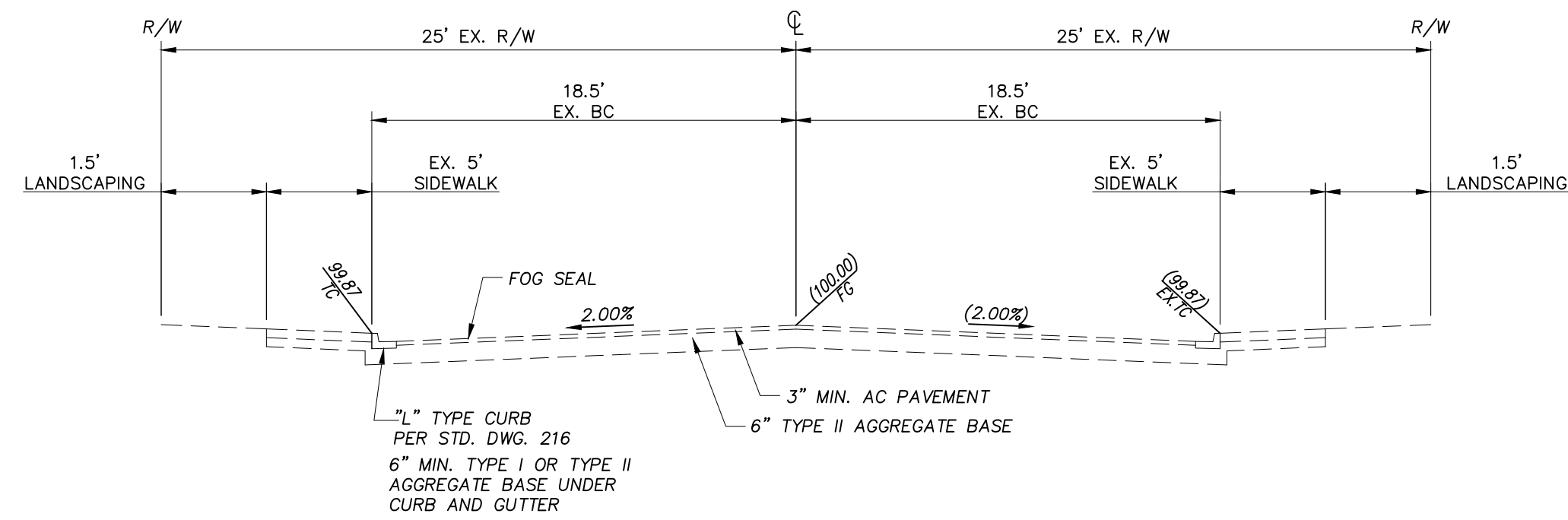
PH: (702) 721-6111

06/08/2021

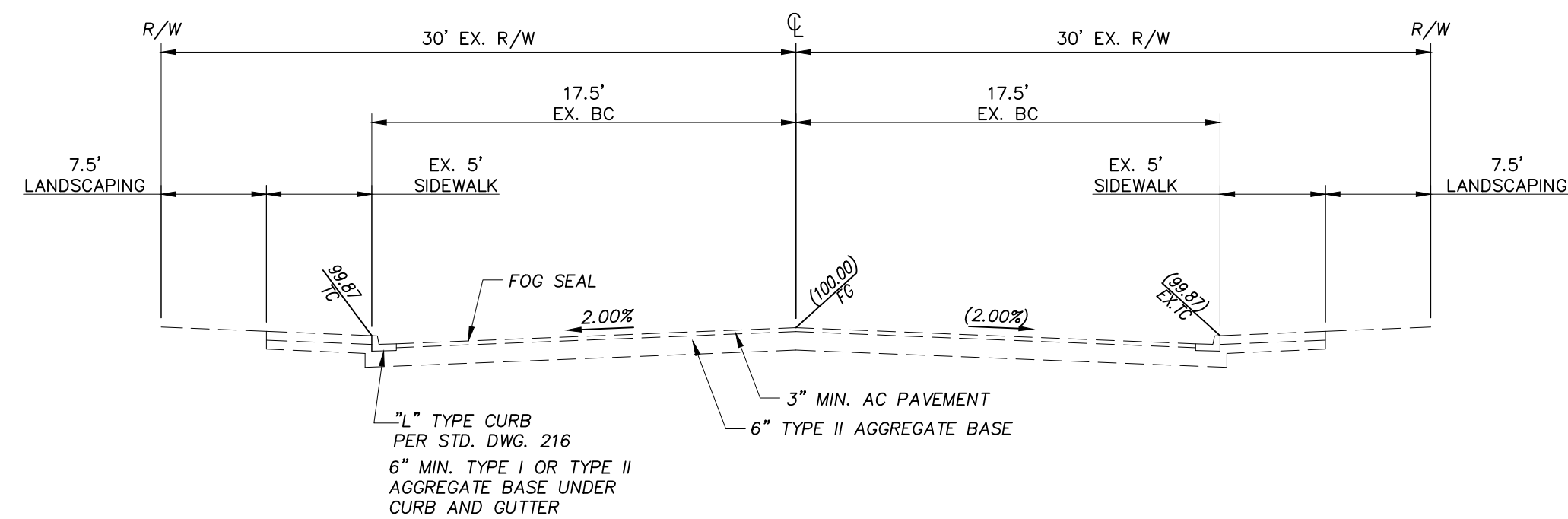
SHEET **G1** OF 7
 DRAWING NO.



