DS #: 0 5273

APN: 139-20-411-015

PROJECT: Rancho and Vegas Townhomes (Technical)

SUBMITTAL: 2nd

SCANNED BY/DATE:

CHECKED BY/DATE:



CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM				DATE: June 17, 2020
TO: **Land Development Services** Department of Building & Safety				FROM: Albert Sung, P.E. Flood Control Project Engineer Department of Public Works
SUBJECT:	Drainage Study for:			**COPIES TO:**
Rancho and Vegas Townhomes (Technical)				Horrocks Engineers
Cross Streets:	SEC of Rancho Drive & Holly Avenue			Harmony Homes, LLC
File Number:	F:\Depot\DSMemos\DS5273B.doc			Bart Anderson, P.E., DevCo
Parcel Number:	139-20-411-015			CCPW
Zoning Action:	TMP-73061			NDOT
FEMA Flood Zone	YES	NO **X**		
Proposed Storm Drain	YES **X**	NO		

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1st Submittal	4/24/2020	5/7/2020	Not Approved	$400.00	3824245: $400
2nd Submittal	6/8/2020	6/17/2020	See Comments Below	$400.00	3876442: $400
			TOTAL FEES (LDDRS):	**$800.00**	----

REMARKS:

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

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

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

2. The project proposes to construct a driveway entrance off of *Rancho Road*, a *Nevada Department of Transportation* (NDOT) right-of-way. The engineer must contact NDOT for occupancy / encroachment permit for the proposed project.

3. The subject project is adjacent to an ongoing capital improvement project in *Rancho Road*, "*Rancho Road Improvements – Mesquite Avenue to Decatur Boulevard*". The engineer must coordinate with the project manager, Mr. Michael Sturdivant of *City Public Works Department* at (702) 229-6734 for acceptable street improvement design in *Rancho Road* prior to the final approval of the improvement plans.

4. **Previous Comment #5:** Per **Sheet C2.9A** and **Sheet C2.10A**, two discharge points had been added at the southern property line. Note that the more discharge points the more burden for the adjacent owner to maintain. Re-design to keep only one discharge point. Revise the grading plans and all pertinent drainage condition maps accordingly.

   Provide construction note for wall opening on the pertinent grading plans.

5. **Previous Comment #7**: Revise **Detail Section 1/C6.1** to provide solid grout to the bottom three (3) courses of the proposed 8"-CMU wall.

6. **Previous Comment #8**: **Sheet C2.2**: The response in the last submittal was that besides the 30'-drainage easement to accept the 60cfs from *Holly Lane*, an additional eight (8) wall openings are provided to drain the flow. However, the grading plan is not clear how many wall openings and what are the spacing between the openings. Review and revise accordingly.

    - **Detail Section M/C6.0** shows roll curb while **Construction Note G3** shows "L"-curb adjacent to the wall at APN: 139-20-401-004. Review and revise accordingly.

    - It is not clear whether the previous parking lot is still a parking lot. Provide parking stall delineation in the next submittal.

7. **Sheet C2.8 and Sheet C2.8A**: Drainage easements ES-E2 (10'-wide) and ES-P3 (15'-wide) are located next to each other. ES-E2 is proposed to accept a 100-year flow of 25cfs while ES-P3 will accept 96cfs. The widths are not that much different however the flows are substantially different. In the study, it was stated that an orifice will regulate the flow distribution, however, the grading plans did not match. Address and resolve in the next submittal.

8. At the east property line, per the *Worksheet for ES-P3 Overflow Weir* calculation, a crest length of 90' was used. However, per the grading plan, it is almost the entire east property line is used for weir. Address and resolve in the next submittal.

9. **Sheet C6.1: Detail Section 6A** shows that a proposed wrought iron gate and a portion of the concrete pad spillway are encroaching into the adjacent property (APN: 139-20-411-012). Review and revise accordingly.

10. Coordinate with the adjacent parcel owner to the east (APN: 139-20-411-012) for acceptance of the proposed drainage pattern and some offsite work may need to be done to the consent of the adjacent owner. A notarized letter of acknowledgment from the adjacent owner must be obtained prior to the final approval of the subject drainage study.

11. All of the proposed onsite drainage easements **ES-P1** to **ES-P5** are not clear to be identified on the grading plans or the drainage condition maps. Provide an overall onsite site plan with only the proposed drainage easements identified in the next submittal.

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/AYS

T/R/S: T20S/R61E/20
AREA M-20

HORROCKS
ENGINEERS

1401 N. Green Valley Parkway, Ste. 160
Henderson, NV 89074
702-966-4063
www.horrocks.com

To: **City of Las Vegas**
Development Review
333 N Rancho Dr.
Las Vegas, NV 89106

From: **David Clark**

Date: June 4, 2020 **Transmittal**

Subject: **Addendum 1 for Technical Drainage Study for Rancho & Vegas Townhomes, DS 5273 (APN 139-20-411-015),**

The following items are: ☐ Requested

☒ Enclosed

☐ Sent Separately via Courier

No. of Copies	Description
1	Subject TDS ADD1
1	CD
1	Grading Plans (Folded)

These data are submitted:

☒ For your review

_____
Signature

Appendix B – Hydrologic Calculations

Interim Phase 1 HEC-1 Model

Interim Phase 2 HEC-1 Model

Ultimate HEC-1 Model

FOR APPENDIX B-D EVERYTHING IS OKAY. I CHECKED EACH NUMBER BASED ON SOME REVISED CALC, ALL ARE FINE.

HEC-1 INTERIM PHASE 1 - 10 YR

```
1****************************************                    ****************************************
 *                                      *                    *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                    *    U.S. ARMY CORPS OF ENGINEERS      *
 *               JUN   1998             *                    *    HYDROLOGIC ENGINEERING CENTER     *
 *            VERSION 4.1               *                    *          609 SECOND STREET           *
 *                                      *                    *       DAVIS, CALIFORNIA 95616        *
 *  RUN DATE   05JUN20  TIME  13:00:07  *                    *           (916) 756-1104             *
 *                                      *                    *                                      *
 ****************************************                    ****************************************

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


          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

1                                                  HEC-1 INPUT                                                 PAGE  1

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

                        *DIAGRAM
            1           ID
            2           ID      <><><><><><><><><><><><><><><><><><><><>
            3           ID        RANCHO & VEGAS TOWNHOMES
            4           ID        HYDROLOGIC MODEL
            5           ID        --------------------------
            6           ID
            7           ID        10-YR STORM EVENT
            8           ID        --------------------------
            9           ID        HORROCKS ENGINEERING
           10           ID        INTERIM PHASE 1 CONDITION
           11           ID        FILE: INT PH1.DAT
           12           ID        PROJECT No: NV-2105-1911
           13           ID        DATE:  MAY 15 2020
           14           ID      <><><><><><><><><><><><><><><><><><><><>
           15           ID
           16           ID       ---> 6-HOUR / SDN 3 <---
           17           ID
           18           IT       5       0       0     300
           19           IO       5
           20           IN       5
           21           JR    PREC    1.00
                        *
           22           KK    OFE1
           23           KM    OFFSITE FLOW AT NORTHWEST CORNER OF PROJECT SITE
           24           BA   .0228
           25           PB    1.58
           26           PC    .000    .020    .057    .070    .087    .108    .124    .130    .130    .130
           27           PC    .130    .130    .130    .133    .140    .142    .148    .158    .172    .181
           28           PC    .190    .197    .199    .200    .201    .204    .214    .229    .241    .249
           29           PC    .251    .256    .270    .278    .281    .283    .295    .322    .352    .409
           30           PC    .499    .590    .710    .744    .781    .812    .819    .835    .851    .856
           31           PC    .860    .868    .876    .888    .910    .926    .937    .950    .970    .976
           32           PC    .982    .985    .987    .989    .990    .993    .993    .994    .995    .998
           33           PC    .998    .999   1.00
           34           LS       0      88
           35           UD    .210
                        *
           36           KK    STE3
           37           BA   .0024
           38           LS       0      92
           39           UD    .134
                        *
           40           KK    CI11
           41           KM   COMBINES OFFISTE BASIN OFE1 AND STREET STE3.
           42           HC       2
                        *
1                                                  HEC-1 INPUT                                                 PAGE  2

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

```
 43          KK  NH_HOL
 44          KM   CENTRAL NEIGHBORHOOD REFERENCE STUDY 100-YR BASEFLOW
 45          KM   WHICH OVERSPILL INTO HOLLY AVENUE. SEE THE STUDY
 46          KM   MAP FOR DETAIL.
 47          BA   .0001
 48          BF       0
 49          LS       0      01
 50          UD   .0001
             *

 51          KK   DUMMY
 52          KM   DUMMY CARD TO RESET BASEFLOW AND HAS NO FLOW
 53          BA   .0001
 54          BF     .00
 55          LS       0      01
 56          UD   .0001
             *

 57          KK    STE4
 58          BA   .0009
 59          LS       0      97
 60          UD   0.100
             *

 61          KK    OFD3
 62          BA   .0013
 63          LS       0      95
 64          UD   0.050
             *

 65          KK    CI21
 66          KM   COMBINES CI11, NH-HOL BASEFLOW, STREET STE4, AND OFFSITE BASIN OFD3.
 67          HC       5

 68          KK    DIV1
 69          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
 70          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
 71          KM   IS THE AMOUNT DIVERTED)
 72          KM   DIV1 AMOUNT THAT ENTERS INTO PROJECT SITE AND COMBINE WITH OND3
 73          DT      D1
 74          DI      14
 75          DQ       7
             *

 76          KK    OND3
 77          BA   .0035
 78          LS       0      95
 79          UD   0.102
             *
1                                        HEC-1 INPUT                                          PAGE  3

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

 80          KK   CI5A1
 81          KM   COMBINES DIV1 AND OND3.
 82          HC       2
             *

 83          KK   OFD2A
 84          BA   .0117
 85          LS       0      92
 86          UD   0.122
             *

 87          KK   RETD1
 88          KM   RETRIEVE D1 - (THIS CARD RETRIEVES THE DIVERTED FLOW)
 89          KM   FLOW THAT RETAINS ON HOLLY AVENUE
 90          DR      D1
             *

 91          KK    CI31
 92          KM   COMBINES OFD2A AND D1.
 93          HC       2
             *

 94          KK    DIV2
 95          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
 96          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
 97          KM   IS THE AMOUNT DIVERTED)
 98          KM   DIV2 RUNOFF AMOUNT ENTERS INTO PROJECT SITE
 99          KM   AND COMBINES WITH OND1
100          DT      D2
101          DI      16
102          DQ      16
             *

103          KK    OND1
104          BA   .0013
```

```
 105          LS       0      95
 106          UD   0.050
              *

 107          KK    CI41
 108          KM   COMBINES DIV2 AND OND1.
 109          HC       2
              *

 110          KK    DIV3
 111          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
 112          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
 113          KM   IS THE AMOUNT DIVERTED)
 114          KM   DIV3 RUNOFF AMOUNT FLOWS SOUTH AND COMBINES WITH CI5A1 FLOW AMOUNT
 115          DT      D3
 116          DI       1
 117          DQ       0
              *
1                                      HEC-1 INPUT                                          PAGE  4

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


 118          KK   CI5B1
 119          KM   COMBINES DIV3 AND CI5A1.
 120          HC       2
              *

 121          KK    DIV4
 122          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
 123          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
 124          KM   IS THE AMOUNT DIVERTED)
 125          KM   DIV4 RUNOFF AMOUNT FLOWS SOUTH AND COMBINES WITH ONI5A
 126          DT      D4
 127          DI      11
 128          DQ       0
              *

 129          KK   OND5A
 130          BA   .0012
 131          LS       0      95
 132          UD   0.051
              *

 133          KK   CI8A1
 134          KM   COMBINES DIV4 AND ONI5A.
 135          HC       2
              *

 136          KK   DUMMY
 137          KM   THIS IS NOT ACTUALLY FLOW SPLIT OR DIVERSION. TOTAL DISCHARGE OF CI8A1
 138          KM   FLOWS EAST TOWARD CI8B1. THAT IS, DUMMY = 0 CFS.
 139          KM   THIS DUMMY CARD AS FLOW SPLIT IS REQUIRE TO
 140          KM   ENABLE HEC-1 TO CREATE FLOW TREE.
 141          DT   CI8A1
 142          DI      12
 143          DQ      12
              *

 144          KK    ONI6
 145          BA   .0106
 146          LS       0      88
 147          UD   0.159
              *

 148          KK   CI9A1
 149          KM   COMBINES DUMMY AND ONI6.
 150          HC       2
              *

 151          KK   OFD2B
 152          BA   .0045
 153          LS       0      92
 154          UD   0.112
              *
1                                      HEC-1 INPUT                                          PAGE  5

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


 155          KK   RETD2
 156          KM   RETRIEVE D2 - (THIS CARD RETRIEVES THE DIVERTED FLOW)
 157          KM   FLOW THAT RETAINS ON HOLLY AVENUE
 158          DR      D2
              *

 159          KK    CI61
 160          KM   COMBINES OFD2B, AND D2.
 161          HC       2
              *
```

```
 162          KK    DIV5
 163          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
 164          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
 165          KM    IS THE AMOUNT DIVERTED)
 166          KM   DIV5 RUNOFF AMOUNT FLOWS SOUTH AND ENTERS INTO THE PROJECT SITE.
 167          DT      D5
 168          DI      19
 169          DQ      19
              *

 170          KK    OND2
 171          BA   .0036
 172          LS       0      95
 173          UD   0.097
              *

 174          KK   RETD3
 175          KM   RETRIEVE D3 - (THIS CARD RETRIEVES THE DIVERTED FLOW)
 176          KM   THE FLOW D3 ENTERS INTO OND2 BASIN
 177          DR      D3
              *

 178          KK    OND4
 179          BA   .0023
 180          LS       0      95
 181          UD   0.067
              *

 182          KK   RETD4
 183          KM   RETRIEVE D4 - (THIS CARD RETRIEVES THE DIVERTED FLOW)
 184          KM   THE FLOW D4 ENTERS INTO OND4 BASIN
 185          DR      D4
              *

 186          KK    CI71
 187          KM   COMBINES DIV5, OND2, D3, OND4, AND D4.
 188          HC       5
              *
1                                        HEC-1 INPUT                                          PAGE  6

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

 189          KK    DIV6
 190          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
 191          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
 192          KM    IS THE AMOUNT DIVERTED)
 193          KM   DIV6 RUNOFF AMOUNT FLOWS SOUTH.
 194          DT      D6
 195          DI       6
 196          DQ       6
              *

 197          KK  RETCI8A1
 198          KM   RETRIEVE CI8A1 - (THIS CARD RETRIEVES THE DIVERTED FLOW)
 199          KM   THE FLOW CI8A1 COMBINES WITH ONI5B BASIN, AND DIV6
 200          DR   CI8A1
              *

 201          KK   ONI5B
 202          BA   .0037
 203          LS       0      88
 204          UD   0.100
              *

 205          KK   CI8B1
 206          KM   COMBINES DIV6, CI8A1, AND ONI5B.
 207          HC       3
              *

 208          KK    DIV7
 209          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
 210          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
 211          KM   IS THE AMOUNT DIVERTED)
 212          KM   DIV7 RUNOFF AMOUNT FLOWS SOUTH.
 213          DT      D7
 214          DI      14
 215          DQ      14
              *

 216          KK   DUMMY
 217          KM   DUMMY CARD TO MAKE HEC-1 RUN
 218          BA   .0001
 219          BF     .00
 220          LS       0      01
 221          UD   .0001
              *

 222          KK   CI8C1
 223          KM   IS EQUAL DIV7
 224          HC       2
```

```
                     *
1                                        HEC-1 INPUT                                                PAGE  7

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


            225      KK   DIV7A
            226      KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
            227      KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
            228      KM   IS THE AMOUNT DIVERTED)
            229      KM   DIV7A RUNOFF AMOUNT FLOWS SOUTH.
            230      DT     D7A
            231      DI       0
            232      DQ       0
                     *

            233      KK   CI9C1
            234      KM   COMBINES DIV7A AND CI9A1.
            235      HC       2
                     *

            236      KK  RETD7A
            237      KM   RETRIEVE D7A - (THIS CARD RETRIEVES THE DIVERTED FLOW)
            238      KM   THE FLOW D7A ENTERS INTO 15'PORPOSED EASEMENT
            239      DR     D7A
                     *

            240      KK   DUMMY
            241      KM   DUMMY CARD TO MAKE HEC-1 RUN
            242      BA   .0001
            243      BF     .00
            244      LS       0      01
            245      UD
                     *

            246      KK   CI9D1
            247      KM    EQUAL TO D7A
            248      HC       2
                     *

            249      KK    DIV8
            250      KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
            251      KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
            252      KM   IS THE AMOUNT DIVERTED)
            253      DT      D8
            254      DI       0
            255      DQ       0
                     *

            256      KK   CI9B1
            257      KM   COMBINES CI9C1 AND DIV8.
            258      HC       2
                     *

            259      KK   RETD8
            260      KM   RETRIEVE D8 - (THIS CARD RETRIEVES THE DIVERTED FLOW)
            261      KM   THE FLOW D8 ENTERS INTO 10' EXISTING EASEMENT
            262      DR      D8
                     *
1                                        HEC-1 INPUT                                                PAGE  8

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


            263      KK   RETD7
            264      KM   RETRIEVE D7 - (THIS CARD RETRIEVES THE DIVERTED FLOW)
            265      KM   THE FLOW D7 ENTERS INTO 10'EXISTING EASEMENT
            266      DR      D7
                     *

            267      KK   CI9E1
            268      KM   COMBINES D7 AND D8.
            269      HC       2
                     *

            270      KK    OFD5
            271      BA   .0237
            272      LS       0      88
            273      UD   0.252
                     *

            274      KK    OFD6
            275      BA   .0170
            276      LS       0      95
            277      UD   0.128
                     *

            278      KK   CI121
            279      KM   COMBINES OFD5 AND OFD6.
            280      HC       2
                     *
```

```
 281          KK  NH-RAN
 282          KM   CENTRAL NEIGHBORHOOD REFERENCE STUDY 100-YR BASEFLOW
 283          KM   WHICH CONTINUE ON RANCHO AVENUE. SEE THE STUDY
 284          KM   MAP FOR DETAIL.
 285          BA   .0001
 286          BF      81
 287          LS       0      01
 288          UD   .0001
                   *

 289          KK   DUMMY
 290          KM   DUMMY CARD TO RESET BASEFLOW AND HAS NO FLOW
 291          BA   .0001
 292          BF     .00
 293          LS       0      01
 294          UD   .0001
                   *

 295          KK    STD1
 296          BA   .0038
 297          LS       0      98
 298          UD   0.077
                   *
1                                        HEC-1 INPUT                                        PAGE  9

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


 299          KK    OFD7
 300          BA   .0045
 301          LS       0      95
 302          UD   0.081
                   *

 303          KK    OFD4
 304          BA   .0012
 305          LS       0      95
 306          UD   0.050
                   *

 307          KK   STD2A
 308          BA   .0032
 309          LS       0      98
 310          UD   0.071
                   *

 311          KK   CI101
 312          KM   COMBINES CI121, NH-RAN, STD1, OFD7, OFD4, AND STD2A.
 313          HC       7
                   *

 314          KK   OFD2C
 315          BA   .0026
 316          LS       0      92
 317          UD   0.120
                   *

 318          KK   RETD5
 319          KM   RETRIEVE D5 - (THIS CARD RETRIEVES THE DIVERTED FLOW)
 320          KM   THE FLOW D5 DO NOT ENTER INTO THE PROJECT SITE AND
 321          KM   REMAINS ON HOLLY AVENUE.
 322          DR      D5
                   *

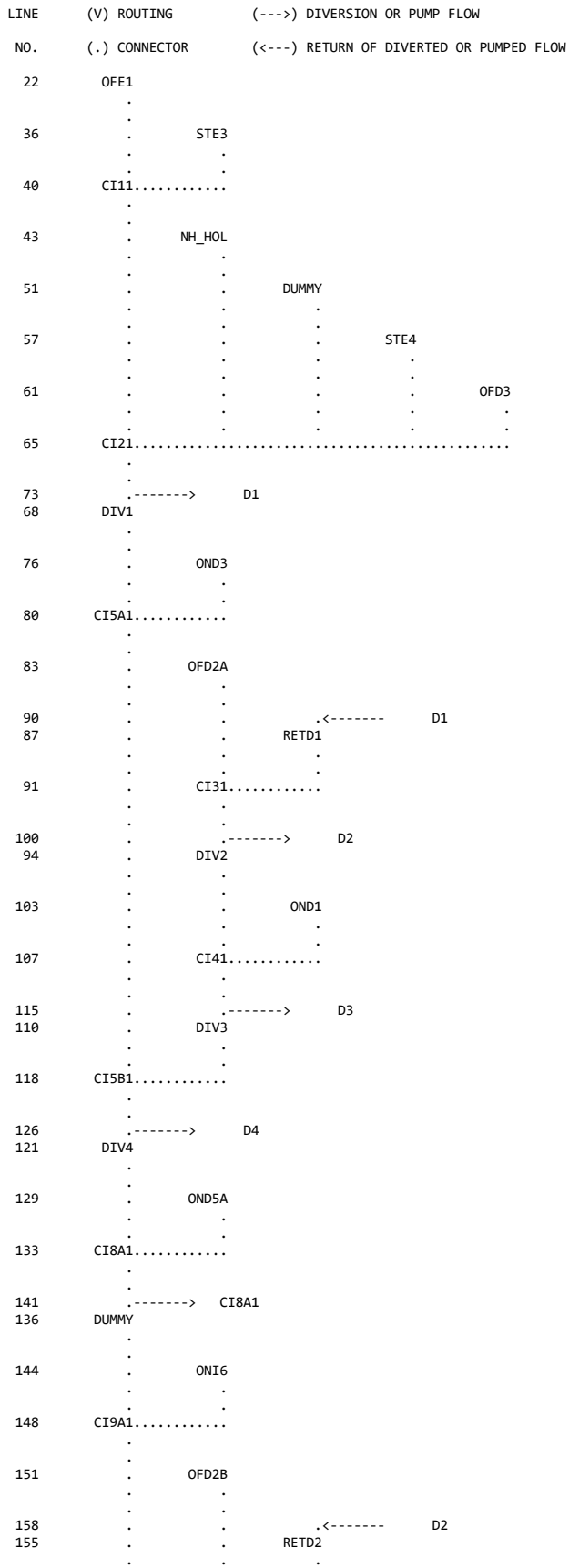
 323          KK    OND7
 324          BA   .0003
 325          LS       0      95
 326          UD   0.050
                   *

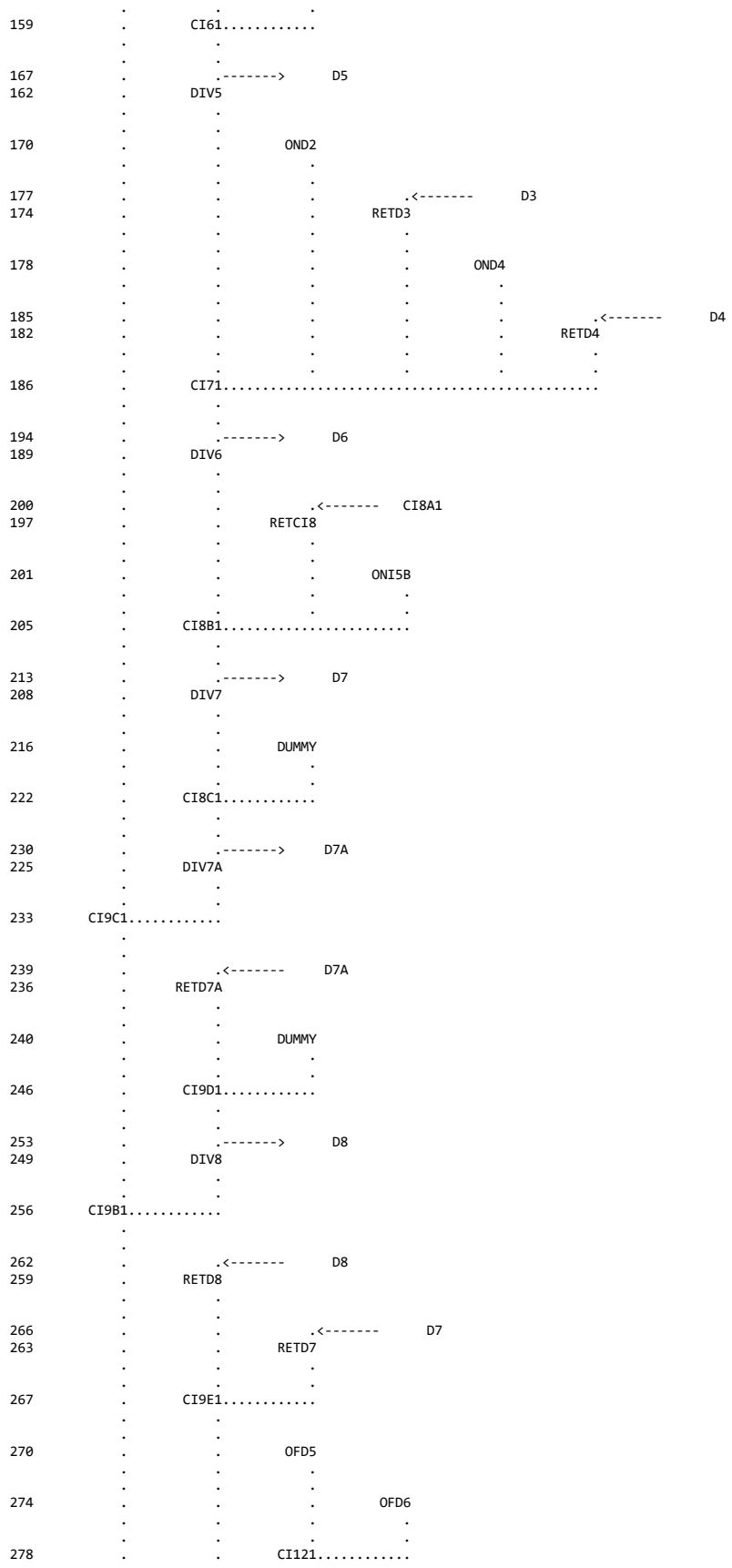
 327          KK    STD5
 328          BA   .0021
 329          LS       0      97
 330          UD   0.072
                   *

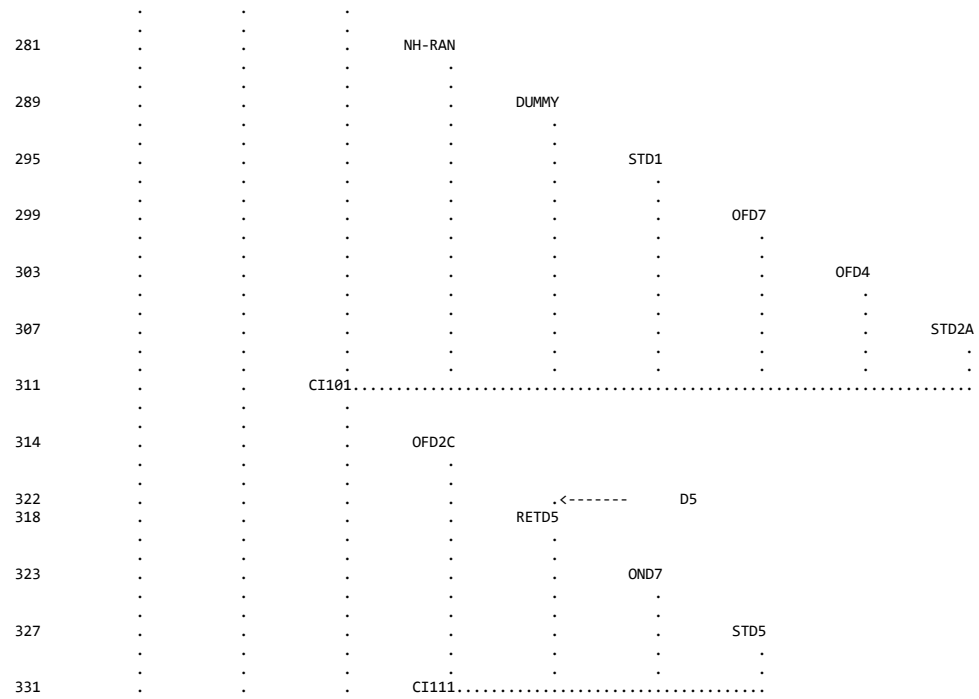
 331          KK   CI111
 332          KM   COMBINES OFD2C, D5, OND7, AND STD5
 333          HC       4
                   *
                   *
                   *
1                                        HEC-1 INPUT                                        PAGE 10

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

 334          ZZ
1
               SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
```


LINE
NO.
(V) ROUTING
(.) CONNECTOR
(--->) DIVERSION OR PUMP FLOW
(<---) RETURN OF DIVERTED OR PUMPED FLOW
22 OFE1
36 STE3
40 CI11
43 NH_HOL
51 DUMMY
57 STE4
61 OFD3
65 CI21
73 D1
68 DIV1
76 OND3
80 CI5A1
83 OFD2A
90 D1
87 RETD1
91 CI31
100 D2
94 DIV2
103 OND1
107 CI41
115 D3
110 DIV3
118 CI5B1
126 D4
121 DIV4
129 OND5A
133 CI8A1
141 CI8A1
136 DUMMY
144 ONI6
148 CI9A1
151 OFD2B
158 D2
155 RETD2


CI61
D5
DIV5
OND2
D3
RETD3
OND4
D4
RETD4
CI71
D6
DIV6
CI8A1
RETCI8
ONI5B
CI8B1
D7
DIV7
DUMMY
CI8C1
D7A
DIV7A
CI9C1
D7A
RETD7A
DUMMY
CI9D1
D8
DIV8
CI9B1
D8
RETD8
D7
RETD7
CI9E1
OFD5
OFD6
CI121



(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
1*****************************************                    *****************************************
 *                                       *                    *                                       *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                    *    U.S. ARMY CORPS OF ENGINEERS       *
 *              JUN   1998               *                    *    HYDROLOGIC ENGINEERING CENTER      *
 *           VERSION 4.1                 *                    *          609 SECOND STREET            *
 *                                       *                    *       DAVIS, CALIFORNIA 95616         *
 *  RUN DATE   05JUN20  TIME  13:00:07   *                    *           (916) 756-1104              *
 *                                       *                    *                                       *
 *****************************************                    *****************************************
```

```
                          <><><><><><><><><><><><><><><><><><><><>
                            RANCHO & VEGAS TOWNHOMES
                            HYDROLOGIC MODEL
                            ---------------------------

                            10-YR STORM EVENT
                            ---------------------------
                            HORROCKS ENGINEERING
                            INTERIM PHASE 1 CONDITION
                            FILE: INT PH1.DAT
                            PROJECT No: NV-2105-1911
                            DATE:  MAY 15 2020
                          <><><><><><><><><><><><><><><><><><><><>

                           ---> 6-HOUR / SDN 3 <---


  19 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
                    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


                                                                    RATIOS APPLIED TO PRECIPITATION
 OPERATION       STATION     AREA    PLAN                      RATIO 1
                                                                  1.00

 HYDROGRAPH AT
+                   OFE1       .02     1   FLOW                  11.
                                               TIME                3.67

 HYDROGRAPH AT
+                   STE3       .00     1   FLOW                   2.
                                               TIME                3.58

   2 COMBINED AT
+                   CI11       .03     1   FLOW                  12.
                                               TIME                3.67

 HYDROGRAPH AT
+                  NH_HOL      .00     1   FLOW                   0.
                                               TIME                .00

 HYDROGRAPH AT
+                  DUMMY       .00     1   FLOW                   0.
                                               TIME                .00

 HYDROGRAPH AT
+                   STE4       .00     1   FLOW                   1.
                                               TIME                3.50

 HYDROGRAPH AT
+                   OFD3       .00     1   FLOW                   1.
                                               TIME                3.50

   5 COMBINED AT
+                   CI21       .03     1   FLOW                  14.
                                               TIME                3.58

 DIVERSION TO
+                     D1       .03     1   FLOW                   7.
                                               TIME                3.58

 HYDROGRAPH AT
+                   DIV1       .03     1   FLOW                   7.
                                               TIME                3.58

 HYDROGRAPH AT
+                   OND3       .00     1   FLOW                   3.
                                               TIME                3.50

   2 COMBINED AT
+                  CI5A1       .03     1   FLOW                  10.
                                               TIME                3.58

 HYDROGRAPH AT
+                  OFD2A       .01     1   FLOW                   9.
                                               TIME                3.58

 HYDROGRAPH AT
+                  RETD1       .00     1   FLOW                   7.
                                               TIME                3.58

   2 COMBINED AT
+                   CI31       .01     1   FLOW                  16.
                                               TIME                3.58

 DIVERSION TO
+                     D2       .01     1   FLOW                  16.
                                               TIME                3.58

 HYDROGRAPH AT
+                   DIV2       .01     1   FLOW                   0.
                                               TIME                .00
```

```
 HYDROGRAPH AT
+                   OND1       .00     1   FLOW          1.
                                           TIME         3.50

  2 COMBINED AT
+                   CI41       .01     1   FLOW          1.
                                           TIME         3.50

 DIVERSION TO
+                     D3       .01     1   FLOW          0.
                                           TIME          .00

 HYDROGRAPH AT
+                   DIV3       .01     1   FLOW          1.
                                           TIME         3.50

  2 COMBINED AT
+                  CI5B1       .04     1   FLOW         11.
                                           TIME         3.58

 DIVERSION TO
+                     D4       .04     1   FLOW          0.
                                           TIME          .00

 HYDROGRAPH AT
+                   DIV4       .04     1   FLOW         11.
                                           TIME         3.58

 HYDROGRAPH AT
+                  OND5A       .00     1   FLOW          1.
                                           TIME         3.50

  2 COMBINED AT
+                  CI8A1       .05     1   FLOW         12.
                                           TIME         3.50

 DIVERSION TO
+                  CI8A1       .05     1   FLOW         12.
                                           TIME         3.50

 HYDROGRAPH AT
+                  DUMMY       .05     1   FLOW          0.
                                           TIME          .00

 HYDROGRAPH AT
+                   ONI6       .01     1   FLOW          6.
                                           TIME         3.58

  2 COMBINED AT
+                  CI9A1       .06     1   FLOW          6.
                                           TIME         3.58

 HYDROGRAPH AT
+                  OFD2B       .00     1   FLOW          3.
                                           TIME         3.58

 HYDROGRAPH AT
+                  RETD2       .00     1   FLOW         16.
                                           TIME         3.58

  2 COMBINED AT
+                   CI61       .00     1   FLOW         19.
                                           TIME         3.58

 DIVERSION TO
+                     D5       .00     1   FLOW         19.
                                           TIME         3.58

 HYDROGRAPH AT
+                   DIV5       .00     1   FLOW          0.
                                           TIME          .00

 HYDROGRAPH AT
+                   OND2       .00     1   FLOW          3.
                                           TIME         3.50

 HYDROGRAPH AT
+                  RETD3       .00     1   FLOW          0.
                                           TIME          .00

 HYDROGRAPH AT
+                   OND4       .00     1   FLOW          2.
                                           TIME         3.50

 HYDROGRAPH AT
+                  RETD4       .00     1   FLOW          0.
                                           TIME          .00

  5 COMBINED AT
+                   CI71       .01     1   FLOW          6.
                                           TIME         3.50
```

```
 DIVERSION TO
+                     D6       .01     1   FLOW          6.
                                            TIME         3.50

 HYDROGRAPH AT
+                    DIV6       .01     1   FLOW          0.
                                            TIME          .00

 HYDROGRAPH AT
+                  RETCI8       .00     1   FLOW         12.
                                            TIME         3.50

 HYDROGRAPH AT
+                   ONI5B       .00     1   FLOW          2.
                                            TIME         3.50

  3 COMBINED AT
+                   CI8B1       .01     1   FLOW         14.
                                            TIME         3.50

 DIVERSION TO
+                     D7       .01     1   FLOW         14.
                                            TIME         3.50

 HYDROGRAPH AT
+                    DIV7       .01     1   FLOW          0.
                                            TIME          .00

 HYDROGRAPH AT
+                   DUMMY       .00     1   FLOW          0.
                                            TIME          .00

  2 COMBINED AT
+                   CI8C1       .01     1   FLOW          0.
                                            TIME          .00

 DIVERSION TO
+                    D7A       .01     1   FLOW          0.
                                            TIME          .00

 HYDROGRAPH AT
+                   DIV7A       .01     1   FLOW          0.
                                            TIME          .00

  2 COMBINED AT
+                   CI9C1       .07     1   FLOW          6.
                                            TIME         3.58

 HYDROGRAPH AT
+                  RETD7A       .00     1   FLOW          0.
                                            TIME          .00

 HYDROGRAPH AT
+                   DUMMY       .00     1   FLOW          0.
                                            TIME          .00

  2 COMBINED AT
+                   CI9D1       .00     1   FLOW          0.
                                            TIME          .00

 DIVERSION TO
+                     D8       .00     1   FLOW          0.
                                            TIME          .00

 HYDROGRAPH AT
+                    DIV8       .00     1   FLOW          0.
                                            TIME          .00

  2 COMBINED AT
+                   CI9B1       .07     1   FLOW          6.
                                            TIME         3.58

 HYDROGRAPH AT
+                   RETD8       .00     1   FLOW          0.
                                            TIME          .00

 HYDROGRAPH AT
+                   RETD7       .00     1   FLOW         14.
                                            TIME         3.50

  2 COMBINED AT
+                   CI9E1       .00     1   FLOW         14.
                                            TIME         3.50

 HYDROGRAPH AT
+                    OFD5       .02     1   FLOW         11.
                                            TIME         3.67

 HYDROGRAPH AT
+                    OFD6       .02     1   FLOW         15.
```

```
                                        TIME         3.58

  2 COMBINED AT
+                  CI121       .04     1   FLOW         25.
                                         TIME         3.58

 HYDROGRAPH AT
+                 NH-RAN       .00     1   FLOW         81.
                                         TIME          .00

 HYDROGRAPH AT
+                  DUMMY       .00     1   FLOW          0.
                                         TIME          .00

 HYDROGRAPH AT
+                   STD1       .00     1   FLOW          5.
                                         TIME         3.50

 HYDROGRAPH AT
+                   OFD7       .00     1   FLOW          5.
                                         TIME         3.50

 HYDROGRAPH AT
+                   OFD4       .00     1   FLOW          1.
                                         TIME         3.50

 HYDROGRAPH AT
+                  STD2A       .00     1   FLOW          4.
                                         TIME         3.50

  7 COMBINED AT
+                  CI101       .05     1   FLOW        117.
                                         TIME         3.50

 HYDROGRAPH AT
+                  OFD2C       .00     1   FLOW          2.
                                         TIME         3.58

 HYDROGRAPH AT
+                  RETD5       .00     1   FLOW         19.
                                         TIME         3.58

 HYDROGRAPH AT
+                   OND7       .00     1   FLOW          0.
                                         TIME         3.50

 HYDROGRAPH AT
+                   STD5       .00     1   FLOW          2.
                                         TIME         3.50

  4 COMBINED AT
+                  CI111       .00     1   FLOW         23.
                                         TIME         3.58


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

HEC-1 INTERIM PHASE 1- 100 YR

```
1****************************************                    ****************************************
 *                                      *                    *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                    *    U.S. ARMY CORPS OF ENGINEERS      *
 *               JUN   1998             *                    *    HYDROLOGIC ENGINEERING CENTER     *
 *            VERSION 4.1               *                    *          609 SECOND STREET           *
 *                                      *                    *       DAVIS, CALIFORNIA 95616        *
 *  RUN DATE   05JUN20  TIME  12:51:17  *                    *           (916) 756-1104             *
 *                                      *                    *                                      *
 ****************************************                    ****************************************

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


          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

1                                              HEC-1 INPUT                                              PAGE  1

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

                        *DIAGRAM
            1           ID
            2           ID      <><><><><><><><><><><><><><><><><><><><>
            3           ID        RANCHO & VEGAS TOWNHOMES
            4           ID        HYDROLOGIC MODEL
            5           ID        --------------------------
            6           ID
            7           ID        100-YR STORM EVENT
            8           ID        --------------------------
            9           ID        HORROCKS ENGINEERING
           10           ID        INTERIM PHASE 1 CONDITION
           11           ID        FILE: INT PH1.DAT
           12           ID        PROJECT No: NV-2105-1911
           13           ID        DATE:  MAY 15 2020
           14           ID      <><><><><><><><><><><><><><><><><><><><>
           15           ID
           16           ID       ---> 6-HOUR / SDN 3 <---
           17           ID
           18           IT       5       0       0     300
           19           IO       5
           20           IN       5
           21           JR    PREC    1.00
                        *
           22           KK    OFE1
           23           KM    OFFSITE FLOW AT NORTHWEST CORNER OF PROJECT SITE
           24           BA   .0228
           25           PB    2.77
           26           PC    .000    .020    .057    .070    .087    .108    .124    .130    .130    .130
           27           PC    .130    .130    .130    .133    .140    .142    .148    .158    .172    .181
           28           PC    .190    .197    .199    .200    .201    .204    .214    .229    .241    .249
           29           PC    .251    .256    .270    .278    .281    .283    .295    .322    .352    .409
           30           PC    .499    .590    .710    .744    .781    .812    .819    .835    .851    .856
           31           PC    .860    .868    .876    .888    .910    .926    .937    .950    .970    .976
           32           PC    .982    .985    .987    .989    .990    .993    .993    .994    .995    .998
           33           PC    .998    .999   1.00
           34           LS       0      88
           35           UD    .210
                        *
           36           KK    STE3
           37           BA   .0024
           38           LS       0      92
           39           UD    .134
                        *
           40           KK    CI11
           41           KM   COMBINES OFFISTE BASIN OFE1 AND STREET STE3.
           42           HC       2
                        *
1                                              HEC-1 INPUT                                              PAGE  2

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

```
 43          KK  NH_HOL
 44          KM   CENTRAL NEIGHBORHOOD REFERENCE STUDY 100-YR BASEFLOW
 45          KM   WHICH OVERSPILL INTO HOLLY AVENUE. SEE THE STUDY
 46          KM   MAP FOR DETAIL.
 47          BA   .0001
 48          BF     285
 49          LS       0      01
 50          UD   .0001
             *

 51          KK   DUMMY
 52          KM   DUMMY CARD TO RESET BASEFLOW AND HAS NO FLOW
 53          BA   .0001
 54          BF     .00
 55          LS       0      01
 56          UD   .0001
             *

 57          KK    STE4
 58          BA   .0009
 59          LS       0      97
 60          UD   0.100
             *

 61          KK    OFD3
 62          BA   .0013
 63          LS       0      95
 64          UD   0.050
             *

 65          KK    CI21
 66          KM   COMBINES CI11, NH-HOL BASEFLOW, STREET STE4, AND OFFSITE BASIN OFD3.
 67          HC       5

 68          KK    DIV1
 69          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
 70          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
 71          KM   IS THE AMOUNT DIVERTED)
 72          KM   DIV1 AMOUNT THAT ENTERS INTO PROJECT SITE AND COMBINE WITH OND3
 73          DT     D1
 74          DI     319
 75          DQ     269
             *

 76          KK    OND3
 77          BA   .0035
 78          LS       0      95
 79          UD   0.102
             *
1                                        HEC-1 INPUT                                          PAGE  3

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

 80          KK   CI5A1
 81          KM   COMBINES DIV1 AND OND3.
 82          HC       2
             *

 83          KK   OFD2A
 84          BA   .0117
 85          LS       0      92
 86          UD   0.122
             *

 87          KK   RETD1
 88          KM   RETRIEVE D1 - (THIS CARD RETRIEVES THE DIVERTED FLOW)
 89          KM   FLOW THAT RETAINS ON HOLLY AVENUE
 90          DR      D1
             *

 91          KK    CI31
 92          KM   COMBINES OFD2A AND D1.
 93          HC       2
             *

 94          KK    DIV2
 95          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
 96          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
 97          KM   IS THE AMOUNT DIVERTED)
 98          KM   DIV2 RUNOFF AMOUNT ENTERS INTO PROJECT SITE, FLOWS SOUTH
 99          KM   AND COMBINES WITH OND1
100          DT     D2
101          DI     287
102          DQ      91
             *

103          KK    OND1
104          BA   .0013
```

```
 105          LS       0      95
 106          UD   0.050
              *

 107          KK    CI41
 108          KM   COMBINES DIV2 AND OND1.
 109          HC       2
              *

 110          KK    DIV3
 111          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
 112          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
 113          KM   IS THE AMOUNT DIVERTED)
 114          KM   DIV3 RUNOFF AMOUNT FLOWS SOUTH AND COMBINES WITH CI5A1 FLOW AMOUNT
 115          DT      D3
 116          DI     198
 117          DQ      25
              *
1                                      HEC-1 INPUT                                          PAGE  4

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


 118          KK   CI5B1
 119          KM   COMBINES DIV3 AND CI5A1.
 120          HC       2
              *

 121          KK    DIV4
 122          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
 123          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
 124          KM   IS THE AMOUNT DIVERTED)
 125          KM   DIV4 RUNOFF AMOUNT FLOWS SOUTH AND COMBINES WITH ONI5A
 126          DT      D4
 127          DI     229
 128          DQ      79
              *

 129          KK   OND5A
 130          BA   .0012
 131          LS       0      95
 132          UD   0.051
              *

 133          KK   CI8A1
 134          KM   COMBINES DIV4 AND OND5A.
 135          HC       2
              *

 136          KK   DUMMY
 137          KM   THIS IS NOT ACTUALLY FLOW SPLIT OR DIVERSION. TOTAL DISCHARGE OF CI8A1
 138          KM   FLOWS EAST TOWARD CI8B1. THAT IS, DUMMY = 0 CFS.
 139          KM   THIS DUMMY CARD AS FLOW SPLIT IS REQUIRE TO
 140          KM   ENABLE HEC-1 TO CREATE FLOW TREE.
 141          DT   CI8A1
 142          DI     151
 143          DQ     151
              *

 144          KK    ONI6
 145          BA   .0106
 146          LS       0      88
 147          UD   0.159
              *

 148          KK   CI9A1
 149          KM   COMBINES DUMMY AND ONI6.
 150          HC       2
              *

 151          KK   OFD2B
 152          BA   .0045
 153          LS       0      92
 154          UD   0.112
              *
1                                      HEC-1 INPUT                                          PAGE  5

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


 155          KK   RETD2
 156          KM   RETRIEVE D2 - (THIS CARD RETRIEVES THE DIVERTED FLOW)
 157          KM   FLOW THAT RETAINS ON HOLLY AVENUE
 158          DR      D2
              *

 159          KK    CI61
 160          KM   COMBINES OFD2B, AND D2.
 161          HC       2
              *
```

```
 162          KK    DIV5
 163          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
 164          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
 165          KM    IS THE AMOUNT DIVERTED)
 166          KM   DIV5 RUNOFF AMOUNT FLOWS SOUTH AND ENTERS INTO THE PROJECT SITE.
 167          DT      D5
 168          DI      98
 169          DQ      38
              *

 170          KK    OND2
 171          BA   .0036
 172          LS       0      95
 173          UD   0.097
              *

 174          KK   RETD3
 175          KM   RETRIEVE D3 - (THIS CARD RETRIEVES THE DIVERTED FLOW)
 176          KM   THE FLOW D3 ENTERS INTO OND2 BASIN
 177          DR      D3
              *

 178          KK    OND4
 179          BA   .0023
 180          LS       0      95
 181          UD   0.067
              *

 182          KK   RETD4
 183          KM   RETRIEVE D4 - (THIS CARD RETRIEVES THE DIVERTED FLOW)
 184          KM   THE FLOW D4 ENTERS INTO OND4 BASIN
 185          DR      D4
              *

 186          KK    CI71
 187          KM   COMBINES DIV5, OND2, D3, OND4, AND D4.
 188          HC       5
              *
1                                        HEC-1 INPUT                                          PAGE  6

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

 189          KK    DIV6
 190          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
 191          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
 192          KM    IS THE AMOUNT DIVERTED)
 193          KM   DIV6 RUNOFF AMOUNT FLOWS SOUTH.
 194          DT      D6
 195          DI     174
 196          DQ     127
              *

 197          KK   ONI5B
 198          BA   .0037
 199          LS       0      88
 200          UD   0.100
              *

 201          KK  RETCI8A1
 202          KM   RETRIEVE CI8A1 - (THIS CARD RETRIEVES THE DIVERTED FLOW)
 203          KM   THE FLOW CI8A1 COMBINES WITH ONI5B BASIN, AND DIV6
 204          DR   CI8A1
              *

 205          KK   CI8B1
 206          KM   COMBINES DIV6, CI8A1, AND ONI5B.
 207          HC       3
              *

 208          KK    DIV7
 209          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
 210          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
 211          KM   IS THE AMOUNT DIVERTED)
 212          KM   DIV7 RUNOFF AMOUNT FLOWS SOUTH.
 213          DT      D7
 214          DI     204
 215          DQ      25
              *

 216          KK   DUMMY
 217          KM   DUMMY CARD TO MAKE HEC-1 RUN
 218          BA   .0001
 219          BF     .00
 220          LS       0      01
 221          UD   .0001
              *

 222          KK   CI8C1
 223          KM   IS EQUAL TO DIV7
 224          HC       2
```

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

 225          KK   DIV7A
 226          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
 227          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
 228          KM   IS THE AMOUNT DIVERTED)
 229          KM   DIV7A RUNOFF AMOUNT FLOWS SOUTH.
 230          DT     D7A
 231          DI     179
 232          DQ      96
                   *

 233          KK   CI9C1
 234          KM   COMBINES DIV7A AND CI9A1.
 235          HC       2
                   *

 236          KK  RETD7A
 237          KM   RETRIEVE D7A - (THIS CARD RETRIEVES THE DIVERTED FLOW)
 238          KM   THE FLOW D7A ENTERS INTO 15' PORPOSED EASEMENT
 239          DR     D7A
                   *

 240          KK   DUMMY
 241          KM   DUMMY CARD TO MAKE HEC-1 RUN
 242          BA   .0001
 243          BF     .00
 244          LS       0      01
 245          UD
                   *

 246          KK   CI9D1
 247          KM    EQUAL TO D7A
 248          HC       2
                   *

 249          KK    DIV8
 250          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
 251          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
 252          KM   IS THE AMOUNT DIVERTED)
 253          DT      D8
 254          DI      96
 255          DQ       4
                   *

 256          KK   CI9B1
 257          KM   COMBINES CI9C1 AND DIV8.
 258          HC       2
                   *

 259          KK   RETD8
 260          KM   RETRIEVE D8 - (THIS CARD RETRIEVES THE DIVERTED FLOW)
 261          KM   THE FLOW D8 ENTERS INTO 10' EXISTING EASEMENT
 262          DR      D8
                   *
```



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

 263          KK   RETD7
 264          KM   RETRIEVE D7 - (THIS CARD RETRIEVES THE DIVERTED FLOW)
 265          KM   THE FLOW D7 ENTERS INTO 10' EXISTING EASEMENT
 266          DR      D7
                   *

 267          KK   CI9E1
 268          KM   COMBINES D7 AND D8.
 269          HC       2
                   *

 270          KK    OFD5
 271          BA   .0237
 272          LS       0      88
 273          UD   0.252
                   *

 274          KK    OFD6
 275          BA   .0170
 276          LS       0      95
 277          UD   0.128
                   *

 278          KK   CI121
 279          KM   COMBINES OFD5 AND OFD6.
 280          HC       2
                   *
```

```
 281          KK  NH-RAN
 282          KM   CENTRAL NEIGHBORHOOD REFERENCE STUDY 100-YR BASEFLOW
 283          KM   WHICH CONTINUE ON RANCHO AVENUE. SEE THE STUDY
 284          KM   MAP FOR DETAIL.
 285          BA   .0001
 286          BF     223
 287          LS       0      01
 288          UD   .0001
                   *

 289          KK   DUMMY
 290          KM   DUMMY CARD TO RESET BASEFLOW AND HAS NO FLOW
 291          BA   .0001
 292          BF     .00
 293          LS       0      01
 294          UD   .0001
                   *

 295          KK    STD1
 296          BA   .0038
 297          LS       0      98
 298          UD   0.077
                   *
1                                        HEC-1 INPUT                                        PAGE  9

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


 299          KK    OFD7
 300          BA   .0045
 301          LS       0      95
 302          UD   0.081
                   *

 303          KK    OFD4
 304          BA   .0012
 305          LS       0      95
 306          UD   0.050
                   *

 307          KK   STD2A
 308          BA   .0032
 309          LS       0      98
 310          UD   0.071
                   *

 311          KK   CI101
 312          KM   COMBINES CI121, NH-RAN, STD1, OFD7, OFD4, AND STD2A.
 313          HC       7
                   *

 314          KK   OFD2C
 315          BA   .0026
 316          LS       0      92
 317          UD   0.120
                   *

 318          KK   RETD5
 319          KM   RETRIEVE D5 - (THIS CARD RETRIEVES THE DIVERTED FLOW)
 320          KM   THE FLOW D5 DO NOT ENTER INTO THE PROJECT SITE AND
 321          KM   REMAINS ON HOLLY AVENUE.
 322          DR      D5
                   *

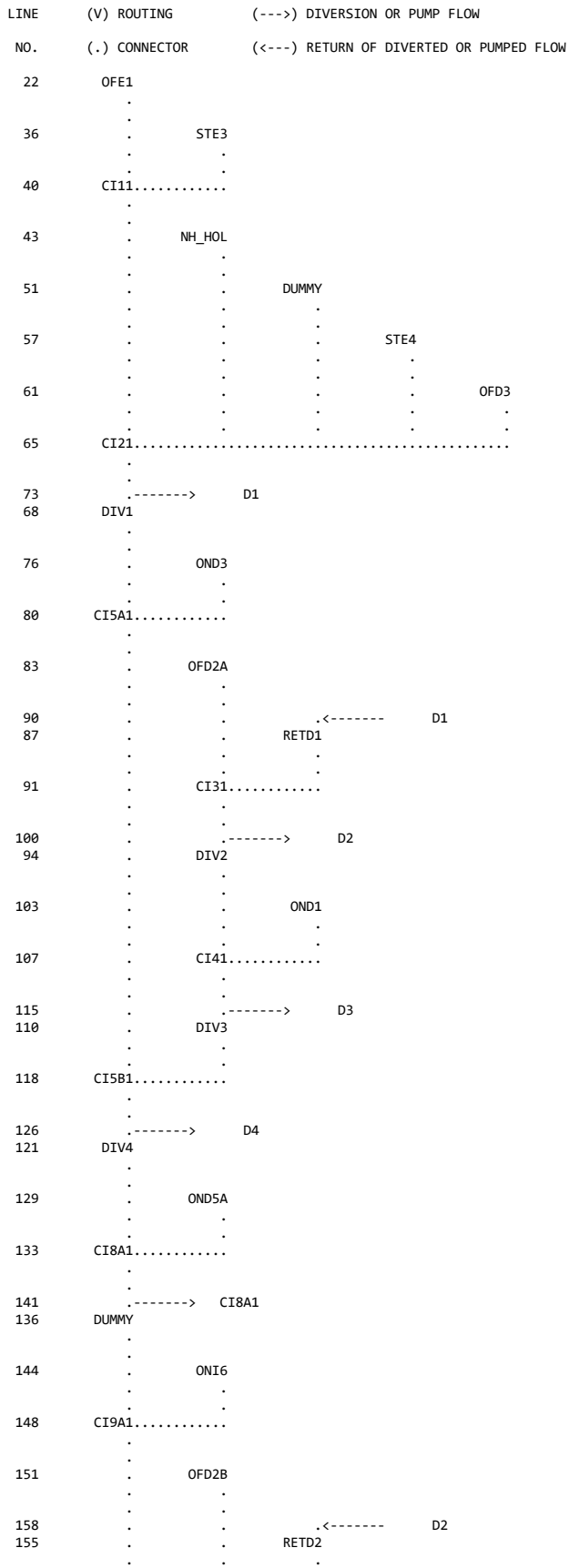
 323          KK    OND7
 324          BA   .0003
 325          LS       0      95
 326          UD   0.050
                   *

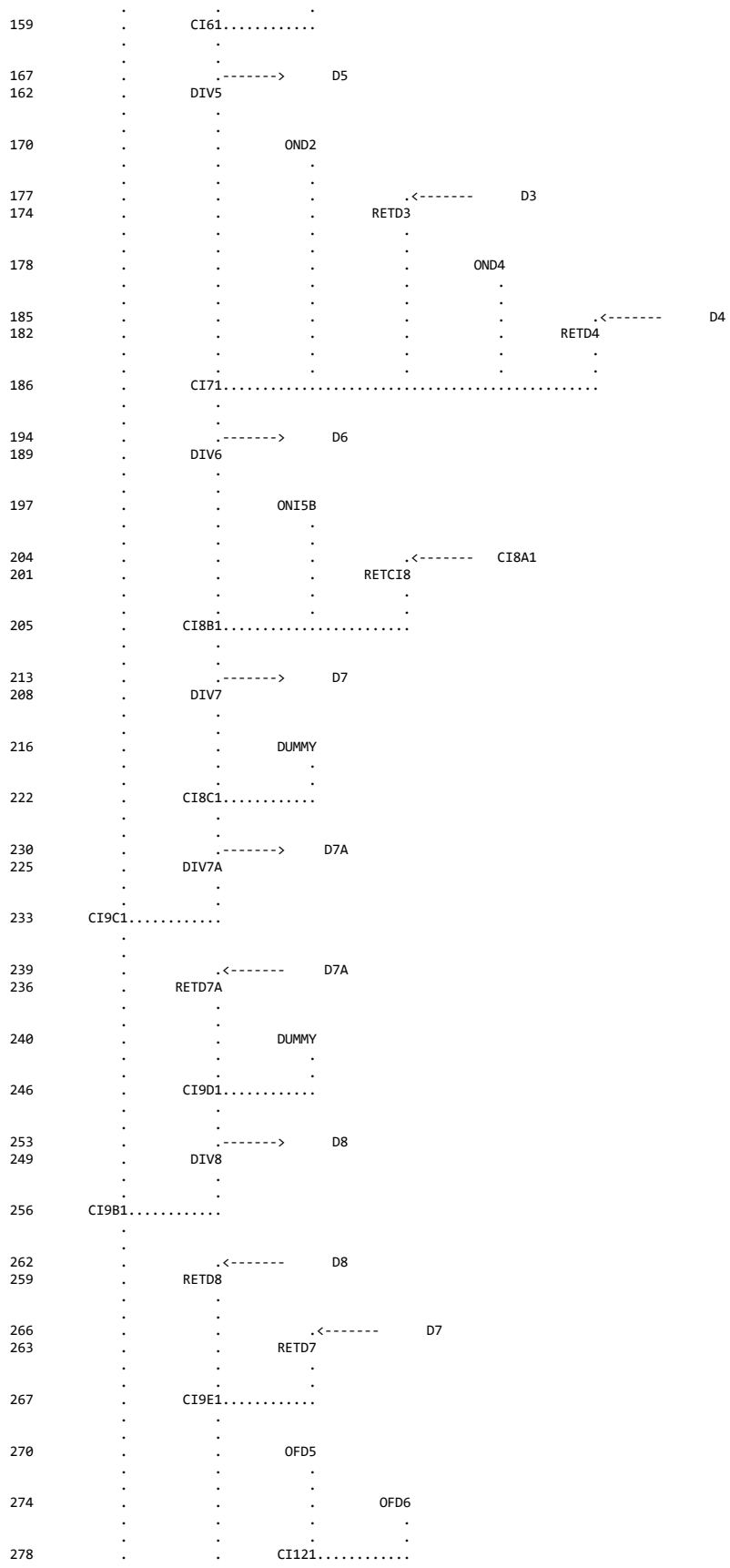
 327          KK    STD5
 328          BA   .0021
 329          LS       0      97
 330          UD   0.072
                   *

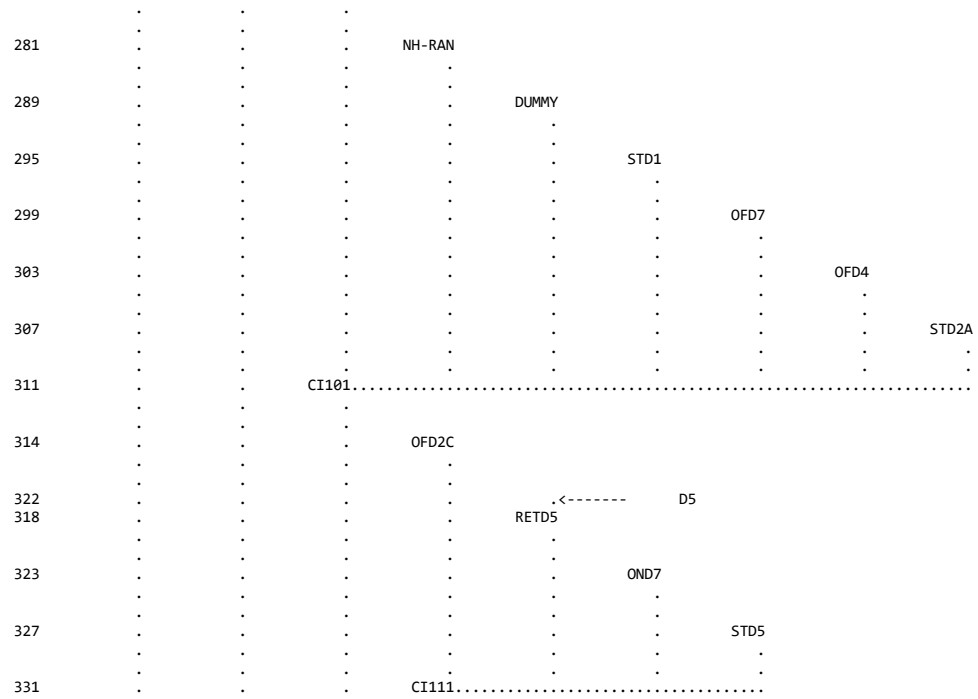
 331          KK   CI111
 332          KM   COMBINES OFD2C, D5, OND7, AND STD5
 333          HC       4
                   *
                   *
                   *
1                                        HEC-1 INPUT                                        PAGE 10

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

 334          ZZ
1
                SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
```


LINE
NO.
(V) ROUTING
(.) CONNECTOR
(--->) DIVERSION OR PUMP FLOW
(<---) RETURN OF DIVERTED OR PUMPED FLOW
22 OFE1
36 STE3
40 CI11
43 NH_HOL
51 DUMMY
57 STE4
61 OFD3
65 CI21
73 D1
68 DIV1
76 OND3
80 CI5A1
83 OFD2A
90 D1
87 RETD1
91 CI31
100 D2
94 DIV2
103 OND1
107 CI41
115 D3
110 DIV3
118 CI5B1
126 D4
121 DIV4
129 OND5A
133 CI8A1
141 CI8A1
136 DUMMY
144 ONI6
148 CI9A1
151 OFD2B
158 D2
155 RETD2


159 CI61
167 D5
162 DIV5
170 OND2
177 D3
174 RETD3
178 OND4
185 D4
182 RETD4
186 CI71
194 D6
189 DIV6
197 ONI5B
204 CI8A1
201 RETCI8
205 CI8B1
213 D7
208 DIV7
216 DUMMY
222 CI8C1
230 D7A
225 DIV7A
233 CI9C1
239 D7A
236 RETD7A
240 DUMMY
246 CI9D1
253 D8
249 DIV8
256 CI9B1
262 D8
259 RETD8
266 D7
263 RETD7
267 CI9E1
270 OFD5
274 OFD6
278 CI121



(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
1****************************************                    ****************************************
 *                                      *                    *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                    *    U.S. ARMY CORPS OF ENGINEERS      *
 *              JUN   1998              *                    *    HYDROLOGIC ENGINEERING CENTER     *
 *           VERSION 4.1                *                    *          609 SECOND STREET           *
 *                                      *                    *       DAVIS, CALIFORNIA 95616        *
 *  RUN DATE   05JUN20  TIME  12:51:17  *                    *           (916) 756-1104             *
 *                                      *                    *                                      *
 ****************************************                    ****************************************
```

<><><><><><><><><><><><><><><><><><><><>
RANCHO & VEGAS TOWNHOMES
HYDROLOGIC MODEL

100-YR STORM EVENT

HORROCKS ENGINEERING
INTERIM PHASE 1 CONDITION
FILE: INT PH1.DAT
PROJECT No: NV-2105-1911
DATE: MAY 15 2020
<><><><><><><><><><><><><><><><><><><><>

---> 6-HOUR / SDN 3 <---

```
  19 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
                    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


                                                                    RATIOS APPLIED TO PRECIPITATION
 OPERATION       STATION     AREA    PLAN                      RATIO 1
                                                                  1.00

 HYDROGRAPH AT
+                   OFE1       .02     1   FLOW                  27.
                                              TIME                3.67

 HYDROGRAPH AT
+                   STE3       .00     1   FLOW                   4.
                                              TIME                3.58

   2 COMBINED AT
+                   CI11       .03     1   FLOW                  30.
                                              TIME                3.58

 HYDROGRAPH AT
+                  NH_HOL      .00     1   FLOW                 285.
                                              TIME                 .00

 HYDROGRAPH AT
+                  DUMMY       .00     1   FLOW                   0.
                                              TIME                 .00

 HYDROGRAPH AT
+                   STE4       .00     1   FLOW                   2.
                                              TIME                3.50

 HYDROGRAPH AT
+                   OFD3       .00     1   FLOW                   3.
                                              TIME                3.50

   5 COMBINED AT
+                   CI21       .03     1   FLOW                 319.
                                              TIME                3.58

 DIVERSION TO
+                     D1       .03     1   FLOW                 269.
                                              TIME                3.58

 HYDROGRAPH AT
+                   DIV1       .03     1   FLOW                  50.
                                              TIME                3.58

 HYDROGRAPH AT
+                   OND3       .00     1   FLOW                   6.
                                              TIME                3.50

   2 COMBINED AT
+                  CI5A1       .03     1   FLOW                  56.
                                              TIME                3.58

 HYDROGRAPH AT
+                  OFD2A       .01     1   FLOW                  19.
                                              TIME                3.58

 HYDROGRAPH AT
+                  RETD1       .00     1   FLOW                 269.
                                              TIME                3.58

   2 COMBINED AT
+                   CI31       .01     1   FLOW                 287.
                                              TIME                3.58

 DIVERSION TO
+                     D2       .01     1   FLOW                  91.
                                              TIME                3.58

 HYDROGRAPH AT
+                   DIV2       .01     1   FLOW                 196.
                                              TIME                3.58
```

```
 HYDROGRAPH AT
+                  OND1       .00     1   FLOW           3.
                                           TIME         3.50

  2 COMBINED AT
+                  CI41       .01     1   FLOW         198.
                                           TIME         3.58

 DIVERSION TO
+                    D3       .01     1   FLOW          25.
                                           TIME         3.58

 HYDROGRAPH AT
+                  DIV3       .01     1   FLOW         173.
                                           TIME         3.58

  2 COMBINED AT
+                 CI5B1       .04     1   FLOW         229.
                                           TIME         3.58

 DIVERSION TO
+                    D4       .04     1   FLOW          79.
                                           TIME         3.58

 HYDROGRAPH AT
+                  DIV4       .04     1   FLOW         150.
                                           TIME         3.58

 HYDROGRAPH AT
+                 OND5A       .00     1   FLOW           3.
                                           TIME         3.50

  2 COMBINED AT
+                 CI8A1       .05     1   FLOW         151.
                                           TIME         3.50

 DIVERSION TO
+                 CI8A1       .05     1   FLOW         151.
                                           TIME         3.50

 HYDROGRAPH AT
+                 DUMMY       .05     1   FLOW           0.
                                           TIME          .00

 HYDROGRAPH AT
+                  ONI6       .01     1   FLOW          14.
                                           TIME         3.58

  2 COMBINED AT
+                 CI9A1       .06     1   FLOW          14.
                                           TIME         3.58

 HYDROGRAPH AT
+                 OFD2B       .00     1   FLOW           7.
                                           TIME         3.50

 HYDROGRAPH AT
+                 RETD2       .00     1   FLOW          91.
                                           TIME         3.58

  2 COMBINED AT
+                  CI61       .00     1   FLOW          98.
                                           TIME         3.58

 DIVERSION TO
+                    D5       .00     1   FLOW          38.
                                           TIME         3.58

 HYDROGRAPH AT
+                  DIV5       .00     1   FLOW          60.
                                           TIME         3.58

 HYDROGRAPH AT
+                  OND2       .00     1   FLOW           7.
                                           TIME         3.50

 HYDROGRAPH AT
+                 RETD3       .00     1   FLOW          25.
                                           TIME         3.58

 HYDROGRAPH AT
+                  OND4       .00     1   FLOW           5.
                                           TIME         3.50

 HYDROGRAPH AT
+                 RETD4       .00     1   FLOW          79.
                                           TIME         3.58

  5 COMBINED AT
+                  CI71       .01     1   FLOW         174.
                                           TIME         3.50
```

```
 DIVERSION TO
+                     D6       .01     1   FLOW         127.
                                            TIME         3.50

 HYDROGRAPH AT
+                    DIV6       .01     1   FLOW          47.
                                            TIME         3.50

 HYDROGRAPH AT
+                   ONI5B       .00     1   FLOW           5.
                                            TIME         3.50

 HYDROGRAPH AT
+                  RETCI8       .00     1   FLOW         151.
                                            TIME         3.50

  3 COMBINED AT
+                   CI8B1       .01     1   FLOW         204.
                                            TIME         3.50

 DIVERSION TO
+                     D7       .01     1   FLOW          25.
                                            TIME         3.50

 HYDROGRAPH AT
+                    DIV7       .01     1   FLOW         179.
                                            TIME         3.50

 HYDROGRAPH AT
+                   DUMMY       .00     1   FLOW           0.
                                            TIME          .00

  2 COMBINED AT
+                   CI8C1       .01     1   FLOW         179.
                                            TIME         3.50

 DIVERSION TO
+                    D7A       .01     1   FLOW          96.
                                            TIME         3.50

 HYDROGRAPH AT
+                   DIV7A       .01     1   FLOW          83.
                                            TIME         3.50

  2 COMBINED AT
+                   CI9C1       .07     1   FLOW          97.
                                            TIME         3.58

 HYDROGRAPH AT
+                  RETD7A       .00     1   FLOW          96.
                                            TIME         3.50

 HYDROGRAPH AT
+                   DUMMY       .00     1   FLOW           0.
                                            TIME          .00

  2 COMBINED AT
+                   CI9D1       .00     1   FLOW          96.
                                            TIME         3.50

 DIVERSION TO
+                     D8       .00     1   FLOW           4.
                                            TIME         3.50

 HYDROGRAPH AT
+                    DIV8       .00     1   FLOW          92.
                                            TIME         3.50

  2 COMBINED AT
+                   CI9B1       .07     1   FLOW         189.
                                            TIME         3.58

 HYDROGRAPH AT
+                   RETD8       .00     1   FLOW           4.
                                            TIME         3.50

 HYDROGRAPH AT
+                   RETD7       .00     1   FLOW          25.
                                            TIME         3.50

  2 COMBINED AT
+                   CI9E1       .00     1   FLOW          29.
                                            TIME         3.50

 HYDROGRAPH AT
+                    OFD5       .02     1   FLOW          26.
                                            TIME         3.67

 HYDROGRAPH AT
+                    OFD6       .02     1   FLOW          30.
```

```
                                        TIME         3.58

  2 COMBINED AT
+                  CI121       .04     1   FLOW         54.
                                         TIME         3.58

 HYDROGRAPH AT
+                 NH-RAN       .00     1   FLOW        223.
                                         TIME          .00

 HYDROGRAPH AT
+                  DUMMY       .00     1   FLOW          0.
                                         TIME          .00

 HYDROGRAPH AT
+                   STD1       .00     1   FLOW          8.
                                         TIME         3.50

 HYDROGRAPH AT
+                   OFD7       .00     1   FLOW          9.
                                         TIME         3.50

 HYDROGRAPH AT
+                   OFD4       .00     1   FLOW          3.
                                         TIME         3.50

 HYDROGRAPH AT
+                  STD2A       .00     1   FLOW          7.
                                         TIME         3.50

  7 COMBINED AT
+                  CI101       .05     1   FLOW        297.
                                         TIME         3.58

 HYDROGRAPH AT
+                  OFD2C       .00     1   FLOW          4.
                                         TIME         3.58

 HYDROGRAPH AT
+                  RETD5       .00     1   FLOW         38.
                                         TIME         3.58

 HYDROGRAPH AT
+                   OND7       .00     1   FLOW          1.
                                         TIME         3.50

 HYDROGRAPH AT
+                   STD5       .00     1   FLOW          4.
                                         TIME         3.50

  4 COMBINED AT
+                  CI111       .00     1   FLOW         47.
                                         TIME         3.50


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

HEC-1 INTERIM PHASE 2 - 10 YR

```
1****************************************                    ****************************************
 *                                      *                    *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                    *    U.S. ARMY CORPS OF ENGINEERS      *
 *               JUN   1998             *                    *    HYDROLOGIC ENGINEERING CENTER     *
 *            VERSION 4.1               *                    *          609 SECOND STREET           *
 *                                      *                    *       DAVIS, CALIFORNIA 95616        *
 *  RUN DATE   05JUN20  TIME  12:48:06  *                    *           (916) 756-1104             *
 *                                      *                    *                                      *
 ****************************************                    ****************************************

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


          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

1                                              HEC-1 INPUT                                              PAGE  1

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

                        *DIAGRAM
            1           ID
            2           ID      <><><><><><><><><><><><><><><><><><><><>
            3           ID        RANCHO & VEGAS TOWNHOMES
            4           ID        HYDROLOGIC MODEL
            5           ID        --------------------------
            6           ID
            7           ID        10-YR STORM EVENT
            8           ID        --------------------------
            9           ID        HORROCKS ENGINEERING
           10           ID        INTERIM PHASE 2 CONDITION
           11           ID        FILE: INT PH2.DAT
           12           ID        PROJECT No: NV-2105-1911
           13           ID        DATE:  MAY 15 2020
           14           ID      <><><><><><><><><><><><><><><><><><><><>
           15           ID
           16           ID       ---> 6-HOUR / SDN 3 <---
           17           ID
           18           IT       5       0       0     300
           19           IO       5
           20           IN       5
           21           JR    PREC    1.00
                        *

           22           KK    OFE1
           23           KM    OFFSITE FLOW AT NORTHWEST CORNER OF PROJECT SITE
           24           BA   .0228
           25           PB    1.58
           26           PC    .000    .020    .057    .070    .087    .108    .124    .130    .130    .130
           27           PC    .130    .130    .130    .133    .140    .142    .148    .158    .172    .181
           28           PC    .190    .197    .199    .200    .201    .204    .214    .229    .241    .249
           29           PC    .251    .256    .270    .278    .281    .283    .295    .322    .352    .409
           30           PC    .499    .590    .710    .744    .781    .812    .819    .835    .851    .856
           31           PC    .860    .868    .876    .888    .910    .926    .937    .950    .970    .976
           32           PC    .982    .985    .987    .989    .990    .993    .993    .994    .995    .998
           33           PC    .998    .999   1.00
           34           LS       0      88
           35           UD    .210
                        *

           36           KK    STE3
           37           BA   .0024
           38           LS       0      92
           39           UD    .134
                        *

           40           KK     CI1
           41           KM   COMBINES OFFISTE BASIN OFE1 AND STREET STE3.
           42           HC       2
                        *
1                                              HEC-1 INPUT                                              PAGE  2

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

```
 43          KK  NH_HOL
 44          KM   CENTRAL NEIGHBORHOOD REFERENCE STUDY 100-YR BASEFLOW
 45          KM   WHICH OVERSPILL INTO HOLLY AVENUE. SEE THE STUDY
 46          KM   MAP FOR DETAIL.
 47          BA   .0001
 48          BF       0
 49          LS       0      01
 50          UD   .0001
             *

 51          KK   DUMMY
 52          KM   DUMMY CARD TO RESET BASEFLOW AND HAS NO FLOW
 53          BA   .0001
 54          BF     .00
 55          LS       0      01
 56          UD   .0001
             *

 57          KK    STE4
 58          BA   .0009
 59          LS       0      97
 60          UD   0.100
             *

 61          KK    OFD3
 62          BA   .0013
 63          LS       0      95
 64          UD   0.050
             *

 65          KK     CI2
 66          KM   COMBINES CI1, NH-HOL BASEFLOW, STREET STE4, AND OFFSITE BASIN OFD3.
 67          HC       5

 68          KK    DIV1
 69          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
 70          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
 71          KM   IS THE AMOUNT DIVERTED)
 72          KM   DIV1 AMOUNT THAT ENTERS INTO PROJECT SITE AND COMBINE WITH OND3
 73          DT      D1
 74          DI      14
 75          DQ       7
             *

 76          KK    OND3
 77          BA   .0035
 78          LS       0      95
 79          UD   0.102
             *
1                                        HEC-1 INPUT                                          PAGE  3

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

 80          KK    CI5A
 81          KM   COMBINES DIV1 AND OND3.
 82          HC       2
             *

 83          KK   OFD2A
 84          BA   .0117
 85          LS       0      92
 86          UD   0.122
             *

 87          KK   RETD1
 88          KM   RETRIEVE D1 - (THIS CARD RETRIEVES THE DIVERTED FLOW)
 89          KM   FLOW THAT RETAINS ON HOLLY AVENUE
 90          DR      D1
             *

 91          KK     CI3
 92          KM   COMBINES OFD2A AND D1.
 93          HC       2
             *

 94          KK    DIV2
 95          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
 96          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
 97          KM   IS THE AMOUNT DIVERTED)
 98          KM   DIV2 RUNOFF AMOUNT ENTERS INTO PROJECT SITE
 99          KM   AND COMBINES WITH OND1
100          DT      D2
101          DI      16
102          DQ      16
             *

103          KK    OND1
104          BA   .0013
```

```
 105          LS       0      95
 106          UD   0.050
              *

 107          KK     CI4
 108          KM   COMBINES DIV2 AND OND1.
 109          HC       2
              *

 110          KK    DIV3
 111          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
 112          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
 113          KM   IS THE AMOUNT DIVERTED)
 114          KM   DIV3 RUNOFF AMOUNT FLOWS SOUTH AND COMBINES WITH CI5A FLOW AMOUNT
 115          DT      D3
 116          DI       1
 117          DQ       0
              *
1                                      HEC-1 INPUT                                          PAGE  4

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


 118          KK    CI5B
 119          KM   COMBINES DIV3 AND CI5A.
 120          HC       2
              *

 121          KK    DIV4
 122          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
 123          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
 124          KM   IS THE AMOUNT DIVERTED)
 125          KM   DIV4 RUNOFF AMOUNT FLOWS SOUTH AND COMBINES WITH OND5A
 126          DT      D4
 127          DI      11
 128          DQ       0
              *

 129          KK   OND5A
 130          BA   .0012
 131          LS       0      95
 132          UD   0.051
              *

 133          KK    CI8A
 134          KM   COMBINES DIV4 AND OND5A.
 135          HC       2
              *

 136          KK   DUMMY
 137          KM   THIS IS NOT ACTUALLY FLOW SPLIT OR DIVERSION. TOTAL DISCHARGE OF CI8A
 138          KM   FLOWS EAST TOWARD CI8B. THAT IS, DUMMY = 0 CFS.
 139          KM   THIS DUMMY CARD AS FLOW SPLIT ARE REQUIRE TO
 140          KM   ENABLE HEC-1 TO CREATE FLOW TREE.
 141          DT    CI8A
 142          DI      12
 143          DQ      12
              *

 144          KK    OND6
 145          BA   .0106
 146          LS       0      95
 147          UD   0.127
              *

 148          KK    CI9A
 149          KM   COMBINES DUMMY AND OND6.
 150          HC       2
              *

 151          KK   OFD2B
 152          BA   .0045
 153          LS       0      92
 154          UD   0.112
              *
1                                      HEC-1 INPUT                                          PAGE  5

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


 155          KK   RETD2
 156          KM   RETRIEVE D2 - (THIS CARD RETRIEVES THE DIVERTED FLOW)
 157          KM   FLOW THAT RETAINS ON HOLLY AVENUE
 158          DR      D2
              *

 159          KK     CI6
 160          KM   COMBINES OFD2B, AND D2.
 161          HC       2
              *
```

```
 162          KK    DIV5
 163          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
 164          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
 165          KM    IS THE AMOUNT DIVERTED)
 166          KM   DIV5 RUNOFF AMOUNT FLOWS SOUTH AND ENTERS INTO THE PROJECT SITE.
 167          DT      D5
 168          DI      19
 169          DQ      19
              *

 170          KK    OND2
 171          BA   .0036
 172          LS       0      95
 173          UD   0.097
              *

 174          KK   RETD3
 175          KM   RETRIEVE D3 - (THIS CARD RETRIEVES THE DIVERTED FLOW)
 176          KM   THE FLOW D3 ENTERS INTO OND2 BASIN
 177          DR      D3
              *

 178          KK    OND4
 179          BA   .0023
 180          LS       0      95
 181          UD   0.067
              *

 182          KK   RETD4
 183          KM   RETRIEVE D4 - (THIS CARD RETRIEVES THE DIVERTED FLOW)
 184          KM   THE FLOW D4 ENTERS INTO OND4 BASIN
 185          DR      D4
              *

 186          KK     CI7
 187          KM   COMBINES DIV5, OND2, D3, OND4, AND D4.
 188          HC       5
              *
1                                        HEC-1 INPUT                                          PAGE  6

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

 189          KK    DIV6
 190          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
 191          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
 192          KM    IS THE AMOUNT DIVERTED)
 193          KM   DIV6 RUNOFF AMOUNT FLOWS SOUTH.
 194          DT      D6
 195          DI       6
 196          DQ       6
              *

 197          KK  RETCI8A
 198          KM   RETRIEVE CI8A - (THIS CARD RETRIEVES THE DIVERTED FLOW)
 199          KM   THE FLOW CI8A COMBINES WITH OND5B BASIN, AND DIV6
 200          DR    CI8A
              *

 201          KK   OND5B
 202          BA   .0037
 203          LS       0      95
 204          UD   0.067
              *

 205          KK    CI8B
 206          KM   COMBINES DIV6, CI8A, AND OND5B.
 207          HC       3
              *

 208          KK    DIV7
 209          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
 210          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
 211          KM   IS THE AMOUNT DIVERTED)
 212          KM   DIV7 RUNOFF AMOUNT FLOWS SOUTH.
 213          DT      D7
 214          DI      16
 215          DQ      16
              *

 216          KK   DUMMY
 217          KM   DUMMY CARD TO MAKE HEC-1 RUN
 218          BA   .0001
 219          BF     .00
 220          LS       0      01
 221          UD   .0001
              *

 222          KK    CI8C
 223          KM   IS EQUAL DIV7
 224          HC       2
```

```
                     *
1                                        HEC-1 INPUT                                                PAGE  7

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


            225          KK   DIV7A
            226          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
            227          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
            228          KM   IS THE AMOUNT DIVERTED)
            229          KM   DIV7A RUNOFF AMOUNT FLOWS SOUTH.
            230          DT     D7A
            231          DI       0
            232          DQ       0
                         *

            233          KK    CI9C
            234          KM   COMBINES DIV7A CI9A.
            235          HC       2
                         *

            236          KK  RETD7A
            237          KM   RETRIEVE D7A - (THIS CARD RETRIEVES THE DIVERTED FLOW)
            238          KM   THE FLOW D7A ENTERS INTO 15' PORPOSED EASEMENT
            239          DR     D7A
                         *

            240          KK   DUMMY
            241          KM   DUMMY CARD TO MAKE HEC-1 RUN
            242          BA   .0001
            243          BF     .00
            244          LS       0      01
            245          UD
                         *

            246          KK    CI9D
            247          KM    EQUAL TO D7A
            248          HC       2
                         *

            249          KK    DIV8
            250          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
            251          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
            252          KM   IS THE AMOUNT DIVERTED)
            253          DT      D8
            254          DI       0
            255          DQ       0
                         *

            256          KK    CI9B
            257          KM   COMBINES CI9C AND DIV8.
            258          HC       2
                         *

            259          KK   RETD8
            260          KM   RETRIEVE D8 - (THIS CARD RETRIEVES THE DIVERTED FLOW)
            261          KM   THE FLOW D8 ENTERS INTO 10' EXISTING EASEMENT
            262          DR      D8
                         *
1                                        HEC-1 INPUT                                                PAGE  8

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


            263          KK   RETD7
            264          KM   RETRIEVE D7 - (THIS CARD RETRIEVES THE DIVERTED FLOW)
            265          KM   THE FLOW D7 ENTERS INTO 10' EXISTING EASEMENT
            266          DR      D7
                         *

            267          KK    CI9E
            268          KM   COMBINES D7 AND D8.
            269          HC       2
                         *

            270          KK    OFD5
            271          BA   .0237
            272          LS       0      88
            273          UD   0.252
                         *

            274          KK    OFD6
            275          BA   .0170
            276          LS       0      95
            277          UD   0.128
                         *

            278          KK    CI12
            279          KM   COMBINES OFD5 AND OFD6.
            280          HC       2
                         *
```

```
 281          KK  NH-RAN
 282          KM   CENTRAL NEIGHBORHOOD REFERENCE STUDY 100-YR BASEFLOW
 283          KM   WHICH CONTINUE ON RANCHO AVENUE. SEE THE STUDY
 284          KM   MAP FOR DETAIL.
 285          BA   .0001
 286          BF      81
 287          LS       0      01
 288          UD   .0001
                   *

 289          KK   DUMMY
 290          KM   DUMMY CARD TO RESET BASEFLOW AND HAS NO FLOW
 291          BA   .0001
 292          BF     .00
 293          LS       0      01
 294          UD   .0001
                   *

 295          KK    STD1
 296          BA   .0038
 297          LS       0      98
 298          UD   0.077
                   *
1                                        HEC-1 INPUT                                        PAGE  9

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


 299          KK    OFD7
 300          BA   .0045
 301          LS       0      95
 302          UD   0.081
                   *

 303          KK    OFD4
 304          BA   .0012
 305          LS       0      95
 306          UD   0.050
                   *

 307          KK   STD2A
 308          BA   .0032
 309          LS       0      98
 310          UD   0.071
                   *

 311          KK    CI10
 312          KM   COMBINES CI12, NH-RAN, STD1, OFD7, OFD4, AND STD2A.
 313          HC       7
                   *

 314          KK   OFD2C
 315          BA   .0026
 316          LS       0      92
 317          UD   0.120
                   *

 318          KK   RETD5
 319          KM   RETRIEVE D5 - (THIS CARD RETRIEVES THE DIVERTED FLOW)
 320          KM   THE FLOW D5 DO NOT ENTER INTO THE PROJECT SITE AND
 321          KM   REMAINS ON HOLLY AVENUE.
 322          DR      D5
                   *

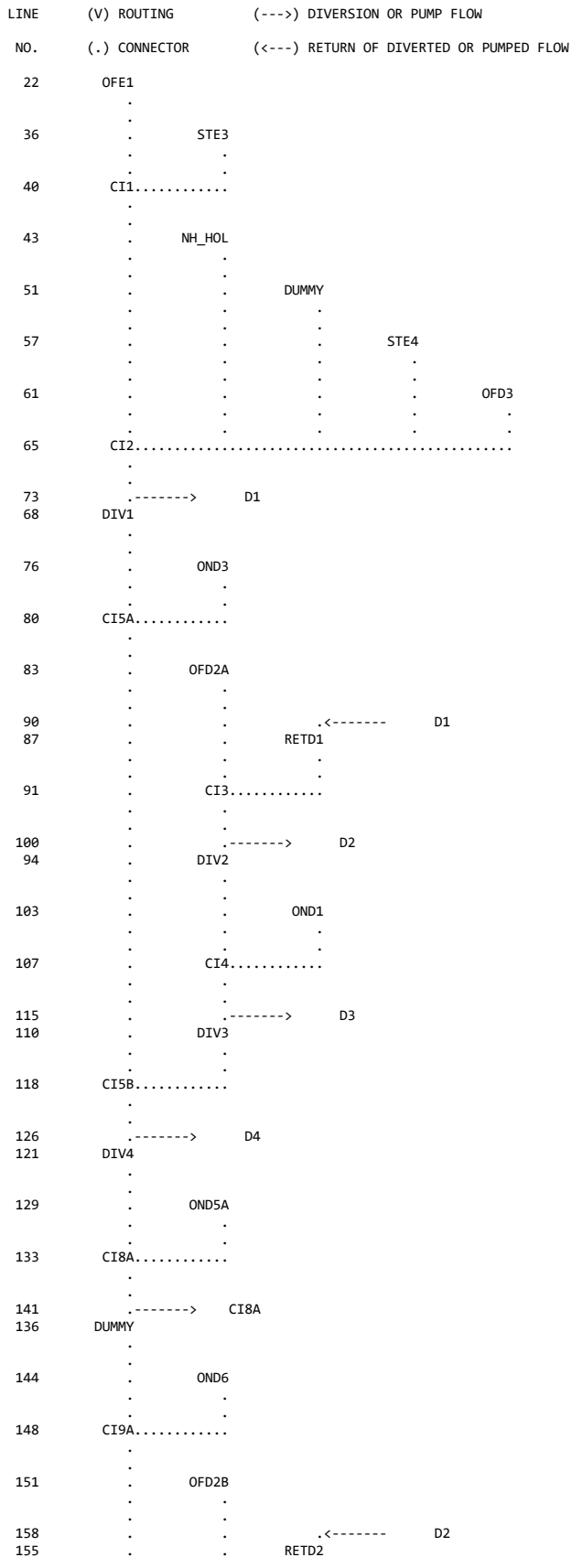
 323          KK    OND7
 324          BA   .0003
 325          LS       0      95
 326          UD   0.050
                   *

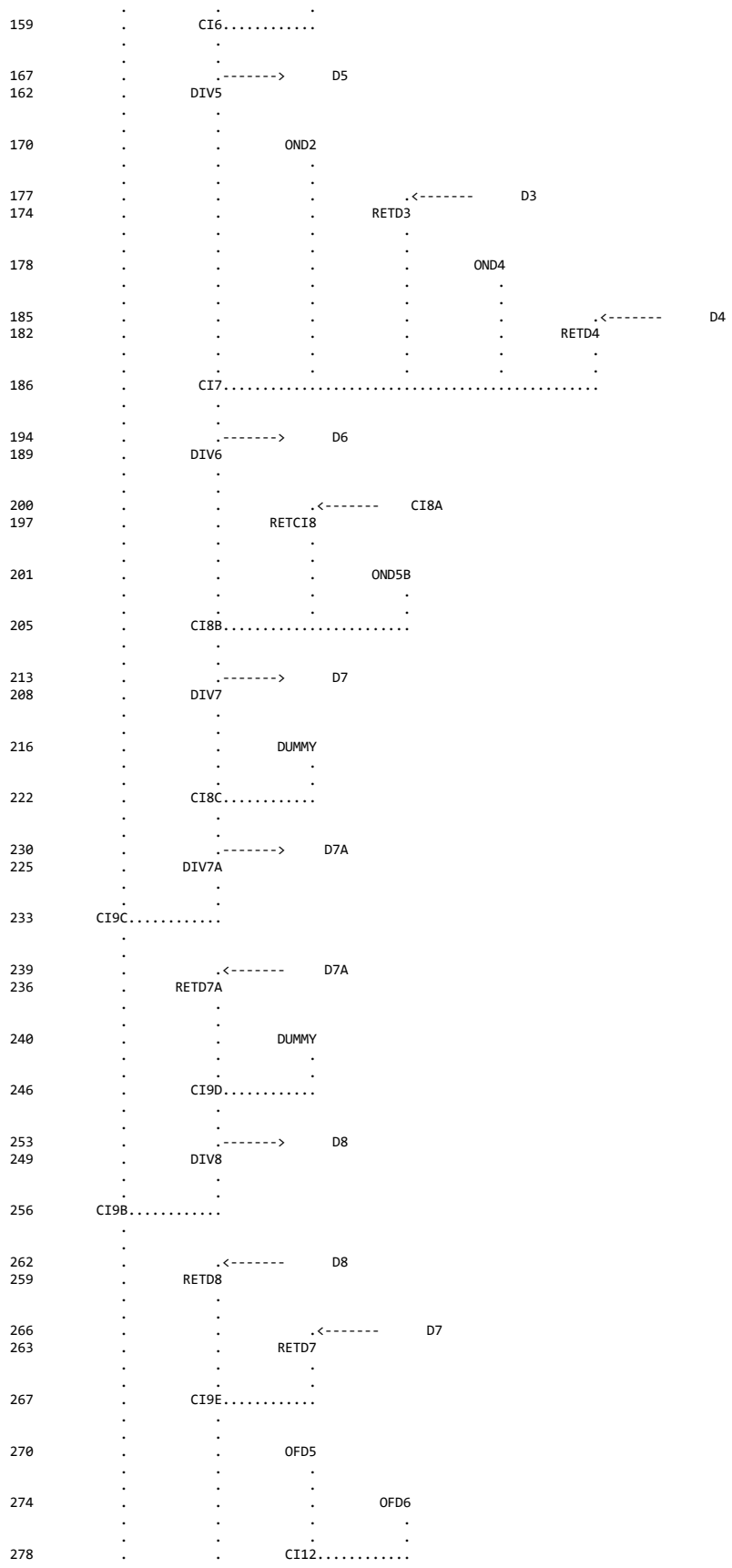
 327          KK    STD5
 328          BA   .0021
 329          LS       0      97
 330          UD   0.072
                   *

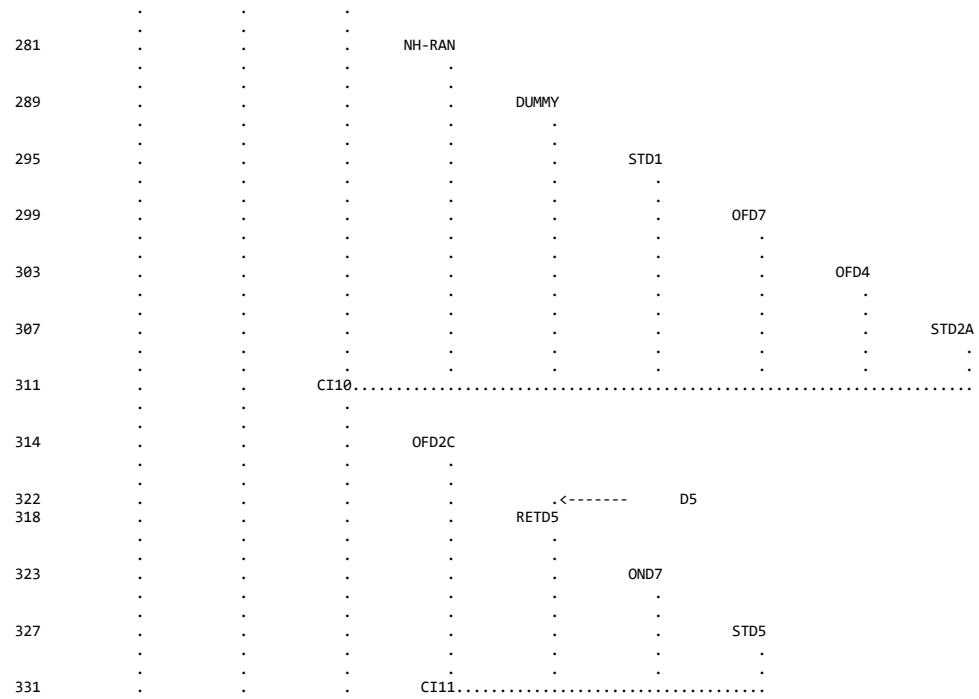
 331          KK    CI11
 332          KM   COMBINES STREETS OFD2C, D5, OND7, AND STD5
 333          HC       4
                   *
                   *
                   *
1                                        HEC-1 INPUT                                        PAGE 10

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

 334          ZZ
1
               SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
```


LINE
NO.
(V) ROUTING
(.) CONNECTOR
(--->) DIVERSION OR PUMP FLOW
(<---) RETURN OF DIVERTED OR PUMPED FLOW
22 OFE1
36 STE3
40 CI1
43 NH_HOL
51 DUMMY
57 STE4
61 OFD3
65 CI2
73 D1
68 DIV1
76 OND3
80 CI5A
83 OFD2A
90 D1
87 RETD1
91 CI3
100 D2
94 DIV2
103 OND1
107 CI4
115 D3
110 DIV3
118 CI5B
126 D4
121 DIV4
129 OND5A
133 CI8A
141 CI8A
136 DUMMY
144 OND6
148 CI9A
151 OFD2B
158 D2
155 RETD2


159 CI6
167
162 DIV5
170 OND2
177
174 RETD3
178 OND4
185
182 RETD4
186 CI7
194
189 DIV6
200
197 RETCI8
201 OND5B
205 CI8B
213
208 DIV7
216 DUMMY
222 CI8C
230
225 DIV7A
233 CI9C
239
236 RETD7A
240 DUMMY
246 CI9D
253
249 DIV8
256 CI9B
262
259 RETD8
266
263 RETD7
267 CI9E
270 OFD5
274 OFD6
278 CI12
D5
D3
D4
D6
CI8A
D7
D7A
D8
D7



(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
1****************************************                    ****************************************
 *                                      *                    *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                    *    U.S. ARMY CORPS OF ENGINEERS      *
 *              JUN   1998              *                    *    HYDROLOGIC ENGINEERING CENTER     *
 *           VERSION 4.1                *                    *          609 SECOND STREET           *
 *                                      *                    *       DAVIS, CALIFORNIA 95616        *
 *  RUN DATE   05JUN20  TIME  12:48:06  *                    *           (916) 756-1104             *
 *                                      *                    *                                      *
 ****************************************                    ****************************************
```