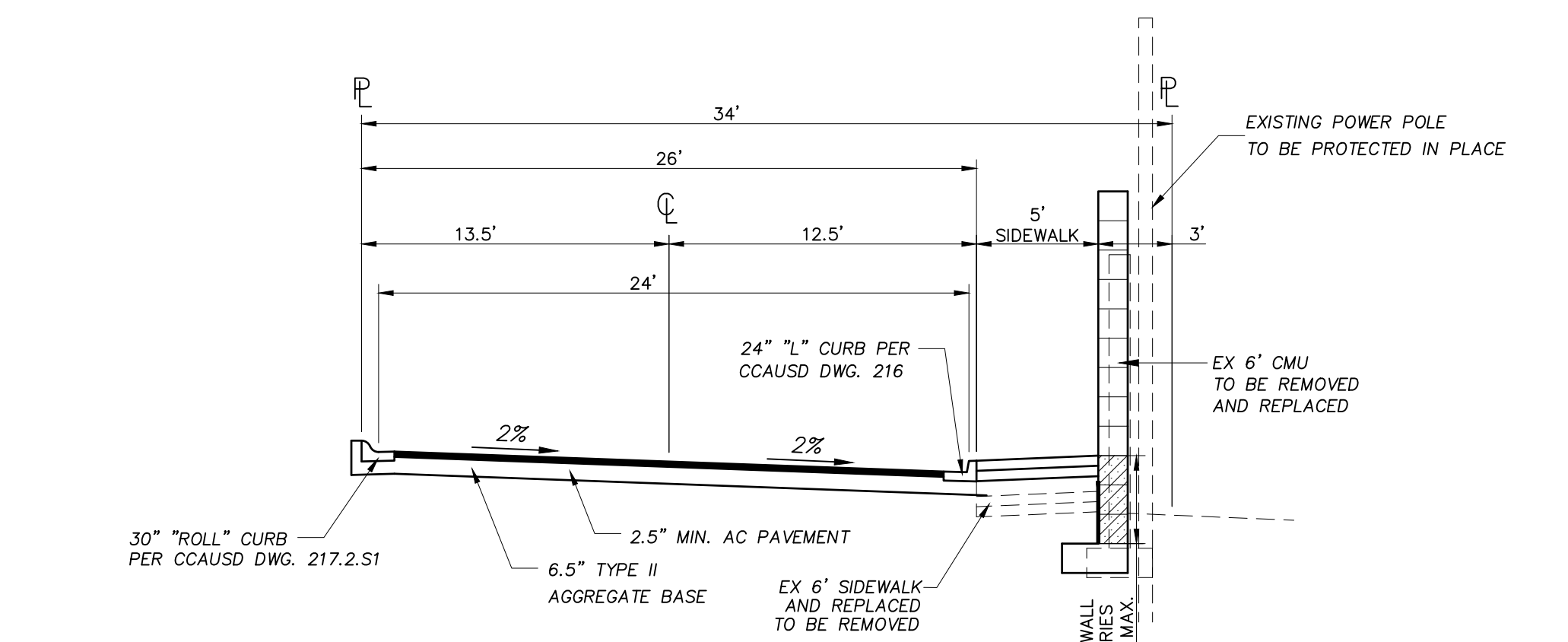
1 PUBLIC STREET SECTION - FRANKLIN AVENUE
NOT TO SCALE



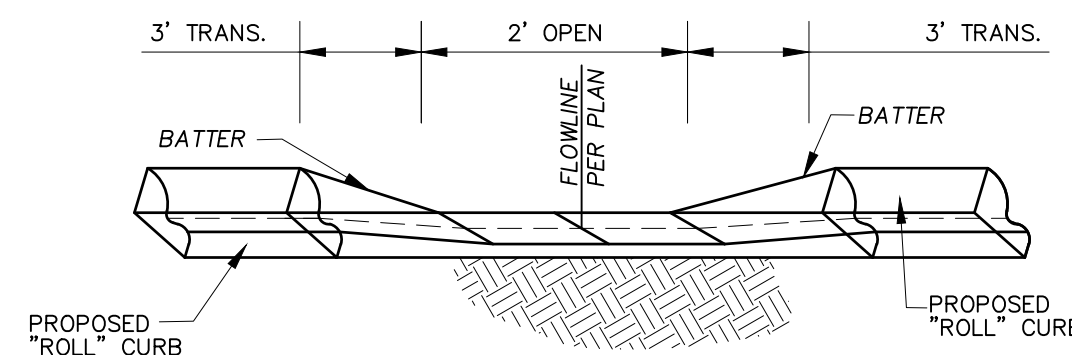
2 PUBLIC STREET SECTION - 8TH STREET
NOT TO SCALE