<><><><><><><><><><><><><><><><><><><><>
RANCHO & VEGAS TOWNHOMES
HYDROLOGIC MODEL

10-YR STORM EVENT

HORROCKS ENGINEERING
INTERIM PHASE 2 CONDITION
FILE: INT PH2.DAT
PROJECT No: NV-2105-1911
DATE: MAY 15 2020
<><><><><><><><><><><><><><><><><><><><>

---> 6-HOUR / SDN 3 <---

```
  19 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
                    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


                                                                    RATIOS APPLIED TO PRECIPITATION
 OPERATION       STATION     AREA    PLAN                      RATIO 1
                                                                  1.00

 HYDROGRAPH AT
+                   OFE1       .02     1   FLOW                  11.
                                               TIME                3.67

 HYDROGRAPH AT
+                   STE3       .00     1   FLOW                   2.
                                               TIME                3.58

   2 COMBINED AT
+                    CI1       .03     1   FLOW                  12.
                                               TIME                3.67

 HYDROGRAPH AT
+                  NH_HOL       .00     1   FLOW                   0.
                                               TIME                .00

 HYDROGRAPH AT
+                  DUMMY       .00     1   FLOW                   0.
                                               TIME                .00

 HYDROGRAPH AT
+                   STE4       .00     1   FLOW                   1.
                                               TIME                3.50

 HYDROGRAPH AT
+                   OFD3       .00     1   FLOW                   1.
                                               TIME                3.50

   5 COMBINED AT
+                    CI2       .03     1   FLOW                  14.
                                               TIME                3.58

 DIVERSION TO
+                      D1       .03     1   FLOW                   7.
                                               TIME                3.58

 HYDROGRAPH AT
+                   DIV1       .03     1   FLOW                   7.
                                               TIME                3.58

 HYDROGRAPH AT
+                   OND3       .00     1   FLOW                   3.
                                               TIME                3.50

   2 COMBINED AT
+                   CI5A       .03     1   FLOW                  10.
                                               TIME                3.58

 HYDROGRAPH AT
+                  OFD2A       .01     1   FLOW                   9.
                                               TIME                3.58

 HYDROGRAPH AT
+                  RETD1       .00     1   FLOW                   7.
                                               TIME                3.58

   2 COMBINED AT
+                    CI3       .01     1   FLOW                  16.
                                               TIME                3.58

 DIVERSION TO
+                      D2       .01     1   FLOW                  16.
                                               TIME                3.58

 HYDROGRAPH AT
+                   DIV2       .01     1   FLOW                   0.
                                               TIME                .00
```

```
 HYDROGRAPH AT
+                  OND1       .00     1   FLOW          1.
                                          TIME        3.50

  2 COMBINED AT
+                   CI4       .01     1   FLOW          1.
                                          TIME        3.50

 DIVERSION TO
+                    D3       .01     1   FLOW          0.
                                          TIME         .00

 HYDROGRAPH AT
+                  DIV3       .01     1   FLOW          1.
                                          TIME        3.50

  2 COMBINED AT
+                  CI5B       .04     1   FLOW         11.
                                          TIME        3.58

 DIVERSION TO
+                    D4       .04     1   FLOW          0.
                                          TIME         .00

 HYDROGRAPH AT
+                  DIV4       .04     1   FLOW         11.
                                          TIME        3.58

 HYDROGRAPH AT
+                 OND5A       .00     1   FLOW          1.
                                          TIME        3.50

  2 COMBINED AT
+                  CI8A       .05     1   FLOW         12.
                                          TIME        3.50

 DIVERSION TO
+                  CI8A       .05     1   FLOW         12.
                                          TIME        3.50

 HYDROGRAPH AT
+                 DUMMY       .05     1   FLOW          0.
                                          TIME         .00

 HYDROGRAPH AT
+                  OND6       .01     1   FLOW         10.
                                          TIME        3.58

  2 COMBINED AT
+                  CI9A       .06     1   FLOW         10.
                                          TIME        3.58

 HYDROGRAPH AT
+                 OFD2B       .00     1   FLOW          3.
                                          TIME        3.58

 HYDROGRAPH AT
+                 RETD2       .00     1   FLOW         16.
                                          TIME        3.58

  2 COMBINED AT
+                   CI6       .00     1   FLOW         19.
                                          TIME        3.58

 DIVERSION TO
+                    D5       .00     1   FLOW         19.
                                          TIME        3.58

 HYDROGRAPH AT
+                  DIV5       .00     1   FLOW          0.
                                          TIME         .00

 HYDROGRAPH AT
+                  OND2       .00     1   FLOW          3.
                                          TIME        3.50

 HYDROGRAPH AT
+                 RETD3       .00     1   FLOW          0.
                                          TIME         .00

 HYDROGRAPH AT
+                  OND4       .00     1   FLOW          2.
                                          TIME        3.50

 HYDROGRAPH AT
+                 RETD4       .00     1   FLOW          0.
                                          TIME         .00

  5 COMBINED AT
+                   CI7       .01     1   FLOW          6.
                                          TIME        3.50
```

```
 DIVERSION TO
+                     D6       .01     1   FLOW          6.
                                            TIME         3.50

 HYDROGRAPH AT
+                   DIV6       .01     1   FLOW          0.
                                            TIME          .00

 HYDROGRAPH AT
+                 RETCI8       .00     1   FLOW         12.
                                            TIME         3.50

 HYDROGRAPH AT
+                  OND5B       .00     1   FLOW          4.
                                            TIME         3.50

  3 COMBINED AT
+                   CI8B       .01     1   FLOW         16.
                                            TIME         3.50

 DIVERSION TO
+                     D7       .01     1   FLOW         16.
                                            TIME         3.50

 HYDROGRAPH AT
+                   DIV7       .01     1   FLOW          0.
                                            TIME          .00

 HYDROGRAPH AT
+                  DUMMY       .00     1   FLOW          0.
                                            TIME          .00

  2 COMBINED AT
+                   CI8C       .01     1   FLOW          0.
                                            TIME          .00

 DIVERSION TO
+                    D7A       .01     1   FLOW          0.
                                            TIME          .00

 HYDROGRAPH AT
+                  DIV7A       .01     1   FLOW          0.
                                            TIME          .00

  2 COMBINED AT
+                   CI9C       .07     1   FLOW         10.
                                            TIME         3.58

 HYDROGRAPH AT
+                 RETD7A       .00     1   FLOW          0.
                                            TIME          .00

 HYDROGRAPH AT
+                  DUMMY       .00     1   FLOW          0.
                                            TIME          .00

  2 COMBINED AT
+                   CI9D       .00     1   FLOW          0.
                                            TIME          .00

 DIVERSION TO
+                     D8       .00     1   FLOW          0.
                                            TIME          .00

 HYDROGRAPH AT
+                   DIV8       .00     1   FLOW          0.
                                            TIME          .00

  2 COMBINED AT
+                   CI9B       .07     1   FLOW         10.
                                            TIME         3.58

 HYDROGRAPH AT
+                  RETD8       .00     1   FLOW          0.
                                            TIME          .00

 HYDROGRAPH AT
+                  RETD7       .00     1   FLOW         16.
                                            TIME         3.50

  2 COMBINED AT
+                   CI9E       .00     1   FLOW         16.
                                            TIME         3.50

 HYDROGRAPH AT
+                   OFD5       .02     1   FLOW         11.
                                            TIME         3.67

 HYDROGRAPH AT
+                   OFD6       .02     1   FLOW         15.
```

```
                                        TIME         3.58

  2 COMBINED AT
+                   CI12       .04     1   FLOW         25.
                                          TIME         3.58

 HYDROGRAPH AT
+                 NH-RAN       .00     1   FLOW         81.
                                          TIME          .00

 HYDROGRAPH AT
+                  DUMMY       .00     1   FLOW          0.
                                          TIME          .00

 HYDROGRAPH AT
+                   STD1       .00     1   FLOW          5.
                                          TIME         3.50

 HYDROGRAPH AT
+                   OFD7       .00     1   FLOW          5.
                                          TIME         3.50

 HYDROGRAPH AT
+                   OFD4       .00     1   FLOW          1.
                                          TIME         3.50

 HYDROGRAPH AT
+                  STD2A       .00     1   FLOW          4.
                                          TIME         3.50

  7 COMBINED AT
+                   CI10       .05     1   FLOW        117.
                                          TIME         3.50

 HYDROGRAPH AT
+                  OFD2C       .00     1   FLOW          2.
                                          TIME         3.58

 HYDROGRAPH AT
+                  RETD5       .00     1   FLOW         19.
                                          TIME         3.58

 HYDROGRAPH AT
+                   OND7       .00     1   FLOW          0.
                                          TIME         3.50

 HYDROGRAPH AT
+                   STD5       .00     1   FLOW          2.
                                          TIME         3.50

  4 COMBINED AT
+                   CI11       .00     1   FLOW         23.
                                          TIME         3.58


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

HEC-1 INTERIM PHASE 2 - 100 YR

```
1****************************************                    ****************************************
 *                                      *                    *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                    *    U.S. ARMY CORPS OF ENGINEERS      *
 *              JUN   1998              *                    *    HYDROLOGIC ENGINEERING CENTER     *
 *            VERSION 4.1               *                    *          609 SECOND STREET           *
 *                                      *                    *       DAVIS, CALIFORNIA 95616        *
 *  RUN DATE   05JUN20  TIME  12:45:14  *                    *           (916) 756-1104             *
 *                                      *                    *                                      *
 ****************************************                    ****************************************

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


          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

1                                                HEC-1 INPUT                                                PAGE  1

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

                        *DIAGRAM
            1           ID
            2           ID      <><><><><><><><><><><><><><><><><><><><>
            3           ID        RANCHO & VEGAS TOWNHOMES
            4           ID        HYDROLOGIC MODEL
            5           ID        --------------------------
            6           ID
            7           ID        100-YR STORM EVENT
            8           ID        --------------------------
            9           ID        HORROCKS ENGINEERING
           10           ID        INTERIM PHASE 2 CONDITION
           11           ID        FILE: INT PH2.DAT
           12           ID        PROJECT No: NV-2105-1911
           13           ID        DATE:  MAY 15 2020
           14           ID      <><><><><><><><><><><><><><><><><><><><>
           15           ID
           16           ID       ---> 6-HOUR / SDN 3 <---
           17           ID
           18           IT       5       0       0     300
           19           IO       5
           20           IN       5
           21           JR    PREC    1.00
                        *
           22           KK    OFE1
           23           KM    OFFSITE FLOW AT NORTHWEST CORNER OF PROJECT SITE
           24           BA   .0228
           25           PB    2.77
           26           PC    .000    .020    .057    .070    .087    .108    .124    .130    .130    .130
           27           PC    .130    .130    .130    .133    .140    .142    .148    .158    .172    .181
           28           PC    .190    .197    .199    .200    .201    .204    .214    .229    .241    .249
           29           PC    .251    .256    .270    .278    .281    .283    .295    .322    .352    .409
           30           PC    .499    .590    .710    .744    .781    .812    .819    .835    .851    .856
           31           PC    .860    .868    .876    .888    .910    .926    .937    .950    .970    .976
           32           PC    .982    .985    .987    .989    .990    .993    .993    .994    .995    .998
           33           PC    .998    .999   1.00
           34           LS       0      88
           35           UD    .210
                        *
           36           KK    STE3
           37           BA   .0024
           38           LS       0      92
           39           UD    .134
                        *
           40           KK     CI1
           41           KM   COMBINES OFFISTE BASIN OFE1 AND STREET STE3.
           42           HC       2
                        *
1                                                HEC-1 INPUT                                                PAGE  2

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

```
 43          KK  NH_HOL
 44          KM   CENTRAL NEIGHBORHOOD REFERENCE STUDY 100-YR BASEFLOW
 45          KM   WHICH OVERSPILL INTO HOLLY AVENUE. SEE THE STUDY
 46          KM   MAP FOR DETAIL.
 47          BA   .0001
 48          BF     285
 49          LS       0      01
 50          UD   .0001
             *

 51          KK   DUMMY
 52          KM   DUMMY CARD TO RESET BASEFLOW AND HAS NO FLOW
 53          BA   .0001
 54          BF     .00
 55          LS       0      01
 56          UD   .0001
             *

 57          KK    STE4
 58          BA   .0009
 59          LS       0      97
 60          UD   0.100
             *

 61          KK    OFD3
 62          BA   .0013
 63          LS       0      95
 64          UD   0.050
             *

 65          KK     CI2
 66          KM   COMBINES CI1, NH-HOL BASEFLOW, STREET STE4, AND OFFSITE BASIN OFD3.
 67          HC       5

 68          KK    DIV1
 69          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
 70          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
 71          KM   IS THE AMOUNT DIVERTED)
 72          KM   DIV1 AMOUNT THAT ENTERS INTO PROJECT SITE AND COMBINE WITH OND3
 73          DT     D1
 74          DI     319
 75          DQ     269
             *

 76          KK    OND3
 77          BA   .0035
 78          LS       0      95
 79          UD   0.102
             *
1                                        HEC-1 INPUT                                          PAGE  3

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

 80          KK    CI5A
 81          KM   COMBINES DIV1 AND OND3.
 82          HC       2
             *

 83          KK   OFD2A
 84          BA   .0117
 85          LS       0      92
 86          UD   0.122
             *

 87          KK   RETD1
 88          KM   RETRIEVE D1 - (THIS CARD RETRIEVES THE DIVERTED FLOW)
 89          KM   FLOW THAT RETAINS ON HOLLY AVENUE
 90          DR      D1
             *

 91          KK     CI3
 92          KM   COMBINES OFD2A AND D1.
 93          HC       2
             *

 94          KK    DIV2
 95          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
 96          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
 97          KM   IS THE AMOUNT DIVERTED)
 98          KM   DIV2 RUNOFF AMOUNT ENTERS INTO PROJECT SITE, FLOWS SOUTH
 99          KM   AND COMBINES WITH OND1
100          DT     D2
101          DI     287
102          DQ      91
             *

103          KK    OND1
104          BA   .0013
```

```
 105          LS       0      95
 106          UD   0.050
              *

 107          KK     CI4
 108          KM   COMBINES DIV2 AND OND1.
 109          HC       2
              *

 110          KK    DIV3
 111          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
 112          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
 113          KM   IS THE AMOUNT DIVERTED)
 114          KM   DIV3 RUNOFF AMOUNT FLOWS SOUTH AND COMBINES WITH CI5A FLOW AMOUNT
 115          DT      D3
 116          DI     198
 117          DQ      25
              *
1                                      HEC-1 INPUT                                          PAGE  4

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


 118          KK    CI5B
 119          KM   COMBINES DIV3 AND CI5A.
 120          HC       2
              *

 121          KK    DIV4
 122          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
 123          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
 124          KM   IS THE AMOUNT DIVERTED)
 125          KM   DIV4 RUNOFF AMOUNT FLOWS SOUTH AND COMBINES WITH OND5A
 126          DT      D4
 127          DI     229
 128          DQ      79
              *

 129          KK   OND5A
 130          BA   .0012
 131          LS       0      95
 132          UD   0.051
              *

 133          KK    CI8A
 134          KM   COMBINES DIV4 AND OND5A.
 135          HC       2
              *

 136          KK   DUMMY
 137          KM   THIS IS NOT ACTUALLY FLOW SPLIT OR DIVERSION. TOTAL DISCHARGE OF CI8A
 138          KM   FLOWS EAST TOWARD CI8B. THAT IS, DUMMY = 0 CFS.
 139          KM   THIS DUMMY CARD AS FLOW SPLIT ARE REQUIRE TO
 140          KM   ENABLE HEC-1 TO CREATE FLOW TREE.
 141          DT    CI8A
 142          DI     151
 143          DQ     151
              *

 144          KK    OND6
 145          BA   .0106
 146          LS       0      95
 147          UD   0.127
              *

 148          KK    CI9A
 149          KM   COMBINES DUMMY AND OND6.
 150          HC       2
              *

 151          KK   OFD2B
 152          BA   .0045
 153          LS       0      92
 154          UD   0.112
              *
1                                      HEC-1 INPUT                                          PAGE  5

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


 155          KK   RETD2
 156          KM   RETRIEVE D2 - (THIS CARD RETRIEVES THE DIVERTED FLOW)
 157          KM   FLOW THAT RETAINS ON HOLLY AVENUE
 158          DR      D2
              *

 159          KK     CI6
 160          KM   COMBINES OFD2B, AND D2.
 161          HC       2
              *
```

```
 162          KK    DIV5
 163          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
 164          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
 165          KM    IS THE AMOUNT DIVERTED)
 166          KM   DIV5 RUNOFF AMOUNT FLOWS SOUTH AND ENTERS INTO THE PROJECT SITE.
 167          DT      D5
 168          DI      98
 169          DQ      38
              *

 170          KK    OND2
 171          BA   .0036
 172          LS       0      95
 173          UD   0.097
              *

 174          KK   RETD3
 175          KM   RETRIEVE D3 - (THIS CARD RETRIEVES THE DIVERTED FLOW)
 176          KM   THE FLOW D3 ENTERS INTO OND2 BASIN
 177          DR      D3
              *

 178          KK    OND4
 179          BA   .0023
 180          LS       0      95
 181          UD   0.067
              *

 182          KK   RETD4
 183          KM   RETRIEVE D4 - (THIS CARD RETRIEVES THE DIVERTED FLOW)
 184          KM   THE FLOW D4 ENTERS INTO OND4 BASIN
 185          DR      D4
              *

 186          KK     CI7
 187          KM   COMBINES DIV5, OND2, D3, OND4, AND D4.
 188          HC       5
              *
1                                        HEC-1 INPUT                                          PAGE  6

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

 189          KK    DIV6
 190          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
 191          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
 192          KM    IS THE AMOUNT DIVERTED)
 193          KM   DIV6 RUNOFF AMOUNT FLOWS SOUTH.
 194          DT      D6
 195          DI     174
 196          DQ     127
              *

 197          KK   OND5B
 198          BA   .0037
 199          LS       0      95
 200          UD   0.067
              *

 201          KK  RETCI8A
 202          KM   RETRIEVE CI8A - (THIS CARD RETRIEVES THE DIVERTED FLOW)
 203          KM   THE FLOW CI8A COMBINES WITH OND5B BASIN, AND DIV6
 204          DR    CI8A
              *

 205          KK    CI8B
 206          KM   COMBINES DIV6, CI8A, AND OND5B.
 207          HC       3
              *

 208          KK    DIV7
 209          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
 210          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
 211          KM   IS THE AMOUNT DIVERTED)
 212          KM   DIV7 RUNOFF AMOUNT FLOWS SOUTH.
 213          DT      D7
 214          DI     206
 215          DQ      25
              *

 216          KK   DUMMY
 217          KM   DUMMY CARD TO MAKE HEC-1 RUN
 218          BA   .0001
 219          BF     .00
 220          LS       0      01
 221          UD   .0001
              *

 222          KK    CI8C
 223          KM   IS EQUAL TO DIV7
 224          HC       2
```

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

 225          KK   DIV7A
 226          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
 227          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
 228          KM   IS THE AMOUNT DIVERTED)
 229          KM   DIV7A RUNOFF AMOUNT FLOWS SOUTH.
 230          DT     D7A
 231          DI     181
 232          DQ      96
              *

 233          KK    CI9C
 234          KM   COMBINES DIV7A AND CI9A.
 235          HC       2
              *

 236          KK  RETD7A
 237          KM   RETRIEVE D7A - (THIS CARD RETRIEVES THE DIVERTED FLOW)
 238          KM   THE FLOW D7A ENTERS INTO 15' PORPOSED EASEMENT
 239          DR     D7A
              *

 240          KK   DUMMY
 241          KM   DUMMY CARD TO MAKE HEC-1 RUN
 242          BA   .0001
 243          BF     .00
 244          LS       0      01
 245          UD
              *

 246          KK    CI9D
 247          KM    EQUAL TO D7A
 248          HC       2
              *

 249          KK    DIV8
 250          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
 251          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
 252          KM   IS THE AMOUNT DIVERTED)
 253          DT      D8
 254          DI      96
 255          DQ       4
              *

 256          KK    CI9B
 257          KM   COMBINES CI9C AND DIV8.
 258          HC       2
              *

 259          KK   RETD8
 260          KM   RETRIEVE D8 - (THIS CARD RETRIEVES THE DIVERTED FLOW)
 261          KM   THE FLOW D8 ENTERS INTO 10' EXISTING EASEMENT
 262          DR      D8
              *
```



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

 263          KK   RETD7
 264          KM   RETRIEVE D7 - (THIS CARD RETRIEVES THE DIVERTED FLOW)
 265          KM   THE FLOW D7 ENTERS INTO 10' EXISTING EASEMENT
 266          DR      D7
              *

 267          KK    CI9E
 268          KM   COMBINES D7 AND D8.
 269          HC       2
              *

 270          KK    OFD5
 271          BA   .0237
 272          LS       0      88
 273          UD   0.252
              *

 274          KK    OFD6
 275          BA   .0170
 276          LS       0      95
 277          UD   0.128
              *

 278          KK    CI12
 279          KM   COMBINES OFD5 AND OFD6.
 280          HC       2
              *
```

```
 281          KK  NH-RAN
 282          KM   CENTRAL NEIGHBORHOOD REFERENCE STUDY 100-YR BASEFLOW
 283          KM   WHICH CONTINUE ON RANCHO AVENUE. SEE THE STUDY
 284          KM   MAP FOR DETAIL.
 285          BA   .0001
 286          BF     223
 287          LS       0      01
 288          UD   .0001
                   *

 289          KK   DUMMY
 290          KM   DUMMY CARD TO RESET BASEFLOW AND HAS NO FLOW
 291          BA   .0001
 292          BF     .00
 293          LS       0      01
 294          UD   .0001
                   *

 295          KK    STD1
 296          BA   .0038
 297          LS       0      98
 298          UD   0.077
                   *
1                                        HEC-1 INPUT                                        PAGE  9

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


 299          KK    OFD7
 300          BA   .0045
 301          LS       0      95
 302          UD   0.081
                   *

 303          KK    OFD4
 304          BA   .0012
 305          LS       0      95
 306          UD   0.050
                   *

 307          KK   STD2A
 308          BA   .0032
 309          LS       0      98
 310          UD   0.071
                   *

 311          KK    CI10
 312          KM   COMBINES CI12, NH-RAN, STD1, OFD7, OFD4, AND STD2A.
 313          HC       7
                   *

 314          KK   OFD2C
 315          BA   .0026
 316          LS       0      92
 317          UD   0.120
                   *

 318          KK   RETD5
 319          KM   RETRIEVE D5 - (THIS CARD RETRIEVES THE DIVERTED FLOW)
 320          KM   THE FLOW D5 DO NOT ENTER INTO THE PROJECT SITE AND
 321          KM   REMAINS ON HOLLY AVENUE.
 322          DR      D5
                   *

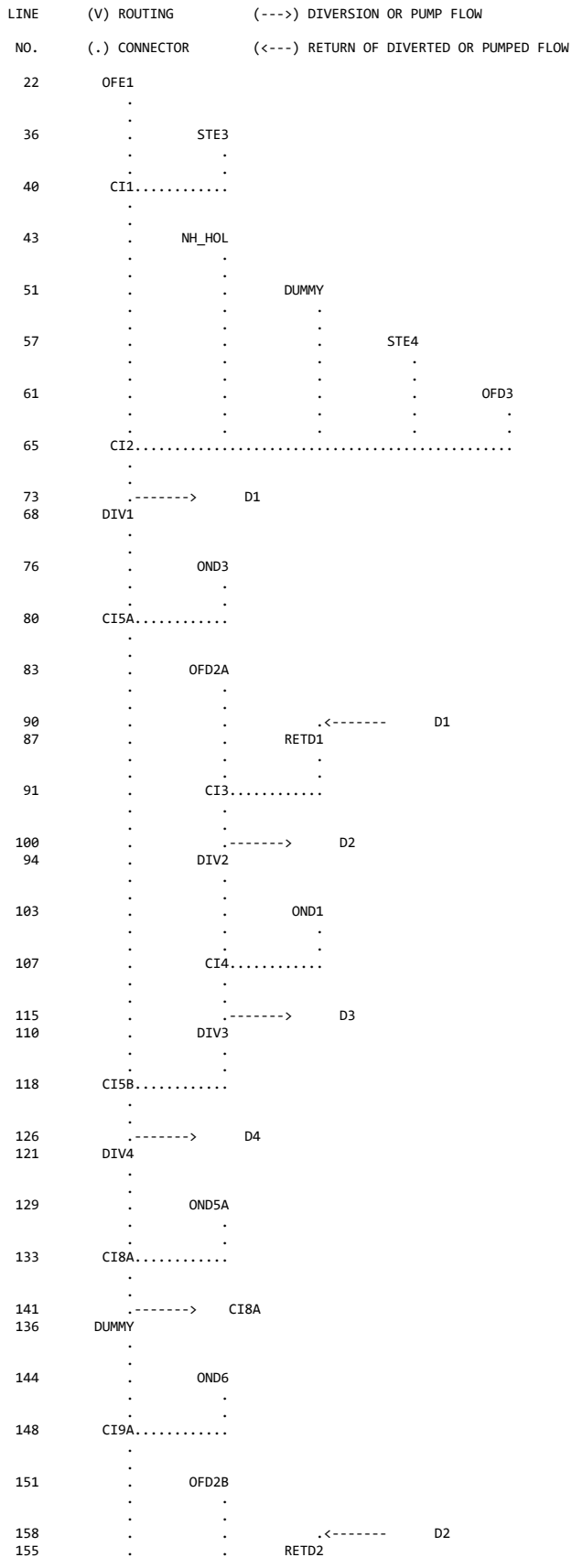
 323          KK    OND7
 324          BA   .0003
 325          LS       0      95
 326          UD   0.050
                   *

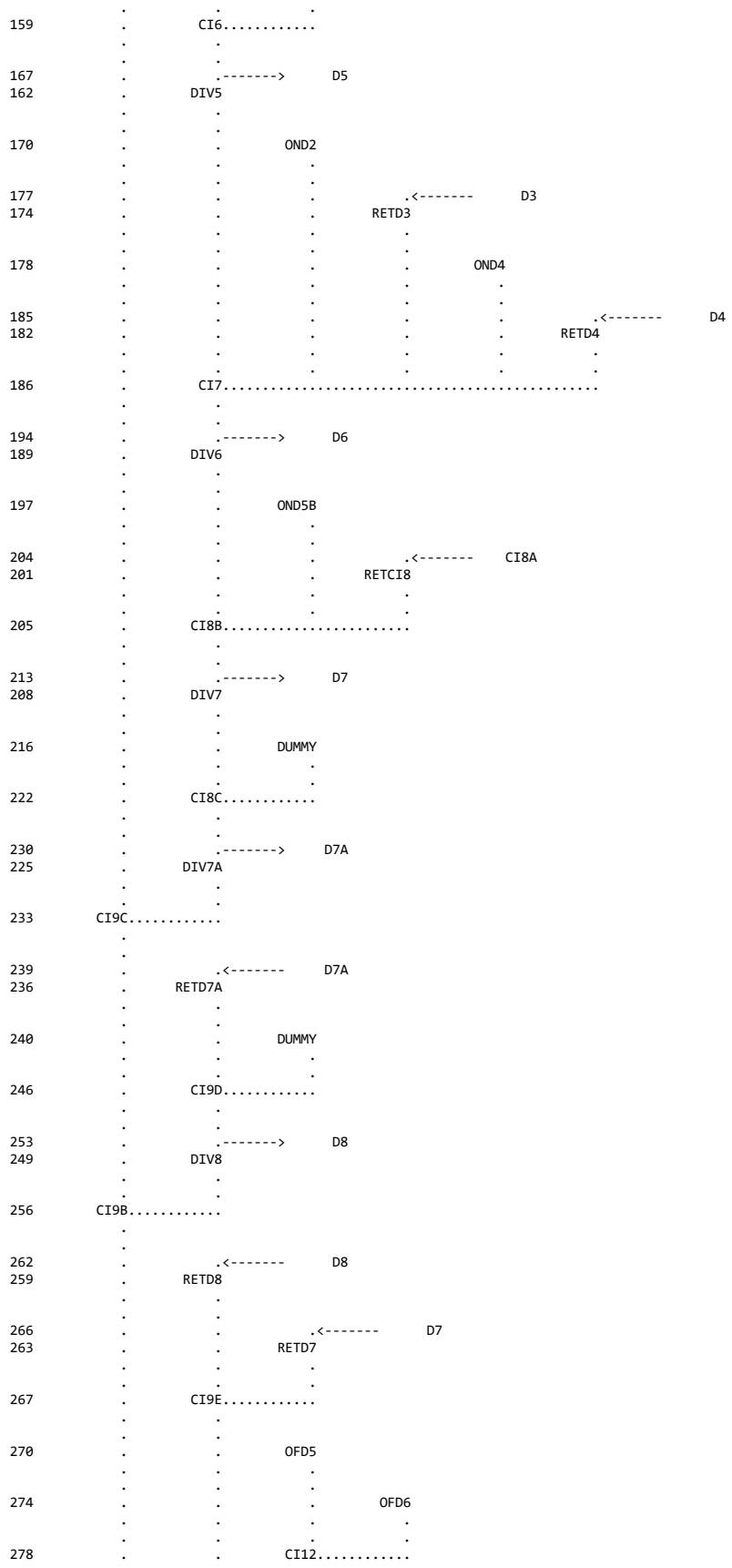
 327          KK    STD5
 328          BA   .0021
 329          LS       0      97
 330          UD   0.072
                   *

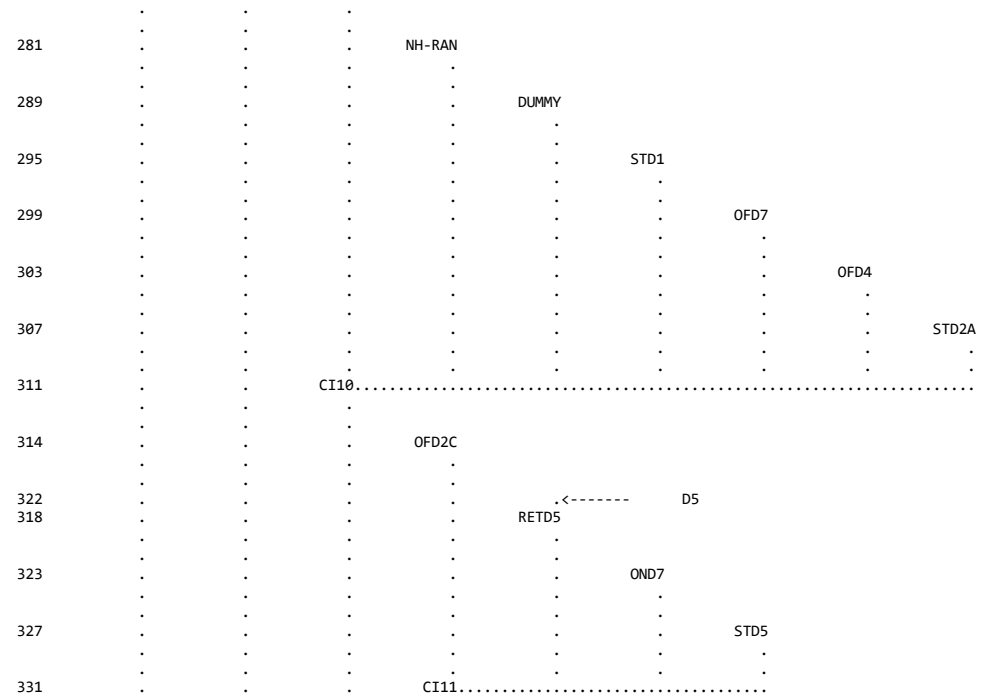
 331          KK    CI11
 332          KM   COMBINES OFD2C, D5, OND7, AND STD5
 333          HC       4
                   *
                   *
                   *
1                                        HEC-1 INPUT                                        PAGE 10

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

 334          ZZ
1
               SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
```


LINE
NO.
(V) ROUTING
(.) CONNECTOR
(--->) DIVERSION OR PUMP FLOW
(<---) RETURN OF DIVERTED OR PUMPED FLOW
22 OFE1
36 STE3
40 CI1
43 NH_HOL
51 DUMMY
57 STE4
61 OFD3
65 CI2
73 D1
68 DIV1
76 OND3
80 CI5A
83 OFD2A
90 D1
87 RETD1
91 CI3
100 D2
94 DIV2
103 OND1
107 CI4
115 D3
110 DIV3
118 CI5B
126 D4
121 DIV4
129 OND5A
133 CI8A
141 CI8A
136 DUMMY
144 OND6
148 CI9A
151 OFD2B
158 D2
155 RETD2


159 CI6
167
162 DIV5
170 OND2
177
174 RETD3
178 OND4
185
182 RETD4
186 CI7
194
189 DIV6
197 OND5B
204
201 RETCI8
205 CI8B
213
208 DIV7
216 DUMMY
222 CI8C
230
225 DIV7A
233 CI9C
239
236 RETD7A
240 DUMMY
246 CI9D
253
249 DIV8
256 CI9B
262
259 RETD8
266
263 RETD7
267 CI9E
270 OFD5
274 OFD6
278 CI12
D5
D3
D4
D6
CI8A
D7
D7A
D8
D7



(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
1****************************************                    ****************************************
 *                                      *                    *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                    *    U.S. ARMY CORPS OF ENGINEERS      *
 *              JUN   1998              *                    *    HYDROLOGIC ENGINEERING CENTER     *
 *           VERSION 4.1                *                    *          609 SECOND STREET           *
 *                                      *                    *       DAVIS, CALIFORNIA 95616        *
 *  RUN DATE   05JUN20  TIME  12:45:14  *                    *           (916) 756-1104             *
 *                                      *                    *                                      *
 ****************************************                    ****************************************
```

<><><><><><><><><><><><><><><><><><><><>
RANCHO & VEGAS TOWNHOMES
HYDROLOGIC MODEL

100-YR STORM EVENT

HORROCKS ENGINEERING
INTERIM PHASE 2 CONDITION
FILE: INT PH2.DAT
PROJECT No: NV-2105-1911
DATE: MAY 15 2020
<><><><><><><><><><><><><><><><><><><><>

---> 6-HOUR / SDN 3 <---

```
  19 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
                    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


                                                                    RATIOS APPLIED TO PRECIPITATION
 OPERATION       STATION     AREA    PLAN                      RATIO 1
                                                                  1.00

 HYDROGRAPH AT
+                   OFE1       .02     1   FLOW                  27.
                                               TIME                3.67

 HYDROGRAPH AT
+                   STE3       .00     1   FLOW                   4.
                                               TIME                3.58

   2 COMBINED AT
+                    CI1       .03     1   FLOW                  30.
                                               TIME                3.58

 HYDROGRAPH AT
+                  NH_HOL       .00     1   FLOW                 285.
                                               TIME                 .00

 HYDROGRAPH AT
+                  DUMMY       .00     1   FLOW                   0.
                                               TIME                 .00

 HYDROGRAPH AT
+                   STE4       .00     1   FLOW                   2.
                                               TIME                3.50

 HYDROGRAPH AT
+                   OFD3       .00     1   FLOW                   3.
                                               TIME                3.50

   5 COMBINED AT
+                    CI2       .03     1   FLOW                 319.
                                               TIME                3.58

 DIVERSION TO
+                     D1       .03     1   FLOW                 269.
                                               TIME                3.58

 HYDROGRAPH AT
+                   DIV1       .03     1   FLOW                  50.
                                               TIME                3.58

 HYDROGRAPH AT
+                   OND3       .00     1   FLOW                   6.
                                               TIME                3.50

   2 COMBINED AT
+                   CI5A       .03     1   FLOW                  56.
                                               TIME                3.58

 HYDROGRAPH AT
+                  OFD2A       .01     1   FLOW                  19.
                                               TIME                3.58

 HYDROGRAPH AT
+                  RETD1       .00     1   FLOW                 269.
                                               TIME                3.58

   2 COMBINED AT
+                    CI3       .01     1   FLOW                 287.
                                               TIME                3.58

 DIVERSION TO
+                     D2       .01     1   FLOW                  91.
                                               TIME                3.58

 HYDROGRAPH AT
+                   DIV2       .01     1   FLOW                 196.
                                               TIME                3.58
```

```
 HYDROGRAPH AT
+                   OND1       .00     1   FLOW          3.
                                           TIME        3.50

  2 COMBINED AT
+                    CI4       .01     1   FLOW        198.
                                           TIME        3.58

 DIVERSION TO
+                     D3       .01     1   FLOW         25.
                                           TIME        3.58

 HYDROGRAPH AT
+                   DIV3       .01     1   FLOW        173.
                                           TIME        3.58

  2 COMBINED AT
+                   CI5B       .04     1   FLOW        229.
                                           TIME        3.58

 DIVERSION TO
+                     D4       .04     1   FLOW         79.
                                           TIME        3.58

 HYDROGRAPH AT
+                   DIV4       .04     1   FLOW        150.
                                           TIME        3.58

 HYDROGRAPH AT
+                  OND5A       .00     1   FLOW          3.
                                           TIME        3.50

  2 COMBINED AT
+                   CI8A       .05     1   FLOW        151.
                                           TIME        3.50

 DIVERSION TO
+                   CI8A       .05     1   FLOW        151.
                                           TIME        3.50

 HYDROGRAPH AT
+                  DUMMY       .05     1   FLOW          0.
                                           TIME         .00

 HYDROGRAPH AT
+                   OND6       .01     1   FLOW         19.
                                           TIME        3.58

  2 COMBINED AT
+                   CI9A       .06     1   FLOW         19.
                                           TIME        3.58

 HYDROGRAPH AT
+                  OFD2B       .00     1   FLOW          7.
                                           TIME        3.50

 HYDROGRAPH AT
+                  RETD2       .00     1   FLOW         91.
                                           TIME        3.58

  2 COMBINED AT
+                    CI6       .00     1   FLOW         98.
                                           TIME        3.58

 DIVERSION TO
+                     D5       .00     1   FLOW         38.
                                           TIME        3.58

 HYDROGRAPH AT
+                   DIV5       .00     1   FLOW         60.
                                           TIME        3.58

 HYDROGRAPH AT
+                   OND2       .00     1   FLOW          7.
                                           TIME        3.50

 HYDROGRAPH AT
+                  RETD3       .00     1   FLOW         25.
                                           TIME        3.58

 HYDROGRAPH AT
+                   OND4       .00     1   FLOW          5.
                                           TIME        3.50

 HYDROGRAPH AT
+                  RETD4       .00     1   FLOW         79.
                                           TIME        3.58

  5 COMBINED AT
+                    CI7       .01     1   FLOW        174.
                                           TIME        3.50
```

```
 DIVERSION TO
+                     D6       .01     1   FLOW         127.
                                            TIME         3.50

 HYDROGRAPH AT
+                    DIV6       .01     1   FLOW          47.
                                            TIME         3.50

 HYDROGRAPH AT
+                  OND5B       .00     1   FLOW           8.
                                            TIME         3.50

 HYDROGRAPH AT
+                 RETCI8       .00     1   FLOW         151.
                                            TIME         3.50

  3 COMBINED AT
+                    CI8B       .01     1   FLOW         206.
                                            TIME         3.50

 DIVERSION TO
+                     D7       .01     1   FLOW          25.
                                            TIME         3.50

 HYDROGRAPH AT
+                    DIV7       .01     1   FLOW         181.
                                            TIME         3.50

 HYDROGRAPH AT
+                   DUMMY       .00     1   FLOW           0.
                                            TIME          .00

  2 COMBINED AT
+                    CI8C       .01     1   FLOW         181.
                                            TIME         3.50

 DIVERSION TO
+                     D7A       .01     1   FLOW          96.
                                            TIME         3.50

 HYDROGRAPH AT
+                   DIV7A       .01     1   FLOW          85.
                                            TIME         3.50

  2 COMBINED AT
+                    CI9C       .07     1   FLOW         103.
                                            TIME         3.50

 HYDROGRAPH AT
+                 RETD7A       .00     1   FLOW          96.
                                            TIME         3.50

 HYDROGRAPH AT
+                   DUMMY       .00     1   FLOW           0.
                                            TIME          .00

  2 COMBINED AT
+                    CI9D       .00     1   FLOW          96.
                                            TIME         3.50

 DIVERSION TO
+                     D8       .00     1   FLOW           4.
                                            TIME         3.50

 HYDROGRAPH AT
+                    DIV8       .00     1   FLOW          92.
                                            TIME         3.50

  2 COMBINED AT
+                    CI9B       .07     1   FLOW         195.
                                            TIME         3.50

 HYDROGRAPH AT
+                  RETD8       .00     1   FLOW           4.
                                            TIME         3.50

 HYDROGRAPH AT
+                  RETD7       .00     1   FLOW          25.
                                            TIME         3.50

  2 COMBINED AT
+                    CI9E       .00     1   FLOW          29.
                                            TIME         3.50

 HYDROGRAPH AT
+                    OFD5       .02     1   FLOW          26.
                                            TIME         3.67

 HYDROGRAPH AT
+                    OFD6       .02     1   FLOW          30.
```

```
                                        TIME         3.58

  2 COMBINED AT
+                   CI12       .04     1   FLOW         54.
                                          TIME         3.58

 HYDROGRAPH AT
+                 NH-RAN       .00     1   FLOW        223.
                                          TIME          .00

 HYDROGRAPH AT
+                   DUMMY      .00     1   FLOW          0.
                                          TIME          .00

 HYDROGRAPH AT
+                    STD1      .00     1   FLOW          8.
                                          TIME         3.50

 HYDROGRAPH AT
+                    OFD7      .00     1   FLOW          9.
                                          TIME         3.50

 HYDROGRAPH AT
+                    OFD4      .00     1   FLOW          3.
                                          TIME         3.50

 HYDROGRAPH AT
+                   STD2A      .00     1   FLOW          7.
                                          TIME         3.50

  7 COMBINED AT
+                    CI10      .05     1   FLOW        297.
                                          TIME         3.58

 HYDROGRAPH AT
+                   OFD2C      .00     1   FLOW          4.
                                          TIME         3.58

 HYDROGRAPH AT
+                   RETD5      .00     1   FLOW         38.
                                          TIME         3.58

 HYDROGRAPH AT
+                    OND7      .00     1   FLOW          1.
                                          TIME         3.50

 HYDROGRAPH AT
+                    STD5      .00     1   FLOW          4.
                                          TIME         3.50

  4 COMBINED AT
+                    CI11      .00     1   FLOW         47.
                                          TIME         3.50


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

HEC-1 ULTIMATE 10 YR

```
1****************************************                    ****************************************
 *                                      *                    *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                    *    U.S. ARMY CORPS OF ENGINEERS      *
 *               JUN   1998             *                    *    HYDROLOGIC ENGINEERING CENTER     *
 *            VERSION 4.1               *                    *          609 SECOND STREET           *
 *                                      *                    *       DAVIS, CALIFORNIA 95616        *
 *  RUN DATE   05JUN20  TIME  13:04:06  *                    *           (916) 756-1104             *
 *                                      *                    *                                      *
 ****************************************                    ****************************************

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

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
            1           ID
            2           ID      <><><><><><><><><><><><><><><><><><><><>
            3           ID        RANCHO & VEGAS TOWNHOMES
            4           ID        HYDROLOGIC MODEL
            5           ID        --------------------------
            6           ID
            7           ID        10-YR STORM EVENT
            8           ID        --------------------------
            9           ID        HORROCKS ENGINEERING
           10           ID        ULTIMATE CONDITION
           11           ID        FILE: ULT.DAT
           12           ID        PROJECT No: NV-2105-1911
           13           ID        DATE:  APRIL 18 2020
           14           ID      <><><><><><><><><><><><><><><><><><><><>
           15           ID
           16           ID       ---> 6-HOUR / SDN 3 <---
           17           ID
           18           IT       5       0       0     300
           19           IO       5
           20           IN       5
           21           JR    PREC    1.00
                        *
           22           KK    OFD1
           23           KM    OFFSITE FLOW AT NORTHWEST CORNER OF PROJECT SITE
           24           BA   .0228
           25           PB    1.58
           26           PC    .000    .020    .057    .070    .087    .108    .124    .130    .130    .130
           27           PC    .130    .130    .130    .133    .140    .142    .148    .158    .172    .181
           28           PC    .190    .197    .199    .200    .201    .204    .214    .229    .241    .249
           29           PC    .251    .256    .270    .278    .281    .283    .295    .322    .352    .409
           30           PC    .499    .590    .710    .744    .781    .812    .819    .835    .851    .856
           31           PC    .860    .868    .876    .888    .910    .926    .937    .950    .970    .976
           32           PC    .982    .985    .987    .989    .990    .993    .993    .994    .995    .998
           33           PC    .998    .999   1.00
           34           LS       0      95
           35           UD    .125
                        *
           36           KK    STD3
           37           BA   .0024
           38           LS       0      98
           39           UD    .105
                        *
           40           KK     CU1
           41           KM   COMBINES OFFISTE BASIN OFD1 AND STREET STD3.
           42           HC       2
                        *
```



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

```
 43          KK  NH_HOL
 44          KM   CENTRAL NEIGHBORHOOD REFERENCE STUDY 100-YR BASEFLOW
 45          KM   WHICH OVERSPILL INTO HOLLY AVENUE. SEE THE STUDY
 46          KM   MAP FOR DETAIL.
 47          BA   .0001
 48          BF       0
 49          LS       0      01
 50          UD   .0001
             *

 51          KK   DUMMY
 52          KM   DUMMY CARD TO RESET BASEFLOW AND HAS NO FLOW
 53          BA   .0001
 54          BF     .00
 55          LS       0      01
 56          UD   .0001
             *

 57          KK    STD4
 58          BA   .0009
 59          LS       0      98
 60          UD   0.050
             *

 61          KK    OFD3
 62          BA   .0013
 63          LS       0      95
 64          UD   0.050
             *

 65          KK     CU2
 66          KM   COMBINES CU1, NH-HOL BASEFLOW, STREET STD4, AND OFFSITE BASIN OFD3.
 67          HC       5

 68          KK    DIV1
 69          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
 70          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
 71          KM   IS THE AMOUNT DIVERTED)
 72          KM   DIV1 AMOUNT THAT ENTERS INTO PROJECT SITE AND COMBINE WITH OND3
 73          DT      D1
 74          DI      25
 75          DQ      25
             *

 76          KK    OND3
 77          BA   .0035
 78          LS       0      95
 79          UD   0.102
             *
1                                        HEC-1 INPUT                                          PAGE  3

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

 80          KK    CU5A
 81          KM   COMBINES DIV1 AND OND3.
 82          HC       2
             *

 83          KK   OFD2A
 84          BA   .0117
 85          LS       0      92
 86          UD   0.122
             *

 87          KK   RETD1
 88          KM   RETRIEVE D1 - (THIS CARD RETRIEVES THE DIVERTED FLOW)
 89          KM   FLOW THAT RETAINS ON HOLLY AVENUE
 90          DR      D1
             *

 91          KK     CU3
 92          KM   COMBINES OFD2A AND D1.
 93          HC       2
             *

 94          KK    DIV2
 95          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
 96          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
 97          KM   IS THE AMOUNT DIVERTED)
 98          KM   DIV2 RUNOFF AMOUNT ENTERS INTO PROJECT SITE, FLOWS SOUTH
 99          KM   AND COMBINES WITH OND1
100          DT      D2
101          DI      33
102          DQ       5
             *

103          KK    OND1
104          BA   .0013
```

```
 105          LS       0      95
 106          UD   0.050
              *

 107          KK     CU4
 108          KM   COMBINES DIV2 AND OND1.
 109          HC       2
              *

 110          KK    DIV3
 111          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
 112          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
 113          KM   IS THE AMOUNT DIVERTED)
 114          KM   DIV3 RUNOFF AMOUNT FLOWS SOUTH AND COMBINES WITH CI5A FLOW AMOUNT
 115          DT      D3
 116          DI      30
 117          DQ       0
              *
1                                      HEC-1 INPUT                                          PAGE  4

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


 118          KK    CU5B
 119          KM   COMBINES DIV3 AND CI5A.
 120          HC       2
              *

 121          KK    DIV4
 122          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
 123          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
 124          KM   IS THE AMOUNT DIVERTED)
 125          KM   DIV4 RUNOFF AMOUNT FLOWS SOUTH AND COMBINES WITH OND5A
 126          DT      D4
 127          DI      33
 128          DQ       0
              *

 129          KK   OND5A
 130          BA   .0012
 131          LS       0      95
 132          UD   0.051
              *

 133          KK    CU8A
 134          KM   COMBINES DIV4 AND OND5A.
 135          HC       2
              *

 136          KK   DUMMY
 137          KM   THIS IS NOT ACTUALLY FLOW SPLIT OR DIVERSION. TOTAL DISCHARGE OF CU8A
 138          KM   FLOWS EAST TOWARD CU8B. THAT IS, DUMMY = 0 CFS.
 139          KM   THIS DUMMY CARD AS FLOW SPLIT IS REQUIRE TO
 140          KM   ENABLE HEC-1 TO CREATE FLOW TREE.
 141          DT    CU8A
 142          DI      35
 143          DQ      35
              *

 144          KK    OND6
 145          BA   .0106
 146          LS       0      95
 147          UD   0.127
              *

 148          KK    CU9A
 149          KM   COMBINES DUMMY AND OND6.
 150          HC       2
              *

 151          KK   OFD2B
 152          BA   .0045
 153          LS       0      92
 154          UD   0.112
              *
1                                      HEC-1 INPUT                                          PAGE  5

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


 155          KK   RETD2
 156          KM   RETRIEVE D2 - (THIS CARD RETRIEVES THE DIVERTED FLOW)
 157          KM   FLOW THAT RETAINS ON HOLLY AVENUE
 158          DR      D2
              *

 159          KK     CU6
 160          KM   COMBINES OFD2B, AND D2.
 161          HC       2
              *
```

```
162          KK    DIV5
163          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
164          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
165          KM    IS THE AMOUNT DIVERTED)
166          KM   DIV5 RUNOFF AMOUNT FLOWS SOUTH AND ENTERS INTO THE PROJECT SITE.
167          DT      D5
168          DI       9
169          DQ       9
             *

170          KK    OND2
171          BA   .0036
172          LS       0      95
173          UD   0.097
             *

174          KK   RETD3
175          KM   RETRIEVE D3 - (THIS CARD RETRIEVES THE DIVERTED FLOW)
176          KM   THE FLOW D3 ENTERS INTO OND2 BASIN
177          DR      D3
             *

178          KK    OND4
179          BA   .0023
180          LS       0      95
181          UD   0.067
             *

182          KK   RETD4
183          KM   RETRIEVE D4 - (THIS CARD RETRIEVES THE DIVERTED FLOW)
184          KM   THE FLOW D4 ENTERS INTO OND4 BASIN
185          DR      D4
             *

186          KK     CU7
187          KM   COMBINES DIV5, OND2, D3, OND4, AND D4.
188          HC       5
             *
1                                        HEC-1 INPUT                                          PAGE  6

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

189          KK    DIV6
190          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
191          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
192          KM    IS THE AMOUNT DIVERTED)
193          KM   DIV6 RUNOFF AMOUNT FLOWS SOUTH.
194          DT      D6
195          DI       6
196          DQ       6
             *

197          KK  RETCU8A
198          KM   RETRIEVE CU8A - (THIS CARD RETRIEVES THE DIVERTED FLOW)
199          KM   THE FLOW CU8A COMBINES WITH OND5B BASIN, AND DIV6
200          DR    CU8A
             *

201          KK   OND5B
202          BA   .0037
203          LS       0      95
204          UD   0.067
             *

205          KK    CU8B
206          KM   COMBINES DIV6, CU8A, AND OND5B.
207          HC       3
             *

208          KK    DIV7
209          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
210          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
211          KM   IS THE AMOUNT DIVERTED)
212          KM   DIV7 RUNOFF AMOUNT FLOWS SOUTH.
213          DT      D7
214          DI      39
215          DQ      25
             *

216          KK   DUMMY
217          KM   DUMMY CARD TO MAKE HEC-1 RUN
218          BA   .0001
219          BF     .00
220          LS       0      01
221          UD   .0001
             *

222          KK    CU8C
223          KM   IS EQUAL TO DIV7
224          HC       2
```

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

 225          KK   DIV7A
 226          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
 227          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
 228          KM   IS THE AMOUNT DIVERTED)
 229          KM   DIV7A RUNOFF AMOUNT FLOWS SOUTH.
 230          DT     D7A
 231          DI      14
 232          DQ      14
                *
 233          KK    CU9C
 234          KM   COMBINES DIV7A AND CU9A.
 235          HC       2
                *
 236          KK  RETD7A
 237          KM   RETRIEVE D7A - (THIS CARD RETRIEVES THE DIVERTED FLOW)
 238          KM   THE FLOW D7A ENTERS INTO 15' PORPOSED EASEMENT
 239          DR     D7A
                *
 240          KK   DUMMY
 241          KM   DUMMY CARD TO MAKE HEC-1 RUN
 242          BA   .0001
 243          BF     .00
 244          LS       0      01
 245          UD
                *
 246          KK    CU9D
 247          KM    EQUAL TO D7A
 248          HC       2
                *
 249          KK    DIV8
 250          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
 251          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
 252          KM   IS THE AMOUNT DIVERTED)
 253          DT      D8
 254          DI      14
 255          DQ       4
                *
 256          KK    CU9B
 257          KM   COMBINES CU9C AND DIV8.
 258          HC       2
                *
 259          KK   RETD8
 260          KM   RETRIEVE D8 - (THIS CARD RETRIEVES THE DIVERTED FLOW)
 261          KM   THE FLOW D8 ENTERS INTO 10' EXISTING EASEMENT
 262          DR      D8
                *
```



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

 263          KK   RETD7
 264          KM   RETRIEVE D7 - (THIS CARD RETRIEVES THE DIVERTED FLOW)
 265          KM   THE FLOW D7 ENTERS INTO 10' EXISTING EASEMENT
 266          DR      D7
                *
 267          KK    CU9E
 268          KM   COMBINES D7 AND D8.
 269          HC       2
                *
 270          KK    OFD5
 271          BA   .0237
 272          LS       0      88
 273          UD   0.252
                *
 274          KK    OFD6
 275          BA   .0170
 276          LS       0      95
 277          UD   0.128
                *
 278          KK    CU12
 279          KM   COMBINES OFD5 AND OFD6.
 280          HC       2
                *
```

```
 281          KK  NH-RAN
 282          KM   CENTRAL NEIGHBORHOOD REFERENCE STUDY 100-YR BASEFLOW
 283          KM   WHICH CONTINUE ON RANCHO AVENUE. SEE THE STUDY
 284          KM   MAP FOR DETAIL.
 285          BA   .0001
 286          BF      81
 287          LS       0      01
 288          UD   .0001
                   *

 289          KK   DUMMY
 290          KM   DUMMY CARD TO RESET BASEFLOW AND HAS NO FLOW
 291          BA   .0001
 292          BF     .00
 293          LS       0      01
 294          UD   .0001
                   *

 295          KK    STD1
 296          BA   .0038
 297          LS       0      98
 298          UD   0.077
                   *
1                                        HEC-1 INPUT                                        PAGE  9

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


 299          KK    OFD7
 300          BA   .0045
 301          LS       0      95
 302          UD   0.081
                   *

 303          KK    OFD4
 304          BA   .0012
 305          LS       0      95
 306          UD   0.050
                   *

 307          KK   STD2A
 308          BA   .0032
 309          LS       0      98
 310          UD   0.071
                   *

 311          KK    CU10
 312          KM   COMBINES CI12, NH-RAN, STD1, OFD7, OFD4, AND STD2A.
 313          HC       7
                   *

 314          KK   OFD2C
 315          BA   .0026
 316          LS       0      92
 317          UD   0.120
                   *

 318          KK   RETD5
 319          KM   RETRIEVE D5 - (THIS CARD RETRIEVES THE DIVERTED FLOW)
 320          KM   THE FLOW D5 DO NOT ENTER INTO THE PROJECT SITE AND
 321          KM   REMAINS ON HOLLY AVENUE.
 322          DR      D5
                   *

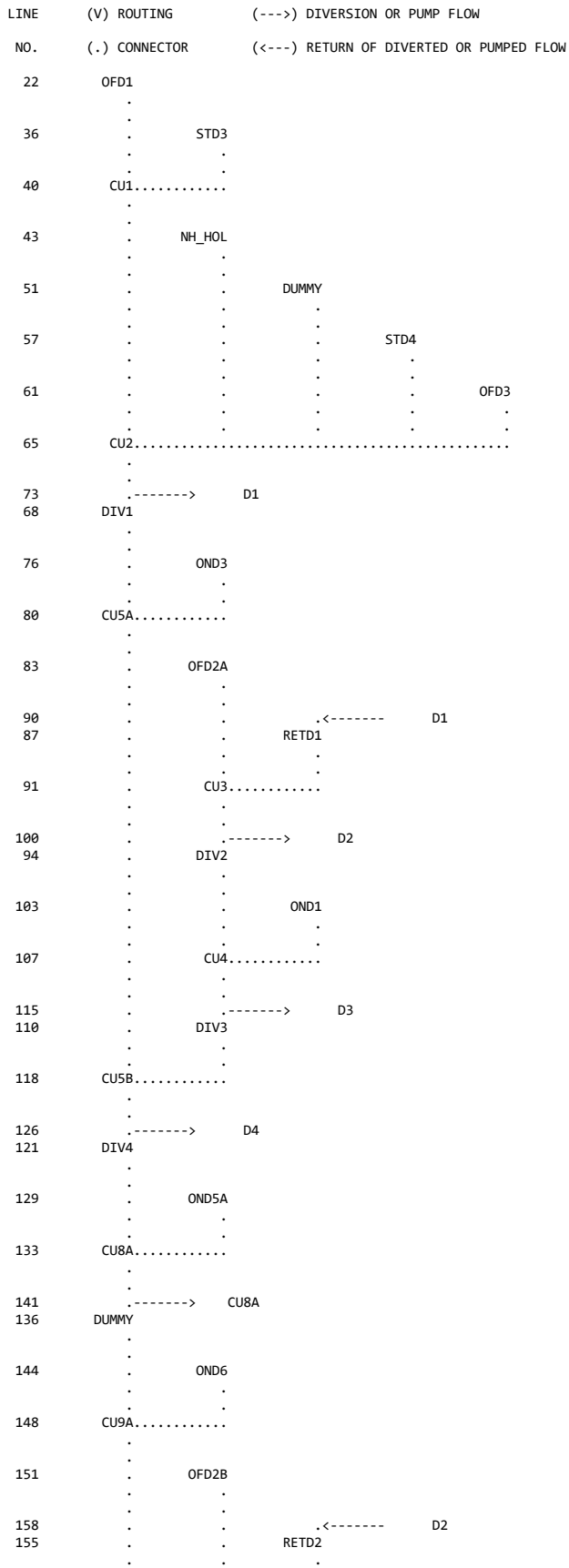
 323          KK    OND7
 324          BA   .0003
 325          LS       0      95
 326          UD   0.050
                   *

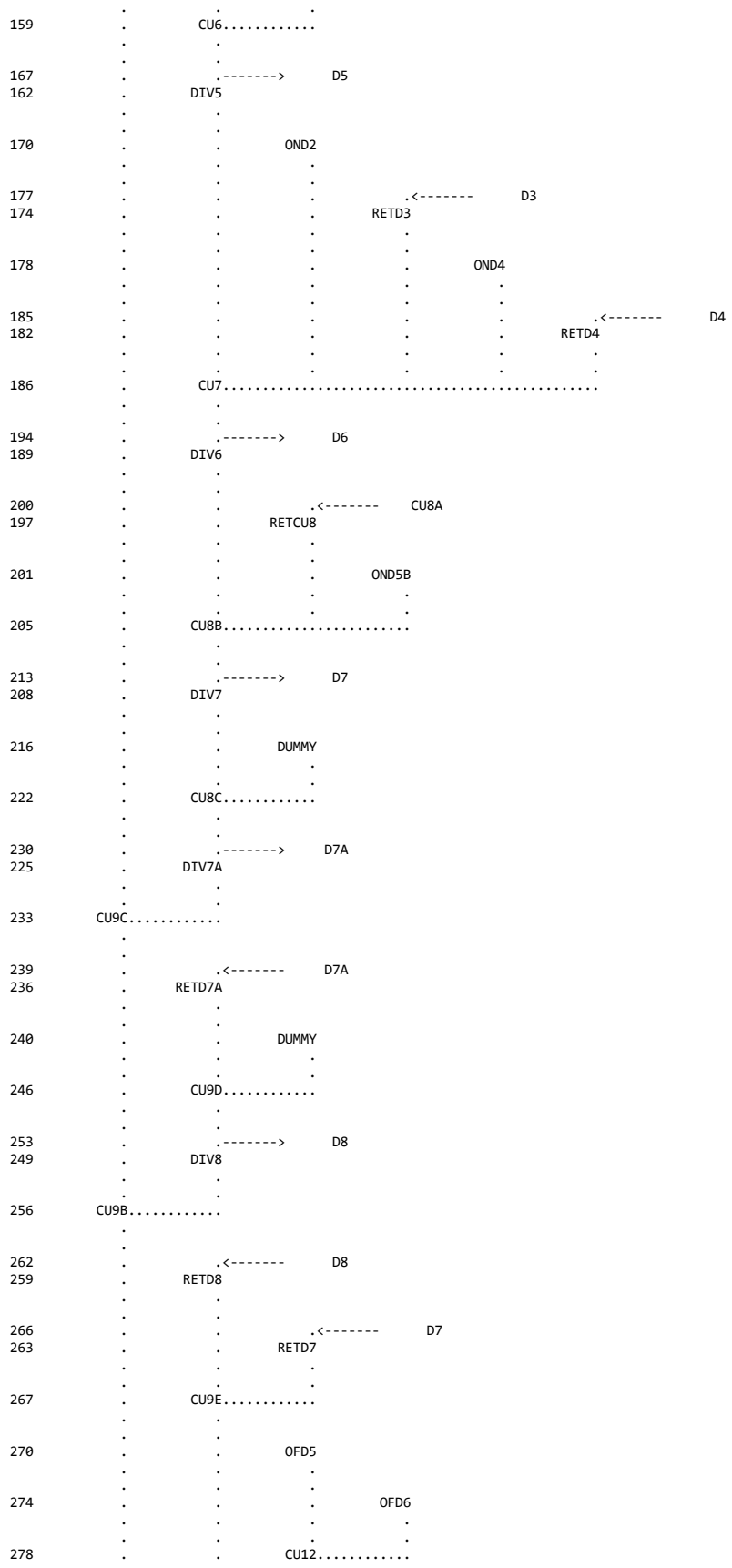
 327          KK    STD5
 328          BA   .0021
 329          LS       0      97
 330          UD   0.072
                   *

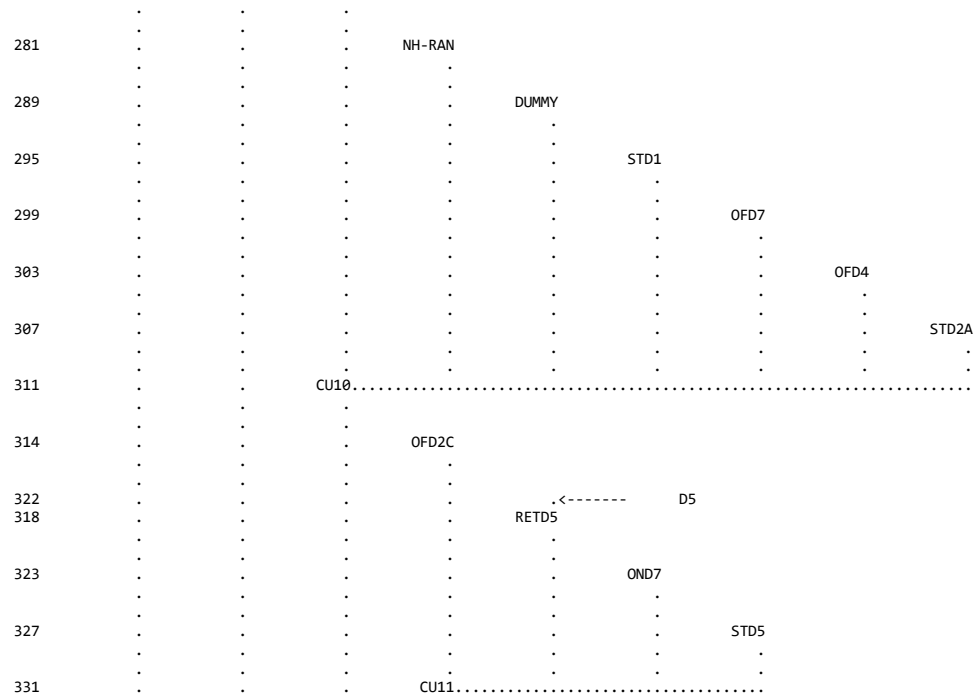
 331          KK    CU11
 332          KM   COMBINES OFD2C, D5, OND7, AND STD5
 333          HC       4
                   *
                   *
                   *
1                                        HEC-1 INPUT                                        PAGE 10

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

 334          ZZ
1
               SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
```


LINE (V) ROUTING (--->) DIVERSION OR PUMP FLOW
NO. (.) CONNECTOR (<---) RETURN OF DIVERTED OR PUMPED FLOW
22 OFD1
36 STD3
40 CU1
43 NH_HOL
51 DUMMY
57 STD4
61 OFD3
65 CU2
73 D1
68 DIV1
76 OND3
80 CU5A
83 OFD2A
90 D1
87 RETD1
91 CU3
100 D2
94 DIV2
103 OND1
107 CU4
115 D3
110 DIV3
118 CU5B
126 D4
121 DIV4
129 OND5A
133 CU8A
141 CU8A
136 DUMMY
144 OND6
148 CU9A
151 OFD2B
158 D2
155 RETD2


159 CU6
167 D5
162 DIV5
170 OND2
177 D3
174 RETD3
178 OND4
185 D4
182 RETD4
186 CU7
194 D6
189 DIV6
200 CU8A
197 RETCU8
201 OND5B
205 CU8B
213 D7
208 DIV7
216 DUMMY
222 CU8C
230 D7A
225 DIV7A
233 CU9C
239 D7A
236 RETD7A
240 DUMMY
246 CU9D
253 D8
249 DIV8
256 CU9B
262 D8
259 RETD8
266 D7
263 RETD7
267 CU9E
270 OFD5
274 OFD6
278 CU12



(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
1****************************************                    ****************************************
 *                                      *                    *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                    *    U.S. ARMY CORPS OF ENGINEERS      *
 *              JUN   1998              *                    *    HYDROLOGIC ENGINEERING CENTER     *
 *           VERSION 4.1                *                    *          609 SECOND STREET           *
 *                                      *                    *       DAVIS, CALIFORNIA 95616        *
 *  RUN DATE   05JUN20  TIME  13:04:06  *                    *           (916) 756-1104             *
 *                                      *                    *                                      *
 ****************************************                    ****************************************
```

<><><><><><><><><><><><><><><><><><><><>
RANCHO & VEGAS TOWNHOMES
HYDROLOGIC MODEL

10-YR STORM EVENT

HORROCKS ENGINEERING
ULTIMATE CONDITION
FILE: ULT.DAT
PROJECT No: NV-2105-1911
DATE: APRIL 18 2020
<><><><><><><><><><><><><><><><><><><><>

---> 6-HOUR / SDN 3 <---

```
  19 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
                    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


                                                                    RATIOS APPLIED TO PRECIPITATION
 OPERATION       STATION     AREA    PLAN                      RATIO 1
                                                                  1.00

 HYDROGRAPH AT
+                   OFD1       .02     1   FLOW                  21.
                                              TIME                3.58

 HYDROGRAPH AT
+                   STD3       .00     1   FLOW                   3.
                                              TIME                3.50

   2 COMBINED AT
+                    CU1       .03     1   FLOW                  23.
                                              TIME                3.58

 HYDROGRAPH AT
+                  NH_HOL       .00     1   FLOW                   0.
                                              TIME                 .00

 HYDROGRAPH AT
+                  DUMMY       .00     1   FLOW                   0.
                                              TIME                 .00

 HYDROGRAPH AT
+                   STD4       .00     1   FLOW                   1.
                                              TIME                3.50

 HYDROGRAPH AT
+                   OFD3       .00     1   FLOW                   1.
                                              TIME                3.50

   5 COMBINED AT
+                    CU2       .03     1   FLOW                  25.
                                              TIME                3.50

 DIVERSION TO
+                     D1       .03     1   FLOW                  25.
                                              TIME                3.50

 HYDROGRAPH AT
+                   DIV1       .03     1   FLOW                   0.
                                              TIME                 .00

 HYDROGRAPH AT
+                   OND3       .00     1   FLOW                   3.
                                              TIME                3.50

   2 COMBINED AT
+                   CU5A       .03     1   FLOW                   3.
                                              TIME                3.50

 HYDROGRAPH AT
+                  OFD2A       .01     1   FLOW                   9.
                                              TIME                3.58

 HYDROGRAPH AT
+                  RETD1       .00     1   FLOW                  25.
                                              TIME                3.50

   2 COMBINED AT
+                    CU3       .01     1   FLOW                  33.
                                              TIME                3.58

 DIVERSION TO
+                     D2       .01     1   FLOW                   5.
                                              TIME                3.58

 HYDROGRAPH AT
+                   DIV2       .01     1   FLOW                  28.
                                              TIME                3.58
```

```
 HYDROGRAPH AT
+                   OND1       .00     1   FLOW          1.
                                           TIME         3.50

  2 COMBINED AT
+                    CU4       .01     1   FLOW         30.
                                           TIME         3.50

 DIVERSION TO
+                     D3       .01     1   FLOW          0.
                                           TIME          .00

 HYDROGRAPH AT
+                   DIV3       .01     1   FLOW         30.
                                           TIME         3.50

  2 COMBINED AT
+                   CU5B       .04     1   FLOW         33.
                                           TIME         3.50

 DIVERSION TO
+                     D4       .04     1   FLOW          0.
                                           TIME          .00

 HYDROGRAPH AT
+                   DIV4       .04     1   FLOW         33.
                                           TIME         3.50

 HYDROGRAPH AT
+                  OND5A       .00     1   FLOW          1.
                                           TIME         3.50

  2 COMBINED AT
+                   CU8A       .05     1   FLOW         35.
                                           TIME         3.50

 DIVERSION TO
+                   CU8A       .05     1   FLOW         35.
                                           TIME         3.50

 HYDROGRAPH AT
+                  DUMMY       .05     1   FLOW          0.
                                           TIME          .00

 HYDROGRAPH AT
+                   OND6       .01     1   FLOW         10.
                                           TIME         3.58

  2 COMBINED AT
+                   CU9A       .06     1   FLOW         10.
                                           TIME         3.58

 HYDROGRAPH AT
+                  OFD2B       .00     1   FLOW          3.
                                           TIME         3.58

 HYDROGRAPH AT
+                  RETD2       .00     1   FLOW          5.
                                           TIME         3.58

  2 COMBINED AT
+                    CU6       .00     1   FLOW          9.
                                           TIME         3.58

 DIVERSION TO
+                     D5       .00     1   FLOW          9.
                                           TIME         3.58

 HYDROGRAPH AT
+                   DIV5       .00     1   FLOW          0.
                                           TIME          .00

 HYDROGRAPH AT
+                   OND2       .00     1   FLOW          3.
                                           TIME         3.50

 HYDROGRAPH AT
+                  RETD3       .00     1   FLOW          0.
                                           TIME          .00

 HYDROGRAPH AT
+                   OND4       .00     1   FLOW          2.
                                           TIME         3.50

 HYDROGRAPH AT
+                  RETD4       .00     1   FLOW          0.
                                           TIME          .00

  5 COMBINED AT
+                    CU7       .01     1   FLOW          6.
                                           TIME         3.50
```

```
 DIVERSION TO
+                     D6       .01     1   FLOW          6.
                                            TIME         3.50

 HYDROGRAPH AT
+                   DIV6       .01     1   FLOW          0.
                                            TIME          .00

 HYDROGRAPH AT
+                 RETCU8       .00     1   FLOW         35.
                                            TIME         3.50

 HYDROGRAPH AT
+                  OND5B       .00     1   FLOW          4.
                                            TIME         3.50

  3 COMBINED AT
+                   CU8B       .01     1   FLOW         39.
                                            TIME         3.50

 DIVERSION TO
+                     D7       .01     1   FLOW         25.
                                            TIME         3.50

 HYDROGRAPH AT
+                   DIV7       .01     1   FLOW         14.
                                            TIME         3.50

 HYDROGRAPH AT
+                  DUMMY       .00     1   FLOW          0.
                                            TIME          .00

  2 COMBINED AT
+                   CU8C       .01     1   FLOW         14.
                                            TIME         3.50

 DIVERSION TO
+                    D7A       .01     1   FLOW         14.
                                            TIME         3.50

 HYDROGRAPH AT
+                  DIV7A       .01     1   FLOW          0.
                                            TIME          .00

  2 COMBINED AT
+                   CU9C       .07     1   FLOW         10.
                                            TIME         3.58

 HYDROGRAPH AT
+                 RETD7A       .00     1   FLOW         14.
                                            TIME         3.50

 HYDROGRAPH AT
+                  DUMMY       .00     1   FLOW          0.
                                            TIME          .00

  2 COMBINED AT
+                   CU9D       .00     1   FLOW         14.
                                            TIME         3.50

 DIVERSION TO
+                     D8       .00     1   FLOW          4.
                                            TIME         3.50

 HYDROGRAPH AT
+                   DIV8       .00     1   FLOW         10.
                                            TIME         3.50

  2 COMBINED AT
+                   CU9B       .07     1   FLOW         19.
                                            TIME         3.50

 HYDROGRAPH AT
+                  RETD8       .00     1   FLOW          4.
                                            TIME         3.50

 HYDROGRAPH AT
+                  RETD7       .00     1   FLOW         25.
                                            TIME         3.50

  2 COMBINED AT
+                   CU9E       .00     1   FLOW         29.
                                            TIME         3.50

 HYDROGRAPH AT
+                   OFD5       .02     1   FLOW         11.
                                            TIME         3.67

 HYDROGRAPH AT
+                   OFD6       .02     1   FLOW         15.
```

```
                                        TIME         3.58

  2 COMBINED AT
+                    CU12       .04     1   FLOW         25.
                                            TIME         3.58

 HYDROGRAPH AT
+                  NH-RAN       .00     1   FLOW         81.
                                            TIME          .00

 HYDROGRAPH AT
+                   DUMMY       .00     1   FLOW          0.
                                            TIME          .00

 HYDROGRAPH AT
+                    STD1       .00     1   FLOW          5.
                                            TIME         3.50

 HYDROGRAPH AT
+                    OFD7       .00     1   FLOW          5.
                                            TIME         3.50

 HYDROGRAPH AT
+                    OFD4       .00     1   FLOW          1.
                                            TIME         3.50

 HYDROGRAPH AT
+                   STD2A       .00     1   FLOW          4.
                                            TIME         3.50

  7 COMBINED AT
+                    CU10       .05     1   FLOW        117.
                                            TIME         3.50

 HYDROGRAPH AT
+                   OFD2C       .00     1   FLOW          2.
                                            TIME         3.58

 HYDROGRAPH AT
+                   RETD5       .00     1   FLOW          9.
                                            TIME         3.58

 HYDROGRAPH AT
+                    OND7       .00     1   FLOW          0.
                                            TIME         3.50

 HYDROGRAPH AT
+                    STD5       .00     1   FLOW          2.
                                            TIME         3.50

  4 COMBINED AT
+                    CU11       .00     1   FLOW         13.
                                            TIME         3.50


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

HEC-1 ULTIMATE 100 YR

```
1****************************************                    ****************************************
 *                                      *                    *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                    *    U.S. ARMY CORPS OF ENGINEERS      *
 *              JUN   1998              *                    *    HYDROLOGIC ENGINEERING CENTER     *
 *           VERSION 4.1                *                    *          609 SECOND STREET           *
 *                                      *                    *       DAVIS, CALIFORNIA 95616        *
 *  RUN DATE   05JUN20  TIME  13:02:16  *                    *          (916) 756-1104              *
 *                                      *                    *                                      *
 ****************************************                    ****************************************

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

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
            1           ID
            2           ID      <><><><><><><><><><><><><><><><><><><><>
            3           ID        RANCHO & VEGAS TOWNHOMES
            4           ID        HYDROLOGIC MODEL
            5           ID        --------------------------
            6           ID
            7           ID        100-YR STORM EVENT
            8           ID        --------------------------
            9           ID        HORROCKS ENGINEERING
           10           ID        ULTIMATE CONDITION
           11           ID        FILE: ULT.DAT
           12           ID        PROJECT No: NV-2105-1911
           13           ID        DATE:  MAY 15 2020
           14           ID      <><><><><><><><><><><><><><><><><><><><>
           15           ID
           16           ID       ---> 6-HOUR / SDN 3 <---
           17           ID
           18           IT       5       0       0     300
           19           IO       5
           20           IN       5
           21           JR    PREC    1.00    0.00
                        *
           22           KK    OFD1
           23           KM    OFFSITE FLOW AT NORTHWEST CORNER OF PROJECT SITE
           24           BA   .0228
           25           PB    2.77
           26           PC    .000    .020    .057    .070    .087    .108    .124    .130    .130    .130
           27           PC    .130    .130    .130    .133    .140    .142    .148    .158    .172    .181
           28           PC    .190    .197    .199    .200    .201    .204    .214    .229    .241    .249
           29           PC    .251    .256    .270    .278    .281    .283    .295    .322    .352    .409
           30           PC    .499    .590    .710    .744    .781    .812    .819    .835    .851    .856
           31           PC    .860    .868    .876    .888    .910    .926    .937    .950    .970    .976
           32           PC    .982    .985    .987    .989    .990    .993    .993    .994    .995    .998
           33           PC    .998    .999    1.00
           34           LS       0      95
           35           UD    .125
                        *
           36           KK    STD3
           37           BA   .0024
           38           LS       0      98
           39           UD    .105
                        *
           40           KK     CU1
           41           KM   COMBINES OFFISTE BASIN OFD1 AND STREET STD3.
           42           HC       2
                        *
```



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

```
 43          KK  NH_HOL
 44          KM   CENTRAL NEIGHBORHOOD REFERENCE STUDY 100-YR BASEFLOW
 45          KM   WHICH OVERSPILL INTO HOLLY AVENUE. SEE THE STUDY
 46          KM   MAP FOR DETAIL.
 47          BA   .0001
 48          BF      39
 49          LS       0      01
 50          UD   .0001
             *

 51          KK   DUMMY
 52          KM   DUMMY CARD TO RESET BASEFLOW AND HAS NO FLOW
 53          BA   .0001
 54          BF     .00
 55          LS       0      01
 56          UD   .0001
             *

 57          KK    STD4
 58          BA   .0009
 59          LS       0      98
 60          UD   0.050
             *

 61          KK    OFD3
 62          BA   .0013
 63          LS       0      95
 64          UD   0.050
             *

 65          KK     CU2
 66          KM   COMBINES CU1, NH-HOL BASEFLOW, STREET STD4, AND OFFSITE BASIN OFD3.
 67          HC       5

 68          KK    DIV1
 69          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
 70          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
 71          KM   IS THE AMOUNT DIVERTED)
 72          KM   DIV1 AMOUNT THAT ENTERS INTO PROJECT SITE AND COMBINE WITH OND3
 73          DT      D1
 74          DI      88
 75          DQ      88
             *

 76          KK    OND3
 77          BA   .0035
 78          LS       0      95
 79          UD   0.102
             *
1                                        HEC-1 INPUT                                          PAGE  3

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

 80          KK    CU5A
 81          KM   COMBINES DIV1 AND OND3.
 82          HC       2
             *

 83          KK   OFD2A
 84          BA   .0117
 85          LS       0      92
 86          UD   0.122
             *

 87          KK   RETD1
 88          KM   RETRIEVE D1 - (THIS CARD RETRIEVES THE DIVERTED FLOW)
 89          KM   FLOW THAT RETAINS ON HOLLY AVENUE
 90          DR      D1
             *

 91          KK     CU3
 92          KM   COMBINES OFD2A AND D1.
 93          HC       2
             *

 94          KK    DIV2
 95          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
 96          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
 97          KM   IS THE AMOUNT DIVERTED)
 98          KM   DIV2 RUNOFF AMOUNT ENTERS INTO PROJECT SITE, FLOWS SOUTH
 99          KM   AND COMBINES WITH OND1
100          DT      D2
101          DI     106
102          DQ      05
             *

103          KK    OND1
104          BA   .0013
```

```
 105          LS       0      95
 106          UD   0.050
              *

 107          KK     CU4
 108          KM   COMBINES DIV2 AND OND1.
 109          HC       2
              *

 110          KK    DIV3
 111          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
 112          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
 113          KM   IS THE AMOUNT DIVERTED)
 114          KM   DIV3 RUNOFF AMOUNT FLOWS SOUTH AND COMBINES WITH CU5A FLOW AMOUNT
 115          DT      D3
 116          DI     104
 117          DQ       0
              *
1                                      HEC-1 INPUT                                          PAGE  4

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


 118          KK    CU5B
 119          KM   COMBINES DIV3 AND CU5A.
 120          HC       2
              *

 121          KK    DIV4
 122          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
 123          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
 124          KM   IS THE AMOUNT DIVERTED)
 125          KM   DIV4 RUNOFF AMOUNT FLOWS SOUTH AND COMBINES WITH OND5A
 126          DT      D4
 127          DI     110
 128          DQ      40
              *

 129          KK   OND5A
 130          BA   .0012
 131          LS       0      95
 132          UD   0.051
              *

 133          KK    CU8A
 134          KM   COMBINES DIV4 AND OND5A.
 135          HC       2
              *

 136          KK   DUMMY
 137          KM   THIS IS NOT ACTUALLY FLOW SPLIT OR DIVERSION. TOTAL DISCHARGE OF CU8A
 138          KM   FLOWS EAST TOWARD CU8B. THAT IS, DUMMY = 0 CFS.
 139          KM   THIS DUMMY CARD AS FLOW SPLIT IS REQUIRE TO
 140          KM   ENABLE HEC-1 TO CREATE FLOW TREE.
 141          DT    CU8A
 142          DI      73
 143          DQ      73
              *

 144          KK    OND6
 145          BA   .0106
 146          LS       0      95
 147          UD   0.127
              *

 148          KK    CU9A
 149          KM   COMBINES DUMMY AND OND6.
 150          HC       2
              *

 151          KK   OFD2B
 152          BA   .0045
 153          LS       0      92
 154          UD   0.112
              *
1                                      HEC-1 INPUT                                          PAGE  5

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


 155          KK   RETD2
 156          KM   RETRIEVE D2 - (THIS CARD RETRIEVES THE DIVERTED FLOW)
 157          KM   FLOW THAT RETAINS ON HOLLY AVENUE
 158          DR      D2
              *

 159          KK     CU6
 160          KM   COMBINES OFD2B, AND D2.
 161          HC       2
              *
```

```
 162          KK    DIV5
 163          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
 164          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
 165          KM    IS THE AMOUNT DIVERTED)
 166          KM   DIV5 RUNOFF AMOUNT FLOWS SOUTH AND ENTERS INTO THE PROJECT SITE.
 167          DT      D5
 168          DI      12
 169          DQ      12
              *

 170          KK    OND2
 171          BA   .0036
 172          LS       0      95
 173          UD   0.097
              *

 174          KK   RETD3
 175          KM   RETRIEVE D3 - (THIS CARD RETRIEVES THE DIVERTED FLOW)
 176          KM   THE FLOW D3 ENTERS INTO OND2 BASIN
 177          DR      D3
              *

 178          KK    OND4
 179          BA   .0023
 180          LS       0      95
 181          UD   0.067
              *

 182          KK   RETD4
 183          KM   RETRIEVE D4 - (THIS CARD RETRIEVES THE DIVERTED FLOW)
 184          KM   THE FLOW D4 ENTERS INTO OND4 BASIN
 185          DR      D4
              *

 186          KK     CU7
 187          KM   COMBINES DIV5, OND2, D3, OND4, AND D4.
 188          HC       5
              *
1                                        HEC-1 INPUT                                          PAGE  6

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

 189          KK    DIV6
 190          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
 191          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
 192          KM    IS THE AMOUNT DIVERTED)
 193          KM   DIV6 RUNOFF AMOUNT FLOWS SOUTH.
 194          DT      D6
 195          DI      52
 196          DQ      52
              *

 197          KK  RETCU8A
 198          KM   RETRIEVE CU8A - (THIS CARD RETRIEVES THE DIVERTED FLOW)
 199          KM   THE FLOW CU8A COMBINES WITH OND5B BASIN, AND DIV6
 200          DR    CU8A
              *

 201          KK   OND5B
 202          BA   .0037
 203          LS       0      95
 204          UD   0.067
              *

 205          KK    CU8B
 206          KM   COMBINES DIV6, CU8A, AND OND5B.
 207          HC       3
              *

 208          KK    DIV7
 209          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
 210          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
 211          KM   IS THE AMOUNT DIVERTED)
 212          KM   DIV7 RUNOFF AMOUNT FLOWS SOUTH.
 213          DT      D7
 214          DI      80
 215          DQ      25
              *

 216          KK   DUMMY
 217          KM   DUMMY CARD TO MAKE HEC-1 RUN
 218          BA   .0001
 219          BF     .00
 220          LS       0      01
 221          UD   .0001
              *

 222          KK    CU8C
 223          KM   IS EQUAL TO DIV7
 224          HC       2
```

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

 225          KK   DIV7A
 226          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
 227          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
 228          KM   IS THE AMOUNT DIVERTED)
 229          KM   DIV7A RUNOFF AMOUNT FLOWS SOUTH.
 230          DT     D7A
 231          DI      55
 232          DQ      55
              *

 233          KK    CU9C
 234          KM   COMBINES DIV7A AND CU9A.
 235          HC       2
              *

 236          KK  RETD7A
 237          KM   RETRIEVE D7A - (THIS CARD RETRIEVES THE DIVERTED FLOW)
 238          KM   THE FLOW D7A ENTERS INTO 15'PORPOSED EASEMENT
 239          DR     D7A
              *

 240          KK   DUMMY
 241          KM   DUMMY CARD TO MAKE HEC-1 RUN
 242          BA   .0001
 243          BF     .00
 244          LS       0      01
 245          UD
              *

 246          KK    CU9D
 247          KM    EQUAL TO D7A
 248          HC       2
              *

 249          KK    DIV8
 250          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
 251          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
 252          KM   IS THE AMOUNT DIVERTED)
 253          DT      D8
 254          DI      55
 255          DQ       4
              *

 256          KK    CU9B
 257          KM   COMBINES CU9C AND DIV8.
 258          HC       2
              *

 259          KK   RETD8
 260          KM   RETRIEVE D8 - (THIS CARD RETRIEVES THE DIVERTED FLOW)
 261          KM   THE FLOW D8 ENTERS INTO 10' EXISTING EASEMENT
 262          DR      D8
              *
```



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

 263          KK   RETD7
 264          KM   RETRIEVE D7 - (THIS CARD RETRIEVES THE DIVERTED FLOW)
 265          KM   THE FLOW D7 ENTERS INTO 10'EXISTING EASEMENT
 266          DR      D7
              *

 267          KK    CU9E
 268          KM   COMBINES D7 AND D8.
 269          HC       2
              *

 270          KK    OFD5
 271          BA   .0237
 272          LS       0      88
 273          UD   0.252
              *

 274          KK    OFD6
 275          BA   .0170
 276          LS       0      95
 277          UD   0.128
              *

 278          KK    CU12
 279          KM   COMBINES OFD5 AND OFD6.
 280          HC       2
              *
```

```
 281          KK  NH-RAN
 282          KM   CENTRAL NEIGHBORHOOD REFERENCE STUDY 100-YR BASEFLOW
 283          KM   WHICH CONTINUE ON RANCHO AVENUE. SEE THE STUDY
 284          KM   MAP FOR DETAIL.
 285          BA   .0001
 286          BF     235
 287          LS       0      01
 288          UD   .0001
                   *

 289          KK   DUMMY
 290          KM   DUMMY CARD TO RESET BASEFLOW AND HAS NO FLOW
 291          BA   .0001
 292          BF     .00
 293          LS       0      01
 294          UD   .0001
                   *

 295          KK    STD1
 296          BA   .0038
 297          LS       0      98
 298          UD   0.077
                   *
1                                        HEC-1 INPUT                                        PAGE  9

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


 299          KK    OFD7
 300          BA   .0045
 301          LS       0      95
 302          UD   0.081
                   *

 303          KK    OFD4
 304          BA   .0012
 305          LS       0      95
 306          UD   0.050
                   *

 307          KK   STD2A
 308          BA   .0032
 309          LS       0      98
 310          UD   0.071
                   *

 311          KK    CU10
 312          KM   COMBINES CI12, NH-RAN, STD1, OFD7, OFD4, AND STD2A.
 313          HC       7
                   *

 314          KK   OFD2C
 315          BA   .0026
 316          LS       0      92
 317          UD   0.120
                   *

 318          KK   RETD5
 319          KM   RETRIEVE D5 - (THIS CARD RETRIEVES THE DIVERTED FLOW)
 320          KM   THE FLOW D5 DO NOT ENTER INTO THE PROJECT SITE AND
 321          KM   REMAINS ON HOLLY AVENUE.
 322          DR      D5
                   *

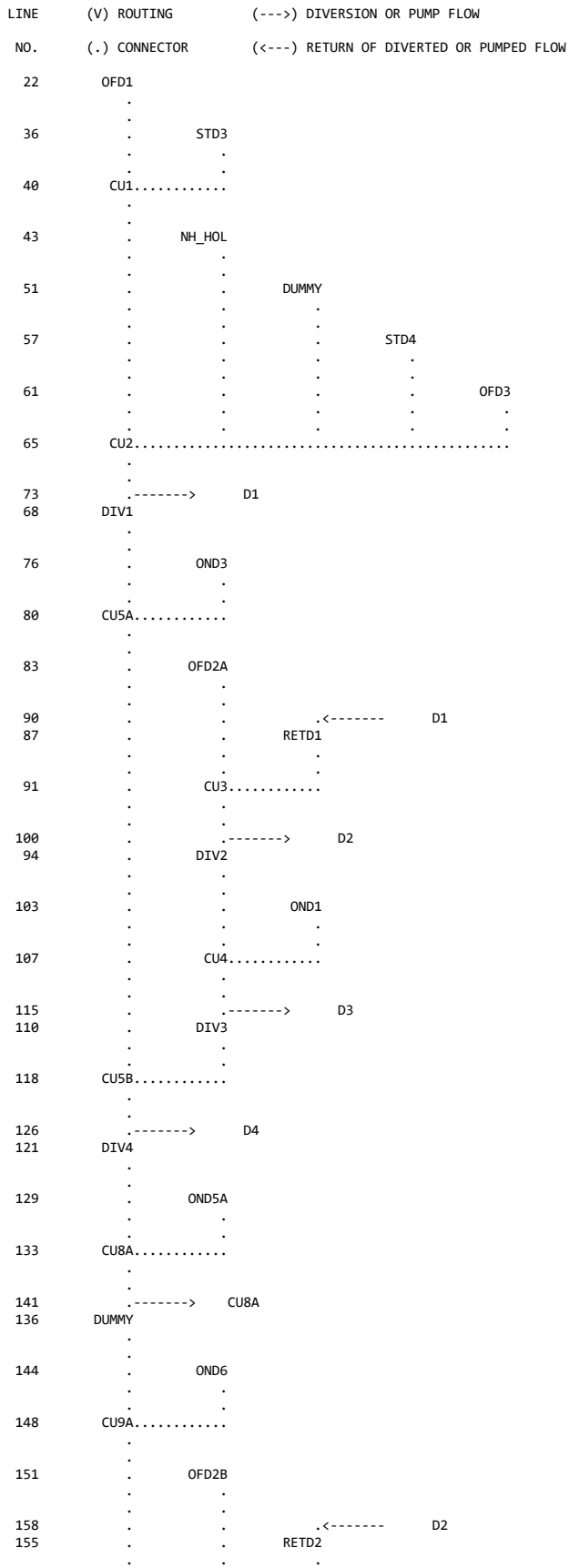
 323          KK    OND7
 324          BA   .0003
 325          LS       0      95
 326          UD   0.050
                   *

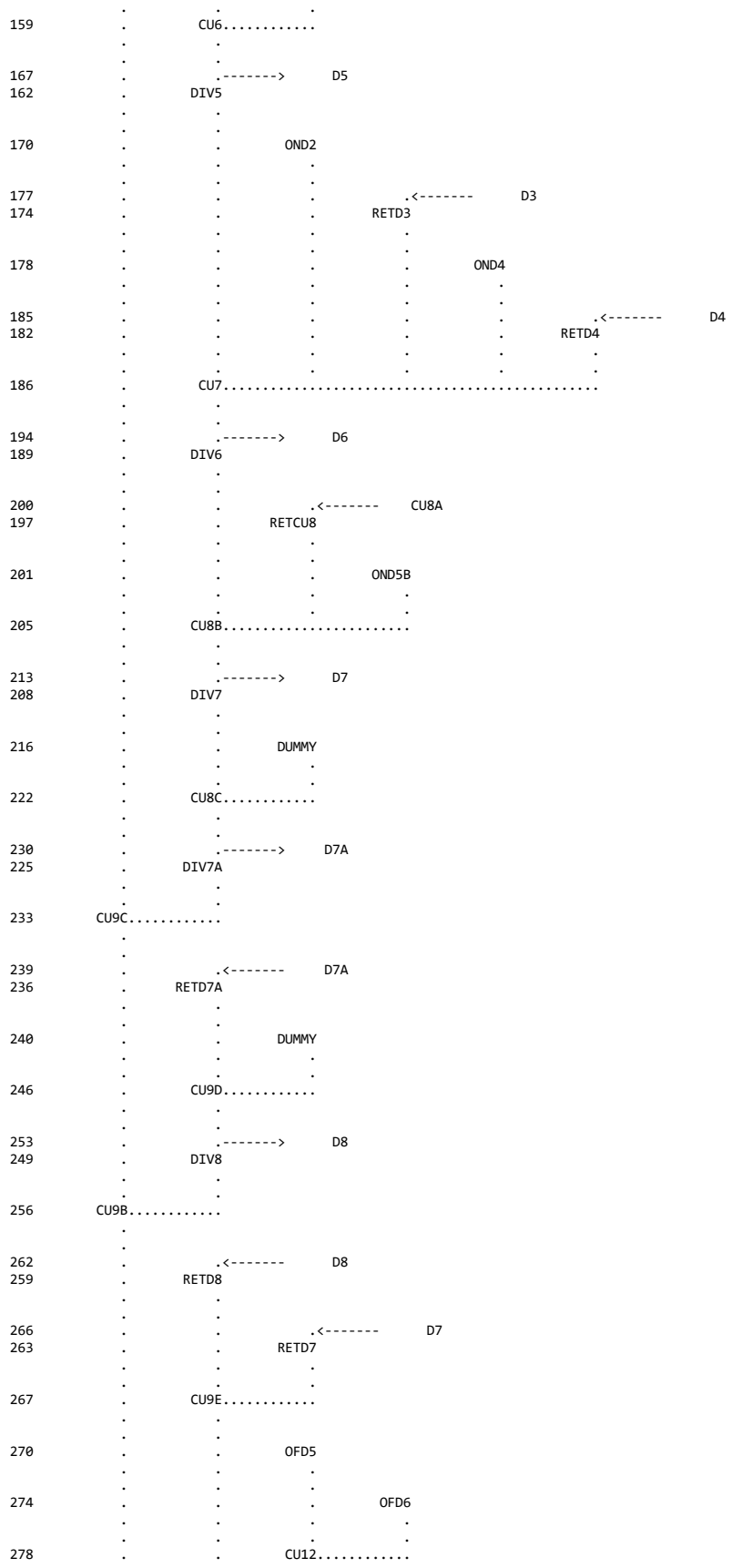
 327          KK    STD5
 328          BA   .0021
 329          LS       0      97
 330          UD   0.072
                   *

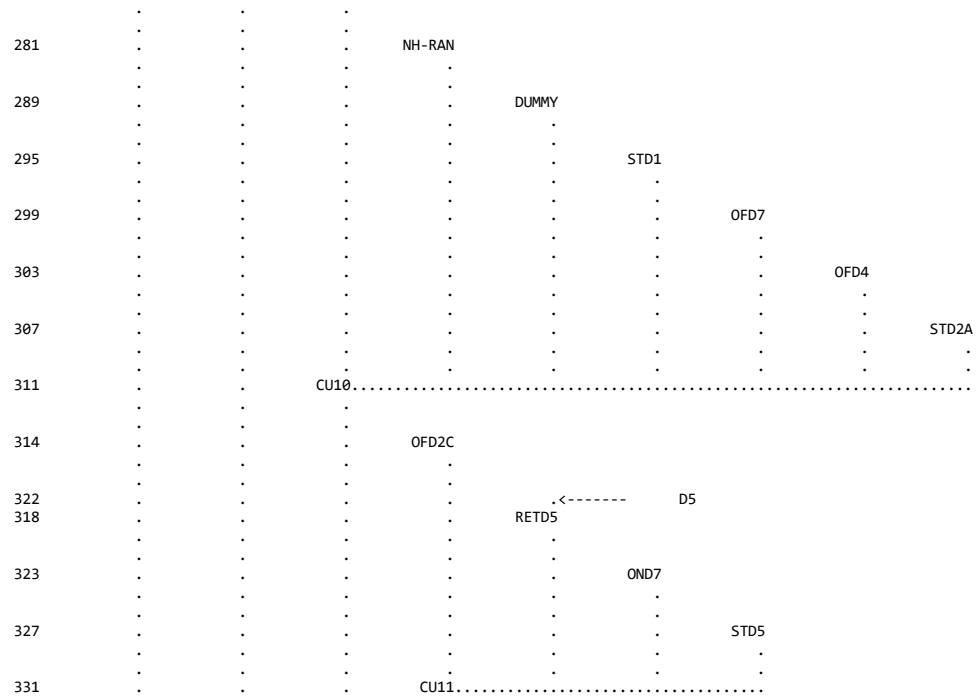
 331          KK    CU11
 332          KM   COMBINES OFD2C, D5, OND7, AND STD5
 333          HC       4
                   *
                   *
                   *
1                                        HEC-1 INPUT                                        PAGE 10

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

 334          ZZ
1
                SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
```