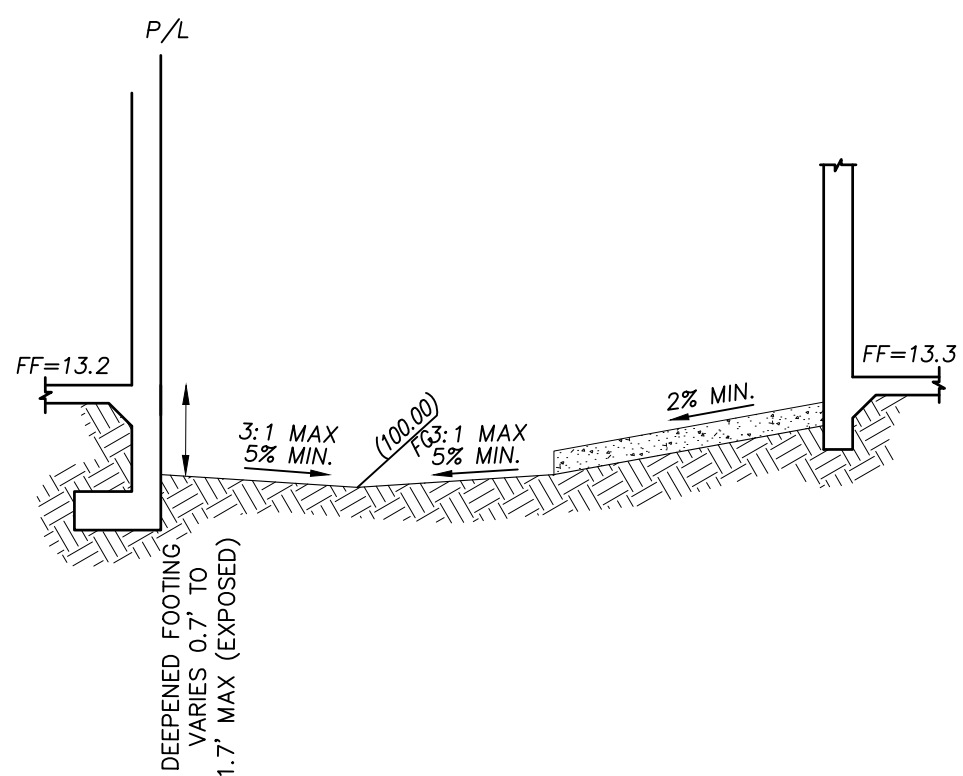
3 PUBLIC STREET SECTION - SWEENEY AVENUE
NOT TO SCALE



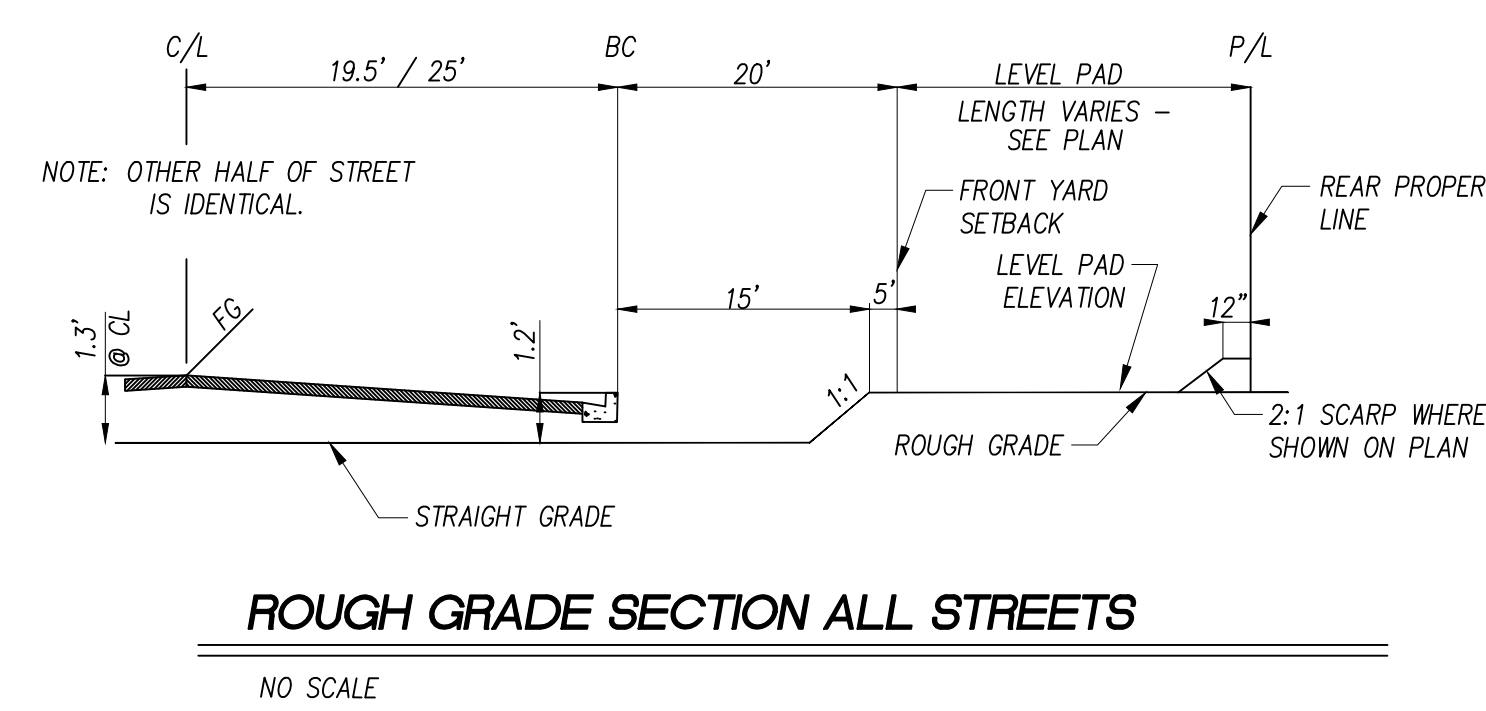