LINE (V) ROUTING (--->) DIVERSION OR PUMP FLOW
NO. (.) CONNECTOR (<---) RETURN OF DIVERTED OR PUMPED FLOW
22 OFD1
36 STD3
40 CU1
43 NH_HOL
51 DUMMY
57 STD4
61 OFD3
65 CU2
73 D1
68 DIV1
76 OND3
80 CU5A
83 OFD2A
90 D1
87 RETD1
91 CU3
100 D2
94 DIV2
103 OND1
107 CU4
115 D3
110 DIV3
118 CU5B
126 D4
121 DIV4
129 OND5A
133 CU8A
141 CU8A
136 DUMMY
144 OND6
148 CU9A
151 OFD2B
158 D2
155 RETD2


159 CU6
167 D5
162 DIV5
170 OND2
177 D3
174 RETD3
178 OND4
185 D4
182 RETD4
186 CU7
194 D6
189 DIV6
200 CU8A
197 RETCU8
201 OND5B
205 CU8B
213 D7
208 DIV7
216 DUMMY
222 CU8C
230 D7A
225 DIV7A
233 CU9C
239 D7A
236 RETD7A
240 DUMMY
246 CU9D
253 D8
249 DIV8
256 CU9B
262 D8
259 RETD8
266 D7
263 RETD7
267 CU9E
270 OFD5
274 OFD6
278 CU12



(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
1****************************************                    ****************************************
 *                                      *                    *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                    *    U.S. ARMY CORPS OF ENGINEERS      *
 *              JUN   1998              *                    *    HYDROLOGIC ENGINEERING CENTER     *
 *           VERSION 4.1                *                    *          609 SECOND STREET           *
 *                                      *                    *       DAVIS, CALIFORNIA 95616        *
 *  RUN DATE   05JUN20  TIME  13:02:16  *                    *           (916) 756-1104             *
 *                                      *                    *                                      *
 ****************************************                    ****************************************
```

<><><><><><><><><><><><><><><><><><><><>
RANCHO & VEGAS TOWNHOMES
HYDROLOGIC MODEL

100-YR STORM EVENT

HORROCKS ENGINEERING
ULTIMATE CONDITION
FILE: ULT.DAT
PROJECT No: NV-2105-1911
DATE: MAY 15 2020
<><><><><><><><><><><><><><><><><><><><>

---> 6-HOUR / SDN 3 <---

```
  19 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
                    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


                                                                    RATIOS APPLIED TO PRECIPITATION
 OPERATION       STATION     AREA    PLAN                      RATIO 1
                                                                  1.00

 HYDROGRAPH AT
+                   OFD1       .02     1   FLOW                  40.
                                            TIME                3.58

 HYDROGRAPH AT
+                   STD3       .00     1   FLOW                   5.
                                            TIME                3.50

   2 COMBINED AT
+                    CU1       .03     1   FLOW                  44.
                                            TIME                3.58

 HYDROGRAPH AT
+                  NH_HOL       .00     1   FLOW                  39.
                                            TIME                 .00

 HYDROGRAPH AT
+                  DUMMY       .00     1   FLOW                   0.
                                            TIME                 .00

 HYDROGRAPH AT
+                   STD4       .00     1   FLOW                   2.
                                            TIME                3.50

 HYDROGRAPH AT
+                   OFD3       .00     1   FLOW                   3.
                                            TIME                3.50

   5 COMBINED AT
+                    CU2       .03     1   FLOW                  88.
                                            TIME                3.50

 DIVERSION TO
+                     D1       .03     1   FLOW                  88.
                                            TIME                3.50

 HYDROGRAPH AT
+                   DIV1       .03     1   FLOW                   0.
                                            TIME                 .00

 HYDROGRAPH AT
+                   OND3       .00     1   FLOW                   6.
                                            TIME                3.50

   2 COMBINED AT
+                   CU5A       .03     1   FLOW                   6.
                                            TIME                3.50

 HYDROGRAPH AT
+                  OFD2A       .01     1   FLOW                  19.
                                            TIME                3.58

 HYDROGRAPH AT
+                  RETD1       .00     1   FLOW                  88.
                                            TIME                3.50

   2 COMBINED AT
+                    CU3       .01     1   FLOW                 106.
                                            TIME                3.50

 DIVERSION TO
+                     D2       .01     1   FLOW                   5.
                                            TIME                3.50

 HYDROGRAPH AT
+                   DIV2       .01     1   FLOW                 101.
                                            TIME                3.50
```

```
 HYDROGRAPH AT
+                   OND1       .00     1   FLOW           3.
                                           TIME         3.50

  2 COMBINED AT
+                    CU4       .01     1   FLOW         104.
                                           TIME         3.50

 DIVERSION TO
+                     D3       .01     1   FLOW           0.
                                           TIME          .00

 HYDROGRAPH AT
+                   DIV3       .01     1   FLOW         104.
                                           TIME         3.50

  2 COMBINED AT
+                   CU5B       .04     1   FLOW         110.
                                           TIME         3.50

 DIVERSION TO
+                     D4       .04     1   FLOW          40.
                                           TIME         3.50

 HYDROGRAPH AT
+                   DIV4       .04     1   FLOW          70.
                                           TIME         3.50

 HYDROGRAPH AT
+                  OND5A       .00     1   FLOW           3.
                                           TIME         3.50

  2 COMBINED AT
+                   CU8A       .05     1   FLOW          73.
                                           TIME         3.50

 DIVERSION TO
+                   CU8A       .05     1   FLOW          73.
                                           TIME         3.50

 HYDROGRAPH AT
+                  DUMMY       .05     1   FLOW           0.
                                           TIME          .00

 HYDROGRAPH AT
+                   OND6       .01     1   FLOW          19.
                                           TIME         3.58

  2 COMBINED AT
+                   CU9A       .06     1   FLOW          19.
                                           TIME         3.58

 HYDROGRAPH AT
+                  OFD2B       .00     1   FLOW           7.
                                           TIME         3.50

 HYDROGRAPH AT
+                  RETD2       .00     1   FLOW           5.
                                           TIME         3.50

  2 COMBINED AT
+                    CU6       .00     1   FLOW          12.
                                           TIME         3.50

 DIVERSION TO
+                     D5       .00     1   FLOW          12.
                                           TIME         3.50

 HYDROGRAPH AT
+                   DIV5       .00     1   FLOW           0.
                                           TIME          .00

 HYDROGRAPH AT
+                   OND2       .00     1   FLOW           7.
                                           TIME         3.50

 HYDROGRAPH AT
+                  RETD3       .00     1   FLOW           0.
                                           TIME          .00

 HYDROGRAPH AT
+                   OND4       .00     1   FLOW           5.
                                           TIME         3.50

 HYDROGRAPH AT
+                  RETD4       .00     1   FLOW          40.
                                           TIME         3.50

  5 COMBINED AT
+                    CU7       .01     1   FLOW          52.
                                           TIME         3.50
```

```
 DIVERSION TO
+                     D6       .01     1   FLOW          52.
                                            TIME         3.50

 HYDROGRAPH AT
+                   DIV6       .01     1   FLOW           0.
                                            TIME          .00

 HYDROGRAPH AT
+                 RETCU8       .00     1   FLOW          73.
                                            TIME         3.50

 HYDROGRAPH AT
+                  OND5B       .00     1   FLOW           8.
                                            TIME         3.50

  3 COMBINED AT
+                   CU8B       .01     1   FLOW          80.
                                            TIME         3.50

 DIVERSION TO
+                     D7       .01     1   FLOW          25.
                                            TIME         3.50

 HYDROGRAPH AT
+                   DIV7       .01     1   FLOW          55.
                                            TIME         3.50

 HYDROGRAPH AT
+                  DUMMY       .00     1   FLOW           0.
                                            TIME          .00

  2 COMBINED AT
+                   CU8C       .01     1   FLOW          55.
                                            TIME         3.50

 DIVERSION TO
+                    D7A       .01     1   FLOW          55.
                                            TIME         3.50

 HYDROGRAPH AT
+                  DIV7A       .01     1   FLOW           0.
                                            TIME          .00

  2 COMBINED AT
+                   CU9C       .07     1   FLOW          19.
                                            TIME         3.58

 HYDROGRAPH AT
+                 RETD7A       .00     1   FLOW          55.
                                            TIME         3.50

 HYDROGRAPH AT
+                  DUMMY       .00     1   FLOW           0.
                                            TIME          .00

  2 COMBINED AT
+                   CU9D       .00     1   FLOW          55.
                                            TIME         3.50

 DIVERSION TO
+                     D8       .00     1   FLOW           4.
                                            TIME         3.50

 HYDROGRAPH AT
+                   DIV8       .00     1   FLOW          51.
                                            TIME         3.50

  2 COMBINED AT
+                   CU9B       .07     1   FLOW          69.
                                            TIME         3.50

 HYDROGRAPH AT
+                  RETD8       .00     1   FLOW           4.
                                            TIME         3.50

 HYDROGRAPH AT
+                  RETD7       .00     1   FLOW          25.
                                            TIME         3.50

  2 COMBINED AT
+                   CU9E       .00     1   FLOW          29.
                                            TIME         3.50

 HYDROGRAPH AT
+                   OFD5       .02     1   FLOW          26.
                                            TIME         3.67

 HYDROGRAPH AT
+                   OFD6       .02     1   FLOW          30.
```

```
                                        TIME         3.58

  2 COMBINED AT
+                   CU12       .04     1   FLOW         54.
                                          TIME         3.58

 HYDROGRAPH AT
+                 NH-RAN       .00     1   FLOW        235.
                                          TIME          .00

 HYDROGRAPH AT
+                  DUMMY       .00     1   FLOW          0.
                                          TIME          .00

 HYDROGRAPH AT
+                   STD1       .00     1   FLOW          8.
                                          TIME         3.50

 HYDROGRAPH AT
+                   OFD7       .00     1   FLOW          9.
                                          TIME         3.50

 HYDROGRAPH AT
+                   OFD4       .00     1   FLOW          3.
                                          TIME         3.50

 HYDROGRAPH AT
+                  STD2A       .00     1   FLOW          7.
                                          TIME         3.50

  7 COMBINED AT
+                   CU10       .05     1   FLOW        309.
                                          TIME         3.58

 HYDROGRAPH AT
+                  OFD2C       .00     1   FLOW          4.
                                          TIME         3.58

 HYDROGRAPH AT
+                  RETD5       .00     1   FLOW         12.
                                          TIME         3.50

 HYDROGRAPH AT
+                   OND7       .00     1   FLOW          1.
                                          TIME         3.50

 HYDROGRAPH AT
+                   STD5       .00     1   FLOW          4.
                                          TIME         3.50

  4 COMBINED AT
+                   CU11       .00     1   FLOW         22.
                                          TIME         3.50


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

Appendix C – Hydraulic Calculations

- Normal Depth Cross-Section Calculations
  - Phase 1 - Onsite Streets
  - Phase 1 – Offsite Streets
  - Phase 2 – Onsite Streets
  - Phase 2 – Offsite Streets
  - Ultimate – Onsite Streets
  - Ultimate – Offsite Streets
  - T-Intersection Calculations (Specific Energy)
- Easement Calculations (Normal Depth, Weir, Orifice Calculations)
  - ES_P1
  - ES_P2
  - ES_P3
  - ES_P4
  - ES_P5
  - ES_E2
- Finished Floor Analysis Table
- T-Intersection Analysis Table
- Easement Adjacent Lots Analysis Table

PHASE 1 – ONSITE STREET SECTIONS

- Section A1
- Section C
- Section C1
- Section D
- Section D1
- Section D2
- Section E
- Section F
- Section I
- Section J
- Section J1
- Section J2
- Section J3
- Section K1

Worksheet for Section A1 INT PH1-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	2.050 %
Discharge	3.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
-0+05.00	1.00
0+00.00	0.60
0+00.40	0.60
0+01.50	0.22
0+02.50	0.30
0+13.50	0.08
0+15.00	0.00
0+16.50	0.08
0+27.50	0.30
0+28.50	0.22
0+29.60	0.60
0+30.00	0.60
0+35.00	1.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+05.00, 1.00)	(0+02.50, 0.30)	0.013
(0+02.50, 0.30)	(0+13.50, 0.08)	0.016
(0+13.50, 0.08)	(0+16.50, 0.08)	0.013
(0+16.50, 0.08)	(0+27.50, 0.30)	0.016
(0+27.50, 0.30)	(0+35.00, 1.00)	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	0.20 ft
Elevation Range	0.00 to 1.00 ft
Flow Area	1.18 ft²
Wetted Perimeter	14.85 ft

Worksheet for Section A1 INT PH1-100 YR

Results	
Hydraulic Radius	0.08 ft
Top Width	14.84 ft
Normal Depth	0.20 ft
Critical Depth	0.23 ft
Critical Slope	0.767 %
Velocity	2.55 ft/s
Velocity Head	0.10 ft
Specific Energy	0.30 ft
Froude Number	1.597
Flow Type	Supercritical

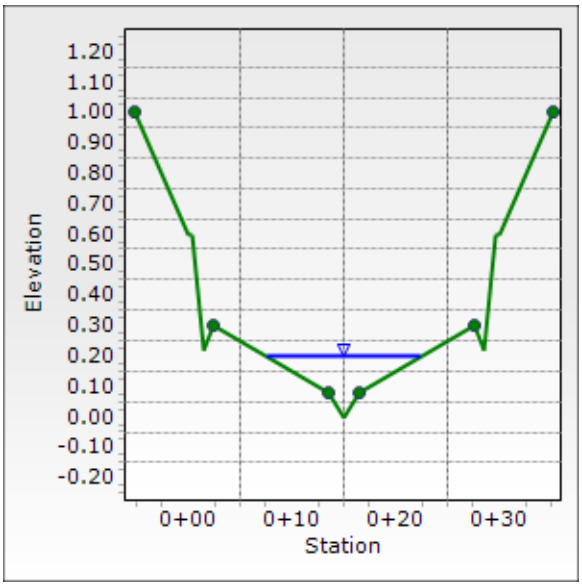
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.00 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.20 ft
Critical Depth	0.23 ft
Channel Slope	2.050 %
Critical Slope	0.767 %

Cross Section for Section A1 INT PH1-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	2.050 %
Normal Depth	0.20 ft
Discharge	3.00 cfs



Worksheet for Section C INT PH1-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.400 %
Discharge	151.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
-0+05.00	1.50
0+00.00	1.50
0+00.00	0.00
0+44.00	0.00
0+44.00	1.50
0+49.00	1.50

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+05.00, 1.50)	(0+49.00, 1.50)	0.025

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	0.96 ft
Elevation Range	0.00 to 1.50 ft
Flow Area	42.39 ft²
Wetted Perimeter	45.93 ft
Hydraulic Radius	0.92 ft
Top Width	44.00 ft
Normal Depth	0.96 ft
Critical Depth	0.72 ft
Critical Slope	1.063 %
Velocity	3.56 ft/s
Velocity Head	0.20 ft
Specific Energy	1.16 ft
Froude Number	0.640
Flow Type	Subcritical

Worksheet for Section C INT PH1-100 YR

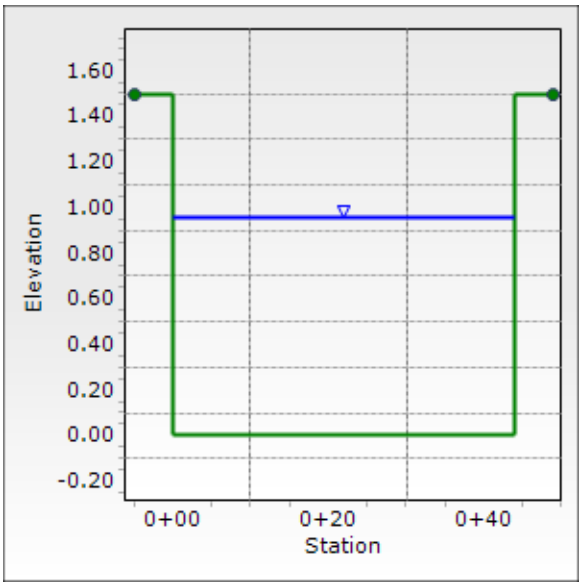
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.00 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.96 ft
Critical Depth	0.72 ft
Channel Slope	0.400 %
Critical Slope	1.063 %

Cross Section for Section C INT PH1-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.400 %
Normal Depth	0.96 ft
Discharge	151.00 cfs



Worksheet for Section C1 INT PH1-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	2.500 %
Discharge	3.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	0.60
0+05.00	0.50
0+05.50	0.50
0+05.50	0.00
0+07.00	0.21
0+32.00	0.71
0+57.00	0.21
0+58.50	0.00
0+58.50	0.50
0+59.00	0.50
0+64.00	0.60

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 0.60)	(0+07.00, 0.21)	0.013
(0+07.00, 0.21)	(0+57.00, 0.21)	0.016
(0+57.00, 0.21)	(0+64.00, 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	0.30 ft
Elevation Range	0.00 to 0.71 ft
Flow Area	1.05 ft²
Wetted Perimeter	13.14 ft
Hydraulic Radius	0.08 ft
Top Width	12.50 ft
Normal Depth	0.30 ft
Critical Depth	0.35 ft

Worksheet for Section C1 INT PH1-100 YR

Results	
Critical Slope	0.771 %
Velocity	2.85 ft/s
Velocity Head	0.13 ft
Specific Energy	0.43 ft
Froude Number	1.735
Flow Type	Supercritical

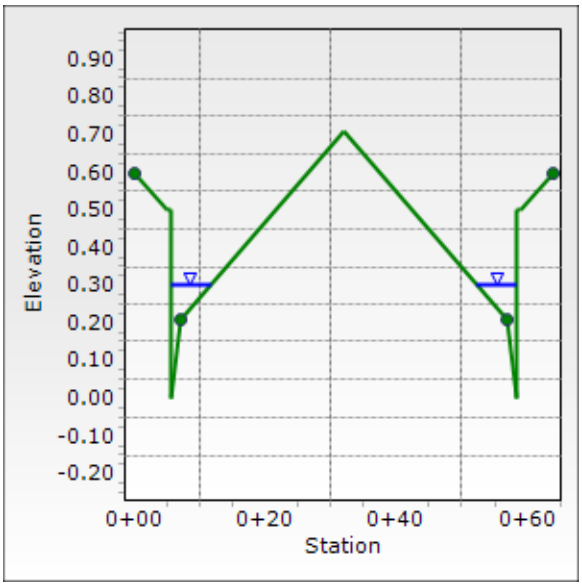
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.00 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.30 ft
Critical Depth	0.35 ft
Channel Slope	2.500 %
Critical Slope	0.771 %

Cross Section for Section C1 INT PH1-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	2.500 %
Normal Depth	0.30 ft
Discharge	3.00 cfs



Section D INT PH1-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.400 %
Discharge	92.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
-0+05.00	1.22
0+00.00	0.82
0+00.40	0.82
0+01.50	0.44
0+02.50	0.52
0+13.50	0.08
0+15.00	0.00
0+16.50	0.08
0+27.50	0.52
0+28.50	0.44
0+29.60	0.82
0+30.00	0.82
0+35.00	1.22

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+05.00, 1.22)	(0+02.50, 0.52)	0.013
(0+02.50, 0.52)	(0+13.50, 0.08)	0.016
(0+13.50, 0.08)	(0+16.50, 0.08)	0.013
(0+16.50, 0.08)	(0+27.50, 0.52)	0.016
(0+27.50, 0.52)	(0+35.00, 1.22)	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	1.00 ft
Elevation Range	0.00 to 1.22 ft
Flow Area	20.68 ft²
Wetted Perimeter	34.67 ft

Results	
Hydraulic Radius	0.60 ft
Top Width	34.50 ft
Normal Depth	1.00 ft
Critical Depth	1.01 ft
Critical Slope	0.389 %
Velocity	4.45 ft/s
Velocity Head	0.31 ft
Specific Energy	1.31 ft
Froude Number	1.013
Flow Type	Supercritical

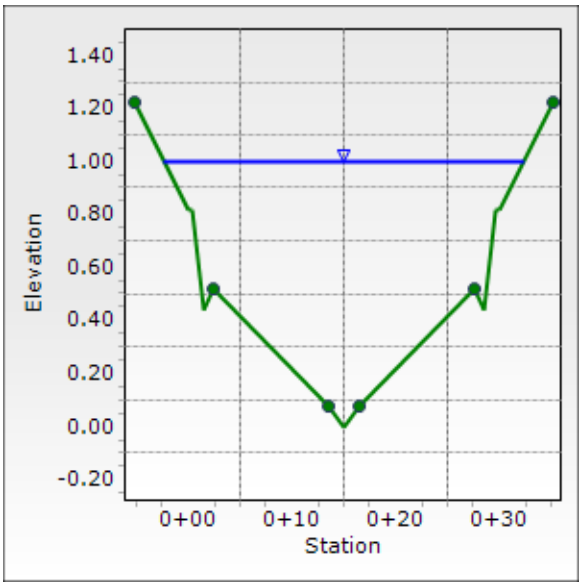
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.00 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	1.00 ft
Critical Depth	1.01 ft
Channel Slope	0.400 %
Critical Slope	0.389 %

Cross Section for Section D INT PH1-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.400 %
Normal Depth	1.00 ft
Discharge	92.00 cfs



Section D1 INT PH1-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	2.550 %
Discharge	26.10 cfs

Section Definitions

Station (ft)	Elevation (ft)
-0+05.00	1.22
0+00.00	0.82
0+00.40	0.82
0+01.50	0.44
0+02.50	0.52
0+13.50	0.08
0+15.00	0.00
0+16.50	0.08
0+27.50	0.52
0+28.50	0.44
0+29.60	0.82
0+30.00	0.82
0+35.00	1.22

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+05.00, 1.22)	(0+02.50, 0.52)	0.013
(0+02.50, 0.52)	(0+13.50, 0.08)	0.016
(0+13.50, 0.08)	(0+16.50, 0.08)	0.013
(0+16.50, 0.08)	(0+27.50, 0.52)	0.016
(0+27.50, 0.52)	(0+35.00, 1.22)	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	0.46 ft
Elevation Range	0.00 to 1.22 ft
Flow Area	4.78 ft²
Wetted Perimeter	22.29 ft

Results	
Hydraulic Radius	0.21 ft
Top Width	22.27 ft
Normal Depth	0.46 ft
Critical Depth	0.59 ft
Critical Slope	0.529 %
Velocity	5.46 ft/s
Velocity Head	0.46 ft
Specific Energy	0.92 ft
Froude Number	2.078
Flow Type	Supercritical

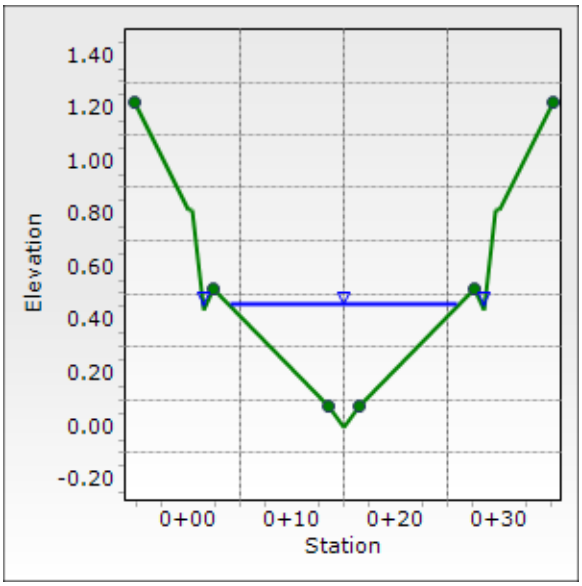
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.00 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.46 ft
Critical Depth	0.59 ft
Channel Slope	2.550 %
Critical Slope	0.529 %

Cross Section for Section D1 INT PH1-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	2.550 %
Normal Depth	0.46 ft
Discharge	26.10 cfs



Section D2 INT PH1-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.400 %
Discharge	0.54 cfs

Section Definitions

Station (ft)	Elevation (ft)
-0+20.00	1.24
-0+19.50	1.24
-0+19.50	0.74
0+13.50	0.08
0+15.00	0.00
0+16.50	0.08
0+27.50	0.30
0+28.50	0.22
0+29.60	0.60
0+30.00	0.60

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+20.00, 1.24)	(0+13.50, 0.08)	0.016
(0+13.50, 0.08)	(0+16.50, 0.08)	0.013
(0+16.50, 0.08)	(0+27.50, 0.30)	0.016
(0+27.50, 0.30)	(0+30.00, 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	0.15 ft
Elevation Range	0.00 to 1.24 ft
Flow Area	0.58 ft²
Wetted Perimeter	10.08 ft
Hydraulic Radius	0.06 ft
Top Width	10.08 ft
Normal Depth	0.15 ft
Critical Depth	0.13 ft

Results	
Critical Slope	0.907 %
Velocity	0.93 ft/s
Velocity Head	0.01 ft
Specific Energy	0.16 ft
Froude Number	0.679
Flow Type	Subcritical

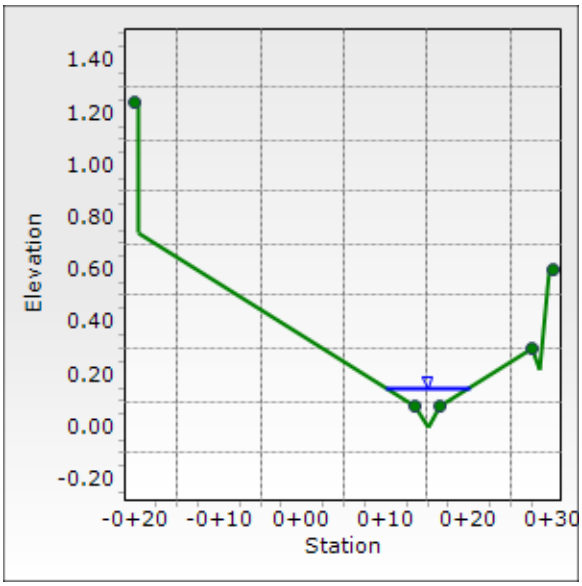
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.00 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.15 ft
Critical Depth	0.13 ft
Channel Slope	0.400 %
Critical Slope	0.907 %

Cross Section for Section D2 INT PH1-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.400 %
Normal Depth	0.15 ft
Discharge	0.54 cfs



Section E INT PH1-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.530 %
Discharge	84.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
-0+05.00	1.42
0+00.00	1.02
0+00.40	1.02
0+01.50	0.64
0+02.50	0.72
0+18.50	0.08
0+20.00	0.00
0+21.50	0.08
0+37.50	0.72
0+38.50	0.64
0+39.60	1.02
0+40.00	1.02
0+45.00	1.42

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+05.00, 1.42)	(0+02.50, 0.72)	0.013
(0+02.50, 0.72)	(0+18.50, 0.08)	0.016
(0+18.50, 0.08)	(0+21.50, 0.08)	0.013
(0+21.50, 0.08)	(0+37.50, 0.72)	0.016
(0+37.50, 0.72)	(0+45.00, 1.42)	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	0.90 ft
Elevation Range	0.00 to 1.42 ft
Flow Area	19.21 ft²
Wetted Perimeter	38.63 ft

Results	
Hydraulic Radius	0.50 ft
Top Width	38.50 ft
Normal Depth	0.90 ft
Critical Depth	0.93 ft
Critical Slope	0.437 %
Velocity	4.37 ft/s
Velocity Head	0.30 ft
Specific Energy	1.20 ft
Froude Number	1.091
Flow Type	Supercritical

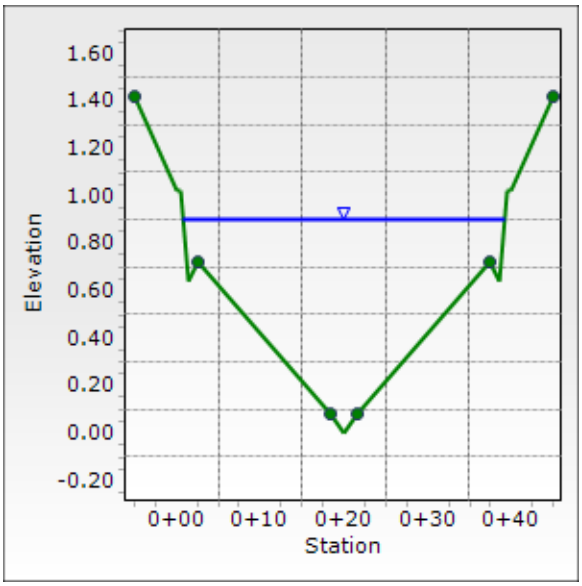
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.00 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.90 ft
Critical Depth	0.93 ft
Channel Slope	0.530 %
Critical Slope	0.437 %

Cross Section for Section E INT PH1-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.530 %
Normal Depth	0.90 ft
Discharge	84.00 cfs



Worksheet for Section F INT PH1-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data		
Channel Slope	0.470	%
Discharge	156.00	cfs

Section Definitions

Station (ft)	Elevation (ft)
-0+05.00	1.50
0+00.00	1.50
0+00.00	0.00
0+54.00	0.00
0+54.00	1.50
0+59.00	1.50

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+05.00, 1.50)	(0+59.00, 1.50)	0.025

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	0.82	ft
Elevation Range	0.00 to 1.50	ft
Flow Area	44.45	ft²
Wetted Perimeter	55.65	ft
Hydraulic Radius	0.80	ft
Top Width	54.00	ft
Normal Depth	0.82	ft
Critical Depth	0.64	ft
Critical Slope	1.091	%
Velocity	3.51	ft/s
Velocity Head	0.19	ft
Specific Energy	1.01	ft
Froude Number	0.682	
Flow Type	Subcritical	

Worksheet for Section F INT PH1-100 YR

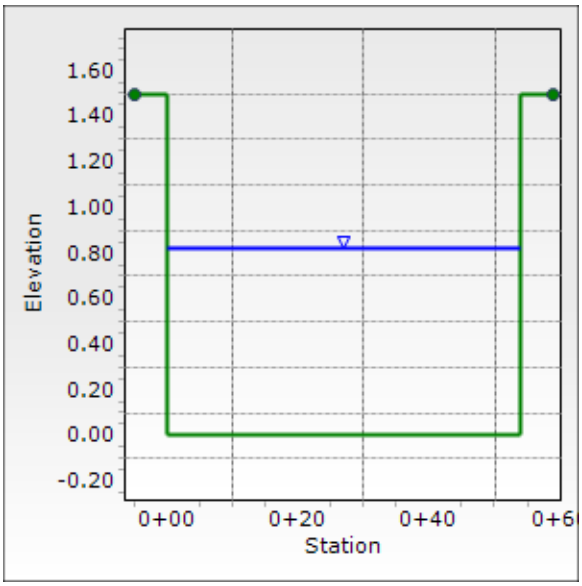
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.00 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.82 ft
Critical Depth	0.64 ft
Channel Slope	0.470 %
Critical Slope	1.091 %

Cross Section for Section F INT PH1-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.470 %
Normal Depth	0.82 ft
Discharge	156.00 cfs



Worksheet for Section I INT PH1-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data		
Channel Slope	1.470	%
Discharge	85.00	cfs

Section Definitions

Station (ft)	Elevation (ft)
-0+05.00	1.50
0+00.00	1.50
0+00.00	0.00
0+40.00	0.00
0+40.00	1.50
0+45.00	1.50

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+05.00, 1.50)	(0+45.00, 1.50)	0.025

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	0.49	ft
Elevation Range	0.00 to 1.50	ft
Flow Area	19.41	ft²
Wetted Perimeter	40.97	ft
Hydraulic Radius	0.47	ft
Top Width	40.00	ft
Normal Depth	0.49	ft
Critical Depth	0.52	ft
Critical Slope	1.172	%
Velocity	4.38	ft/s
Velocity Head	0.30	ft
Specific Energy	0.78	ft
Froude Number	1.109	
Flow Type	Supercritical	

Worksheet for Section I INT PH1-100 YR

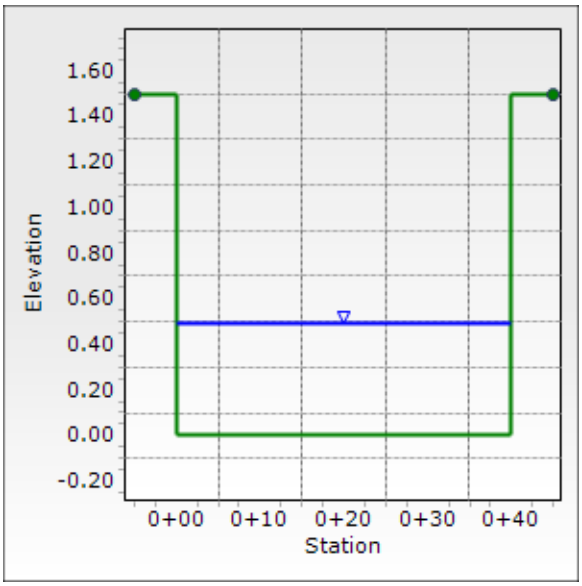
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.00 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.49 ft
Critical Depth	0.52 ft
Channel Slope	1.470 %
Critical Slope	1.172 %

Cross Section for Section I INT PH1-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.470 %
Normal Depth	0.49 ft
Discharge	85.00 cfs



Worksheet for Section J INT PH1-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.400 %
Discharge	87.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
-0+05.00	1.50
0+00.00	1.50
0+00.00	0.00
0+34.00	0.00
0+34.00	1.50
0+39.00	1.50

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+05.00, 1.50)	(0+39.00, 1.50)	0.025

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	0.81 ft
Elevation Range	0.00 to 1.50 ft
Flow Area	27.50 ft²
Wetted Perimeter	35.62 ft
Hydraulic Radius	0.77 ft
Top Width	34.00 ft
Normal Depth	0.81 ft
Critical Depth	0.59 ft
Critical Slope	1.137 %
Velocity	3.16 ft/s
Velocity Head	0.16 ft
Specific Energy	0.96 ft
Froude Number	0.620
Flow Type	Subcritical

Worksheet for Section J INT PH1-100 YR

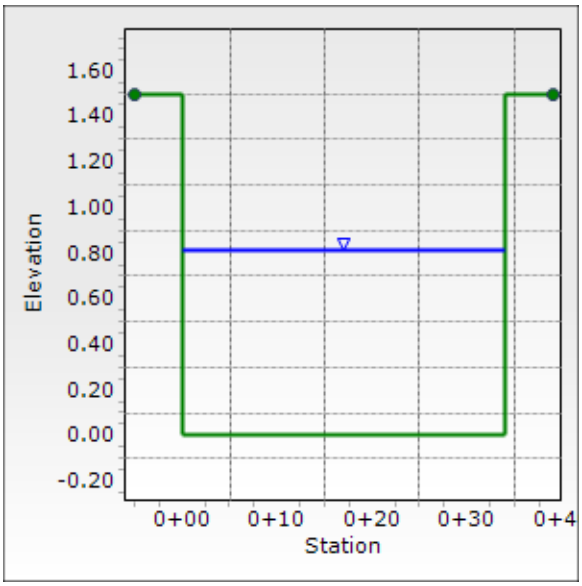
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.00 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.81 ft
Critical Depth	0.59 ft
Channel Slope	0.400 %
Critical Slope	1.137 %

Cross Section for Section J INT PH1-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.400 %
Normal Depth	0.81 ft
Discharge	87.00 cfs



Worksheet for Section J1 INT PH1-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data		
Channel Slope	0.740	%
Discharge	2.40	cfs

Section Definitions

Station (ft)	Elevation (ft)
-0+05.00	1.50
0+00.00	1.50
0+00.00	0.00
0+34.00	0.00
0+34.00	1.50
0+39.00	1.50

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+05.00, 1.50)	(0+39.00, 1.50)	0.025

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	0.08	ft
Elevation Range	0.00 to 1.50	ft
Flow Area	2.60	ft²
Wetted Perimeter	34.15	ft
Hydraulic Radius	0.08	ft
Top Width	34.00	ft
Normal Depth	0.08	ft
Critical Depth	0.05	ft
Critical Slope	2.423	%
Velocity	0.92	ft/s
Velocity Head	0.01	ft
Specific Energy	0.09	ft
Froude Number	0.588	
Flow Type	Subcritical	

Worksheet for Section J1 INT PH1-100 YR

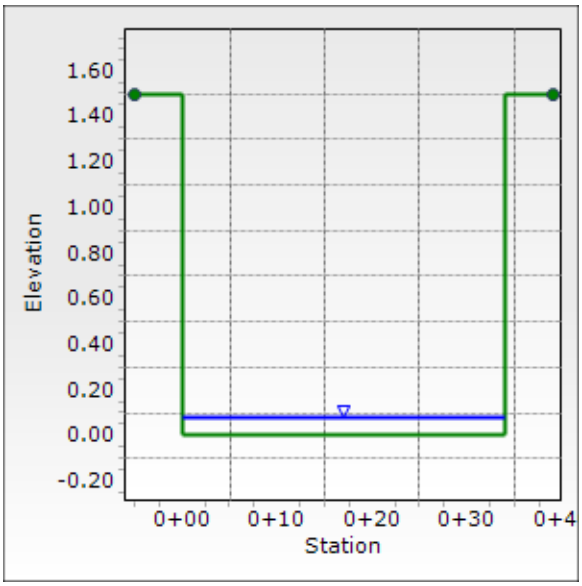
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.00 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.08 ft
Critical Depth	0.05 ft
Channel Slope	0.740 %
Critical Slope	2.423 %

Cross Section for Section J1 INT PH1-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.740 %
Normal Depth	0.08 ft
Discharge	2.40 cfs



Worksheet for Section J2 INT PH1-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data		
Channel Slope	0.400	%
Discharge	6.50	cfs

Section Definitions

Station (ft)	Elevation (ft)
-0+05.00	1.50
0+00.00	1.50
0+00.00	0.00
0+34.00	0.00
0+34.00	1.50
0+39.00	1.50

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+05.00, 1.50)	(0+39.00, 1.50)	0.025

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	0.17	ft
Elevation Range	0.00 to 1.50	ft
Flow Area	5.71	ft²
Wetted Perimeter	34.34	ft
Hydraulic Radius	0.17	ft
Top Width	34.00	ft
Normal Depth	0.17	ft
Critical Depth	0.10	ft
Critical Slope	1.950	%
Velocity	1.14	ft/s
Velocity Head	0.02	ft
Specific Energy	0.19	ft
Froude Number	0.489	
Flow Type	Subcritical	

Worksheet for Section J2 INT PH1-100 YR

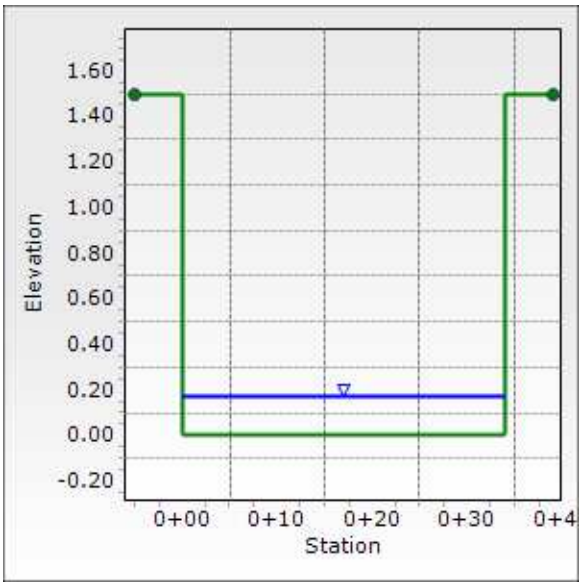
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.00 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.17 ft
Critical Depth	0.10 ft
Channel Slope	0.400 %
Critical Slope	1.950 %

Cross Section for Section J2 INT PH1-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.400 %
Normal Depth	0.17 ft
Discharge	6.50 cfs



Section J3 INT PH1- 100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.500 %
Discharge	0.60 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	1.67
0+05.00	0.00
0+07.00	0.67

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 1.67)	(0+07.00, 0.67)	0.025

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	0.39 ft
Elevation Range	0.00 to 1.67 ft
Flow Area	0.44 ft²
Wetted Perimeter	2.43 ft
Hydraulic Radius	0.18 ft
Top Width	2.30 ft
Normal Depth	0.39 ft
Critical Depth	0.30 ft
Critical Slope	1.836 %
Velocity	1.35 ft/s
Velocity Head	0.03 ft
Specific Energy	0.41 ft
Froude Number	0.543
Flow Type	Subcritical

GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft

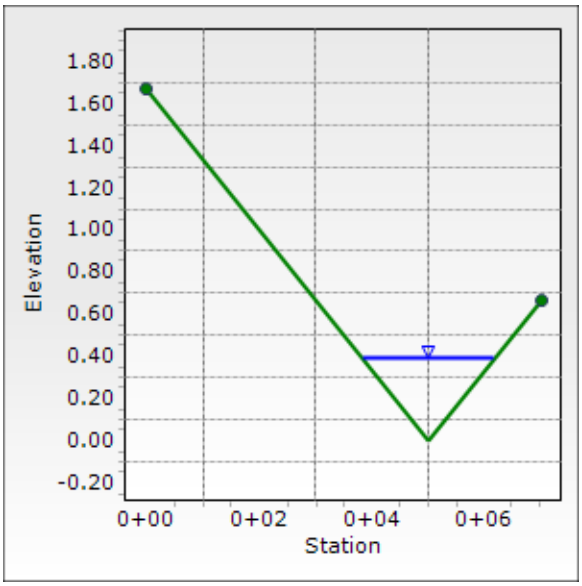
GVF Input Data	
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.00 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	0.00 ft/s
Upstream Velocity	0.00 ft/s
Normal Depth	0.39 ft
Critical Depth	0.30 ft
Channel Slope	0.500 %
Critical Slope	1.836 %

Cross Section for Section J3 INT PH1- 100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.500 %
Normal Depth	0.39 ft
Discharge	0.60 cfs



Worksheet for Section K1 INT PH1-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.400 %
Discharge	51.50 cfs

Section Definitions

Station (ft)	Elevation (ft)
-0+18.50	1.21
-0+18.00	1.21
-0+18.00	0.71
0+13.50	0.08
0+15.00	0.00
0+16.50	0.08
0+27.50	0.30
0+28.50	0.22
0+29.60	0.60
0+30.00	0.60

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+18.50, 1.21)	(0+13.50, 0.08)	0.016
(0+13.50, 0.08)	(0+16.50, 0.08)	0.013
(0+16.50, 0.08)	(0+27.50, 0.30)	0.016
(0+27.50, 0.30)	(0+30.00, 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	0.68 ft
Elevation Range	0.00 to 1.21 ft
Flow Area	16.87 ft²
Wetted Perimeter	46.45 ft
Hydraulic Radius	0.36 ft
Top Width	46.29 ft
Normal Depth	0.68 ft
Critical Depth	0.64 ft

Worksheet for Section K1 INT PH1-100 YR

Results	
Critical Slope	0.512 %
Velocity	3.05 ft/s
Velocity Head	0.14 ft
Specific Energy	0.82 ft
Froude Number	0.892
Flow Type	Subcritical

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

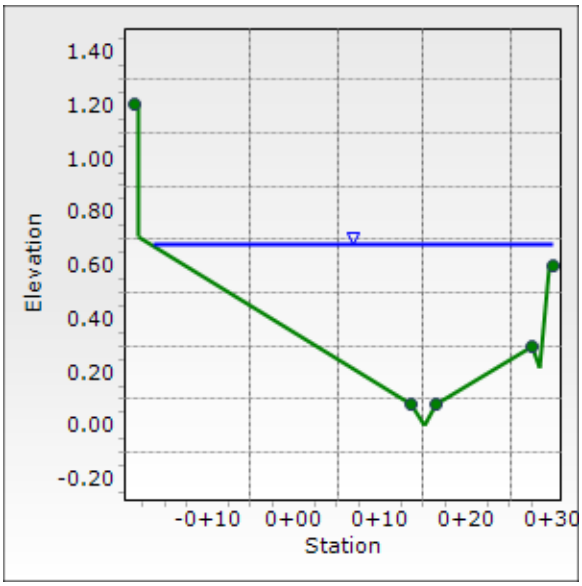
GVF Output Data	
Upstream Depth	0.00 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.68 ft
Critical Depth	0.64 ft
Channel Slope	0.400 %
Critical Slope	0.512 %

Messages	
Messages	Water Surface Elevation exceeds lowest end station by 0.075856354 6927555ft.

Cross Section for Section K1 INT PH1-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.400 %
Normal Depth	0.68 ft
Discharge	51.50 cfs



PHASE 1 – OFFSITE STREET SECTIONS

- Section Q rancho west half
- Section Q rancho west half capacity
- Section Q rancho east half
- Section R rancho west half
- Section R rancho east half
- Section S rancho west half
- Section S rancho east half

NOTE: Calculations that are identical in the Phase 1 and Phase 2 conditions are included (and designated as such) in the Phase 1 Section to avoid redundant calculations.

Section Q Rancho West HALF INT_PH1&PH2-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.300 %
Discharge	236.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+71.00	1.11
0+76.50	0.98
1+01.50	0.60
1+17.00	0.17
1+17.00	0.13
1+18.50	0.00
1+18.50	0.50
1+19.00	0.50
1+25.00	0.62

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+71.00, 1.11)	(1+17.00, 0.13)	0.016
(1+17.00, 0.13)	(1+25.00, 0.62)	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	1.23 ft
Elevation Range	0.00 to 1.11 ft
Flow Area	31.49 ft²
Wetted Perimeter	55.30 ft
Hydraulic Radius	0.57 ft
Top Width	54.00 ft
Normal Depth	1.23 ft
Critical Depth	1.49 ft
Critical Slope	0.390 %
Velocity	7.49 ft/s
Velocity Head	0.87 ft

Results	
Specific Energy	2.11 ft
Froude Number	1.730
Flow Type	Supercritical

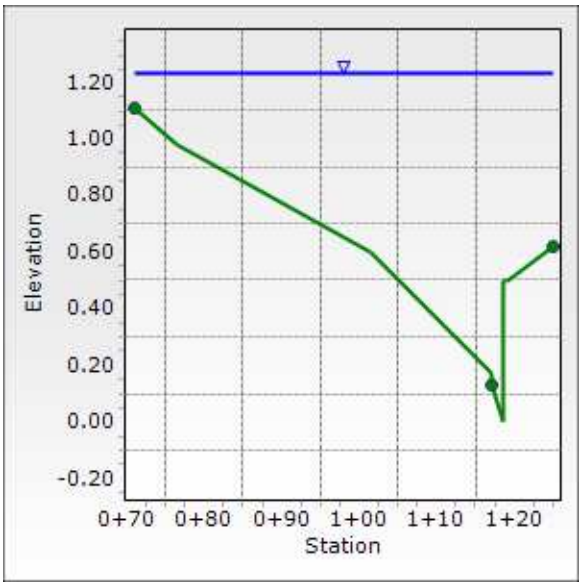
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

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	1.23 ft
Critical Depth	1.49 ft
Channel Slope	1.300 %
Critical Slope	0.390 %

Cross Section for Section Q Rancho West HALF INT_PH1&PH2-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.300 %
Normal Depth	1.23 ft
Discharge	236.00 cfs



Section Q Rancho West HALF Capacity INT_PH1&PH2-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Discharge

Input Data	
Channel Slope	1.300 %
Normal Depth	1.23 ft

Section Definitions

Station (ft)	Elevation (ft)
0+85.50	1.50
0+85.50	0.84
1+01.50	0.60
1+17.00	0.17
1+17.00	0.13
1+18.50	0.00
1+18.50	0.50
1+19.00	0.50
1+25.00	0.62

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+85.50, 1.50)	(1+17.00, 0.17)	0.016
(1+17.00, 0.17)	(1+25.00, 0.62)	0.013

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

Results	
Discharge	230.34 cfs
Elevation Range	0.00 to 1.50 ft
Flow Area	27.39 ft²
Wetted Perimeter	41.05 ft
Hydraulic Radius	0.67 ft
Top Width	39.50 ft
Normal Depth	1.23 ft
Critical Depth	1.56 ft
Critical Slope	0.368 %
Velocity	8.41 ft/s
Velocity Head	1.10 ft

Results	
Specific Energy	2.33 ft
Froude Number	1.780
Flow Type	Supercritical

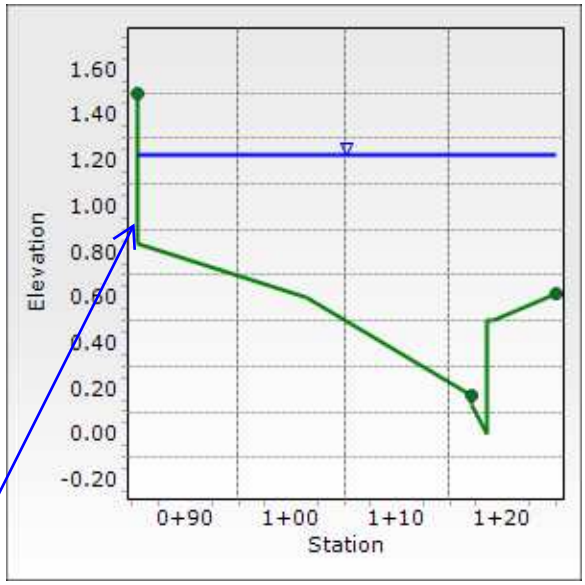
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

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	1.23 ft
Critical Depth	1.56 ft
Channel Slope	1.300 %
Critical Slope	0.368 %

Cross Section for Section Q Rancho West HALF Capacity
INT_PH1&PH2-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Discharge

Input Data	
Channel Slope	1.300 %
Normal Depth	1.23 ft
Discharge	230.34 cfs



NOTE: PROPOSED MEDIAN.

THE FLOW NOT CONTAINED WEST OF THE MEDIAN WILL OVERTOP TO THE EAST SIDE OF RANCHO.

Section Q Rancho East HALF INT_PH1&PH2-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.300 %
Discharge	13.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
-0+06.00	3.00
-0+06.00	1.00
0+00.00	0.88
0+06.00	0.76
0+07.00	0.66
0+16.00	0.35
0+20.00	0.50
0+21.00	0.50
0+21.00	0.00
0+22.50	0.13
0+22.50	0.17
0+42.00	0.56
0+58.00	0.90
0+71.00	0.97

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+06.00, 3.00)	(0+16.00, 0.35)	0.020
(0+16.00, 0.35)	(0+21.00, 0.00)	0.013
(0+21.00, 0.00)	(0+71.00, 0.97)	0.016

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	0.51 ft
Elevation Range	0.00 to 3.00 ft
Flow Area	4.38 ft²
Wetted Perimeter	28.99 ft
Hydraulic Radius	0.15 ft

Results	
Top Width	28.43 ft
Normal Depth	0.51 ft
Critical Depth	0.55 ft
Critical Slope	0.702 %
Velocity	2.97 ft/s
Velocity Head	0.14 ft
Specific Energy	0.65 ft
Froude Number	1.332
Flow Type	Supercritical

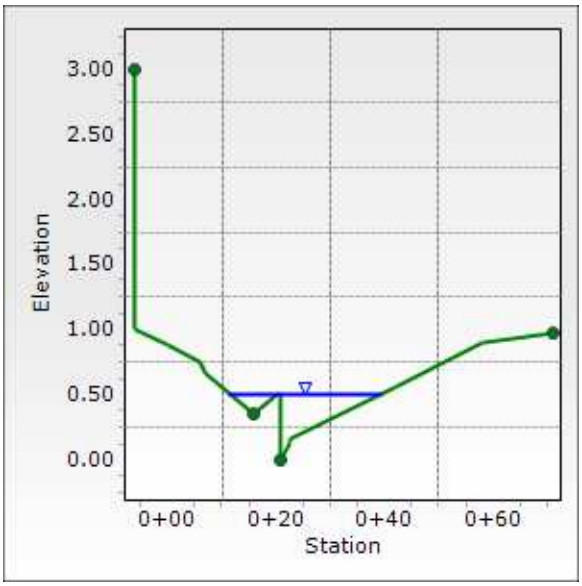
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

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	0.51 ft
Critical Depth	0.55 ft
Channel Slope	1.300 %
Critical Slope	0.702 %

Cross Section for Section Q Rancho East HALF INT_PH1&PH2-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.300 %
Normal Depth	0.51 ft
Discharge	13.00 cfs



Section R Rancho West HALF INT_PH1&PH2-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.300 %
Discharge	284.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+85.00	1.46
0+85.50	1.46
0+85.50	0.96
1+00.00	0.85
1+18.00	0.07
1+20.75	0.00
1+23.50	0.07
1+34.00	0.45
2+14.00	1.11

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+85.00, 1.46)	(1+18.00, 0.07)	0.016
(1+18.00, 0.07)	(1+23.50, 0.07)	0.013
(1+23.50, 0.07)	(2+14.00, 1.11)	0.016

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	1.05 ft
Elevation Range	0.00 to 1.46 ft
Flow Area	48.91 ft²
Wetted Perimeter	121.84 ft
Hydraulic Radius	0.40 ft
Top Width	121.71 ft
Normal Depth	1.05 ft
Critical Depth	1.21 ft
Critical Slope	0.455 %
Velocity	5.81 ft/s

Results	
Velocity Head	0.52 ft
Specific Energy	1.58 ft
Froude Number	1.615
Flow Type	Supercritical

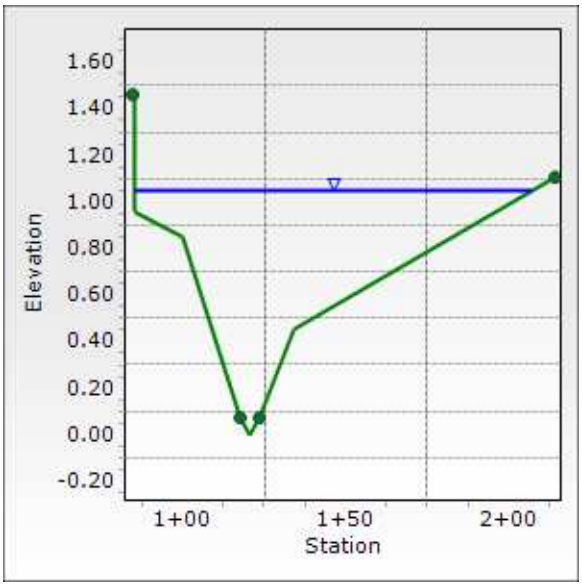
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

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	1.05 ft
Critical Depth	1.21 ft
Channel Slope	1.300 %
Critical Slope	0.455 %

Cross Section for Section R Rancho West HALF INT_PH1&PH2-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.300 %
Normal Depth	1.05 ft
Discharge	284.00 cfs



Section R Rancho East HALF INT_PH1&PH2-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.300 %
Discharge	13.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
-0+48.00	2.71
0+16.00	0.68
0+20.00	0.50
0+24.00	0.68
0+39.00	0.85
0+53.00	1.15
0+56.50	1.17
0+56.50	1.67
0+57.00	1.67

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+48.00, 2.71)	(0+16.00, 0.68)	0.016
(0+16.00, 0.68)	(0+24.00, 0.68)	0.013
(0+24.00, 0.68)	(0+57.00, 1.67)	0.016

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	0.37 ft
Elevation Range	0.50 to 2.71 ft
Flow Area	4.26 ft²
Wetted Perimeter	29.58 ft
Hydraulic Radius	0.14 ft
Top Width	29.57 ft
Normal Depth	0.37 ft
Critical Depth	0.41 ft
Critical Slope	0.612 %
Velocity	3.05 ft/s

Results	
Velocity Head	0.14 ft
Specific Energy	0.51 ft
Froude Number	1.418
Flow Type	Supercritical

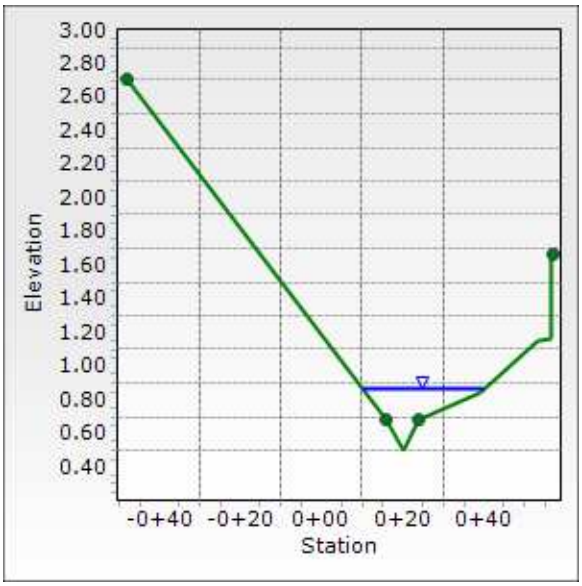
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

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	0.37 ft
Critical Depth	0.41 ft
Channel Slope	1.300 %
Critical Slope	0.612 %

Cross Section for Section R Rancho East HALF INT_PH1&PH2-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.300 %
Normal Depth	0.37 ft
Discharge	13.00 cfs



Section S Rancho West HALF INT_PH1&PH2-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.000 %
Discharge	288.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+64.00	1.47
0+74.00	1.35
0+75.00	0.80
0+91.00	0.68
1+02.00	0.28
1+05.00	0.23
1+09.50	0.17
1+09.50	0.13
1+11.00	0.00
1+11.00	0.50
1+11.00	0.55
1+17.00	0.63
1+25.00	1.06

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+64.00, 1.47)	(0+75.00, 0.80)	0.013
(0+75.00, 0.80)	(1+09.50, 0.17)	0.016
(1+09.50, 0.17)	(1+17.00, 0.63)	0.013
(1+17.00, 0.63)	(1+25.00, 1.06)	0.020

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	1.35 ft
Elevation Range	0.00 to 1.47 ft
Flow Area	38.48 ft²
Wetted Perimeter	52.04 ft
Hydraulic Radius	0.74 ft

Results	
Top Width	51.00 ft
Normal Depth	1.35 ft
Critical Depth	1.61 ft
Critical Slope	0.413 %
Velocity	7.49 ft/s
Velocity Head	0.87 ft
Specific Energy	2.22 ft
Froude Number	1.519
Flow Type	Supercritical

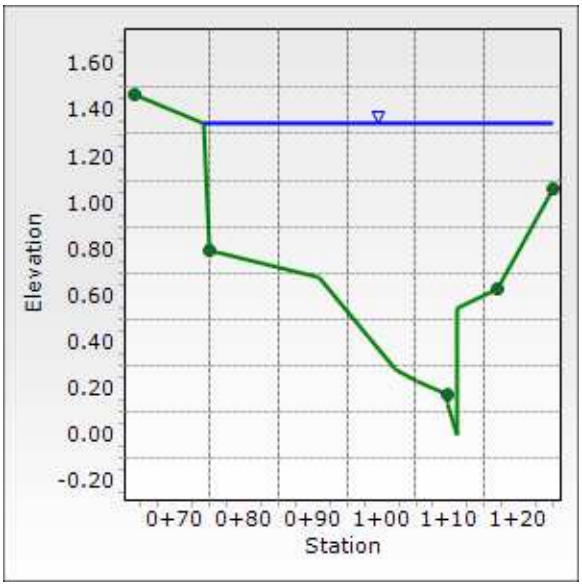
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

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	1.35 ft
Critical Depth	1.61 ft
Channel Slope	1.000 %
Critical Slope	0.413 %

Cross Section for Section S Rancho West HALF INT_PH1&PH2-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.000 %
Normal Depth	1.35 ft
Discharge	288.00 cfs



Section S Rancho East HALF INT_PH1&PH2-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.000 %
Discharge	17.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
-0+06.00	2.00
-0+06.00	0.99
0+05.00	0.77
0+10.00	0.67
0+15.00	0.57
0+15.50	0.57
0+15.50	0.07
0+17.00	0.24
0+29.50	0.46
0+34.50	0.42
0+51.00	0.55
0+52.00	1.20
0+64.00	1.47

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+06.00, 2.00)	(0+05.00, 0.77)	0.020
(0+05.00, 0.77)	(0+10.00, 0.67)	0.013
(0+10.00, 0.67)	(0+15.00, 0.57)	0.020
(0+15.00, 0.57)	(0+17.00, 0.24)	0.013
(0+17.00, 0.24)	(0+52.00, 1.20)	0.016
(0+52.00, 1.20)	(0+64.00, 1.47)	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	0.52 ft
Elevation Range	0.07 to 2.00 ft
Flow Area	6.11 ft²

Results	
Wetted Perimeter	37.52 ft
Hydraulic Radius	0.16 ft
Top Width	37.00 ft
Normal Depth	0.52 ft
Critical Depth	0.54 ft
Critical Slope	0.663 %
Velocity	2.78 ft/s
Velocity Head	0.12 ft
Specific Energy	0.64 ft
Froude Number	1.207
Flow Type	Supercritical

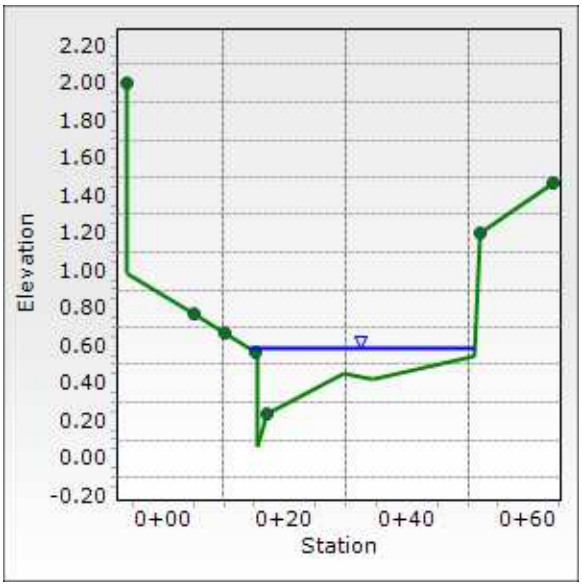
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

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	0.52 ft
Critical Depth	0.54 ft
Channel Slope	1.000 %
Critical Slope	0.663 %

Cross Section for Section S Rancho East HALF INT_PH1&PH2-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.000 %
Normal Depth	0.52 ft
Discharge	17.00 cfs



PHASE 2 – ONSITE STREET SECTIONS

- Section A1
- Section D
- Section D1
- Section D2
- Section E
- Section F
- Section I
- Section J
- Section J1
- Section J2
- Section J3
- Section K1

Worksheet for Section A1 INT PH2-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	2.050 %
Discharge	3.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
-0+05.00	1.00
0+00.00	0.60
0+00.40	0.60
0+01.50	0.22
0+02.50	0.30
0+13.50	0.08
0+15.00	0.00
0+16.50	0.08
0+27.50	0.30
0+28.50	0.22
0+29.60	0.60
0+30.00	0.60
0+35.00	1.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+05.00, 1.00)	(0+02.50, 0.30)	0.013
(0+02.50, 0.30)	(0+13.50, 0.08)	0.016
(0+13.50, 0.08)	(0+16.50, 0.08)	0.013
(0+16.50, 0.08)	(0+27.50, 0.30)	0.016
(0+27.50, 0.30)	(0+35.00, 1.00)	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	0.20 ft
Elevation Range	0.00 to 1.00 ft
Flow Area	1.18 ft²
Wetted Perimeter	14.85 ft

Worksheet for Section A1 INT PH2-100 YR

Results	
Hydraulic Radius	0.08 ft
Top Width	14.84 ft
Normal Depth	0.20 ft
Critical Depth	0.23 ft
Critical Slope	0.767 %
Velocity	2.55 ft/s
Velocity Head	0.10 ft
Specific Energy	0.30 ft
Froude Number	1.597
Flow Type	Supercritical

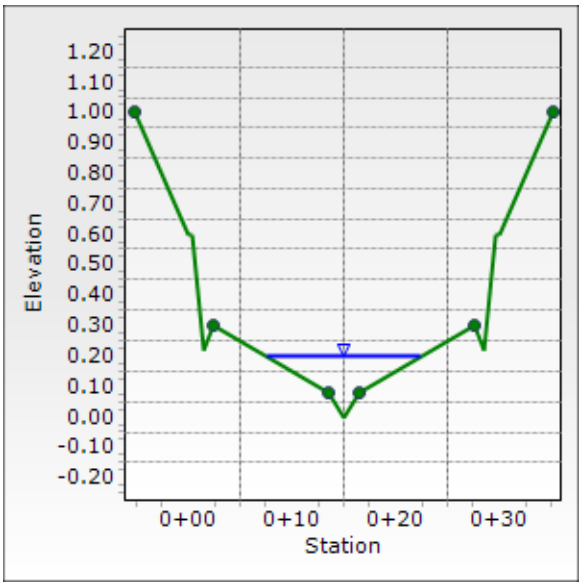
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.00 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.20 ft
Critical Depth	0.23 ft
Channel Slope	2.050 %
Critical Slope	0.767 %

Cross Section for Section A1 INT PH2-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	2.050 %
Normal Depth	0.20 ft
Discharge	3.00 cfs



Section D INT PH2-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.400 %
Discharge	92.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
-0+05.00	1.22
0+00.00	0.82
0+00.40	0.82
0+01.50	0.44
0+02.50	0.52
0+13.50	0.08
0+15.00	0.00
0+16.50	0.08
0+27.50	0.52
0+28.50	0.44
0+29.60	0.82
0+30.00	0.82
0+35.00	1.22

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+05.00, 1.22)	(0+02.50, 0.52)	0.013
(0+02.50, 0.52)	(0+13.50, 0.08)	0.016
(0+13.50, 0.08)	(0+16.50, 0.08)	0.013
(0+16.50, 0.08)	(0+27.50, 0.52)	0.016
(0+27.50, 0.52)	(0+35.00, 1.22)	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	1.00 ft
Elevation Range	0.00 to 1.22 ft
Flow Area	20.68 ft²
Wetted Perimeter	34.67 ft

Results	
Hydraulic Radius	0.60 ft
Top Width	34.50 ft
Normal Depth	1.00 ft
Critical Depth	1.01 ft
Critical Slope	0.389 %
Velocity	4.45 ft/s
Velocity Head	0.31 ft
Specific Energy	1.31 ft
Froude Number	1.013
Flow Type	Supercritical

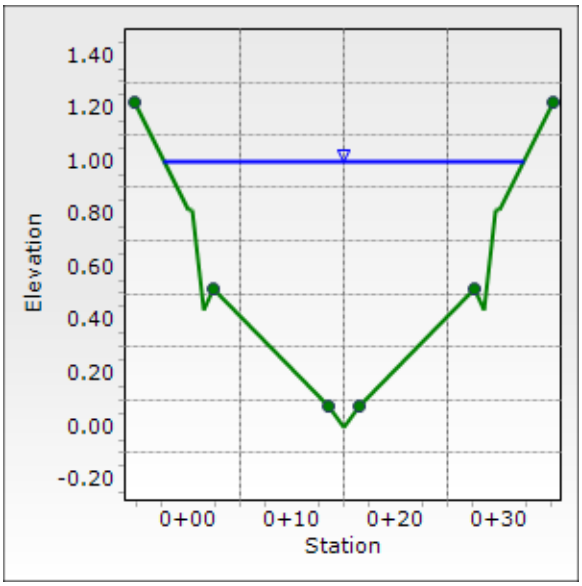
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.00 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	1.00 ft
Critical Depth	1.01 ft
Channel Slope	0.400 %
Critical Slope	0.389 %

Cross Section for Section D INT PH2-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.400 %
Normal Depth	1.00 ft
Discharge	92.00 cfs



Section D1 INT PH2-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	2.550 %
Discharge	26.10 cfs

Section Definitions

Station (ft)	Elevation (ft)
-0+05.00	1.22
0+00.00	0.82
0+00.40	0.82
0+01.50	0.44
0+02.50	0.52
0+13.50	0.08
0+15.00	0.00
0+16.50	0.08
0+27.50	0.52
0+28.50	0.44
0+29.60	0.82
0+30.00	0.82
0+35.00	1.22

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+05.00, 1.22)	(0+02.50, 0.52)	0.013
(0+02.50, 0.52)	(0+13.50, 0.08)	0.016
(0+13.50, 0.08)	(0+16.50, 0.08)	0.013
(0+16.50, 0.08)	(0+27.50, 0.52)	0.016
(0+27.50, 0.52)	(0+35.00, 1.22)	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	0.46 ft
Elevation Range	0.00 to 1.22 ft
Flow Area	4.78 ft²
Wetted Perimeter	22.29 ft

Results	
Hydraulic Radius	0.21 ft
Top Width	22.27 ft
Normal Depth	0.46 ft
Critical Depth	0.59 ft
Critical Slope	0.529 %
Velocity	5.46 ft/s
Velocity Head	0.46 ft
Specific Energy	0.92 ft
Froude Number	2.078
Flow Type	Supercritical

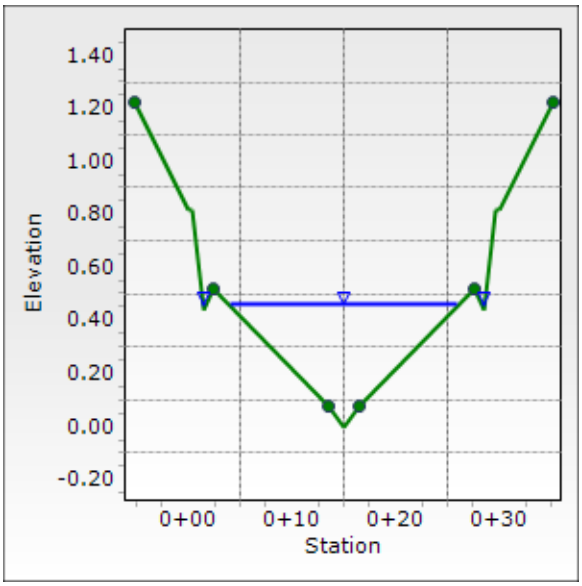
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.00 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.46 ft
Critical Depth	0.59 ft
Channel Slope	2.550 %
Critical Slope	0.529 %

Cross Section for Section D1 INT PH2-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	2.550 %
Normal Depth	0.46 ft
Discharge	26.10 cfs



Section D2 INT PH2-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.400 %
Discharge	0.54 cfs

Section Definitions

Station (ft)	Elevation (ft)
-0+20.00	1.24
-0+19.50	1.24
-0+19.50	0.74
0+13.50	0.08
0+15.00	0.00
0+16.50	0.08
0+27.50	0.30
0+28.50	0.22
0+29.60	0.60
0+30.00	0.60

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+20.00, 1.24)	(0+13.50, 0.08)	0.016
(0+13.50, 0.08)	(0+16.50, 0.08)	0.013
(0+16.50, 0.08)	(0+27.50, 0.30)	0.016
(0+27.50, 0.30)	(0+30.00, 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	0.15 ft
Elevation Range	0.00 to 1.24 ft
Flow Area	0.58 ft²
Wetted Perimeter	10.08 ft
Hydraulic Radius	0.06 ft
Top Width	10.08 ft
Normal Depth	0.15 ft
Critical Depth	0.13 ft

Results	
Critical Slope	0.907 %
Velocity	0.93 ft/s
Velocity Head	0.01 ft
Specific Energy	0.16 ft
Froude Number	0.679
Flow Type	Subcritical

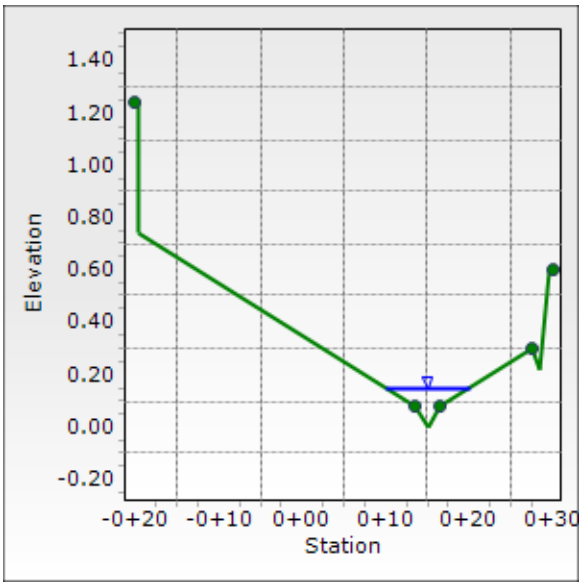
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.00 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.15 ft
Critical Depth	0.13 ft
Channel Slope	0.400 %
Critical Slope	0.907 %

Cross Section for Section D2 INT PH2-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.400 %
Normal Depth	0.15 ft
Discharge	0.54 cfs



Section E INT PH2-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.530 %
Discharge	84.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
-0+05.00	1.42
0+00.00	1.02
0+00.40	1.02
0+01.50	0.64
0+02.50	0.72
0+18.50	0.08
0+20.00	0.00
0+21.50	0.08
0+37.50	0.72
0+38.50	0.64
0+39.60	1.02
0+40.00	1.02
0+45.00	1.42

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+05.00, 1.42)	(0+02.50, 0.72)	0.013
(0+02.50, 0.72)	(0+18.50, 0.08)	0.016
(0+18.50, 0.08)	(0+21.50, 0.08)	0.013
(0+21.50, 0.08)	(0+37.50, 0.72)	0.016
(0+37.50, 0.72)	(0+45.00, 1.42)	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	0.90 ft
Elevation Range	0.00 to 1.42 ft
Flow Area	19.21 ft²
Wetted Perimeter	38.63 ft

Results	
Hydraulic Radius	0.50 ft
Top Width	38.50 ft
Normal Depth	0.90 ft
Critical Depth	0.93 ft
Critical Slope	0.437 %
Velocity	4.37 ft/s
Velocity Head	0.30 ft
Specific Energy	1.20 ft
Froude Number	1.091
Flow Type	Supercritical

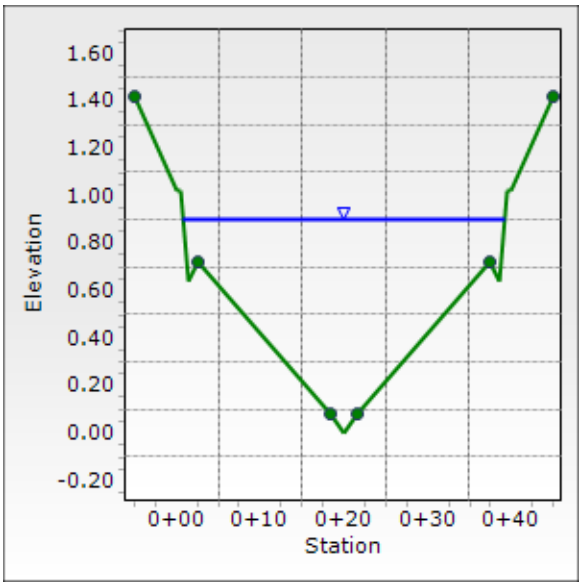
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.00 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.90 ft
Critical Depth	0.93 ft
Channel Slope	0.530 %
Critical Slope	0.437 %

Cross Section for Section E INT PH2-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.530 %
Normal Depth	0.90 ft
Discharge	84.00 cfs



Worksheet for Section F INT PH2-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.470 %
Discharge	159.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
-0+05.00	1.62
0+00.00	1.22
0+00.40	1.22
0+01.50	0.84
0+02.50	0.92
0+23.50	0.08
0+25.00	0.00
0+26.50	0.08
0+47.50	0.92
0+48.50	0.84
0+49.60	1.22
0+50.00	1.22
0+55.00	1.62

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+05.00, 1.62)	(0+02.50, 0.92)	0.013
(0+02.50, 0.92)	(0+23.50, 0.08)	0.016
(0+23.50, 0.08)	(0+26.50, 0.08)	0.013
(0+26.50, 0.08)	(0+47.50, 0.92)	0.016
(0+47.50, 0.92)	(0+55.00, 1.62)	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	1.17 ft
Elevation Range	0.00 to 1.62 ft
Flow Area	32.23 ft²
Wetted Perimeter	49.04 ft

Worksheet for Section F INT PH2-100 YR

Results	
Hydraulic Radius	0.66 ft
Top Width	48.89 ft
Normal Depth	1.17 ft
Critical Depth	1.20 ft
Critical Slope	0.404 %
Velocity	4.93 ft/s
Velocity Head	0.38 ft
Specific Energy	1.54 ft
Froude Number	1.071
Flow Type	Supercritical

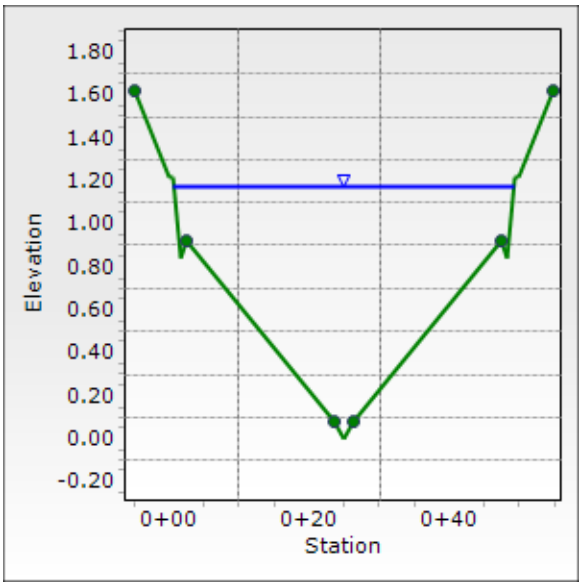
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.00 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	1.17 ft
Critical Depth	1.20 ft
Channel Slope	0.470 %
Critical Slope	0.404 %

Cross Section for Section F INT PH2-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.470 %
Normal Depth	1.17 ft
Discharge	159.00 cfs



Worksheet for Section I INT PH2-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.470 %
Discharge	88.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
-0+13.00	0.92
0+00.00	0.66
0+00.40	0.66
0+01.50	0.28
0+02.50	0.36
0+16.50	0.08
0+18.00	0.00
0+19.50	0.08
0+33.50	0.36
0+34.50	0.28
0+35.60	0.66
0+36.00	0.66
0+49.00	0.92

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+13.00, 0.92)	(0+00.00, 0.66)	0.025
(0+00.00, 0.66)	(0+02.50, 0.36)	0.013
(0+02.50, 0.36)	(0+16.50, 0.08)	0.016
(0+16.50, 0.08)	(0+19.50, 0.08)	0.013
(0+19.50, 0.08)	(0+33.50, 0.36)	0.016
(0+33.50, 0.36)	(0+36.00, 0.66)	0.013
(0+36.00, 0.66)	(0+49.00, 0.92)	0.025

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	0.62 ft
Elevation Range	0.00 to 0.92 ft

Worksheet for Section I INT PH2-100 YR

Results	
Flow Area	13.96 ft²
Wetted Perimeter	35.11 ft
Hydraulic Radius	0.40 ft
Top Width	34.98 ft
Normal Depth	0.62 ft
Critical Depth	0.84 ft
Critical Slope	0.461 %
Velocity	6.30 ft/s
Velocity Head	0.62 ft
Specific Energy	1.24 ft
Froude Number	1.759
Flow Type	Supercritical

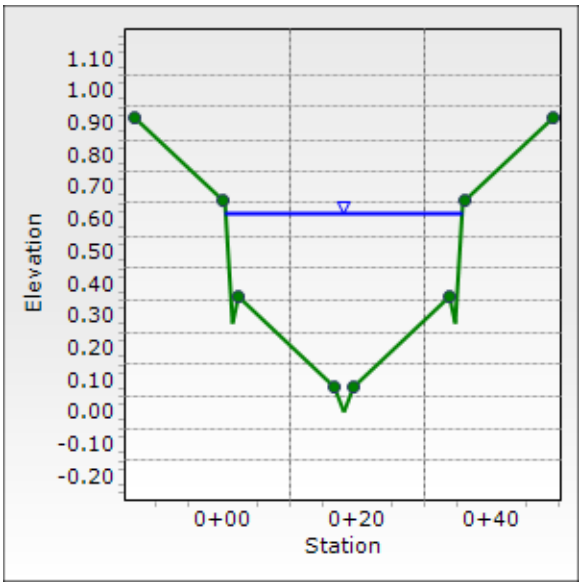
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.00 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.62 ft
Critical Depth	0.84 ft
Channel Slope	1.470 %
Critical Slope	0.461 %

Cross Section for Section I INT PH2-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.470 %
Normal Depth	0.62 ft
Discharge	88.00 cfs



Worksheet for Section J INT PH2-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.400 %
Discharge	90.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
-0+05.00	1.22
0+00.00	0.82
0+00.40	0.82
0+01.50	0.44
0+02.50	0.52
0+13.50	0.08
0+15.00	0.00
0+16.50	0.08
0+27.50	0.52
0+28.50	0.44
0+29.60	0.82
0+30.00	0.82
0+35.00	1.22

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+05.00, 1.22)	(0+02.50, 0.52)	0.013
(0+02.50, 0.52)	(0+13.50, 0.08)	0.016
(0+13.50, 0.08)	(0+16.50, 0.08)	0.013
(0+16.50, 0.08)	(0+27.50, 0.52)	0.016
(0+27.50, 0.52)	(0+35.00, 1.22)	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	0.99 ft
Elevation Range	0.00 to 1.22 ft
Flow Area	20.38 ft²
Wetted Perimeter	34.45 ft

Worksheet for Section J INT PH2-100 YR

Results	
Hydraulic Radius	0.59 ft
Top Width	34.28 ft
Normal Depth	0.99 ft
Critical Depth	1.00 ft
Critical Slope	0.391 %
Velocity	4.42 ft/s
Velocity Head	0.30 ft
Specific Energy	1.29 ft
Froude Number	1.010
Flow Type	Supercritical

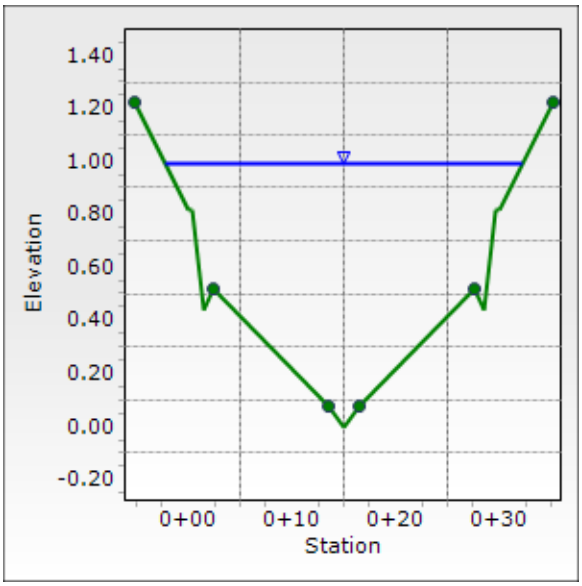
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.00 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.99 ft
Critical Depth	1.00 ft
Channel Slope	0.400 %
Critical Slope	0.391 %

Cross Section for Section J INT PH2-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.400 %
Normal Depth	0.99 ft
Discharge	90.00 cfs



Worksheet for Section J1 INT PH2-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.740 %
Discharge	3.20 cfs

Section Definitions

Station (ft)	Elevation (ft)
-0+05.00	1.00
0+00.00	0.60
0+00.40	0.60
0+01.50	0.22
0+02.50	0.30
0+13.50	0.08
0+15.00	0.00
0+16.50	0.08
0+27.50	0.30
0+28.50	0.22
0+29.60	0.60
0+30.00	0.60
0+35.00	1.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+05.00, 1.00)	(0+02.50, 0.30)	0.013
(0+02.50, 0.30)	(0+13.50, 0.08)	0.016
(0+13.50, 0.08)	(0+16.50, 0.08)	0.013
(0+16.50, 0.08)	(0+27.50, 0.30)	0.016
(0+27.50, 0.30)	(0+35.00, 1.00)	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	0.24 ft
Elevation Range	0.00 to 1.00 ft
Flow Area	1.85 ft²
Wetted Perimeter	19.42 ft

Worksheet for Section J1 INT PH2-100 YR

Results	
Hydraulic Radius	0.10 ft
Top Width	19.41 ft
Normal Depth	0.24 ft
Critical Depth	0.24 ft
Critical Slope	0.767 %
Velocity	1.73 ft/s
Velocity Head	0.05 ft
Specific Energy	0.28 ft
Froude Number	0.984
Flow Type	Subcritical

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

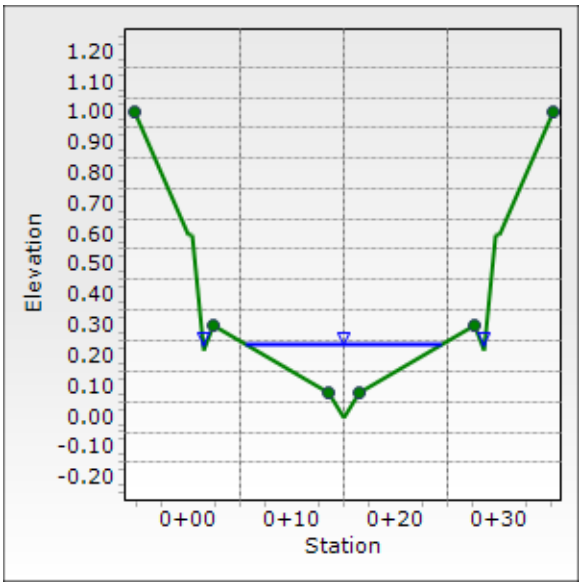
GVF Output Data	
Upstream Depth	0.00 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.24 ft
Critical Depth	0.24 ft
Channel Slope	0.740 %
Critical Slope	0.767 %

Messages	
Messages	Flow is divided.

Cross Section for Section J1 INT PH2-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.740 %
Normal Depth	0.24 ft
Discharge	3.20 cfs



Section J2 INT PH2-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.400 %
Discharge	8.70 cfs

Section Definitions

Station (ft)	Elevation (ft)
-0+05.00	1.00
0+00.00	0.60
0+00.40	0.60
0+01.50	0.22
0+02.50	0.30
0+13.50	0.08
0+15.00	0.00
0+16.50	0.08
0+27.50	0.30
0+28.50	0.22
0+29.60	0.60
0+30.00	0.60
0+35.00	1.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+05.00, 1.00)	(0+02.50, 0.30)	0.013
(0+02.50, 0.30)	(0+13.50, 0.08)	0.016
(0+13.50, 0.08)	(0+16.50, 0.08)	0.013
(0+16.50, 0.08)	(0+27.50, 0.30)	0.016
(0+27.50, 0.30)	(0+35.00, 1.00)	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 1.00 ft
Flow Area	4.68 ft²
Wetted Perimeter	27.81 ft

Results	
Hydraulic Radius	0.17 ft
Top Width	27.75 ft
Normal Depth	0.35 ft
Critical Depth	0.33 ft
Critical Slope	0.660 %
Velocity	1.86 ft/s
Velocity Head	0.05 ft
Specific Energy	0.40 ft
Froude Number	0.798
Flow Type	Subcritical

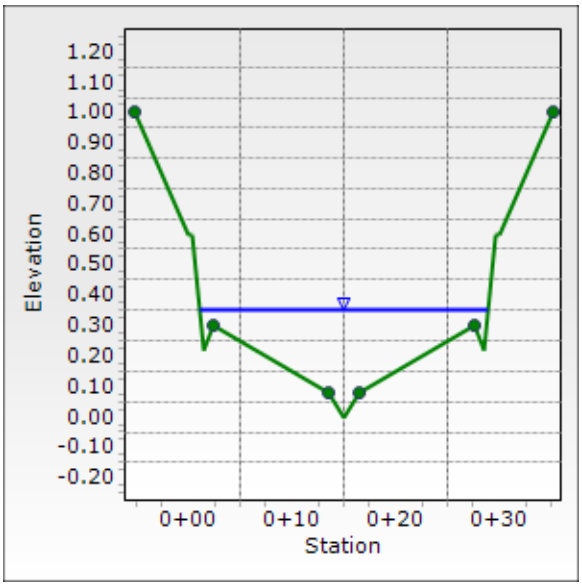
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.00 ft
Profile Description	N/A
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	0.400 %
Critical Slope	0.660 %

Cross Section for Section J2 INT PH2-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.400 %
Normal Depth	0.35 ft
Discharge	8.70 cfs



Section J3 INT PH2- 100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data		
Channel Slope	0.500	%
Discharge	0.90	cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	1.67
0+05.00	0.00
0+07.00	0.67

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 1.67)	(0+07.00, 0.67)	0.025

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	0.45 ft
Elevation Range	0.00 to 1.67 ft
Flow Area	0.60 ft²
Wetted Perimeter	2.83 ft
Hydraulic Radius	0.21 ft
Top Width	2.68 ft
Normal Depth	0.45 ft
Critical Depth	0.35 ft
Critical Slope	1.739 %
Velocity	1.50 ft/s
Velocity Head	0.03 ft
Specific Energy	0.48 ft
Froude Number	0.557
Flow Type	Subcritical

GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft

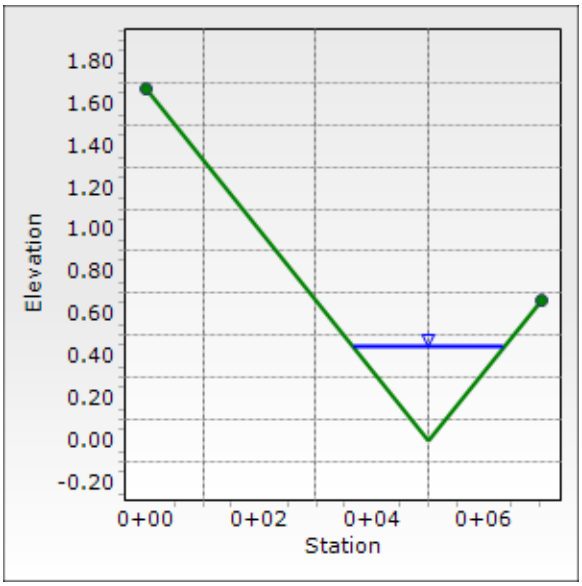
GVF Input Data	
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.00 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	0.00 ft/s
Upstream Velocity	0.00 ft/s
Normal Depth	0.45 ft
Critical Depth	0.35 ft
Channel Slope	0.500 %
Critical Slope	1.739 %

Cross Section for Section J3 INT PH2- 100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.500 %
Normal Depth	0.45 ft
Discharge	0.90 cfs



Worksheet for Section K1 INT PH2-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.400 %
Discharge	51.50 cfs

Section Definitions

Station (ft)	Elevation (ft)
-0+18.50	1.21
-0+18.00	1.21
-0+18.00	0.71
0+13.50	0.08
0+15.00	0.00
0+16.50	0.08
0+27.50	0.30
0+28.50	0.22
0+29.60	0.60
0+30.00	0.60

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+18.50, 1.21)	(0+13.50, 0.08)	0.016
(0+13.50, 0.08)	(0+16.50, 0.08)	0.013
(0+16.50, 0.08)	(0+27.50, 0.30)	0.016
(0+27.50, 0.30)	(0+30.00, 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	0.68 ft
Elevation Range	0.00 to 1.21 ft
Flow Area	16.87 ft²
Wetted Perimeter	46.45 ft
Hydraulic Radius	0.36 ft
Top Width	46.29 ft
Normal Depth	0.68 ft
Critical Depth	0.64 ft

Worksheet for Section K1 INT PH2-100 YR

Results	
Critical Slope	0.512 %
Velocity	3.05 ft/s
Velocity Head	0.14 ft
Specific Energy	0.82 ft
Froude Number	0.892
Flow Type	Subcritical

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

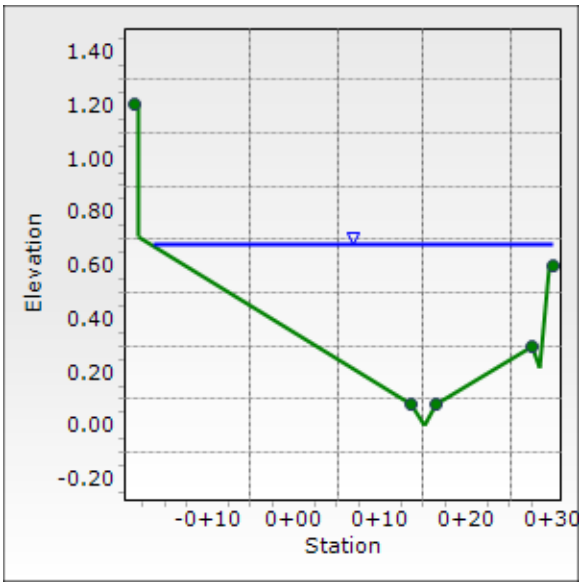
GVF Output Data	
Upstream Depth	0.00 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.68 ft
Critical Depth	0.64 ft
Channel Slope	0.400 %
Critical Slope	0.512 %

Messages	
Messages	Water Surface Elevation exceeds lowest end station by 0.075856354 6927555ft.

Cross Section for Section K1 INT PH2-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.400 %
Normal Depth	0.68 ft
Discharge	51.50 cfs



ULTIMATE – ONSITE STREET SECTIONS

- Section A1
- Section D
- Section D1
- Section D2
- Section E
- Section F
- Section J
- Section J1
- Section J2
- Section J3
- Section K1

Worksheet for Section A1 ULT-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	2.050 %
Discharge	3.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
-0+05.00	1.00
0+00.00	0.60
0+00.40	0.60
0+01.50	0.22
0+02.50	0.30
0+13.50	0.08
0+15.00	0.00
0+16.50	0.08
0+27.50	0.30
0+28.50	0.22
0+29.60	0.60
0+30.00	0.60
0+35.00	1.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+05.00, 1.00)	(0+02.50, 0.30)	0.013
(0+02.50, 0.30)	(0+13.50, 0.08)	0.016
(0+13.50, 0.08)	(0+16.50, 0.08)	0.013
(0+16.50, 0.08)	(0+27.50, 0.30)	0.016
(0+27.50, 0.30)	(0+35.00, 1.00)	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	0.20 ft
Elevation Range	0.00 to 1.00 ft
Flow Area	1.18 ft²
Wetted Perimeter	14.85 ft

Worksheet for Section A1 ULT-100 YR

Results	
Hydraulic Radius	0.08 ft
Top Width	14.84 ft
Normal Depth	0.20 ft
Critical Depth	0.23 ft
Critical Slope	0.767 %
Velocity	2.55 ft/s
Velocity Head	0.10 ft
Specific Energy	0.30 ft
Froude Number	1.597
Flow Type	Supercritical

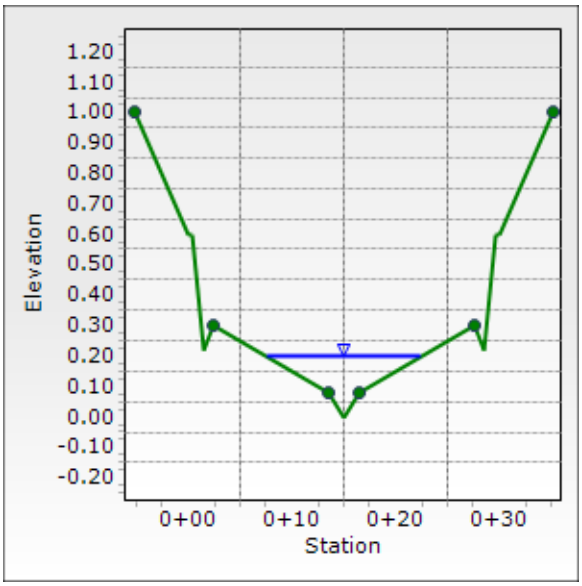
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.00 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.20 ft
Critical Depth	0.23 ft
Channel Slope	2.050 %
Critical Slope	0.767 %

Cross Section for Section A1 ULT-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	2.050 %
Normal Depth	0.20 ft
Discharge	3.00 cfs



Section D ULT-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.400 %
Discharge	7.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
-0+05.00	1.22
0+00.00	0.82
0+00.40	0.82
0+01.50	0.44
0+02.50	0.52
0+13.50	0.08
0+15.00	0.00
0+16.50	0.08
0+27.50	0.52
0+28.50	0.44
0+29.60	0.82
0+30.00	0.82
0+35.00	1.22

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+05.00, 1.22)	(0+02.50, 0.52)	0.013
(0+02.50, 0.52)	(0+13.50, 0.08)	0.016
(0+13.50, 0.08)	(0+16.50, 0.08)	0.013
(0+16.50, 0.08)	(0+27.50, 0.52)	0.016
(0+27.50, 0.52)	(0+35.00, 1.22)	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	0.39 ft
Elevation Range	0.00 to 1.22 ft
Flow Area	3.52 ft²
Wetted Perimeter	18.71 ft

Results	
Hydraulic Radius	0.19 ft
Top Width	18.69 ft
Normal Depth	0.39 ft
Critical Depth	0.36 ft
Critical Slope	0.634 %
Velocity	1.99 ft/s
Velocity Head	0.06 ft
Specific Energy	0.46 ft
Froude Number	0.807
Flow Type	Subcritical

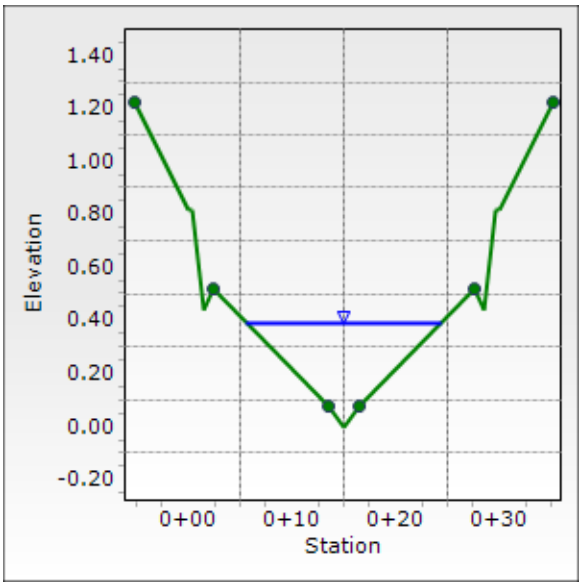
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.00 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.39 ft
Critical Depth	0.36 ft
Channel Slope	0.400 %
Critical Slope	0.634 %

Cross Section for Section D ULT-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.400 %
Normal Depth	0.39 ft
Discharge	7.00 cfs



Section D1 ULT-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	2.550 %
Discharge	1.10 cfs

Section Definitions

Station (ft)	Elevation (ft)
-0+05.00	1.22
0+00.00	0.82
0+00.40	0.82
0+01.50	0.44
0+02.50	0.52
0+13.50	0.08
0+15.00	0.00
0+16.50	0.08
0+27.50	0.52
0+28.50	0.44
0+29.60	0.82
0+30.00	0.82
0+35.00	1.22

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+05.00, 1.22)	(0+02.50, 0.52)	0.013
(0+02.50, 0.52)	(0+13.50, 0.08)	0.016
(0+13.50, 0.08)	(0+16.50, 0.08)	0.013
(0+16.50, 0.08)	(0+27.50, 0.52)	0.016
(0+27.50, 0.52)	(0+35.00, 1.22)	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	0.14 ft
Elevation Range	0.00 to 1.22 ft
Flow Area	0.41 ft²
Wetted Perimeter	6.19 ft

Results	
Hydraulic Radius	0.07 ft
Top Width	6.18 ft
Normal Depth	0.14 ft
Critical Depth	0.18 ft
Critical Slope	0.713 %
Velocity	2.67 ft/s
Velocity Head	0.11 ft
Specific Energy	0.25 ft
Froude Number	1.823
Flow Type	Supercritical

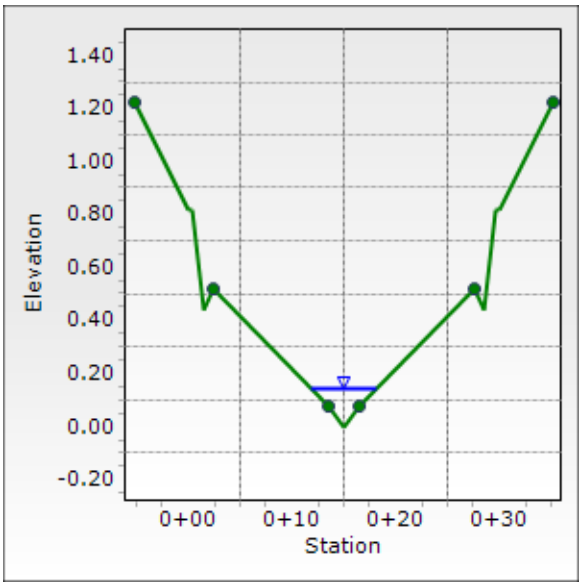
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.00 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.14 ft
Critical Depth	0.18 ft
Channel Slope	2.550 %
Critical Slope	0.713 %

Cross Section for Section D1 ULT-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	2.550 %
Normal Depth	0.14 ft
Discharge	1.10 cfs



Section D2 ULT-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.400 %
Discharge	0.54 cfs

Section Definitions

Station (ft)	Elevation (ft)
-0+20.00	1.24
-0+19.50	1.24
-0+19.50	0.74
0+13.50	0.08
0+15.00	0.00
0+16.50	0.08
0+27.50	0.30
0+28.50	0.22
0+29.60	0.60
0+30.00	0.60

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+20.00, 1.24)	(0+13.50, 0.08)	0.016
(0+13.50, 0.08)	(0+16.50, 0.08)	0.013
(0+16.50, 0.08)	(0+27.50, 0.30)	0.016
(0+27.50, 0.30)	(0+30.00, 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	0.15 ft
Elevation Range	0.00 to 1.24 ft
Flow Area	0.58 ft²
Wetted Perimeter	10.08 ft
Hydraulic Radius	0.06 ft
Top Width	10.08 ft
Normal Depth	0.15 ft
Critical Depth	0.13 ft

Results	
Critical Slope	0.907 %
Velocity	0.93 ft/s
Velocity Head	0.01 ft
Specific Energy	0.16 ft
Froude Number	0.679
Flow Type	Subcritical

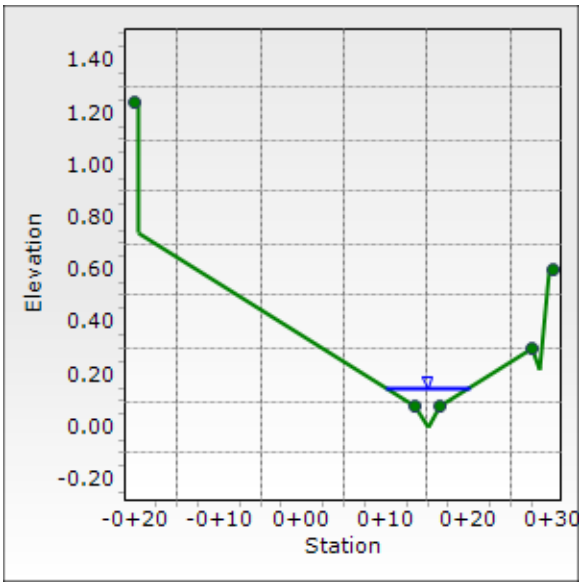
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.00 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.15 ft
Critical Depth	0.13 ft
Channel Slope	0.400 %
Critical Slope	0.907 %

Cross Section for Section D2 ULT-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.400 %
Normal Depth	0.15 ft
Discharge	0.54 cfs



Section E ULT-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.530 %
Discharge	45.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
-0+05.00	1.42
0+00.00	1.02
0+00.40	1.02
0+01.50	0.64
0+02.50	0.72
0+18.50	0.08
0+20.00	0.00
0+21.50	0.08
0+37.50	0.72
0+38.50	0.64
0+39.60	1.02
0+40.00	1.02
0+45.00	1.42

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+05.00, 1.42)	(0+02.50, 0.72)	0.013
(0+02.50, 0.72)	(0+18.50, 0.08)	0.016
(0+18.50, 0.08)	(0+21.50, 0.08)	0.013
(0+21.50, 0.08)	(0+37.50, 0.72)	0.016
(0+37.50, 0.72)	(0+45.00, 1.42)	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	0.74 ft
Elevation Range	0.00 to 1.42 ft
Flow Area	13.11 ft²
Wetted Perimeter	37.65 ft

Results	
Hydraulic Radius	0.35 ft
Top Width	37.58 ft
Normal Depth	0.74 ft
Critical Depth	0.75 ft
Critical Slope	0.502 %
Velocity	3.43 ft/s
Velocity Head	0.18 ft
Specific Energy	0.92 ft
Froude Number	1.025
Flow Type	Supercritical

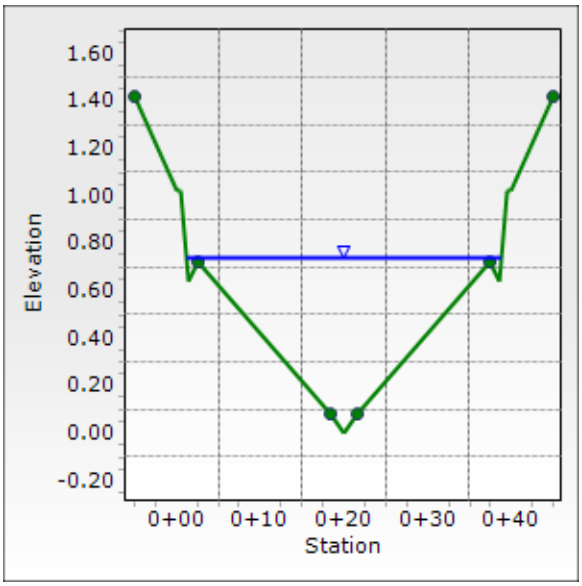
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.00 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.74 ft
Critical Depth	0.75 ft
Channel Slope	0.530 %
Critical Slope	0.502 %

Cross Section for Section E ULT-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.530 %
Normal Depth	0.74 ft
Discharge	45.00 cfs



Worksheet for Section F ULT-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.470 %
Discharge	81.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
-0+05.00	1.62
0+00.00	1.22
0+00.40	1.22
0+01.50	0.84
0+02.50	0.92
0+23.50	0.08
0+25.00	0.00
0+26.50	0.08
0+47.50	0.92
0+48.50	0.84
0+49.60	1.22
0+50.00	1.22
0+55.00	1.62

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+05.00, 1.62)	(0+02.50, 0.92)	0.013
(0+02.50, 0.92)	(0+23.50, 0.08)	0.016
(0+23.50, 0.08)	(0+26.50, 0.08)	0.013
(0+26.50, 0.08)	(0+47.50, 0.92)	0.016
(0+47.50, 0.92)	(0+55.00, 1.62)	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	0.94 ft
Elevation Range	0.00 to 1.62 ft
Flow Area	21.31 ft²
Wetted Perimeter	47.65 ft

Worksheet for Section F ULT-100 YR

Results	
Hydraulic Radius	0.45 ft
Top Width	47.58 ft
Normal Depth	0.94 ft
Critical Depth	0.94 ft
Critical Slope	0.469 %
Velocity	3.80 ft/s
Velocity Head	0.22 ft
Specific Energy	1.16 ft
Froude Number	1.001
Flow Type	Supercritical

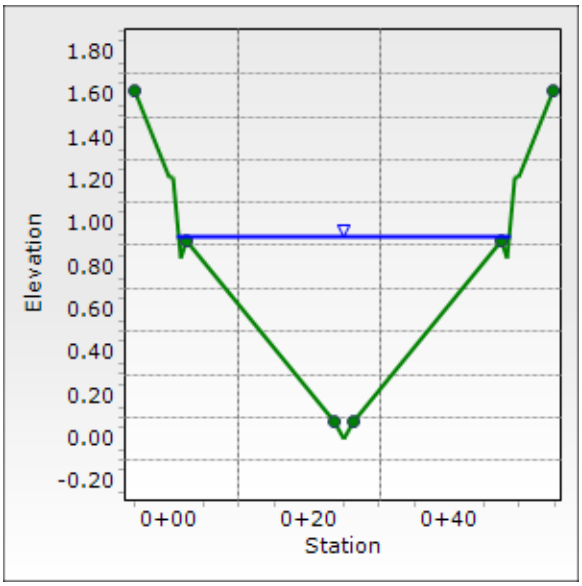
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.00 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.94 ft
Critical Depth	0.94 ft
Channel Slope	0.470 %
Critical Slope	0.469 %

Cross Section for Section F ULT-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.470 %
Normal Depth	0.94 ft
Discharge	81.00 cfs



Worksheet for Section J ULT-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.400 %
Discharge	5.40 cfs

Section Definitions

Station (ft)	Elevation (ft)
-0+05.00	1.22
0+00.00	0.82
0+00.40	0.82
0+01.50	0.44
0+02.50	0.52
0+13.50	0.08
0+15.00	0.00
0+16.50	0.08
0+27.50	0.52
0+28.50	0.44
0+29.60	0.82
0+30.00	0.82
0+35.00	1.22

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+05.00, 1.22)	(0+02.50, 0.52)	0.013
(0+02.50, 0.52)	(0+13.50, 0.08)	0.016
(0+13.50, 0.08)	(0+16.50, 0.08)	0.013
(0+16.50, 0.08)	(0+27.50, 0.52)	0.016
(0+27.50, 0.52)	(0+35.00, 1.22)	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	0.00 to 1.22 ft
Flow Area	2.90 ft²
Wetted Perimeter	16.94 ft

Worksheet for Section J ULT-100 YR

Results	
Hydraulic Radius	0.17 ft
Top Width	16.93 ft
Normal Depth	0.36 ft
Critical Depth	0.33 ft
Critical Slope	0.652 %
Velocity	1.86 ft/s
Velocity Head	0.05 ft
Specific Energy	0.41 ft
Froude Number	0.795
Flow Type	Subcritical

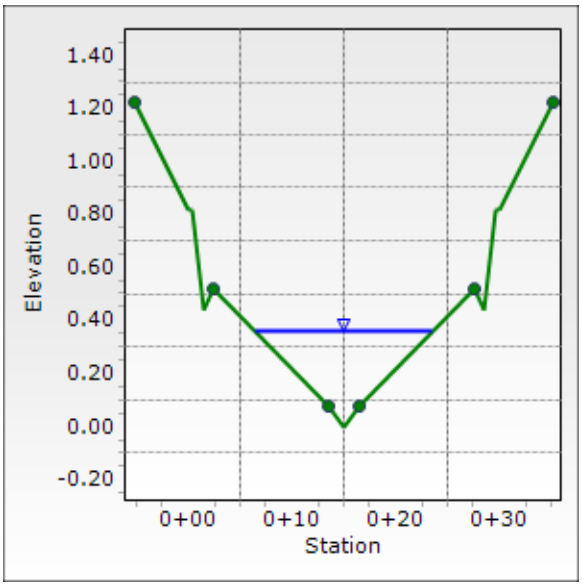
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.00 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.36 ft
Critical Depth	0.33 ft
Channel Slope	0.400 %
Critical Slope	0.652 %

Cross Section for Section J ULT-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.400 %
Normal Depth	0.36 ft
Discharge	5.40 cfs



Worksheet for Section J1 ULT-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.740 %
Discharge	3.20 cfs

Section Definitions

Station (ft)	Elevation (ft)
-0+05.00	1.00
0+00.00	0.60
0+00.40	0.60
0+01.50	0.22
0+02.50	0.30
0+13.50	0.08
0+15.00	0.00
0+16.50	0.08
0+27.50	0.30
0+28.50	0.22
0+29.60	0.60
0+30.00	0.60
0+35.00	1.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+05.00, 1.00)	(0+02.50, 0.30)	0.013
(0+02.50, 0.30)	(0+13.50, 0.08)	0.016
(0+13.50, 0.08)	(0+16.50, 0.08)	0.013
(0+16.50, 0.08)	(0+27.50, 0.30)	0.016
(0+27.50, 0.30)	(0+35.00, 1.00)	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	0.24 ft
Elevation Range	0.00 to 1.00 ft
Flow Area	1.85 ft²
Wetted Perimeter	19.42 ft

Worksheet for Section J1 ULT-100 YR

Results	
Hydraulic Radius	0.10 ft
Top Width	19.41 ft
Normal Depth	0.24 ft
Critical Depth	0.24 ft
Critical Slope	0.767 %
Velocity	1.73 ft/s
Velocity Head	0.05 ft
Specific Energy	0.28 ft
Froude Number	0.984
Flow Type	Subcritical

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

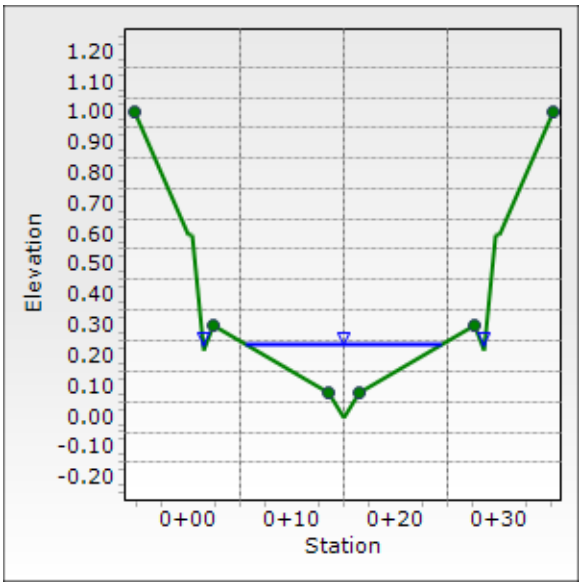
GVF Output Data	
Upstream Depth	0.00 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.24 ft
Critical Depth	0.24 ft
Channel Slope	0.740 %
Critical Slope	0.767 %

Messages	
Messages	Flow is divided.

Cross Section for Section J1 ULT-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.740 %
Normal Depth	0.24 ft
Discharge	3.20 cfs



Section J2 ULT-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.400 %
Discharge	8.70 cfs

Section Definitions

Station (ft)	Elevation (ft)
-0+05.00	1.00
0+00.00	0.60
0+00.40	0.60
0+01.50	0.22
0+02.50	0.30
0+13.50	0.08
0+15.00	0.00
0+16.50	0.08
0+27.50	0.30
0+28.50	0.22
0+29.60	0.60
0+30.00	0.60
0+35.00	1.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+05.00, 1.00)	(0+02.50, 0.30)	0.013
(0+02.50, 0.30)	(0+13.50, 0.08)	0.016
(0+13.50, 0.08)	(0+16.50, 0.08)	0.013
(0+16.50, 0.08)	(0+27.50, 0.30)	0.016
(0+27.50, 0.30)	(0+35.00, 1.00)	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 1.00 ft
Flow Area	4.68 ft²
Wetted Perimeter	27.81 ft

Results	
Hydraulic Radius	0.17 ft
Top Width	27.75 ft
Normal Depth	0.35 ft
Critical Depth	0.33 ft
Critical Slope	0.660 %
Velocity	1.86 ft/s
Velocity Head	0.05 ft
Specific Energy	0.40 ft
Froude Number	0.798
Flow Type	Subcritical

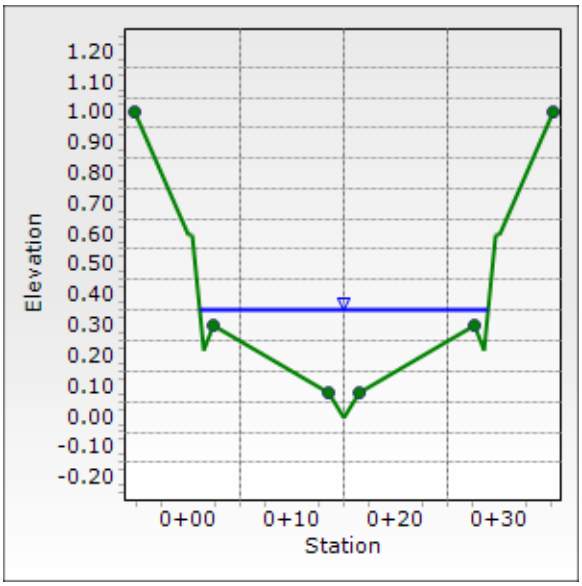
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.00 ft
Profile Description	N/A
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	0.400 %
Critical Slope	0.660 %

Cross Section for Section J2 ULT-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.400 %
Normal Depth	0.35 ft
Discharge	8.70 cfs



Section J3 ULT- 100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.500 %
Discharge	0.90 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	1.67
0+05.00	0.00
0+07.00	0.67

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 1.67)	(0+07.00, 0.67)	0.025

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	0.45 ft
Elevation Range	0.00 to 1.67 ft
Flow Area	0.60 ft²
Wetted Perimeter	2.83 ft
Hydraulic Radius	0.21 ft
Top Width	2.68 ft
Normal Depth	0.45 ft
Critical Depth	0.35 ft
Critical Slope	1.739 %
Velocity	1.50 ft/s
Velocity Head	0.03 ft
Specific Energy	0.48 ft
Froude Number	0.557
Flow Type	Subcritical

GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft

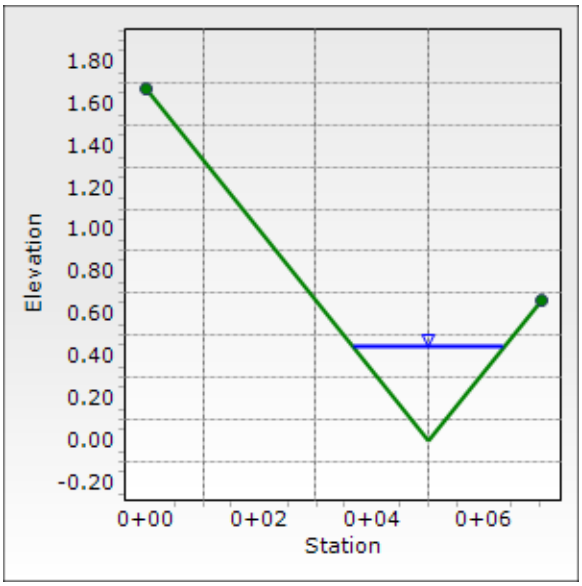
GVF Input Data	
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.00 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	0.00 ft/s
Upstream Velocity	0.00 ft/s
Normal Depth	0.45 ft
Critical Depth	0.35 ft
Channel Slope	0.500 %
Critical Slope	1.739 %

Cross Section for Section J3 ULT- 100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.500 %
Normal Depth	0.45 ft
Discharge	0.90 cfs



Worksheet for Section K1 ULT-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.400 %
Discharge	51.50 cfs

Section Definitions

Station (ft)	Elevation (ft)
-0+18.50	1.21
-0+18.00	1.21
-0+18.00	0.71
0+13.50	0.08
0+15.00	0.00
0+16.50	0.08
0+27.50	0.30
0+28.50	0.22
0+29.60	0.60
0+30.00	0.60

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+18.50, 1.21)	(0+13.50, 0.08)	0.016
(0+13.50, 0.08)	(0+16.50, 0.08)	0.013
(0+16.50, 0.08)	(0+27.50, 0.30)	0.016
(0+27.50, 0.30)	(0+30.00, 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	0.68 ft
Elevation Range	0.00 to 1.21 ft
Flow Area	16.87 ft²
Wetted Perimeter	46.45 ft
Hydraulic Radius	0.36 ft
Top Width	46.29 ft
Normal Depth	0.68 ft
Critical Depth	0.64 ft

Worksheet for Section K1 ULT-100 YR

Results	
Critical Slope	0.512 %
Velocity	3.05 ft/s
Velocity Head	0.14 ft
Specific Energy	0.82 ft
Froude Number	0.892
Flow Type	Subcritical

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

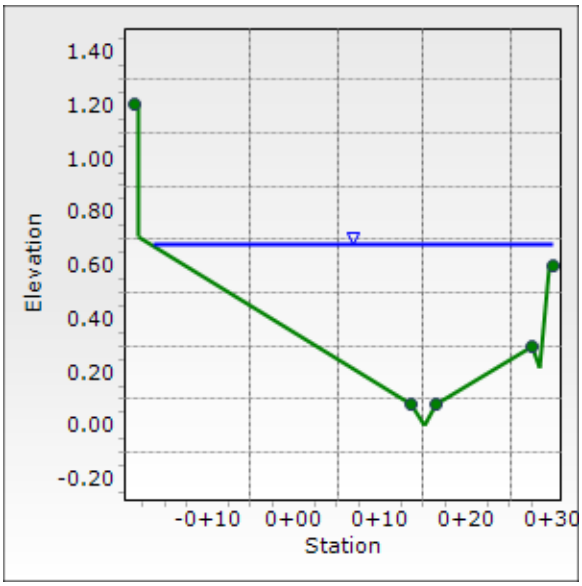
GVF Output Data	
Upstream Depth	0.00 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.68 ft
Critical Depth	0.64 ft
Channel Slope	0.400 %
Critical Slope	0.512 %

Messages	
Messages	Water Surface Elevation exceeds lowest end station by 0.075856354 6927555ft.

Cross Section for Section K1 ULT-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.400 %
Normal Depth	0.68 ft
Discharge	51.50 cfs



ULTIMATE – OFFSITE STREET SECTIONS

- Section Q rancho west half
- Section Q rancho west half capacity
- Section Q rancho east half
- Section R rancho west half
- Section R rancho east half
- Section S rancho west half
- Section S rancho east half

Section Q Rancho West HALF ULT-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.300 %
Discharge	248.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+71.00	1.11
0+76.50	0.98
1+01.50	0.60
1+17.00	0.17
1+17.00	0.13
1+18.50	0.00
1+18.50	0.50
1+19.00	0.50
1+25.00	0.62

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+71.00, 1.11)	(1+17.00, 0.13)	0.016
(1+17.00, 0.13)	(1+25.00, 0.62)	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	1.25 ft
Elevation Range	0.00 to 1.11 ft
Flow Area	32.45 ft²
Wetted Perimeter	55.33 ft
Hydraulic Radius	0.59 ft
Top Width	54.00 ft
Normal Depth	1.25 ft
Critical Depth	1.52 ft
Critical Slope	0.386 %
Velocity	7.64 ft/s
Velocity Head	0.91 ft

Results	
Specific Energy	2.16 ft
Froude Number	1.738
Flow Type	Supercritical

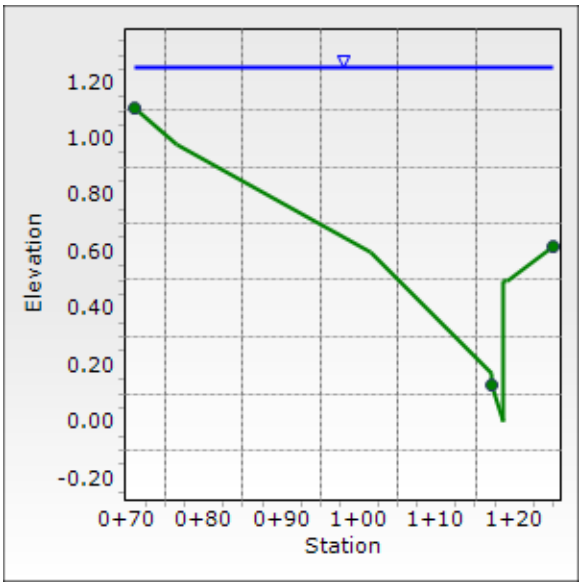
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

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	1.25 ft
Critical Depth	1.52 ft
Channel Slope	1.300 %
Critical Slope	0.386 %

Cross Section for Section Q Rancho West HALF ULT-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.300 %
Normal Depth	1.25 ft
Discharge	248.00 cfs



Section Q Rancho West HALF Capacity ULT-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Discharge

Input Data	
Channel Slope	1.300 %
Normal Depth	1.25 ft

Section Definitions

Station (ft)	Elevation (ft)
0+85.00	1.50
0+85.50	1.50
0+85.50	0.84
1+01.50	0.60
1+17.00	0.17
1+17.00	0.13
1+18.50	0.00
1+18.50	0.50
1+19.00	0.50
1+25.00	0.62

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+85.00, 1.50)	(1+17.00, 0.17)	0.016
(1+17.00, 0.17)	(1+25.00, 0.62)	0.013

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

Results	
Discharge	241.38 cfs
Elevation Range	0.00 to 1.50 ft
Flow Area	28.18 ft²
Wetted Perimeter	41.09 ft
Hydraulic Radius	0.69 ft
Top Width	39.50 ft
Normal Depth	1.25 ft
Critical Depth	1.59 ft
Critical Slope	0.366 %
Velocity	8.57 ft/s

Results	
Velocity Head	1.14 ft
Specific Energy	2.39 ft
Froude Number	1.788
Flow Type	Supercritical

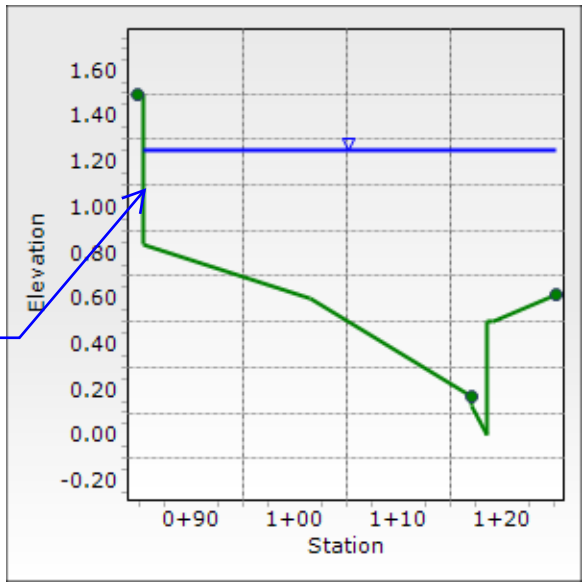
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

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	1.25 ft
Critical Depth	1.59 ft
Channel Slope	1.300 %
Critical Slope	0.366 %

Cross Section for Section Q Rancho West HALF Capacity ULT-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Discharge

Input Data	
Channel Slope	1.300 %
Normal Depth	1.25 ft
Discharge	241.38 cfs



NOTE: PROPOSED MEDIAN.

THE FLOW NOT CONTAINED WEST OF THE MEDIAN WILL OVERTOP TO THE EAST SIDE OF RANCHO.

Section Q Rancho East HALF ULT-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.300 %
Discharge	14.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
-0+06.00	3.00
-0+06.00	1.00
0+00.00	0.88
0+06.00	0.76
0+07.00	0.66
0+16.00	0.35
0+20.00	0.50
0+21.00	0.50
0+21.00	0.00
0+22.50	0.13
0+22.50	0.17
0+42.00	0.56
0+58.00	0.90
0+71.00	0.97

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+06.00, 3.00)	(0+16.00, 0.35)	0.020
(0+16.00, 0.35)	(0+21.00, 0.00)	0.013
(0+21.00, 0.00)	(0+71.00, 0.97)	0.016

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	0.52 ft
Elevation Range	0.00 to 3.00 ft
Flow Area	4.63 ft²
Wetted Perimeter	29.68 ft
Hydraulic Radius	0.16 ft

Results	
Top Width	29.12 ft
Normal Depth	0.52 ft
Critical Depth	0.56 ft
Critical Slope	0.697 %
Velocity	3.02 ft/s
Velocity Head	0.14 ft
Specific Energy	0.66 ft
Froude Number	1.336
Flow Type	Supercritical

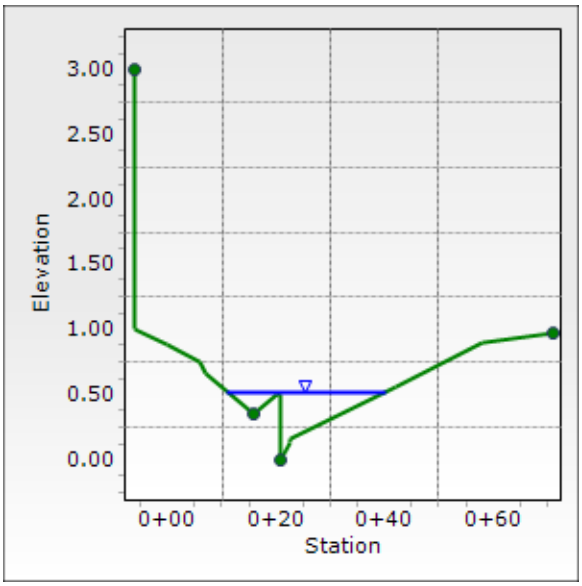
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

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	0.52 ft
Critical Depth	0.56 ft
Channel Slope	1.300 %
Critical Slope	0.697 %

Cross Section for Section Q Rancho East HALF ULT-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.300 %
Normal Depth	0.52 ft
Discharge	14.00 cfs



Section R Rancho West HALF ULT -100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data		
Channel Slope	1.300	%
Discharge	295.00	cfs

Section Definitions

Station (ft)	Elevation (ft)
0+85.00	1.46
0+85.50	1.46
0+85.50	0.96
1+00.00	0.85
1+18.00	0.07
1+20.75	0.00
1+23.50	0.07
1+34.00	0.45
2+14.00	1.11

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+85.00, 1.46)	(1+18.00, 0.07)	0.016
(1+18.00, 0.07)	(1+23.50, 0.07)	0.013
(1+23.50, 0.07)	(2+14.00, 1.11)	0.016

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	1.07	ft
Elevation Range	0.00 to 1.46	ft
Flow Area	50.26	ft²
Wetted Perimeter	123.19	ft
Hydraulic Radius	0.41	ft
Top Width	123.05	ft
Normal Depth	1.07	ft
Critical Depth	1.22	ft
Critical Slope	0.451	%
Velocity	5.87	ft/s

Results	
Velocity Head	0.54 ft
Specific Energy	1.60 ft
Froude Number	1.619
Flow Type	Supercritical

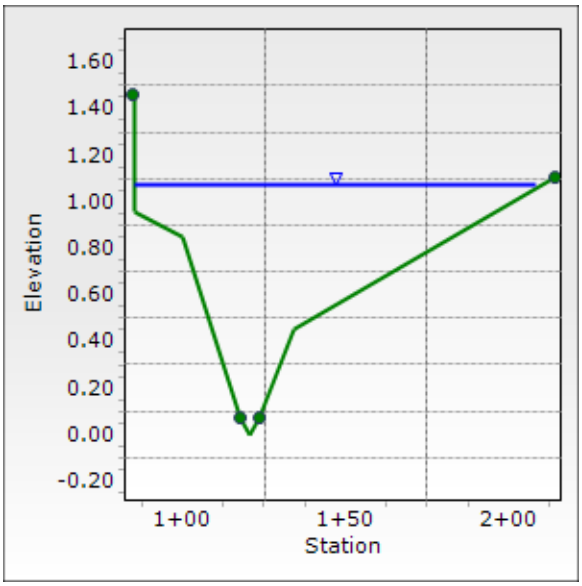
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

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	1.07 ft
Critical Depth	1.22 ft
Channel Slope	1.300 %
Critical Slope	0.451 %

Cross Section for Section R Rancho West HALF ULT -100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.300 %
Normal Depth	1.07 ft
Discharge	295.00 cfs



Section R Rancho East HALF ULT-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.300 %
Discharge	14.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
-0+48.00	2.71
0+16.00	0.68
0+20.00	0.50
0+24.00	0.68
0+39.00	0.85
0+53.00	1.15
0+56.50	1.17
0+56.50	1.67
0+57.00	1.67

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+48.00, 2.71)	(0+16.00, 0.68)	0.016
(0+16.00, 0.68)	(0+24.00, 0.68)	0.013
(0+24.00, 0.68)	(0+57.00, 1.67)	0.016

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	0.37 ft
Elevation Range	0.50 to 2.71 ft
Flow Area	4.49 ft²
Wetted Perimeter	30.19 ft
Hydraulic Radius	0.15 ft
Top Width	30.17 ft
Normal Depth	0.37 ft
Critical Depth	0.42 ft
Critical Slope	0.607 %
Velocity	3.12 ft/s

Results	
Velocity Head	0.15 ft
Specific Energy	0.52 ft
Froude Number	1.425
Flow Type	Supercritical

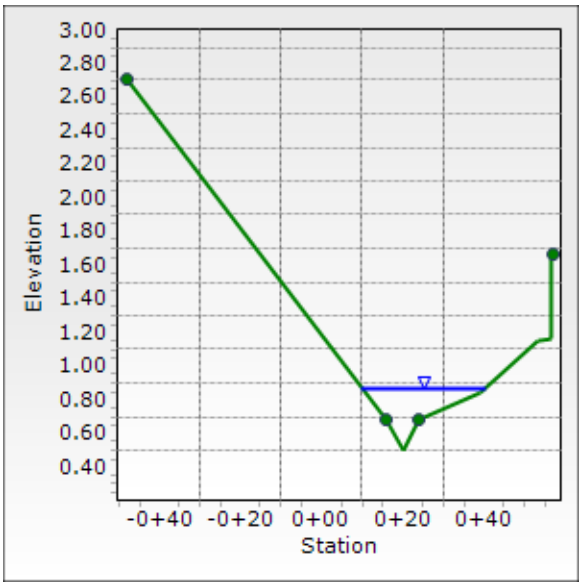
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

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	0.37 ft
Critical Depth	0.42 ft
Channel Slope	1.300 %
Critical Slope	0.607 %

Cross Section for Section R Rancho East HALF ULT-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.300 %
Normal Depth	0.37 ft
Discharge	14.00 cfs



Section S Rancho West HALF ULT-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.000 %
Discharge	299.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+64.00	1.47
0+74.00	1.35
0+75.00	0.80
0+91.00	0.68
1+02.00	0.28
1+05.00	0.23
1+09.50	0.17
1+09.50	0.13
1+11.00	0.00
1+11.00	0.50
1+11.00	0.55
1+17.00	0.63
1+25.00	1.06

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+64.00, 1.47)	(0+75.00, 0.80)	0.013
(0+75.00, 0.80)	(1+09.50, 0.17)	0.016
(1+09.50, 0.17)	(1+17.00, 0.63)	0.013
(1+17.00, 0.63)	(1+25.00, 1.06)	0.020

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	1.37 ft
Elevation Range	0.00 to 1.47 ft
Flow Area	39.79 ft²
Wetted Perimeter	53.99 ft
Hydraulic Radius	0.74 ft

Results	
Top Width	52.92 ft
Normal Depth	1.37 ft
Critical Depth	1.63 ft
Critical Slope	0.405 %
Velocity	7.51 ft/s
Velocity Head	0.88 ft
Specific Energy	2.25 ft
Froude Number	1.528
Flow Type	Supercritical

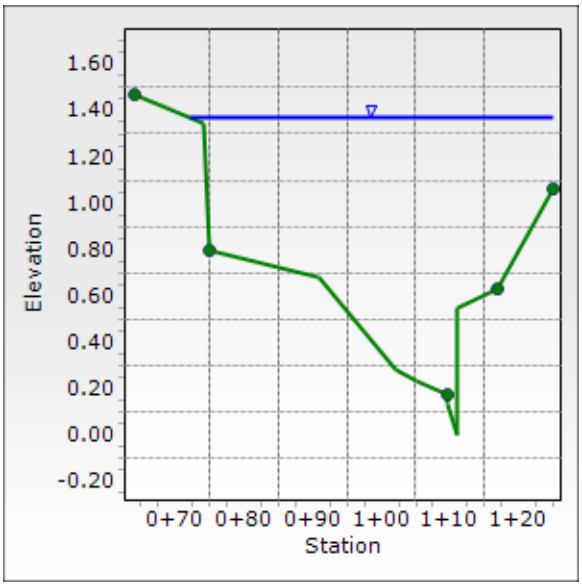
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

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	1.37 ft
Critical Depth	1.63 ft
Channel Slope	1.000 %
Critical Slope	0.405 %

Cross Section for Section S Rancho West HALF ULT-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.000 %
Normal Depth	1.37 ft
Discharge	299.00 cfs



Section S Rancho East HALF ULT-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.000 %
Discharge	18.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
-0+06.00	2.00
-0+06.00	0.99
0+05.00	0.77
0+10.00	0.67
0+15.00	0.57
0+15.50	0.57
0+15.50	0.07
0+17.00	0.24
0+29.50	0.46
0+34.50	0.42
0+51.00	0.55
0+52.00	1.20
0+64.00	1.47

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+06.00, 2.00)	(0+05.00, 0.77)	0.020
(0+05.00, 0.77)	(0+10.00, 0.67)	0.013
(0+10.00, 0.67)	(0+15.00, 0.57)	0.020
(0+15.00, 0.57)	(0+17.00, 0.24)	0.013
(0+17.00, 0.24)	(0+52.00, 1.20)	0.016
(0+52.00, 1.20)	(0+64.00, 1.47)	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	0.53 ft
Elevation Range	0.07 to 2.00 ft
Flow Area	6.36 ft²

Results	
Wetted Perimeter	37.87 ft
Hydraulic Radius	0.17 ft
Top Width	37.34 ft
Normal Depth	0.53 ft
Critical Depth	0.55 ft
Critical Slope	0.660 %
Velocity	2.83 ft/s
Velocity Head	0.12 ft
Specific Energy	0.65 ft
Froude Number	1.210
Flow Type	Supercritical

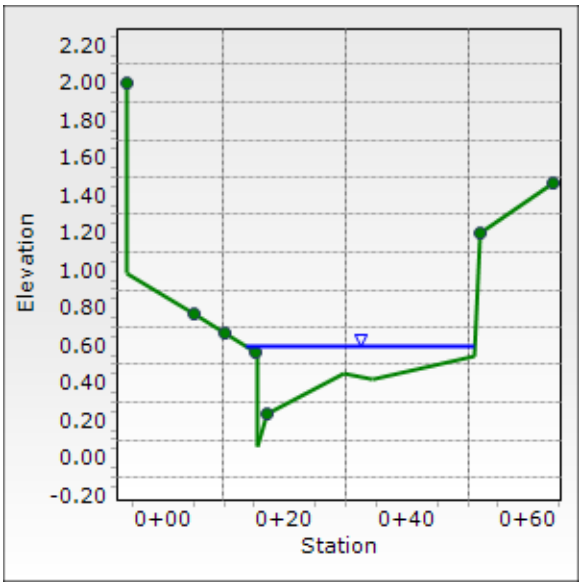
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

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	0.53 ft
Critical Depth	0.55 ft
Channel Slope	1.000 %
Critical Slope	0.660 %

Cross Section for Section S Rancho East HALF ULT-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.000 %
Normal Depth	0.53 ft
Discharge	18.00 cfs



T-INTERSECTION CALCULATIONS (SPECIFIC ENERGY)

- ES_P1 INT PH1 & PH2 100 YR T-Intersection
- Section C INT PH1 & PH2 100 YR T-Intersection

Section ES_P1 INT PH1 & PH2 100 YR T-Intersection

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	2.000 %
Discharge	50.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	24.00
0+00.00	22.18
0+21.00	22.26
0+42.00	22.34
0+42.00	24.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 24.00)	(0+42.00, 24.00)	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	0.29 ft
Elevation Range	22.18 to 24.00 ft
Flow Area	8.81 ft²
Wetted Perimeter	42.42 ft
Hydraulic Radius	0.21 ft
Top Width	42.00 ft
Normal Depth	0.29 ft
Critical Depth	0.43 ft
Critical Slope	0.356 %
Velocity	5.68 ft/s
Velocity Head	0.50 ft
Specific Energy	0.79 ft
Froude Number	2.185
Flow Type	Supercritical

GVF Input Data

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

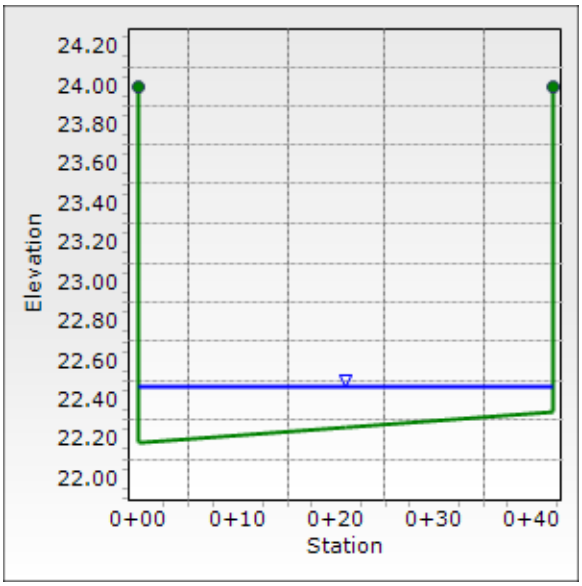
GVF Output Data	
Upstream Depth	0.00 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.29 ft
Critical Depth	0.43 ft
Channel Slope	2.000 %
Critical Slope	0.356 %

Messages	
Notes	Section taken at the FL of the inverted crown of the street. Width is determined using the 20' easement and assuming 20 degree expansion over ~30 feet to the inverted crown/lowpoint/FL.

Cross Section for Section ES_P1 INT PH1 & PH2 100 YR T-Intersection

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	2.000 %
Normal Depth	0.29 ft
Discharge	50.00 cfs



Worksheet for Section C INT PH1 & PH2-100 YR - T-Intersection

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.40 %
Discharge	151.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	19.50
0+00.00	18.32
0+72.00	17.98
0+72.00	19.50

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 19.50)	(0+72.00, 19.50)	0.013

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

Results	
Normal Depth	0.65 ft
Elevation Range	17.98 to 19.50 ft
Flow Area	34.45 ft²
Wetted Perimeter	72.96 ft
Hydraulic Radius	0.47 ft
Top Width	72.00 ft
Normal Depth	0.65 ft
Critical Depth	0.69 ft
Critical Slope	0.31 %
Velocity	4.38 ft/s
Velocity Head	0.30 ft
Specific Energy	0.95 ft
Froude Number	1.117
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.00 ft

Worksheet for Section C INT PH1 & PH2-100 YR - T-Intersection

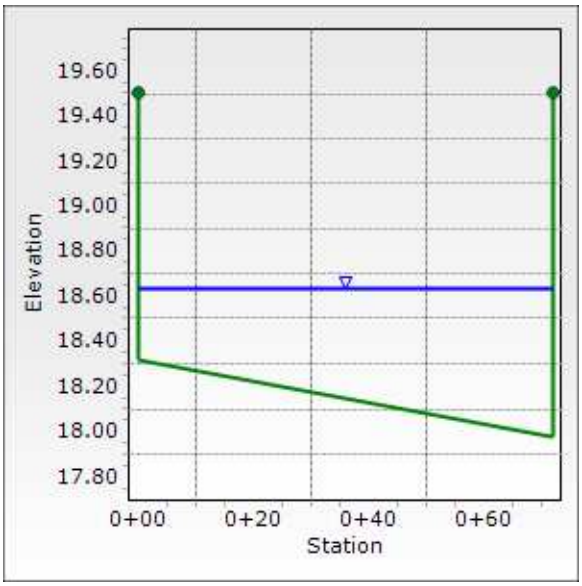
GVF Input Data	
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.00 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.65 ft
Critical Depth	0.69 ft
Channel Slope	0.40 %
Critical Slope	0.31 %

Cross Section for Section C INT PH1 & PH2-100 YR - T-Intersection

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.40 %
Normal Depth	0.65 ft
Discharge	151.00 cfs



EASEMENT CALCULATIONS (NORMAL DEPTH, WEIR, ORIFICE CALCULATIONS)

- ES_P1 (PH1 & PH2)

Weir - Orifice Equation

Description: 20' Proposed Drainage Easement - 50 cfs
Project: NV-2105-1911
Cross Streets: ES-P1
Designed By: DBC/SBL
Date: 6/3/2020

Orifice Equation: $Q = CA(2gh)^{1/2}$

where:

Q = 100-year event discharge	=	50.0	
C = discharge coefficient	=	0.65	
H = Orifice Height (ft)	=	1.17	(ft)
W = Orifice Width (ft)	=	20	(ft)
A = Effective area (ft^2)	=	23.40 ft^2	
Clogging Factor =	=	50%	
	=	11.70 ft^2	
g = gravitational constant	=	32.2 ft/s^2	

h = Head, ponding depth (ft), (measured from centerline of orifice)

Solving for h, $h = \frac{(Q/cA)^2}{2g} = \frac{[\ 50cfs / (0.65*11.7ft^2)\ ]^2}{2*32.2ft/s^2}$ = 0.67 ft

Ponding depth for orifice = 1.34 ft

Weir Equation: $Q = CLh^{1.5}$

where:

Q = 100-year event discharge	=	50.0
C = broad crest weir coefficient	=	3.1
L = perimeter	=	20.00 ft
Clogging Factor =	=	50%
	=	10.00 ft

Solving for h, $h = [Q/(CL)]^{1.5} = [\ 4cfs / (3.0*3.14ft)\ ]^{0.67}$ = 1.38 ft

WSE in Holly = FL in ES-P2 (23.08') + Depth of flow (1.23') = WSE (24.32')
WSE at ES-P1 = FL (22.98) + Orifice Pond Depth (1.34') = WSE (24.32')

Note: For 1.23 ' depth of flow, please refer to the "Section U offsite street normal depth calc".

Section ES_P1 INT- PH1 & PH2 100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.400 %
Discharge	50.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	2.50
0+00.00	0.20
0+10.00	0.00
0+20.00	0.20
0+20.00	2.50

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 2.50)	(0+20.00, 2.50)	0.013

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

Results	
Normal Depth	0.47 ft
Elevation Range	0.00 to 2.50 ft
Flow Area	7.34 ft²
Wetted Perimeter	20.54 ft
Hydraulic Radius	0.36 ft
Top Width	20.00 ft
Normal Depth	0.47 ft
Critical Depth	0.68 ft
Critical Slope	0.315 %
Velocity	6.81 ft/s
Velocity Head	0.72 ft
Specific Energy	1.19 ft
Froude Number	1.982
Flow Type	Supercritical

GVF Input Data

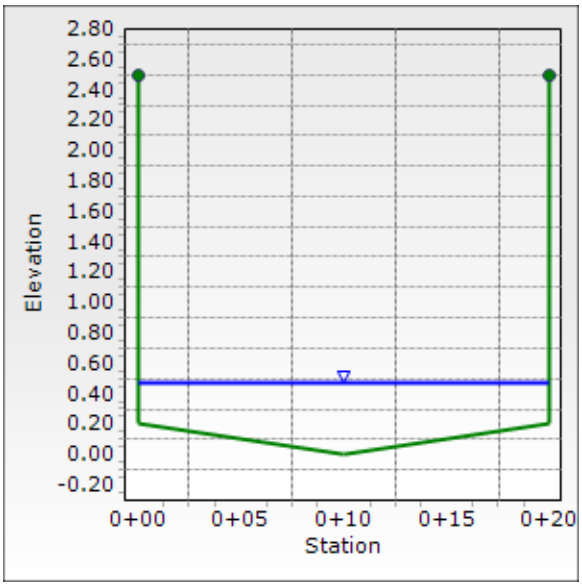
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.00 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.47 ft
Critical Depth	0.68 ft
Channel Slope	1.400 %
Critical Slope	0.315 %

Cross Section for Section ES_P1 INT- PH1 & PH2 100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.400 %
Normal Depth	0.47 ft
Discharge	50.00 cfs



EASEMENT CALCULATIONS (NORMAL DEPTH, WEIR, ORIFICE CALCULATIONS)

- ES_P2_DIV2 (PH1 & PH2)

Worksheet for Section U Holly INT_PH1&PH2-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.30 %
Discharge	287.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	0.60
0+05.00	0.50
0+05.50	0.50
0+05.50	0.00
0+07.00	0.17
0+30.00	0.35
0+53.00	-0.36
0+54.50	-0.57
0+54.50	-0.07
0+61.00	0.12
0+66.00	-0.46
0+71.00	-0.71
0+76.00	-0.46
0+79.00	0.44
0+80.00	0.53
0+82.00	2.08

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 0.60)	(0+07.00, 0.17)	0.013
(0+07.00, 0.17)	(0+53.00, -0.36)	0.016
(0+53.00, -0.36)	(0+61.00, 0.12)	0.013
(0+61.00, 0.12)	(0+82.00, 2.08)	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	1.23 ft
Elevation Range	-0.71 to 2.08 ft

Worksheet for Section U Holly INT_PH1&PH2-100 YR

Results	
Flow Area	39.37 ft²
Wetted Perimeter	76.97 ft
Hydraulic Radius	0.51 ft
Top Width	75.75 ft
Normal Depth	1.23 ft
Critical Depth	1.47 ft
Critical Slope	0.37 %
Velocity	7.29 ft/s
Velocity Head	0.83 ft
Specific Energy	2.05 ft
Froude Number	1.783
Flow Type	Supercritical

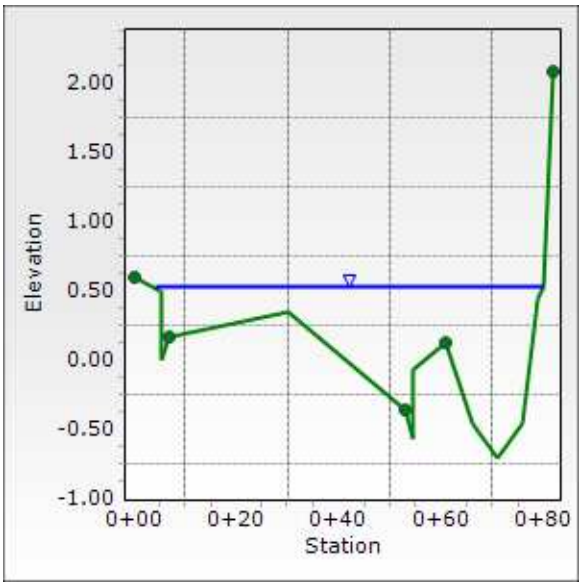
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

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	1.23 ft
Critical Depth	1.47 ft
Channel Slope	1.30 %
Critical Slope	0.37 %

Cross Section for Section U Holly INT_PH1&PH2-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.30 %
Normal Depth	1.23 ft
Discharge	287.00 cfs



Section U1 D2-DIV2 Calc INT_PH1&PH2-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Discharge

Input Data	
Channel Slope	0.60 %
Normal Depth	0.73 ft

Section Definitions

Station (ft)	Elevation (ft)
-0+06.00	0.70
0+03.00	0.46
0+06.00	0.43
0+09.00	0.46
0+30.00	0.78
0+53.00	0.17
0+57.00	0.09
0+61.00	0.01
0+67.00	0.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+06.00, 0.70)	(0+03.00, 0.46)	0.016
(0+03.00, 0.46)	(0+09.00, 0.46)	0.013
(0+09.00, 0.46)	(0+53.00, 0.17)	0.016
(0+53.00, 0.17)	(0+57.00, 0.09)	0.013
(0+57.00, 0.09)	(0+67.00, 0.00)	0.016

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

Results	
Discharge	69.45 cfs
Elevation Range	0.00 to 0.78 ft
Flow Area	20.83 ft²
Wetted Perimeter	68.61 ft
Hydraulic Radius	0.30 ft
Top Width	67.83 ft
Normal Depth	0.73 ft
Critical Depth	0.74 ft

Results	
Critical Slope	0.53 %
Velocity	3.33 ft/s
Velocity Head	0.17 ft
Specific Energy	0.90 ft
Froude Number	1.060
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	0.73 ft
Critical Depth	0.74 ft
Channel Slope	0.60 %
Critical Slope	0.53 %

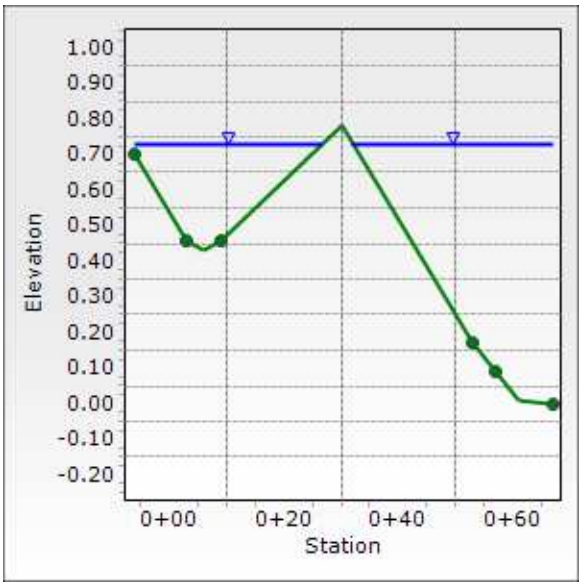
Messages

Messages	
Notes	THE WSE ELEVATIONS OF THE OVERFLOW TO THE EAST AT SECTION U2 (91 CFS) AND THE FLOW SPLIT AMOUNT THAT IS CONVEYED DOWN MOUNT MAINALO (SECTION U1) ARE EQUAL. SECTION U1 = FL (20.81) + NORMAL DEPTH (0.73') = 21.54' SECTION U2 = SOUTH SIDE FL (20.97) + NORMAL DEPTH ABOVE FL (0.57') = 21.54'

Cross Section for Section U1 D2-DIV2 Calc INT_PH1&PH2-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Discharge

Input Data	
Channel Slope	0.60 %
Normal Depth	0.73 ft
Discharge	69.45 cfs



NOTE: This cross section does not include flows that are conveyed in ES-P2 that are conveyed south in Mount Mainalo Street. See Section U3.

Section U2 at Holly High Point for D2-DIV2 Calc INT_PH1&PH2-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.60 %
Discharge	91.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	0.29
0+05.00	0.19
0+05.50	0.19
0+05.50	-0.31
0+07.00	-0.17
0+30.00	0.44
0+53.00	0.21
0+54.50	0.00
0+54.50	0.50
0+60.00	0.60
0+63.00	-0.36
0+66.00	0.39
0+66.50	0.39
0+70.00	-0.01

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 0.29)	(0+07.00, -0.17)	0.013
(0+07.00, -0.17)	(0+53.00, 0.21)	0.016
(0+53.00, 0.21)	(0+60.00, 0.60)	0.013
(0+60.00, 0.60)	(0+70.00, -0.01)	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	0.93 ft
Elevation Range	-0.36 to 0.60 ft
Flow Area	24.23 ft²
Wetted Perimeter	70.65 ft

Results	
Hydraulic Radius	0.34 ft
Top Width	68.48 ft
Normal Depth	0.93 ft
Critical Depth	0.96 ft
Critical Slope	0.48 %
Velocity	3.76 ft/s
Velocity Head	0.22 ft
Specific Energy	1.15 ft
Froude Number	1.113
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	0.93 ft
Critical Depth	0.96 ft
Channel Slope	0.60 %
Critical Slope	0.48 %

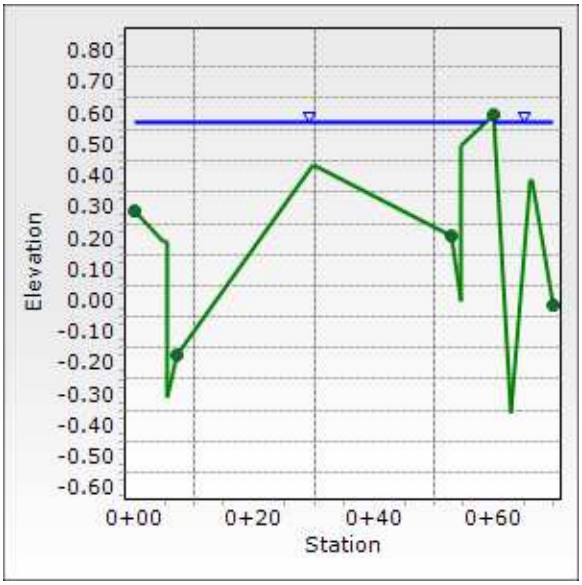
Messages

Messages	
Notes	THE WSE ELEVATIONS OF THE OVERFLOW TO THE EAST AT SECTION U2 (91 CFS) AND THE FLOW SPLIT AMOUNT THAT IS CONVEYED DOWN MOUNT MAINALO (SECTION U1) ARE EQUAL. SECTION U1 = FL (20.81) + NORMAL DEPTH (0.73') = 21.54' SECTION U2 = SOUTH SIDE FL (20.97) + NORMAL DEPTH ABOVE FL (0.57') = 21.54'

Cross Section for Section U2 at Holly High Point for D2-DIV2 Calc INT_PH1&PH2-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.60 %
Normal Depth	0.93 ft
Discharge	91.00 cfs



NOTE: The section is Holly Avenue at the Local high point east of the intersection with Holly and Mount Mainalo. The WSE match for the flows conveyed east and south.

Also, the section shows that a portion of the runoff that continues east in Holly is not confined to the roadway but enters the swale on the south side of Holly. See Section U2 SWALE under the ES-P4 calculations.

Section U3 ES-P2 Discharge INT_PH1&PH2-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Discharge

Input Data		
Channel Slope	0.40	%
Normal Depth	1.23	ft

Section Definitions

Station (ft)	Elevation (ft)
0+05.00	1.20
0+05.00	0.29
0+13.00	0.00
0+23.00	0.51
0+23.00	1.20

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+05.00, 1.20)	(0+23.00, 1.20)	0.013

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

Results		
Discharge	127.54	cfs
Elevation Range	0.00 to 1.20	ft
Flow Area	18.43	ft²
Wetted Perimeter	19.68	ft
Hydraulic Radius	0.94	ft
Top Width	18.00	ft
Normal Depth	1.23	ft
Critical Depth	1.37	ft
Critical Slope	0.27	%
Velocity	6.92	ft/s
Velocity Head	0.74	ft
Specific Energy	1.97	ft
Froude Number	1.206	
Flow Type	Supercritical	

GVF Input Data

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

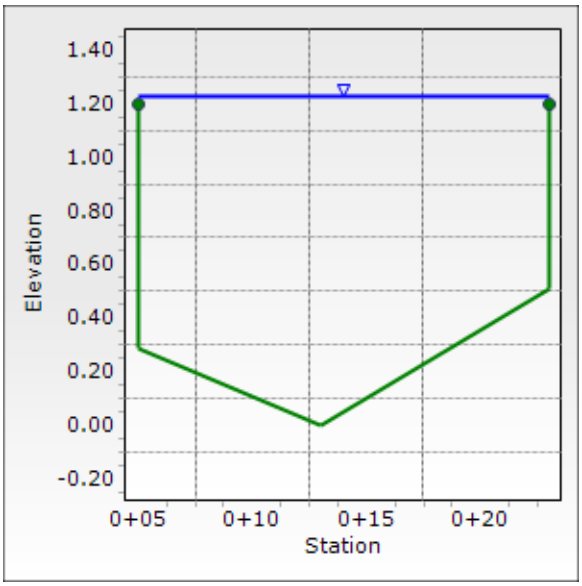
GVF Output Data	
Upstream Depth	0.00 ft
Profile Description	
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	1.23 ft
Critical Depth	1.37 ft
Channel Slope	0.40 %
Critical Slope	0.27 %

Messages	
Notes	THE FLOW INLCUDES THE AMOUNT IN THE EASEMENT UPSTREAM OF THE INTERSECTIO N, BUT USING REDUCED SLOPE TO DETERMINE THE FLOWS. ASSUMES TOTAL FLOWS ARE CONVEYED SOUTH IN MOUNT MAINALO STREET

Cross Section for Section U3 ES-P2 Discharge INT_PH1&PH2-100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Discharge

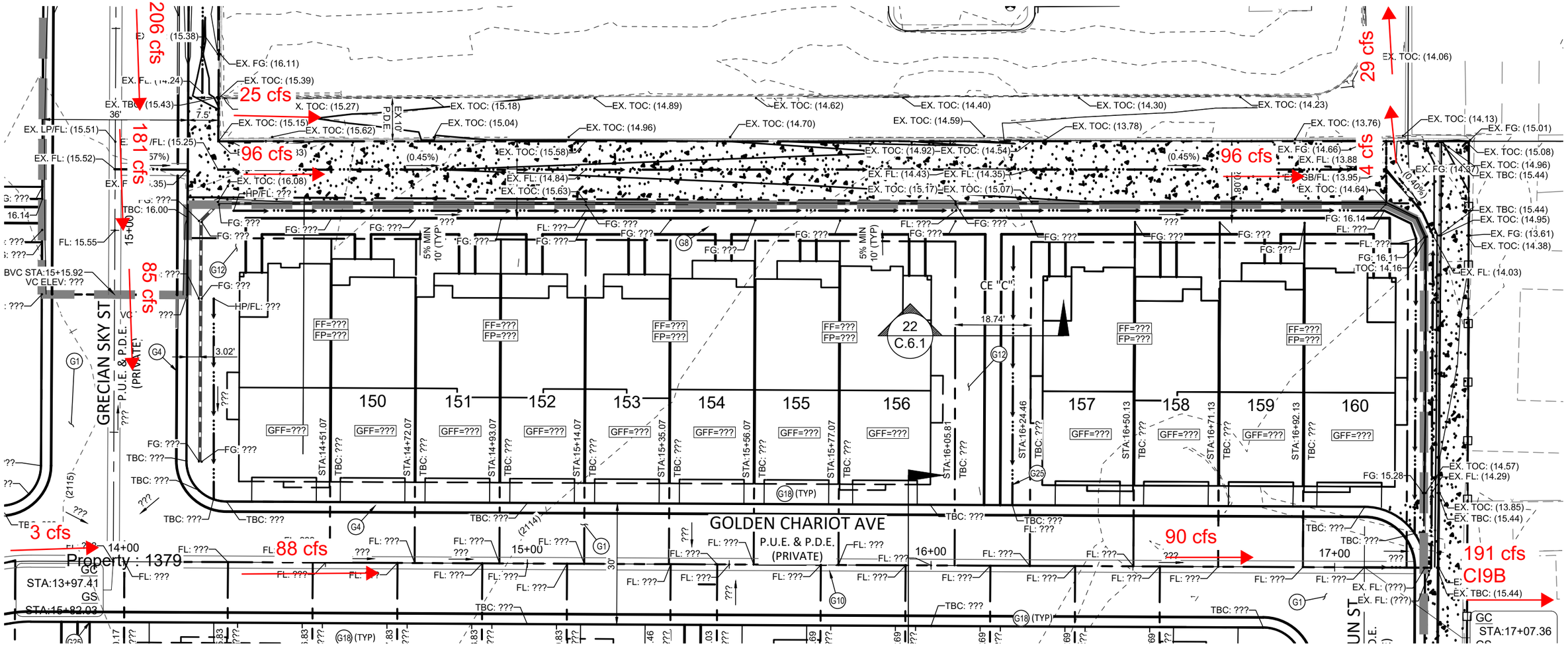
Input Data	
Channel Slope	0.40 %
Normal Depth	1.23 ft
Discharge	127.54 cfs



NOTE: This section represents the flow that discharges ES-P2 and is conveyed south in Mount Mainalo.

EASEMENT CALCULATIONS (NORMAL DEPTH, WEIR, ORIFICE CALCULATIONS)

- ES_P3 (PH1 & PH2)



ES-P3 AND ES-E2 PHASE 2 FLOW SPLIT SCHEMATIC

Worksheet for Section ES_P3_INT PH1 & PH2 100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.40 %
Discharge	96.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	2.00
0+00.00	0.15
0+07.50	0.00
0+15.00	0.15
0+15.00	2.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 2.00)	(0+15.00, 2.00)	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	1.05 ft
Elevation Range	0.00 to 2.00 ft
Flow Area	14.59 ft²
Wetted Perimeter	16.80 ft
Hydraulic Radius	0.87 ft
Top Width	15.00 ft
Normal Depth	1.05 ft
Critical Depth	1.16 ft
Critical Slope	0.28 %
Velocity	6.58 ft/s
Velocity Head	0.67 ft
Specific Energy	1.72 ft
Froude Number	1.176
Flow Type	Supercritical

GVF Input Data

Worksheet for Section ES_P3_INT PH1 & PH2 100 YR

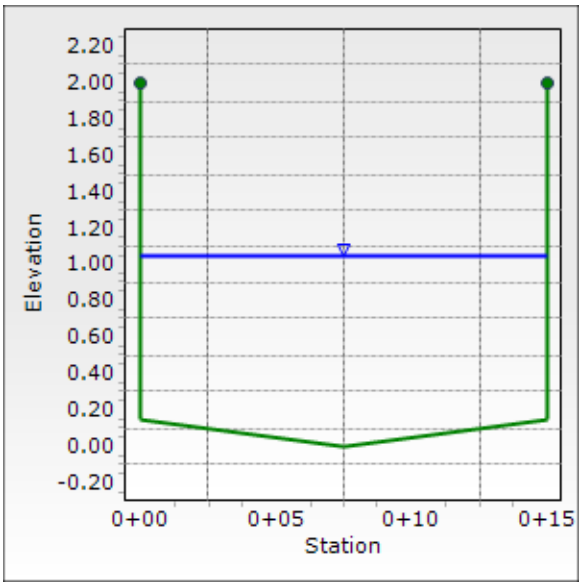
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.00 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	1.05 ft
Critical Depth	1.16 ft
Channel Slope	0.40 %
Critical Slope	0.28 %

Cross Section for Section ES_P3_INT PH1 & PH2 100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.40 %
Normal Depth	1.05 ft
Discharge	96.00 cfs



Section ES_E2_INT-PH1 & PH2 100 YR - NO CLOGGING

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data		
Channel Slope	0.50	%
Discharge	58.00	cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	2.00
0+00.00	0.10
0+05.00	0.00
0+10.00	0.10
0+10.00	2.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 2.00)	(0+10.00, 2.00)	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	0.92	ft
Elevation Range	0.00 to 2.00	ft
Flow Area	8.71	ft²
Wetted Perimeter	11.64	ft
Hydraulic Radius	0.75	ft
Top Width	10.00	ft
Normal Depth	0.92	ft
Critical Depth	1.06	ft
Critical Slope	0.31	%
Velocity	6.66	ft/s
Velocity Head	0.69	ft
Specific Energy	1.61	ft
Froude Number	1.258	
Flow Type	Supercritical	

GVF Input Data

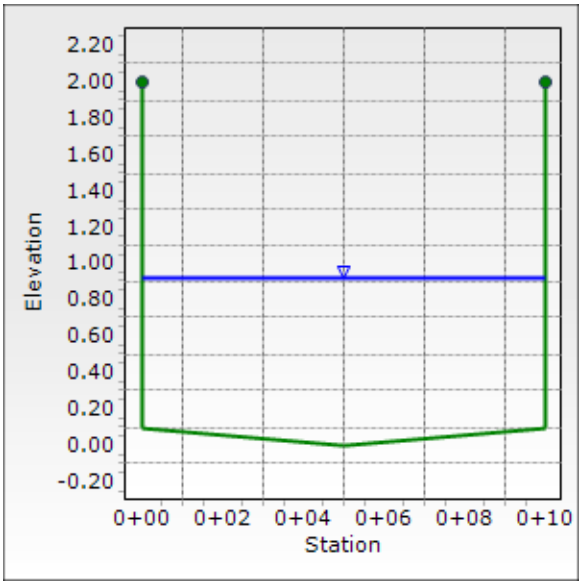
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.00 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.92 ft
Critical Depth	1.06 ft
Channel Slope	0.50 %
Critical Slope	0.31 %

Cross Section for Section ES_E2_INT-PH1 & PH2 100 YR - NO CLOGGING

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.50 %
Normal Depth	0.92 ft
Discharge	58.00 cfs



Section ES_E2_INT PH1 & PH2 100 YR - NO CLOGGING - EGL FERRELL

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.50 %
Discharge	58.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
-0+15.00	1.00
-0+15.00	0.16
0+00.00	0.12
0+25.00	0.00
0+25.00	2.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+15.00, 1.00)	(0+25.00, 2.00)	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	0.45 ft
Elevation Range	0.00 to 2.00 ft
Flow Area	14.37 ft²
Wetted Perimeter	40.74 ft
Hydraulic Radius	0.35 ft
Top Width	40.00 ft
Normal Depth	0.45 ft
Critical Depth	0.49 ft
Critical Slope	0.34 %
Velocity	4.04 ft/s
Velocity Head	0.25 ft
Specific Energy	0.70 ft
Froude Number	1.187
Flow Type	Supercritical

GVF Input Data

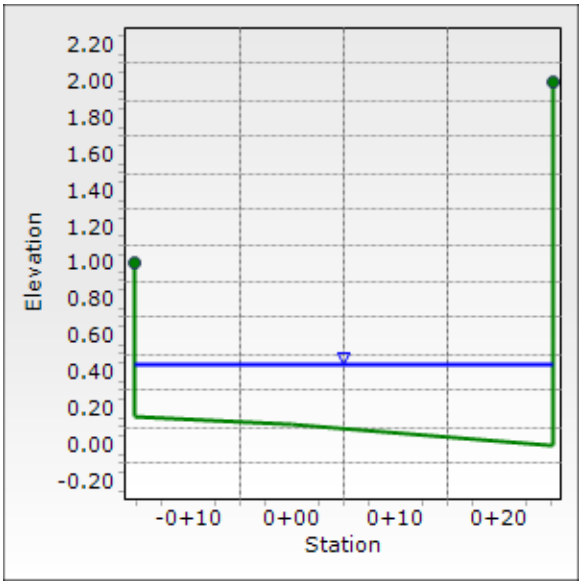
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.00 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.45 ft
Critical Depth	0.49 ft
Channel Slope	0.50 %
Critical Slope	0.34 %

Cross Section for Section ES_E2_INT PH1 & PH2 100 YR - NO CLOGGING - EGL FERRELL

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.50 %
Normal Depth	0.45 ft
Discharge	58.00 cfs



ES-P3 INT-PH1 & PH2 NUISANCE BLOCK WALL TO ES-E2

Project Description	
Solve For	Discharge

Input Data	
Headwater Elevation	15.55 ft
Centroid Elevation	14.89 ft
Tailwater Elevation	14.05 ft
Discharge Coefficient	0.650
Opening Width	1.50 ft
Opening Height	0.67 ft

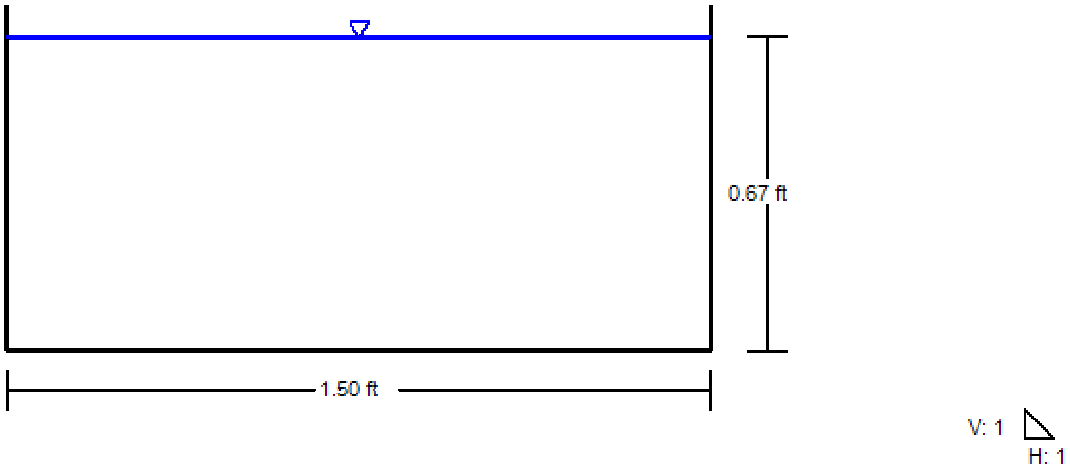
Results	
Discharge	4.26 cfs
Headwater Height Above Centroid	0.66 ft
Tailwater Height Above Centroid	-0.84 ft
Flow Area	1.01 ft²
Velocity	4.24 ft/s

Messages	
	FL = 13.89' PONDING = 15.55'
	DOWNSTREAM TAKEN FROM ES-E2. NORMAL DPETH = 0.50' (29 CFS).
Notes	ASSUMES BOTTOM HALF OF OPENING IS CLOGGED. USED 0.67 INSTEAD OF 1.33' FOR HEIGHT TO SIMULATE 50% CLOGGING FACTOR

Cross Section for ES-P3 INT-PH1 & PH2 NUISANCE BLOCK WALL TO ES-E2

Project Description	
Solve For	Discharge

Input Data	
Discharge	4.26 cfs
Headwater Elevation	15.55 ft
Centroid Elevation	14.89 ft
Tailwater Elevation	14.05 ft
Discharge Coefficient	0.650
Opening Width	1.50 ft
Opening Height	0.67 ft



Worksheet for ES-P3 OVERFLOW WEIR

Project Description	
Solve For	Headwater Elevation

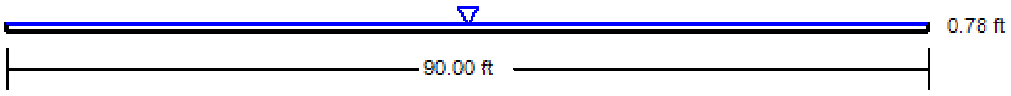
Input Data	
Discharge	191.00 cfs
Crest Elevation	15.10 ft
Tailwater Elevation	14.00 ft
Weir Coefficient	3.10 ft^(1/2)/s
Crest Length	90.00 ft
Number Of Contractions	0

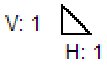
Results	
Headwater Elevation	15.88 ft
Headwater Height Above Crest	0.78 ft
Tailwater Height Above Crest	-1.10 ft
Flow Area	69.91 ft²
Velocity	2.73 ft/s
Wetted Perimeter	91.55 ft
Top Width	90.00 ft

Cross Section for ES-P3 OVERFLOW WEIR

Project Description	
Solve For	Headwater Elevation

Input Data	
Discharge	191.00 cfs
Headwater Elevation	15.88 ft
Crest Elevation	15.10 ft
Tailwater Elevation	14.00 ft
Weir Coefficient	3.10 ft^(1/2)/s
Crest Length	90.00 ft
Number Of Contractions	0





ES-P3 INT- PH1 & PH2 ENTRANCE WEIR

Project Description	
Solve For	Headwater Elevation

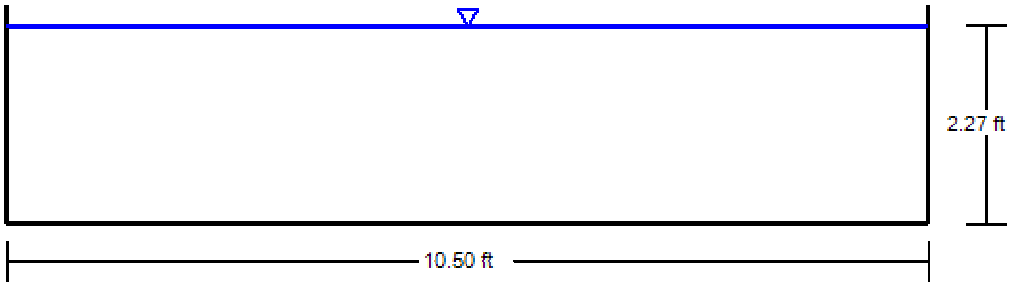
Input Data	
Discharge	96.00 cfs
Crest Elevation	14.80 ft
Tailwater Elevation	15.85 ft
Weir Coefficient	3.10 ft^(1/2)/s
Crest Length	10.50 ft
Number Of Contractions	0

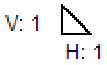
Results	
Headwater Elevation	17.07 ft
Headwater Height Above Crest	2.27 ft
Tailwater Height Above Crest	1.05 ft
Flow Area	23.80 ft²
Velocity	4.03 ft/s
Wetted Perimeter	15.03 ft
Top Width	10.50 ft

Cross Section for ES-P3 INT- PH1 & PH2 ENTRANCE WEIR

Project Description	
Solve For	Headwater Elevation

Input Data	
Discharge	96.00 cfs
Headwater Elevation	17.07 ft
Crest Elevation	14.80 ft
Tailwater Elevation	15.85 ft
Weir Coefficient	3.10 ft^(1/2)/s
Crest Length	10.50 ft
Number Of Contractions	0





EASEMENT CALCULATIONS (NORMAL DEPTH, WEIR, ORIFICE CALCULATIONS)

- ES_P4 (PH1 & PH2)

Section U2 SWALE D2-DIV2 Calc INT_PH1&PH2-100 YR_For ES_P4

Project Description	
Friction Method	Manning Formula
Solve For	Discharge

Input Data		
Channel Slope	0.50	%
Normal Depth	0.93	ft

Section Definitions

Station (ft)	Elevation (ft)
0+60.00	0.60
0+63.00	-0.36
0+66.00	0.39
0+66.50	0.39
0+70.00	-0.01

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+60.00, 0.60)	(0+70.00, -0.01)	0.013

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

Results		
Discharge	19.88	cfs
Elevation Range	-0.36 to 0.60	ft
Flow Area	4.44	ft²
Wetted Perimeter	10.75	ft
Hydraulic Radius	0.41	ft
Top Width	9.91	ft
Normal Depth	0.93	ft
Critical Depth	0.98	ft
Critical Slope	0.35	%
Velocity	4.48	ft/s
Velocity Head	0.31	ft
Specific Energy	1.24	ft
Froude Number	1.180	
Flow Type	Supercritical	

GVF Input Data

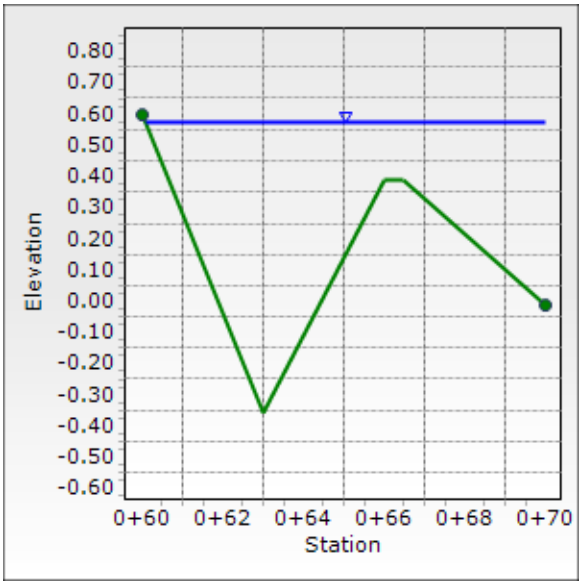
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

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	0.93 ft
Critical Depth	0.98 ft
Channel Slope	0.50 %
Critical Slope	0.35 %

Cross Section for Section U2 SWALE D2-DIV2 Calc INT_PH1&PH2-100 YR_For ES_P4

Project Description	
Friction Method	Manning Formula
Solve For	Discharge

Input Data	
Channel Slope	0.50 %
Normal Depth	0.93 ft
Discharge	19.88 cfs



Section U2 NORTH at Holly High Point for D2-DIV2 Calc INT_PH1&PH2-100 YR_For ES_P4

Project Description	
Friction Method	Manning Formula
Solve For	Discharge

Input Data	
Channel Slope	0.62 %
Normal Depth	0.75 ft

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	0.29
0+05.00	0.19
0+05.50	0.19
0+05.50	-0.31
0+07.00	-0.17
0+30.00	0.44

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 0.29)	(0+05.50, -0.31)	0.013
(0+05.50, -0.31)	(0+07.00, -0.17)	0.013
(0+07.00, -0.17)	(0+30.00, 0.44)	0.016

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

Results	
Discharge	31.29 cfs
Elevation Range	-0.31 to 0.44 ft
Flow Area	9.16 ft²
Wetted Perimeter	30.67 ft
Hydraulic Radius	0.30 ft
Top Width	30.00 ft
Normal Depth	0.75 ft
Critical Depth	0.77 ft
Critical Slope	0.51 %
Velocity	3.42 ft/s
Velocity Head	0.18 ft
Specific Energy	0.93 ft

Results	
Froude Number	1.090
Flow Type	Supercritical

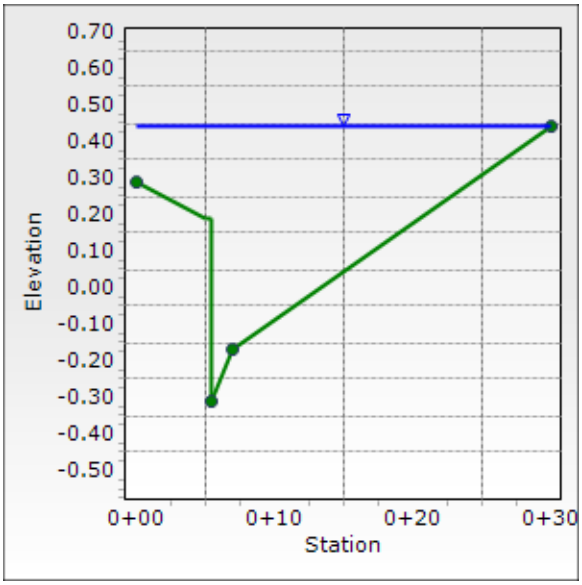
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

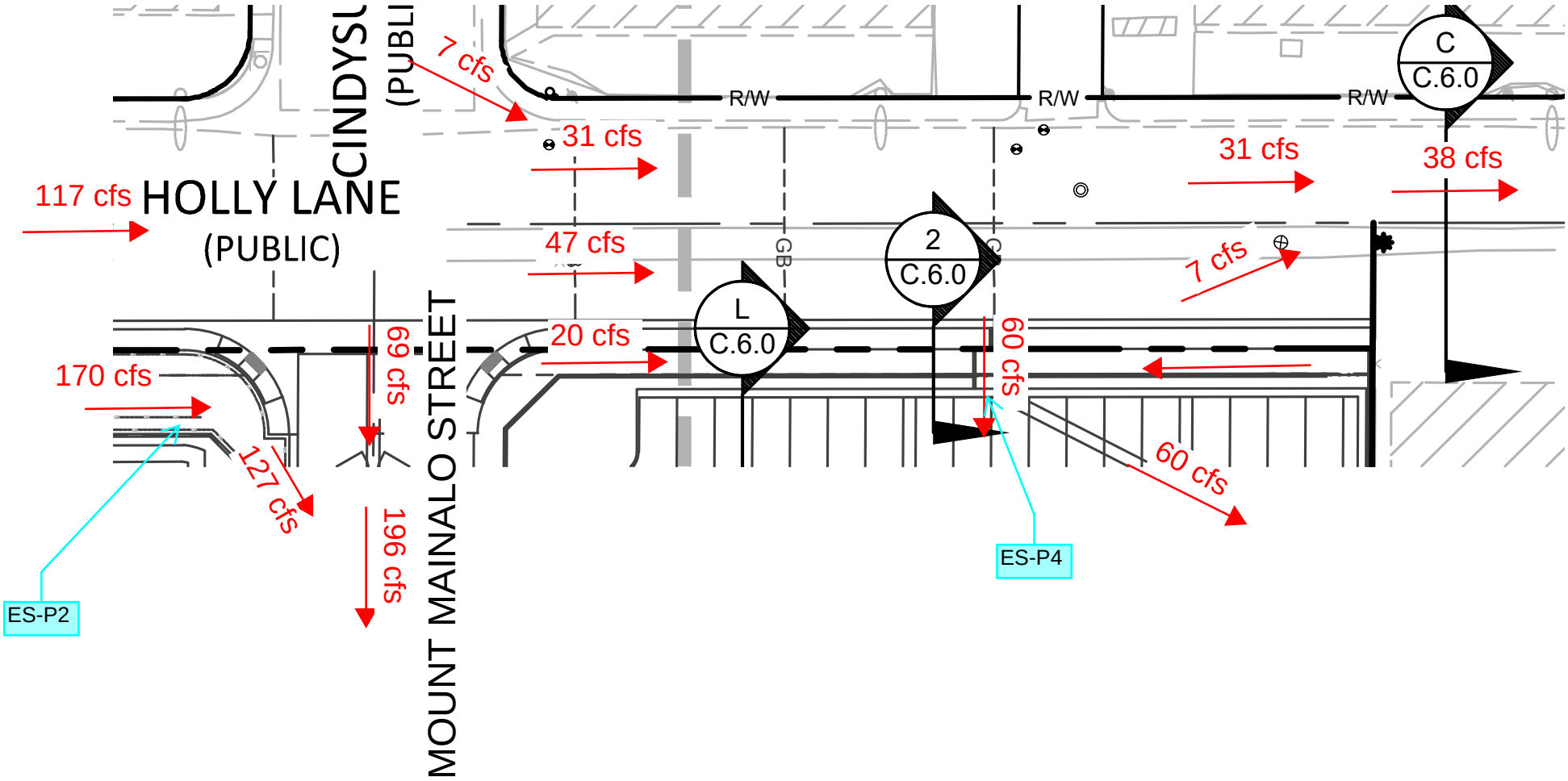
GVF Output Data	
Upstream Depth	0.00 ft
Profile Description	
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.75 ft
Critical Depth	0.77 ft
Channel Slope	0.62 %
Critical Slope	0.51 %

Cross Section for Section U2 NORTH at Holly High Point for D2-DIV2 Calc INT_PH1&PH2-100 YR_For ES_P4

Project Description	
Friction Method	Manning Formula
Solve For	Discharge

Input Data	
Channel Slope	0.62 %
Normal Depth	0.75 ft
Discharge	31.29 cfs





PHASE 1&2 FLOW SPLIT SCHEMATIC

Weir - Orifice Equation

Description: ES-P4 - 30' Proposed Drainage Easement - 60 cfs
Project: NV-2105-1911
Cross Streets: ES-P4
Designed By: DBC/SBL
Date: 6/4/2020

Orifice Equation: $Q = CA(2gh)^{1/2}$

where:

Q = 100-year event discharge	=	56.0	
C = discharge coefficient	=	0.65	
H = Orifice Height (ft)	=	1.01	(ft)
W = Orifice Width (ft)	=	30	(ft)
A = Effective area (ft^2)	=	30.30 ft²	
Clogging Factor =	=	50%	
	=	15.15 ft²	
g = gravitational constant	=	32.2 ft/s^2	

h = Head, ponding depth (ft), (measured from centerline of orifice)

Solving for h, $h = \frac{(Q/cA)^2}{2g} = \frac{[\ 56cfs / (0.65*15.15ft^2)\ ]^2}{2*32.2ft/s^2}$ = 0.50 ft

Ponding depth for orifice = 1.00 ft

Weir Equation: $Q = CLh^{1.5}$

where:

Q = 100-year event discharge	=	60.0
C = broad crest weir coefficient	=	3.1
L = perimeter	=	30.00 ft
Clogging Factor =	=	50%
	=	15.00 ft

Solving for h, $h = [Q/(CL)]^{1.5} = [\ 4cfs / (3.0*3.14ft)\ ]^{0.67}$ = 1.19 ft

The 30' easement does not convey the entire 60 cfs, additional capacity is provided by block wall opneings on either side.