4 PRIVATE STREET SECTION - PRIVATE ALLEY
NOT TO SCALE



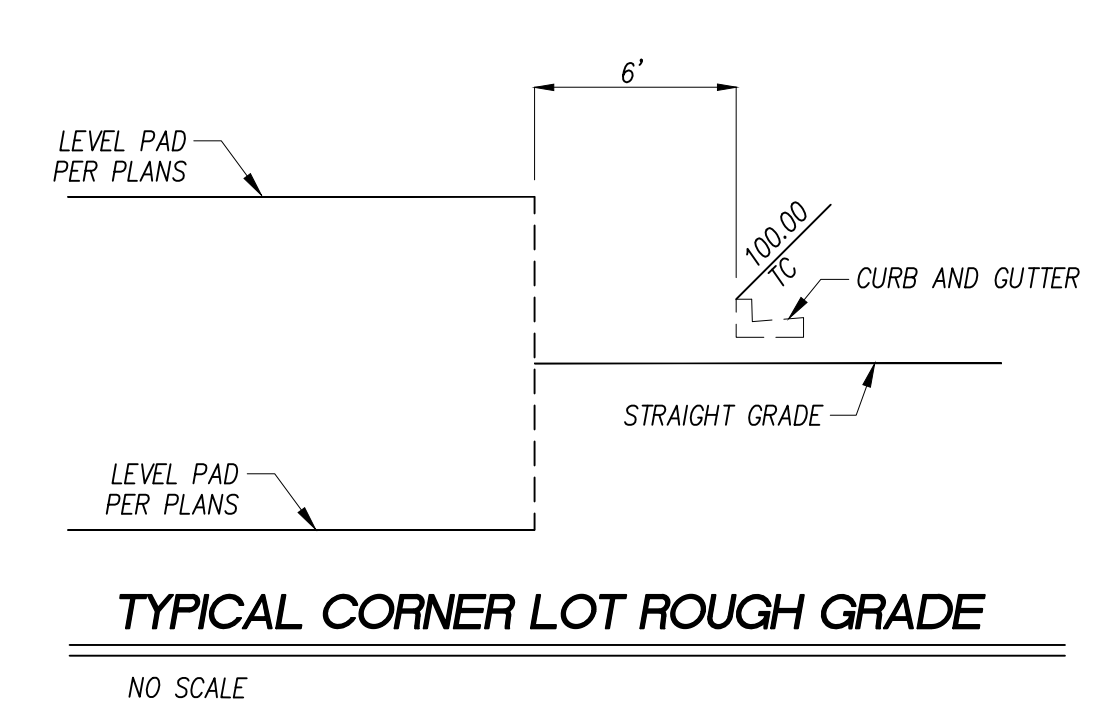
B 2' WIDE CURB OPENING DETAIL
NOT TO SCALE