WSE of Weir Elevavtion over sidewalk = 20.70'

ES-P4 FL = 19.69' + 1.01' depth = 20.70

Ovetopping to East_INT_PH1&PH2_For ES_P4

Project Description	
Solve For	Headwater Elevation

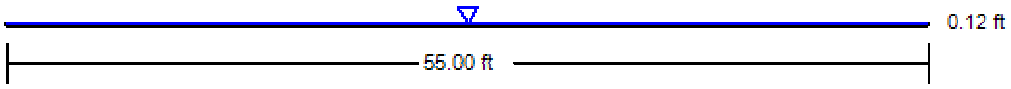
Input Data	
Discharge	7.00 cfs
Crest Elevation	20.59 ft
Tailwater Elevation	20.00 ft
Weir Coefficient	3.10 ft^(1/2)/s
Crest Length	55.00 ft
Number Of Contractions	0

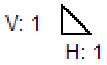
Results	
Headwater Elevation	20.70 ft
Headwater Height Above Crest	0.12 ft
Tailwater Height Above Crest	-0.59 ft
Flow Area	6.55 ft²
Velocity	1.07 ft/s
Wetted Perimeter	55.24 ft
Top Width	55.00 ft

Cross Section for Ovetopping to East_INT_PH1&PH2_For ES_P4

Project Description	
Solve For	Headwater Elevation

Input Data	
Discharge	7.00 cfs
Headwater Elevation	20.70 ft
Crest Elevation	20.59 ft
Tailwater Elevation	20.00 ft
Weir Coefficient	3.10 ft^(1/2)/s
Crest Length	55.00 ft
Number Of Contractions	0





Over-Sidewalk Weir_INT_PH1&PH2_For ES_P4

Project Description	
Solve For	Discharge

Input Data	
Headwater Elevation	20.70 ft
Crest Elevation	20.36 ft
Tailwater Elevation	19.00 ft
Coefficient of Discharge	0.570
Angle	179.54 degrees

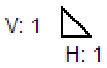
Results	
Discharge	40.95 cfs
Headwater Height Above Crest	0.34 ft
Tailwater Height Above Crest	-1.36 ft
Flow Area	28.80 ft²
Velocity	1.42 ft/s
Wetted Perimeter	169.40 ft
Top Width	169.40 ft

Cross Section for Over-Sidewalk Weir_INT_PH1&PH2_For ES_P4

Project Description	
Solve For	Discharge

Input Data	
Discharge	40.95 cfs
Headwater Elevation	20.70 ft
Crest Elevation	20.36 ft
Tailwater Elevation	19.00 ft
Coefficient of Discharge	0.570
Angle	179.54 degrees





EASEMENT CALCULATIONS (NORMAL DEPTH, WEIR, ORIFICE CALCULATIONS)

- ES_P5 (PH2 & ULTIMATE)

Weir - Orifice Equation

Description: 10' Proposed Drainage Easement
Project: NV-2105-1911
Cross Streets: ES-P5A
Designed By: DBC/SBL
Date: 6/5/2020

FIRST: ORIFICE SIZE (48" X 16")

Orifice Equation: $Q = CA(2gh)^{1/2}$

where:

Q = 100-year event discharge	=	2.0	
C = discharge coefficient	=	0.65	
H = Orifice Height (ft)	=	1.33	(ft)
W = Orifice Width (ft)	=	4	(ft)
A = Effective area (ft^2)	=	5.32 ft²	
Clogging Factor =	=	50%	
	=	2.66 ft²	
g = gravitational constant	=	32.2 ft/s^2	

h = Head, ponding depth (ft), (measured from centerline of orifice)

Solving for h, $h = \frac{(Q/cA)^2}{2g} = \frac{[\ 2cfs\ /\ (0.65*2.66ft^2)\ ]^2}{2*32.2ft/s^2}$ = 0.02 ft

Ponding depth for orifice = 0.04 ft

Weir Equation: $Q = CLh^{1.5}$

where:

Q = 100-year event discharge	=	2.0
C = broad crest weir coefficient	=	3.1
L = perimeter	=	4.00 ft
Clogging Factor =	=	50%
	=	2.00 ft

Solving for h, $h = [Q/(CL)]^{1.5} = [\ 4cfs\ /\ (3.0*3.14ft)\ ]^{0.67}$ = 0.47 ft

Weir - Orifice Equation

Description: 10' Proposed Drainage Easement
Project: NV-2105-1911
Cross Streets: ES-P5B
Designed By: DBC/SBL
Date: 6/5/2020

SECOND: ORIFICE SIZE (48" X 16")

Orifice Equation: $Q = CA(2gh)^{1/2}$

where:

Q = 100-year event discharge	=	2.0	
C = discharge coefficient	=	0.65	
H = Orifice Height (ft)	=	1.33	(ft)
W = Orifice Width (ft)	=	4	(ft)
A = Effective area (ft^2)	=	5.32 ft²	
Clogging Factor =	=	50%	
	=	2.66 ft²	
g = gravitational constant	=	32.2 ft/s^2	

h = Head, ponding depth (ft), (measured from centerline of orifice)

Solving for h, $h = \frac{(Q/cA)^2}{2g} = \frac{[\ 2cfs / (0.65*2.66ft^2)\ ]^2}{2*32.2ft/s^2}$ = 0.02 ft

Ponding depth for orifice = 0.04 ft

Weir Equation: $Q = CLh^{1.5}$

where:

Q = 100-year event discharge	=	2.0
C = broad crest weir coefficient	=	3.1
L = perimeter	=	4.00 ft
Clogging Factor =	=	50%
	=	2.00 ft

Solving for h, $h = [Q/(CL)]^{1.5} = [\ 4cfs / (3.0*3.14ft)\ ]^{0.67}$ = 0.47 ft

EASEMENT CALCULATIONS (NORMAL DEPTH, WEIR, ORIFICE CALCULATIONS)

- ES_E2 (PH1, PH2, & ULTIMATE)

Worksheet for Section ES_E2_INT-PH1-PH2 & ULT 100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.500 %
Discharge	29.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	2.00
0+00.00	0.10
0+05.00	0.00
0+10.00	0.10
0+10.00	2.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 2.00)	(0+10.00, 2.00)	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	0.61 ft
Elevation Range	0.00 to 2.00 ft
Flow Area	5.62 ft²
Wetted Perimeter	11.03 ft
Hydraulic Radius	0.51 ft
Top Width	10.00 ft
Normal Depth	0.61 ft
Critical Depth	0.69 ft
Critical Slope	0.332 %
Velocity	5.16 ft/s
Velocity Head	0.41 ft
Specific Energy	1.03 ft
Froude Number	1.214
Flow Type	Supercritical

GVF Input Data

Worksheet for Section ES_E2_INT-PH1-PH2 & ULT 100 YR

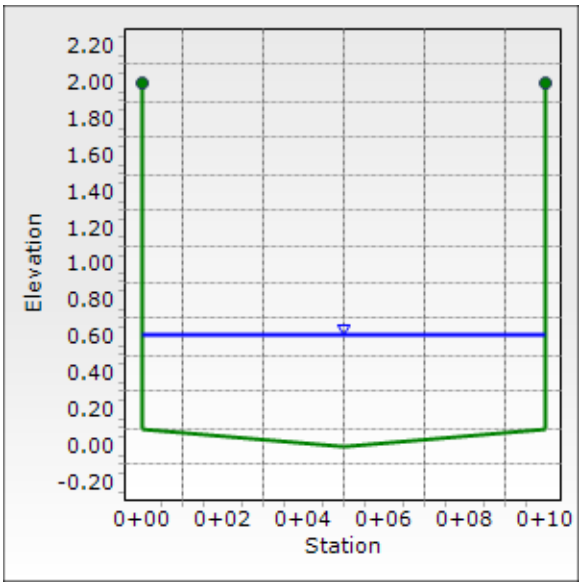
GVF Input Data	
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.00 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.61 ft
Critical Depth	0.69 ft
Channel Slope	0.500 %
Critical Slope	0.332 %

Cross Section for Section ES_E2_INT-PH1-PH2 & ULT 100 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.500 %
Normal Depth	0.61 ft
Discharge	29.00 cfs



Finished Floor Analysis Table

T-Intersection Analysis Table

Easement Adjacent Lots Analysis Table

HORROCKS ENGINEERS

FINISHED FLOOR ANALYSIS

Project Number NV-2105-1911 | **Project Name:** Rancho and Vegas Townhomes

Date: 6/4/2020 | **Designed By:** ACD

LOT #	ADJACENT STREET	FL @ LOT LINE	Flow Depth	MIN GFF	MIN. FF	ACTUAL GFF	ACTUAL FF	LOT #	ADJACENT STREET	FL @ LOT LINE	Flow Depth	MIN GFF	MIN. FF	ACTUAL GFF	ACTUAL FF
FF Check - TRIPOLI FALLS															
1	TRIPOLI FALLS	20.16	0.30	n/a	20.76	n/a	22.14	2	TRIPOLI FALLS	20.65	0.30	n/a	21.25	n/a	22.14
3	TRIPOLI FALLS	21.01	0.30	n/a	21.61	n/a	22.14	4	TRIPOLI FALLS	21.52	0.30	n/a	22.12	n/a	22.14
5	TRIPOLI FALLS	22.14	0.30	n/a	22.74	n/a	22.14	6	TRIPOLI FALLS	23.26	0.30	n/a	23.86	n/a	22.14
7	TRIPOLI FALLS	24.66	0.30	n/a	25.26	n/a	22.70	8	TRIPOLI FALLS	25.68	0.30	n/a	26.28	n/a	22.70
9	TRIPOLI FALLS	26.52	0.30	n/a	27.12	n/a	22.70	10	TRIPOLI FALLS	27.00	0.30	n/a	27.60	n/a	22.70
11	TRIPOLI FALLS	27.00	0.30	n/a	27.60	n/a	22.70	12	TRIPOLI FALLS	26.72	0.30	n/a	27.32	n/a	22.70
235	TRIPOLI FALLS	24.72	0.30	n/a	25.32	n/a	21.28	236	TRIPOLI FALLS	23.45	0.30	n/a	24.05	n/a	21.28
237	TRIPOLI FALLS	22.57	0.30	n/a	23.17	n/a	21.28	238	TRIPOLI FALLS	21.89	0.30	n/a	22.49	n/a	21.28
239	TRIPOLI FALLS	21.33	0.30	n/a	21.93	n/a	21.28	240	TRIPOLI FALLS	20.89	0.30	n/a	21.49	n/a	21.28
241	TRIPOLI FALLS	20.92	0.30	n/a	21.52	n/a	21.28	242	TRIPOLI FALLS	19.80	0.30	n/a	20.40	n/a	21.28
FF Check - MOUNT MAINALO															
1	MOUNT MAINALO -B	19.60	1.08	20.68	21.76	21.31	22.14	22	MOUNT MAINALO -B	19.98	1.08	21.06	22.14	20.95	22.12
23	MOUNT MAINALO -B	20.30	1.08	21.38	22.46	22.13	23.30	40	MOUNT MAINALO -C	20.67	1.12	21.79	22.91	22.15	23.80
41	MOUNT MAINALO -C	20.55	1.12	21.67	22.79	22.15	22.90	68	MOUNT MAINALO -B	20.16	1.08	21.24	22.32	22.05	22.55
69	MOUNT MAINALO -B	19.83	1.08	20.91	21.99	20.62	21.12	100	MOUNT MAINALO -A	19.40	1.01	20.41	21.42	20.62	21.12
101	MOUNT MAINALO -A	18.99	1.01	20.00	22.98	19.50	20.50	242	MOUNT MAINALO -A	18.91	1.01	19.92	20.93	19.36	21.28
FF Check - TRIPOLI COVE															
1	TRIPOLI COVE	20.25	0.70	21.20	21.65	21.31	22.14	2	TRIPOLI COVE	20.34	0.70	21.29	21.74	21.31	22.14
3	TRIPOLI COVE	20.42	0.70	21.37	21.82	21.39	22.14	4	TRIPOLI COVE	20.50	0.70	21.45	21.90	21.47	22.14
5	TRIPOLI COVE	20.69	0.70	21.64	22.09	21.64	22.14	6	TRIPOLI COVE	20.69	0.70	21.64	22.09	21.64	22.14
7	TRIPOLI COVE	20.86	0.70	21.81	22.26	21.87	22.70	8	TRIPOLI COVE	20.94	0.70	21.89	22.34	21.95	22.70
9	TRIPOLI COVE	21.03	0.70	21.98	22.43	22.03	22.70	10	TRIPOLI COVE	21.12	0.70	22.07	22.52	22.12	22.70
11	TRIPOLI COVE	21.19	0.70	22.14	22.59	22.20	22.70	12	TRIPOLI COVE	21.25	0.70	22.20	22.65	22.20	22.70
13	TRIPOLI COVE	21.10	0.70	22.05	22.50	22.05	22.55	14	TRIPOLI COVE	21.00	0.70	21.95	22.40	22.05	22.55
15	TRIPOLI COVE	20.91	0.70	21.86	22.31	21.88	22.55	16	TRIPOLI COVE	20.83	0.70	21.78	22.23	21.80	22.55
17	TRIPOLI COVE	20.67	0.70	21.62	22.07	21.62	22.12	18	TRIPOLI COVE	20.56	0.70	21.51	21.96	21.62	22.12
19	TRIPOLI COVE	20.49	0.70	21.44	21.89	21.45	22.12	20	TRIPOLI COVE	20.39	0.70	21.34	21.79	21.45	22.12
21	TRIPOLI COVE	20.31	0.70	21.26	21.71	21.29	22.12	22	TRIPOLI COVE	20.22	0.70	21.17	21.62	21.29	22.12
FF Check - GRECIAN MOON															
13	GRECIAN MOON ST	21.59	0.67	22.26	22.93	22.05	22.55	32	GRECIAN MOON ST	21.83	0.67	22.50	23.17	23.10	23.77
FF Check - HESTIA															
23	HESTIA	21.44	0.26	21.95	21.96	22.30	23.30	24	HESTIA	21.86	0.26	22.37	22.38	22.63	23.3
25	HESTIA	22.19	0.26	22.70	22.71	22.80	23.30	26	HESTIA	22.42	0.26	22.93	22.94	23.30	24.3
27	HESTIA	22.53	0.26	23.04	23.05	23.55	24.30	28	HESTIA	22.56	0.26	23.07	23.08	23.63	24.3
29	HESTIA	22.47	0.26	22.98	22.99	23.47	24.14	30	HESTIA	22.37	0.26	22.88	22.89	23.56	24.14
31	HESTIA	22.28	0.26	22.79	22.80	23.47	24.14	32	HESTIA	22.20	0.26	22.71	22.72	23.39	24.14
33	HESTIA	22.43	0.26	22.94	22.95	23.30	23.70	34	HESTIA	22.52	0.26	23.03	23.04	23.30	23.70
35	HESTIA	22.55	0.26	23.06	23.07	23.30	23.70	36	HESTIA	22.55	0.26	23.06	23.07	23.30	23.70
37	HESTIA	22.48	0.26	22.99	23.00	23.30	23.70	38	HESTIA	22.30	0.26	22.81	22.82	23.30	23.70
39	HESTIA	22.01	0.26	22.52	22.53	22.80	23.70	40	HESTIA	21.61	0.26	22.12	22.13	22.47	23.70
FF Check - ARCADIAN KING															
41	ARCADIAN KING WEST	21.00	0.38	21.63	21.76	22.15	22.90	42	ARCADIAN KING WEST	21.09	0.38	21.72	21.85	22.32	22.90
43	ARCADIAN KING WEST	21.20	0.38	21.83	21.96	22.40	22.90	44	ARCADIAN KING WEST	21.20	0.38	21.83	21.96	22.40	22.90
45	ARCADIAN KING WEST	21.10	0.38	21.73	21.86	22.23	22.90	46	ARCADIAN KING WEST	20.94	0.38	21.57	21.70	21.73	22.90
47	ARCADIAN KING WEST	20.51	0.38	21.14	21.27	21.48	22.90	48	ARCADIAN KING WEST	20.12	0.38	20.75	20.88	20.98	22.90
53	ARCADIAN KING EAST	18.17	1.00	19.42	20.17	19.43	21.03	54	ARCADIAN KING EAST	18.25	1.00	19.50	20.25	19.61	21.03
55	ARCADIAN KING EAST	18.34	1.00	19.59	20.34	19.61	21.03	56	ARCADIAN KING EAST	18.42	1.00	19.67	20.42	19.70	21.03
57	ARCADIAN KING EAST	18.51	1.00	19.76	20.51	19.86	21.03	58	ARCADIAN KING EAST	18.59	1.00	19.84	20.59	19.86	21.03
59	ARCADIAN KING EAST	18.75	1.00	20.00	20.75	20.03	21.03	60	ARCADIAN KING EAST	19.03	1.00	20.28	21.03	20.28	21.03
61	ARCADIAN KING WEST	20.12	0.38	20.75	20.88	20.88	22.55	62	ARCADIAN KING WEST	20.61	0.38	21.24	21.37	21.55	22.55
63	ARCADIAN KING WEST	20.94	0.38	21.57	21.70	22.05	22.55	64	ARCADIAN KING WEST	21.10	0.38	21.73	21.86	22.05	22.55
65	ARCADIAN KING WEST	21.20	0.38	21.83	21.96	22.05	22.55	66	ARCADIAN KING WEST	21.20	0.38	21.83	21.96	22.05	22.55
67	ARCADIAN KING WEST	21.09	0.38	21.72	21.85	22.05	22.55	68	ARCADIAN KING WEST	21.00	0.38	21.63	21.76	22.05	22.55
FF Check - ARCADIAN SUN															
49	ARCADIAN SUN	18.89	0.15	19.29	19.19	19.92	20.42	50	ARCADIAN SUN	19.01	0.15	19.41	19.31	19.92	20.42
51	ARCADIAN SUN	19.01	0.15	19.41	19.31	19.92	20.42	52	ARCADIAN SUN	18.91	0.15	19.31	19.21	19.92	20.42
FF Check - HERODIAN															
69	HERODIAN	19.32	0.90	20.47	21.12	20.62	21.12	70	HERODIAN	19.19	0.90	20.34	20.99	20.62	21.12
71	HERODIAN	19.08	0.90	20.23	20.88	20.37	21.12	72	HERODIAN	18.95	0.90	20.10	20.75	20.37	21.12
73	HERODIAN	18.86	0.90	20.01	20.66	20.12	21.12	74	HERODIAN	18.75	0.90	19.90	20.55	20.12	21.12
75	HERODIAN	18.64	0.90	19.79	20.44	19.95	21.12	76	HERODIAN	18.52	0.90	19.67	20.32	19.95	21.12
77	HERODIAN	18.32	0.90	19.47	20.12	19.62	20.12	78	HERODIAN	18.18	0.90	19.33	19.98	19.62	20.12
79	HERODIAN	18.07	0.90	19.22	19.87	19.37	20.12	80	HERODIAN	17.96	0.90	19.11	19.76	19.37	20.12
81	HERODIAN	17.84	0.90	18.99	19.64	19.12	20.12	82	HERODIAN	17.73	0.90	18.88	19.53	19.12	20.12
83	HERODIAN	17.62	0.90	18.77	19.42	18.95	20.12	84	HERODIAN	17.51	0.90	18.66	19.31	18.95	20.12
85	HERODIAN	17.51	0.90	18.66	19.31	18.95	20.12	86	HERODIAN	17.62	0.90	18.77	19.42	18.95	20.12
87	HERODIAN	17.73	0.90	18.88	19.53	19.12	20.12	88	HERODIAN	17.84	0.90	18.99	19.64	19.12	20.12
89	HERODIAN	17.96	0.90	19.11	19.76	19.37	20.12	90	HERODIAN	18.07	0.90	19.22	19.87	19.37	20.12
91	HERODIAN	18.18	0.90	19.33	19.98	19.62	20.12	92	HERODIAN	18.32	0.90	19.47	20.12	19.62	20.12
93	HERODIAN	18.52	0.90	19.67	20.32	19.95	21.12	94	HERODIAN	18.64	0.90	19.79	20.44	19.95	21.12
95	HERODIAN	18.75	0.90	19.90	20.55	20.12	21.12	96	HERODIAN	18.86	0.90	20.01	20.66	20.12	21.12
97	HERODIAN	18.95	0.90	20.10	20.75	20.37	21.12	98	HERODIAN	19.08	0.90	20.23	20.88	20.37	21.12
99	HERODIAN	19.19	0.90	20.34	20.99	20.62	21.12	100	HERODIAN	19.32	0.90	20.47	21.12	20.62	21.12

NOTE: The Lots that do not meet FF criteria due to side-lot flows will be protected with solid grouted walls. (Highlighted in Red)

HORROCKS ENGINEERS

FINISHED FLOOR ANALYSIS

Project Number NV-2105-1911 | **Project Name:** Rancho and Vegas Townhomes

Date: 6/4/2020 | **Designed By:** ACD

LOT #	ADJACENT STREET	FL @ LOT LINE	Flow Depth	MIN GFF	MIN. FF	ACTUAL GFF	ACTUAL FF	LOT #	ADJACENT STREET	FL @ LOT LINE	Flow Depth	MIN GFF	MIN. FF	ACTUAL GFF	ACTUAL FF
FF Check - ALPHEUS RIVER															
101	ALPHEUS RIVER EAST	18.05	1.14	19.44	20.33	19.50	20.50	102	ALPHEUS RIVER EAST	17.92	1.14	19.31	20.20	19.50	20.50
103	ALPHEUS RIVER EAST	17.82	1.14	19.21	20.10	19.33	20.50	104	ALPHEUS RIVER EAST	17.72	1.14	19.11	20.00	19.33	20.50
105	ALPHEUS RIVER EAST	17.62	1.14	19.01	19.90	19.17	20.50	106	ALPHEUS RIVER EAST	17.52	1.14	18.91	19.80	19.17	20.50
107	ALPHEUS RIVER EAST	17.43	1.14	18.82	19.71	18.83	20.50	108	ALPHEUS RIVER EAST	17.33	1.14	18.72	19.61	18.83	20.50
109	ALPHEUS RIVER EAST	17.14	1.14	18.53	19.42	18.70	19.70	110	ALPHEUS RIVER EAST	17.02	1.14	18.41	19.30	18.70	19.70
111	ALPHEUS RIVER EAST	16.92	1.14	18.31	19.20	18.37	19.70	112	ALPHEUS RIVER EAST	16.83	1.14	18.22	19.11	18.37	19.70
113	ALPHEUS RIVER EAST	16.73	1.14	18.12	19.01	18.28	19.70	114	ALPHEUS RIVER EAST	16.63	1.14	18.02	18.91	18.28	19.70
115	ALPHEUS RIVER EAST	16.54	1.14	17.93	18.82	18.03	19.70	116	ALPHEUS RIVER EAST	16.43	1.14	17.82	18.71	18.03	19.70
117	ALPHEUS RIVER EAST	16.43	1.14	17.82	18.71	18.03	19.70	118	ALPHEUS RIVER EAST	16.54	1.14	17.93	18.82	18.03	19.70
119	ALPHEUS RIVER EAST	16.63	1.14	18.02	18.91	18.28	19.70	120	ALPHEUS RIVER EAST	16.73	1.14	18.12	19.01	18.28	19.70
121	ALPHEUS RIVER EAST	16.83	1.14	18.22	19.11	18.37	19.70	122	ALPHEUS RIVER EAST	16.92	1.14	18.31	19.20	18.37	19.70
123	ALPHEUS RIVER EAST	17.02	1.14	18.41	19.30	18.70	19.70	124	ALPHEUS RIVER EAST	17.14	1.14	18.53	19.42	18.70	19.70
125	ALPHEUS RIVER EAST	17.33	1.14	18.72	19.61	19.00	20.33	126	ALPHEUS RIVER EAST	17.43	1.14	18.82	19.71	19.00	20.33
127	ALPHEUS RIVER EAST	17.52	1.14	18.91	19.80	19.16	20.33	128	ALPHEUS RIVER EAST	17.62	1.14	19.01	19.90	19.16	20.33
129	ALPHEUS RIVER EAST	17.72	1.14	19.11	20.00	19.33	20.33	130	ALPHEUS RIVER EAST	17.82	1.14	19.21	20.10	19.33	20.33
131	ALPHEUS RIVER EAST	17.92	1.14	19.31	20.20	19.58	20.33	132	ALPHEUS RIVER EAST	18.05	1.14	19.44	20.33	19.58	20.33
235	ALPHEUS RIVER WEST	20.14	0.26	20.65	20.66	20.78	21.28	236	ALPHEUS RIVER WEST	20.05	0.26	20.56	20.57	20.78	21.28
237	ALPHEUS RIVER WEST	19.88	0.26	20.39	20.40	20.78	21.28	238	ALPHEUS RIVER WEST	19.60	0.26	20.11	20.12	20.28	21.28
239	ALPHEUS RIVER WEST	19.33	0.26	19.84	19.85	19.95	21.28	240	ALPHEUS RIVER WEST	19.05	0.26	19.56	19.57	19.86	21.28
241	ALPHEUS RIVER WEST	18.77	0.26	19.28	19.29	19.61	21.28	242	ALPHEUS RIVER WEST	18.50	0.26	19.01	19.02	19.36	21.28
FF Check - GOLDEN CHARIOT															
133	GOLDEN CHARIOT WEST	18.99	0.24	19.48	19.47	19.61	20.11	134	GOLDEN CHARIOT WEST	18.87	0.24	19.36	19.35	19.61	20.11
135	GOLDEN CHARIOT WEST	18.70	0.24	19.19	19.18	19.53	20.11	136	GOLDEN CHARIOT WEST	18.55	0.24	19.04	19.03	19.53	20.11
137	GOLDEN CHARIOT WEST	18.39	0.24	18.88	18.87	19.11	20.11	138	GOLDEN CHARIOT WEST	18.24	0.24	18.73	18.72	19.11	20.11
139	GOLDEN CHARIOT WEST	18.08	0.24	18.57	18.56	18.78	20.11	140	GOLDEN CHARIOT WEST	17.93	0.24	18.42	18.41	18.78	20.11
141	GOLDEN CHARIOT WEST	17.64	0.24	18.13	18.12	18.20	18.70	142	GOLDEN CHARIOT WEST	17.46	0.24	17.95	17.94	18.20	18.70
143	GOLDEN CHARIOT WEST	17.30	0.24	17.79	17.78	18.12	18.70	144	GOLDEN CHARIOT WEST	17.15	0.24	17.64	17.63	18.12	18.70
145	GOLDEN CHARIOT WEST	16.99	0.24	17.48	17.47	17.87	18.70	146	GOLDEN CHARIOT WEST	16.84	0.24	17.33	17.32	17.87	18.70
147	GOLDEN CHARIOT WEST	16.67	0.24	17.16	17.15	17.53	18.70	148	GOLDEN CHARIOT WEST	16.52	0.24	17.01	17.00	17.53	18.70
149	GOLDEN CHARIOT EAST	16.07	0.98	17.30	18.03	17.30	18.05	150	GOLDEN CHARIOT EAST	15.97	0.98	17.20	17.93	17.30	18.05
151	GOLDEN CHARIOT EAST	15.88	0.98	17.11	17.84	17.22	18.05	152	GOLDEN CHARIOT EAST	15.80	0.98	17.03	17.76	17.05	18.05
153	GOLDEN CHARIOT EAST	15.71	0.98	16.94	17.67	17.05	18.05	154	GOLDEN CHARIOT EAST	15.63	0.98	16.86	17.59	16.88	18.05
155	GOLDEN CHARIOT EAST	15.55	0.98	16.78	17.51	16.88	18.05	156	GOLDEN CHARIOT EAST	15.48	0.98	16.71	17.44	16.72	18.05
157	GOLDEN CHARIOT EAST	15.27	0.98	16.50	17.23	16.55	17.30	158	GOLDEN CHARIOT EAST	15.17	0.98	16.40	17.13	16.47	17.30
159	GOLDEN CHARIOT EAST	15.09	0.98	16.32	17.05	16.47	17.30	160	GOLDEN CHARIOT EAST	15.00	0.98	16.23	16.96	16.30	17.30
161	GOLDEN CHARIOT EAST	15.14	0.98	16.37	17.10	16.43	17.60	162	GOLDEN CHARIOT EAST	15.23	0.98	16.46	17.19	16.60	17.60
163	GOLDEN CHARIOT EAST	15.31	0.98	16.54	17.27	16.60	17.60	164	GOLDEN CHARIOT EAST	15.40	0.98	16.63	17.36	16.77	17.60
165	GOLDEN CHARIOT EAST	15.48	0.98	16.71	17.44	16.77	17.60	166	GOLDEN CHARIOT EAST	15.59	0.98	16.82	17.55	16.85	17.60
167	GOLDEN CHARIOT EAST	15.73	0.98	16.96	17.69	16.98	18.15	168	GOLDEN CHARIOT EAST	15.82	0.98	17.05	17.78	17.15	18.15
169	GOLDEN CHARIOT EAST	15.90	0.98	17.13	17.86	17.15	18.15	170	GOLDEN CHARIOT EAST	15.98	0.98	17.21	17.94	17.30	18.15
171	GOLDEN CHARIOT EAST	16.07	0.98	17.30	18.03	17.32	18.15	172	GOLDEN CHARIOT EAST	16.17	0.98	17.40	18.13	17.40	18.15
173	GOLDEN CHARIOT WEST	16.49	0.24	16.98	16.97	17.40	18.40	174	GOLDEN CHARIOT WEST	16.65	0.24	17.14	17.13	17.57	18.40
175	GOLDEN CHARIOT WEST	16.80	0.24	17.29	17.28	17.73	18.40	176	GOLDEN CHARIOT WEST	16.96	0.24	17.45	17.44	17.90	18.40
177	GOLDEN CHARIOT WEST	17.11	0.24	17.60	17.59	17.90	18.40	178	GOLDEN CHARIOT WEST	17.30	0.24	17.79	17.78	17.90	18.40
179	GOLDEN CHARIOT WEST	17.59	0.24	18.08	18.07	18.50	19.50	180	GOLDEN CHARIOT WEST	17.75	0.24	18.24	18.23	18/.75	19.50
181	GOLDEN CHARIOT WEST	17.90	0.24	18.39	18.38	18.83	19.50	182	GOLDEN CHARIOT WEST	18.06	0.24	18.55	18.54	19.00	19.50
183	GOLDEN CHARIOT WEST	18.21	0.24	18.70	18.69	19.00	19.50	184	GOLDEN CHARIOT WEST	18.40	0.24	18.89	18.88	19.00	19.50
FF Check - GRECIAN SUN															
161	GRECIAN QUEEN	15.77	0.35	16.37	16.47	20.23	20.71								
FF Check - PARNON															
161	PARNON	15.78	0.35	16.38	16.48	n/a	17.60	162	PARNON	15.87	0.35	16.47	16.57	n/a	17.60
163	PARNON	15.95	0.35	16.55	16.65	n/a	17.60	164	PARNON	16.04	0.35	16.64	16.74	n/a	17.60
165	PARNON	16.12	0.35	16.72	16.82	n/a	17.60	166	PARNON	16.22	0.35	16.82	16.92	n/a	17.60
167	PARNON	16.37	0.35	16.97	17.07	n/a	17.60								
FF Check - NYX															
198	NYX	16.67	0.35	17.27	17.37	17.89	18.39								
FF Check - GRECIAN QUEEN															
185	GRECIAN QUEEN	18.11	0.35	18.71	18.81	18.71	19.21	186	GRECIAN QUEEN	17.97	0.35	18.57	18.67	18.71	19.21
187	GRECIAN QUEEN	17.88	0.35	18.48	18.58	18.71	19.21	188	GRECIAN QUEEN	17.80	0.35	18.40	18.50	18.71	19.21
189	GRECIAN QUEEN	17.71	0.35	18.31	18.41	18.71	19.21	190	GRECIAN QUEEN	17.64	0.35	18.24	18.34	18.63	19.21
191	GRECIAN QUEEN	17.55	0.35	18.15	18.25	18.45	19.21	192	GRECIAN QUEEN	17.46	0.35	18.06	18.16	18.46	19.21
193	GRECIAN QUEEN	17.29	0.35	17.89	17.99	17.89	18.39	194	GRECIAN QUEEN	17.19	0.35	17.79	17.89	17.89	18.39
195	GRECIAN QUEEN	17.11	0.35	17.71	17.81	17.89	18.39	196	GRECIAN QUEEN	17.03	0.35	17.63	17.73	17.89	18.39
197	GRECIAN QUEEN	16.94	0.35	17.54	17.64	17.89	18.39	198	GRECIAN QUEEN	16.85	0.35	17.45	17.55	17.89	18.39
199	GRECIAN QUEEN	16.72	0.35	17.32	17.42	17.68	18.43	200	GRECIAN QUEEN	16.81	0.35	17.41	17.51	17.76	18.43
201	GRECIAN QUEEN	16.89	0.35	17.49	17.59	17.93	18.43	202	GRECIAN QUEEN	16.98	0.35	17.58	17.68	17.93	18.43
203	GRECIAN QUEEN	17.06	0.35	17.66	17.76	17.93	18.43	204	GRECIAN QUEEN	17.15	0.35	17.75	17.85	17.93	18.43
205	GRECIAN QUEEN	17.23	0.35	17.83	17.93	17.93	18.43	206	GRECIAN QUEEN	17.33	0.35	17.93	18.03	17.93	18.43
207	GRECIAN QUEEN	17.48	0.35	18.08	18.18	18.46	19.21	208	GRECIAN QUEEN	17.58	0.35	18.18	18.28	18.63	19.21
209	GRECIAN QUEEN	17.65	0.35	18.25	18.35	18.71	19.21	210	GRECIAN QUEEN	17.73	0.35	18.33	18.43	18.71	19.21
211	GRECIAN QUEEN	17.81	0.35	18.41	18.51	18.71	19.21	212	GRECIAN QUEEN	17.90	0.35	18.50	18.60	18.71	19.21
213	GRECIAN QUEEN	17.99	0.35	18.59	18.69	18.71	19.21	214	GRECIAN QUEEN	18.11	0.35	18.71	18.81	18.71	19.21
FF Check - ARCADIAN SEA															
215	ARCADIAN SEA	18.18	0.35	18.78	18.88	19.22	19.89	216	ARCADIAN SEA	18.27	0.35	18.87	18.97	19.22	19.89
217	ARCADIAN SEA	18.35	0.35	18.95	19.05	19.39	19.89	218	ARCADIAN SEA	18.43	0.35	19.03	19.13	19.39	19.89
219	ARCADIAN SEA	18.52	0.35	19.12	19.22	19.39	19.89	220	ARCADIAN SEA	18.60	0.35	19.20	19.30	19.39	19.89
221	ARCADIAN SEA	18.69	0.35	19.29	19.39	19.39	19.89	222	ARCADIAN SEA	18.79	0.35	19.39	19.49	19.39	19.89
223	ARCADIAN SEA	18.93	0.35	19.53	19.63	19.93	20.51	224	ARCADIAN SEA	19.01	0.35	19.61	19.71	20.01	20.51
225	ARCADIAN SEA	19.10	0.35	19.70	19.80	20.01	20.51	226	ARCADIAN SEA	19.18	0.35	19.78	19.88	20.01	20.51

NOTE: The Lots that do not meet FF criteria due to side-lot flows will be protected with solid grouted walls. (Highlighted in Red)

HORROCKS ENGINEERS

FINISHED FLOOR ANALYSIS For LOTS ADJACENT TO EASEMENTS							
Project Number			NV-2105-1911		**Name**	Rancho and Vegas Townhomes	
Date:			6/4/2020		**Design By**	DBC/SBL	
FF Check							
Bldg #	Flow Line (FL).	Weir Height	Flow Depth/Normal Depth	WSE	FF	Does FF Meet criteria	Easement
117	15.23	-	1.92	17.15	18.95	YES	ES-E2/ES-P3
148	15.23	-	1.92	17.15	18.95	YES	
149	-	-	-	15.88	18.64	YES	ES_P3
150	-	-	-	15.88	18.64	YES	
151	-	-	-	15.88	18.64	YES	
152	-	-	-	15.88	18.64	YES	
153	-	-	-	15.88	17.89	YES	
154	-	-	-	15.88	17.89	YES	
155	-	-	-	15.88	17.89	YES	
156	-	-	-	15.88	17.89	YES	
157	-	-	-	15.88	17.60	YES	
158	-	-	-	15.88	17.60	YES	
159	-	-	-	15.88	17.60	YES	
160	-	-	-	15.88	17.60	YES	
161	-	0.68	-	15.88	17.50	YES	ES_P3
162	-	0.68	-	15.88	17.50	YES	
163	-	0.68	-	15.88	17.50	YES	
164	-	0.68	-	15.88	17.50	YES	
165	-	0.68	-	15.88	17.50	YES	
166	-	0.68	-	15.88	17.50	YES	
167	-	0.68	-	15.88	18.19	YES	
81	16.32	-	1.21	17.53	19.93	YES	ES_E1
82	16.32	-	1.21	17.53	19.72	YES	
83	16.32	-	1.21	17.53	19.72	YES	
84	16.32	-	1.21	17.53	19.72	YES	
85	16.32	-	1.21	17.53	19.72	YES	
86	16.32	-	1.21	17.53	19.72	YES	
87	16.32	-	1.21	17.53	19.72	YES	

FINISHED FLOOR ANALYSIS FOR T INTERSECTIONS									
Project Number			NV-2105-1911			**Name**		Rancho and Vegas Townhomes	
Date:			6/4/2020			**Design By**		DBC/SBL	
Lot #	**FF Elev.**	**Flow Line Elevation**	**Specific Energy**	**Energy Grade Line**	**Criteria Met**	**Velocity Head**	**Normal Depth**	**Specific energy2**	**Section used for T-Intersection**
41	20.67	20.74	0.29	21.03	NO	0.26	0.03	0.29	Section A1
132	20.40	17.98	1.35	19.33	YES	1	0.35	1.35	Section C
100	19.10	19.27	0.43	19.70	NO	0.3	0.13	0.43	Section C1
53	20.19	17.71	0.16	17.87	YES	0.15	0.01	0.16	Section D2
54	20.19	17.71	0.16	17.87	YES	0.15	0.01	0.16	
55	20.19	17.71	0.16	17.87	YES	0.15	0.01	0.16	
56	20.19	17.71	0.16	17.87	YES	0.15	0.01	0.16	
171	18.15	15.92	1.06	16.98	YES	0.74	0.32	1.06	Section I
172	18.15	15.92	1.06	16.98	YES	0.74	0.32	1.06	
198	18.39	16.67	0.4	17.07	YES	0.35	0.05	0.4	Section J2
199	18.43	16.67	0.4	17.07	YES	0.35	0.05	0.4	
200	18.43	16.67	0.4	17.07	YES	0.35	0.05	0.4	
69	20.71	19.66	0.91	20.57	YES	0.7	0.21	0.92	Section K
10	22.77	21.19	0.82	22.01	YES	0.68	0.14	0.82	Section K1
11	22.77	21.19	0.82	22.01	YES	0.68	0.14	0.82	
12	22.77	21.19	0.82	22.01	YES	0.68	0.14	0.82	
60	20.94	18.75	1.09	19.84	YES	0.81	0.28	1.09	Section L
61	21.74	18.75	1.09	19.84	YES	0.81	0.28	1.09	
30	23.77	22.37	0.79	23.16	YES	0.47	0.29	0.5	20' ES_P1
31	23.77	22.28	0.79	23.07	YES	0.47	0.29	0.5	
32	23.77	22.2	0.79	22.99	YES	0.47	0.29	0.5	
Notes: Lots 41, 100, to be protected with Solid Grouted Stem Wall									

Appendix D – Reference Material

CLV Meeting, May 12, 2020 Notes

Rancho Drive Capacity Improvements Mesquite Ave to Decatur Blvd Plans

Holly/Ferrell Study, DS 3893

MEETING MINUTES

Date: 5/13/2020 11:00 AM

Location: Webex Meeting Number 926-128-865

Attendees: Oh Sang Kwon; Albert Sung; Shou-Ching Hsu; Mark Sorensen; Larry Bitton; Brooklyn Quiroz; Anthony DeLeon; David Clark

ITEM 1: DRAINAGE EASEMENT WIDTHS

Multiple comments reference minimum 20' drainage easements. No reference to this minimum width is found in the HCDDM.

Decision/Action Needed: Maintain minimum 20 foot easements for flows greater the 20 cfs where possible. Where conflicts occur, identify and show that the requested width reduction meets HCDDM criteria, but maintain width greater than 10 feet.

ITEM 2: HOLLY LOW POINT AT PARKING LOT

Adjacent to the east of the main entrance in Holly Lane a final spill of 60 cfs (DIV 5) is proposed to be accepted into the subject site. Are there any zero-curb to facilitate the flow-split?

It is our understanding that nuisance flow over public walkways is not permitted.

Decision/Action Needed: Clearly state/show the drainage conveyance characteristics (i.e. wrought iron fence, high and low points), provide a detail, and provide 20' easement if not limited. Since the entry accepts all nuisance flow, depressed curb can be proposed if needed.

ITEM 3: SOUTHEAST DRAINAGE EASEMENT

Clarify drainage design and discuss easement width, weir, and discharge allowances. Refer to comments 10, 16, 18, 19, 24, and 25

Decision/Action Needed: Proposed design with nuisance channel and weir with uniform crest elevation is acceptable in concept. Provide profile of the existing ground along easterly property boundary and for proposed channel/weir. Minor increases to flow into the existing Holly Ferrell subdivision's drainage easements are permitted so long as downstream parcels are not adversely impacted and HCDDM criteria is still met.

ITEM 4: GARAGE FINISH FLOOR CRITERIA

Comment states 6" minimum above high side TC and/or water surface, whichever is higher. Previous discussions with the city conflict with this and there aren't any codes referencing this requirement.

Decision/Action Needed: Reduction in freeboard is permitted for this project due to tight driveways and interim flow patterns. Horrocks to ensure minimum 3" freeboard to the garage finished floors where

possible. Revised street sections to manage drainageways with 4% cross slope require approval from Victor Bolanos with City Traffic.

ITEM 5: FLO-2D-HEC-1 COMPARISONS

HEC-1 combination points in Holly don't match the values represented in the Flo2d results.

Decision/Action Needed: Matching flow values between the models is not required. Clearly describe inherent inaccuracies in the flo2d model and explain difference in response letter.

ITEM 6: INTERIM GRADING OPTIONS

Phase two rough grading cannot show pad elevations

Decision/Action Needed: Contours only to be shown, but specific pad elevations cannot be called out. Pad preparation is not acceptable during the rough grade conditions.

ITEM 7: RANCHO FLOWS AT ENTRY

Flow overtopping Rancho centerline and entering the site during the existing condition must be accounted for in evaluation of the entry hump.

Decision/Action Needed: Flows overtopping Rancho centerline can be kept in Rancho. Calculations of entry hump must show that flow is not able to overtop and enter the site.

HYDROLOGIC CRITERIA AND DRAINAGE MANUAL

DRAINAGE STUDY INFORMATION FORM

Name of Development: Rancho Drive Capacity Improvements- Mesquite to Decatur Date: 12/12/2018

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

East/West: Decatur Boulevard and Mesquite Ave

b) Section: 18,19,20,29 Township: 20 South Range: 61 East

c) APN :

Name of Owner: City of Las Vegas

Telephone No.: 702-229-6734 Fax No.: 702-229-2518 E-Mail Address: msturdivant@LasVegasNevada.GOV

Address: 333 North Rancho Drive, Suite 700, Las Vegas, NV 89106

Contact Person-Name: Jake Schneider **Telephone No.:** 702-697-8100

* **E-Mail Address:** Timothy.J.Schneider@wsp.com **Fax No.:** 702-697-8170

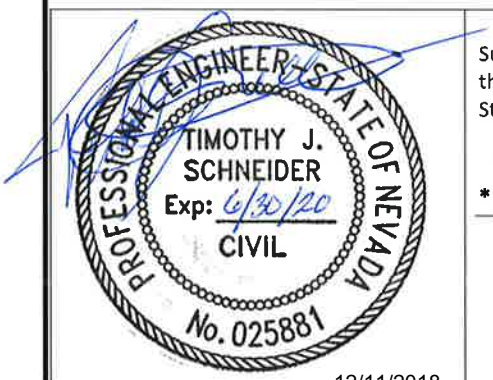
Firm: WSP

Address: 3953 Howard Hughes Parkway, Suite 135, Las Vegas, NV 89169

Type of Land Development/Land Disturbance Process:

	Rezoning		Subdivision Map		Clearing and Grading Only
	Parcel Map		Planned Unit Development	X	Other (Please specify below)
	Large Parcel Map		Building Permit	Flood Control Facility	

1. Total Owned Land Area: At Site: Public ROW Being Developed/Disturbed: Rancho Drive
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.): Local Flood Control Facility
5. Approximate upstream land area which drains to the subject site: 9.61 Square Miles
6. Has the site drainage been evaluated in the past? ☐ **YES** ☒ **NO** If yes, please identify documentation:
7. If known, please briefly identify the proposed discharge point(s) of runoff from the site: The proposed storm drain improvements include a storm drain facility within Rancho Drive. The system discharges flows to the existing MPU facilities in Vegas Drive, Washington Avenue and in Rancho Drive.
8. Briefly describe your proposed schedule for the subject project: Tentative Design completion in 2019



12/11/2018

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.**

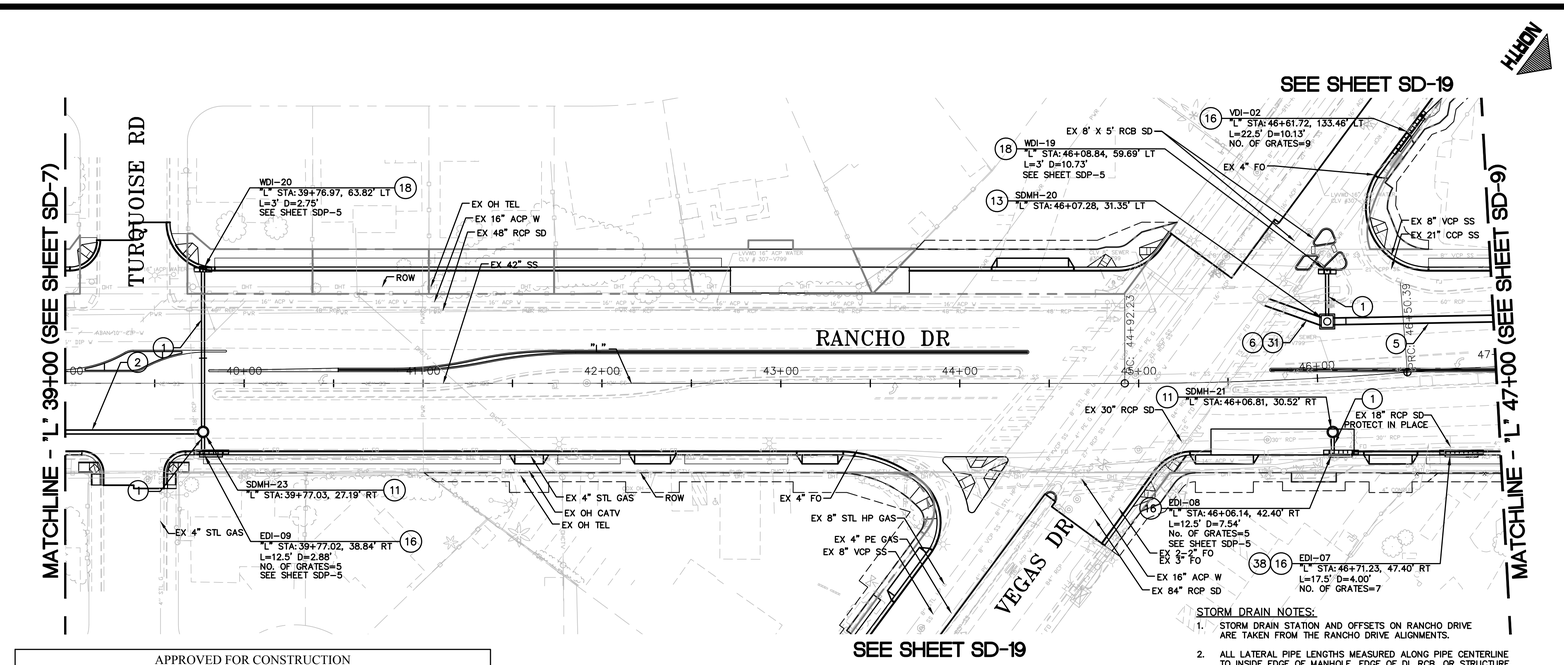
Local Entity File No.

Revision	Date

REFERENCE:

STANDARD FORM 1

Updated 05/01/2008



PLAN

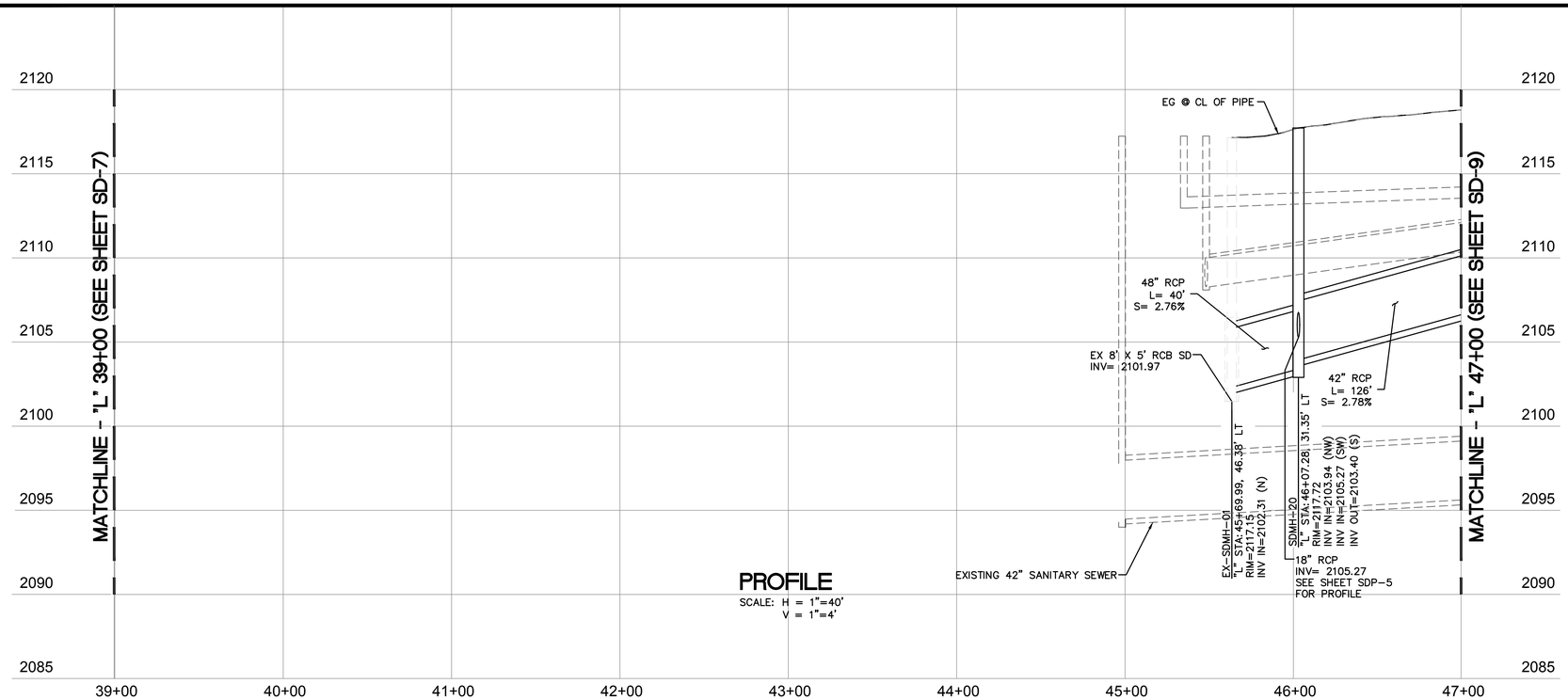
APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

PROJECT No. 117536 DATE _____

STORM DRAIN NOTES:

1. STORM DRAIN STATION AND OFFSETS ON RANCHO DRIVE ARE TAKEN FROM THE RANCHO DRIVE ALIGNMENTS.
2. ALL LATERAL PIPE LENGTHS MEASURED ALONG PIPE CENTERLINE TO INSIDE EDGE OF MANHOLE, EDGE OF DI, RCB, OR STRUCTURE. ALL MAINLINE PIPE LENGTHS MEASURED ALONG PIPE CENTERLINE TO CENTER OF MANHOLE.
3. ALL DROP INLETS SHALL INCLUDE STORM WATER MANAGEMENT STAMP AND DETAIL PER USDCCA STD. DWG. NO. 421.
4. ALL PIPE LENGTHS FOR PROPOSED SEWER ARE MEASURED ALONG PIPELINE CENTERLINE FROM INSIDE TO INSIDE OF MANHOLES.



PROFILE

SCALE: H = 1"=40'
V = 1"=4'

GRAPHIC SCALE

40 0 20 40 80

(IN FEET)

1 inch = 40 ft. (24"x 36")

1 inch = 80 ft. (11"x 17")

FAST Call before you UnderGround 1-702-432-5300 FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION (F.A.S.T.)

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

Call before you Dig AVOID CUTTING UNDERGROUND UTILITY LINES, IT'S COSTLY. Call 811

CONSTRUCTION ITEMS:

1. CONSTRUCT 18 INCH RCP (CLASS III)
2. CONSTRUCT 24 INCH RCP (CLASS III)
3. CONSTRUCT 30 INCH RCP (CLASS III)
4. CONSTRUCT 36 INCH RCP (CLASS III)
5. CONSTRUCT 42 INCH RCP (CLASS III)
6. CONSTRUCT 48 INCH RCP (CLASS III)
7. CONSTRUCT 54 INCH RCP (CLASS III)
8. CONSTRUCT 60 INCH RCP (CLASS III)
9. NOT USED
10. CONSTRUCT 48 INCH TYPE I STORM DRAIN MANHOLE PER USDCCA STD. DWG. NO. 403
11. CONSTRUCT 48 INCH TYPE IA STORM DRAIN MANHOLE PER USDCCA STD. DWG. NO. 404
12. CONSTRUCT 60 INCH TYPE I STORM DRAIN MANHOLE PER USDCCA STD. DWG. NO. 403
13. CONSTRUCT TYPE II STORM DRAIN MANHOLE PER USDCCA STD. DWG. NO. 405
14. CONSTRUCT TYPE III STORM DRAIN MANHOLE PER USDCCA STD. DWG. NO. 406
15. CONSTRUCT NDOT TYPE 4 MANHOLE PER DETAIL ON SHEET SDT-5
16. CONSTRUCT TYPE DM DROP INLET PER DETAIL ON SHEET SDT-1
17. CONSTRUCT TYPE CM DROP INLET PER DETAIL ON SHEET SDT-1
18. CONSTRUCT TYPE F SINGLE GRATE INLET OR APPROVED EQUAL PER DETAIL ON SHEET SDT-2
19. CONSTRUCT TYPE F DOUBLE GRATE INLET OR APPROVED EQUAL PER DETAIL ON SHEET SDT-2
20. CONSTRUCT 48 INCH SANITARY SEWER MANHOLE
21. CONSTRUCT 8 INCH PVC C900 SS PER SD-20 OF DCSWCS
22. CONNECT PVC C900 SS TO EXISTING SEWER MANHOLE
23. CONSTRUCT MODIFIED TYPE CM DROP INLET PER DETAIL-2 ON SHEET SDT-6
24. CONNECT TO EXISTING STORM DRAIN; INSTALL CONCRETE COLLAR PER DETAIL ON SHEET SDT-4
25. CONSTRUCT DRAINAGE CHANNEL PER DETAIL ON SHEET SDT-7
26. CONSTRUCT MODIFIED TYPE F SINGLE GRATE INLET PER DETAIL ON SHEET SDT-5
27. CONSTRUCT 6 INCH PVC C900 SS PER SD-20 OF DCSWCS
28. CONNECT TO EXISTING/ PROPOSED 54 INCH RCP PER DETAIL-1 ON SHEET SDT-6
29. NOT USED
30. CONNECT TO EXISTING 4 FOOT X 4 FOOT GRATE INLET
31. CONNECT TO EXISTING STORM DRAIN MANHOLE
32. CONNECT EXISTING RCP TO PROPOSED STORM DRAIN MANHOLE
33. CONSTRUCT HEADWALL AND TRASH RACK PER DETAIL ON SHEET SDT-7
34. CONNECT TO EXISTING RCB PER DETAIL-1 ON SHEET SDT-4
35. CONNECT TO EXISTING RCB PER DETAIL-2 ON SHEET SDT-4
36. CONNECT TO PROPOSED 18 INCH RCP BY OTHERS; INSTALL 18 INCH COLLAR PER DETAIL-3 ON SHEET SDT-4
37. CONNECT TO PROPOSED 48 INCH RCP BY OTHERS; INSTALL 48 INCH COLLAR PER DETAIL-2 ON SHEET SDT-4
38. CONNECT TO EXISTING 18 INCH STORM DRAIN LATERAL
39. ADJUST TO GRADE; INSTALL EXISTING OR SIMILAR GRATE
40. CONSTRUCT NDOT TYPE 2 DI PER NDOT STD. DWG. NO. R-4.2.1

NO.	DATE:	DESCRIPTION	APPD

REVISIONS

PREPARED BY
3753 Howard Hughes Parkway, Suite 135
Las Vegas, NV 89169
Phone: 702-697-8100

NOT-FOR-CONSTRUCTION

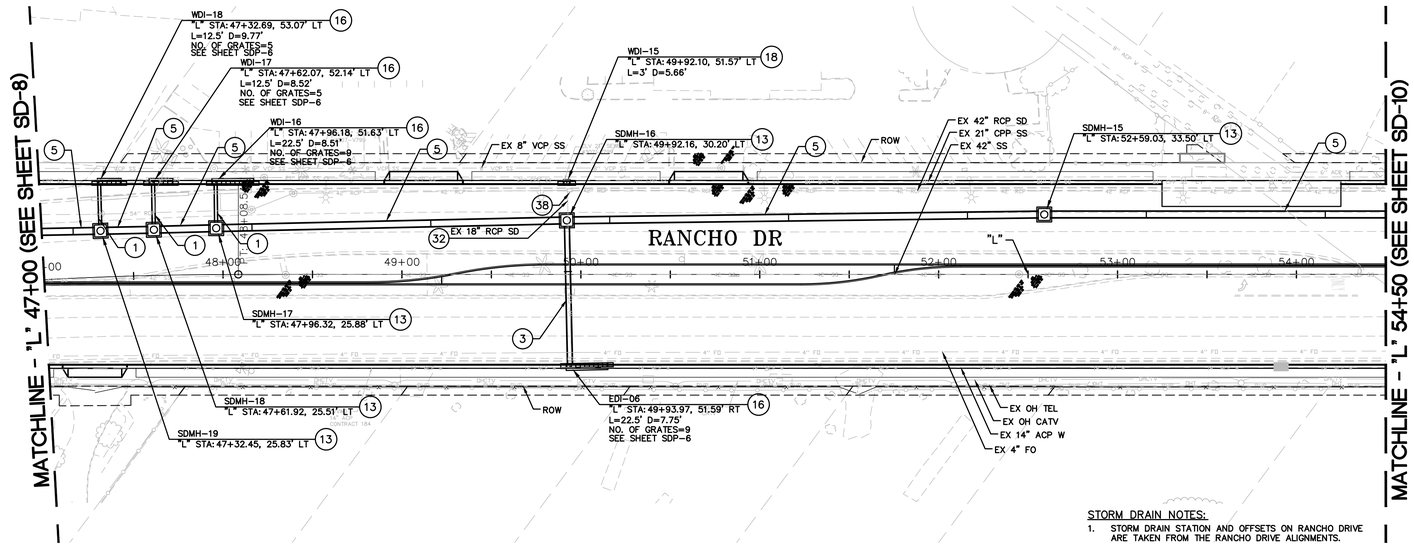
PREPARED FOR
CITY OF LAS VEGAS

BID # ----	DATE: DECEMBER 2018
H # ----	DESIGNED BY: NP
SUBMITTAL STAGE: 50%	DRAWN BY: RN
	CHECKED BY: SC

TITLE
RANCHO DRIVE CAPACITY IMPROVEMENTS
MESQUITE AVE TO DECATUR BLVD

SHEET
DRAINAGE PLAN AND PROFILE
"L" 39+00 TO "L" 47+00

SHEET
SD-9
128 OF 281
DRAWING NO.



PLAN

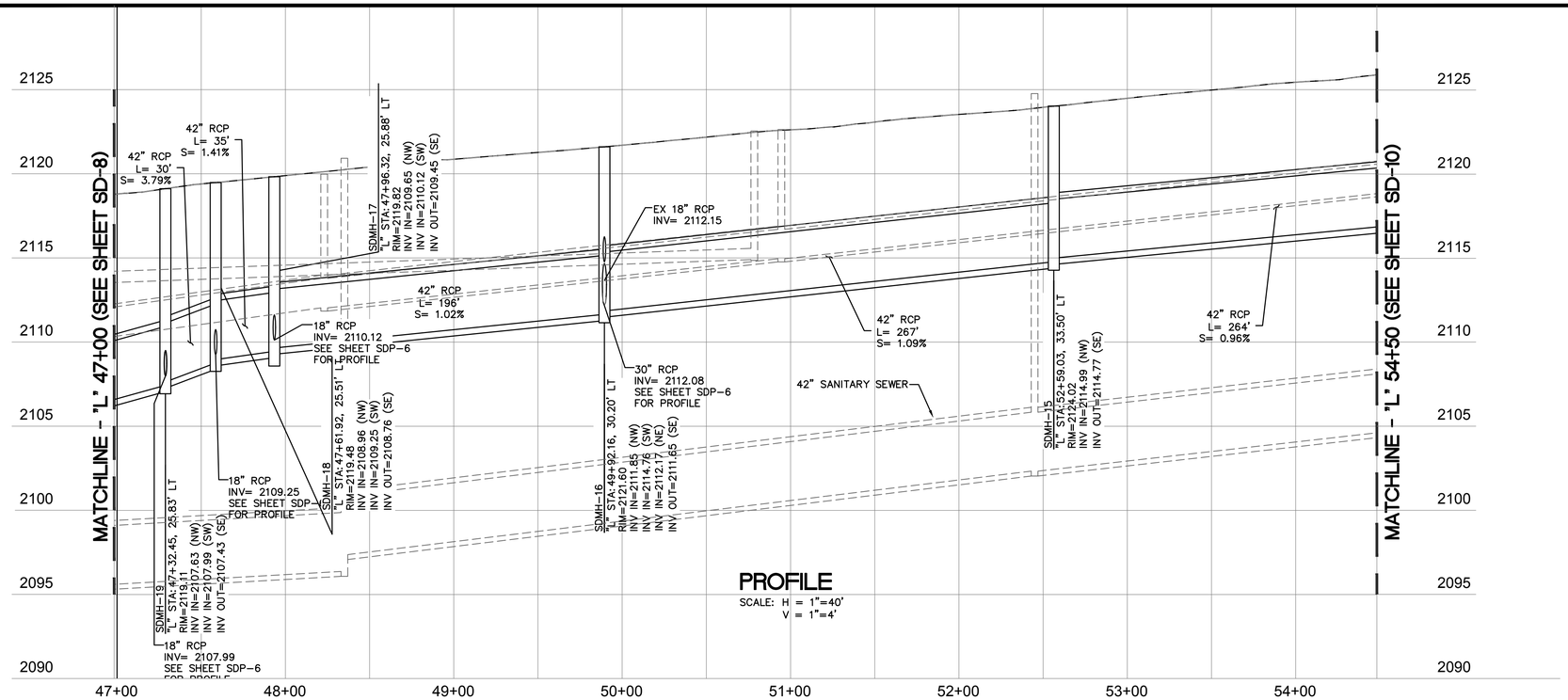
STORM DRAIN NOTES:

1. STORM DRAIN STATION AND OFFSETS ON RANCHO DRIVE ARE TAKEN FROM THE RANCHO DRIVE ALIGNMENTS.
2. ALL LATERAL PIPE LENGTHS MEASURED ALONG PIPE CENTERLINE TO INSIDE EDGE OF MANHOLE, EDGE OF DI, RCB, OR STRUCTURE. ALL MAINLINE PIPE LENGTHS MEASURED ALONG PIPE CENTERLINE TO CENTER OF MANHOLE.
3. ALL DROP INLETS SHALL INCLUDE STORM WATER MANAGEMENT STAMP AND DETAIL PER USDCCA STD. DWG. NO. 421.
4. ALL PIPE LENGTHS FOR PROPOSED SEWER ARE MEASURED ALONG PIPE CENTERLINE FROM INSIDE TO INSIDE OF MANHOLES.

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

PROJECT No. 117536 DATE



PROFILE

SCALE: H = 1"=40'
V = 1"=4'

GRAPHIC SCALE

40 0 20 40 80

(IN FEET)

1 inch = 40 ft. (24"x 36")

1 inch = 80 ft. (11"x 17")

Call before you UnderGround 1-702-432-5300 FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION (F.A.S.T.)

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

Call before you Dig AVOID CUTTING UNDERGROUND UTILITY LINES, IT'S COSTLY. Call 811

CONSTRUCTION ITEMS:

1. CONSTRUCT 18 INCH RCP (CLASS III)
2. CONSTRUCT 24 INCH RCP (CLASS III)
3. CONSTRUCT 30 INCH RCP (CLASS III)
4. CONSTRUCT 36 INCH RCP (CLASS III)
5. CONSTRUCT 42 INCH RCP (CLASS III)
6. CONSTRUCT 48 INCH RCP (CLASS III)
7. CONSTRUCT 54 INCH RCP (CLASS III)
8. CONSTRUCT 60 INCH RCP (CLASS III)
9. NOT USED
10. CONSTRUCT 48 INCH TYPE I STORM DRAIN MANHOLE PER USDCCA STD. DWG. NO. 403
11. CONSTRUCT 48 INCH TYPE IA STORM DRAIN MANHOLE PER USDCCA STD. DWG. NO. 404
12. CONSTRUCT 60 INCH TYPE I STORM DRAIN MANHOLE PER USDCCA STD. DWG. NO. 403
13. CONSTRUCT TYPE II STORM DRAIN MANHOLE PER USDCCA STD. DWG. NO. 405
14. CONSTRUCT TYPE III STORM DRAIN MANHOLE PER USDCCA STD. DWG. NO. 406
15. CONSTRUCT NDOT TYPE 4 MANHOLE PER DETAIL ON SHEET SDT-5
16. CONSTRUCT TYPE DM DROP INLET PER DETAIL ON SHEET SDT-1
17. CONSTRUCT TYPE CM DROP INLET PER DETAIL ON SHEET SDT-1
18. CONSTRUCT TYPE F SINGLE GRATE INLET OR APPROVED EQUAL PER DETAIL ON SHEET SDT-2
19. CONSTRUCT TYPE F DOUBLE GRATE INLET OR APPROVED EQUAL PER DETAIL ON SHEET SDT-2
20. CONSTRUCT 48 INCH SANITARY SEWER MANHOLE
21. CONSTRUCT 8 INCH PVC C900 SS PER SD-20 OF DCSWCS
22. CONNECT PVC C900 SS TO EXISTING SEWER MANHOLE
23. CONSTRUCT MODIFIED TYPE CM DROP INLET PER DETAIL-2 ON SHEET SDT-6
24. CONNECT TO EXISTING STORM DRAIN; INSTALL CONCRETE COLLAR PER DETAIL ON SHEET SDT-4
25. CONSTRUCT DRAINAGE CHANNEL PER DETAIL ON SHEET SDT-7
26. CONSTRUCT MODIFIED TYPE F SINGLE GRATE INLET PER DETAIL ON SHEET SDT-5
27. CONSTRUCT 6 INCH PVC C900 SS PER SD-20 OF DCSWCS
28. CONNECT TO EXISTING/ PROPOSED 54 INCH RCP PER DETAIL-1 ON SHEET SDT-6
29. NOT USED
30. CONNECT TO EXISTING 4 FOOT X 4 FOOT GRATE INLET
31. CONNECT TO EXISTING STORM DRAIN MANHOLE
32. CONNECT EXISTING RCP TO PROPOSED STORM DRAIN MANHOLE
33. CONSTRUCT HEADWALL AND TRASH RACK PER DETAIL ON SHEET SDT-7
34. CONNECT TO EXISTING RCB PER DETAIL-1 ON SHEET SDT-4
35. CONNECT TO EXISTING RCB PER DETAIL-2 ON SHEET SDT-4
36. CONNECT TO PROPOSED 18 INCH RCP BY OTHERS; INSTALL 18 INCH COLLAR PER DETAIL-3 ON SHEET SDT-4
37. CONNECT TO PROPOSED 48 INCH RCP BY OTHERS; INSTALL 48 INCH COLLAR PER DETAIL-2 ON SHEET SDT-4
38. CONNECT TO EXISTING 18 INCH STORM DRAIN LATERAL
39. ADJUST TO GRADE; INSTALL EXISTING OR SIMILAR GRATE
40. CONSTRUCT NDOT TYPE 2 DI PER NDOT STD. DWG. NO. R-4.2.1

REVISIONS	NO.	DATE:	DESCRIPTION	APPD

PREPARED BY
LVL
3753 Howard Hughes Parkway, Suite 135
Las Vegas, NV 89169
Phone: 702-697-8100

NOT-FOR-CONSTRUCTION

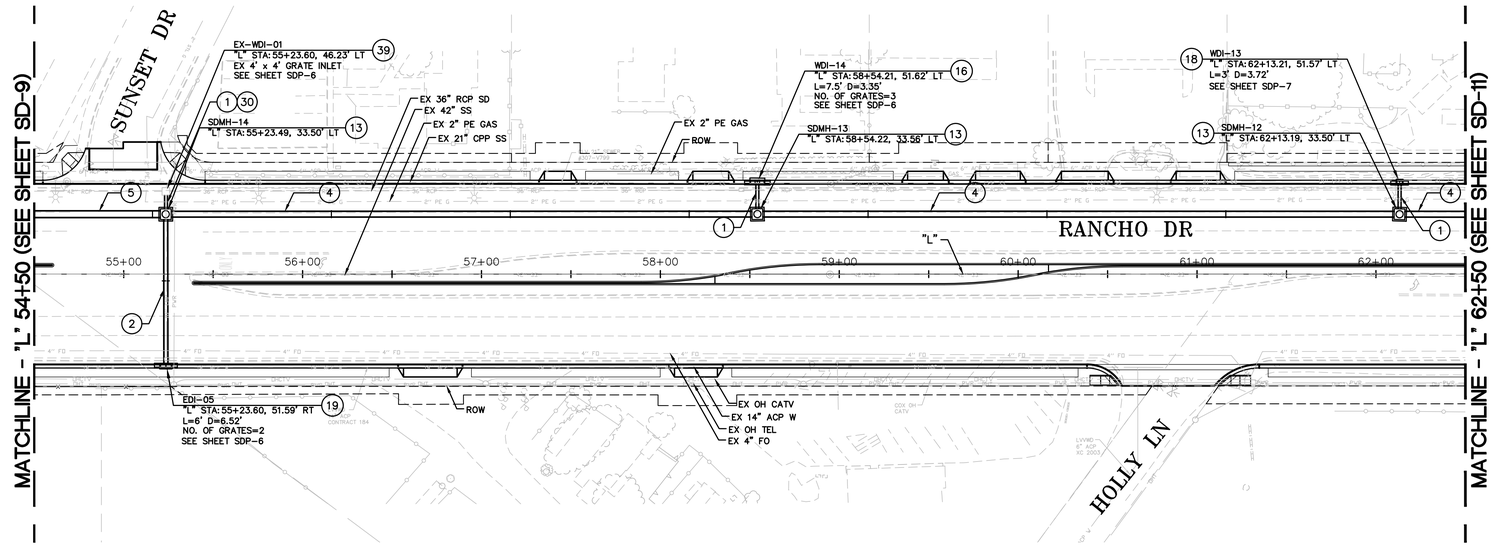
PREPARED FOR
CITY OF LAS VEGAS

BID # ----	DATE: DECEMBER 2018	DESIGNED BY: NP	DRAWN BY: RN	CHECKED BY: SC
H # ----		SUBMITTAL STAGE: 50%		

TITLE
RANCHO DRIVE CAPACITY IMPROVEMENTS
MESQUITE AVE TO DECATUR BLVD

SHEET
DRAINAGE PLAN AND PROFILE
"L" 47+00 TO "L" 54+50

SHEET
SD-10
129 OF 281
DRAWING NO.



PLAN

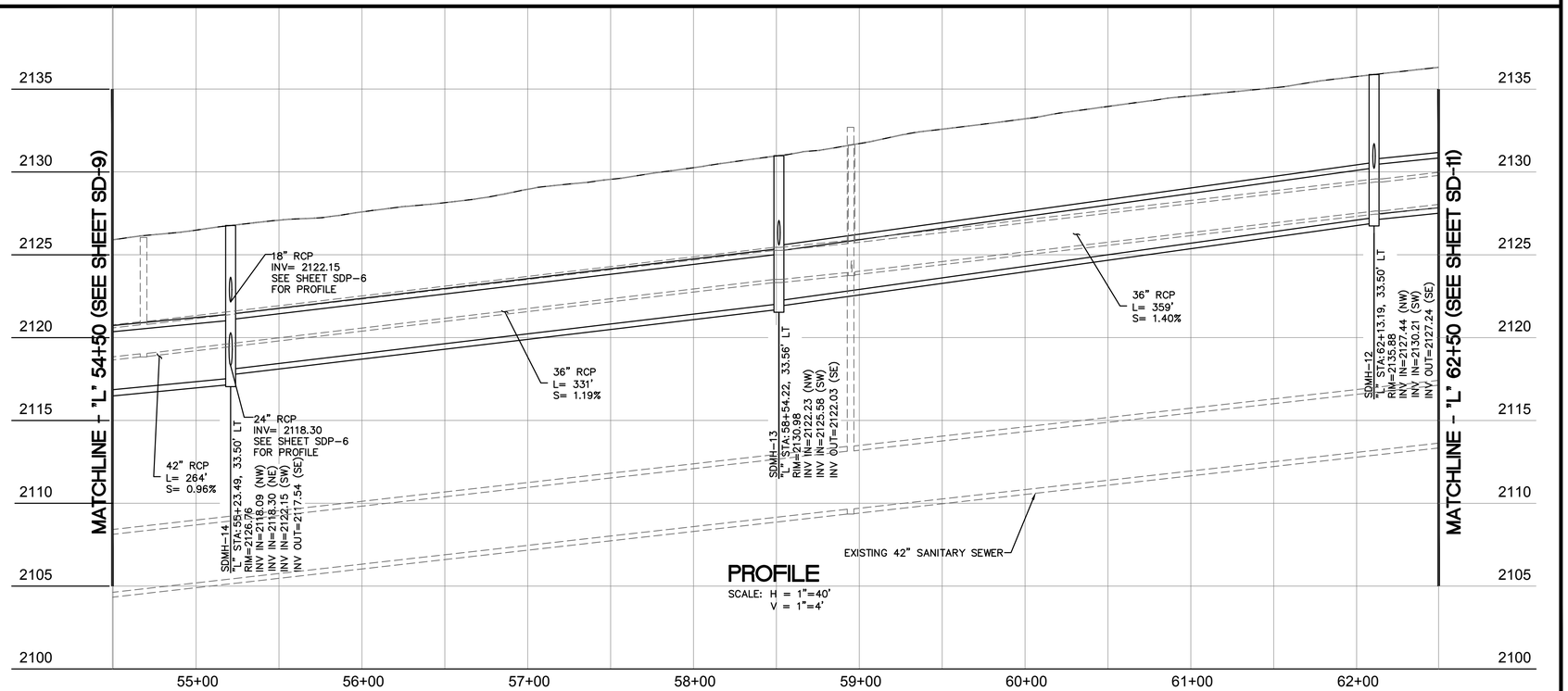
APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

PROJECT No. 117536 DATE

STORM DRAIN NOTES:

1. STORM DRAIN STATION AND OFFSETS ON RANCHO DRIVE ARE TAKEN FROM THE RANCHO DRIVE ALIGNMENTS.
2. ALL LATERAL PIPE LENGTHS MEASURED ALONG PIPE CENTERLINE TO INSIDE EDGE OF MANHOLE, EDGE OF DI, RCB, OR STRUCTURE. ALL MAINLINE PIPE LENGTHS MEASURED ALONG PIPE CENTERLINE TO CENTER OF MANHOLE.
3. ALL DROP INLETS SHALL INCLUDE STORM WATER MANAGEMENT STAMP AND DETAIL PER USDCCA STD. DWG. NO. 421.
4. ALL PIPE LENGTHS FOR PROPOSED SEWER ARE MEASURED ALONG PIPE CENTERLINE FROM INSIDE TO INSIDE OF MANHOLES.



PROFILE

SCALE: H = 1"=40'
V = 1"=4'

GRAPHIC SCALE

40 0 20 40 80

(IN FEET)

1 inch = 40 ft. (24"x 36")

1 inch = 80 ft. (11"x 17")

FAST Call before you UnderGround 1-702-432-5300 FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION (F.A.S.T.)

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

Call before you Dig AVOID CUTTING UNDERGROUND UTILITY LINES, IT'S COSTLY. Call 811

CONSTRUCTION ITEMS:

1. CONSTRUCT 18 INCH RCP (CLASS III)
2. CONSTRUCT 24 INCH RCP (CLASS III)
3. CONSTRUCT 30 INCH RCP (CLASS III)
4. CONSTRUCT 36 INCH RCP (CLASS III)
5. CONSTRUCT 42 INCH RCP (CLASS III)
6. CONSTRUCT 48 INCH RCP (CLASS III)
7. CONSTRUCT 54 INCH RCP (CLASS III)
8. CONSTRUCT 60 INCH RCP (CLASS III)
9. NOT USED
10. CONSTRUCT 48 INCH TYPE I STORM DRAIN MANHOLE PER USDCCA STD. DWG. NO. 403
11. CONSTRUCT 48 INCH TYPE IA STORM DRAIN MANHOLE PER USDCCA STD. DWG. NO. 404
12. CONSTRUCT 60 INCH TYPE I STORM DRAIN MANHOLE PER USDCCA STD. DWG. NO. 403
13. CONSTRUCT TYPE II STORM DRAIN MANHOLE PER USDCCA STD. DWG. NO. 405
14. CONSTRUCT TYPE III STORM DRAIN MANHOLE PER USDCCA STD. DWG. NO. 406
15. CONSTRUCT NDOT TYPE 4 MANHOLE PER DETAIL ON SHEET SDT-5
16. CONSTRUCT TYPE DM DROP INLET PER DETAIL ON SHEET SDT-1
17. CONSTRUCT TYPE CM DROP INLET PER DETAIL ON SHEET SDT-1
18. CONSTRUCT TYPE F SINGLE GRATE INLET OR APPROVED EQUAL PER DETAIL ON SHEET SDT-2
19. CONSTRUCT TYPE F DOUBLE GRATE INLET OR APPROVED EQUAL PER DETAIL ON SHEET SDT-2
20. CONSTRUCT 48 INCH SANITARY SEWER MANHOLE
21. CONSTRUCT 8 INCH PVC C900 SS PER SD-20 OF DCSWCS
22. CONNECT PVC C900 SS TO EXISTING SEWER MANHOLE
23. CONSTRUCT MODIFIED TYPE CM DROP INLET PER DETAIL-2 ON SHEET SDT-6
24. CONNECT TO EXISTING STORM DRAIN; INSTALL CONCRETE COLLAR PER DETAIL ON SHEET SDT-4
25. CONSTRUCT DRAINAGE CHANNEL PER DETAIL ON SHEET SDT-7
26. CONSTRUCT MODIFIED TYPE F SINGLE GRATE INLET PER DETAIL ON SHEET SDT-5
27. CONSTRUCT 6 INCH PVC C900 SS PER SD-20 OF DCSWCS
28. CONNECT TO EXISTING/ PROPOSED 54 INCH RCP PER DETAIL-1 ON SHEET SDT-6
29. NOT USED
30. CONNECT TO EXISTING 4 FOOT X 4 FOOT GRATE INLET
31. CONNECT TO EXISTING STORM DRAIN MANHOLE
32. CONNECT EXISTING RCP TO PROPOSED STORM DRAIN MANHOLE
33. CONSTRUCT HEADWALL AND TRASH RACK PER DETAIL ON SHEET SDT-7
34. CONNECT TO EXISTING RCB PER DETAIL-1 ON SHEET SDT-4
35. CONNECT TO EXISTING RCB PER DETAIL-2 ON SHEET SDT-4
36. CONNECT TO PROPOSED 18 INCH RCP BY OTHERS; INSTALL 18 INCH COLLAR PER DETAIL-3 ON SHEET SDT-4
37. CONNECT TO PROPOSED 48 INCH RCP BY OTHERS; INSTALL 48 INCH COLLAR PER DETAIL-2 ON SHEET SDT-4
38. CONNECT TO EXISTING 18 INCH STORM DRAIN LATERAL
39. ADJUST TO GRADE; INSTALL EXISTING OR SIMILAR GRATE
40. CONSTRUCT NDOT TYPE 2 DI PER NDOT STD. DWG. NO. R-4.2.1

NO.	DATE:	DESCRIPTION	APPD

REVISIONS

PREPARED BY
WSP
3763 Howard Hughes Parkway, Suite 135
Las Vegas, NV 89169
Phone: 702-697-8100

NOT-FOR-CONSTRUCTION

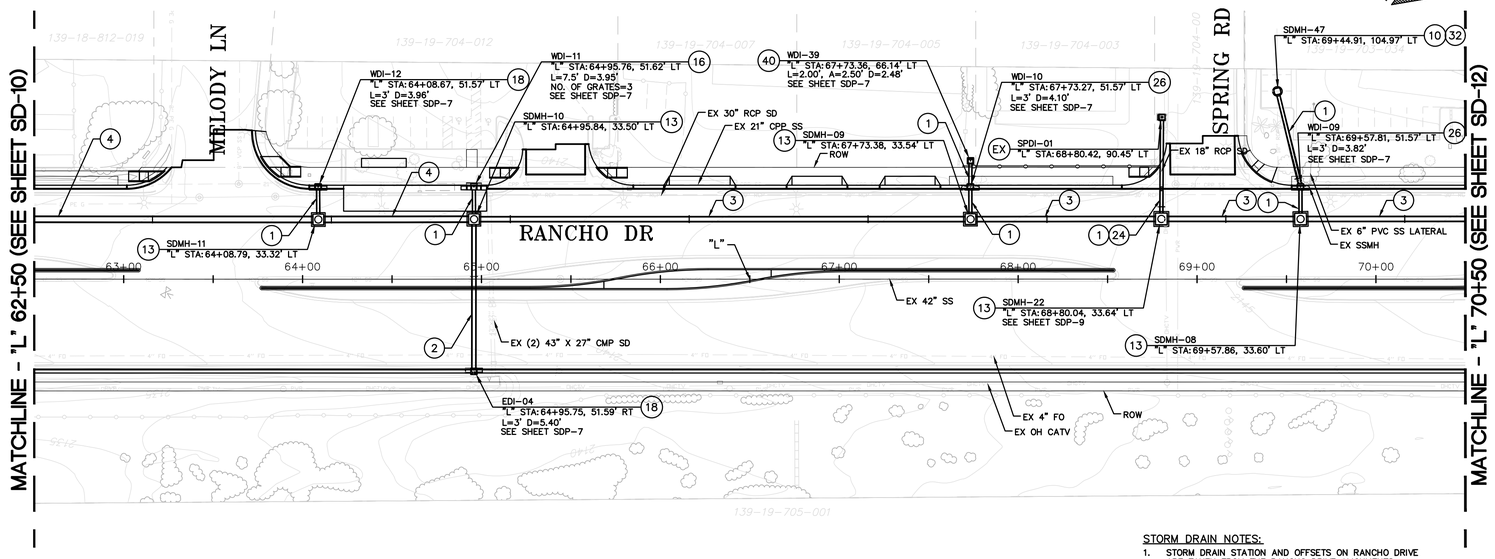
PREPARED FOR
CITY OF LAS VEGAS

BID # ----	DATE: DECEMBER 2018
H # ----	DESIGNED BY: NP
SUBMITTAL STAGE: 50%	DRAWN BY: RN
	CHECKED BY: SC

TITLE
RANCHO DRIVE CAPACITY IMPROVEMENTS
MESQUITE AVE TO DECATUR BLVD

SHEET
DRAINAGE PLAN AND PROFILE
"L" 54+50 TO "L" 62+50

SHEET
SD-11
130 OF 281
DRAWING NO.



PLAN

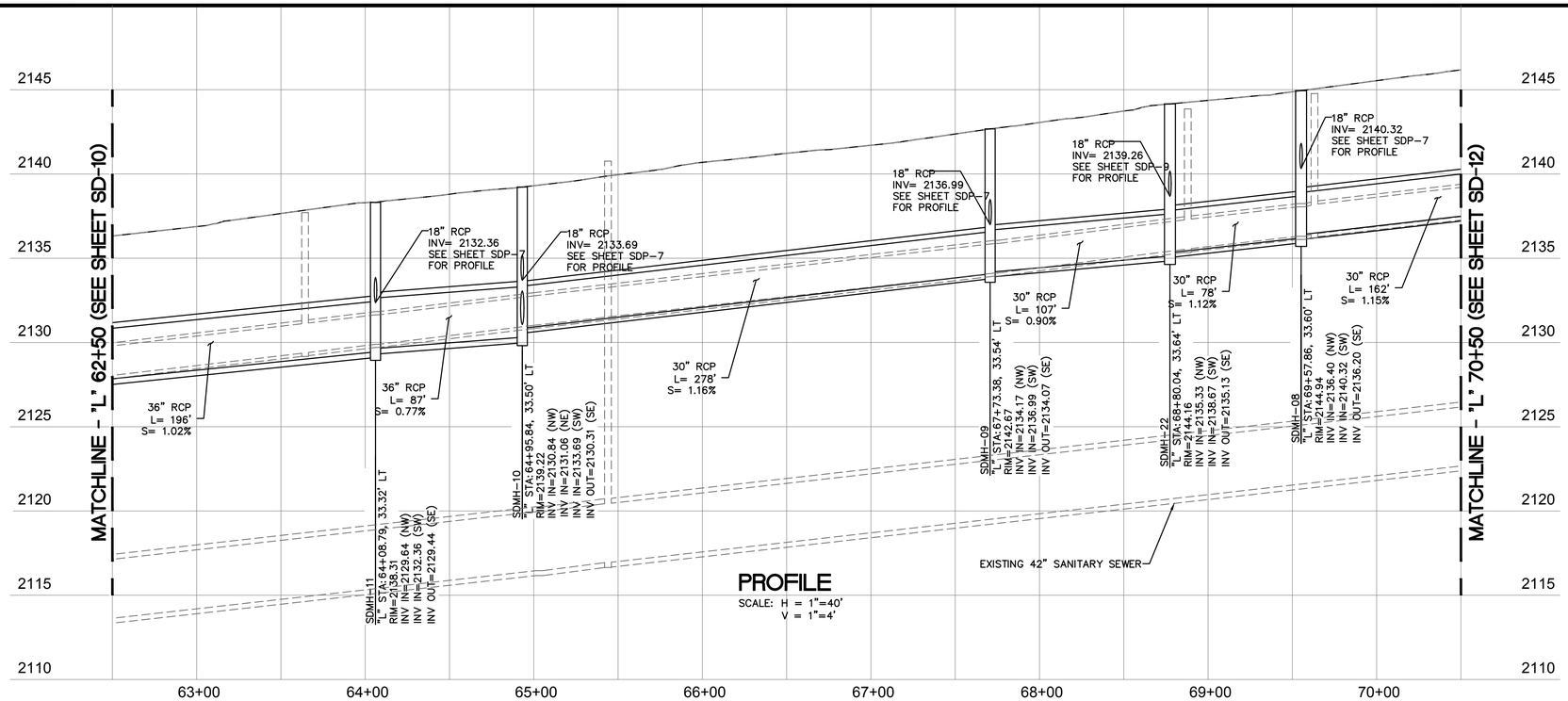
STORM DRAIN NOTES:

1. STORM DRAIN STATION AND OFFSETS ON RANCHO DRIVE ARE TAKEN FROM THE RANCHO DRIVE ALIGNMENTS.
2. ALL LATERAL PIPE LENGTHS MEASURED ALONG PIPE CENTERLINE TO INSIDE EDGE OF MANHOLE, EDGE OF DI, RCB, OR STRUCTURE. ALL MAINLINE PIPE LENGTHS MEASURED ALONG PIPE CENTERLINE TO CENTER OF MANHOLE.
3. ALL DROP INLETS SHALL INCLUDE STORM WATER MANAGEMENT STAMP AND DETAIL PER USDCCA STD. DWG. NO. 421.
4. ALL PIPE LENGTHS FOR PROPOSED SEWER ARE MEASURED ALONG PIPE CENTERLINE FROM INSIDE TO INSIDE OF MANHOLES.

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

PROJECT No. 117536 DATE



PROFILE

SCALE: H = 1"=40'
V = 1"=4'

GRAPHIC SCALE

40 0 20 40 80

(IN FEET)

1 inch = 40 ft. (24"x 36")

1 inch = 80 ft. (11"x 17")

Call before you UnderGround 1-702-432-5300 FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION (F.A.S.T.)

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

Call before you Dig AVOID CUTTING UNDERGROUND UTILITY LINES, IT'S COSTLY. Call 811

CONSTRUCTION ITEMS:

1. CONSTRUCT 18 INCH RCP (CLASS III)
2. CONSTRUCT 24 INCH RCP (CLASS III)
3. CONSTRUCT 30 INCH RCP (CLASS III)
4. CONSTRUCT 36 INCH RCP (CLASS III)
5. CONSTRUCT 42 INCH RCP (CLASS III)
6. CONSTRUCT 48 INCH RCP (CLASS III)
7. CONSTRUCT 54 INCH RCP (CLASS III)
8. CONSTRUCT 60 INCH RCP (CLASS III)
9. NOT USED
10. CONSTRUCT 48 INCH TYPE I STORM DRAIN MANHOLE PER USDCCA STD. DWG. NO. 403
11. CONSTRUCT 48 INCH TYPE IA STORM DRAIN MANHOLE PER USDCCA STD. DWG. NO. 404
12. CONSTRUCT 60 INCH TYPE I STORM DRAIN MANHOLE PER USDCCA STD. DWG. NO. 403
13. CONSTRUCT TYPE II STORM DRAIN MANHOLE PER USDCCA STD. DWG. NO. 405
14. CONSTRUCT TYPE III STORM DRAIN MANHOLE PER USDCCA STD. DWG. NO. 406
15. CONSTRUCT NDOT TYPE 4 MANHOLE PER DETAIL ON SHEET SDT-5
16. CONSTRUCT TYPE DM DROP INLET PER DETAIL ON SHEET SDT-1
17. CONSTRUCT TYPE CM DROP INLET PER DETAIL ON SHEET SDT-1
18. CONSTRUCT TYPE F SINGLE GRATE INLET OR APPROVED EQUAL PER DETAIL ON SHEET SDT-2
19. CONSTRUCT TYPE F DOUBLE GRATE INLET OR APPROVED EQUAL PER DETAIL ON SHEET SDT-2
20. CONSTRUCT 48 INCH SANITARY SEWER MANHOLE
21. CONSTRUCT 8 INCH PVC C900 SS PER SD-20 OF DCSWCS
22. CONNECT PVC C900 SS TO EXISTING SEWER MANHOLE
23. CONSTRUCT MODIFIED TYPE CM DROP INLET PER DETAIL-2 ON SHEET SDT-6
24. CONNECT TO EXISTING STORM DRAIN; INSTALL CONCRETE COLLAR PER DETAIL ON SHEET SDT-4
25. CONSTRUCT DRAINAGE CHANNEL PER DETAIL ON SHEET SDT-7
26. CONSTRUCT MODIFIED TYPE F SINGLE GRATE INLET PER DETAIL ON SHEET SDT-5
27. CONSTRUCT 6 INCH PVC C900 SS PER SD-20 OF DCSWCS
28. CONNECT TO EXISTING/ PROPOSED 54 INCH RCP PER DETAIL-1 ON SHEET SDT-6
29. NOT USED
30. CONNECT TO EXISTING 4 FOOT X 4 FOOT GRATE INLET
31. CONNECT TO EXISTING STORM DRAIN MANHOLE
32. CONNECT EXISTING RCP TO PROPOSED STORM DRAIN MANHOLE
33. CONSTRUCT HEADWALL AND TRASH RACK PER DETAIL ON SHEET SDT-7
34. CONNECT TO EXISTING RCB PER DETAIL-1 ON SHEET SDT-4
35. CONNECT TO EXISTING RCB PER DETAIL-2 ON SHEET SDT-4
36. CONNECT TO PROPOSED 18 INCH RCP BY OTHERS; INSTALL 18 INCH COLLAR PER DETAIL-3 ON SHEET SDT-4
37. CONNECT TO PROPOSED 48 INCH RCP BY OTHERS; INSTALL 48 INCH COLLAR PER DETAIL-2 ON SHEET SDT-4
38. CONNECT TO EXISTING 18 INCH STORM DRAIN LATERAL
39. ADJUST TO GRADE; INSTALL EXISTING OR SIMILAR GRATE
40. CONSTRUCT NDOT TYPE 2 DI PER NDOT STD. DWG. NO. R-4.2.1

NO.	DATE:	DESCRIPTION	APPD

REVISIONS

PREPARED BY
3753 Howard Hughes Parkway, Suite 135
Las Vegas, NV 89169
Phone: 702-697-8100

PROFESSIONAL ENGINEER - STATE OF NEVADA - TIMOTHY A. SCHNEIDER - No. 023887 - CIVIL - NOT TO BE REPRODUCED

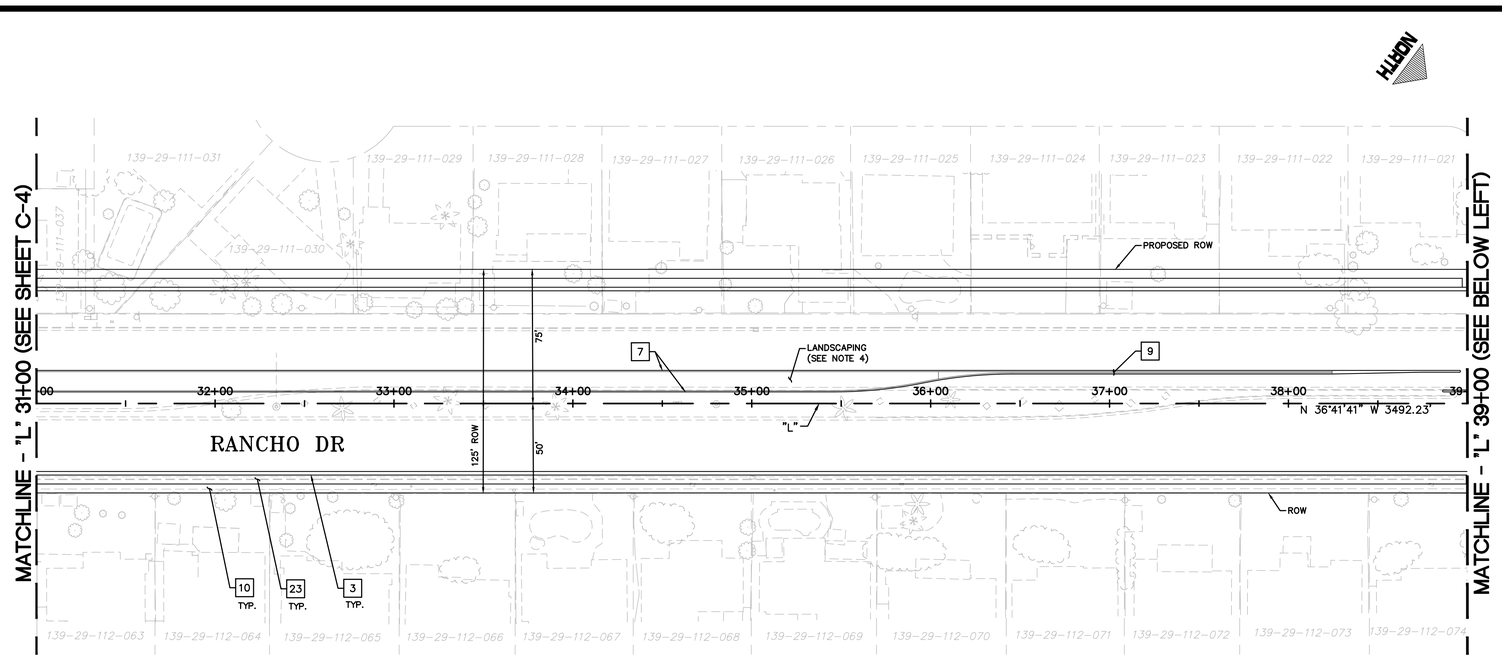
PREPARED FOR
CITY OF LAS VEGAS

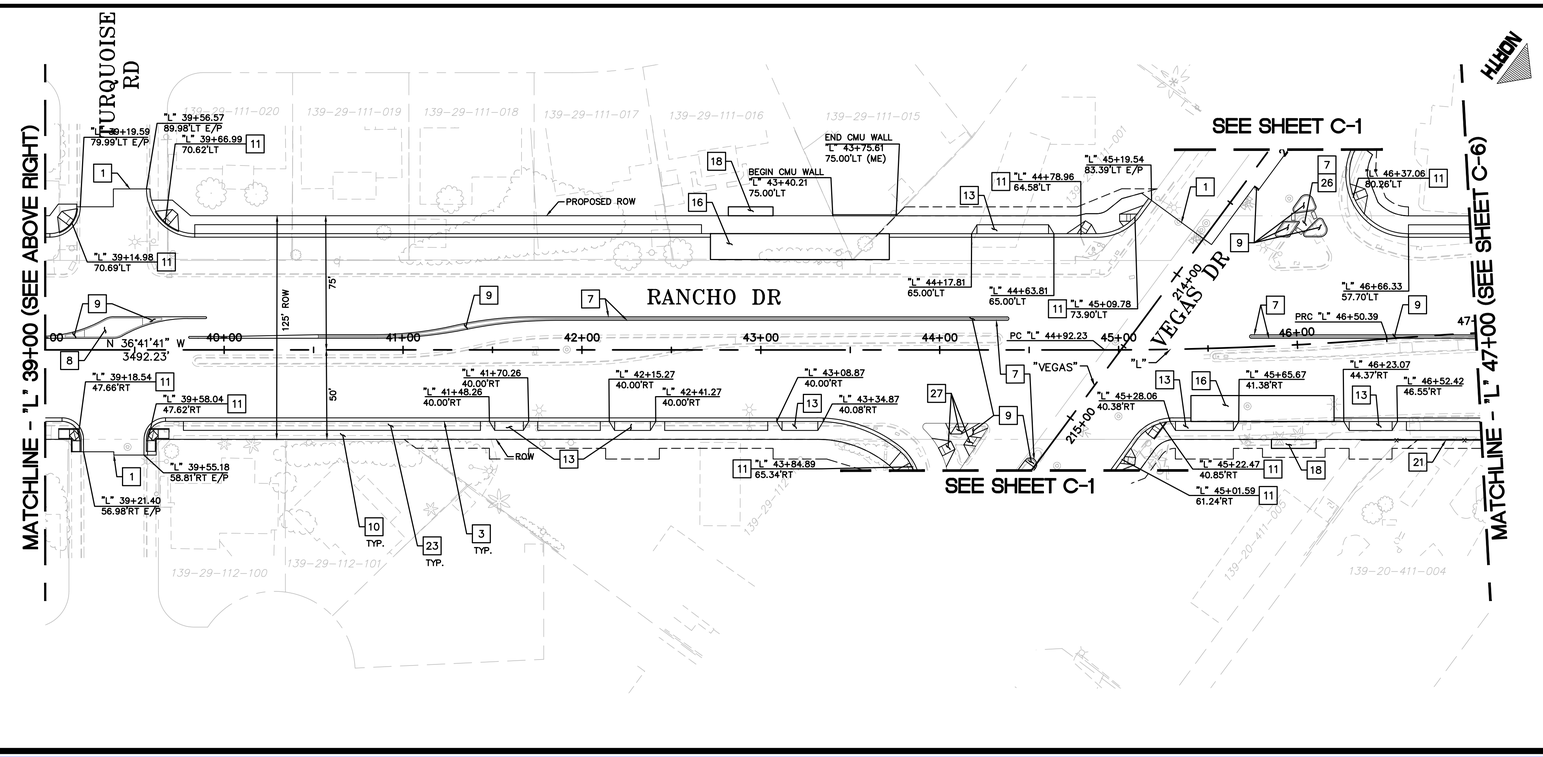
TITLE
RANCHO DRIVE CAPACITY IMPROVEMENTS
MESQUITE AVE TO DECATUR BLVD

SHEET
DRAINAGE PLAN AND PROFILE
"L" 62+50 TO "L" 70+50

BID # ----	DATE: DECEMBER 2018
H # ----	DESIGNED BY: NP
SUBMITTAL STAGE: 50%	DRAWN BY: RN
	CHECKED BY: SC

SHEET
SD-12
131 OF 281
DRAWING NO.





GRAPHIC SCALE

40 0 20 40 80

(IN FEET)

1 inch = **40** ft.

Call before you UnderGround 1-702-432-5300 FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION (F.A.S.T.)

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

Call before you Dig AVOID CUTTING UNDERGROUND UTILITY LINES, IT'S COSTLY. Call 811

CONSTRUCTION NOTES

1. LIMITS OF OVERLAY (STATION/OFFSETS ARE TO E/P)
3. CONSTRUCT CURB AND GUTTER (NDOT TYPE 5) (NDOT STD. PLAN NO. R-5.1.1)
7. CONSTRUCT TYPE A GLUE DOWN CURB (NDOT STD. PLAN NO. R-5.1.1)
8. CONSTRUCT PLANTMIX BITUMINOUS SURFACE (ISLAND PAVING DETAILS, NDOT STD. PLAN NO. R-5.2.3)
9. CONSTRUCT CONCRETE ISLAND PAVING (ISLAND PAVING DETAILS, NDOT STD. PLAN NO. R-5.2.3)
10. CONSTRUCT CONCRETE SIDEWALK (USDCCA STD. DWG. NO. 234)
11. CONSTRUCT SIDEWALK RAMP (PERPENDICULAR) (NDOT STD. PLAN NO. R-5.2.2.1)
12. CONSTRUCT SIDEWALK RAMP (PARALLEL) (NDOT STD. PLAN NO. R-5.2.2.2)
13. CONSTRUCT CONCRETE COMMERCIAL DRIVEWAY (OPTION A), MODIFIED (USDCCA STD. DWG. NO. 224)
14. CONSTRUCT CONCRETE COMMERCIAL DRIVEWAY (NDOT STD. PLAN NO. R-5.3.3)
15. CONSTRUCT CONCRETE COMMERCIAL DRIVEWAY (OPTION A), (USDCCA STD. DWG. NO. 224)
16. CONSTRUCT CONCRETE BUS PAD (USDCCA STD. DWG. NO. 234.1) (NDOT STD. PLAN NO. R-10.1.2)
17. RESIDENTIAL DRIVEWAY (USDCCA STD. DWG. NO. 223)
18. CONSTRUCT 25'x5' CONCRETE BUS SHELTER PAD AT BACK OF SIDEWALK (USDCCA STD. DWG. NO. 234.2)
19. CONSTRUCT CONCRETE SIDEWALK "DETAIL H" (SEE SHEET CD-2)
20. INSTALL PED. RAIL (TYPE R) (NDOT STD. PLAN NO. B-25.1.5)
21. INSTALL CHAIN LINK FENCE (NDOT STD.PLAN NO. R-6.3.2.1)
22. CONSTRUCT CMU WALL "DETAIL D" (SEE SHEET CD-2)
23. 5' AMENITY ZONE (SEE LANDSCAPE PLANS)
24. CONSTRUCT CANTILEVER CONCRETE RETAINING WALL "DETAIL F" (SEE SHEET CD-2)
25. INSTALL DOUBLE SWING GATE (NDOT STD. PLAN NO. R-6.3.2)
26. CONSTRUCT TYPE A CONCRETE MEDIAN ISLAND CURB RAMP (NDOT STD. PLAN NO. R-5.2.3)
27. CONSTRUCT CHANNELING ISLAND CURB RAMPS (NDOT STD. PLAN NO. R-5.2.4)

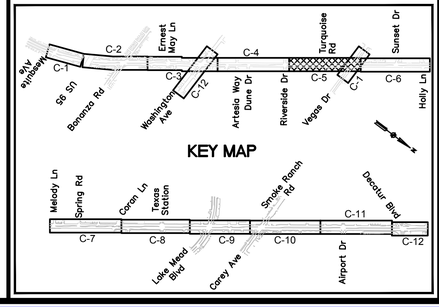
NOTES:

1. STATION/OFFSETS ARE TO BACK OF CURB UNLESS OTHERWISE NOTED.
2. FOR CURVE DATA AND DETAILS NOT SHOWN SEE GE SHEETS & CD SHEETS.
3. CURB RAMPS ARE STATIONED AT THE CENTER OF THE LANDING ALONG THE FLOWLINE.
4. FOR MEDIAN & SIDEWALK LANDSCAPING SEE LANDSCAPE PLANS.

LEGEND:

- - - - - - - - TEMPORARY CONSTRUCTION EASEMENT (SEE ROW PLANS)

(ME) MATCH EXISTING



NO.	DATE:	DESCRIPTION	APPD

REVISIONS

PREPARED BY
3753 Howard Hughes Parkway, Suite 135
Las Vegas, NV 89169
Phone: 702-697-8100

NAVEEN K. PURSCA — No. 19509 — STATE OF NEVADA — PROFESSIONAL ENGINEER — CIVIL

PREPARED FOR
CITY OF LAS VEGAS

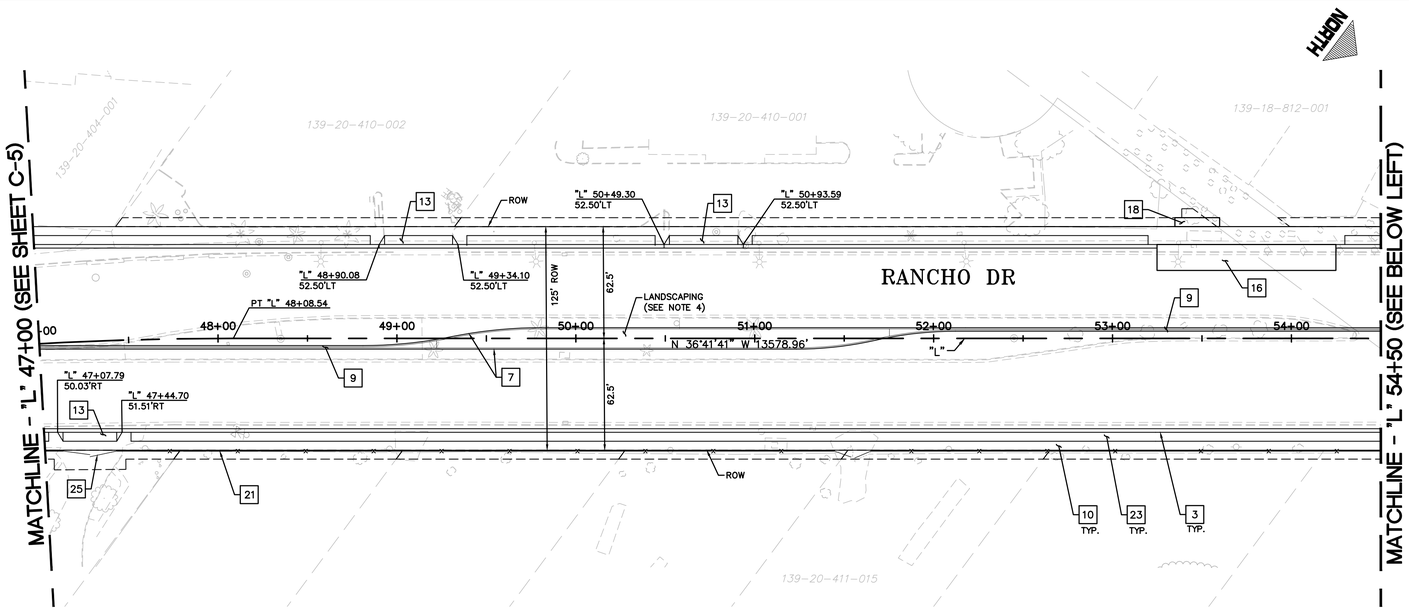
BID # ----
H # ----

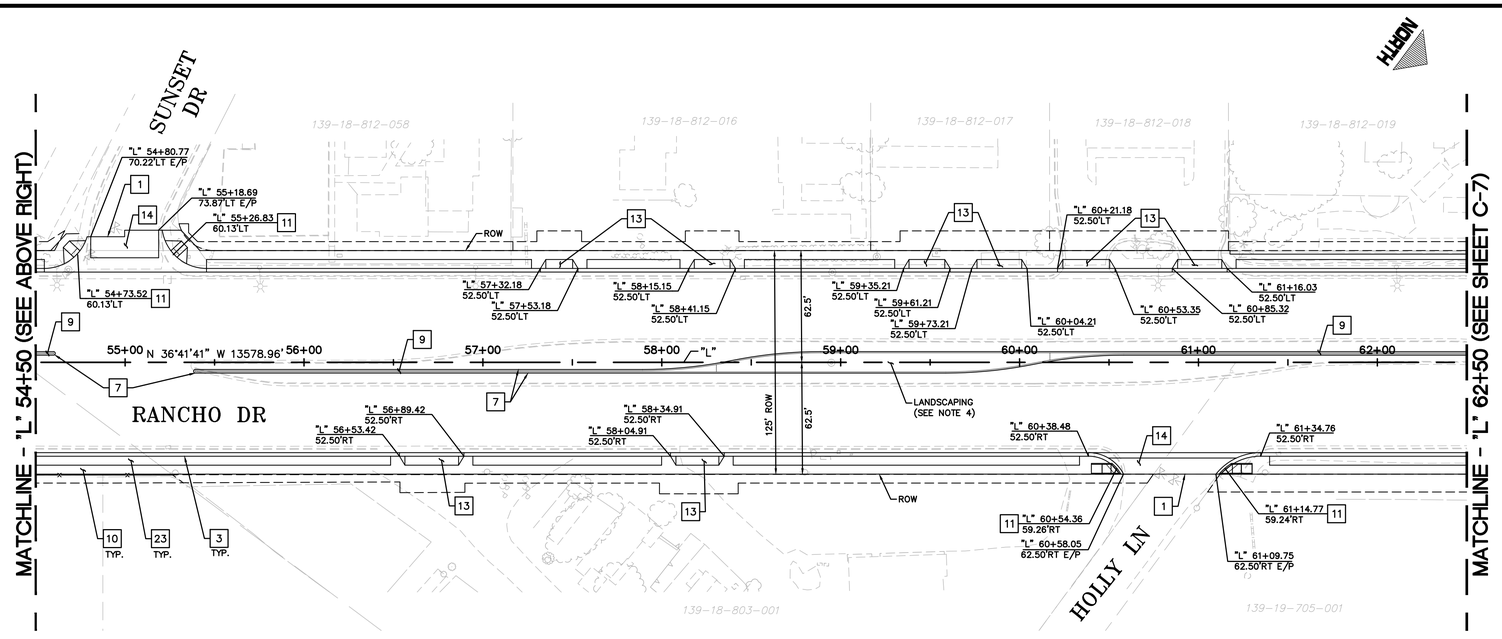
DATE: DECEMBER 2018
DESIGNED BY: NP
DRAWN BY: MS
CHECKED BY: SC
SUBMITTAL STAGE: 50%

TITLE
RANCHO DRIVE CAPACITY IMPROVEMENTS
MESQUITE AVE TO DECATUR BLVD

SHEET
ROADWAY PLAN
"L" 31+00 TO "L" 47+00

SHEET
C-5
54 OF 281
DRAWING NO.





GRAPHIC SCALE

40 0 20 40 80

(IN FEET)

1 inch = 40 ft.

Call before you UnderGround 1-702-432-5300 FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION (F.A.S.T.)

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

Call before you Dig. AVOID CUTTING UNDERGROUND UTILITY LINES, IT'S COSTLY. Call 811

CONSTRUCTION NOTES

1. LIMITS OF OVERLAY (STATION/OFFSETS ARE TO E/P)
3. CONSTRUCT CURB AND GUTTER (NDOT TYPE 5) (NDOT STD. PLAN NO. R-5.1.1)
7. CONSTRUCT TYPE A GLUE DOWN CURB (NDOT STD. PLAN NO. R-5.1.1)
8. CONSTRUCT PLANTMIX BITUMINOUS SURFACE (ISLAND PAVING DETAILS, NDOT STD. PLAN NO. R-5.2.3)
9. CONSTRUCT CONCRETE ISLAND PAVING (ISLAND PAVING DETAILS, NDOT STD. PLAN NO. R-5.2.3)
10. CONSTRUCT CONCRETE SIDEWALK (USDCCA STD. DWG. NO. 234)
11. CONSTRUCT SIDEWALK RAMP (PERPENDICULAR) (NDOT STD. PLAN NO. R-5.2.2.1)
12. CONSTRUCT SIDEWALK RAMP (PARALLEL) (NDOT STD. PLAN NO. R-5.2.2.2)
13. CONSTRUCT CONCRETE COMMERCIAL DRIVEWAY (OPTION A), MODIFIED (USDCCA STD. DWG. NO. 224)
14. CONSTRUCT CONCRETE COMMERCIAL DRIVEWAY (NDOT STD. PLAN NO. R-5.3.3)
15. CONSTRUCT CONCRETE COMMERCIAL DRIVEWAY (OPTION A), (USDCCA STD. DWG. NO. 224)
16. CONSTRUCT CONCRETE BUS PAD (USDCCA STD. DWG. NO. 234.1) (NDOT STD. PLAN NO. R-10.1.2)
17. RESIDENTIAL DRIVEWAY (USDCCA STD. DWG. NO. 223)
18. CONSTRUCT 25'x5' CONCRETE BUS SHELTER PAD AT BACK OF SIDEWALK (USDCCA STD. DWG. NO. 234.2)
19. CONSTRUCT CONCRETE SIDEWALK "DETAIL H" (SEE SHEET CD-2)
20. INSTALL PED. RAIL (TYPE R) (NDOT STD. PLAN NO. B-25.1.5)
21. INSTALL CHAIN LINK FENCE (NDOT STD.PLAN NO. R-6.3.2.1)
22. CONSTRUCT CMU WALL "DETAIL D" (SEE SHEET CD-2)
23. 5' AMENITY ZONE (SEE LANDSCAPE PLANS)
24. CONSTRUCT CANTILEVER CONCRETE RETAINING WALL "DETAIL F" (SEE SHEET CD-2)
25. INSTALL DOUBLE SWING GATE (NDOT STD. PLAN NO. R-6.3.2)
26. CONSTRUCT TYPE A CONCRETE MEDIAN ISLAND CURB RAMP (NDOT STD. PLAN NO. R-5.2.3)
27. CONSTRUCT CHANNELING ISLAND CURB RAMPS (NDOT STD. PLAN NO. R-5.2.4)

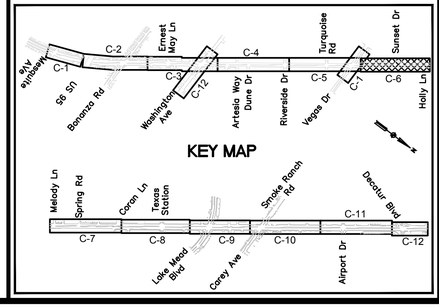
NOTES:

1. STATION/OFFSETS ARE TO BACK OF CURB UNLESS OTHERWISE NOTED.
2. FOR CURVE DATA AND DETAILS NOT SHOWN SEE GE SHEETS & CD SHEETS.
3. CURB RAMPS ARE STATIONED AT THE CENTER OF THE LANDING ALONG THE FLOWLINE.
4. FOR MEDIAN & SIDEWALK LANDSCAPING SEE LANDSCAPE PLANS.

LEGEND:

- - - - - - - - TEMPORARY CONSTRUCTION EASEMENT (SEE ROW PLANS)

(ME) MATCH EXISTING



REVISIONS

NO.	DATE:	DESCRIPTION	APPD

PREPARED BY

3753 Howard Hughes Parkway, Suite 135
Las Vegas, NV 89169
Phone: 702-697-8100

NAVEEN K. PURSCA — Nevada No. 19509 — PROFESSIONAL ENGINEER — STATE OF NEVADA — R-CML

PREPARED FOR
CITY OF LAS VEGAS

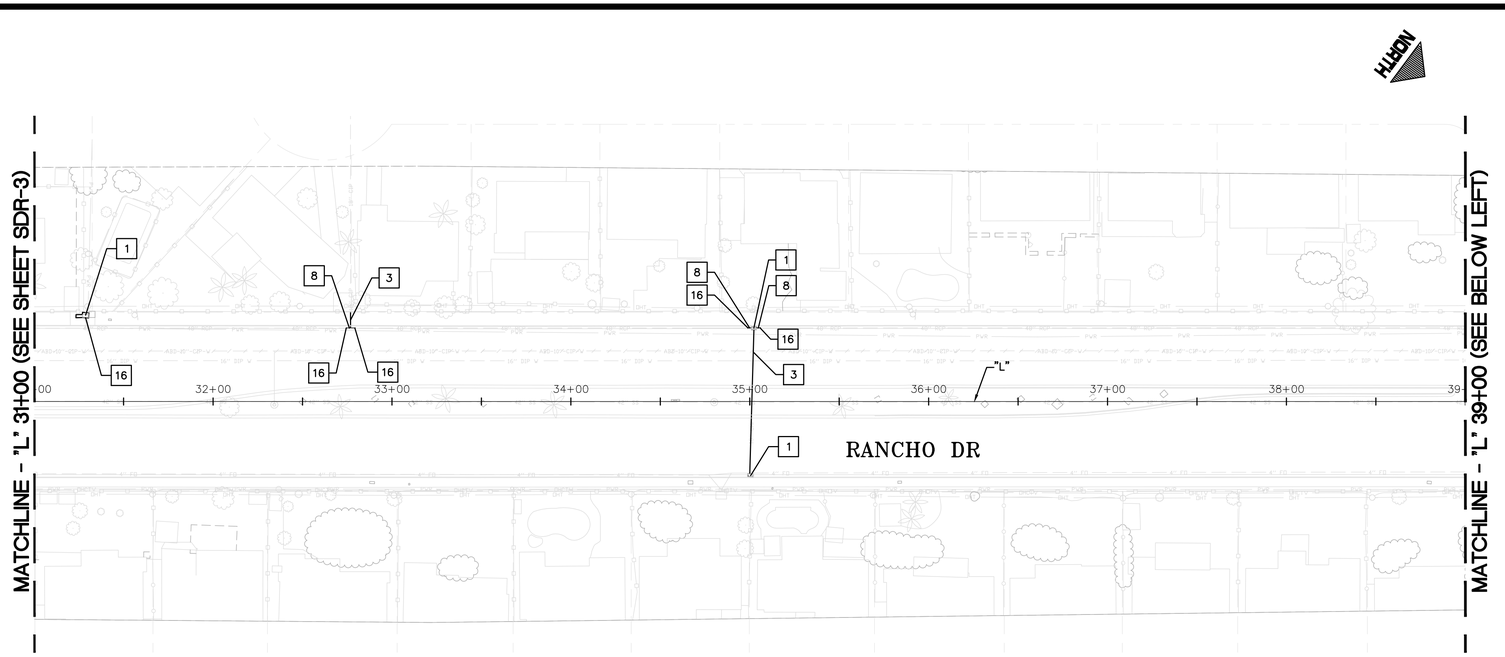
BID # ----
H.# ----

DATE: DECEMBER 2018
DESIGNED BY: NP
DRAWN BY: MS
CHECKED BY: SC
SUBMITTAL STAGE: 50%

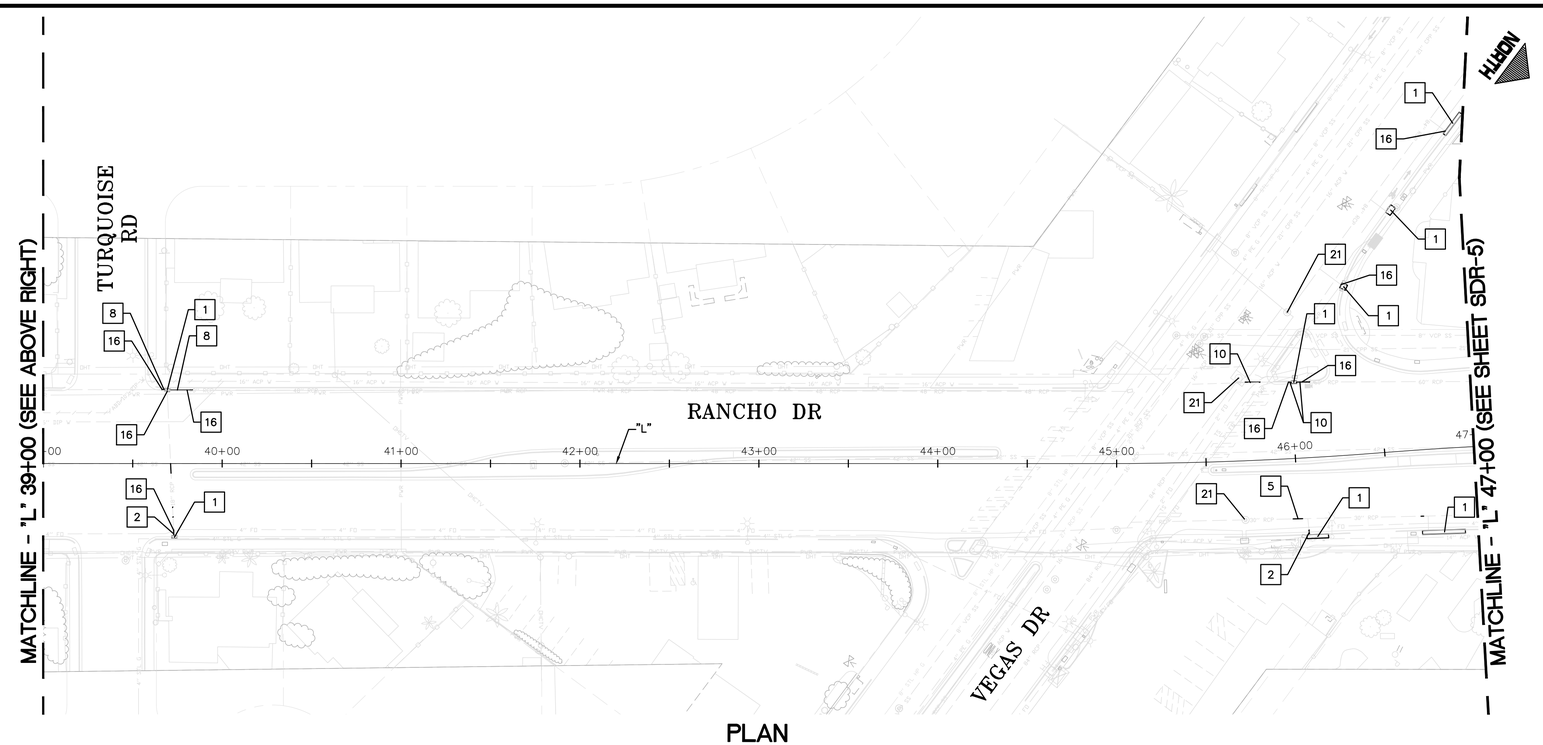
TITLE
RANCHO DRIVE CAPACITY IMPROVEMENTS
MESQUITE AVE TO DECATUR BLVD

SHEET
ROADWAY PLAN
"L" 47+00 TO "L" 62+50

SHEET
C-6
55 OF 281
DRAWING NO.



PLAN



PLAN

GRAPHIC SCALE

40 0 20 40 80

(IN FEET)

1 inch = 40 ft. (24"x 36")

1 inch = 80 ft. (11"x 17")

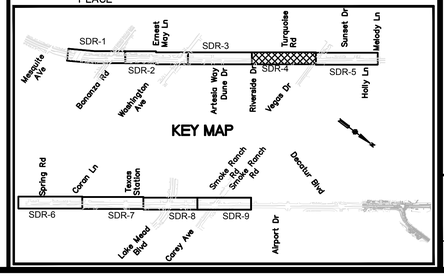
FAST Call before you UnderGround 1-702-432-5300 FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION (F.A.S.T.)

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

Call before you Dig AVOID CUTTING UNDERGROUND UTILITY LINES, IT'S COSTLY. Call 811

REMOVAL NOTES

1	"L" STA.: 31+28.72, 48.24' LT "L" STA.: 35+00.50, 41.40' RT "L" STA.: 35+02.32, 41.14' LT "L" STA.: 39+69.35, 41.17' RT "L" STA.: 46+01.36, 42.62' LT "L" STA.: 46+09.91, 44.25' RT "L" STA.: 46+33.68, 94.14' LT "L" STA.: 46+63.18, 134.88' LT "L" STA.: 46+80.57, 46.69' RT "L" STA.: 46+98.15, 181.11' LT	REMOVE EXISTING DI
2	"L" STA.: 39+72.90, 37.34' RT TO "L" STA.: 39+73.05, 40.38' RT	REMOVE 18" REINFORCED CONCRETE STORM DRAIN PIPE
3	"L" STA.: 32+76.84, 50.00' LT TO "L" STA.: 32+76.84, 41.05' LT "L" STA.: 35+00.01, 40.55' RT TO "L" STA.: 35+02.33, 40.30' LT	REMOVE 18" CORRUGATED METAL STORM DRAIN PIPE
5	"L" STA.: 45+97.15, 33.69' RT TO "L" STA.: 46+01.90, 33.85' RT "L" STA.: 46+05.34, 40.60' RT TO "L" STA.: 46+05.45, 42.99' RT	REMOVE 30" REINFORCED CONCRETE STORM DRAIN PIPE
8	"L" STA.: 32+74.41, 40.87' LT TO "L" STA.: 32+79.34, 40.86' LT "L" STA.: 34+99.00, 41.09' LT TO "L" STA.: 35+00.87, 41.09' LT "L" STA.: 35+03.67, 41.10' LT TO "L" STA.: 35+05.84, 41.10' LT "L" STA.: 39+66.45, 41.30' LT TO "L" STA.: 39+67.98, 41.30' LT "L" STA.: 39+70.74 41.07' LT TO "L" STA.: 39+80.40, 41.06' LT	REMOVE 48" REINFORCED CONCRETE STORM DRAIN PIPE
10	"L" STA.: 45+73.64, 43.93' LT TO "L" STA.: 45+80.55, 43.66' LT "L" STA.: 45+98.38, 42.87' LT TO "L" STA.: 45+99.91, 42.79' LT "L" STA.: 46+02.97, 42.63' LT TO "L" STA.: 46+06.04, 42.47' LT	REMOVE 60" REINFORCED CONCRETE STORM DRAIN PIPE
16	"L" STA.: 31+28.74, 46.85' LT "L" STA.: 32+74.41, 40.87' LT "L" STA.: 32+79.34, 40.86' LT "L" STA.: 34+99.00, 41.09' LT "L" STA.: 35+05.84, 41.10' LT "L" STA.: 39+66.45, 41.30' LT "L" STA.: 39+69.30, 40.30' LT "L" STA.: 39+72.90, 37.34' RT "L" STA.: 39+80.40, 41.06' LT "L" STA.: 45+80.55, 43.66' LT "L" STA.: 45+98.38, 42.87' LT "L" STA.: 46+06.04, 42.47' LT "L" STA.: 46+32.26, 95.30' LT "L" STA.: 46+94.03, 177.00' LT	PLUG EXISTING STORM DRAIN PIPE
21	PROTECT EXISTING SDMH IN PLACE	



NO.	DATE:	DESCRIPTION	APPD

REVISIONS

PREPARED BY

3753 Howard Hughes Parkway, Suite 135
Las Vegas, NV 89169
Phone: 702-697-8100

NOT FOR CONSTRUCTION UNLESS SIGNED BY PROFESSIONAL ENGINEER - STATE OF NEVADA TIMOTHY J. SCHNEIDER Expires 6/30/20 CIVIL No. 015881

PREPARED FOR
CITY OF LAS VEGAS

BID # ----

H # ----

DATE: DECEMBER 2018

DESIGNED BY: TJS

DRAWN BY: TJS

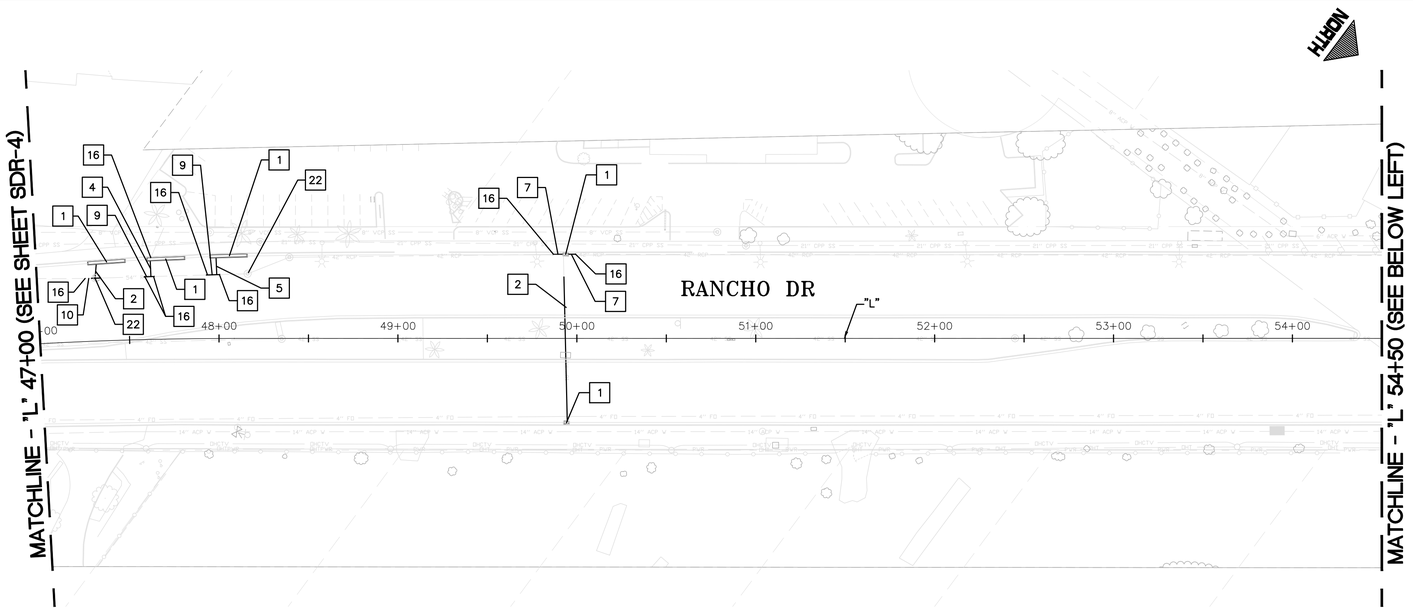
CHECKED BY: SC

SUBMITTAL STAGE: 50%

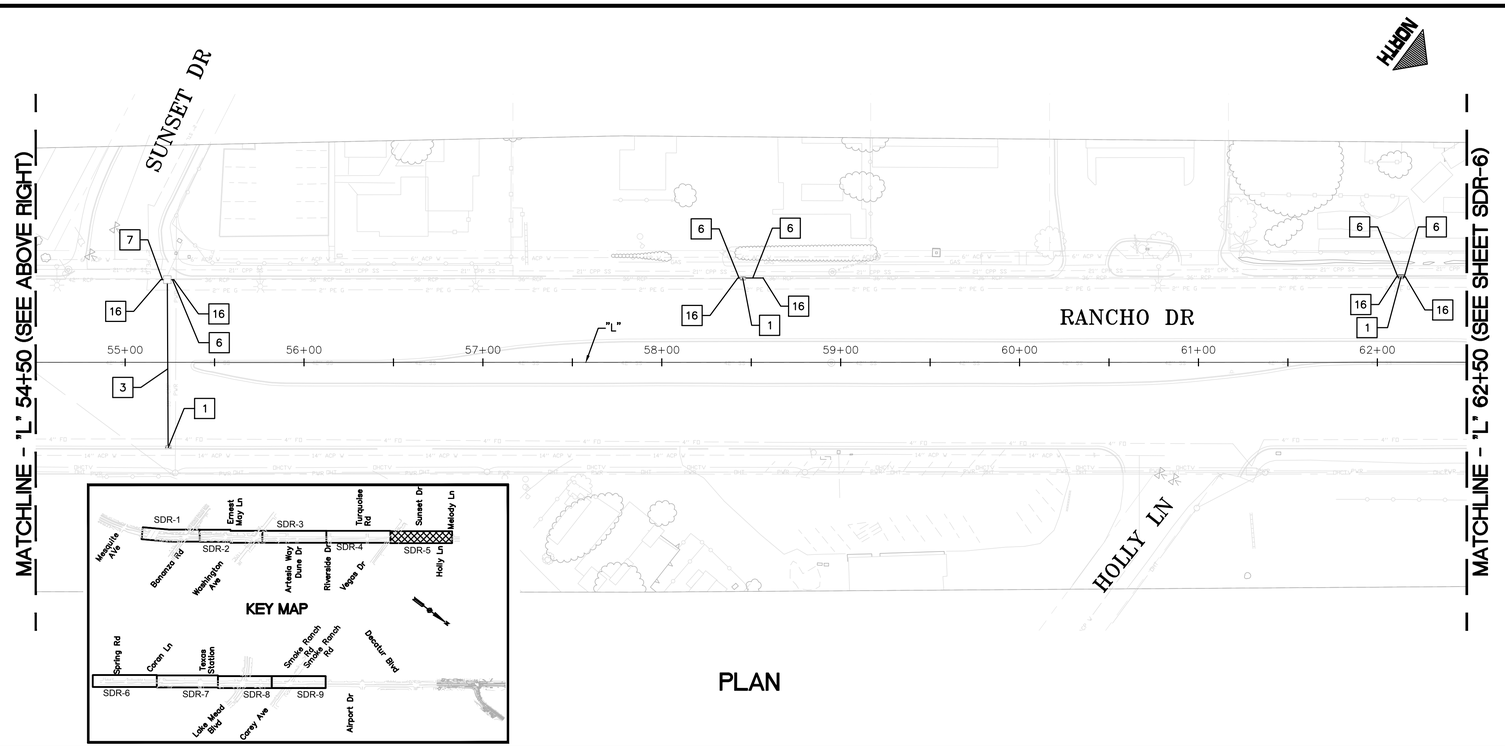
TITLE
RANCHO DRIVE CAPACITY IMPROVEMENTS
MESQUITE AVE TO DECATUR BLVD

SHEET
STORM DRAIN REMOVAL PLAN

SHEET
SDR-4
155 OF 281
DRAWING NO.



PLAN



PLAN

GRAPHIC SCALE

40 0 20 40 80

(IN FEET)

1 inch = 40 ft. (24"x 36")

1 inch = 80 ft. (11"x 17")

FAST Call before you UnderGround 1-702-432-5300 FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION (F.A.S.T.)

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

Call before you Dig AVOID CUTTING UNDERGROUND UTILITY LINES, IT'S COSTLY. Call 811

REMOVAL NOTES

1	"L" STA.: 47+38.64, 43.97' LT "L" STA.: 47+71.01, 44.82' LT "L" STA.: 48+05.78, 48.23' LT "L" STA.: 49+93.75, 47.01' LT "L" STA.: 49+94.16, 47.15' RT "L" STA.: 55+24.08, 47.53' RT "L" STA.: 58+45.23, 47.10' LT "L" STA.: 62+13.25, 47.89' LT	REMOVE EXISTING DI
2	"L" STA.: 47+32.02, 35.13' LT TO "L" STA.: 47+32.98, 42.93' LT "L" STA.: 49+93.94, 34.06' LT TO "L" STA.: 49+94.64, 46.07' RT	REMOVE 18" REINFORCED CONCRETE STORM DRAIN PIPE
3	"L" STA.: 55+23.60, 44.09' LT TO "L" STA.: 55+24.06, 46.68' RT	REMOVE 18" CORRUGATED METAL STORM DRAIN PIPE
4	"L" STA.: 47+62.55, 43.98' LT TO "L" STA.: 47+62.73, 35.09' LT	REMOVE 24" REINFORCED CONCRETE STORM DRAIN PIPE
5	"L" STA.: 47+98.54, 45.13' LT TO "L" STA.: 47+98.91, 35.65' LT	REMOVE 30" REINFORCED CONCRETE STORM DRAIN PIPE
6	"L" STA.: 55+25.72, 46.23' LT TO "L" STA.: 55+27.22, 46.23' LT "L" STA.: 58+42.40, 47.04' LT TO "L" STA.: 58+43.90, 47.04' LT "L" STA.: 58+46.70, 47.12' LT TO "L" STA.: 58+56.62, 47.15' LT "L" STA.: 62+10.80, 47.85' LT TO "L" STA.: 62+11.68, 47.86' LT	REMOVE 36" REINFORCED CONCRETE STORM DRAIN PIPE
7	"L" STA.: 49+86.94, 46.98' LT TO "L" STA.: 49+92.32, 47.04' LT "L" STA.: 49+95.12, 47.07' LT TO "L" STA.: 49+99.28, 47.06' LT "L" STA.: 55+19.98, 46.23' LT TO "L" STA.: 55+21.48, 46.23' LT	REMOVE 42" REINFORCED CONCRETE STORM DRAIN PIPE
9	"L" STA.: 47+59.42, 35.07' LT TO "L" STA.: 47+60.89, 35.08' LT "L" STA.: 47+62.73, 35.09' LT TO "L" STA.: 47+64.17, 35.10' LT "L" STA.: 47+93.82, 35.53' LT TO "L" STA.: 48+00.38, 35.69' LT	REMOVE 54" REINFORCED CONCRETE STORM DRAIN PIPE
10	"L" STA.: 47+26.58, 35.22' LT TO "L" STA.: 47+33.51, 35.12' LT	REMOVE 60" REINFORCED CONCRETE STORM DRAIN PIPE
16	"L" STA.: 47+26.59, 35.22' LT "L" STA.: 47+33.51, 35.12' LT "L" STA.: 47+59.42, 35.07' LT "L" STA.: 47+62.88, 45.72' LT "L" STA.: 47+64.17, 35.10' LT "L" STA.: 47+93.82, 35.53' LT "L" STA.: 48+00.38, 35.69' LT "L" STA.: 49+86.94, 46.98' LT "L" STA.: 49+99.28, 47.06' LT "L" STA.: 55+19.98, 46.26' LT "L" STA.: 55+27.22, 46.23' LT "L" STA.: 58+42.40, 47.04' LT "L" STA.: 58+56.62, 47.15' LT "L" STA.: 62+10.80, 47.85' LT	PLUG EXISTING STORM DRAIN PIPE

NO.	DATE:	DESCRIPTION	APPD

REVISIONS

PREPARED BY

3753 Howard Hughes Parkway, Suite 135
Las Vegas, NV 89169
Phone: 702-697-8100

NOT FOR CONSTRUCTION UNLESS SIGNED
PROFESSIONAL ENGINEER - STATE OF NEVADA
TIMOTHY J. SCHNEIDER
Expires 06/30/20
No. 026881
CIVIL

PREPARED FOR
CITY OF LAS VEGAS

BID # ----
H # ----

DATE: DECEMBER 2018
DESIGNED BY: TJS
DRAWN BY: TJS
CHECKED BY: SC
SUBMITTAL STAGE: 50%

TITLE
RANCHO DRIVE CAPACITY IMPROVEMENTS
MESQUITE AVE TO DECATUR BLVD

SHEET
STORM DRAIN REMOVAL PLAN

SHEET
SDR-5
156 OF 281
DRAWING NO.

DS #: DS 3893

APN: 139-20-401-008, 139-20-401-012, 139-20-401-013, 139-20-401-014

PROJECT: HOLLY / FERRELL

SUBMITTAL: 4TH Submittal - UPDATE #1 (STATED AS UPDATE #2)

SCANNED BY/DATE:

CHECKED BY/DATE:

IDS 3893-1
2/15/07
M-20
$100.00—

UPDATE #2 TO THE TECHNICAL HYDROLOGY STUDY FOR HOLLY / FERRELL

CITY OF LAS VEGAS
TCE# 001-05036

Prepared for:
RICHMOND AMERICAN HOMES
2490 Paseo Verde Pkwy., Suite 120
Henderson, Nevada 89074

Prepared by:
TCE
3277 East Warm Springs Road, Suite 400
Las Vegas, Nevada 89120
(702) 932-6125
FAX (702) 932-6129

February 2007

T THOMASON
C CONSULTING
E ENGINEERS

CITY OF LAS VEGAS
INTER-OFFICE MEMORANDUM

DATE: March 1, 2007

TO:
Land Development Services
Department of Public Works

FROM:
Albert Sung, P.E.
Flood Control Project Engineer
Department of Public Works

SUBJECT:	Technical Drainage Study for: **Holly / Ferrell – Update**
Cross Streets:	SWC of Ferrell Street & Holly Avenue
File Number:	F:\Depot\DSMEMOS\DS3893D.doc
Parcel Number:	139-20-401-008, 012, 013, 014
Zoning Action:	SDR-6727, TMP-8896, ZON-6726

FEMA Flood Zone	YES		NO	X
Proposed Storm Drain	YES		NO	X

COPIES TO:
Thomason Consulting Engineers
Richmond American Homes
Bart Anderson, P.E., DevCo

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Trn. No.
1st Submittal	9/13/2005	9/26/2005	Not Approved	$400.00	29518: $400
2nd Submittal	10/13/2005	10/27/2005	Not Approved	$400.00	31581: $400
3rd Submittal	11/8/2005	11/21/2005	Approved	$400.00	32991: $400
4th Submittal	2/15/2007	3/1/2007	See Comments Below	$100.00	63223: $100
			TOTAL FEES (LDDRS):	**$1,300.00**	----

REMARKS:

4th Submittal: Update to replace the erosion protection in front of Lots 1-4 from a wall to riprap

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.

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 Amendment 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

B&H/ays

T/R/S: T20S/R61E/20
AREA M-20

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM					DATE: November 21, 2005
TO: **Land Development Services** Department of Public Works					FROM: Albert Sung, P.E. Flood Control Project Engineer Department of Public Works
SUBJECT:	Technical Drainage Study for: **Holly / Ferrell**				**COPIES TO:** Thomason Consulting Engineers
Cross Streets:	SWC of Ferrell Street & Holly Avenue				Richmond American Homes
File Number:	F:\Depot\DSMEMOS\DS3893C.doc				Bart Anderson, P.E., DevCo
Parcel Number:	139-20-401-008, 012, 013, 014				
Zoning Action:	SDR-6727, TMP-8896, ZON-6726				
FEMA Flood Zone	YES		NO	X	
Proposed Storm Drain	YES		NO	X	

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Trn. No.
1st Submittal	9/13/2005	9/26/2005	Not Approved	$400.00	29518: $400
2nd Submittal	10/13/2005	10/27/2005	Not Approved	$400.00	31581: $400
3rd Submittal	11/8/2005	11/21/2005	See Comments Below	$400.00	32991: $400
			TOTAL FEES (LDDRS):	**$1,200.00**	----

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.

1. Revise Detail 13/D1 to show the bottom three (3) courses of the block wall as "8"-CMU to be solid grouted".
2. Raise the finish floor elevation of Lot 53 to FF=15.6.
3. Private streets must be public drainage easements. Provide a note on the grading plans "Note: All private streets are P.U.E., public sewer easements and public drainage easements to be privately maintained by HOA".
4. The engineer must provide a table on the grading plans that shows a quantity estimate of all drainage improvements within Public Drainage Easements. All drainage improvements within Public Drainage Easements must be bonded and inspected.
5. All drainage easements must be public drainage easements to be privately maintained and common lots to be labeled on the grading plans and to be dedicated as such in the final map.

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

B&H/ays

T/R/S: T20S/R61E/20

AREA M-20

Worksheet for Easement E3

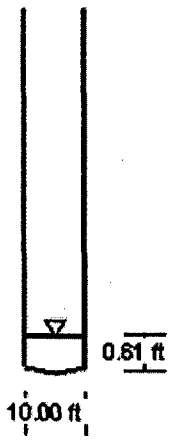
Station	Elevation
0+005	0.00
0+010	0.10
0+010	6.00

Note: E3 is 10' EASEMNET

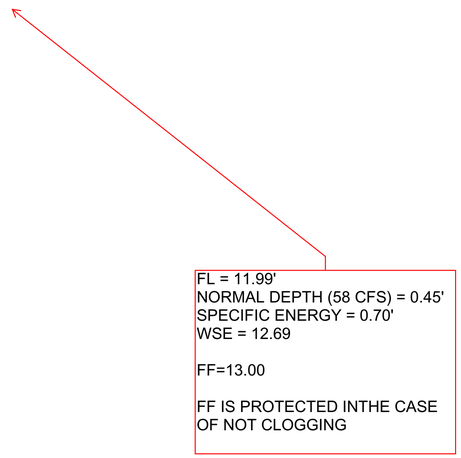
Cross Section for Easement E3

Project Description		
Flow Element:	Irregular Section	
Friction Method:	Manning Formula	
Solve For:	Normal Depth	

Section Data		
Roughness Coefficient:	0.013	
Channel Slope:	0.00500	ft/ft
Normal Depth:	0.61	ft
Elevation Range:	0.00 to 6.00 ft	
Discharge:	29.00	ft^3/s



V: 10
H: 1


FL = 11.99'
NORMAL DEPTH (58 CFS) = 0.45'
SPECIFIC ENERGY = 0.70'
WSE = 12.69
FF=13.00
FF IS PROTECTED INTHE CASE
OF NOT CLOGGING

ADDENDUM # 1

TO THE

TECHNICAL DRAINAGE STUDY

FOR

RANCHO & VEGAS TOWNHOMES
(APN 139-20-411-015)

IN

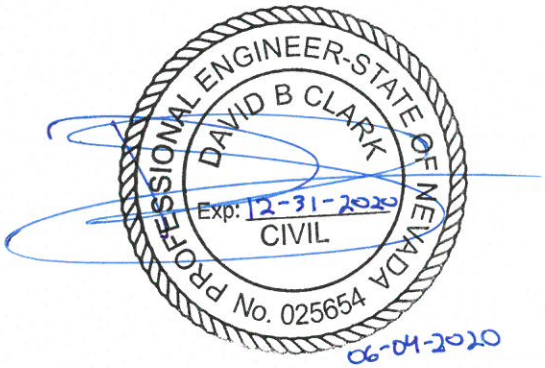
THE CITY OF LAS VEGAS, NEVADA

PREPARED FOR

Harmony Homes LLC
8912 Spanish Ridge Ave, Suite 200
Las Vegas, NV 89148
Ph. (702) 570 7223

SUBMITTED TO

CITY OF LAS VEGAS



JUNE 2020

HORROCKS ENGINEERS PROJECT NV-2105-1911

Horrocks Engineers
1401 N Green Valley Pkwy, Suite 160
Henderson, NV 89074
702.966.4063

HORROCKS
ENGINEERS

HYDROLOGIC CRITERIA AND DRAINAGE MANUAL

DRAINAGE STUDY INFORMATION FORM

Name of Development: RANCHO AND VEGAS TOWNHOMES Date: 06-04-2020

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

East/West: Holly Avenue

b) Section: 20 Township: 20S Range: 61E

c) APN : 139-20-411-015

Name of Owner: HARMONY HOMES, LLC

Telephone No.: 702-570-7223 Fax No.: E-Mail Address: mrosenberg@Harmonyhomes.com

Address: 8912 Spanish Ridge Ave Suite 200 Las Vegas, NV 89148

Contact Person-Name: David B. Clark **Telephone No.:** 702.966.4063

* **E-Mail Address:** dclark@horrocks.com **Fax No.:**

Firm: Horrocks Engineers

Address: 1401 N Green Valley Pkwy, Suite 160 Henderson, NV 89014

Type of Land Development/Land Disturbance Process:

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

1. Total Owned Land Area: At Site: 17+/- acres Being Developed/Disturbed: 17+/- 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.): Residential - Townhomes
5. Approximate upstream land area which drains to the subject site: 350 acres
6. Has the site drainage been evaluated in the past? ☒ **YES** ☐ **NO** If yes, please identify documentation: HOLLY/FERRELL - DS 3893 RANCHO & VEGAS (TANEY -DS 5029)
7. If known, please briefly identify the proposed discharge point(s) of runoff from the site: 30' drainage easement at Diamond Regent, Holly Avenue, 10' drainage easement in Ferrell development, Parcel APN 139-20-411-012, Parcel APN 139-20-411-014, Parcel APN 139-20-411-004
8. Briefly describe your proposed schedule for the subject project: ASAP



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.

Local Entity File No.

Revision	Date

REFERENCE:

STANDARD FORM 1

Updated 05/01/2008

HORROCKS
ENGINEERS

1401 N. Green Valley Parkway, Ste. 160
Henderson, NV 89074
702-966-4063
www.horrocks.com

June 4, 2020

Albert Sung, P.E.
Department of Public Works
City of Las Vegas
333 N. Rancho Drive
Las Vegas, NV 89106

RE: Addendum #1 to Technical Drainage Study for Rancho and Vegas Townhomes, DS 5273

Dear Mr. Sung,

Horrocks Engineers hereby submits Addendum #1 to the Technical Drainage Study for Rancho and Vegas Townhomes DS 5273, which responds to the City's comments dated May 07, 2020. The comments are listed below together with the associated responses.

CLV COMMENTS AND RESPONSES

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

   RESPONSE: Noted. The study and addenda will be submitted to CCPW upon conditional approval from CLV.

2. **The project proposes to construct a driveway entrance off of Rancho Road, a Nevada Department of Transportation (NDOT) right-of-way. The engineer must contact NDOT for occupancy / encroachment permit for the proposed project.**

   RESPONSE: Noted. An occupancy/encroachment permit is being sought concurrently with TDS submittal and approval, but is not required until Improvement plan approval. The traffic

scope has already been obtained that dictated the proposed improvements of the median in Rancho Drive.

3. **The subject project is adjacent to an ongoing capital improvement project in Rancho Road, "Rancho Road Improvements – Mesquite Avenue to Decatur Boulevard". The engineer must coordinate with the project manager, Mr. Michael Sturdivant of City Public Works Department at (702) 229-6734 for acceptable street improvement design in Rancho Road prior to the final approval of the drainage study.**

   RESPONSE: Michael Sturdivant of City Public Works Department has been contacted to ensure that appropriate coordination of the driveway onto Rancho Road is acceptable. The engineer received and reviewed preliminary plans (Rancho Road Improvements – Mesquite Avenue to Decatur Boulevard, hereinafter referred to as the "Rancho Drive Project.') and will continue coordination as necessary. It does not appear that the proposed improvements for this project negatively impact the current plans for the Rancho Road Improvements project. Note that there is an existing Drop inlet just north of the proposed entrance road on Rancho Drive. The proposed improvements from the project site do not encroach on the existing facilities. The current preliminary plans for the Rancho Road Improvements propose to remove and replace the drop inlet. However, the Rancho Road Improvements have not been finalized and the project is currently stalled. Thus, the engineer in the Ultimate condition does not use the Rancho Road Improvements. The ultimate conditions for this study references the Future condition from the neighborhood study as detailed in the original submittal.

   The proposed median in Rancho Drive deviates from the NDOT median shown on the Rancho Drive Improvements plans. The median proposed with this project prevents left turn movements from the site per NDOT requirement. The coordination with the Public Work Department (Michael Sturdivant) will continue as necessary after TDS approval. The engineer acknowledges that any revisions to the median in Rancho Drive that alter drainage conditions or patterns may require and update.

4. **The Study stated that the project will be constructed in two phases. However, only the grading plans for the fully developed condition were provided in the last submittal. A separate set of plans for Phase 1 Improvements must be provided in the next submittal. For Phase 1 Improvement Plans, the undeveloped Phase 2 portion must be shown as**

existing natural grade condition. At the most, the future Phase 2 can only be shown as a rough grade condition without any final grading and elevations of pads. Contour lines are the only acceptable features in the future Phase 2 portion.

RESPONSE: Noted. The intent is that during construction of Phase 1, the Phase 2 area will be rough graded and the improvements within the drainage easements (ES-P3 and ES-P5) will be constructed. The rough grade condition for the Phase 2 area will be shown on the phase 1 grading plans. The original submittal included cross section calculations for the rough graded Phase 2 area showing finished grade cross sections. These sections (Interim Phase 1) have been revised to show the street sections in the rough grade condition as requested. See Appendix A for revised figures with updated summary tables and Appendix C for revised normal depth calculations.

Although the velocities in the rough graded areas are non erosive (less than 5 fps) however, there are proposed riprap pads to reduce the risk of erosion and sediment transport. See the grading plans for riprap locations and riprap sizes.

5. **Figure 5 (Existing Condition Offsite Basin Map): Basin ONE4 at the south of the site drains Q100=4cfs to the adjacent parcel (APN: 139-20-411-004) in the existing condition. However, no discharge is proposed in any of the interim or ultimate conditions. Note that this discharge point shall be maintained to relieve the impact to other discharge points.**
Revise the interim and ultimate conditions maps and the overall grading design accordingly.

RESPONSE: The engineer performed an additional site visit to inspect the southern boundary. The basin delineation for ON-E4 has been revised. It appears that the runoff that impacts the eastern wall of parcel APN: 139-20-411-014) is conveyed north and not to the south. There are two locations where runoff would discharge into the parcel to the south. Two (2) block wall openings are proposed at these locations and referred to as ES-P5. Block wall opening orifice calculations can be found in Appendix C. The runoff of basin OND6D can be conveyed within one of the block wall openings with a 50% clogging factor. Multiple block wall openings provide an additional outlet in case one is fully clogged.

The interim and ultimate conditions have been revised so that basin a portion of OND6 is prorated and drains south to parcel APN 139-20-411-004. The prorated flows of prorated basin OND6D are conveyed south through ES-P5 into the adjacent parcel APN: 139-20-411-004. See Appendix A for updated Figures 6, 7, 8, 9, and 10. See Appendix B for updated hydrology calculations.

6. **ES-P1 at the northwest corner of the site is designed for 50 cfs. Widen ES-P1 to 20'-minimum. Per City policy, 10'-wide drainage easement is limited to 20 cfs. Also, callout wrought iron gate per Standard Drawing 425.S1 in the grading plan.**

   RESPONSE: Easement ES-P1 has been widened to 20'. The normal depth and weir calculations have been revised to account for the increased width of the easement. The orifice is calculated using a 50% clogging factor per the Manual. The T-intersection (specific energy) calculations are updated and shown on the Finished Floor Analysis. See Appendix C for revised hydraulic calculations and finished floor analysis. The wrought iron gate is called out on the revised grading plans and details.

7. **It is not clear how much flow is proposed to convey through ES-P2 adjacent to Holly Lane. Provide hydraulic calculations and address in the next submittal.**

   RESPONSE: An additional cross section U is included to show that the easement will convey 170 cfs in the 100-year event with a flow depth of 1.23', which is equivalent to the flow depth of the total 100-year flow with the cross section that includes Holly Avenue and ES-P2. See Section U in Appendix C. In the 100–year event, Holly Avenue and ES-P2 are jointly inundated to a depth of 1.23' in ES-P2 (0.52' above the northern gutter flowline). The lower flowline of ES-P2 allows the flow depths in Holly to mimic existing conditions. The intent of ES-P2 is to limit the depth of flow in Holly Avenue and protect the existing finished floors north of Holly Avenue. The entire flow of ES-P2 is discharged into Mount Mainalo Street.

8. **Adjacent to the east of the main entrance in Holly Lane (Mount Mainalo Street), a final spill of 60 cfs (DIV 5) is proposed to be accepted into the subject site. Are there any zero-curb to facilitate the flow- split?**

   Also, a mere 48"x16" wall opening is proposed to convey the 60 cfs is totally

undersized for this magnitude of flow. It appears that a minimum 20'-wide wrought iron fence is required instead of the wall opening. Address in the next submittal.

RESPONSE: There is a sidewalk underdrain at the local low point east of the intersection of Mount Mainalo Street and Holly Avenue. In the virtual meeting zero curb was discussed but it was concluded that the priority is to prevent pedestrians from crossing drainage pathways from nuisance and low flow events. The street grading and sidewalk underdrain provide positive drainage into the project site through ES-P4. However, when the capacity of the sidewalk underdrain is exceeded, runoff will pond up in Holly Avenue and overtop the curb and sidewalk and flow south through ES-P4 and the block wall openings. See Appendix C for updated and additional hydraulic calculations.

There was a virtual meeting with attendees from CLV and the engineer (Horrocks) to discuss comments and resolutions. A copy of the meeting notes can be found in Appendix D and will hereinafter be referred to as the 'Virtual Meeting.'

As discussed in the virtual meeting, the construction note indicating the wrought iron fence as a block wall opening was an error. The area is revised to show a 30' easement with a wrought iron fence. Additional calculations are included to show that the easement has capacity to convey the 39 cfs through the proposed easement ES-P4 (newly labeled with this submittal). The remaining 21 cfs will be conveyed through eight (8) block wall openings along Holly Avenue. Seven (7) of the block wall opening surround ES-P4 and the eighth is located near the boundary of APN: 139-21-401-004 for relief of the adjacent parcel. The ponding depth is limited by the surrounding street grading. Block wall opening capacity calculations are included in Appendix C and show that the capacity of one (1) block wall opening is 3 cfs and includes a 50% clogging factor. Positive drainage flowline enters the site through ES-P4 and the block wall opening will convey flow once the runoff at the entrance to ES-P4 ponds up.

9. **The parking stalls in the path of the 60 cfs as stated in the above comment must be removed and designated for drainage easement. Review and resolve in the next submittal.**

RESPONSE: The flowline through the parking lot has been revised. The parking stalls in the path of the accepted flow have been removed. The parking lot is a common element and is

thus, considered public drainage easements to be privately maintained by the HOA. The easement and block wall openings are to be constructed per the standard drawings with wrought iron fencing and curbs.

10. **The proposed ES-P3 at the southeast corner of the development is conveying 96 cfs through a 10'- wide public drainage easement (privately maintained). Per the hydraulic calculation, the 100-year flow depth is 1.35' and the 100-year velocity is 7.36 ft/s, the resulting DV is 9.93 which exceeds the criteria of 8.0. Note that DV-value is a threshold of whether a human will be swept away if standing in the course of the water path. Widen the drainage easement to a minimum of 20' if still meeting the criteria.**

RESPONSE: Easement ES-P3 was discussed in length during the virtual meeting. See Appendix D for meeting minute notes. The conclusion was that Horrocks would widen ES-P3 as needed to meet the DxV criteria (maximum of 8) within the easement. ES-P3 will be a minimum 15' wide easement between units 149 and 160 before it widens. The flow depth is calculated to be 1.05' deep with a velocity of 6.58. The DxV is below 8 and meets criteria. The low nuisance flow discharges 4 cfs through a 1.5'x1.33' block wall opening into the existing easement ES-E2, assuming a 50% clogging factor per The Manual. Larger flows will pond up and discharge into APN 139-20-411-012 over a weir parallel to the boundary with APN 13-20-411-012. The existing fence will be replaced with a wrought iron fence along the property. An agreement with the adjacent property owner will be provided before final approval. It is noted that if an agreement cannot be reached, the site design will require revision and/or a drainage study update.

The project boundary matches the existing elevations. The intent of the design is that the large flows that pond up and weir over will do so uniformly over the uniform weir crest. The flow will then normalize as it discharges the project site at the existing grades of the adjacent parcel. The flow quantity is reduced form the existing condition and the flow profile is spread out and allowed to normalize along existing elevations/grading. See Figure 11 in Appendix A for a profile of the project boundary at ES-P3. The profile shows the flowline elevation that shows positive drainage to easement ES-E2, the weir crest elevation, the existing matching grade at the project boundary, and the bottom of weir elevation.

The entrance to ES-P3 will be limited to a 10.5' section to accept the correct amount of flow into the easement.

11. **The proposed residential project consists of lots with 5'-long driveway leading into the individual garage and finished floor.**
In the next submittal, provide a table to list all lots and the proposed garage floor elevations (GFF) which must be set at a minimum of 6" above the adjacent high side TC of individual lot or 6" above the corresponding water surface whichever the higher.

RESPONSE: The garage finish floor elevations and 100-year freeboard were discussed in the virtual meeting with CLV. See Appendix D for meeting minute notes. The conversation concluded that the garage finished floors will provide freeboard above the 100-year event WSE, however, 6 inches above the corresponding water surface elevation will not be required. The finished floor analysis table shows the GFF, FF, FL and TC elevations and determines whether criteria is met. The garage finished floors are elevated to at least 3 inches above the corresponding water surface elevations. See Appendix C for the finished floor analysis tables.

12. **There are several discrepancies between the existing condition exhibit and the FLO2D exhibit. For example: The FLO2D exhibit shows 290 cfs at combination point C6, but the Existing Conditions Exhibit shows 324 cfs. The property north of the site is shown to produce 71 cfs in the FLO2D exhibit, but only 40 cfs in the existing condition exhibit. Please provide better description regarding flow difference.**

RESPONSE: As discussed and acknowledged in the virtual meeting, the results of the two models will have variations that are inherent to the models, their inputs, parameters, and the objective the model. Below are listed some of the differences in between the FLO2D model, and the HEC-1 model that standout and create variations in the results. It should also be noted that the HEC-1 model results are used for the design flows that are used to design the project site. The FLO2D is an accompanying tool that allowed the engineer to analyze the site with an additional perspective. While useful and instructional, the FLO2D resulting flows are not used to design. HEC1 software is approved within the Manual for hydrologic calculations. See Appendix D for the virtual meeting notes.

13. D8 and DIV8 are considered in the HEC-1s for the Interim and Ultimate Conditions. Show these flow splits on all applicable basin map exhibits.

RESPONSE: The flow split in the HEC-1 model, D8/DIV8, has been renamed as a dummy card. The card is utilized to convey all the flows at concentration points CI8A1/CI8A/CU8A to CI8B1/CI8A/CU8A. The card is not intended to split flows at the intersection of Alpheus River Avenue and Mount Mainalo Street. The total flow at the intersection will be conveyed east in Alpheus River Avenue. The HEC-1 models have been revised and renamed with a 'dummy' nomenclature. Notes are included within the HEC-1 models to denote the intent and utility of the card and it location. The Figures have been revised accordingly. See Appendix A for revised figures and summary tables and see Appendix B for revised HEC-1 models.

14. Figure 8 (Interim Condition Offsite Map) has the table "Offsite Street Normal Depth Calculations Summary for Interim Phase 2 Condition", but this table displays the normal depth calculations for Phase 1. Revise accordingly.

RESPONSE: Noted. The table headings now match the calculations in the table. It should be noted that many of the onsite and offsite street calculations are identical in the Phase 1 and Phase 2 conditions.

15. The Flowmaster cross sections in Rancho Drive show the flow overtopping the center median for the west half of the street. This overtopping flow needs to be considered in the east half of the street to verify the hump on Tripoli Falls Avenue is met.

RESPONSE: The cross sections in Rancho at the entry road (Tripoli Falls Avenue) has been reviewed and revised. There are various cross section calculated in Rancho Drive. Section Q is located just upstream of the intersection between Rancho Drive and Sunset Street and the project site entry road. Section R is located at the intersection. 'Section Q Rancho West HALF…' calculation shows the flow depth of the total flow in the west half of Rancho upstream of the intersection. This flow depth is used in "Section Q West HALF Capacity…' to determine the amount of flow that will be contained on the west side of the proposed median. This section includes the 6-inch median curb.

'Section R Rancho West HALF…' illustrates the total flow including the inflow from Sunset Street, and the proposed curb. The specific energy and normal depth of the section shows that the runoff is contained within the west half of the roadway. 'Section R Rancho East HALF…' shows a flow of 13 cfs and a flow depth of 0.13' at the entry road. The entry road is elevated to at least 0.5' above the water surface elevation. See Appendix C for hydraulic calculations.

16. **Provide hydraulic sections for the onsite swales. Particularly, the 8' swales located along the perimeter at CU9B in ultimate condition do not seem like they can convey 69 cfs at the 0.5% slope.**

RESPONSE: The swale at CI9B1/CI9B/CU9B has been replaced with a concrete weir set at elevation 2115.10'. The intent of the design is that nuisance flows are conveyed north in Grecian Sun Street to ES-P3 and then to ES-E2. Larger flows will pond up and weir over to the east. A concrete pad is provided along APN 139-20-411-012 to mitigate erosion from the weir and allow flow to normalize before being conveyed though the proposed wrought iron fence and into the adjacent parcel. The concrete pad downstream of the weir is set at the existing elevations along the property boundary.

Weir, orifice and normal depth calculations for ES-P3 are include in Appendix C. The hydraulic calculations have been revised to match grading and drainage pattern revisions from the original submittal.

The swale on the north side of lots 149-160 and to the east of lot 160 has been included as section J3 and shows that the runoff from prorated subbasin OND6C can be conveyed in the swale with a flow depth of 0.45'. The velocities are non-erosive (under 5 fps).

17. **The minimum drainage easement shown Cross-section 7/C.6.1 is 20-ft adjust grading plan and calculations accordingly.**

RESPONSE: Per discussion in the virtual meeting with the CLV and the response to comment 10, the drainage easement, now labeled ES-P3 has been revised to be 15' wide. The easement now meets DxV criteria. The revised normal depth calculations in Appendix C and the grading details for cross section. All finish floor adjacent to the easement have been set a minimum of 18".

18. Provide a weir calculation for the concentration point CI9B and finished floor around this weir depth must be minimum of 18-inch above the water surface elevation. Clearly show the limit of proposed wrought iron fence and screen wall along this area. Clearly indicated that the screen wall shown in 6A/C.6.1. is proposed to be removed and replaced with wrought iron fence.

RESPONSE: Easement ES-P3 has been revised since the original submittal. The weir has been relocated west to provide increased concrete pad length between the weir and the property line to allow flow to normalize. The weir crest elevation is set at 2115.10' for the width of the easement majority of the easement(~180'). The southern portion of the easement is raised above the 2115.10' weir elevation to prevent runoff from Parnon Avenue to overtop the weir and enter the adjacent site during smaller storm events. The weir calculations shows a weir depth of 0.67' for a maximum water surface elevation of 2115.88'. The weir is intended to disperse runoff and deconcentrate flows before discharging to APN 139-20-411-012. Weir calculations include a 50% clogging factor and can be found in Appendix C. Adjacent finished floor elevations are set at least 18" above the water surface elevation over the weir (2117.38'). See Appendix C for finish floor analysis. The weir will cause ponding and backwater conditions through ES-P3, Grecian Sun Street and Golden Chariot Avenue.

19. The FlowMaster for Interim Phase 2 Cross Section ES_P3 should be evaluated for flows from D7 (29 cfs) and CI9B (195 cfs), this will be a total of 224 cfs. Per the grading plans (Sheet C.2.8) the combination point CI9B will be conveyed into the drainage easement ES_P3. Additionally, provide and evaluate all existing FF along this 10' easement with this (224 cfs) additional flow.

RESPONSE: It is not the design intent that the flows in easement ES-E2 (D7) recombines with easement ES-P3. The design intent is that 29 cfs (the design flowrate from the Holly Study, DS 3893) from the flows at CI8B1/CI8B/CU8B enters the existing easement ES-E2 and is conveyed to Ferrell Street. The nuisance flows will discharge from ES-P3 into ES-E2 near the proposed lot 160 northeast of Golden Chariot Avenue. The flows from D7 do not combine with flows at concentration point CI9B1/CI9B/CU9B. The wrought iron fence entrance to easement ES-E2 will be revised to include an orifice plate that will limit the flows entering the ES-E2.

During the 100-year event, ES-P3 will have ponding up to elevation 15.55. This ponding provides head from ES-P3 to ES-E2. The block wall opening that connects ES-P3 to ES-E2 and provides positive drainage for nuisance flows, is limited in size so that during the 100 year event, the block wall opening conveys 4 cfs with a 50% clogging factor. With the 25 cfs that enters at the entrance to ES-E2 (with a 50% clogging factor) and the 4 cfs from this block wall opening, ES-E2 has the design flow of 29 cfs. However, in the instance of a 100-year event and not clogging in these orifice entrances to ES-E2, the easement will convey up to 58 cfs. Additional calculations for ES-E2, as discussed in the virtual meeting, are included. The adjacent lots are not negatively affect by the increased flows. The finished floor across from the discharge point of ES-E2 in Ferrell Avenue is above the Specific energy. See Appendix C for additional ES-E2 calculations and Appendix D for the Holly Study reference information.

20. **Sheet C2.1: Lots 30 and 31 are facing directly at ES-P1 which conveys 50 cfs. The flow in ES-P1 will impact the two lots before it will make a 90-degree turn and flow in Grecian Moon Street. Provide EGL calculation and verify that the proposed GFF and FF of the lots in the vicinity are adequately protected. Provide a cut-off wall at the beginning of concrete channel along Holly.**

    RESPONSE: The finished floor analysis now includes a section with all the lots potentially affected by T-intersections and show the specific energy. The finished floor are set above the specific energy of the flows perpendicular to the lots. See Appendix C for the updated finished floor analysis. The lots that do not meet finished floor criteria on their side streets will be protected with solid grouted walls.

21. **Sheet C2.2: The knuckle at Arcadian King Avenue and Grecian Sky Street requires EGL calculation to justify the proposed GFF and FF elevations of Lots 53 to 56.**

    RESPONSE: The finished floor analysis now includes a section with all the lots potentially affected by T-intersections and show the specific energy. The finished floor are set above the specific energy of the flows perpendicular to the lots. T-intersection are analyzed using the specific energy (EGL) which encompasses superelevation depths. See Appendix C for the updated finished floor analysis.

22. Sheet C2.4: Label the recorded number for the existing drainage easement in the adjacent apartment complex on the grading plan.

RESPONSE: Noted. The easement is labeled on the plans. The existing easements are referenced rom the final ma book 130 and page 0027.

23. Sheet C2.8: Provide EGL calculation at the T-intersection of Grecian Sky Street and Golden Chariot Avenue. Justify the GFF and FF of Lots 171, 172 accordingly.

Provide EGL calculation at the intersection of Grecian Sun Street and Golden Chariot Avenue for the same reason. Verify that Lots 159, 160 and 161 are adequately elevated.

RESPONSE: The finished floor analysis in Appendix C shows the finished floor and garage floor elevations, street flow depths, and EGLs at pertinent locations including lots 171, 172, 159, 160, and 161. The project site meets applicable Manual and City criteria including finished floor, easement, T-intersection and finished floor (twice the depth of flow).

24. Sheet C2.8: Label the recorded document number for the existing drainage easement. All drainage condition maps show that the discharge point of CE6, CI9B, CI9B1 or CU9B is at the end of Golden Chariot Avenue. However, per grading plan Sheet C2.8, the flow arrows in the proposed concrete easement point to the northeast corner of the plan as the discharge point. Address in the next submittal.
Cross Section 6A/C6.1 shows an existing wall along the east boundary. How the proposed discharge from Golden Chariot Avenue can go through if this wall is to remain? Provide a blow-up detail and a cross section to profile how Golden Chariot Avenue connects with the proposed discharge point and the adjacent parcel in the next submittal.

RESPONSE: Section 6A/C6.1 has been modified. The existing fence along APN: 139-20-411-012 will be replaced with a wrought iron fence with the approval of the adjacent property owner. As discussed in Comment 10 and 18 above, the intent is that nuisance flows will be conveyed to easement ES-E2 and ES-E2 will meet design capacity during the 100-year event. The remaining flows (CI9B1/CI9B/CU9B) will pond up and weir over to the east along historical flow patterns into APN: 139-20-411-012.

25. **Sheet C2.8: In the existing condition, the discharge pattern is sheet flow to the adjacent parcel. However, in the interim and ultimate conditions, even the flow is reduced, the discharge will be concentrated flow which will have more defined flow path and erosion on the way.**

    Coordinate with the adjacent parcel owner for acceptance of the proposed drainage pattern and some offsite work may need to be done to the consent of the adjacent owner. A notarized letter of acknowledgment from the adjacent owner must be obtained prior to the final approval of the subject drainage study.

    RESPONSE: The design includes a weir with constant elevation (2114.88'). Runoff during events will pond up and flow over the weir across the entire ~225' uniformly. The intent is to de-concentrate flows and lower velocities as runoff is conveyed to the adjacent parcel. The proposed concrete apron downstream of the weir match the existing grades along the property line. The owner has been notified that a notarized letter from the adjacent property owner will be required for final approval.

26. **Sheet C2.10: With reference to Comment #5 above, provide an opening for the discharge of Basin ONE4. Review and revise the pertinent grading plan, interior streets and details accordingly.**

    RESPONSE: Easement ES-P5 will include 2 standard block wall openings (48"X16") at existing low points where flow discharged from the project site. Grading plans, figures, basin summaries, calculations etc. have been revised to account for the drainage pattern change.

27. **Sheet C2.10: Provide EGL calculation at Grecian Queen Avenue and Nyx Street and check the GFF and FF of Lots 198, 199 and 200.**

    RESPONSE: See Appendix C for the finished floor analysis table that includes t-intersection analysis for lots 198, 199, and 200.

28. General Comment: Please clearly indicate location of screen wall callout along Holly. Construction note shown in the grading plans do not match the cross-sections.

RESPONSE: The details and grading plan are now more clear on the screen wall location. See grading sheets C.2.1and C.2.2 and Details X and X on sheets C.6.0 and C.6.1.

29. The proposed wrought iron gate and fence must be per City detail, along with drainage easement details.

RESPONSE: The appropriate details and standards are called out for the drainage easements. See the grading plans for callouts and details.

30. Revise the Drainage Certification name to match the name listed as the stamping engineer on the grading plans.

RESPONSE: Noted.

31. The following Finished Floors do not meet the twice the depth of flow, or minimum 6" above the adjacent TC up to 18":

LOT	TC	FF	REQ FF
6	21.17	22.11	22.19
49	19.37	20.20	20.75
50	19.48	20.20	20.86
51	19.39	20.20	20.77
52	19.29	20.20	20.67
56	18.9	20.19	20.28
60	19.65	20.94	21.03
64	22.04	22.49	22.54
69	19.90	20.71	21
70	19.76	20.71	20.86
71	19.65	20.71	20.75
72	19.54	19.90	20.64
77	18.89	19.72	19.99
78	18.75	19.72	19.85
79	18.64	19.72	19.74
90	18.64	19.72	19.74
91	18.75	19.72	19.85

LOT	TC	FF	REQ FF
98	19.66	20.71	20.76
99	19.77	20.71	20.87
100	19.90	20.71	21
235	21.17	21.89	22.67
236	21.09	21.89	22.59
237	21.00	21.89	22.5
238	20.92	21.89	22.42
239	20.68	21.89	22.18
240	20.43	21.89	21.93

RESPONSE: Noted. As discussed in Comment 11 and in the virtual meeting, the garage finished floors will not maintain 6" of freeboard due to the shortened 5' driveways. An updated finished floor analysis can be found in Appendix C. The finish floor elevations meet pertinent criteria.

It is anticipated that the responses above and the attached Addendum #1 fully address the City comments. We respectfully request City approval of the Technical Drainage Study. Please don't hesitate to contact us with any questions.

Sincerely,

Horrocks Engineers

David B. Clark, PE

Engineer

Appendix A – Comment Letter and Figures

CLV Comment Letter

Figure 5: Existing Offsite Basin Map

Figure 6: Interim Phase 1 Offsite Basin Map

Figure 7: Interim Phase 1 Onsite Basin Map

Figure 8: Interim Phase 2 Offsite Basin Map

Figure 9: Interim Phase 2 Onsite Basin Map

Figure 10: Ultimate Basin Map

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM				DATE: May 7, 2020
TO: **Land Development Services** Department of Building & Safety				FROM: Albert Sung, P.E. Flood Control Project Engineer Department of Public Works
SUBJECT:	Drainage Study for:			**COPIES TO:**
Rancho and Vegas Townhomes				Horrocks Engineers
Cross Streets:	SEC of Rancho Drive & Holly Avenue			Harmony Homes, LLC
File Number:	F:\Depot\DSMemos\DS5273A.doc			Bart Anderson, P.E., DevCo
Parcel Number:	139-20-411-015			CCRFCD
Zoning Action:	TMP-73061			CCPW
FEMA Flood Zone	YES	NO **X**		NDOT
Proposed Storm Drain	YES **X**	NO		

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1st Submittal	4/24/2020	5/7/2020	See Comments Below	$400.00	3824245: $400
			TOTAL FEES (LDDRS):	**$400.00**	**----**

REMARKS:

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

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

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

2. The project proposes to construct a driveway entrance off of *Rancho Road*, a *Nevada Department of Transportation* (NDOT) right-of-way. The engineer must contact NDOT for occupancy / encroachment permit for the proposed project.

3. The subject project is adjacent to an ongoing capital improvement project in *Rancho Road*, "*Rancho Road Improvements – Mesquite Avenue to Decatur Boulevard*". The engineer must coordinate with the project manager, Mr. Michael Sturdivant of *City Public Works Department* at (702) 229-6734 for acceptable street improvement design in *Rancho Road* prior to the final approval of the drainage study.

4. The *Study* stated that the project will be constructed in two phases. However, only the grading plans for the fully developed condition were provided in the last submittal. A separate set of plans for *Phase 1 Improvements* must be provided in the next submittal. For *Phase 1 Improvement Plans*, the undeveloped *Phase 2* portion must be shown as existing natural grade condition. At the most, the future *Phase 2* can only be shown as a rough grade condition without any final grading and elevations of pads. Contour lines are the only acceptable features in the future *Phase 2* portion.

5. **Figure 5 (Existing Condition Offsite Basin Map)**: Basin ONE4 at the south of the site drains Q_{100}=4cfs to the adjacent parcel (APN: 139-20-411-004) in the existing condition. However, no discharge is proposed in any of the interim or ultimate conditions. Note that this discharge point shall be maintained to relieve the impact to other discharge points.

   Revise the interim and ultimate conditions maps and the overall grading design accordingly.

6. **ES-P1** at the northwest corner of the site is designed for 50 cfs. Widen **ES-P1** to 20'-minimum. Per **City** policy, 10'-wide drainage easement is limited to 20 cfs. Also, callout wrought iron gate per Standard Drawing 425.S1 in the grading plan.

7. It is not clear how much flow is proposed to convey through **ES-P2** adjacent to *Holly Lane*. Provide hydraulic calculations and address in the next submittal.

8. Adjacent to the east of the main entrance in *Holly Lane* (*Mount Mainalo Street*), a final spill of 60 cfs (**DIV 5**) is proposed to be accepted into the subject site. Are there any zero-curb to facilitate the flow-split?

   Also, a mere 48"x16" wall opening is proposed to convey the 60 cfs is totally undersized for this magnitude of flow. It appears that a minimum 20'-wide wrought iron fence is required instead of the wall opening. Address in the next submittal.

9. The parking stalls in the path of the 60 cfs as stated in the above comment must be removed and designated for drainage easement. Review and resolve in the next submittal.

10. The proposed **ES-P3** at the southeast corner of the development is conveying 96 cfs through a 10'-wide public drainage easement (privately maintained). Per the hydraulic calculation, the 100-year flow depth is 1.35' and the 100-year velocity is 7.36 ft/s, the resulting DV is 9.93 which exceeds the criteria of 8.0. Note that DV-value is a threshold of whether a human will be swept away if standing in the course of the water path. Widen the drainage easement to a minimum of 20' if still meeting the criteria.

11. The proposed residential project consists of lots with 5'-long driveway leading into the individual garage and finished floor.

    In the next submittal, provide a table to list all lots and the proposed garage floor elevations (GFF) which must be set at a minimum of 6" above the adjacent high side TC of individual lot or 6" above the corresponding water surface whichever the higher.

12. There are several discrepancies between the existing condition exhibit and the FLO2D exhibit. For example: The FLO2D exhibit shows 290 cfs at combination point C6, but the Existing Conditions Exhibit shows 324 cfs. The property north of the site is shown to produce 71 cfs in the FLO2D exhibit, but only 40 cfs in the existing condition exhibit. Please provide better description regarding flow difference.

13. D8 and DIV8 are considered in the HEC-1s for the *Interim* and *Ultimate Conditions*. Show these flow splits on all applicable basin map exhibits.

14. **Figure 8 (Interim Condition Offsite Map)** has the table "*Offsite Street Normal Depth Calculations Summary for Interim Phase 2 Condition*", but this table displays the normal depth calculations for Phase 1. Revise accordingly.

15. The Flowmaster cross sections in *Rancho Drive* show the flow overtopping the center median for the west half of the street. This overtopping flow needs to be considered in the east half of the street to verify the hump on Tripoli Falls Avenue is met.

16. Provide hydraulic sections for the onsite swales. Particularly, the 8' swales located along the perimeter at CU9B in ultimate condition do not seem like they can convey 69 cfs at the 0.5% slope.
17. The minimum drainage easement shown Cross-section 7/C.6.1 is 20-ft adjust grading plan and calculations accordingly.
18. Provide a weir calculation for the concentration point C19B and finished floor around this weir depth must be minimum of 18-inch above the water surface elevation. Clearly show the limit of proposed wrought iron fence and screen wall along this area. Clearly indicated that the screen wall shown in 6A/C.6.1. is proposed to be removed and replaced with wrought iron fence.
19. The FlowMaster for *Interim Phase 2 Cross Section ES_P3* should be evaluated for flows from D7 (29 cfs) and CI9B (195 cfs), this will be a total of 224 cfs. Per the grading plans (Sheet C.2.8) the combination point CI9B will be conveyed into the drainage easement ES_P3. Additionally, provide and evaluate all existing FF along this 10' easement with this (224 cfs) additional flow.
20. **Sheet C2.1**: Lots 30 and 31 are facing directly at **ES-P1** which conveys 50 cfs. The flow in **ES-P1** will impact the two lots before it will make a 90-degree turn and flow in *Grecian Moon Street*. Provide EGL calculation and verify that the proposed GFF and FF of the lots in the vicinity are adequately protected. Provide a cut-off wall at the beginning of concrete channel along Holly.
21. **Sheet C2.2**: The knuckle at *Arcadian King Avenue* and *Grecian Sky Street* requires EGL calculation to justify the proposed GFF and FF elevations of Lots 53 to 56.
22. **Sheet C2.4**: Label the recorded number for the existing drainage easement in the adjacent apartment complex on the grading plan.
23. **Sheet C2.8**: Provide EGL calculation at the T-intersection of *Grecian Sky Street* and *Golden Chariot Avenue*. Justify the GFF and FF of Lots 171, 172 accordingly.

    Provide EGL calculation at the intersection of *Grecian Sun Street* and *Golden Chariot Avenue* for the same reason. Verify that Lots 159, 160 and 161 are adequately elevated.
24. **Sheet C2.8**: Label the recorded document number for the existing drainage easement.

    All drainage condition maps show that the discharge point of CE6, CI9B, CI9B1 or CU9B is at the end of *Golden Chariot Avenue*. However, per grading plan Sheet C2.8, the flow arrows in the proposed concrete easement point to the northeast corner of the plan as the discharge point. Address in the next submittal.

    Cross Section 6A/C6.1 shows an existing wall along the east boundary. How the proposed discharge from *Golden Chariot Avenue* can go through if this wall is to remain? Provide a blow-up detail and a cross section to profile how *Golden Chariot Avenue* connects with the proposed discharge point and the adjacent parcel in the next submittal.
25. **Sheet C2.8**: In the existing condition, the discharge pattern is sheetflow to the adjacent parcel. However, in the interim and ultimate conditions, even the flow is reduced, the discharge will be concentrated flow which will have more defined flow path and erosion on the way.

    Coordinate with the adjacent parcel owner for acceptance of the proposed drainage pattern and some offsite work may need to be done to the consent of the adjacent owner. A notarized letter of acknowledgment from the adjacent owner must be obtained prior to the final approval of the subject drainage study.
26. **Sheet C2.10**: With reference to *Comment #5* above, provide an opening for the discharge of Basin ONE4. Review and revise the pertinent grading plan, interior streets and details accordingly.
27. **Sheet C2.10**: Provide EGL calculation at *Grecian Queen Avenue* and *Nyx Street* and check the GFF and FF of Lots 198, 199 and 200.
28. **General Comment**: Please clearly indicate location of screen wall callout along Holly. Construction note shown in the grading plans do not match the cross-sections.

29. The proposed wrought iron gate and fence must be per City detail, along with drainage easement details.

30. Revise the *Drainage Certification* name to match the name listed as the stamping engineer on the grading plans.

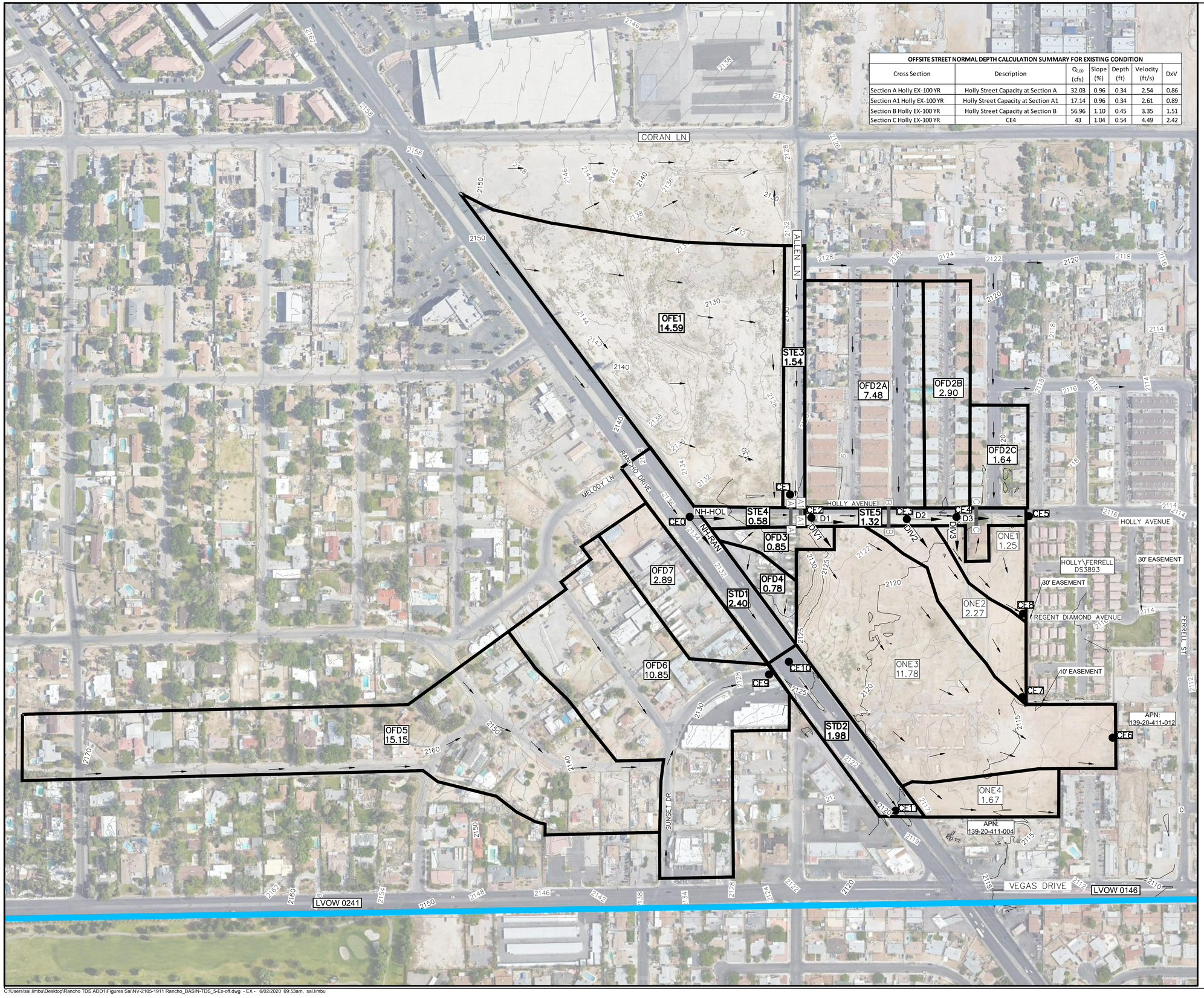
31. The following Finished Floors do not meet the twice the depth of flow, or minimum 6" above the adjacent TC up to 18":

LOT	TC	FF	REQ FF
6	21.17	22.11	22.19
49	19.37	20.20	20.75
50	19.48	20.20	20.86
51	19.39	20.20	20.77
52	19.29	20.20	20.67
56	18.9	20.19	20.28
60	19.65	20.94	21.03
64	22.04	22.49	22.54
69	19.90	20.71	21
70	19.76	20.71	20.86
71	19.65	20.71	20.75
72	19.54	19.90	20.64
77	18.89	19.72	19.99
78	18.75	19.72	19.85
79	18.64	19.72	19.74
90	18.64	19.72	19.74
91	18.75	19.72	19.85
92	18.89	19.72	19.99
98	19.66	20.71	20.76
99	19.77	20.71	20.87
100	19.90	20.71	21
235	21.17	21.89	22.67
236	21.09	21.89	22.59
237	21.00	21.89	22.5
238	20.92	21.89	22.42
239	20.68	21.89	22.18
240	20.43	21.89	21.93

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/AYS

T/R/S: T20S/R61E/20
AREA M-20



OFFSITE STREET NORMAL DEPTH CALCULATION SUMMARY FOR EXISTING CONDITION

Cross Section	Description	Q_{100} (cfs)	Slope (%)	Depth (ft)	Velocity (ft/s)	DxV
Section A Holly EX-100 YR	Holly Street Capacity at Section A	32.03	0.96	0.34	2.54	0.86
Section A1 Holly EX-100 YR	Holly Street Capacity at Section A1	17.14	0.96	0.34	2.61	0.89
Section B Holly EX-100 YR	Holly Street Capacity at Section B	56.96	1.10	0.45	3.35	1.51
Section C Holly EX-100 YR	CE4	43	1.04	0.54	4.49	2.42

0 150' 300'
SCALE: 1" = 150'

Existing Condition			
Basin	Area (acres)	Q_{10} (cfs)	Q_{100} (cfs)
CE1	-	12	30
CE2	-	14	319
CE3	-	23	36
CE4	-	26	43
CE5	-	30	51
CE6	-	9	324
CE7		2	4
CE8		1	3
CE9		25	54
CE10		114	292
CE11		116	296
NH_HOL	-	0	285
NH_RAN	-	81	223
D1	-	14	17
DIV1	-	0	302
D2	-	23	36
DIV2	-	0	0
D3	-	26	43
DIV3	-	0	0
OFE1	14.59	11	27
OFD2A	10.77	9	19
OFD2B	10.77	3	7
OFD2C	10.77	2	4
OFD3	0.85	1	3
OFD4	0.78	1	3
OFD5	15.15	11	26
OFD6	10.85	15	30
OFD7	2.89	5	9
ONE1	1.25	1	3
ONE2	2.27	2	4
ONE3	11.78	9	22
ONE4	1.67	1	4
STD1	2.40	5	8
STD2	1.98	4	7
STE3	1.54	2	4
STE4	0.58	1	2
STE5	1.32	2	4
CE1 = OFE1 + STE3			
CE2 = CE1 + (NH_HOL) + STE4 + OFD3			
CE3 = D1 + OFD2A			
CE4 = D2 + OFD2B			
CE5 = D3 + OFD2C + STE5			
CE6 = DIV1 + ONE3			
CE7 = DIV2 + ONE2			
CE8 = DIV3 + ONE1			
CE9 = OFD5 + OFD6			
CE10 = (NH_RAN) + OFD7 + OFD4 + STD1 + CE9			
CE11 = CE10 + STD2			
Note: NH-HOL and NH-RAN are referenced from Neighborhood Study.			

KEY:

- ONE1 6.76 — BASIN NAME/AREA
- CE3 — CONCENTRATION POINT
- FLOW DIRECTION
- BASIN BOUNDARY
- EXISTING FACILITY
- A — A — CROSS SECTION

HORROCKS ENGINEERS
1401 N. Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
0 1 2
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE

REVISIONS
REV # | DATE

*SEE GENERAL NOTES SHEET

DRAWING INFO
DATE 03/06/2020
DESIGNED MDP
DRAWN SS
CHECKED LMB
PROJECT NV-2105-1911

RANCHO & VEGAS TOWNHOMES

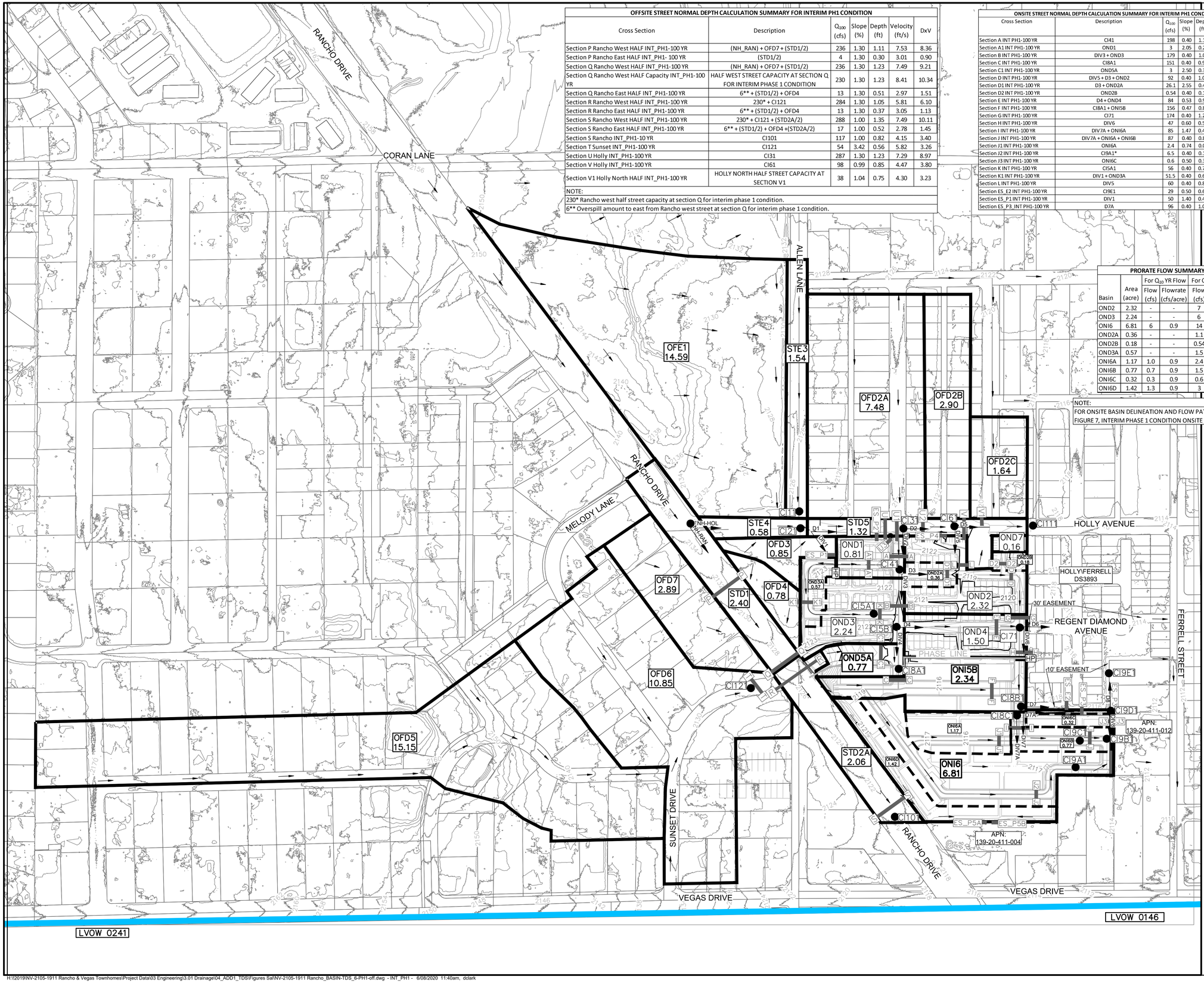
CITY OF LAS VEGAS, NEVADA

EXISTING CONDITION OFFSITE BASIN MAP

APN 139-20-411-015

5
PAGE

C:\Users\sal.limbu\Desktop\Rancho TDS ADD1\Figures Sal\NV-2105-1911 Rancho_BASIN-TDS_5-Ex-off.dwg - EX - 6/02/2020 09:53am, sal.limbu



OFFSITE STREET NORMAL DEPTH CALCULATION SUMMARY FOR INTERIM PH1 CONDITION

Cross Section	Description	Q_{100} (cfs)	Slope (%)	Depth (ft)	Velocity (ft/s)	DxV
Section P Rancho West HALF INT_PH1-100 YR	(NH_RAN) + OFD7 + (STD1/2)	236	1.30	1.11	7.53	8.36
Section P Rancho East HALF INT_PH1- 100 YR	(STD1/2)	4	1.30	0.30	3.01	0.90
Section Q Rancho West HALF INT_PH1-100 YR	(NH_RAN) + OFD7 + (STD1/2)	236	1.30	1.23	7.49	9.21
Section Q Rancho West HALF Capacity INT_PH1-100 YR	HALF WEST STREET CAPACITY AT SECTION Q FOR INTERIM PHASE 1 CONDITION	230	1.30	1.23	8.41	10.34
Section Q Rancho East HALF INT_PH1-100 YR	6** + (STD1/2) + OFD4	13	1.30	0.51	2.97	1.51
Section R Rancho West HALF INT_PH1-100 YR	230* + CI121	284	1.30	1.05	5.81	6.10
Section R Rancho East HALF INT_PH1-100 YR	6** + (STD1/2) + OFD4	13	1.30	0.37	3.05	1.13
Section S Rancho West HALF INT_PH1-100 YR	230* + CI121 + (STD2A/2)	288	1.00	1.35	7.49	10.11
Section S Rancho East HALF INT_PH1-100 YR	6** + (STD1/2) + OFD4 +(STD2A/2)	17	1.00	0.52	2.78	1.45
Section S Rancho INT_PH1-10 YR	CI101	117	1.00	0.82	4.15	3.40
Section T Sunset INT_PH1-100 YR	CI121	54	3.42	0.56	5.82	3.26
Section U Holly INT_PH1-100 YR	CI31	287	1.30	1.23	7.29	8.97
Section V Holly INT_PH1-100 YR	CI61	98	0.99	0.85	4.47	3.80
Section V1 Holly North HALF INT_PH1-100 YR	HOLLY NORTH HALF STREET CAPACITY AT SECTION V1	38	1.04	0.75	4.30	3.23

NOTE:
230* Rancho west half street capacity at section Q for interim phase 1 condition.
6** Overspill amount to east from Rancho west street at section Q for interim phase 1 condition.