S SECTION
NOT TO SCALE



ROUGH GRADE SECTION ALL STREETS
NO SCALE

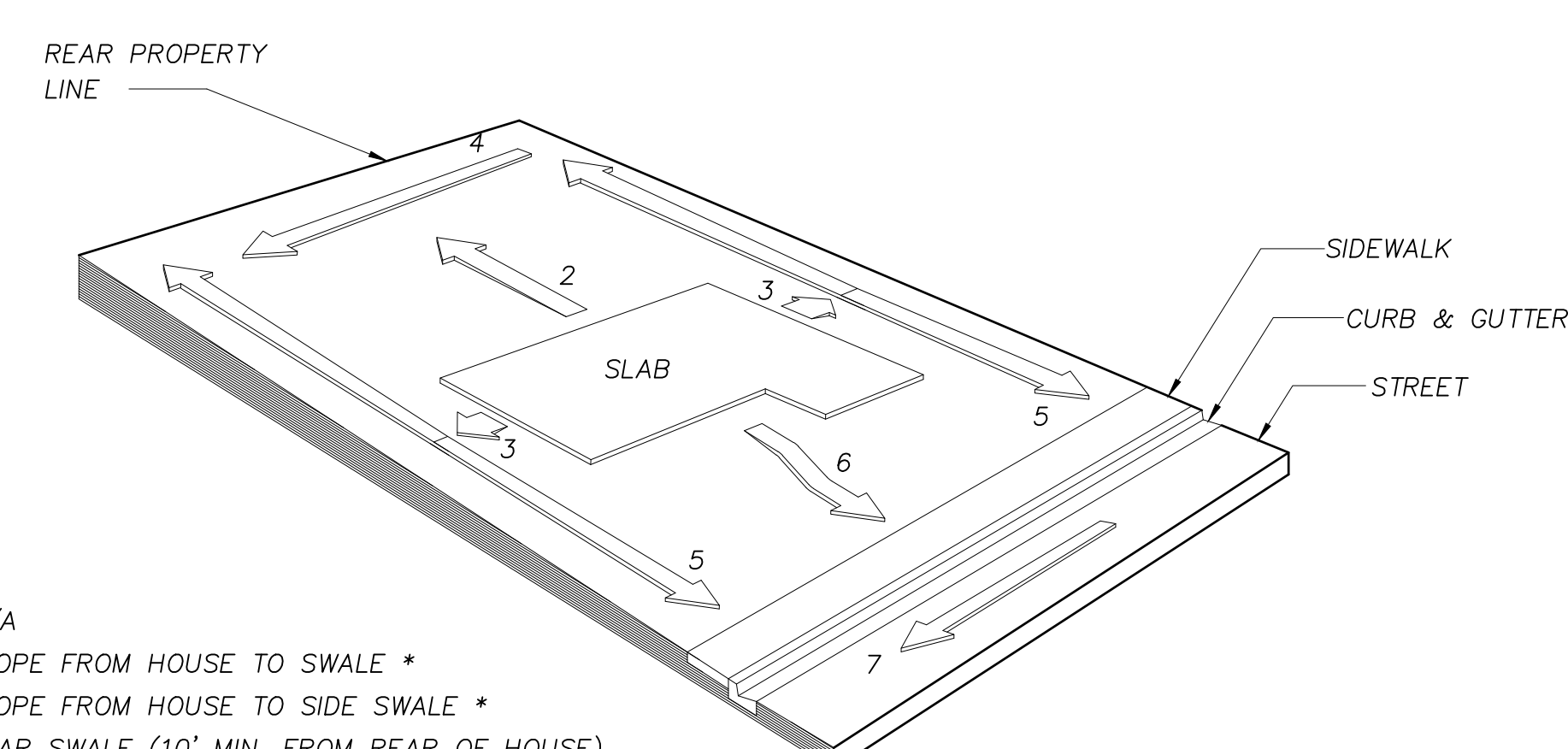


TYPICAL CORNER LOT ROUGH GRADE
NO SCALE

WALL FOOTING NOTE:
ALL OF THE RETAINING WALL HEIGHTS ARE DETERMINED WITH THE TOP OF THE FOOTING BEING APPROXIMATELY 4" BELOW THE LOW SIDE GRADE. WITH THE EXCEPTION OF RETAINING WALLS WHICH ARE NEXT TO A SIDEWALK, ALL OF THESE ARE FIGURED TO HAVE THE TOP OF FOOTING BEING 12" BELOW THE TOP OF THE SIDEWALK.

WALL FOOTING DRAINAGE NOTE:
ALL RETAINING WALL TO HAVE 2" DIA. WEEP HOLES LINED WITH PVC @ 8' ON CENTER LOCATED 3" ABOVE THE LOWEST ADJACENT GRADE AND WATERPROOFING PER 1805.3 OF 2009 IBC.

CMU WALL NOTE:
THE RETAINING/SCREEN WALLS SHOWN HEREON ARE REPRESENTATIVE ONLY. REFER TO STRUCTURAL PLANS FOR DESIGN, INCLUDING, BUT NOT LIMITED TO DRAINAGE CONSIDERATIONS FOR WEEP NOTES, DRAINAGE BACK FILL, WATERPROOFING, AND DRAIN PIPES AS MAY BE APPLICABLE.



- N/A
- SLOPE FROM HOUSE TO SWALE *
- SLOPE FROM HOUSE TO SIDE SWALE *
- REAR SWALE (10' MIN. FROM REAR OF HOUSE)
- SIDE SWALE (MINIMUM 1%)
- SLOPE FROM HOUSE TO SIDEWALK *
- SLOPE OF STREET

* 5% MINIMUM SLOPE FOR 10' AWAY FROM FOUNDATIONS

TYPICAL GRADING - FHA TYPE 'B' DRAINAGE
NOT TO SCALE

SCALE: N/A	PROJECT NO. 221-20002
DESIGNED BY: []	COMMENTS ADDRESSED BY: []
CHECKED BY: []	DATE: []
DRAWN BY: []	BY: []
THOMASON CONSULTING ENGINEERS 7080 L.A. CIENEGA STREET, SUITE 200 LAS VEGAS, NEVADA 89119 TEL: 702-932-6125 FAX: 702-932-6129	
KAVISON HOMES 237 CHACO CANYON, HENDERSON, NEVADA, 89074 8TH / FRANKLIN DETAIL SHEET	
PH: (702) 721-6111	FAX: []
SHEET D1 7 OF 7 DRAWING NO.	