ONSITE STREET NORMAL DEPTH CALCULATION SUMMARY FOR INTERIM PH1 CONDITION

Cross Section	Description	Q_{100} (cfs)	Slope (%)	Depth (ft)	Velocity (ft/s)	DxV
Section A INT PH1-100 YR	CI41	198	0.40	1.12	5.26	5.89
Section A1 INT PH1-100 YR	OND1	3	2.05	0.20	2.55	0.51
Section B INT PH1-100 YR	DIV3 + OND3	179	0.40	1.08	5.05	5.45
Section C INT PH1-100 YR	CI8A1	151	0.40	0.96	3.56	3.42
Section C1 INT PH1-100 YR	OND5A	3	2.50	0.30	2.85	0.86
Section D INT PH1-100 YR	DIV5 + D3 + OND2	92	0.40	1.00	4.45	4.45
Section D1 INT PH1-100 YR	D3 + OND2A	26.1	2.55	0.46	5.46	2.51
Section D2 INT PH1-100 YR	OND2B	0.54	0.40	0.15	0.93	0.14
Section E INT PH1-100 YR	D4 + OND4	84	0.53	0.90	4.37	3.93
Section F INT PH1-100 YR	CI8A1 + ONI5B	156	0.47	0.82	3.51	2.88
Section G INT PH1-100 YR	CI71	174	0.40	1.21	3.80	4.60
Section H INT PH1-100 YR	DIV6	47	0.60	0.58	3.76	2.18
Section I INT PH1-100 YR	DIV7A + ONI6A	85	1.47	0.49	4.38	2.15
Section J INT PH1-100 YR	DIV7A + ONI6A + ONI6B	87	0.40	0.81	3.16	2.56
Section J1 INT PH1-100 YR	ONI6A	2.4	0.74	0.08	0.92	0.07
Section J2 INT PH1-100 YR	CI9A1*	6.5	0.40	0.17	1.14	0.19
Section J3 INT PH1-100 YR	ONI6C	0.6	0.50	0.39	1.35	0.53
Section K INT PH1-100 YR	CI5A1	56	0.40	0.70	3.72	2.60
Section K1 INT PH1-100 YR	DIV1 + OND3A	51.5	0.40	0.68	3.05	2.07
Section L INT PH1-100 YR	DIV5	60	0.40	0.81	4.23	3.43
Section ES_E2 INT PH1-100 YR	CI9E1	29	0.50	0.61	5.16	3.15
Section ES_P1 INT PH1-100 YR	DIV1	50	1.40	0.47	6.81	3.20
Section ES_P3_INT PH1-100 YR	D7A	96	0.40	1.05	6.58	6.91

PRORATE FLOW SUMMARY

Basin	Area (acre)	For Q_{10} YR Flow: Flow (cfs)	For Q_{10} YR Flow: Flowrate (cfs/acre)	For Q_{100} YR Flow: Flow (cfs)	For Q_{100} YR Flow: Flowrate (cfs/acre)
OND2	2.32	-	-	7	3.0
OND3	2.24	-	-	6	2.7
ONI6	6.81	6	0.9	14	2.0
OND2A	0.36	-	-	1.1	3.0
OND2B	0.18	-	-	0.54	3.0
OND3A	0.57	-	-	1.5	2.7
ONI6A	1.17	1.0	0.9	2.4	2.0
ONI6B	0.77	0.7	0.9	1.5	2.0
ONI6C	0.32	0.3	0.9	0.6	2.0
ONI6D	1.42	1.3	0.9	3	2.0

NOTE:
FOR ONSITE BASIN DELINEATION AND FLOW PATTERNS SEE FIGURE 7, INTERIM PHASE 1 CONDITION ONSITE BASIN MAP

Interim Phase 1 Condition

Basin	Area (acres)	Q_{10} (cfs)	Q_{100} (cfs)
CI11	-	12	30
CI21	-	14	319
CI31	-	16	287
CI41	-	1	198
CI5A1	-	10	56
CI5B1	-	11	229
CI61	-	19	98
CI71	-	6	174
CI8A1	-	12	151
CI8B1	-	14	204
CI8C1	-	0	179
CI9A1*	-	2.8	6.5
CI9B1*	-	5	186
CI9C1		6	97
CI9D1		0	96
CI9E1		14	29
CI101	-	117	297
CI111	-	23	47
CI121	-	25	54
D1	-	7	269
DIV1	-	7	50
D2	-	16	91
DIV2	-	0	196
D3	-	0	25
DIV3	-	1	173
D4	-	0	79
DIV4	-	11	150
D5	-	19	38
DIV5	-	0	60
D6	-	6	127
DIV6	-	0	47
D7	-	14	25
DIV7	-	0	179
D7A		0	96
DIV7A		0	83
D8		0	4
DIV8		0	92
NH_HOL	-	0	285
NH_RAN	-	81	223
OFD2A	7.48	9	19
OFD2B	2.90	3	7
OFD2C	1.64	2	4
OFD3	0.85	1	3
OFD4	0.78	1	3
OFD5	15.15	11	26
OFD6	10.85	15	30
OFD7	2.89	5	9
OFE1	14.59	11	27
OND1	0.81	1	3
OND2	2.32	3	7
OND3	2.24	3	6
OND4	1.50	2	5
OND5A	0.77	1	3
ONI5B	2.34	2	5
ONI6	6.81	6	14
OND7	0.16	<1	1
STD1	2.40	5	8
STD2A	2.06	4	7
STE3	1.54	2	4
STE4	0.58	1	2
STD5	1.32	2	4

CI11 = OFE1 + STE3
CI21 = CI11 + (NH_HOL) + STE4 + OFD3
CI31 = D1 + OFD2A
CI41 = DIV2 + OND1
CI5A1 = DIV1 + OND3
CI5B1 = DIV3 + CI5A1
CI61 = D2 + OFD2B
CI71 = DIV5 + OND2 + D3 + OND4 + D4
CI8A1 = DIV4 + OND5A
CI8B1 = DIV6 + CI8A1 + ONI5B
CI8C1 = DIV7
CI9A1 = ONI6
CI9A1* = CI9A1 - OND6A - OND6B - OND6C - OND6D
CI9B1 = DIV8 + CI9C1
CI9B1* = CI9B1 - OND6D
CI9C1= DIV7A + CI9A1
CI9D1 = D7A
CI9E1 = D7 + D8
CI101 = (NH_RAN) + OFD7 + OFD4 + STD1 + CI121 + STD2A
CI111 = D5 + OFD2C + STD5 + OND7
CI121 = OFD5 + OFD6

Note: NH-HOL and NH-RAN are referenced from Neighborhood Study.
* Revised from HEC-1 Model results

KEY:

- OND1 6.76 — BASIN NAME/AREA
- CI3 — CONCENTRATION POINT
- FLOW DIRECTION
- 1 — 1 — CROSS SECTION
- BASIN BOUNDARY
- PRORATE BASIN BOUNDARY
- OND2A 0.36 — PRORATE BASIN NAME/AREA
- EXISTING FACILITY

0 150' 300'
SCALE: 1" = 150'

HORROCKS ENGINEERS
1401 N. Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
0 1 2
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE

REVISIONS
REV # | DATE

*SEE GENERAL NOTES SHEET

DRAWING INFO
DATE
DESIGNED
DRAWN
CHECKED
PROJECT NV-2105-1911

RANCHO AND VEGAS

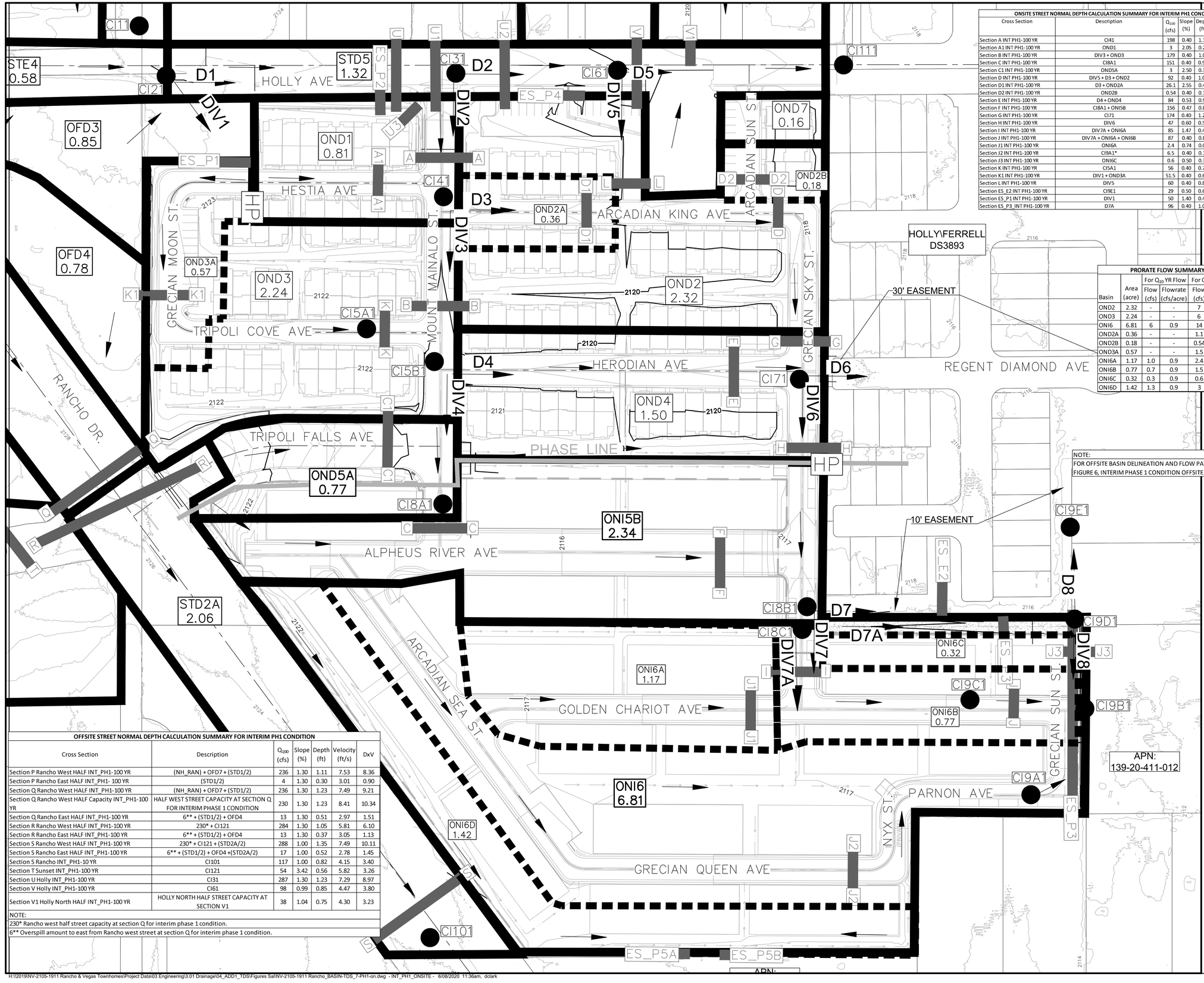
CITY OF LAS VEGAS, NEVADA

INTERIM PHASE 1 CONDITION OFFSITE BASIN MAP

APN 139-20-411-015

6

PAGE



ONSITE STREET NORMAL DEPTH CALCULATION SUMMARY FOR INTERIM PH1 CONDITION

Cross Section	Description	Q_{100} (cfs)	Slope (%)	Depth (ft)	Velocity (ft/s)	DxV
Section A INT PH1-100 YR	CI41	198	0.40	1.12	5.26	5.89
Section A1 INT PH1-100 YR	OND1	3	2.05	0.20	2.55	0.51
Section B INT PH1-100 YR	DIV3 + OND3	179	0.40	1.08	5.05	5.45
Section C INT PH1-100 YR	CI8A1	151	0.40	0.96	3.56	3.42
Section C1 INT PH1-100 YR	OND5A	3	2.50	0.30	2.85	0.86
Section D INT PH1-100 YR	DIV5 + D3 + OND2	92	0.40	1.00	4.45	4.45
Section D1 INT PH1-100 YR	D3 + OND2A	26.1	2.55	0.46	5.46	2.51
Section D2 INT PH1-100 YR	OND2B	0.54	0.40	0.15	0.93	0.14
Section E INT PH1-100 YR	D4 + OND4	84	0.53	0.90	4.37	3.93
Section F INT PH1-100 YR	CI8A1 + ONI5B	156	0.47	0.82	3.51	2.88
Section G INT PH1-100 YR	CI71	174	0.40	1.21	3.80	4.60
Section H INT PH1-100 YR	DIV6	47	0.60	0.58	3.76	2.18
Section I INT PH1-100 YR	DIV7A + ONI6A	85	1.47	0.49	4.38	2.15
Section J INT PH1-100 YR	DIV7A + ONI6A + ONI6B	87	0.40	0.81	3.16	2.56
Section J1 INT PH1-100 YR	ONI6A	2.4	0.74	0.08	0.92	0.07
Section J2 INT PH1-100 YR	CI9A1*	6.5	0.40	0.17	1.14	0.19
Section J3 INT PH1-100 YR	ONI6C	0.6	0.50	0.39	1.35	0.53
Section K INT PH1-100 YR	CI5A1	56	0.40	0.70	3.72	2.60
Section K1 INT PH1-100 YR	DIV1 + OND3A	51.5	0.40	0.68	3.05	2.07
Section L INT PH1-100 YR	DIV5	60	0.40	0.81	4.23	3.43
Section ES_E2 INT PH1-100 YR	CI9E1	29	0.50	0.61	5.16	3.15
Section ES_P1 INT PH1-100 YR	DIV1	50	1.40	0.47	6.81	3.20
Section ES_P3 INT PH1-100 YR	D7A	96	0.40	1.05	6.58	6.91

PRORATE FLOW SUMMARY

Basin	Area (acre)	For Q_{10} YR Flow: Flow (cfs)	For Q_{10} YR Flow: Flowrate (cfs/acre)	For Q_{100} YR Flow: Flow (cfs)	For Q_{100} YR Flow: Flowrate (cfs/acre)
OND2	2.32	-	-	7	3.0
OND3	2.24	-	-	6	2.7
ONI6	6.81	6	0.9	14	2.0
OND2A	0.36	-	-	1.1	3.0
OND2B	0.18	-	-	0.54	3.0
OND3A	0.57	-	-	1.5	2.7
ONI6A	1.17	1.0	0.9	2.4	2.0
ONI6B	0.77	0.7	0.9	1.5	2.0
ONI6C	0.32	0.3	0.9	0.6	2.0
ONI6D	1.42	1.3	0.9	3	2.0

NOTE:
FOR OFFSITE BASIN DELINEATION AND FLOW PATTERNS SEE FIGURE 6, INTERIM PHASE 1 CONDITION OFFSITE BASIN MAP

Interim Phase 1 Condition

Basin	Area (acres)	Q_{10} (cfs)	Q_{100} (cfs)
CI11	-	12	30
CI21	-	14	319
CI31	-	16	287
CI41	-	1	198
CI5A1	-	10	56
CI5B1	-	11	229
CI61	-	19	98
CI71	-	6	174
CI8A1	-	12	151
CI8B1	-	14	204
CI8C1	-	0	179
CI9A1*	-	2.8	6.5
CI9B1*	-	5	186
CI9C1		6	97
CI9D1		0	96
CI9E1		14	29
CI101	-	117	297
CI111	-	23	47
CI121	-	25	54
D1	-	7	269
DIV1	-	7	50
D2	-	16	91
DIV2	-	0	196
D3	-	0	25
DIV3	-	1	173
D4	-	0	79
DIV4	-	11	150
D5	-	19	38
DIV5	-	0	60
D6	-	6	127
DIV6	-	0	47
D7	-	14	25
DIV7	-	0	179
D7A		0	96
DIV7A		0	83
D8		0	4
DIV8		0	92
NH_HOL	-	0	285
NH_RAN	-	81	223
OFD2A	7.48	9	19
OFD2B	2.90	3	7
OFD2C	1.64	2	4
OFD3	0.85	1	3
OFD4	0.78	1	3
OFD5	15.15	11	26
OFD6	10.85	15	30
OFD7	2.89	5	9
OFE1	14.59	11	27
OND1	0.81	1	3
OND2	2.32	3	7
OND3	2.24	3	6
OND4	1.50	2	5
OND5A	0.77	1	3
ONI5B	2.34	2	5
ONI6	6.81	6	14
OND7	0.16	<1	1
STD1	2.40	5	8
STD2A	2.06	4	7
STE3	1.54	2	4
STE4	0.58	1	2
STD5	1.32	2	4
CI11 = OFE1 + STE3			
CI21 = CI11 + (NH_HOL) + STE4 + OFD3			
CI31 = D1 + OFD2A			
CI41 = DIV2 + OND1			
CI5A1 = DIV1 + OND3			
CI5B1 = DIV3 + CI5A1			
CI61 = D2 + OFD2B			
CI71 = DIV5 + OND2 + D3 + OND4 + D4			
CI8A1 = DIV4 + OND5A			
CI8B1 = DIV6 + CI8A1 + ONI5B			
CI8C1 = DIV7			
CI9A1 = ONI6			
CI9A1* = CI9A1 - OND6A - OND6B - OND6C - OND6D			
CI9B1 =DIV8 + CI9C1			
CI9B1* = CI9B1 - OND6D			
CI9C1= DIV7A + CI9A1			
CI9D1 = D7A			
CI9E1 = D7 + D8			
CI101 = (NH_RAN) + OFD7 + OFD4 + STD1 + CI121 + STD2A			
CI111 = D5 + OFD2C + STD5 + OND7			
CI121 = OFD5 + OFD6			

Note: NH-HOL and NH-RAN are referenced from Neighborhood Study.
* Revised from HEC-1 Model results

OFFSITE STREET NORMAL DEPTH CALCULATION SUMMARY FOR INTERIM PH1 CONDITION

Cross Section	Description	Q_{100} (cfs)	Slope (%)	Depth (ft)	Velocity (ft/s)	DxV
Section P Rancho West HALF INT_PH1-100 YR	(NH_RAN) + OFD7 + (STD1/2)	236	1.30	1.11	7.53	8.36
Section P Rancho East HALF INT_PH1- 100 YR	(STD1/2)	4	1.30	0.30	3.01	0.90
Section Q Rancho West HALF INT_PH1-100 YR	(NH_RAN) + OFD7 + (STD1/2)	236	1.30	1.23	7.49	9.21
Section Q Rancho West HALF Capacity INT_PH1-100 YR	HALF WEST STREET CAPACITY AT SECTION Q FOR INTERIM PHASE 1 CONDITION	230	1.30	1.23	8.41	10.34
Section Q Rancho East HALF INT_PH1-100 YR	6** + (STD1/2) + OFD4	13	1.30	0.51	2.97	1.51
Section R Rancho West HALF INT_PH1-100 YR	230* + CI121	284	1.30	1.05	5.81	6.10
Section R Rancho East HALF INT_PH1-100 YR	6** + (STD1/2) + OFD4	13	1.30	0.37	3.05	1.13
Section S Rancho West HALF INT_PH1-100 YR	230* + CI121 + (STD2A/2)	288	1.00	1.35	7.49	10.11
Section S Rancho East HALF INT_PH1-100 YR	6** + (STD1/2) + OFD4 +(STD2A/2)	17	1.00	0.52	2.78	1.45
Section S Rancho INT_PH1-10 YR	CI101	117	1.00	0.82	4.15	3.40
Section T Sunset INT_PH1-100 YR	CI121	54	3.42	0.56	5.82	3.26
Section U Holly INT_PH1-100 YR	CI31	287	1.30	1.23	7.29	8.97
Section V Holly INT_PH1-100 YR	CI61	98	0.99	0.85	4.47	3.80
Section V1 Holly North HALF INT_PH1-100 YR	HOLLY NORTH HALF STREET CAPACITY AT SECTION V1	38	1.04	0.75	4.30	3.23

NOTE:
230* Rancho west half street capacity at section Q for interim phase 1 condition.
6** Overspill amount to east from Rancho west street at section Q for interim phase 1 condition.

KEY:

- OND1 0.81 — BASIN NAME/AREA
- CI31 — CONCENTRATION POINT
- FLOW DIRECTION
- A — A — CROSS SECTION
- BASIN BOUNDARY
- PRORATE BASIN BOUNDARY
- OND2A 0.36 — PRORATE BASIN NAME/AREA

SCALE: 1" = 50'

HORROCKS ENGINEERS
1401 N. Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE
0 1 2

REVISIONS
REV # | DATE
*SEE GENERAL NOTES SHEET

DRAWING INFO
DATE
DESIGNED
DRAWN
CHECKED
PROJECT NV-2105-1911

RANCHO AND VEGAS
CITY OF LAS VEGAS, NEVADA

INTERIM PHASE 1 CONDITION ONSITE BASIN MAP

APN 139-20-411-015

7
PAGE

OFFSITE STREET NORMAL DEPTH CALCULATION SUMMARY FOR INTERIM PH2 CONDITION

Cross Section	Description	Q_{100} (cfs)	Slope (%)	Depth (ft)	Velocity (ft/s)	DxV
Section P Rancho West HALF INT_PH2-100 YR	(NH_RAN) + OFD7 + (STD1/2)	236	1.30	1.11	7.53	8.36
Section P Rancho East HALF INT_PH2 - 100 YR	(STD1/2)	4	1.30	0.30	3.01	0.90
Section Q Rancho West HALF INT_PH2-100 YR	(NH_RAN) + OFD7 + (STD1/2)	236	1.30	1.23	7.49	9.21
Section Q Rancho West HALF Capacity INT_PH2-100 YR	HALF WEST STREET CAPACITY at Section Q FOR INTERIM PHASE 2 CONDITION.	230	1.30	1.23	8.41	10.34
Section Q Rancho East HALF INT_PH2-100 YR	6** + (STD1/2) + OFD4	13	1.30	0.51	2.97	1.51
Section R Rancho West HALF INT_PH2-100 YR	230* + CI12	284	1.30	1.05	5.81	6.10
Section R Rancho East HALF INT_PH2-100 YR	6** + (STD1/2) + OFD4	13	1.30	0.37	3.05	1.13
Section S Rancho West HALF INT_PH2-100 YR	230* + CI12 + (STD2A/2)	288	1.00	1.35	7.49	10.11
Section S Rancho East HALF INT_PH2-100 YR	6** + (STD1/2) + OFD4 + (STD2A/2)	17	1.00	0.52	2.78	1.45
Section S Rancho INT_PH2-10 YR	CI10	117	1.00	0.82	4.15	3.40
Section T Sunset INT_PH2-100 YR	CI12	54	3.42	0.56	5.82	3.26
Section U Holly INT_PH2-100 YR	CI3	287	1.30	1.23	7.29	8.97
Section V Holly INT_PH2-100 YR	CI6	98	0.99	0.85	4.47	3.80
Section V1 Holly North HALF INT_PH2-100 YR	HOLLY NORTH HALF STREET CAPACITY AT SECTION V1	38	1.04	0.75	4.30	3.23

NOTE:

230* Rancho west half street capacity at section Q for interim phase 2 condition.

6** Overspill amount to east from Rancho west street at section Q for interim phase 2 condition.

ONSITE STREET NORMAL DEPTH CALCULATION SUMMARY FOR INTERIM PH2 CONDITION

Cross Section	Description	Q_{100} (cfs)	Slope (%)	Depth (ft)	Velocity (ft/s)	DxV
Section A INT PH2-100 YR	CI4	198	0.40	1.12	5.26	5.89
Section A1 INT PH2-100 YR	OND1	3	2.05	0.20	2.55	0.51
Section B INT PH2-100 YR	DIV3 + OND3	179	0.40	1.08	5.05	5.45
Section C INT PH2-100 YR	CI8A	151	0.40	1.00	4.73	4.73
Section C1 INT PH2-100 YR	OND5A	3	2.50	0.30	2.85	0.86
Section D INT PH2-100 YR	DIV5 + D3 + OND2	92	0.40	1.00	4.45	4.45
Section D1 INT PH2-100 YR	D3 + OND2A	26.1	2.55	0.46	5.46	2.51
Section D2 INT PH2-100 YR	OND2B	0.54	0.40	0.15	0.93	0.14
Section E INT PH2-100 YR	D4 + OND4	84	0.53	0.90	4.37	3.93
Section F INT PH2-100 YR	CI8A + OND5B	159	0.47	1.17	4.93	5.77
Section G INT PH2-100 YR	CI7	174	0.40	1.21	3.80	4.60
Section H INT PH2-100 YR	DIV6	47	0.60	0.58	3.76	2.18
Section I INT PH2-100 YR	DIV7A + OND6A	88	1.47	0.62	6.30	3.91
Section J INT PH2-100 YR	DIV7A + OND6A + OND6B	90	0.40	0.99	4.42	4.38
Section J1 INT PH2-100 YR	OND6A	3.2	0.74	0.24	1.73	0.42
Section J2 INT PH2-100 YR	CI9A*	8.7	0.40	0.35	1.86	0.65
Section J3 INT PH2-100 YR	OND6C	0.9	0.50	0.45	1.50	0.68
Section K INT PH2-100 YR	CI5A	56	0.40	0.70	3.72	2.60
Section K1 INT PH2-100 YR	DIV1 + OND3A	51.5	0.40	0.68	3.05	2.07
Section L INT PH2-100 YR	DIV5	60	0.40	0.81	4.23	3.43
Section ES_E2 INT PH2-100 YR	CI9E	29	0.50	0.61	5.16	3.15
Section ES_P1 INT PH2-100 YR	DIV1	50	1.40	0.47	6.81	3.20
Section ES_P3_INT PH2-100 YR	D7A	96	0.40	1.05	6.58	6.91

PRORATE FLOW SUMMARY

Basin	Area (acre)	For Q_{10} YR Flow: Flow (cfs)	For Q_{10} YR Flow: Flowrate (cfs/acre)	For Q_{100} YR Flow: Flow (cfs)	For Q_{100} YR Flow: Flowrate (cfs/acre)
OND2	2.32	-	-	7	3.0
OND3	2.24	-	-	6	2.7
OND6	6.81	10	1.5	19	2.8
OND2A	0.36	-	-	1.1	3.0
OND2B	0.18	-	-	0.54	3.0
OND3A	0.57	-	-	1.5	2.7
OND6A	1.17	1.7	1.5	3.2	2.8
OND6B	0.77	1.1	1.5	2.2	2.8
OND6C	0.32	0.5	1.5	0.9	2.8
OND6D	1.42	2.1	1.5	4.0	2.8

NOTE:

FOR ONSITE BASIN DELINEATION AND FLOW PATTERNS SEE FIGURE 9, INTERIM PHASE 2 CONDITION ONSITE BASIN MAP

Interim Phase 2 Condition			
Basin	Area (acres)	Q_{10} (cfs)	Q_{100} (cfs)
CI1	-	12	30
CI2	-	14	319
CI3	-	16	287
CI4	-	1	198
CI5A	-	10	56
CI5B	-	11	229
CI6	-	19	98
CI7	-	6	174
CI8A	-	12	151
CI8B	-	16	206
CI8C	-	0	181
CI9A*	-	4.6	8.7
CI9B*	-	8	191
CI9C		10	103
CI9D		0	96
CI9E		16	29
CI10	-	117	297
CI11	-	23	47
CI12	-	25	54
D1	-	7	269
DIV1	-	7	50
D2	-	16	91
DIV2	-	0	196
D3	-	0	25
DIV3	-	1	173
D4	-	0	79
DIV4	-	11	150
D5	-	19	38
DIV5	-	0	60
D6	-	6	127
DIV6	-	0	47
D7		16	25
DIV7	-	0	181
D7A		0	96
DIV7A		0	85
D8		0	4
DIV8		0	92
NH_HOL	-	0	285
NH_RAN		81	223
OFD2A	7.48	9	19
OFD2B	2.90	3	7
OFD2C	1.64	2	4
OFD3	0.85	1	3
OFD4	0.78	1	3
OFD5	15.15	11	26
OFD6	10.85	15	30
OFD7	2.89	5	9
OFE1	14.59	11	27
OND1	0.81	1	3
OND2	2.32	3	7
OND3	2.24	3	6
OND4	1.50	2	5
OND5A	0.77	1	3
OND5B	2.34	4	8
OND6	6.81	10	19
OND7	0.16	<1	1
STD1	2.40	5	8
STD2A	2.06	4	7
STE3	1.54	2	4
STE4	0.58	1	2
STD5	1.32	2	4

CI1 = OFE1 + STE3

CI2 = CI1 + (NH_HOL) + STE4 + OFD3

CI3 = D1 + OFD2A

CI4 = DIV2 + OND1

CI5A = DIV1 + OND3

CI5B = DIV3 + CI5A

CI6 = D2 + OFD2B

CI7 = DIV5 + OND2 + D3 + OND4 + D4

CI8A = DIV4 + OND5A

CI8B = DIV6 + CI8A + OND5B

CI8C = DIV7

CI9A = OND6

CI9A* = CI9A - OND6A - OND6B - OND6C - OND6D

CI9B =DIV8 + CI9C

CI9B* = CI9B - OND6D

CI9C = DIV7A + CI9A

CI9D = D7A

CI9E = D7 + D8

CI10 = (NH_RAN) + OFD7 + OFD4 + STD1 + CI12 + STD2A

CI11 = D5 + OFD2C + STD5 + OND7

CI12 = OFD5 + OFD6

Note: NH-HOL and NH-RAN are referenced from Neighborhood Study.

*Revised from the HEC-1 Model Results

KEY:

- OND1 6.76 — BASIN NAME/AREA
- CI3 — CONCENTRATION POINT
- FLOW DIRECTION
- A — A — CROSS SECTION
- BASIN BOUNDARY
- PRORATE BASIN BOUNDARY
- OND2A 0.36 — PRORATE BASIN NAME/AREA
- EXISTING FACILITY

SCALE: 1" = 150'

HORROCKS ENGINEERS
1401 N. Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING 0 1 2
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE

REVISIONS: REV # | DATE

*SEE GENERAL NOTES SHEET

DRAWING INFO: DATE | DESIGNED | DRAWN | CHECKED | PROJECT NV-2105-1911

RANCHO AND VEGAS

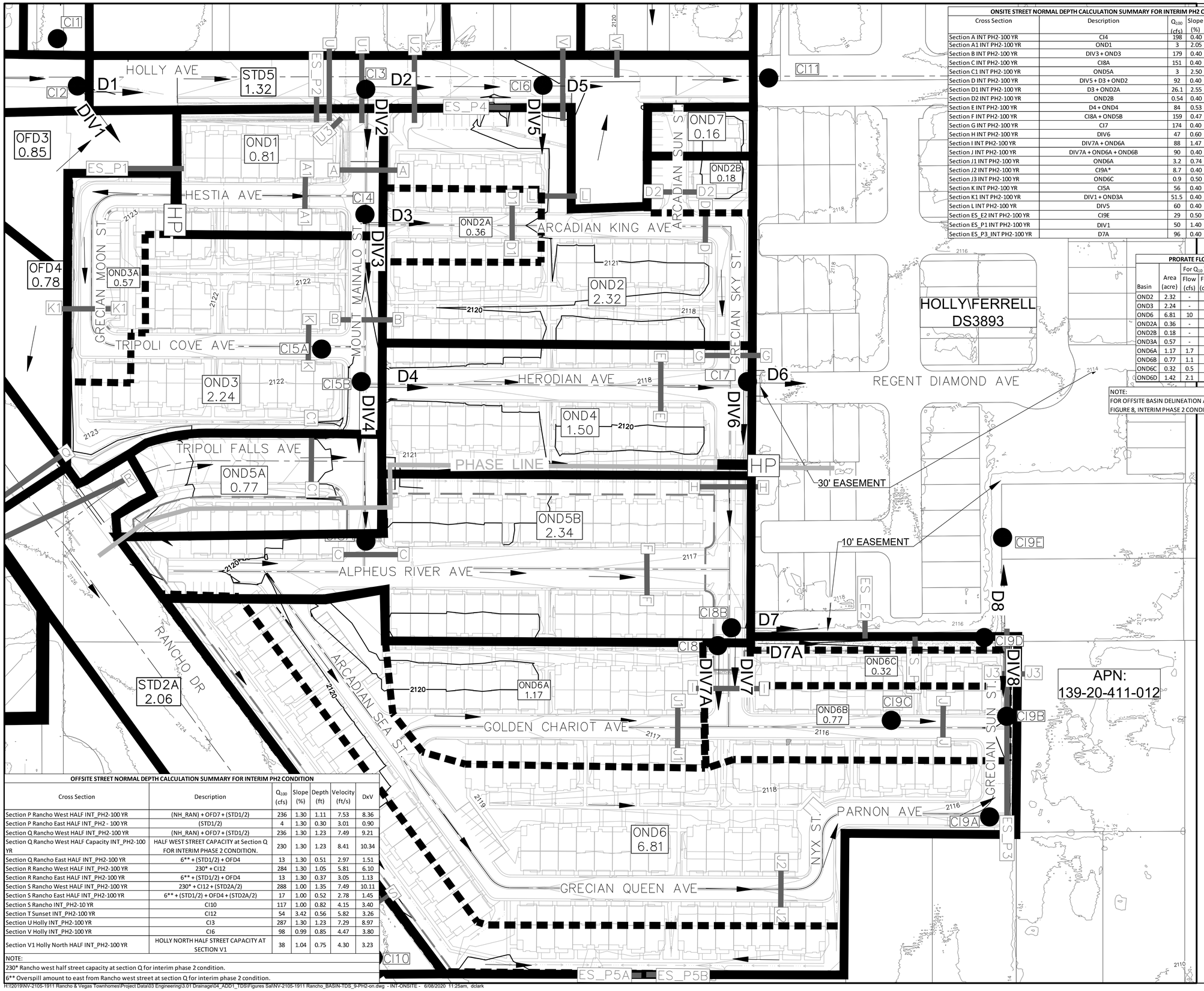
CITY OF LAS VEGAS, NEVADA

INTERIM PHASE 2 CONDITION OFFSITE BASIN MAP

APN 139-20-411-015

8

PAGE



ONSITE STREET NORMAL DEPTH CALCULATION SUMMARY FOR INTERIM PH2 CONDITION

Cross Section	Description	Q_{100} (cfs)	Slope (%)	Depth (ft)	Velocity (ft/s)	DxV
Section A INT PH2-100 YR	CI4	198	0.40	1.12	5.26	5.89
Section A1 INT PH2-100 YR	OND1	3	2.05	0.20	2.55	0.51
Section B INT PH2-100 YR	DIV3 + OND3	179	0.40	1.08	5.05	5.45
Section C INT PH2-100 YR	CI8A	151	0.40	1.00	4.73	4.73
Section C1 INT PH2-100 YR	OND5A	3	2.50	0.30	2.85	0.86
Section D INT PH2-100 YR	DIV5 + D3 + OND2	92	0.40	1.00	4.45	4.45
Section D1 INT PH2-100 YR	D3 + OND2A	26.1	2.55	0.46	5.46	2.51
Section D2 INT PH2-100 YR	OND2B	0.54	0.40	0.15	0.93	0.14
Section E INT PH2-100 YR	D4 + OND4	84	0.53	0.90	4.37	3.93
Section F INT PH2-100 YR	CI8A + OND5B	159	0.47	1.17	4.93	5.77
Section G INT PH2-100 YR	CI7	174	0.40	1.21	3.80	4.60
Section H INT PH2-100 YR	DIV6	47	0.60	0.58	3.76	2.18
Section I INT PH2-100 YR	DIV7A + OND6A	88	1.47	0.62	6.30	3.91
Section J INT PH2-100 YR	DIV7A + OND6A + OND6B	90	0.40	0.99	4.42	4.38
Section J1 INT PH2-100 YR	OND6A	3.2	0.74	0.24	1.73	0.42
Section J2 INT PH2-100 YR	CI9A*	8.7	0.40	0.35	1.86	0.65
Section J3 INT PH2-100 YR	OND6C	0.9	0.50	0.45	1.50	0.68
Section K INT PH2-100 YR	CI5A	56	0.40	0.70	3.72	2.60
Section K1 INT PH2-100 YR	DIV1 + OND3A	51.5	0.40	0.68	3.05	2.07
Section L INT PH2-100 YR	DIV5	60	0.40	0.81	4.23	3.43
Section ES_E2 INT PH2-100 YR	CI9E	29	0.50	0.61	5.16	3.15
Section ES_P1 INT PH2-100 YR	DIV1	50	1.40	0.47	6.81	3.20
Section ES_P3_INT PH2-100 YR	D7A	96	0.40	1.05	6.58	6.91

PRORATE FLOW SUMMARY

Basin	Area (acre)	For Q_{10} YR Flow (cfs)	For Q_{10} YR Flowrate (cfs/acre)	For Q_{100} YR Flow (cfs)	For Q_{100} YR Flowrate (cfs/acre)
OND2	2.32	-	-	7	3.0
OND3	2.24	-	-	6	2.7
OND6	6.81	10	1.5	19	2.8
OND2A	0.36	-	-	1.1	3.0
OND2B	0.18	-	-	0.54	3.0
OND3A	0.57	-	-	1.5	2.7
OND6A	1.17	1.7	1.5	3.2	2.8
OND6B	0.77	1.1	1.5	2.2	2.8
OND6C	0.32	0.5	1.5	0.9	2.8
OND6D	1.42	2.1	1.5	4.0	2.8

NOTE:
FOR OFFSITE BASIN DELINEATION AND FLOW PATTERNS SEE FIGURE 8, INTERIM PHASE 2 CONDITION OFFSITE BASIN MAP

Interim Phase 2 Condition

Basin	Area (acres)	Q_{10} (cfs)	Q_{100} (cfs)
CI1	-	12	30
CI2	-	14	319
CI3	-	16	287
CI4	-	1	198
CI5A	-	10	56
CI5B	-	11	229
CI6	-	19	98
CI7	-	6	174
CI8A	-	12	151
CI8B	-	16	206
CI8C	-	0	181
CI9A*	-	4.6	8.7
CI9B*	-	8	191
CI9C		10	103
CI9D		0	96
CI9E		16	29
CI10	-	117	297
CI11	-	23	47
CI12	-	25	54
D1	-	7	269
DIV1	-	7	50
D2	-	16	91
DIV2	-	0	196
D3	-	0	25
DIV3	-	1	173
D4	-	0	79
DIV4	-	11	150
D5	-	19	38
DIV5	-	0	60
D6	-	6	127
DIV6	-	0	47
D7	-	16	25
DIV7	-	0	181
D7A		0	96
DIV7A		0	85
D8		0	4
DIV8		0	92
NH_HOL	-	0	285
NH_RAN		81	223
OFD2A	7.48	9	19
OFD2B	2.90	3	7
OFD2C	1.64	2	4
OFD3	0.85	1	3
OFD4	0.78	1	3
OFD5	15.15	11	26
OFD6	10.85	15	30
OFD7	2.89	5	9
OFE1	14.59	11	27
OND1	0.81	1	3
OND2	2.32	3	7
OND3	2.24	3	6
OND4	1.50	2	5
OND5A	0.77	1	3
OND5B	2.34	4	8
OND6	6.81	10	19
OND7	0.16	<1	1
STD1	2.40	5	8
STD2A	2.06	4	7
STE3	1.54	2	4
STE4	0.58	1	2
STD5	1.32	2	4

CI1 = OFE1 + STE3
CI2 = CI1 + (NH_HOL) + STE4 + OFD3
CI3 = D1 + OFD2A
CI4 = DIV2 + OND1
CI5A = DIV1 + OND3
CI5B = DIV3 + CI5A
CI6 = D2 + OFD2B
CI7 = DIV5 + OND2 + D3 + OND4 + D4
CI8A = DIV4 + OND5A
CI8B = DIV6 + CI8A + OND5B
CI8C = DIV7
CI9A = OND6
CI9A* = CI9A - OND6A - OND6B - OND6C - OND6D
CI9B =DIV8 + CI9C
CI9B* = CI9B - OND6D
CI9C = DIV7A + CI9A
CI9D = D7A
CI9E = D7 + D8
CI10 = (NH_RAN) + OFD7 + OFD4 + STD1 + CI12 + STD2A
CI11 = D5 + OFD2C + STD5 + OND7
CI12 = OFD5 + OFD6
Note: NH-HOL and NH-RAN are referenced from Neighborhood Study.
*Revised from the HEC-1 Model Results

OFFSITE STREET NORMAL DEPTH CALCULATION SUMMARY FOR INTERIM PH2 CONDITION

Cross Section	Description	Q_{100} (cfs)	Slope (%)	Depth (ft)	Velocity (ft/s)	DxV
Section P Rancho West HALF INT_PH2-100 YR	(NH_RAN) + OFD7 + (STD1/2)	236	1.30	1.11	7.53	8.36
Section P Rancho East HALF INT_PH2 - 100 YR	(STD1/2)	4	1.30	0.30	3.01	0.90
Section Q Rancho West HALF INT_PH2-100 YR	(NH_RAN) + OFD7 + (STD1/2)	236	1.30	1.23	7.49	9.21
Section Q Rancho West HALF Capacity INT_PH2-100 YR	HALF WEST STREET CAPACITY at Section Q FOR INTERIM PHASE 2 CONDITION.	230	1.30	1.23	8.41	10.34
Section Q Rancho East HALF INT_PH2-100 YR	6** + (STD1/2) + OFD4	13	1.30	0.51	2.97	1.51
Section R Rancho West HALF INT_PH2-100 YR	230* + CI12	284	1.30	1.05	5.81	6.10
Section R Rancho East HALF INT_PH2-100 YR	6** + (STD1/2) + OFD4	13	1.30	0.37	3.05	1.13
Section S Rancho West HALF INT_PH2-100 YR	230* + CI12 + (STD2A/2)	288	1.00	1.35	7.49	10.11
Section S Rancho East HALF INT_PH2-100 YR	6** + (STD1/2) + OFD4 + (STD2A/2)	17	1.00	0.52	2.78	1.45
Section S Rancho INT_PH2-10 YR	CI10	117	1.00	0.82	4.15	3.40
Section T Sunset INT_PH2-100 YR	CI12	54	3.42	0.56	5.82	3.26
Section U Holly INT_PH2-100 YR	CI3	287	1.30	1.23	7.29	8.97
Section V Holly INT_PH2-100 YR	CI6	98	0.99	0.85	4.47	3.80
Section V1 Holly North HALF INT_PH2-100 YR	HOLLY NORTH HALF STREET CAPACITY AT SECTION V1	38	1.04	0.75	4.30	3.23

NOTE:
230* Rancho west half street capacity at section Q for interim phase 2 condition.
6** Overspill amount to east from Rancho west street at section Q for interim phase 2 condition.

KEY:

- OND1 / 0.81 — BASIN NAME/AREA
- CI31 — CONCENTRATION POINT
- FLOW DIRECTION
- A — A — CROSS SECTION
- BASIN BOUNDARY
- PRORATE BASIN BOUNDARY
- OND2A / 0.36 — PRORATE BASIN NAME/AREA

SCALE: 1" = 50'

HORROCKS ENGINEERS
1401 N. Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE
0 1 2

REVISIONS
REV # | DATE

*SEE GENERAL NOTES SHEET

DRAWING INFO
DATE
DESIGNED
DRAWN
CHECKED
PROJECT NV-2105-1911

RANCHO AND VEGAS

CITY OF LAS VEGAS, NEVADA

INTERIM PHASE 2 CONDITION ONSITE BASIN MAP

APN 139-20-411-015

9

PAGE

H:\2019\NV-2105-1911 Rancho & Vegas Townhomes\Project Data\03 Engineering\3.01 Drainage\04_ADD1_TDS\Figures Sal\NV-2105-1911 Rancho_BASIN-TDS_9-PH2-on.dwg - INT-ONSITE - 6/08/2020 11:25am, dclark

OFFSITE STREET NORMAL DEPTH CALCULATION SUMMARY FOR ULTIMATE CONDITION

Cross Section	Description	Q_{100} (cfs)	Slope (%)	Depth (ft)	Velocity (ft/s)	DxV
Section P Rancho West HALF ULT-100 YR	(NH_RAN) + OFD7 + (STD1/2)	248	1.30	1.13	7.68	8.68
Section P Rancho East HALF ULT - 100 YR	(STD1/2)	4	1.30	0.30	3.01	0.90
Section Q Rancho West HALF ULT-100 YR	(NH_RAN) + OFD7 + (STD1/2)	248	1.30	1.25	7.64	9.55
Section Q Rancho West HALF Capacity ULT-100 YR	HALF WEST STREET CAPACITY AT SECTION Q FOR ULTIMATE CONDITION	241	1.30	1.25	8.57	10.71
Section Q Rancho East HALF ULT-100 YR	7** + (STD1/2) + OFD4	14	1.30	0.52	3.02	1.57
Section R Rancho West HALF ULT-100 YR	241* + CU12	295	1.30	1.07	5.87	6.28
Section R Rancho East HALF ULT-100 YR	7** + (STD1/2) + OFD4	14	1.30	0.37	3.12	1.15
Section S Rancho West HALF ULT-100 YR	241* + CU12 + (STD2A/2)	299	1.00	1.37	7.51	10.29
Section S Rancho East HALF ULT-100 YR	7** + (STD1/2) + OFD4 + (STD2A/2)	18	1.00	0.53	2.83	1.50
Section S Rancho ULT-10 YR	CU10	117	1.00	0.82	4.15	3.40
Section T Sunset ULT-100 YR	CU12	54	3.42	0.56	5.82	3.26
Section U Holly North HALF ULT-100 YR	NORTH HALF STREET CAPACITY AT SECTION U	5	1.30	0.35	2.30	0.81
Section V1 Holly North HALF ULT-100 YR	SECTION U + OFD2B	12	1.04	0.56	3.19	1.79

NOTE:

241* Rancho west half street capacity at section Q for ultimate condition.

7** Overspill amount to east from Rancho west street at section Q for ultimate condition

ONSITE STREET NORMAL DEPTH CALCULATION SUMMARY FOR ULTIMATE CONDITION

Cross Section	Description	Q_{100}	Slope	Depth	Velocity	DxV
Section A ULT 100 YR	CU4	104	0.40	0.87	4.08	3.55
Section A1 ULT 100 YR	OND1	3	2.05	0.20	2.55	0.51
Section B ULT 100 YR	DIV3 + OND3	110	0.40	0.89	4.17	3.71
Section C ULT 100 YR	CU8A	73	0.40	0.75	3.63	2.72
Section C1 ULT 100 YR	OND5A	3	2.50	0.30	2.85	0.86
Section D ULT 100 YR	DIV5 + D3 + OND2	7	0.40	0.39	1.99	0.78
Section D1 ULT 100 YR	D3 + OND2A	1.1	2.55	0.14	2.67	0.37
Section D2 ULT-100 YR	OND2B	0.54	0.40	0.15	0.93	0.14
Section E ULT 100 YR	D4 + OND4	45	0.53	0.74	3.43	2.54
Section F ULT 100 YR	CU8A + OND5B	81	0.47	0.94	3.80	3.57
Section G ULT 100 YR	CU7	52	0.40	0.65	3.45	2.24
Section J ULT 100 YR	DIV7A + OND6A + OND6B	5.4	0.40	0.36	1.86	0.67
Section J1 ULT 100 YR	OND6A	3.2	0.74	0.24	1.73	0.42
Section J2 ULT-100 YR	CU9A - (OND6A + OND6B + OND6C + OND6D)	8.7	0.40	0.35	1.86	0.65
Section J3 ULT-100 YR	OND6C	0.9	0.50	0.45	1.50	0.68
Section K ULT 100 YR	CU5A	6	0.40	0.32	1.60	0.51
Section K1 ULT-100 YR	DIV1 + OND3A	51.5	0.40	0.68	3.05	2.07
Section ES_E2 ULT-100 YR	CU9E	29	0.50	0.61	5.16	3.15
Section ES_P3_ULT 100 YR	D7A	55	0.40	0.76	5.34	4.06

PRORATE FLOW SUMMARY

Basin	Area (acre)	For Q_{10} YR Flow Flow (cfs)	For Q_{10} YR Flow Flowrate (cfs/acre)	For Q_{100} YR Flow Flow (cfs)	For Q_{100} YR Flow Flowrate (cfs/acre)
OND2	2.32	-	-	7	3.0
OND3	2.24	-	-	6	2.7
OND6	6.81	10	1.5	19	2.8
OND2A	0.36	-	-	1.1	3.0
OND2B	0.18	-	-	0.54	3.0
OND3A	0.57	-	-	1.5	2.7
OND6A	1.17	1.7	1.5	3.2	2.8
OND6B	0.77	1.1	1.5	2.2	2.8
OND6C	0.32	0.5	1.5	0.9	2.8
OND6D	1.42	2.1	1.5	4.0	2.8

Basin	Area (acres)	Q_{10} (cfs)	Q_{100} (cfs)
CU1	-	23	44
CU2	-	25	88
CU3	-	33	106
CU4	-	30	104
CU5A	-	3	6
CU5B	-	33	110
CU6	-	9	12
CU7	-	6	52
CU8A	-	35	73
CU8B	-	39	80
CU8C	-	14	55
CU9A*	-	4.6	8.7
CU9B*	-	17	65
CU9C	-	10	19
CU9D	-	14	55
CU9E	-	29	29
CU10	-	117	309
CU11	-	13	22
CU12	-	25	54
D1	-	25	88
DIV1	-	0	0
D2	-	5	5
DIV2	-	28	101
D3	-	0	0
DIV3	-	30	104
D4	-	0	40
DIV4	-	33	70
D5	-	9	12
DIV5	-	0	0
D6	-	6	52
DIV6	-	0	0
D7	-	25	25
DIV7	-	14	55
D7A		14	55
DIV7A		0	0
D8		4	4
DIV8		10	51
NH_HOL	-	0	39
NH_RAN		81	235
OFD2A	7.48	9	19
OFD2B	2.90	3	7
OFD2C	1.64	2	4
OFD3	0.85	1	3
OFD4	0.78	1	3
OFD5	15.15	11	26
OFD6	10.85	15	30
OFD7	2.89	5	9
OFD1	14.59	21	40
OND1	0.81	1	3
OND2	2.32	3	7
OND3	2.24	3	6
OND4	1.50	2	5
OND5A	0.77	1	3
OND5B	2.34	4	8
OND6	6.81	10	19
OND7	0.16	<1	1
STD1	2.40	5	8
STD2A	2.06	4	7
STD3	1.54	3	5
STD4	0.58	1	2
STD5	1.32	2	4

CU1 = OFD1 + STD3

CU2 = CU1 + (NH_HOL) + STD4 + OFD3

CU3 = D1 + OFD2A

CU4 = DIV2 + OND1

CU5A = DIV1 + OND3

CU5B = DIV3 + CU5A

CU6 = D2 + OFD2B

CU7 = DIV5 + OND2 + D3 + OND4 + D4

CU8A = DIV4 + OND5A

CU8B = DIV6 + CU8A + OND5B

CU8C = DIV7

CU9A = OND6

CU9A* = CU9A - OND6A - OND6B - OND6C - OND6D

CU9B =DIV8 + CU9C

CU9B* = CU9B - OND6D

CU9C = DIV7A + CU9A

CU9D = D7A

CU9E = D7 + D8

CU10 = (NH_RAN) + OFD7 + OFD4 + STD1 + CU12 + STD2A

CU11 = D5 + OFD2C + STD5 + OND7

CU12 = OFD5 + OFD6

Note: NH-HOL and NH-RAN are referenced from Neighborhood Study.

*Revised from the HEC-1 Model Results

KEY:

- OND1 6.76 — BASIN NAME/AREA
- CU3 — CONCENTRATION POINT
- FLOW DIRECTION
- A — A — CROSS SECTION
- BASIN BOUNDARY
- PRORATE BASIN BOUNDARY
- OND2A 0.36 — PRORATE BASIN NAME/AREA
- EXISTING FACILITY

SCALE: 1" = 150'

HORROCKS ENGINEERS
1401 N. Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE

REVISIONS
REV # | DATE

*SEE GENERAL NOTES SHEET

DRAWING INFO
DATE
DESIGNED
DRAWN
CHECKED
PROJECT NV-2105-1911

RANCHO AND VEGAS

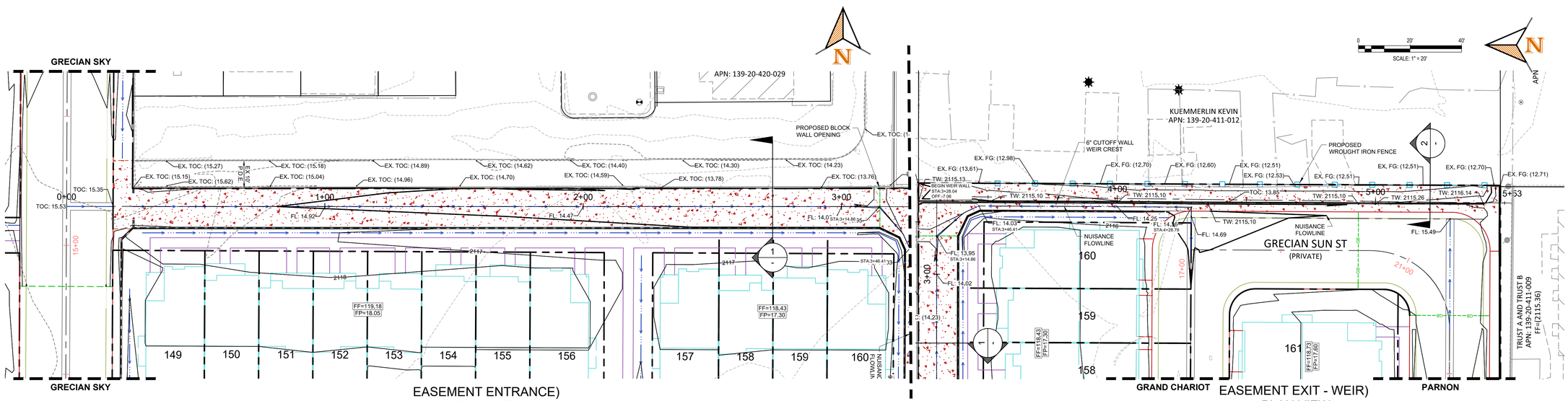
CITY OF LAS VEGAS, NEVADA

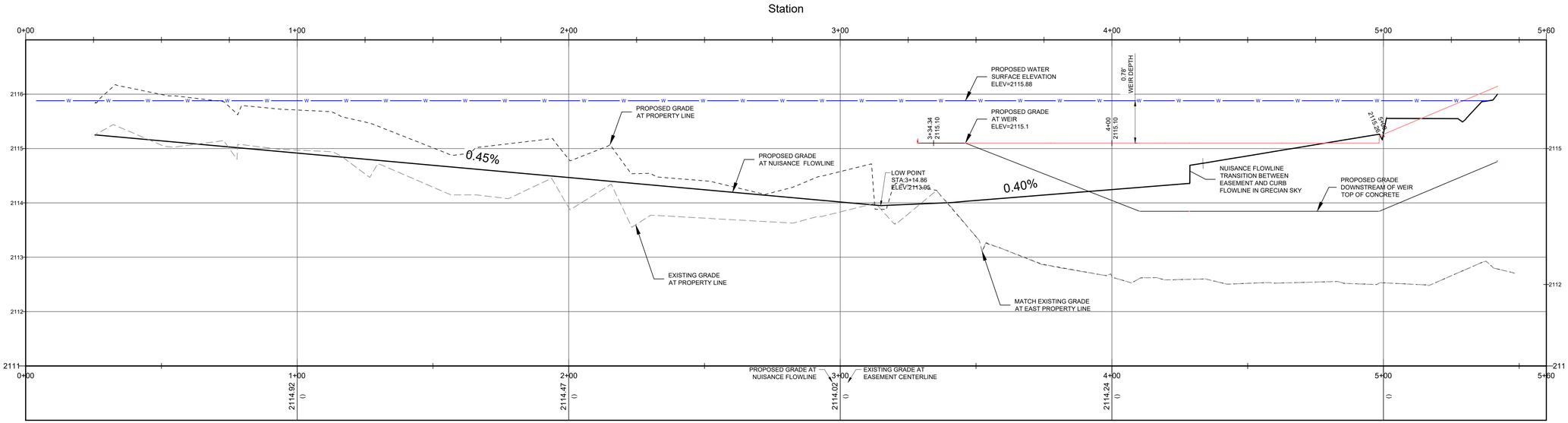
APN 139-20-411-015

ULTIMATE CONDITION OFFSITE BASIN MAP

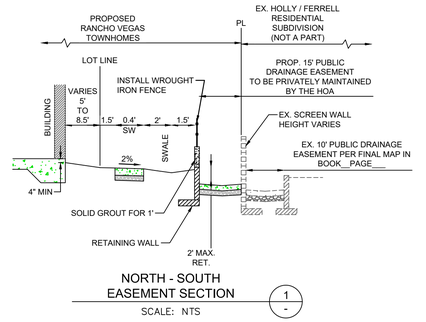
10

PAGE

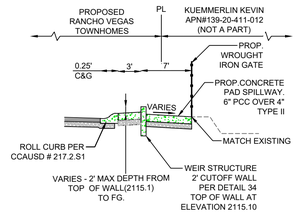




PUBLIC DRAINAGE EASEMENT - ESP3
PROFILE VIEW
(STA. 0+00 TO 5+50)
SCALE: 1" = 20' H
SCALE: 1" = 2' V



NORTH - SOUTH
EASEMENT SECTION 1 -
SCALE: NTS



EAST - WEST
EASEMENT SECTION 2 -
SCALE: NTS

HORROCKS ENGINEERS
1401 North Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE
0 1 2

REVISIONS
REV # | DATE

*SEE GENERAL NOTES SHEET

DRAWING INFO
DATE 6/7/2020
DESIGNED AD
DRAWN AD
CHECKED DC
PROJECT NV-2105-1911

CHRISTOPHER J. DELEON JR. EXP. 12/31/20 CIVIL STATE OF NEVADA
No. 23215
6/8/2020

RANCHO & VEGAS
LAS VEGAS, NEVADA
DRAINAGE EASEMENT PROFILE
EASEMENT ESP3

11
PAGE

IMPROVEMENT PLANS

FOR

RANCHO & VEGAS

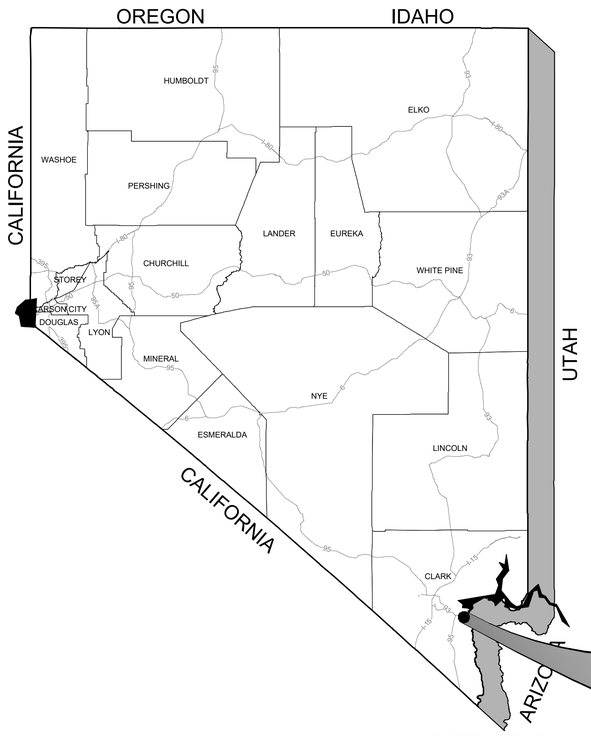
A RESIDENTIAL SUBDIVISION

located in

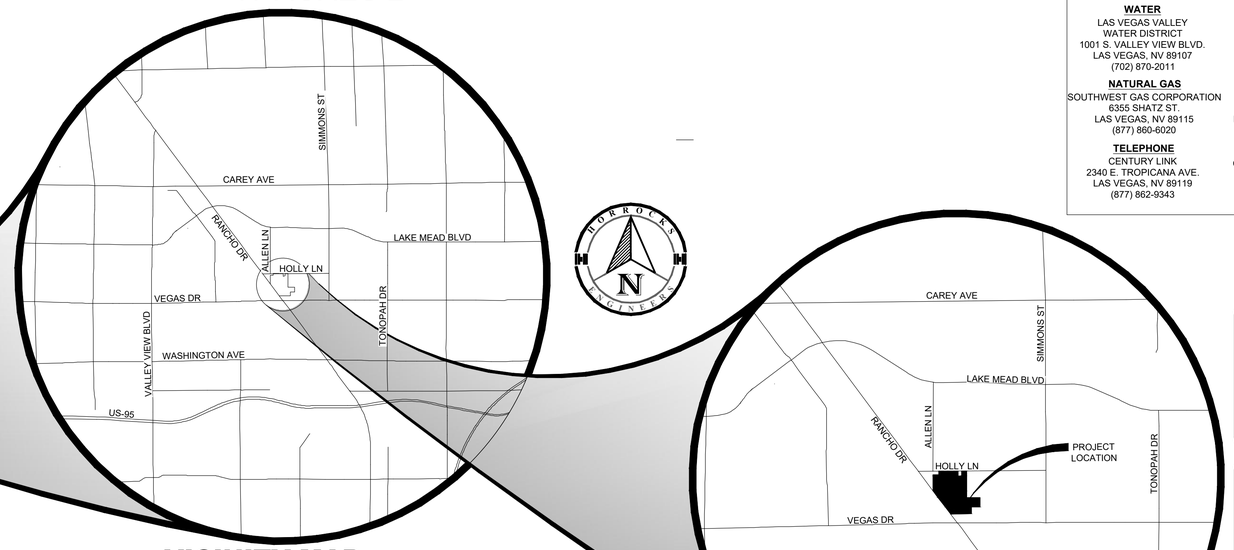
CITY OF LAS VEGAS

APN # 139-20-411-015

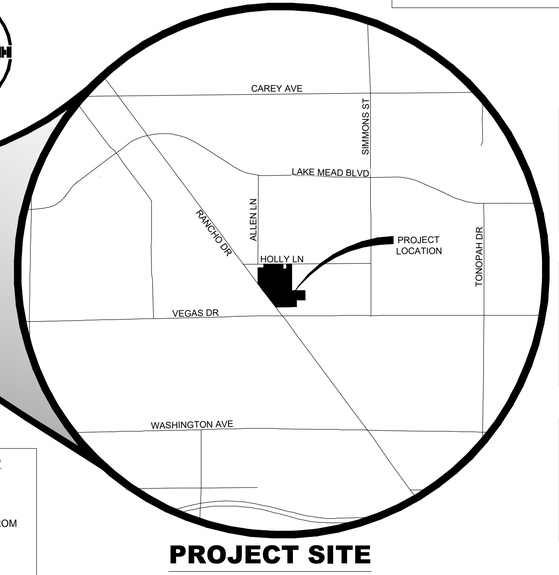
17 ACRES ±



NEVADA STATE MAP



VICINITY MAP



PROJECT SITE

OWNER:
HARMONY HOMES
8912 SPANISH RIDGE AVE, STE 200
LAS VEGAS, NV 89148
PHONE: (702)570-7213
CONTACT: MATT ROSENBERG
EMAIL: MROSENBERG@HARMONYHOMES.COM

DEVELOPER:
HARMONY HOMES
8912 SPANISH RIDGE AVE, STE 200
LAS VEGAS, NV 89148
PHONE: (702)570-7213
CONTACT: MATT ROSENBERG
EMAIL: MROSENBERG@HARMONYHOMES.COM

ENGINEER:
HORROCKS ENGINEERS
1401 N. GREEN VALLEY PKWY., STE 160
HENDERSON, NV 89074
PHONE: (702)966-4063
CONTACT: LARRY BITTON, P.E.
EMAIL: LARRYB@HORROCKS.COM

UTILITY CONTACTS

WATER LAS VEGAS VALLEY WATER DISTRICT 1001 S. VALLEY VIEW BLVD. LAS VEGAS, NV 89107 (702) 870-2011	**POWER** NEVADA ENERGY 7155 LINDELL RD. LAS VEGAS, NV 89118 (702) 402-8400
NATURAL GAS SOUTHWEST GAS CORPORATION 6355 SHATZ ST. LAS VEGAS, NV 89115 (877) 860-6020	**SEWER** CITY OF LAS VEGAS 333 N. RANCHO DR. LAS VEGAS, NV 89106 (702) 229-6301
TELEPHONE CENTURY LINK 2340 E. TROPICANA AVE. LAS VEGAS, NV 89119 (877) 862-9343	**CATV SERVICE** COX COMMUNICATIONS LAS VEGAS INC. 819 E. OGDEN AVE. LAS VEGAS, NV 89010 (702) 883-4000

Sheet List Table

Sheet Number	Sheet Description	Sheet Title
01	C.0.0	COVER SHEET
02	C.0.1	NOTES SHEET
03	C.0.2	LEGEND & ABBREVIATIONS
04	C.0.3	SITE KEY MAP
05	C.2.0	OVERALL GRADING SHEET
06	C.2.1	GRADING SHEET 1
07	C.2.2	GRADING SHEET 2
08	C.2.3	GRADING SHEET 3
09	C.2.4	GRADING SHEET 4
10	C.2.5	GRADING SHEET 5
11	C.2.6	GRADING SHEET 6
12	C.2.7	GRADING SHEET 7
13	C.2.8	GRADING SHEET 8
14	C.2.9	GRADING SHEET 9
15	C.2.10	GRADING SHEET 10
16	C.2.5A	GRADING SHEET 1 PHASE 2
17	C.2.6A	GRADING SHEET 2 PHASE 2
18	C.2.7A	GRADING SHEET 3 PHASE 2
19	C.2.8A	GRADING SHEET 4 PHASE 2
20	C.2.9A	GRADING SHEET 5 PHASE 2
21	C.2.10A	GRADING SHEET 6 PHASE 2
22	C.5.0	HOLLY AVE PLAN & PROFILE (STA 14+50 TO STA 19+25)
23	C.5.1	HOLLY AVE PLAN & PROFILE (STA 18+75 TO STA 22+25)
24	C.5.2	RANCHO DR PLAN & PROFILE (STA 51+00 TO STA 56+00)
25	C.5.3	RANCHO DR PLAN & PROFILE (STA 47+00 TO STA 51+25)
26	C.5.4	HESTIA AVE PLAN & PROFILE (STA 9+75 TO STA 13+25)
27	C.5.5	ARCADIAN KING AVE PLAN & PROFILE (STA 9+75 TO STA 14+50)
28	C.5.6	TRIPOLI COVE AVE PLAN & PROFILE (STA 14+75 TO STA 18+25)
29	C.5.7	HERODIAN AVE PLAN & PROFILE (STA 9+75 TO STA 14+50)
30	C.5.8	TRIPOLI FALLS AVE PLAN & PROFILE (STA 10+00 TO STA 14+00)
31	C.5.9	ALPHEUS RIVER AVE PLAN & PROFILE (STA 9+75 TO STA 12+50)
32	C.5.10	ALPHEUS RIVER AVE PLAN & PROFILE (STA 12+00 TO STA 16+50)
33	C.5.11	GRECIAN MOON ST PLAN & PROFILE (STA 13+00 TO STA 15+00)
34	C.5.12	MOUNT MAINALO ST PLAN & PROFILE (STA 9+75 TO STA13+50)
35	C.5.13	MOUNT MAINALO ST PLAN & PROFILE (STA 13+00 TO STA 16+00)
36	C.5.14	GRECIAN SKY ST PLAN & PROFILE (STA 9+75 TO STA 13+00)
37	C.5.15	GRECIAN SKY ST PLAN & PROFILE (STA 12+75 TO 16+00)
38	C.5.16	ARCADIAN SEA ST PLAN & PROFILE (STA 9+75 TO STA 14+75)
39	C.5.17	GOLDEN CHARIOT AVE PLAN & PROFILE (STA 9+75 TO STA 14+25)
40	C.5.18	GOLDEN CHARIOT AVE PLAN & PROFILE (STA 13+50 TO STA 17+50)
41	C.5.19	GRECIAN QUEEN AVE PLAN & PROFILE (STA 14+56 TO STA 18+26)
42	C.5.20	PARNON AVE PLAN & PROFILE (STA 19+08 TO STA 20+96)
43	C.5.21	NYX ST PLAN & PROFILE (STA 18+26 TO STA 19+08)
44	C.6.0	STREET SECTIONS
45	C.6.1	DETAILS 1
46	C.6.2	DETAILS 2

SITE DATA:

APN NUMBER:	139-20-411-015
GROSS AREA:	17± ACRES
ZONING:	R-TH
TOTAL COMMON LOT COUNT:	7 LOTS
TOTAL RESIDENTIAL LOT COUNT:	242 LOTS
TOTAL DENSITY:	14.24 DU/AC

AREA OF DISTURBANCE:

XX AC. ONSITE (PRIVATE)
XX AC. OFFSITE (PUBLIC)

NOTE:

FOR ALL REFERENCES TO FINAL MAP #_____ SHOWN THROUGHOUT THIS SET OF PLANS, SEE PLAT BOOK ___ PAGE ___.

EARTHWORKS

CUT: XX CY
FILL: XX CY
NET: XX CY (FILL)

ESTIMATED QUANTITY FROM EXISTING TO FINISHED GRADES.
PER SOILS REPORT BY GEOTEK, INC., PROJECT #14379-LV, DATED OCT 2, 2018

LEGAL DESCRIPTION:

BEING PORTIONS OF THE NORTH HALF (N 1/2) OF THE SOUTHWEST QUARTER (SW 1/4) OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 20, TOWNSHIP 20 SOUTH, RANGE 61 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA, TOGETHER WITH LOTS 1, 2, 3, 4 AND THE WEST 200 FEET OF LOTS 11 AND 12 OF "SEBEC ACRES" AS SHOWN BY MAP THEREOF IN BOOK 2, PAGE 28 OF PLATS, CLARK COUNTY, NEVADA, OFFICIAL RECORDS.

BASIS OF BEARING:

NORTH 89°55'00" WEST, BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 20, TOWNSHIP 20 SOUTH, RANGE 61 EAST, M.D.M., AS SHOWN IN BOOK 130, PAGE 27 OF PLATS IN THE OFFICE OF THE CLARK COUNTY, NEVADA RECORDER.

BENCHMARK:

BENCHMARK NO. 2LV0130NES
RIVET & PLATE IN TOP OF CURB AT SW CORNER OF VEGAS DRIVE AND SILVER LAKES
ELEVATION IN METERS: 646.832
ELEVATION IN FEET: 2122.15
NAVD 88

FLOOD ZONE:

THIS SITE IS LOCATED IN A ZONE 'X', AREAS OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN AND PARTIALLY IN A SHADED ZONE 'X', AREAS OF 0.2% ANNUAL CHANCE FLOOD; AREAS OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AND AREAS PROTECTED BY LEVEES FROM 1% ANNUAL CHANCE OF FLOOD PER THE FLOOD INSURANCE RATE MAP COMMUNITY PANEL 32003C2160F, CLARK COUNTY, NEVADA DATED NOVEMBER 16, 2011.

APPROVALS

CITY OF LAS VEGAS FIRE DEPARTMENT DATE

MIKE JANSEN DATE
CITY ENGINEER - CITY OF LAS VEGAS
APPROVAL OF THESE PLANS BY THE CITY ENGINEER IS LIMITED TO THOSE IMPROVEMENTS CONSTRUCTED IN THE DEDICATED RIGHT-OF-WAY, AND/OR DEDICATED EASEMENTS. THIS APPROVAL DOES NOT AUTHORIZE CONSTRUCTION OF ANY IMPROVEMENTS THAT DEVIATE FROM ADOPTED STANDARDS AND/OR SPECIFICATIONS EXCEPT THOSE SPECIFICALLY LISTED UNDER DEVIATIONS FROM STANDARDS. THE ENGINEER SHALL RESOLVE ANY DEVIATION OTHER THAN THOSE LISTED IN DEVIATIONS FROM STANDARD IN FAVOR OF THE UNIFORM STANDARD DRAWINGS AND SPECIFICATIONS, CLARK COUNTY AREA, NEVADA.

SOUTHWEST GAS CORPORATION DATE

COX COMMUNICATIONS LAS VEGAS, INC DATE

CENTRAL TELEPHONE COMPANY DBA CENTURY LINK DATE
THE CENTURY LINK APPROVAL DOES NOT ASSUME OR GUARANTEE LIABILITY FOR KNOWN OR UNKNOWN CONFLICTS WITH EXISTING OR PROPOSED IMPROVEMENTS. RESOLUTION OF ANY CONFLICT WILL BE ACCOMPLISHED PURSUANT TO LOCAL ORDINANCES, NEVADA REVISED STATUTES AND/OR PUBLIC UTILITY COMMISSION RULES AND REGULATIONS.

NV ENERGY DATE
NEVADA ENERGY ACKNOWLEDGES THAT WE HAVE RECEIVED YOUR PLANS AND WILL PROVIDE SERVICE TO ALL ELECTRICAL NEEDS ASSOCIATED WITH THIS PROJECT. NEVADA POWER COMPANY RESERVES THE RIGHT TO ADDRESS ANY EXISTING OR FUTURE CONFLICTS ONCE THE FINAL DESIGN IS COMPLETED. THE NEW SERVICE AND THE RESOLUTION OF ANY CONFLICTS WILL BE ACCOMPLISHED PURSUANT TO THE NEVADA PUBLIC UTILITY COMMISSION'S RULES AND REGULATIONS.

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER DATE
(PROJECT#_____), SHEETS: _____

Call before you Dig
NOE-NOTIFY-ME-ONCE.COM
"IN LITTLE ONE'S HOODIE"
Call 811 or 1-800-227-2600

ALOE-NOTTING-IS-CRUCIAL
POWER-LINES-ITS-COSTLY
CALL BEFORE YOU DO OVERHEAD
1-702-227-2929

FAST Call before you UnderGround
1-702-432-5300
"HELLING" AROUND, SAVING SYSTEMS OF "EARTH-FORMATION"

HORROCKS ENGINEERS
1401 North Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE
0 1 2

REVISIONS
REV # | DATE
*SEE GENERAL NOTES SHEET

DRAWING INFO
DATE 6/8/2020
DESIGNED ACD
DRAWN PMP
CHECKED ACD
PROJECT NV-2105-1911

PROFESSIONAL ENGINEER-STATE OF NEVADA
ANTHONY C. DELEON JR
EXP. 12-31-20
CIVIL
No. 023113
6/8/2020

RANCHO & VEGAS
CITY OF LAS VEGAS, NEVADA
COVER SHEET

C.0.0
PAGE 01

CITY OF LAS VEGAS GENERAL NOTES

1. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE "UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA NEVADA", LATEST ISSUE; THE "UNIFORM STANDARD DRAWINGS FOR PUBLIC WORKS CONSTRUCTION, CLARK COUNTY AREA NEVADA", LATEST REVISED EDITION; THE "SUMMERLIN IMPROVEMENT STANDARDS" FOR WORK IN THE SUMMERLIN AREA; AND OTHER APPLICABLE APPROVED STANDARDS ISSUED BY THE CONTROLLING AGENCY; THE UNIFORM BUILDING CODE; AND ALL LOCAL CITY CODES AND ORDINANCES APPLICABLE, EXCEPT AS NOTED ON THIS SHEET AS "DEVIATIONS FROM STANDARDS".

2. THE EXISTENCE AND LOCATION OF ANY OVERHEAD OR UNDERGROUND UTILITY LINES, PIPES, OR STRUCTURES SHOWN ON THESE PLANS ARE OBTAINED BY A RESEARCH OF THE AVAILABLE RECORDS. EXISTING UTILITIES AS SHOWN FROM CLV PLANS LIBRARY ARE APPROXIMATE AND FOR RECORD PURPOSES. EXISTING UTILITIES ARE LOCATED ON PLANS ONLY FOR THE CONVENIENCE OF THE CONTRACTOR. EXISTING UTILITY SERVICE LATERALS MAY NOT BE SHOWN ON THE PLANS. THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, LOCATE ALL UNDERGROUND AND OVERHEAD INTERFERENCES WHICH MAY AFFECT HIS OPERATION DURING CONSTRUCTION AND SHALL TAKE ALL NECESSARY PRECAUTIONS TO AVOID DAMAGE TO SAME. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING NEAR OVERHEAD UTILITIES SO AS TO SAFELY PROTECT ALL PERSONNEL AND EQUIPMENT, AND SHALL BE RESPONSIBLE FOR ALL COST AND LIABILITY IN CONNECTION THEREWITH.

3. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT EXISTING UTILITY LINES, STRUCTURES AND STREET IMPROVEMENTS WHICH ARE TO REMAIN IN PLACE, FROM DAMAGE, AND ALL SUCH IMPROVEMENTS OR STRUCTURES DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR REPLACED SATISFACTORY TO THE CITY ENGINEER AND OWNING UTILITY COMPANY AT THE EXPENSE OF THE CONTRACTOR.

4. ALL CONSTRUCTION SHALL BE AS SHOWN ON THESE PLANS, ANY REVISIONS SHALL HAVE THE PRIOR WRITTEN APPROVAL OF THE CITY ENGINEER.

5. TYPE V CEMENT SHALL BE USED IN ALL OFF-SITE CONCRETE WORK. CONCRETE TO BE 3000 P.S.I. MINIMUM @ 28 DAYS. MIX DESIGNS TO BE APPROVED BY THE CITY, PRIOR TO THE USE ON THE PROJECT.

6. PERMITS ARE REQUIRED FOR ANY WORK IN THE PUBLIC RIGHT-OF-WAY. THE CONTRACTOR SHALL SECURE ALL PERMITS AND INSPECTIONS REQUIRED FOR THIS CONSTRUCTION.

7. EXPANSION JOINTS REQUIRED, MAXIMUM EVERY 300' IN EXTRUDED-TYPE CURB.

8. AC PAVEMENT TO BE ONE-HALF INCH (½") ABOVE LIP OF ALL GUTTERS AFTER COMPACTION, EXCEPT AT SIDEWALK RAMPS AND CROSS GUTTERS.

9. CURB AND GUTTER FOUND TO BE UNACCEPTABLE TO THE CITY OF LAS VEGAS SHALL BE REMOVED AND REPLACED PER STANDARD DRAWING 216.

10. SIDEWALK RAMPS SHALL BE CONSTRUCTED IN EACH QUADRANT OF AN INTERSECTION PER STANDARD DRAWING 235. EXACT LOCATION OF RAMPS MAY BE ADJUSTED IN THE FIELD BY A CITY INSPECTOR.

11. CONTRACTOR SHALL PROVIDE ALL NECESSARY HORIZONTAL AND VERTICAL TRANSITIONS BETWEEN NEW CONSTRUCTION AND EXISTING SURFACES TO PROVIDE FOR PROPER DRAINAGE AND FOR INGRESS AND EGRESS TO NEW CONSTRUCTION. THE EXTENT OF THE TRANSITIONS TO BE AS SHOWN ON PLANS.

12. ALL GRADING WORK SHALL CONFORM TO THE SOILS REPORT AS PREPARED BY THE (COMPANY , REPORT #, DATE) APPROVED BY THE CITY ENGINEER, AND AS SHOWN ON THESE PLANS.

13. EXACT LOCATION OF ALL SAWCUT LINES MAY BE ADJUSTED OR DETERMINED IN THE FIELD BY A CITY OF LAS VEGAS ENGINEER IF LOCATION ON PLANS IS NOT CLEARLY SHOWN, OR EXISTING PAVEMENT CONDITION REQUIRES RELOCATIONS.

14. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PROTECT EXISTING PERMANENT SURVEY MONUMENTS. ANY MONUMENTS DISTURBED SHALL BE REPLACED AND ADJUSTED PER AVAILABLE RECORDS IN ACCORDANCE WITH N.R.S. STATUTE NO. 625.380 & CITY OF LAS VEGAS TITLE 18, APPENDIX D.

15. UTILITY COMPANY METER BOXES, MANHOLE LIDS, VALVE COVERS, ETC., SHALL BE LOCATED OUT OF DRIVEWAYS, DRIVEWAY APRONS, FLOWLINES, AND CROSS GUTTERS UNLESS WRITTEN APPROVAL IS GRANTED BY THE UTILITY COMPANY AND THE CITY ENGINEER.

WALL NOTES:

16. ALL WALLS, NEW OR EXISTING, ARE ONLY SHOWN ON CIVIL PLANS FOR THE PURPOSE OF REVIEWING GRADING RELATIONSHIPS; FLOOD CONTROL AND SIGHT DISTANCE AT INTERSECTIONS. NEW WALLS REQUIRE A SEPARATE PERMIT AND INSPECTION BY THE BUILDING DEPARTMENT.

17. ASPHALT MIX DESIGN MUST BE SUBMITTED AND APPROVED BY THE CITY ENGINEER PRIOR TO THE PLACEMENT OF ASPHALT WITHIN CITY RIGHT OF WAY.

18. CONTRACTOR SHALL ADJUST ALL NEW AND EXISTING INLETS, VALVE BOXES, MANHOLE RIMS, AND SEWER CLEAN OUTS, ETC. TO FINISH GRADE AS APPLICABLE WHETHER OR NOT THEY ARE SHOWN ON THE PLANS.

19. MATERIALS, HANDLING AND PLACEMENT OF PORTLAND CEMENT CONCRETE SHALL BE IN ACCORDANCE WITH APPLICABLE SECTIONS OF NDOT OR THE CLARK COUNTY AREA SPECIFICATIONS (AS APPLICABLE) AND THE PLANS AND DETAILS SHOWN HEREON.

20. WHEN INSTALLING UNDERGROUND FACILITIES THAT REQUIRE UNDERGROUND LOCATING DEVICES SUCH AS MARKER BALLS, LOCATING RIBBON, ETC, THE CONTRACTOR SHALL PROVIDE WRITTEN DOCUMENTATION TO OFFSITE INSPECTION AND TESTING CERTIFYING THAT ALL DEVICES HAVE BEEN PLACED AND VERIFIED TO BE IN GOOD WORKING CONDITION PRIOR TO THE CONSTRUCTION OF ANY ROAD BASE.

21. SANITARY SEWER AND STORM DRAIN FINAL LOCATION MAP(S) SHALL BE PROVIDED TO THE CITY AND APPROVED PRIOR TO ACCEPTANCE OF FACILITY VIDEO INSPECTION. THE MAP(S) SHALL INCLUDE THE HORIZONTAL AND VERTICAL (INVERT) LOCATION OF PUBLIC SEWER MANHOLES, STORM DRAIN MANHOLES AND TRANSITION STRUCTURES, STORM DRAIN LATERALS AT THE CONNECTION TO THE STORM DRAIN MAIN AND AT THE CONNECTION TO A DROP INLET, THE CONNECTION OF SEWER SERVICE LATERALS TO THE SEWER MAIN AND WHERE THE SEWER SERVICE LATERALS EXIT THE PUBLIC RIGHT-OF-WAY, AND STORM DRAIN MAIN ALIGNMENT, INCLUDING DEFLECTION POINTS. THE LOCATION SHALL BE DESCRIBED BY COORDINATES WHICH SHALL BE BASED ON THE OFFICIAL HORIZONTAL AND VERTICAL CONTROL NETWORKS OF THE CITY OF LAS VEGAS. FINAL LOCATION MAPS MUST BE SEALED AND CERTIFIED BY A NEVADA PROFESSIONAL LAND SURVEYOR TO HAVE POSITIONAL CERTAINTIES OF ± 0.09 METERS (± 0.3 FEET) HORIZONTALLY AND VERTICALLY. A SEPARATE ELECTRONIC COMMA DELIMITED FILE FOR THE SANITARY SEWER AND STORM DRAIN COORDINATES SHALL ALSO ACCOMPANY THE SANITARY SEWER AND STORM DRAIN FINAL LOCATION MAP(S).

OR

SANITARY SEWER AND STORM DRAIN FACILITIES SHOWN ON THESE PLANS SHALL BE USED TO MEET THE REQUIREMENTS OF NRS 455 AND SHALL SHOW AT A MINIMUM THE HORIZONTAL AND VERTICAL (INVERT) LOCATION OF PUBLIC SEWER MANHOLES, STORM DRAIN MANHOLES, STORM DRAIN LATERALS AT THE CONNECTION TO THE STORM DRAIN MAIN AND AT THE CONNECTION TO A DROP INLET, AND THE CONNECTION OF SEWER SERVICE LATERALS TO THE SEWER MAIN AND WHERE THE SEWER SERVICE LATERALS EXIT THE PUBLIC RIGHT-OF-WAY. ANY DEVIATIONS FROM THE INFORMATION SHOWN SHALL BE NOTED AND SUBMITTED AS A REVISION TO THE PLANS AND APPROVED PRIOR TO ACCEPTANCE OF FACILITY VIDEO INSPECTION.

22. CCTV VIDEO INSPECTION IS REQUIRED FOR ALL SEWER AND STORM DRAINS. THE CCTV VIDEO INSPECTIONS NEED TO BE PERFORMED PER THE DESIGN AND CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS LATEST EDITION.

23. A SEPARATE BORING PERMIT IS REQUIRED FOR ALL BORING ACTIVITIES.

CITY OF LAS VEGAS GRADING NOTES

1. IN THE EVENT THAT ANY UNFORESEEN CONDITIONS NOT COVERED BY THESE NOTES ARE ENCOUNTERED DURING GRADING OPERATIONS, THE OWNER/ENGINEER SHALL BE IMMEDIATELY NOTIFIED FOR DIRECTION.

2. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PERFORM ALL NECESSARY CUTS AND FILLS WITHIN THE LIMITS OF THIS PROJECT AND THE RELATED OFF-SITE WORK, SO AS TO GENERATE THE DESIRED SUBGRADE, FINISH GRADES AND SLOPES SHOWN.

3. CONTRACTOR SHALL TAKE FULL RESPONSIBILITY FOR ALL EXCAVATION. ADEQUATE SHORING SHALL BE DESIGNED AND PROVIDED BY THE CONTRACTOR TO PREVENT UNDERMINING OF ANY ADJACENT FEATURES OR FACILITIES AND/OR CAVING OF THE EXCAVATION.

4. THE CONTRACTOR IS WARNED THAT AN EARTHWORK BALANCE WAS NOT NECESSARILY THE INTENT OF THIS PROJECT. ANY ADDITIONAL MATERIAL REQUIRED OR LEFTOVER MATERIAL FOLLOWING EARTHWORK OPERATIONS BECOMES THE RESPONSIBILITY OF THE CONTRACTOR.

5. THE GRADING CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH THE OWNER TO PROVIDE FOR THE REQUIREMENTS OF THE PROJECT STORM WATER POLLUTION PREVENTION PLAN (SWPPP) AND ASSOCIATED PERMIT.

6. CONTRACTOR SHALL GRADE TO THE LINES AND ELEVATIONS SHOWN ON THE PLANS WITHIN THE FOLLOWING HORIZONTAL AND VERTICAL TOLERANCES AND DEGREES OF COMPACTION, IN THE AREAS INDICATED:

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

COMPACTION TESTING WILL BE PERFORMED BY THE OWNER OR HIS REPRESENTATIVE.

7. ALL CUT AND FILL SLOPES SHALL BE PROTECTED UNTIL EFFECTIVE EROSION CONTROL HAS BEEN ESTABLISHED.

8. THE USE OF POTABLE WATER WITHOUT A SPECIAL PERMIT FOR BUILDING OR CONSTRUCTION PURPOSES INCLUDING CONSOLIDATION OF BACKFILL OR DUST CONTROL IS PROHIBITED. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS FOR CONSTRUCTION WATER.

9. THE CONTRACTOR SHALL MAINTAIN THE STREETS, SIDEWALKS AND ALL OTHER PUBLIC RIGHT-OF-WAY IN A CLEAN, SAFE AND USABLE CONDITION. ALL SPILLS OF SOIL, ROCK OR CONSTRUCTION DEBRIS SHALL BE PROMPTLY REMOVED FROM THE PUBLICLY OWNED PROPERTY DURING CONSTRUCTION AND UPON COMPLETION OF THE PROJECT. ALL ADJACENT PROPERTY, PRIVATE OR PUBLIC SHALL BE MAINTAINED IN A CLEAN, SAFE AND USABLE CONDITION.

10. IN THE EVENT THAT ANY TEMPORARY CONSTRUCTION ITEM IS REQUIRED THAT IS NOT SHOWN ON THESE DRAWINGS, THE OWNER AGREES TO PROVIDE AND INSTALL SUCH ITEM AT HIS OWN EXPENSE AND AT THE DIRECTION OF THE CITY ENGINEER. TEMPORARY CONSTRUCTION INCLUDES DITCHES, BERMS, ROAD SIGNS AND BARRICADES, ETC.

CITY OF LAS VEAGS TRAFFIC NOTES

1. ALL CONSTRUCTION SIGNING, BARRICADING, AND TRAFFIC DELINEATION SHALL CONFORM TO THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", LATEST EDITION.

2. THE STREET SIGN CONTRACTOR SHALL OBTAIN STREET NAMES AND BLOCK NUMBERING FROM THE PLANNING DEPARTMENT PRIOR TO CONSTRUCTION.

3. BEFORE ANY WORK IS STARTED IN THE RIGHT-OF-WAY, THE CONTRACTOR SHALL INSTALL ALL ADVANCE WARNING SIGNS FOR THE CONSTRUCTION ZONE. THE CONTRACTOR SHALL INSTALL TEMPORARY STOP SIGNS AT ALL NEW STREET ENCROACHMENTS INTO EXISTING CITY STREETS WHERE WARRANTED IMMEDIATELY AFTER FIRST GRADING WORK IS ACCOMPLISHED, AND SHALL MAINTAIN SAID SIGNS UNTIL PERMANENT SIGNS ARE INSTALLED.

4. WHEN A DESIGNATED "SAFE ROUTE TO SCHOOL" IS ENCROACHED UPON BY A CONSTRUCTION WORK ZONE AND PUBLIC WORKS STAFF IDENTIFIES A NEED FOR STUDENTS TO BE ASSISTED IN THE SAFE CROSSING THROUGH THAT WORK ZONE, THE CONTRACTOR SHALL BE REQUIRED TO PROVIDE A QUALIFIED "CROSSING GUARD". THE GUARD SHALL BE PRESENT FOR THE FULL DURATION OF TIME THAT CHILDREN ARE LIKELY TO BE PRESENT.

5. IF THE IMPROVEMENTS NECESSITATE THE OBLITERATION, TEMPORARY OBSTRUCTION, TEMPORARY REMOVAL OR RELOCATION OF ANY EXISTING TRAFFIC PAVEMENT MARKING, SUCH PAVEMENT MARKING SHALL BE RESTORED OR REPLACED WITH LIKE MATERIALS TO THE SATISFACTION OF THE CITY TRAFFIC ENGINEER.

6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING ALL PERMANENT SIGNS SHOWN ON THE PLANS. ALL NEW TRAFFIC SIGNS SHALL BE FABRICATED WITH DIAMOND GRADE VIP CLASS 6 REFLECTIVE SHEETING OR APPROVED EQUAL. ALL NEW TRAFFIC SIGNS, EXCEPT STREETNAME AND SCHOOL SPEED LIMIT SIGNS, SHALL HAVE 3M SERIES 1160 OR APPROVED EQUIVALENT ANTI-GRAFFITI PROTECTIVE OVERLAY FILM. SCHOOL ZONE SIGNS SHALL HAVE 3M SERIES 1150 ANTI-GRAFFITI PROTECTIVE OVERLAY FILM. STREET NAME SIGNS SHALL CONFORM IN THEIR ENTIRETY TO CURRENT CITY STANDARDS. ALL OTHER SIGNS SHALL BE STANDARD SIZE UNLESS OTHERWISE SPECIFIED ON THE PLANS. ALL SIGN POSTS SHALL BE INSTALLED IN ACCORDANCE WITH THE CURRENT CITY STANDARDS.

7. WHEN A PROPOSED STREET LIGHT STANDARD IS LOCATED WITHIN FIVE (5') FEET OF ANY PROPOSED SIGN SHOWN ON THE PLANS TO BE MOUNTED ON A SIGNPOST, THE SIGN SHALL BE MOUNTED ON THE STREET LIGHT STANDARD AND THE SIGNPOST SHALL BE ELIMINATED.

8. ALL PERMANENT TRAFFIC CONTROL DEVICES CALLED FOR HEREON SHALL BE IN PLACE AND IN FINAL POSITION PRIOR TO ALLOWING ANY PUBLIC TRAFFIC ONTO THE PORTIONS OF THE ROAD(S) BEING IMPROVED HERE UNDER, REGARDLESS OF THE STATUS OF COMPLETION OF PAVING OR OTHER OFF-SITE IMPROVEMENTS CALLED FOR BY THESE PLANS.

9. STREET SIGNS AND STOPS SIGNS SHALL BE INSTALLED PER CITY STANDARD SPECIFICATIONS FOR PLACEMENT OF STREET NAME SIGNS.

10. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY TRAFFIC CONTROL DEVICES AND FLAGGERS TO INSURE THE SAFETY OF THE PUBLIC IN OR AROUND THE WORK AREA. THE CONTRACTOR SHALL HAVE A CERTIFIED ATSSA TRAFFIC CONTROL TECHNICIAN OR IMSA WORK ZONE SAFETY SPECIALIST SET UP, MAINTAIN AND/OR REMOVE ALL TRAFFIC CONTROL DEVICES IN THE CITY OF LAS VEGAS RIGHT OF WAY.

11. WORK IN PUBLIC STREETS, ONCE BEGUN, SHALL BE EXPEDITED TO COMPLETION SO AS TO PROVIDE MINIMUM INCONVENIENCE TO ADJACENT PROPERTY OWNERS AND TO THE TRAVELING PUBLIC.

12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING CITIZENS AREA TRANSIT (C.A.T.) IF THE CONSTRUCTION INTERRUPTS OR RELOCATES A BUS STOP OR HAS AN ADVERSE EFFECT ON BUS SERVICE ON THAT STREET TO ARRANGE FOR TEMPORARY RELOCATION OF STOP.

13. GUARDS SHALL BE OBTAINED BY CONTACTING THE METROPOLITAN POLICE DEPARTMENT SPECIAL EVENTS UNIT (PHONE # 828-3442) WHO WILL PROVIDE OFFICERS PROPERLY TRAINED IN TRAFFIC CONTROL. FEES FOR THE USE OF THESE OFFICERS SHALL BE SET BY METRO AND WILL BE PAID BY THE CONTRACTOR. THE CONTRACTOR IS RESPONSIBLE FOR ALL ARRANGEMENTS WITH METRO.

14. ANY WORK WITHIN 300' OF A SIGNALIZED INTERSECTION WILL BE NIGHT WORK, UNLESS OTHERWISE DIRECTED BY THE CITY OF LAS VEGAS TRAFFIC ENGINEER.

15. THE CONTRACTOR SHALL CONTACT THE TRAFFIC ENGINEERING DIVISION (TRANSPORTATION SECTION) THROUGH THE PROJECT'S OFFSITE INSPECTOR PRIOR TO INITIATING PAVING TO RECEIVE DIRECTION FOR ANY PERMANENT OR TEMPORARY MODIFICATIONS TO THE APPROVED DRAWINGS REGARDING FINAL PAVEMENT TRANSITIONS, MARKINGS AND SIGNING THAT ARE REQUIRED TO MATCH ADJACENT ROADWAY SEGMENTS. THE CONTRACTOR SHALL PROVIDE A DRAWING FOR APPROVAL BY THE TRAFFIC ENGINEERING DIVISION DEPICTING ANY ADJUSTMENTS TO THE FINAL PAVEMENT MARKINGS AND SIGNAGE, WHICH MAY INCLUDE OMITTING, ADDING OR MODIFYING PAVEMENT MARKINGS AND TRAFFIC CONTROL SIGNS SUCH THAT ADEQUATE TRANSITIONS AND LANE TERMINATIONS BETWEEN ADJACENT ROADWAY SEGMENTS ARE CONSTRUCTED

CITY OF LAS VEGAS STREETLIGHT NOTES

1. ALL STREET LIGHTING INSTALLATIONS SHALL BE IN ACCORDANCE WITH THE STREET LIGHTING PLANS, THE "UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA", LATEST REVISION, AND THE "UNIFORM STANDARD DRAWINGS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA", LATEST REVISION, AND ANY ADOPTED SPECIAL AREA STANDARDS.

2. NO DEVIATION OF STREET LIGHT, PULL BOX, CONDUITS (ETC.) LOCATIONS SHALL BE PERMITTED WITHOUT WRITTEN APPROVAL OF TRAFFIC ENGINEERING AND THE CITY ENGINEER.

3. ALL EXISTING STREET LIGHTING SHALL REMAIN OPERATIONAL DURING CONSTRUCTION.

4. ALL STREET LIGHTING CONDUITS STUB SHALL HAVE AT LEAST ONE GREEN #8 THW WIRE INSTALLED, AS TRACER WIRE. WHEN "EMPTY" CONDUIT IS COMPLETELY INSTALLED FROM PB TO PB, IT SHALL HAVE MINIMUM OF 2 #4 AND 1 #8 THW WIRE WITH THE ENDS TAPED OR "SAFE OFF" PRIOR TO FINAL INSPECTION.

5. ANY STRUCTURE SUCH AS BLOCK WALLS, CHAIN LINK FENCES, RETAINING WALLS, ETC., SHALL LEAVE A MINIMUM CLEARANCE IN ACCORDANCE WITH THE USD NO. 320A.

6. AS-BUILT DRAWINGS SHALL BE SUPPLIED TO THE TEFO PRIOR TO ANY PRE-FINAL INSPECTION. THE AS- BUILT DRAWING NEEDS TO BE STAMPED AS-BUILT AND SIGNED BY THE PREPARER.

7. SERVICE POINT SHALL BE COORDINATED WITH NV ENERGY COMPANY, AND WHEREVER POSSIBLE, BE LOCATED NEAR THE CENTER OF THE CIRCUIT. SERVICE POINTS SHALL BE SHOWN ON THE CIVIL PLANS.

8. IT SHALL BE ASSUMED THAT IN THE ABSENCE OF AN EXISTING, WORKABLE CIRCUIT TO ATTACH TO, ALL INSTALLATIONS SHALL REQUIRE A NEW SERVICE FOR OPERATION OF THE CIRCUIT.

9. WHEREVER THERE IS AN OVERHEAD UTILITY THAT MAY CONFLICT WITH THE INSTALLATION OF STREET LIGHTING CIRCUITS AND/OR POLES, THESE CONFLICTS MUST BE RESOLVED BETWEEN THE DEVELOPER AND THE UTILITIES INVOLVED, AT NO EXPENSE TO THE CITY OF LAS VEGAS, BEFORE STREETLIGHT BASES ARE INSTALLED.

10. THE CONTRACTOR SHALL FURNISH COMPLETE SERVICE TO TRANSFORMERS AND CONTROL SYSTEMS IF REQUIRED ON PLANS.

11. THE DEVELOPER/OWNER WILL BE REQUIRED TO SUPPLY POWER TO ALL NEW PUBLIC STREET LIGHTS INSTALLED UNDER THIS DESIGN PRIOR TO BOND RELEASE OR PROJECT COMPLETION. THE DEVELOPER/OWNER WILL BE RESPONSIBLE FOR ALL ITEMS ASSOCIATED WITH THE INSTALLATION, CONSTRUCTION, ENERGIZING, MAINTENANCE AND OPERATIONAL COST OF SAID STREET LIGHTS PRIOR TO PROJECT COMPLETION. REFER TO THE PLAN FOR ANY NEW SERVICE REQUIREMENTS. THE TRANSFER OF OWNERSHIP FROM THE DEVELOPER/OWNER TO THE CITY OF LAS VEGAS FOR ALL NEW PUBLIC STREET LIGHTS AND/OR SERVICE/S INSTALLED UNDER THIS PLAN DESIGN WILL BE IN CONJUNCTION WITH THIS PROJECT COMPLETION. COORDINATE ALL MAINTENANCE AND OPERATIONAL TRANSFERS WITH THE CITY OF LAS VEGAS TRAFFIC ENGINEERING DEPARTMENT (TEFO) AT (702) 229-6331.

STORMWATER 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 CLARK COUNTY AS A RESULT OF CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS SITE DEVELOPMENT OR CONSTRUCTION PROJECT. SUCH MATERIALS SHALL BE PREVENTED FROM ENTERING THE STORM SEWER 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 CLARK COUNTY TITLE 24.40 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 PRACTICABLE AND NO LATER THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED. SOME EXCEPTIONS MAY APPLY, REFER TO THE NEVADA STORMWATER GENERAL PERMIT FOR CONSTRUCTION ACTIVITY NVR 100000, SECTION III.A.5.

4. AT A MINIMUM, THE CONSTRACTOR 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 OR MODIFY THE STORMWATER POLLUTION PREVENTION PLAN AS NECESSARY. SOME EXCEPTIONS TO WEEKLY INSPECTIONS MAY APPLY, SUCH AS SUSPENSION OF LAND DISTURBANCE ACTIVITIES. REFER TO THE NEVADA STORMWATER GENERAL PERMIT FOR CONSTRUCTION ACTIVITY NVR 100000, SECTION III.A.12.

5. ACCUMULATED SEDIMENT IN BMPS SHALL BE REMOVED WITHIN SEVEN DAYS AFTER A STORMWATER RUNOFF EVENT OR PRIOR TO THE NEXT ANTICIPATED STORM EVENT, WHICHEVER IS EARLIER. SEDIMENT MUST BE REMOVED WHEN BMP CAPACITY HAS BEEN REDUCED BY 50 PERCENT OR MORE.

SOUTHERN NEVADA - SOUTHWEST GAS CORPORATION GENERAL NOTES

1. IN THE EVENT OF A NATURAL GAS EMERGENCIES CALL 911 AND 1-877-860-6020.

2. THERE SHALL BE A MINIMUM HORIZONTAL AND VERTICAL CLEARANCE OF 12-INCHES BETWEEN NATURAL GAS FACILITIES AND ANY UNDERGROUND FACILITIES AND/OR STRUCTURES, INCLUDING BUT NOT LIMITED TO WATER, SEWER, STORM DRAIN, COMMUNICATIONS, AND ELECTRIC.

3. FOR VALVE ADJUSTMENT CONTACT 702-528-7881 14 DAYS PRIOR TO CONSTRUCTION.

4. IN THE EVENT OF A NATURAL GAS CONFLICT WITH PROPOSED UTILITIES AND/OR STRUCTURES CONTACT 702-365-2099.

5. FOR STAND BY CONTACT 702-278-8451

CITY OF LAS VEGAS FIRE PREVENTION NOTES

1. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH THE LAS VEGAS FIRE AND RESCUE ADOPTED FIRE CODE ORDINANCE # 6325 FOR HYDRANT SPECIFICATIONS AND HYDRANT INSTALLATION SPECIFICATIONS.

2. ONLY FIRE HYDRANTS THAT ARE ON THE LAS VEGAS VALLEY WATER DISTRICT'S - **APPROVED PRODUCTS LIST** ARE ALLOWED TO BE INSTALLED.

3. A PERMIT IS REQUIRED FROM LAS VEGAS FIRE AND RESCUE FOR THE INSTALLATION OF ON-SITE WATER LINES AND FIRE HYDRANTS. THE PERMIT AND CONTRACTORS MATERIAL TEST CERTIFICATE FOR UNDERGROUND PIPING FORM SHALL BE OBTAINED FROM THE FIRE PROTECTION ENGINEER *BEFORE* COMMENCEMENT OF WORK. [IFC § 105.7.12]

4. ON ANY RESIDENTIAL OR COMMERCIAL INSTALLATIONS, FIRE HYDRANTS SHALL BE INSTALLED AND FIRE APPARATUS ACCESS ROADS SHALL BE MAINTAINED *BEFORE* COMMENCEMENT OF ANY COMBUSTIBLE CONSTRUCTION. ALL FIRE HYDRANTS SHALL BE IN GOOD WORKING ORDE AND SHALL BE CAPABLE OF DELIVERING THE REQUIRED FIRE FLOW. [IFC § 3310, § 3312]

5. TO IDENTIFY THE FIRE HYDRANT LOCATIONS, THE CONTRACTOR SHALL PLACE A BLUE REFLECTIVE MARKER AT THE CENTER LINE OF THE STREET ADJACENT TO THE FIRE HYDRANTS. [IFC § 507.5.7.3]

6. ALL UNDERGROUND INSPECTIONS, PRESSURE AND FLUSH VERIFICATIONS OF ALL FIRE HYDRANTS AND FIRE LINES, SHALL BE CONDUCTED ***BEFORE*** COVERING THE LINES. CENTER LOADING IS ACCEPTABLE FOR THE HYDRO TESTS WITH PRIOR FIRE PREVENTION APPROVAL. [IFC § 106.3]

7. ALL ON-SITE UNDERGROUND WATER MAINS AND MATERIALS SHALL BE U.L. LISTED, A.W.W.A APPROVED AND SHALL BE RATED FOR THE APPROPRIATE WORKING PRESSURE. [IFC § 507.2.1, NFPA 24]

8. PAINTING OF CURBS, FIRE HYDRANTS, PADS, PROTECTION OF FIRE HYDRANTS FROM PHYSICAL DAMAGE, AND ALL OTHER WORK NECESSARY PER PLANS SHALL BE COMPLETED BEFORE APPROVAL BY LAS VEGAS FIRE AND RESCUE, FIRE PREVENTION DIVISION. [IFC § 507]

9. PRIVATE HYDRANTS SHALL BE PAINTED RED. [IFC § 507.5.7.1]

10. PRIOR TO THE FINAL OCCUPANCY, A FIRE FLOW TEST SHALL BE WITNESSED BY LAS VEGAS FIRE AND RESCUE, FIRE PREVENTION DIVISION TO VERIFY AVAILABILITY OF THE REQUIRED FIRE FLOW. [IFC § 507]

11. FIRE HYDRANT SPACING SHALL BE AS FOLLOWS: [IFC § C102]
    - RESIDENTIAL - 500 FT UNSPRINKLERED; 600 FT SPRINKLERED.
    - COMMERCIAL - 300 FT UNSPRINKLERED; 400 FT SPRINKLERED.

12. WHERE THE WATER MAINS ARE EXTENDED ALONG STREETS OR NEW STREETS ARE INSTALLED WHERE FIRE HYDRANTS ARE NOT NEEDED FOR PROTECTION OF THE STRUCTURES, FIRE HYDRANTS SHALL BE INSTALLED AT A MAXIMUM OF 1000 FT SPACING, TO PROVIDE FOR TRANSPORTATION HAZARDS. WHERE STREETS ARE PROVIDED WITH MEDIAN DIVIDERS OR HAVE FOUR (4) OR MORE TRAFFIC LANES AND HAVE A TRAFFIC COUNT OF MORE THAN 30,000 PER DAY, HYDRANTS ARE REQUIRED ON EACH SIDE OF THE STREET SPACED AT 500 FT ON AN ALTERNATING BASIS. [IFC § C102.8]

13. NO FIRE HYDRANTS SHALL BE LOCATED WITHIN THE RADIUS OF A CUL-DE-SAC OR WITHIN 20 FT OF THE PERIMETER OF THE RADIUS OF THE CUL-DE-SAC.

14. NO FIRE HYDRANTS SHALL BE LOCATED WITHIN 6 FT OF ANY CURB RETURN, DRIVEWAY, POWER POLE, STREETLIGHT OR ANY OTHER OBSTRUCTION. [IFC § C102.12]

15. A MAXIMUM DISTANCE FROM A FIRE HYDRANT TO A ONE-TWO FAMILY DWELLING SHALL NOT EXCEED 300 FT, AS MEASURED BY AN APPROVED ROUTE. [IFC § C102.4]

16. THE MAXIMUM DISTANCE FROM A FIRE HYDRANT TO A FIRE DEPARTMENT CONNECTION (FDC) SHALL NOT EXCEED 100 FT, AS MEASURED BY AN APPROVED ROUTE. [IFC § C102.7]

17. THE MAXIMUM DISTANCE FROM A HYDRANT TO THE END OF A DEAD-END STREET SHALL NOT EXCEED 200 FT. [IFC § C102.6]

18. TWO (2) SOURCES OF SUPPLY ARE REQUIRED WHENEVER THERE IS 4 OR MORE FIRE HYDRANTS/SPRINKLER LEAD-INS ARE INSTALLED ON A SINGLE SYSTEM. SECTIONAL CONTROL VALVES SHALL BE INSTALLED SO THAT NO MORE THAN 2 FIRE HYDRANTS CAN BE OUT OF SERVICE DUE TO A BREAK IN A WATER MAIN. [IFC § C104]

19. ALL *FIRE APPARATUS* ACCESS ROADS SHALL BE PAVED TO PROVIDE ALL-WEATHER DRIVING CAPABILITIES, AND SHALL BE DESIGNED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF THE FIRE APPARATUS. [IFC § 503.2.3]

20. THE GRADIENT FOR THE FIRE APPARATUS ACCESS ROADS SHALL NOT EXCEED 12%. ANGLES OF APPROACH AND ANGLES OF DEPARTURE SHALL NOT EXCEED 6% FOR 25 FT PRIOR TO OR AFTER THE GRADE CHANGE. ADJACENT TO THE STRUCTURES GRADIENT SHALL N

SEWER

EXISTING	PROPOSED
UNKNOWN	
4 INCH	
6 INCH	
8 INCH	
10 INCH	
12 INCH	
14 INCH	
15 INCH	
16 INCH	
18 INCH	
24 INCH	
30 INCH	
36 INCH	
SERVICE LATERAL	

POWER

EXISTING	PROPOSED
OVERHEAD	
UNDERGROUND	
N/A	2 INCH
N/A	3 INCH
N/A	4 INCH
N/A	6 INCH
N/A	8 INCH
N/A	10 INCH
1 PH A 1/0	
1 PH A 4/0	
1 PH B 1/0	
1 PH B 4/0	
1 PH C 1/0	
1 PH C 4/0	
3 PH ABC 4/0	
3 PH ABC 750A	
SECONDARY	
STREET LIGHT	

HATCH PATTERNS

- BUILDING / PAD
- CONCRETE SIDEWALK / FLATWORK
- DECORATIVE BRICK / SIDEWALK / FLATWORK / LANDSCAPE AREAS
- POOL DECK
- XERISCAPE
- LANDSCAPE AREAS / GRASS
- HEAVY DUTY PAVEMENT SECTION
- LIGHT DUTY PAVEMENT SECTION
- ADA ACCESS RAMP TRUNCATED DOMES
- RIPRAP
- GRAVEL

STANDARD SYMBOLS

EXISTING		PROPOSED
e	ELECTRICAL MANHOLE	E
fo	FIBER OPTIC MANHOLE	FO
t	TELEPHONE MANHOLE	T
tv	CABLE TV MANHOLE	TV
pp	ELECTRICAL POWER POLE	PP
	SIGNAL POLE	
e	ELECTRICAL BOX	E
fo	FIBER OPTIC BOX	FO
jb	JUNCTION BOX	JB
tb	TELEPHONE BOX	TB
t	TELEPHONE PEDESTAL	T
tv	CABLE TV BOX	TV
	LIGHT POLE	
	LIGHT POLE OPT 2	
	LIGHT POLE OPT 3	
g	GAS MANHOLE	G
g	GAS METER	G
co	CLEANOUT	CO
s	SEWER MANHOLE	S
ir	IRRIGATION MANHOLE	IR
ir	IRRIGATION BOX	IR
w	WATER MANHOLE	W
w	WATER METER	WM
	WATER METER OPT 2	WM
	BLOW-OFF	BO
	FIRE HYDRANT	
	FIRE HYDRANT OPT 2	
	GATE VALVE	
	GATE VALVE OPT 2	
	CROSS	
	TEE	
	90° BEND	
	45° BEND	
	22.5° BEND	
	11.25° BEND	
	WYE	
	REDUCER	
	CAP & PLUG	
sd	STORM DRAIN MANHOLE	SD
	AREA DRAIN ROUND	
	AREA DRAIN SQUARE	
	DROP INLET	
	CURB INLET	
	CURB INLET OPT 2	
	CURB INLET OPT 3	
	CURB DOUBLE INLET	
	CURB DOUBLE INLET OPT 2	
SD	COMBO BOX	SD
	OIL/WATER SAND/GREASE	
	OIL/WATER SAND/GREASE OPT 2	
	FLARED END LARGE	
	FLARED END SMALL	
	SIGN	
	BOLLARD	
BH	BORE HOLE	BH
TP	TEST PIT	TP

ABBREVIATIONS

A	ALGEBRAIC GRADE CHANGE
ABC	AGGREGATE BASE COURSE
AC	ASPHALTIC CEMENT OR CONCRETE
BC	BUILDING CORNER
BCR	BACK OF CURB RETURN
BFE	BASE FLOOD ELEVATION
BFF	BASEMENT FINISH FLOOR ELEVATION
BLDG	BUILDING
BM	BENCHMARK
BP	BEGIN POINT
BV	BUTTERFLY VALVE
BVC	BEGIN VERTICAL CURVE
BVCE	BEGIN VERTICAL CURVE ELEVATION
BVCS	BEGIN VERTICAL CURVE STATION
BVP	BEGIN VERTICAL PROFILE
BVW	BOTTOM OF VISIBLE WALL
C&G	CURB & GUTTER
CL	CENTERLINE
CB	CATCH BASIN
CLR	CLEAR
CO	CLEANOUT
CONC	CONCRETE
Cu	COPPER
C.Y.	CYCUBIC YARD
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DWG	DRAWING
E	EAST OR EASTING
EA	EACH
EG	EXISTING GRADE
EOC	EDGE OF CONCRETE
EOP	EDGE OF PAVEMENT
EP	END POINT
ESMT	EASEMENT
EVC	END VERTICAL CURVE
EVCE	END VERTICAL CURVE ELEVATION
EVCS	END VERTICAL CURVE STATION
EVP	END VERTICAL PROFILE
EX	EXISTING
FF	FINISHED FLOOR ELEVATION
FE	FLANGE END
FG	FINISHED GRADE ELEVATION
FL	FLOW LINE
FJ	FLANGE JOINT
FM	FORCE MAIN
FPS	FEET PER SECOND
FT	FOOT OR FEET
FUT	FUTURE
G	GAS LINE
GB	GRADE BREAK
GFF	GARAGE FINISHED FLOOR ELEVATION
GV	GATE VALVE
HGL	HYDRAULIC GRADE LINE
HRZ	HORIZONTAL
HP	HIGH POINT
HWM	HIGH WATER MARK
ID	INSIDE DIAMETER
IN	INCH(ES)
IRR	IRRIGATION (PRESSURIZED)/ NON-POTABLE
K	VERTICAL CURVE COEFFICIENT
L	LENGTH
LF	LINEAR FEET
L/S	LANDSCAPE
LP	LOW POINT
LT	LEFT
MAX	MAXIMUM
MFR	MANUFACTURER
MGD	MILLION GALLONS PER DAY
MID	MIDDLE
MH	MANHOLE
MIN	MINIMUM
MJ	MECHANICAL JOINT
N	NORTH OR NORTHING, FRICTION FACTOR
N/A	NOT APPLICABLE
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OVHP	OVERALL HIGH POINT
OVLP	OVERALL LOW POINT
PC	POINT OF CURVE
PCC	POINT OF COMPOUND CURVE
PDE	PUBLIC DRAINAGE EASEMENT
PH	PHASE
PI	POINT OF INTERSECTION
PL	PROPERTY LINE
PRC	POINT OF REVERSE CURVE
PT	POINT OF TANGENCY
PUE	PUBLIC UTILITY EASEMENT
PVC	POLYVINYL CHLORIDE
PVI	POINT OF VERTICAL INTERSECTION
Q	RATE OF FLOW
R	RADIUS
R/W	RIGHT OF WAY
REV	REVISION
RT	RIGHT
S	SLOPE
S/W	SIDEWALK
SD	STORM DRAIN
SDMH	STORM DRAIN MANHOLE
SEC	SECTION
SPEC	SPECIFICATIONS
SSMH	SANITARY SEWER MANHOLE
SS	SANITARY SEWER
S/L	STREETLIGHT
STA	STATION
STD	STANDARD
SVE	SIGHT VISIBILITY EASEMENT
TBM	TEMPORARY BENCH MARK
TOC	TOP OF CONCRETE
TBC	TOP BACK OF CURB
TEMP	TEMPORARY
TA	TOP OF ASPHALT
TF	TOP OF FOOTING
TG	TOP OF GRATE
TRW	TOP OF RETAINING WALL
TW	TOP OF WALL
TYP	TYPICAL
UTC	UNTREATED BASE COURSE
V	VELOCITY
VC	VERTICAL CURVE
VRT	VERTICAL
WTR	WATER
W/	WITH

STORM

EXISTING	PROPOSED
UNKNOWN	
4 INCH	
6 INCH	
8 INCH	
10 INCH	
12 INCH	
15 INCH	
16 INCH	
18 INCH	
24 INCH	
30 INCH	
36 INCH	
42 INCH	
48 INCH	
54 INCH	
60 INCH	
66 INCH	
72 INCH	
LAND DRAIN	

GAS

EXISTING	PROPOSED
UNKNOWN	
N/A	1 INCH
2 INCH	
3 INCH	N/A
4 INCH	
6 INCH	
8 INCH	
12 INCH	
HIGH PRESSURE	

SURFACE FEATURES

EXISTING/PROPOSED

- CUT LINE
- FILL LINE
- LIMITS OF DISTURBANCE
- DITCH
- GRADE BREAK
- HIGH WATER MARK
- HIGH WATER MARK - 1 YEAR EVENT
- HIGH WATER MARK - 5 YEAR EVENT
- HIGH WATER MARK - 10 YEAR EVENT
- HIGH WATER MARK - 25 YEAR EVENT
- HIGH WATER MARK - 50 YEAR EVENT
- HIGH WATER MARK - 100 YEAR EVENT
- FENCE - BARBED
- FENCE - CHAIN LINK
- FENCE - DECORATIVE
- FENCE - WOOD
- WALL - BLOCK
- WALL - CONCRETE
- WALL - PANEL
- WALL - ROCK
- RIGHT OF WAY
- CENTERLINE (ROAD/ENTITY)
- CURB & GUTTER
- PARCEL LINE
- PROPERTY BOUNDARY
- 10' PUBLIC UTILITY & DRAINAGE EASEMENT (P.U.E.)
- PAINT STRIPE - SOLID
- PAINT STRIPE - DOUBLE SOLID
- PAINT STRIPE - BROKEN
- PAINT STRIPE - BIKE LANE INTERSECTION
- PAINT STRIPE - LANE DROP
- PAINT STRIPE - LANE LINE EXTENSION
- TRAFFIC SIGNAL - DETECTION CONDUIT
- TRAFFIC SIGNAL - FUTURE CONDUIT
- TRAFFIC SIGNAL - LIGHTING CONDUIT
- TRAFFIC SIGNAL - PEDESTRIAN CONDUIT
- TRAFFIC SIGNAL - POWER SOURCE CONDUIT
- TRAFFIC SIGNAL - SIGNAL CONDUIT

CONSTRUCTION KEYNOTE TAGS

- D00 OR D99 DEMO PLAN
- G1 OR G9 GRADING PLAN
- 01 OR 35 SITE PLAN
- 36 OR 50 WATER
- 51 OR 65 SEWER
- 66 OR 80 STORM DRAIN
- 81 OR 90 IRRIGATION
- 91 OR 93 CABLE TV
- 94 OR 96 TELEPHONE
- 97 OR 99 GAS
- 00 OR 00 POWER
- A OR Z MISCELLANEOUS

CALLOUTS

- FFE: XXXX.XX — PROPOSED BUILDING FINISHED FLOOR ELEVATION
- 75.19 — PROPOSED TBC SPOT ELEVATION (@ PC'S, PT'S & PL)
- 75.19 — PROPOSED EOP SPOT ELEVATION (@ EDGE OF)
- # — PARKING STALL COUNT

DETAIL REFERENCE

X / - **DETAIL NAME**
SCALE: NTS

MATCHLINE STA. XX+XX.XX
SEE SHEET PP-XX

WATER

EXISTING	PROPOSED
UNKNOWN	
3/4" W	3/4 INCH
1" W	1 INCH
1-1/2" W	1-1/2 INCH
2" W	2 INCH
3" W	3 INCH
4" W	4 INCH
6" W	6 INCH
8" W	8 INCH
10" W	10 INCH
12" W	12 INCH
14" W	14 INCH
16" W	16 INCH
18" W	18 INCH
24" W	24 INCH
30" W	30 INCH
36" W	36 INCH
48" W	48 INCH
60" W	60 INCH
72" W	72 INCH
	SERVICE LATERAL

COMMUNICATIONS

EXISTING	PROPOSED
OVERHEAD CABLE TV	
UNDERGROUND CABLE TV	
OVERHEAD FIBER OPTIC	
UNDERGROUNG FIBER OPTIC	
OVERHEAD TELEPHONE	
UNDERGROUND TELEPHONE	

IRRIGATION

EXISTING	PROPOSED
UNKNOWN	
1" IRR	1 INCH
2" IRR	2 INCH
4" IRR	4 INCH
6" IRR	6 INCH
8" IRR	8 INCH
10" IRR	10 INCH
12" IRR	12 INCH
18" IRR	N/A
24" IRR	N/A
30" IRR	N/A
36" IRR	N/A
	SERVICE LATERAL

MISCELLANEOUS

EXISTING	PROPOSED
DEMO	
UNKNOWN PIPE	
JOINT UTILITY TRENCH	
TOE OF SLOPE	
TOP OF SLOPE	
DIRECTIONAL FLOWLINE	
EDGE OF PAVEMENT	
GUARDRAIL	
RAILROAD TRACKS	
CONTOUR - MAJOR	4000
CONTOUR - MINOR	4002

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO._____ FIRST APPROVAL DATE:_____
LVVWD APPROVED FIRE FLOW_____GPM AT 20 PSI RESIDENTIAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW_____N/A_____GPM

HORROCKS ENGINEERS
1401 North Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE
0 1 2

REVISIONS
REV # | DATE
*SEE GENERAL NOTES SHEET

DRAWING INFO
DATE 3/30/2020
DESIGNED SS
DRAWN SS
CHECKED ACD
PROJECT NV-2105-1911

PROFESSIONAL ENGINEER-STATE OF NEVADA
ANTHONY C. DELEON JR
EXP. 12-31-20
CIVIL
No.023113
6/8/2020

RANCHO & VEGAS
CITY OF LAS VEGAS, NEVADA

LEGEND & ABBREVIATIONS

C.0.2

PAGE 03

HORROCKS ENGINEERS
1401 North Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
0 1 2
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE

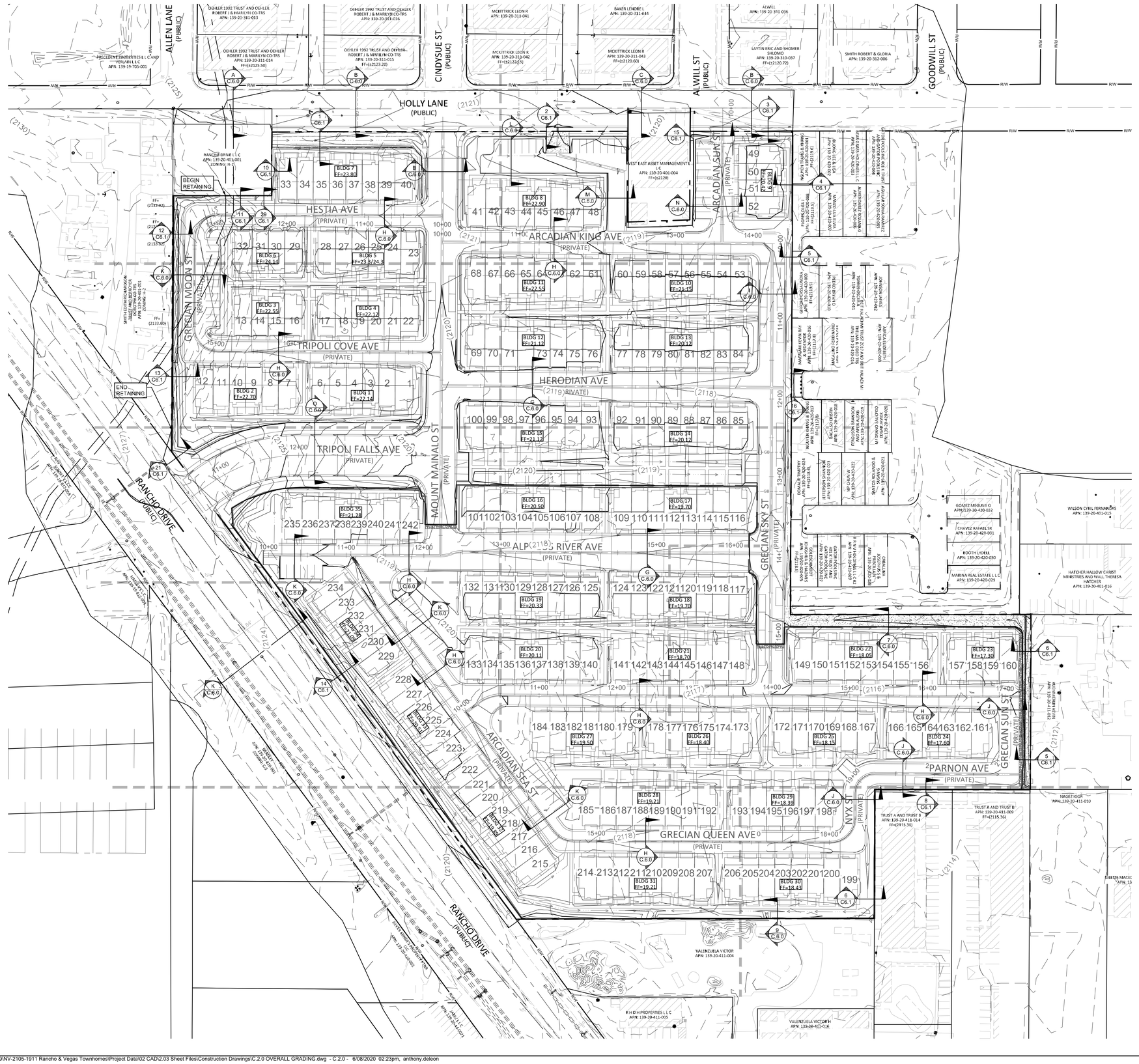
REVISIONS
REV # | DATE
*SEE GENERAL NOTES SHEET

DRAWING INFO
DATE 3/30/2020
DESIGNED SS
DRAWN SS
CHECKED ACD
PROJECT NV-2105-1911

PROFESSIONAL ENGINEER-STATE OF NEVADA
ANTHONY C. DELEON JR
EXP. 12-31-20
CIVIL
No. 023113
6/8/2020

RANCHO & VEGAS
CITY OF LAS VEGAS, NEVADA
SITE KEY MAP

C.0.3
PAGE 04



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

HORROCKS ENGINEERS
1401 North Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
0 1 2
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE

REVISIONS		
REV #	DATE	
1		

*SEE GENERAL NOTES SHEET

DRAWING INFO	
DATE	3/25/2020
DESIGNED	ACD
DRAWN	ACD
CHECKED	ACD
PROJECT	NV-2105-1911

PROFESSIONAL ENGINEER-STATE OF NEVADA
ANTHONY C. DELEON JR
EXP. 12-31-20
CIVIL
No. 023113
6/8/2020

ENGINEER'S NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR EROSION AND DUST CONTROL, AND STORMWATER MANAGEMENT DURING CONSTRUCTION.
2. SEE HORIZONTAL CONTROL PLAN FOR EXACT PROPERTY LINE DIMENSIONS
3. ENGINEER TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES BETWEEN THESE PLANS AND FIELD CONDITIONS.
4. THESE PLANS SHALL NOT IN PART, OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY GOVERNING AGENCIES.
5. ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS.
6. DURING CONSTRUCTION, SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE. SAME MUST UTILIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES.
7. SOILS REPORT NOTE:
   GRADING SHALL BE IN ACCORDANCE WITH SOILS REPORT
   PREPARED BY: GEOTEK, INC.
   PROJECT NO.: 14379-LV
   DATE: OCTOBER 2, 2018
8. CUT/FILL ESTIMATES (PUBLIC AND PRIVATE):
   FROM EXISTING TO FINISH GRADE ELEVATIONS
   NET CUT: ____ CY
   NET FILL: ____ CY
   TOTAL: ____ CY (FILL)
9. FLOOR SECTION ASSUMES 5" SLAB OVER MIN. 8.5" TYPE II. CONTRACTOR TO VERIFY WITH STRUCTURAL PLANS AND GEOTECHNICAL ENGINEER.

LEGAL DESCRIPTION:

BEING PORTIONS OF THE NORTH HALF (N 1/2) OF THE SOUTHWEST QUARTER (SW 1/4) OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 20, TOWNSHIP 20 SOUTH, RANGE 61 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA, TOGETHER WITH LOTS 1, 2, 3, 4 AND THE WEST 200 FEET OF LOTS 11 AND 12 OF "SEBEC ACRES" AS SHOWN BY MAP THEREOF IN BOOK 2, PAGE 28 OF PLATS, CLARK COUNTY, NEVADA, OFFICIAL RECORDS.

BASIS OF BEARING:

NORTH 89°55'00" WEST, BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 20, TOWNSHIP 20 SOUTH, RANGE 61 EAST, M.D.M., AS SHOWN IN BOOK 130, PAGE 27 OF PLATS IN THE OFFICE OF THE CLARK COUNTY, NEVADA RECORDER.

BENCHMARK:

BENCHMARK NO. 2LV0130NES
RIVET & PLATE IN TOP OF CURB AT SW CORNER OF VEGAS DRIVE AND SILVER LAKES
ELEVATION IN METERS: 646.832
ELEVATION IN FEET: 2122.15
NAVD 88

FLOOD ZONE:

THIS SITE IS LOCATED IN A ZONE 'X', AREAS OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN AND PARTIALLY IN A SHADED ZONE 'X', AREAS OF 0.2% ANNUAL CHANCE FLOOD; AREAS OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AND AREAS PROTECTED BY LEVEES FROM 1% ANNUAL CHANCE OF FLOOD PER THE FLOOD INSURANCE RATE MAP COMMUNITY PANEL 32003C2160F, CLARK COUNTY, NEVADA DATED NOVEMBER 16, 2011.

AREA OF DISTURBANCE

ONSITE: ____ AC.

OFFSITE: ____ AC.

NOTE:
ADD ____' TO GRADING ELEVATIONS SHOWN HEREON TO ADJUST THEM TO THE ASSOCIATED DATUM.
FINISHED GRADE CONTOURS ARE APPROXIMATE. REFER TO SPOT ELEVATION GRADE TAGS FOR CONSTRUCTION STAKING PURPOSES.

DRAINAGE CERTIFICATION:

THIS SET OF IMPROVEMENT PLANS IS CERTIFIED TO CONFORM TO THE REQUIREMENTS OF THE APPROVED DRAINAGE STUDY.
DS# 5273 .

ANTHONY C. DELEON JR., P.E. NO. 023113 DATE

Call before you Dig
AVOID COSTLY UNDERGROUND UTILITY CONFLICTS
Call 811
or
1-800-227-2600

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

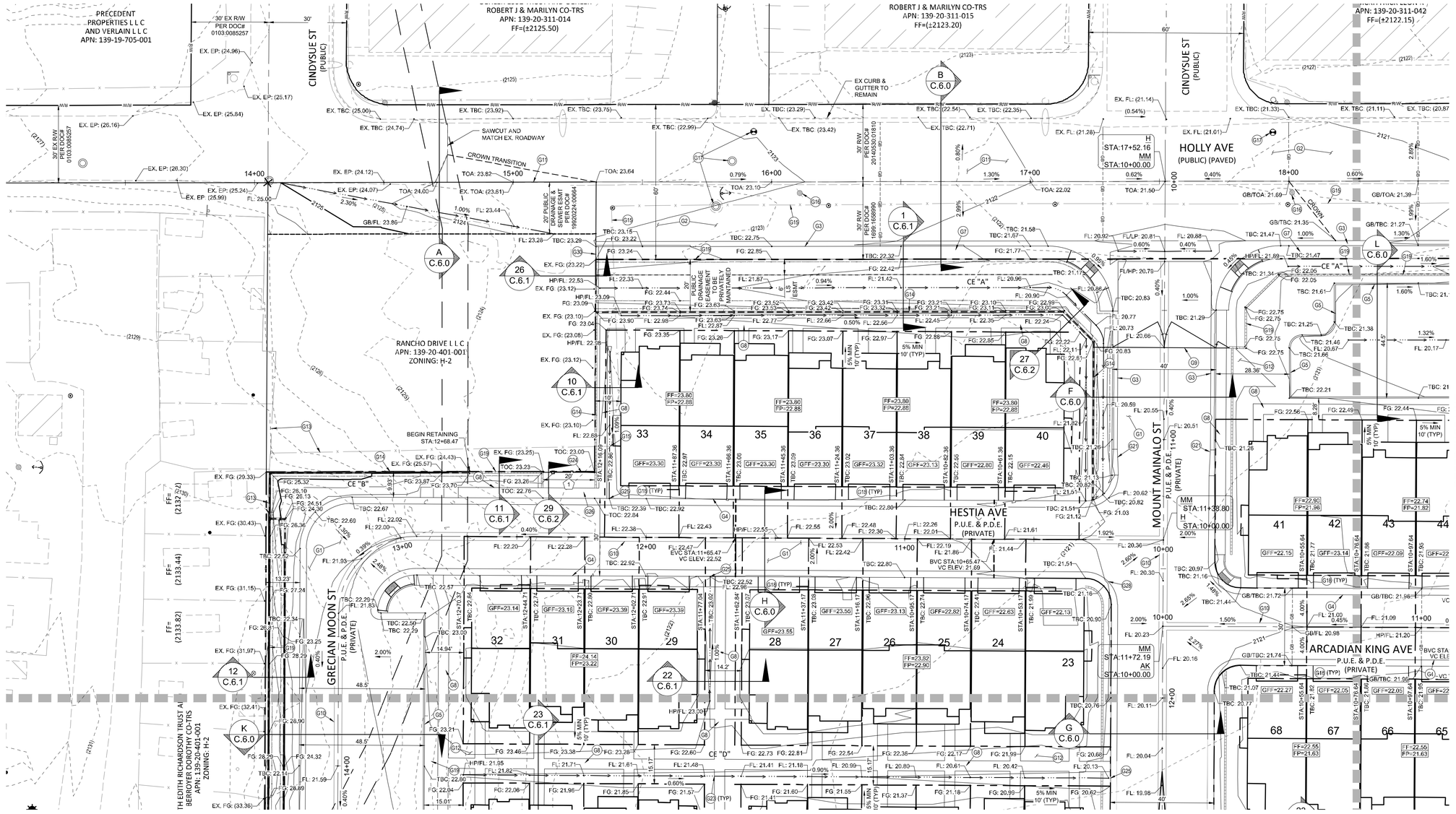
FAST
Call
before you
UnderGround
1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

RANCHO & VEGAS
CITY OF LAS VEGAS, NEVADA
OVERALL GRADING SHEET

C.2.0

PAGE 05

H:\2019\NV-2105-1911 Rancho & Vegas Townhomes\Project Data\02 CAD\2.03 Sheet Files\Construction Drawings\C.2.0 OVERALL GRADING.dwg - C.2.0 - 6/8/2020 02:23pm, anthony.deleon



BASIS OF BEARING
SEE SHEET C.2.0

BENCHMARK
SEE SHEET C.2.0

LEGAL DESCRIPTION
SEE SHEET C.2.0

FLOOD ZONE
SEE SHEET C.2.0

SIGHT VISIBILITY ZONE PER CCAUS# 201.2 (TYP)

SIGHT VISIBILITY ZONE NOTE:

NO WALLS, FENCES, SHRUBS, UTILITY APPURTENANCES OR ANY OTHER OBJECT, OTHER THAN TRAFFIC CONTROL DEVICES, FIRE HYDRANTS, TREES, AND STREET LIGHT POLES, MAY BE CONSTRUCTED OR INSTALLED WITHIN THE SIGHT VISIBILITY ZONE UNLESS SAID OBJECT IS MAINTAINED AT LESS THAN 24 INCHES IN HEIGHT, MEASURED FROM TOP OF CURB, OR WHERE NO CURB EXISTS, A HEIGHT OF 27 INCHES MEASURED FROM THE TOP OF ADJACENT ASPHALT, GRAVEL OR PAVEMENT STREET SURFACE. THIS RESTRICTION EXTENDS ALONG THE SIGHT VISIBILITY LINE THROUGH LANDSCAPED MEDIANS.

Call before you DIG AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY. Call 811 or 1-800-227-2600

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

FAST Call before you UnderGround 1-702-432-5300 AVOID ANY ACCIDENTS DUE TO LACK OF TRANSPORT STUFF

ENGINEER'S NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR EROSION AND DUST CONTROL, AND STORMWATER MANAGEMENT DURING CONSTRUCTION.
2. SEE HORIZONTAL CONTROL PLAN FOR EXACT PROPERTY LINE DIMENSIONS
3. ENGINEER TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES BETWEEN THESE PLANS AND FIELD CONDITIONS.
4. THESE PLANS SHALL NOT IN PART, OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY GOVERNING AGENCIES.
5. ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS.
6. DURING CONSTRUCTION, SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE. SAME MUST UTILIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES.
7. SOILS REPORT NOTE:
   GRADING SHALL BE IN ACCORDANCE WITH SOILS REPORT
   PREPARED BY: GEOTEK, INC.
   PROJECT NO.: 14379-LV
   DATE: OCTOBER 2, 2018
8. CUT/FILL ESTIMATES (PUBLIC AND PRIVATE):
   FROM EXISTING TO FINISH GRADE ELEVATIONS
   NET CUT: ____ CY
   NET FILL: ____ CY
   TOTAL: ____ CY (FILL)
9. FLOOR SECTION ASSUMES 5" SLAB OVER MIN. 8.5" TYPE II. CONTRACTOR TO VERIFY WITH STRUCTURAL PLANS AND GEOTECHNICAL ENGINEER.
10. ADD 2'100' TO GRADING ELEVATIONS SHOWN HEREON TO ADJUST THEM TO THE ASSOCIATED DATUM. FINISHED GRADE CONTOURS ARE APPROXIMATE. REFER TO SPOT ELEVATION GRADE TAGS FOR CONSTRUCTION STAKING PURPOSES.

GRADING KEY NOTES:

- G1 CONSTRUCT 3" AC PAVEMENT OVER 4" TYPE II AGG BASE.
- G2 CONSTRUCT 4.5" AC PAVEMENT OVER 4" TYPE II AGG BASE.
- G3 CONSTRUCT 24" "L" TYPE CURB PER CCAUSD #216.
- G4 CONSTRUCT 30" ROLL CURB PER CCAUSD #217.2.S1.
- G5 CONSTRUCT 6" "A" TYPE CURB PER CCAUSD #219.
- G6 CONSTRUCT SIDEWALK DRAIN PER CCAUSD #236.
- G7 CONSTRUCT 5' SIDEWALK 4" THICK PER CCAUSD #234.
- G8 CONSTRUCT 4' SIDEWALK 4" THICK PER CCAUSD #234.
- G9 INSTALL WROUGHT IRON GATE.
- G10 CONSTRUCT 3' CONCRETE VALLEY GUTTER PER CCAUSD #228.
- G11 SAWCUT & REMOVE EXISTING PAVEMENT.
- G12 INSTALL LANDSCAPING BY OTHERS.
- G13 EXISTING FENCE TO REMAIN.
- G14 INSTALL RETAINING WALL BY SEPARATE PERMIT. HEIGHT DEPICTED BY PLAN.
- G15 EXISTING FENCE TO BE REMOVED.
- G16 EXISTING POWER POLE TO BE RELOCATED.
- G17 ADJUST EXISTING UTILITIES TO NEW FINISHED GRADE.
- G18 CONSTRUCT 5" THICK CONCRETE DRIVEWAY.
- G19 INSTALL SCREEN WALL. HEIGHT DEPICTED PER PLAN.
- G20 INSTALL BLOCK WALL OPENING PER DETAIL #20 ON SHEET C.6.1.
- G21 CONSTRUCT 10' TRANSITION FROM "L" CURB TO ROLL CURB PER DETAIL #18 SHEET C.6.1.
- G22 INSTALL 4" SIDEWALK DRAIN PIPE PER CCAUSD #236.
- G23 CONSTRUCT SIDEWALK UNDERDRAIN PER CCAUSD #236.
- G24 INSTALL WROUGHT IRON GATE/FENCE PER CCAUSD #425.S1
- G25 CONSTRUCT 2' WIDE CURB OPENING PER DETAIL 31 ON SHEET C.6.1
- G26 INSTALL 6" CONCRETE PAVEMENT OVER 6" TYPE II AGG BASE
- G27 INSTALL RIP RAP PER PLAN
- G28 CONSTRUCT 30" ROLL CURB WITH REVERSE LIP PER DETAIL 32 ON SHEET C.6.1
- G29 INSTALL RIP-RAP D50=3",T=6" SUBGRADE @ 90% COMPACTION LENGTH & WIDTH SPECIFIED PER PLAN
- G30 CONSTRUCT STEM WALL. SOLID GROUT FOR 3 COURSES & 10.5' EASEMENT OPENING
- G31 CONSTRUCT 8' CONCRETE VALLEY GUTTER PER CCAUSD #228.

EASEMENT KEY NOTES:

1. 20' PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED BY THE HOA
2. 30' PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED BY THE HOA.

DRAINAGE CERTIFICATION:

THIS SET OF IMPROVEMENT PLANS IS CERTIFIED TO CONFORM TO THE REQUIREMENTS OF THE APPROVED DRAINAGE STUDY.
DS# 5273 .

ANTHONY C. DELEON JR., P.E. NO. 023113 DATE

SCALE: 1" = 20'

HORROCKS ENGINEERS
1401 North Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE

REVISIONS
REV # | DATE

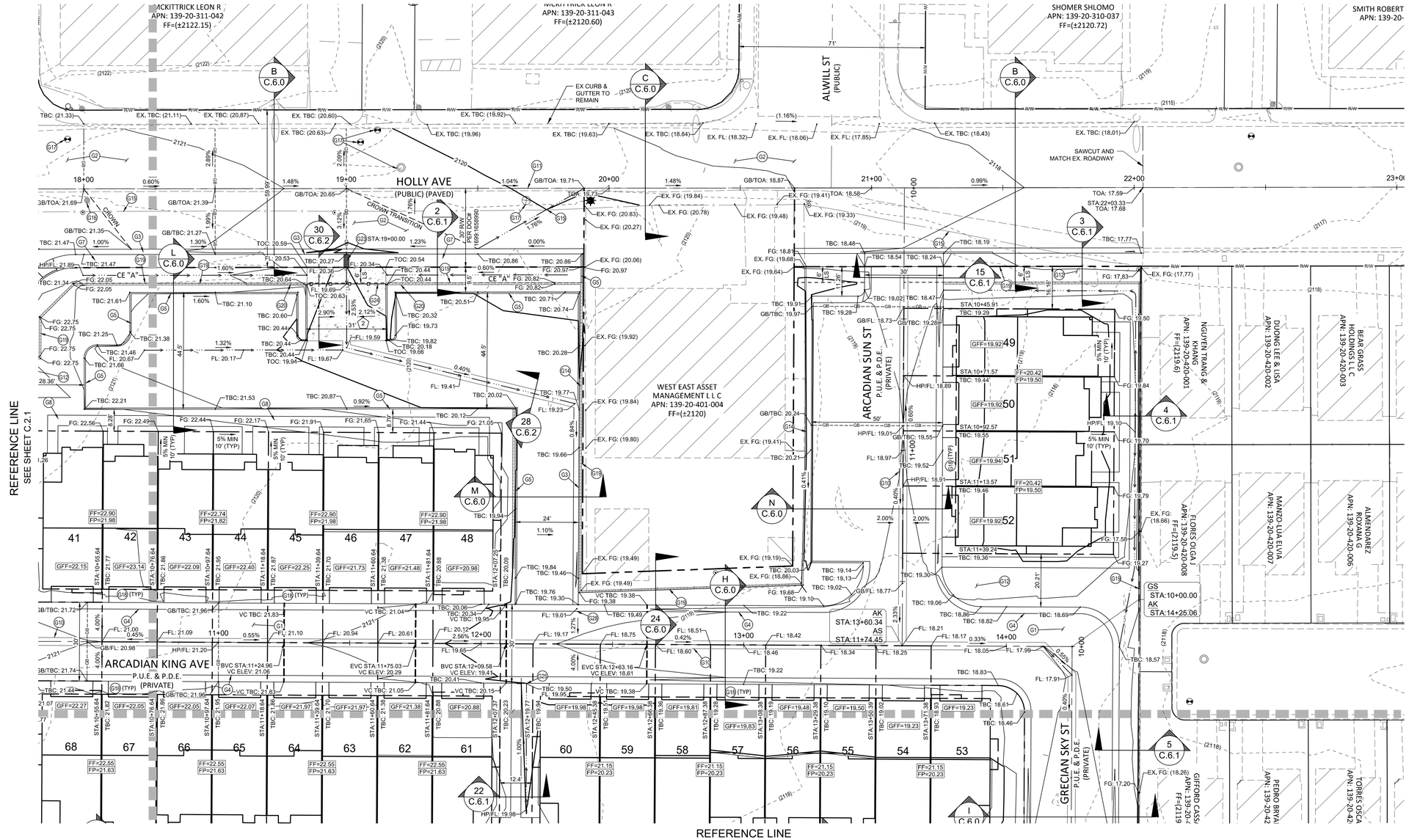
*SEE GENERAL NOTES SHEET

DRAWING INFO
DATE 3/30/2020
DESIGNED ACD
DRAWN PMP
CHECKED ACD
PROJECT NV-2105-1911

PROFESSIONAL ENGINEER STATE OF NEVADA ANTHONY C. DELEON JR Exp. 12-31-20 CIVIL No. 023113
6/8/2020

RANCHO & VEGAS
CITY OF LAS VEGAS, NEVADA
GRADING SHEET 1

C.2.1



BASIS OF BEARING
SEE SHEET C.2.0

BENCHMARK
SEE SHEET C.2.0

LEGAL DESCRIPTION
SEE SHEET C.2.0

FLOOD ZONE
SEE SHEET C.2.0

SIGHT VISIBILITY ZONE NOTE:
NO WALLS, FENCES, SHRUBS, UTILITY APPURTENANCES OR ANY OTHER OBJECT, OTHER THAN TRAFFIC CONTROL DEVICES, FIRE HYDRANTS, TREES, AND STREET LIGHT POLES, MAY BE CONSTRUCTED OR INSTALLED WITHIN THE SIGHT VISIBILITY ZONE, UNLESS SAID OBJECT IS MAINTAINED AT LESS THAN 24 INCHES IN HEIGHT, MEASURED FROM TOP OF CURB, OR WHERE NO CURB EXISTS, A HEIGHT OF 27 INCHES MEASURED FROM THE TOP OF ADJACENT ASPHALT, GRAVEL OR PAVEMENT STREET SURFACE. THIS RESTRICTION EXTENDS ALONG THE SIGHT VISIBILITY LINE THROUGH LANDSCAPED MEDIANS.

Call before you dig
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.
Call 811 or 1-800-227-2600

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

FAST
Call before you UnderGround
1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

ENGINEER'S NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR EROSION AND DUST CONTROL, AND STORMWATER MANAGEMENT DURING CONSTRUCTION.
2. SEE HORIZONTAL CONTROL PLAN FOR EXACT PROPERTY LINE DIMENSIONS
3. ENGINEER TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES BETWEEN THESE PLANS AND FIELD CONDITIONS.
4. THESE PLANS SHALL NOT IN PART, OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY GOVERNING AGENCIES.
5. ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS.
6. DURING CONSTRUCTION, SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE. SAME MUST UTILIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES.
7. SOILS REPORT NOTE:
   GRADING SHALL BE IN ACCORDANCE WITH SOILS REPORT
   PREPARED BY: GEOTEK, INC.
   PROJECT NO.: 14379-LV
   DATE: OCTOBER 2, 2018
8. CUT/FILL ESTIMATES (PUBLIC AND PRIVATE):
   FROM EXISTING TO FINISH GRADE ELEVATIONS
   NET CUT: ____ CY
   NET FILL: ____ CY
   TOTAL: ____ CY (FILL)
9. FLOOR SECTION ASSUMES 5" SLAB OVER MIN. 8.5" TYPE II. CONTRACTOR TO VERIFY WITH STRUCTURAL PLANS AND GEOTECHNICAL ENGINEER.
10. ADD 2'100' TO GRADING ELEVATIONS SHOWN HEREON TO ADJUST THEM TO THE ASSOCIATED DATUM. FINISHED GRADE CONTOURS ARE APPROXIMATE. REFER TO SPOT ELEVATION GRADE TAGS FOR CONSTRUCTION STAKING PURPOSES.

GRADING KEY NOTES:

- G1 CONSTRUCT 3" AC PAVEMENT OVER 4" TYPE II AGG BASE.
- G2 CONSTRUCT 4.5" AC PAVEMENT OVER 4" TYPE II AGG BASE.
- G3 CONSTRUCT 24" "L" TYPE CURB PER CCAUSD #216.
- G4 CONSTRUCT 30" ROLL CURB PER CCAUSD #217.2.S1.
- G5 CONSTRUCT 6" "A" TYPE CURB PER CCAUSD #219.
- G6 CONSTRUCT SIDEWALK DRAIN PER CCAUSD #236.
- G7 CONSTRUCT 5' SIDEWALK 4" THICK PER CCAUSD #234.
- G8 CONSTRUCT 4' SIDEWALK 4" THICK PER CCAUSD #234.
- G9 INSTALL WROUGHT IRON GATE.
- G10 CONSTRUCT 3' CONCRETE VALLEY GUTTER PER CCAUSD #228.
- G11 SAWCUT & REMOVE EXISTING PAVEMENT.
- G12 INSTALL LANDSCAPING BY OTHERS.
- G13 EXISTING FENCE TO REMAIN.
- G14 INSTALL RETAINING WALL BY SEPARATE PERMIT. HEIGHT DEPICTED BY PLAN.
- G15 EXISTING FENCE TO BE REMOVED.
- G16 EXISTING POWER POLE TO BE RELOCATED.
- G17 ADJUST EXISTING UTILITIES TO NEW FINISHED GRADE.
- G18 CONSTRUCT 5" THICK CONCRETE DRIVEWAY.
- G19 INSTALL SCREEN WALL. HEIGHT DEPICTED PER PLAN.
- G20 INSTALL BLOCK WALL OPENING PER DETAIL #20 ON SHEET C.6.1.
- G21 CONSTRUCT 10' TRANSITION FROM "L" CURB TO ROLL CURB PER DETAIL #18 SHEET C.6.1.
- G22 INSTALL 4" SIDEWALK DRAIN PIPE PER CCAUSD #236.
- G23 CONSTRUCT SIDEWALK UNDERDRAIN PER CCAUSD #236.
- G24 INSTALL WROUGHT IRON GATE/FENCE PER CCAUSD #425.S1
- G25 CONSTRUCT 2' WIDE CURB OPENING PER DETAIL 31 ON SHEET C.6.1
- G26 INSTALL 6" CONCRETE PAVEMENT OVER 6" TYPE II AGG BASE
- G27 INSTALL RIP RAP PER PLAN
- G28 CONSTRUCT 30" ROLL CURB WITH REVERSE LIP PER DETAIL 32 ON SHEET C.6.1
- G29 INSTALL RIP-RAP D50=3",T=6" SUBGRADE @ 90% COMPACTION LENGTH & WIDTH SPECIFIED PER PLAN
- G30 CONSTRUCT STEM WALL. SOLID GROUT FOR 3 COURSES & 10.5' EASEMENT OPENING
- G31 CONSTRUCT 8' CONCRETE VALLEY GUTTER PER CCAUSD #228.

EASEMENT KEY NOTES:

1. 20' PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED BY THE HOA
2. 30' PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED BY THE HOA.

DRAINAGE CERTIFICATION:

THIS SET OF IMPROVEMENT PLANS IS CERTIFIED TO CONFORM TO THE REQUIREMENTS OF THE APPROVED DRAINAGE STUDY.
DS# 5273 .

ANTHONY C. DELEON JR., P.E. NO. 023113 DATE

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

HORROCKS ENGINEERS
1401 North Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
0 1 2
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE

REVISIONS
REV # | DATE

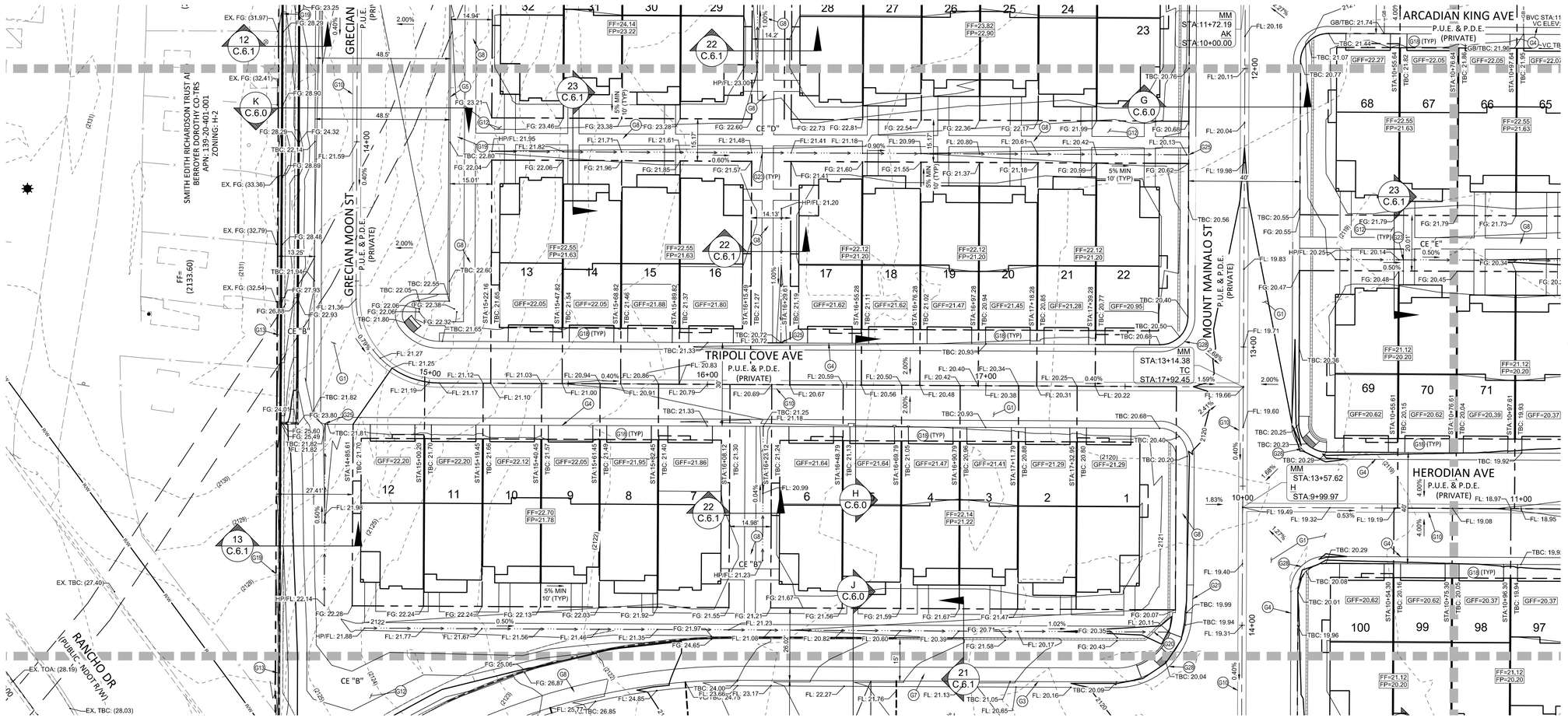
*SEE GENERAL NOTES SHEET

DRAWING INFO
DATE 3/30/2020
DESIGNED ACD
DRAWN PMP
CHECKED ACD
PROJECT NV-2105-1911

PROFESSIONAL ENGINEER - STATE OF NEVADA
ANTHONY C. DELEON JR
EXP. 12-31-20
CIVIL
No.023113
6/8/2020

RANCHO & VEGAS
CITY OF LAS VEGAS, NEVADA
GRADING SHEET 2

C.2.2



BASIS OF BEARING

SEE SHEET C.2.0

BENCHMARK

SEE SHEET C.2.0

LEGAL DESCRIPTION

SEE SHEET C.2.0

FLOOD ZONE

SEE SHEET C.2.0

SIGHT VISIBILITY ZONE PER CCAUSD# 201.2 (TYP)

SIGHT VISIBILITY ZONE NOTE:

NO WALLS, FENCES, SHRUBS, UTILITY APPURTENANCES OR ANY OTHER OBJECT, OTHER THAN TRAFFIC CONTROL DEVICES, FIRE HYDRANTS, TREES, AND STREET LIGHT POLES, MAY BE CONSTRUCTED OR INSTALLED WITHIN THE SIGHT VISIBILITY ZONE UNLESS SAID OBJECT IS MAINTAINED AT LESS THAN 24 INCHES IN HEIGHT, MEASURED FROM TOP OF CURB, OR WHERE NO CURB EXISTS, A HEIGHT OF 27 INCHES MEASURED FROM THE TOP OF ADJACENT ASPHALT, GRAVEL OR PAVEMENT STREET SURFACE. THIS RESTRICTION EXTENDS ALONG THE SIGHT VISIBILITY LINE THROUGH LANDSCAPED MEDIANS.

Call before you dig
AVOID CUTTING UNDERGROUND UTILITY LINES, IT'S COSTLY.
Call 811
OR
1-800-227-2600

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

FAST
Call before you
UnderGround
1-702-432-5300
FREQUENT AND INTERNAL SYSTEM OF TRANSPORTATION

ENGINEER'S NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR EROSION AND DUST CONTROL, AND STORMWATER MANAGEMENT DURING CONSTRUCTION.
2. SEE HORIZONTAL CONTROL PLAN FOR EXACT PROPERTY LINE DIMENSIONS
3. ENGINEER TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES BETWEEN THESE PLANS AND FIELD CONDITIONS.
4. THESE PLANS SHALL NOT IN PART, OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY GOVERNING AGENCIES.
5. ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS.
6. DURING CONSTRUCTION, SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE. SAME MUST UTILIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES.
7. SOILS REPORT NOTE:
   GRADING SHALL BE IN ACCORDANCE WITH SOILS REPORT
   PREPARED BY: GEOTEK, INC.
   PROJECT NO.: 14379-LV
   DATE: OCTOBER 2, 2018
8. CUT/FILL ESTIMATES (PUBLIC AND PRIVATE):
   FROM EXISTING TO FINISH GRADE ELEVATIONS
   NET CUT: _____ CY
   NET FILL: _____ CY
   TOTAL: _____ CY (FILL)
9. FLOOR SECTION ASSUMES 5" SLAB OVER MIN. 8.5" TYPE II. CONTRACTOR TO VERIFY WITH STRUCTURAL PLANS AND GEOTECHNICAL ENGINEER.
10. ADD 2100' TO GRADING ELEVATIONS SHOWN HEREON TO ADJUST THEM TO THE ASSOCIATED DATUM. FINISHED GRADE CONTOURS ARE APPROXIMATE. REFER TO SPOT ELEVATION GRADE TAGS FOR CONSTRUCTION STAKING PURPOSES.

GRADING KEY NOTES:

- G1 CONSTRUCT 3" AC PAVEMENT OVER 4" TYPE II AGG BASE.
- G2 CONSTRUCT 4.5" AC PAVEMENT OVER 4" TYPE II AGG BASE.
- G3 CONSTRUCT 24" "L" TYPE CURB PER CCAUSD #216.
- G4 CONSTRUCT 30" ROLL CURB PER CCAUSD #217.2.S1.
- G5 CONSTRUCT 6" "A" TYPE CURB PER CCAUSD #219.
- G6 CONSTRUCT SIDEWALK DRAIN PER CCAUSD #236.
- G7 CONSTRUCT 5' SIDEWALK 4" THICK PER CCAUSD #234.
- G8 CONSTRUCT 4' SIDEWALK 4" THICK PER CCAUSD #234.
- G9 INSTALL WROUGHT IRON GATE.
- G10 CONSTRUCT 3' CONCRETE VALLEY GUTTER PER CCAUSD #228.
- G11 SAWCUT & REMOVE EXISTING PAVEMENT.
- G12 INSTALL LANDSCAPING BY OTHERS.
- G13 EXISTING FENCE TO REMAIN.
- G14 INSTALL RETAINING WALL BY SEPARATE PERMIT. HEIGHT DEPICTED BY PLAN.
- G15 EXISTING FENCE TO BE REMOVED.
- G16 EXISTING POWER POLE TO BE RELOCATED.
- G17 ADJUST EXISTING UTILITIES TO NEW FINISHED GRADE.
- G18 CONSTRUCT 5" THICK CONCRETE DRIVEWAY.
- G19 INSTALL SCREEN WALL. HEIGHT DEPICTED PER PLAN.
- G20 INSTALL BLOCK WALL OPENING PER DETAIL #20 ON SHEET C.6.1.
- G21 CONSTRUCT 10' TRANSITION FROM "L" CURB TO ROLL CURB PER DETAIL #18 SHEET C.6.1.
- G22 INSTALL 4" SIDEWALK DRAIN PIPE PER CCAUSD #236.
- G23 CONSTRUCT SIDEWALK UNDERDRAIN PER CCAUSD #236.
- G24 INSTALL WROUGHT IRON GATE/FENCE PER CCAUSD #425.S1
- G25 CONSTRUCT 2' WIDE CURB OPENING PER DETAIL 31 ON SHEET C.6.1
- G26 INSTALL 6" CONCRETE PAVEMENT OVER 6" TYPE II AGG BASE
- G27 INSTALL RIP RAP PER PLAN
- G28 CONSTRUCT 30" ROLL CURB WITH REVERSE LIP PER DETAIL 32 ON SHEET C.6.1
- G29 INSTALL RIP-RAP D50=3",T=6" SUBGRADE @ 90% COMPACTION LENGTH & WIDTH SPECIFIED PER PLAN
- G30 CONSTRUCT STEM WALL. SOLID GROUT FOR 3 COURSES & 10.5' EASEMENT OPENING
- G31 CONSTRUCT 8' CONCRETE VALLEY GUTTER PER CCAUSD #228.

EASEMENT KEY NOTES:

1. 20' PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED BY THE HOA
2. 30' PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED BY THE HOA.

DRAINAGE CERTIFICATION:

THIS SET OF IMPROVEMENT PLANS IS CERTIFIED TO CONFORM TO THE REQUIREMENTS OF THE APPROVED DRAINAGE STUDY.
DS# 5273 .

ANTHONY C. DELEON JR., P.E. NO. 023113 DATE

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

HORROCKS ENGINEERS
1401 North Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
0 1 2
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE

REVISIONS
REV # | DATE

*SEE GENERAL NOTES SHEET

DRAWING INFO
DATE 3/30/2020
DESIGNED ACD
DRAWN PMP
CHECKED ACD
PROJECT NV-2105-1911

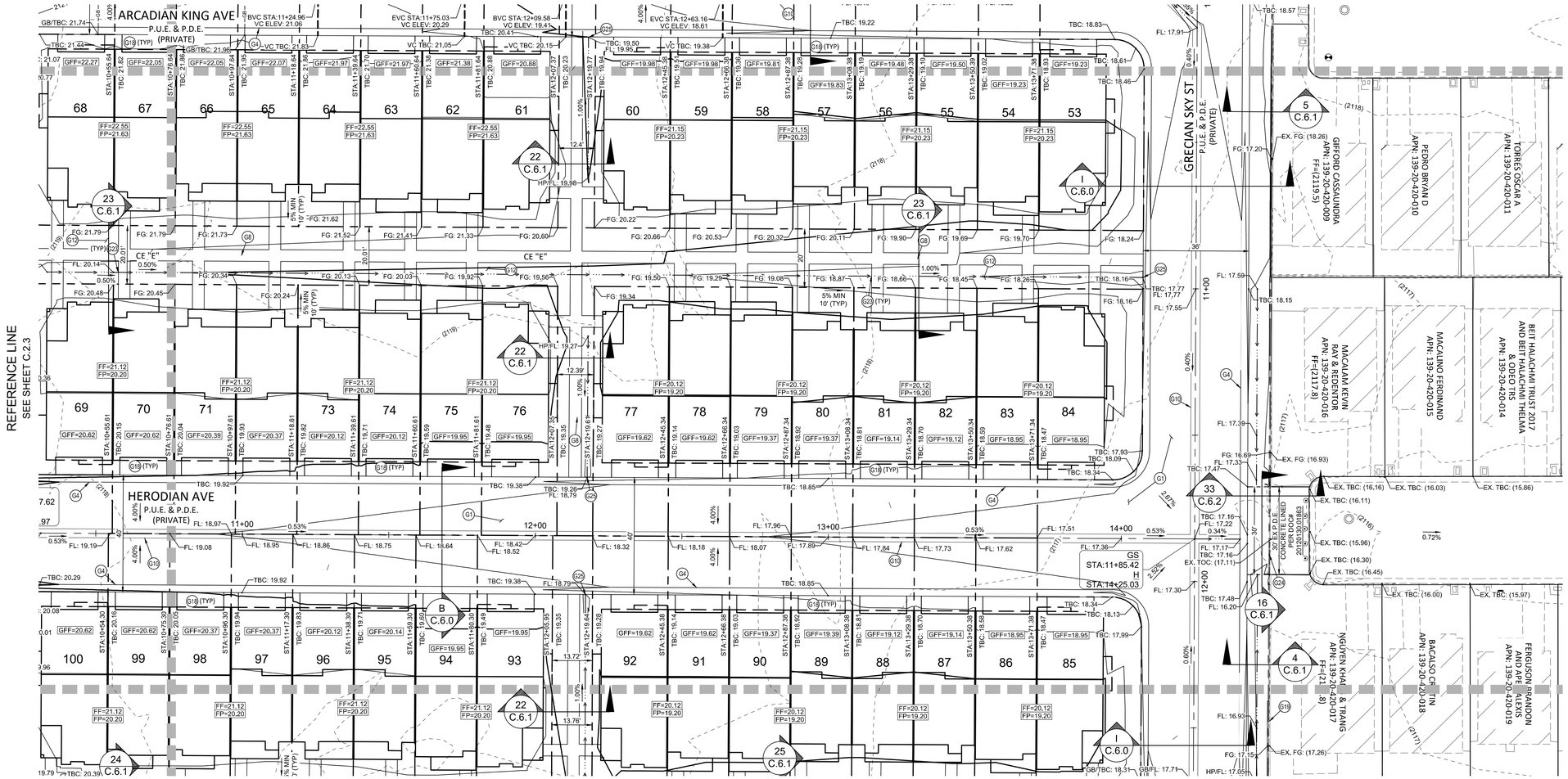
PROFESSIONAL ENGINEER STATE OF NEVADA
ANTHONY C. DELEON JR
EXP. 12-31-20
CIVIL
NO. 023113
6/8/2020

RANCHO & VEGAS

CITY OF LAS VEGAS, NEVADA

GRADING SHEET 3

C.2.3



BASIS OF BEARING
SEE SHEET C.2.0

BENCHMARK
SEE SHEET C.2.0

LEGAL DESCRIPTION
SEE SHEET C.2.0

FLOOD ZONE
SEE SHEET C.2.0

SIGHT VISIBILITY ZONE PER CCAUSD# 201.2 (TYP)

SIGHT VISIBILITY ZONE NOTE:

NO WALLS, FENCES, SHRUBS, UTILITY APPURTENANCES OR ANY OTHER OBJECT, OTHER THAN TRAFFIC CONTROL DEVICES, FIRE HYDRANTS, TREES, AND STREET LIGHT POLES, MAY BE CONSTRUCTED OR INSTALLED WITHIN THE SIGHT VISIBILITY ZONE UNLESS SAID OBJECT IS MAINTAINED AT LESS THAN 24 INCHES IN HEIGHT, MEASURED FROM TOP OF CURB, OR WHERE NO CURB EXISTS, A HEIGHT OF 27 INCHES MEASURED FROM THE TOP OF ADJACENT ASPHALT, GRAVEL OR PAVEMENT STREET SURFACE. THIS RESTRICTION EXTENDS ALONG THE SIGHT VISIBILITY LINE THROUGH LANDSCAPED MEDIANS.

Call before you Dig
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.
Call 811 or 1-800-227-2600

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

FAST
Call before you UnderGround
1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

ENGINEER'S NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR EROSION AND DUST CONTROL, AND STORMWATER MANAGEMENT DURING CONSTRUCTION.
2. SEE HORIZONTAL CONTROL PLAN FOR EXACT PROPERTY LINE DIMENSIONS
3. ENGINEER TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES BETWEEN THESE PLANS AND FIELD CONDITIONS.
4. THESE PLANS SHALL NOT IN PART, OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY GOVERNING AGENCIES.
5. ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS.
6. DURING CONSTRUCTION, SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE. SAME MUST UTILIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES.
7. SOILS REPORT NOTE:
   GRADING SHALL BE IN ACCORDANCE WITH SOILS REPORT
   PREPARED BY: GEOTEK, INC.
   PROJECT NO.: 14379-LV
   DATE: OCTOBER 2, 2018
8. CUT/FILL ESTIMATES (PUBLIC AND PRIVATE):
   FROM EXISTING TO FINISH GRADE ELEVATIONS
   NET CUT: ____ CY
   NET FILL: ____ CY
   TOTAL: ____ CY (FILL)
9. FLOOR SECTION ASSUMES 5" SLAB OVER MIN. 8.5" TYPE II. CONTRACTOR TO VERIFY WITH STRUCTURAL PLANS AND GEOTECHNICAL ENGINEER.
10. ADD 2100' TO GRADING ELEVATIONS SHOWN HEREON TO ADJUST THEM TO THE ASSOCIATED DATUM. FINISHED GRADE CONTOURS ARE APPROXIMATE. REFER TO SPOT ELEVATION GRADE TAGS FOR CONSTRUCTION STAKING PURPOSES.

GRADING KEY NOTES:

- G1 CONSTRUCT 3" AC PAVEMENT OVER 4" TYPE II AGG BASE.
- G2 CONSTRUCT 4.5" AC PAVEMENT OVER 4" TYPE II AGG BASE.
- G3 CONSTRUCT 24" "L" TYPE CURB PER CCAUSD #216.
- G4 CONSTRUCT 30" ROLL CURB PER CCAUSD #217.2.S1.
- G5 CONSTRUCT 6" "A" TYPE CURB PER CCAUSD #219.
- G6 CONSTRUCT SIDEWALK DRAIN PER CCAUSD #236.
- G7 CONSTRUCT 5' SIDEWALK 4" THICK PER CCAUSD #234.
- G8 CONSTRUCT 4' SIDEWALK 4" THICK PER CCAUSD #234.
- G9 INSTALL WROUGHT IRON GATE.
- G10 CONSTRUCT 3' CONCRETE VALLEY GUTTER PER CCAUSD #228.
- G11 SAWCUT & REMOVE EXISTING PAVEMENT.
- G12 INSTALL LANDSCAPING BY OTHERS.
- G13 EXISTING FENCE TO REMAIN.
- G14 INSTALL RETAINING WALL BY SEPARATE PERMIT. HEIGHT DEPICTED BY PLAN.
- G15 EXISTING FENCE TO BE REMOVED.
- G16 EXISTING POWER POLE TO BE RELOCATED.
- G17 ADJUST EXISTING UTILITIES TO NEW FINISHED GRADE.
- G18 CONSTRUCT 5" THICK CONCRETE DRIVEWAY.
- G19 INSTALL SCREEN WALL. HEIGHT DEPICTED PER PLAN.
- G20 INSTALL BLOCK WALL OPENING PER DETAIL #20 ON SHEET C.6.1.
- G21 CONSTRUCT 10' TRANSITION FROM "L" CURB TO ROLL CURB PER DETAIL #18 SHEET C.6.1.
- G22 INSTALL 4" SIDEWALK DRAIN PIPE PER CCAUSD #236.
- G23 CONSTRUCT SIDEWALK UNDERDRAIN PER CCAUSD #236.
- G24 INSTALL WROUGHT IRON GATE/FENCE PER CCAUSD #425.S1
- G25 CONSTRUCT 2' WIDE CURB OPENING PER DETAIL 31 ON SHEET C.6.1
- G26 INSTALL 6" CONCRETE PAVEMENT OVER 6" TYPE II AGG BASE
- G27 INSTALL RIP RAP PER PLAN
- G28 CONSTRUCT 30" ROLL CURB WITH REVERSE LIP PER DETAIL 32 ON SHEET C.6.1
- G29 INSTALL RIP-RAP D50=3",T=6" SUBGRADE @ 90% COMPACTION LENGTH & WIDTH SPECIFIED PER PLAN
- G30 CONSTRUCT STEM WALL. SOLID GROUT FOR 3 COURSES & 10.5' EASEMENT OPENING
- G31 CONSTRUCT 8' CONCRETE VALLEY GUTTER PER CCAUSD #228.

EASEMENT KEY NOTES:

1. 20' PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED BY THE HOA
2. 30' PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED BY THE HOA.

DRAINAGE CERTIFICATION:

THIS SET OF IMPROVEMENT PLANS IS CERTIFIED TO CONFORM TO THE REQUIREMENTS OF THE APPROVED DRAINAGE STUDY.
DS# 5273 .

ANTHONY C. DELEON JR., P.E. NO. 023113 DATE

HORROCKS ENGINEERS
1401 North Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
0 1 2
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE

REVISIONS
REV # | DATE

*SEE GENERAL NOTES SHEET

DRAWING INFO
DATE 3/30/2020
DESIGNED ACD
DRAWN PMP
CHECKED ACD
PROJECT NV-2105-1911

PROFESSIONAL ENGINEER STATE OF NEVADA
ANTHONY C. DELEON JR
EXP. 12-31-20
CIVIL
No.023113
6/8/2020

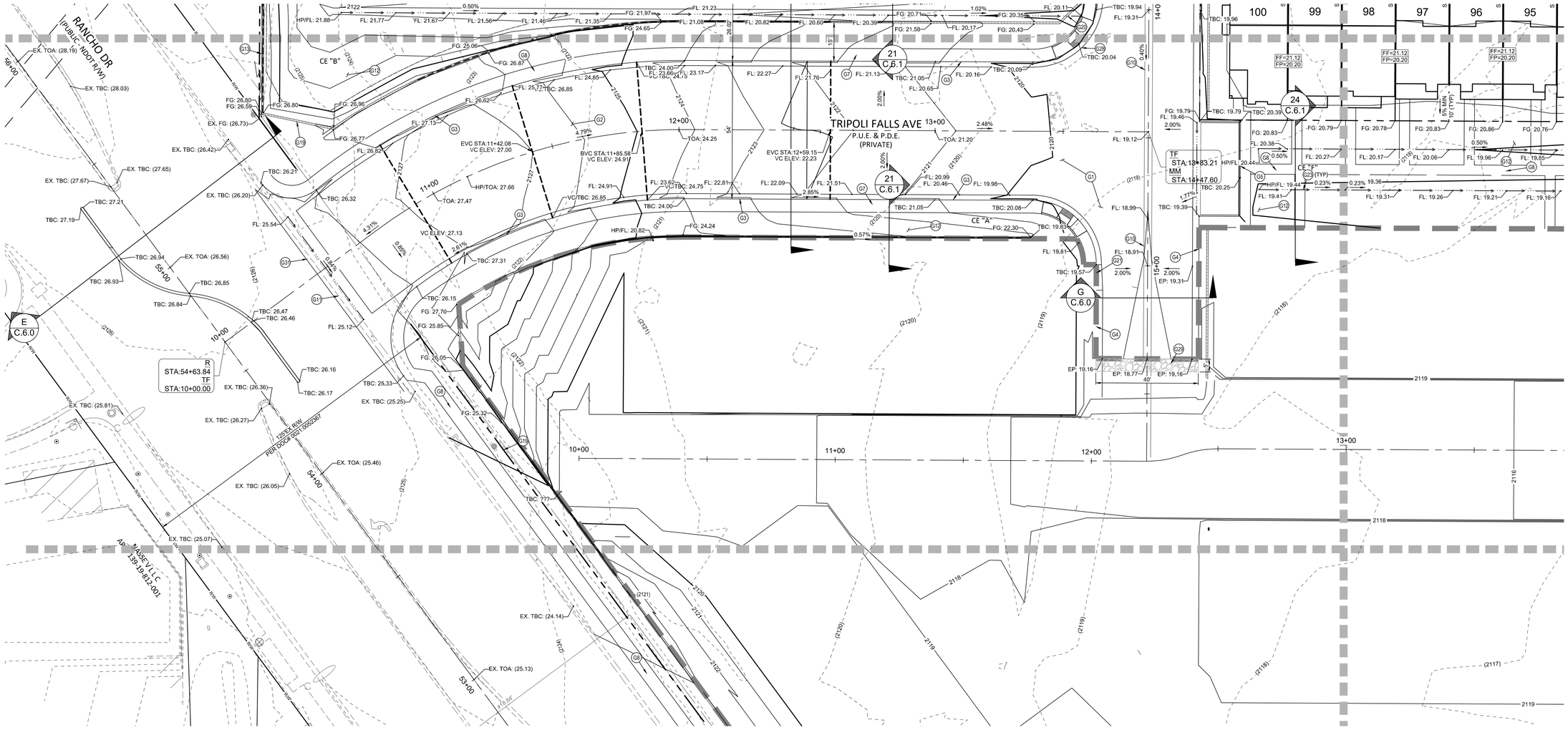
HORROCKS ENGINEERS

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

RANCHO & VEGAS
CITY OF LAS VEGAS, NEVADA
GRADING SHEET 4

C.2.4

PAGE 09



BASIS OF BEARING
SEE SHEET C.2.0

BENCHMARK
SEE SHEET C.2.0

LEGAL DESCRIPTION
SEE SHEET C.2.0

FLOOD ZONE
SEE SHEET C.2.0

SIGHT VISIBILITY ZONE PER CCAUSD# 201.2 (TYP)

SIGHT VISIBILITY ZONE NOTE:

NO WALLS, FENCES, SHRUBS, UTILITY APPURTENANCES OR ANY OTHER OBJECT, OTHER THAN TRAFFIC CONTROL DEVICES, FIRE HYDRANTS, TREES, AND STREET LIGHT POLES, MAY BE CONSTRUCTED OR INSTALLED WITHIN THE SIGHT VISIBILITY ZONE UNLESS SAID OBJECT IS MAINTAINED AT LESS THAN 24 INCHES IN HEIGHT, MEASURED FROM TOP OF CURB, OR WHERE NO CURB EXISTS, A HEIGHT OF 27 INCHES MEASURED FROM THE TOP OF ADJACENT ASPHALT, GRAVEL OR PAVEMENT STREET SURFACE. THIS RESTRICTION EXTENDS ALONG THE SIGHT VISIBILITY LINE THROUGH LANDSCAPED MEDIANS.

Call before you dig
AVOID CUTTING UNDERGROUND UTILITY LINES & IT'S COSTLY.
Call 811
1-800-227-2600

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

FAST
Call before you UnderGround
1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

ENGINEER'S NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR EROSION AND DUST CONTROL, AND STORMWATER MANAGEMENT DURING CONSTRUCTION.
2. SEE HORIZONTAL CONTROL PLAN FOR EXACT PROPERTY LINE DIMENSIONS
3. ENGINEER TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES BETWEEN THESE PLANS AND FIELD CONDITIONS.
4. THESE PLANS SHALL NOT IN PART, OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY GOVERNING AGENCIES.
5. ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS.
6. DURING CONSTRUCTION, SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE. SAME MUST UTILIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES.
7. SOILS REPORT NOTE:
   GRADING SHALL BE IN ACCORDANCE WITH SOILS REPORT
   PREPARED BY: GEOTEK, INC.
   PROJECT NO.: 14379-LV
   DATE: OCTOBER 2, 2018
8. CUT/FILL ESTIMATES (PUBLIC AND PRIVATE):
   FROM EXISTING TO FINISH GRADE ELEVATIONS
   NET CUT: _____ CY
   NET FILL: _____ CY
   TOTAL: _____ CY (FILL)
9. FLOOR SECTION ASSUMES 5" SLAB OVER MIN. 8.5" TYPE II. CONTRACTOR TO VERIFY WITH STRUCTURAL PLANS AND GEOTECHNICAL ENGINEER.
10. ADD 2100' TO GRADING ELEVATIONS SHOWN HEREON TO ADJUST THEM TO THE ASSOCIATED DATUM. FINISHED GRADE CONTOURS ARE APPROXIMATE. REFER TO SPOT ELEVATION GRADE TAGS FOR CONSTRUCTION STAKING PURPOSES.

GRADING KEY NOTES:

- G1 CONSTRUCT 3" AC PAVEMENT OVER 4" TYPE II AGG BASE.
- G2 CONSTRUCT 4.5" AC PAVEMENT OVER 4" TYPE II AGG BASE.
- G3 CONSTRUCT 24" "L" TYPE CURB PER CCAUSD #216.
- G4 CONSTRUCT 30" ROLL CURB PER CCAUSD #217.2.S1.
- G5 CONSTRUCT 6" "A" TYPE CURB PER CCAUSD #219.
- G6 CONSTRUCT SIDEWALK DRAIN PER CCAUSD #236.
- G7 CONSTRUCT 5' SIDEWALK 4" THICK PER CCAUSD #234.
- G8 CONSTRUCT 4' SIDEWALK 4" THICK PER CCAUSD #234.
- G9 INSTALL WROUGHT IRON GATE.
- G10 CONSTRUCT 3' CONCRETE VALLEY GUTTER PER CCAUSD #228.
- G11 SAWCUT & REMOVE EXISTING PAVEMENT.
- G12 INSTALL LANDSCAPING BY OTHERS.
- G13 EXISTING FENCE TO REMAIN.
- G14 INSTALL RETAINING WALL BY SEPARATE PERMIT. HEIGHT DEPICTED BY PLAN.
- G15 EXISTING FENCE TO BE REMOVED.
- G16 EXISTING POWER POLE TO BE RELOCATED.
- G17 ADJUST EXISTING UTILITIES TO NEW FINISHED GRADE.
- G18 CONSTRUCT 5" THICK CONCRETE DRIVEWAY.
- G19 INSTALL SCREEN WALL. HEIGHT DEPICTED PER PLAN.
- G20 INSTALL BLOCK WALL OPENING PER DETAIL #20 ON SHEET C.6.1.
- G21 CONSTRUCT 10' TRANSITION FROM "L" CURB TO ROLL CURB PER DETAIL #18 SHEET C.6.1.
- G22 INSTALL 4" SIDEWALK DRAIN PIPE PER CCAUSD #236.
- G23 CONSTRUCT SIDEWALK UNDERDRAIN PER CCAUSD #236.
- G24 INSTALL WROUGHT IRON GATE/FENCE PER CCAUSD #425.S1
- G25 CONSTRUCT 2' WIDE CURB OPENING PER DETAIL 31 ON SHEET C.6.1
- G26 INSTALL 6" CONCRETE PAVEMENT OVER 6" TYPE II AGG BASE
- G27 INSTALL RIP RAP PER PLAN
- G28 CONSTRUCT 30" ROLL CURB WITH REVERSE LIP PER DETAIL 32 ON SHEET C.6.1
- G29 INSTALL RIP-RAP D50=3",T=6" SUBGRADE @ 90% COMPACTION LENGTH & WIDTH SPECIFIED PER PLAN
- G30 CONSTRUCT STEM WALL. SOLID GROUT FOR 3 COURSES & 10.5' EASEMENT OPENING
- G31 CONSTRUCT 8' CONCRETE VALLEY GUTTER PER CCAUSD #228.

EASEMENT KEY NOTES:

- 1 20' PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED BY THE HOA
- 2 30' PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED BY THE HOA.

DRAINAGE CERTIFICATION:

THIS SET OF IMPROVEMENT PLANS IS CERTIFIED TO CONFORM TO THE REQUIREMENTS OF THE APPROVED DRAINAGE STUDY.
DS# 5273 .

ANTHONY C. DELEON JR., P.E. NO. 023113 DATE

HORROCKS ENGINEERS
1401 North Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
0 1 2
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE

REVISIONS
REV # | DATE
*SEE GENERAL NOTES SHEET

DRAWING INFO
DATE 3/30/2020
DESIGNED ACD
DRAWN PMP
CHECKED ACD
PROJECT NV-2105-1911

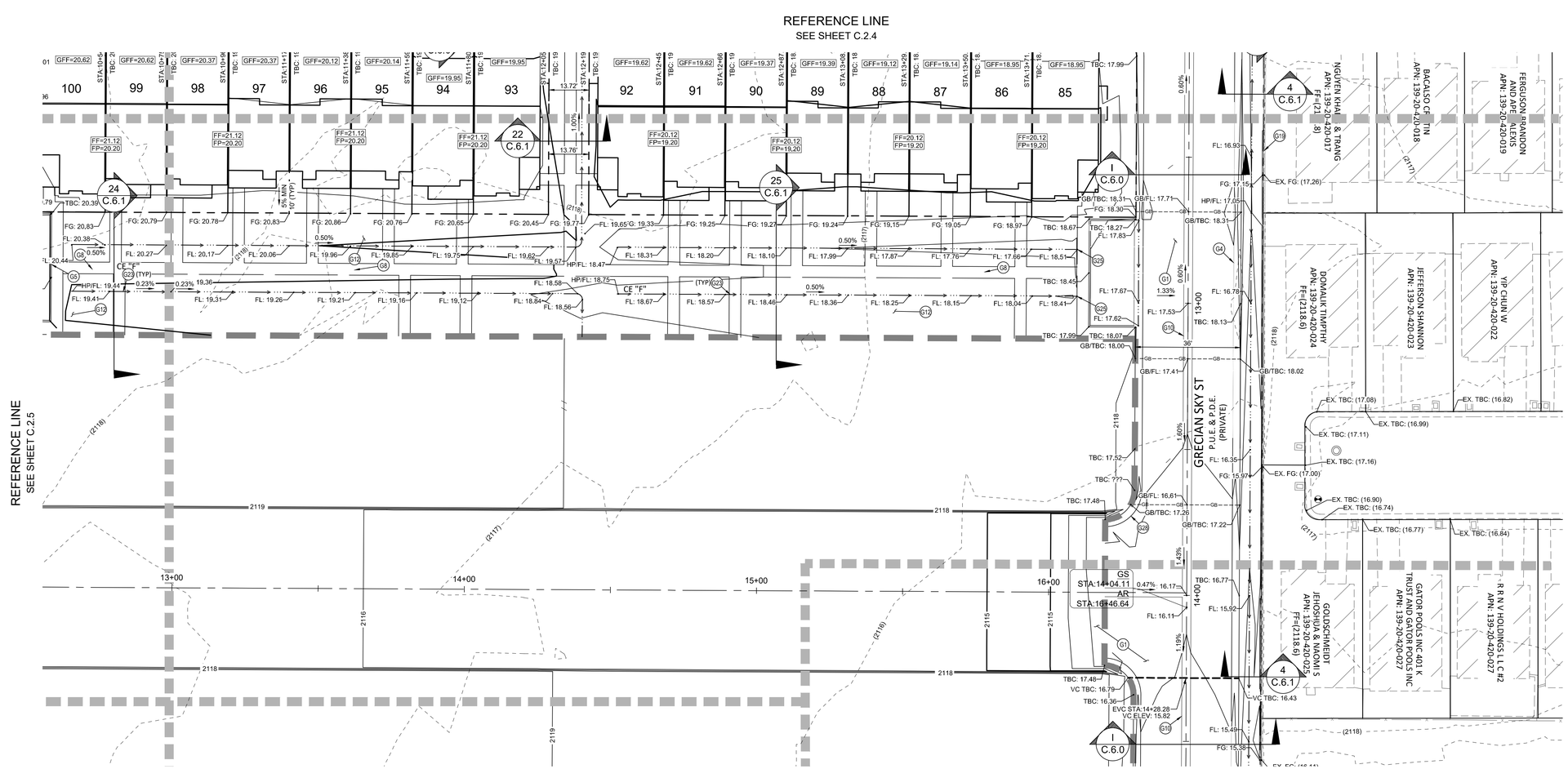
PROFESSIONAL ENGINEER - STATE OF NEVADA
ANTHONY C. DELEON JR
EXP. 12-31-20
CIVIL
No. 023113
6/8/2020

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

RANCHO & VEGAS
CITY OF LAS VEGAS, NEVADA
GRADING SHEET 5

C.2.5

PAGE 10



BASIS OF BEARING
SEE SHEET C.2.0

BENCHMARK
SEE SHEET C.2.0

LEGAL DESCRIPTION
SEE SHEET C.2.0

FLOOD ZONE
SEE SHEET C.2.0

SIGHT VISIBILITY ZONE PER CCAUSD# 201.2 (TYP)

SIGHT VISIBILITY ZONE NOTE:
NO WALLS, FENCES, SHRUBS, UTILITY APPURTENANCES OR ANY OTHER OBJECT, OTHER THAN TRAFFIC CONTROL DEVICES, FIRE HYDRANTS, TREES, AND STREET LIGHT POLES, MAY BE CONSTRUCTED OR INSTALLED WITHIN THE SIGHT VISIBILITY ZONE UNLESS SAID OBJECT IS MAINTAINED AT LESS THAN 24 INCHES IN HEIGHT, MEASURED FROM TOP OF CURB, OR WHERE NO CURB EXISTS, A HEIGHT OF 27 INCHES MEASURED FROM THE TOP OF ADJACENT ASPHALT, GRAVEL OR PAVEMENT STREET SURFACE. THIS RESTRICTION EXTENDS ALONG THE SIGHT VISIBILITY LINE THROUGH LANDSCAPED MEDIANS.

Call before you dig
AVOID CUTTING UNDERGROUND UTILITY LINES, IT'S COSTLY.
Call 811 or
1-800-227-2600

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

FAST
Call before you UnderGround
1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

ENGINEER'S NOTES:
1. CONTRACTOR IS RESPONSIBLE FOR EROSION AND DUST CONTROL, AND STORMWATER MANAGEMENT DURING CONSTRUCTION.
2. SEE HORIZONTAL CONTROL PLAN FOR EXACT PROPERTY LINE DIMENSIONS
3. ENGINEER TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES BETWEEN THESE PLANS AND FIELD CONDITIONS.
4. THESE PLANS SHALL NOT IN PART, OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY GOVERNING AGENCIES.
5. ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS.
6. DURING CONSTRUCTION, SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE. SAME MUST UTILIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES.
7. SOILS REPORT NOTE:
   GRADING SHALL BE IN ACCORDANCE WITH SOILS REPORT
   PREPARED BY: GEOTEK, INC.
   PROJECT NO.: 14379-LV
   DATE: OCTOBER 2, 2018
8. CUT/FILL ESTIMATES (PUBLIC AND PRIVATE):
   FROM EXISTING TO FINISH GRADE ELEVATIONS
   NET CUT: _____ CY
   NET FILL: _____ CY
   TOTAL: _____ CY (FILL)
9. FLOOR SECTION ASSUMES 5" SLAB OVER MIN. 8.5" TYPE II. CONTRACTOR TO VERIFY WITH STRUCTURAL PLANS AND GEOTECHNICAL ENGINEER.
10. ADD 2100' TO GRADING ELEVATIONS SHOWN HEREON TO ADJUST THEM TO THE ASSOCIATED DATUM. FINISHED GRADE CONTOURS ARE APPROXIMATE. REFER TO SPOT ELEVATION GRADE TAGS FOR CONSTRUCTION STAKING PURPOSES.

GRADING KEY NOTES:
- G1 CONSTRUCT 3" AC PAVEMENT OVER 4" TYPE II AGG BASE.
- G2 CONSTRUCT 4.5" AC PAVEMENT OVER 4" TYPE II AGG BASE.
- G3 CONSTRUCT 24" "L" TYPE CURB PER CCAUSD #216.
- G4 CONSTRUCT 30" ROLL CURB PER CCAUSD #217.2.S1.
- G5 CONSTRUCT 6" "A" TYPE CURB PER CCAUSD #219.
- G6 CONSTRUCT SIDEWALK DRAIN PER CCAUSD #236.
- G7 CONSTRUCT 5' SIDEWALK 4" THICK PER CCAUSD #234.
- G8 CONSTRUCT 4' SIDEWALK 4" THICK PER CCAUSD #234.
- G9 INSTALL WROUGHT IRON GATE.
- G10 CONSTRUCT 3' CONCRETE VALLEY GUTTER PER CCAUSD #228.
- G11 SAWCUT & REMOVE EXISTING PAVEMENT.
- G12 INSTALL LANDSCAPING BY OTHERS.
- G13 EXISTING FENCE TO REMAIN.
- G14 INSTALL RETAINING WALL BY SEPARATE PERMIT. HEIGHT DEPICTED BY PLAN.
- G15 EXISTING FENCE TO BE REMOVED.
- G16 EXISTING POWER POLE TO BE RELOCATED.
- G17 ADJUST EXISTING UTILITIES TO NEW FINISHED GRADE.
- G18 CONSTRUCT 5" THICK CONCRETE DRIVEWAY.
- G19 INSTALL SCREEN WALL. HEIGHT DEPICTED PER PLAN.
- G20 INSTALL BLOCK WALL OPENING PER DETAIL #20 ON SHEET C.6.1.
- G21 CONSTRUCT 10' TRANSITION FROM "L" CURB TO ROLL CURB PER DETAIL #18 SHEET C.6.1.
- G22 INSTALL 4" SIDEWALK DRAIN PIPE PER CCAUSD #236.
- G23 CONSTRUCT SIDEWALK UNDERDRAIN PER CCAUSD #236.
- G24 INSTALL WROUGHT IRON GATE/FENCE PER CCAUSD #425.S1
- G25 CONSTRUCT 2' WIDE CURB OPENING PER DETAIL 31 ON SHEET C.6.1
- G26 INSTALL 6" CONCRETE PAVEMENT OVER 6" TYPE II AGG BASE
- G27 INSTALL RIP RAP PER PLAN
- G28 CONSTRUCT 30" ROLL CURB WITH REVERSE LIP PER DETAIL 32 ON SHEET C.6.1
- G29 INSTALL RIP-RAP D50=3",T=6" SUBGRADE @ 90% COMPACTION LENGTH & WIDTH SPECIFIED PER PLAN
- G30 CONSTRUCT STEM WALL. SOLID GROUT FOR 3 COURSES & 10.5' EASEMENT OPENING
- G31 CONSTRUCT 8' CONCRETE VALLEY GUTTER PER CCAUSD #228.

EASEMENT KEY NOTES:
1. 20' PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED BY THE HOA
2. 30' PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED BY THE HOA.

DRAINAGE CERTIFICATION:
THIS SET OF IMPROVEMENT PLANS IS CERTIFIED TO CONFORM TO THE REQUIREMENTS OF THE APPROVED DRAINAGE STUDY.
DS# 5273 .

ANTHONY C. DELEON JR., P.E. NO. 023113 DATE

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

HORROCKS ENGINEERS
1401 North Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
0 1 2
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE

REVISIONS
REV # | DATE

*SEE GENERAL NOTES SHEET

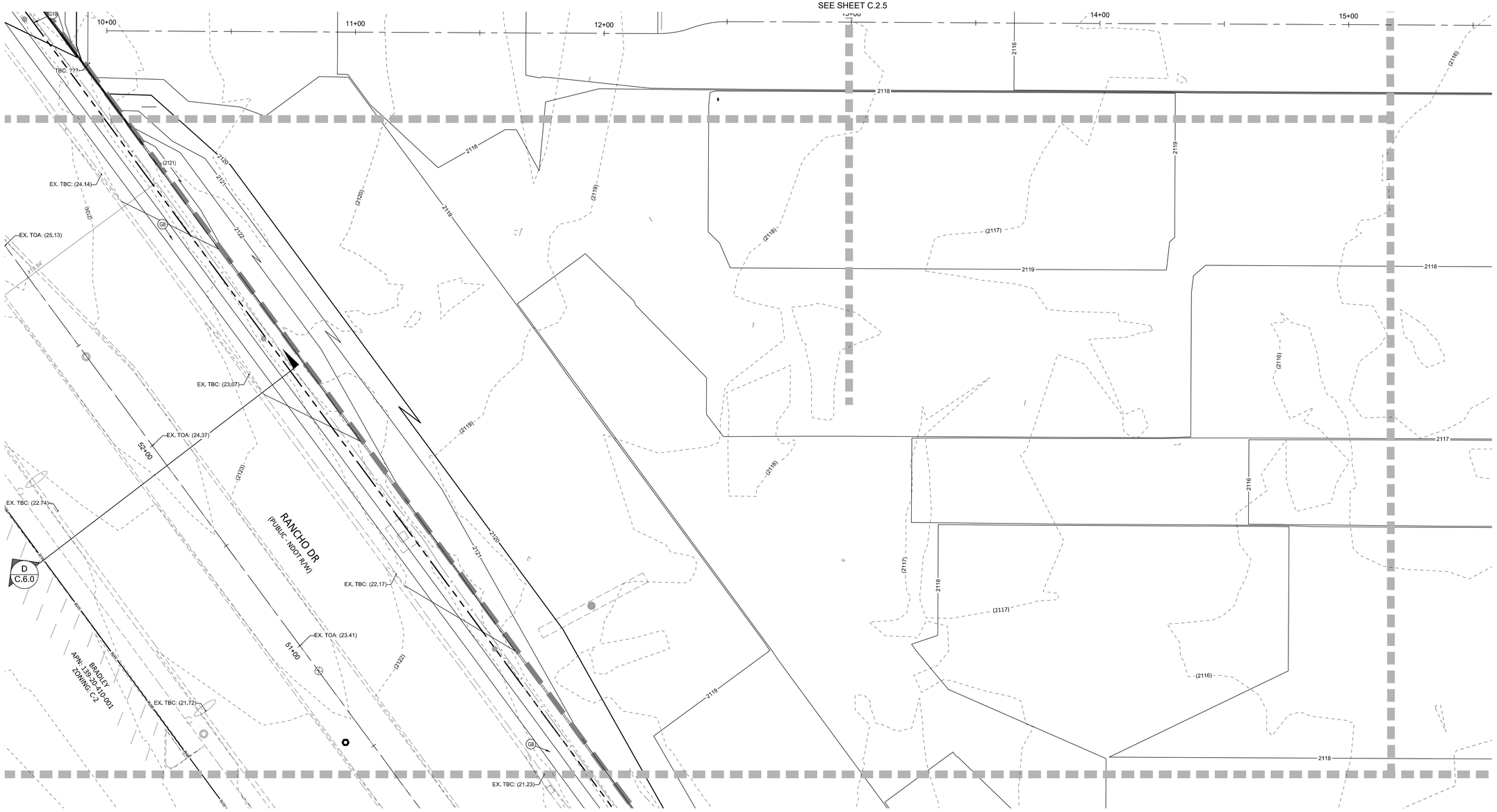
DRAWING INFO
DATE 6/11/2020
DESIGNED ACD
DRAWN PMP
CHECKED ACD
PROJECT NV-2105-1911

PROFESSIONAL ENGINEER - STATE OF NEVADA
ANTHONY C. DELEON JR
EXP. 12-31-20
CIVIL
No. 023113
6/8/2020

RANCHO & VEGAS
CITY OF LAS VEGAS, NEVADA
GRADING SHEET 6

C.2.6

PAGE 11



BASIS OF BEARING
SEE SHEET C.2.0

BENCHMARK
SEE SHEET C.2.0

LEGAL DESCRIPTION
SEE SHEET C.2.0

FLOOD ZONE
SEE SHEET C.2.0

SIGHT VISIBILITY ZONE PER CCAUSD# 201.2 (TYP)

SIGHT VISIBILITY ZONE NOTE:

NO WALLS, FENCES, SHRUBS, UTILITY APPURTENANCES OR ANY OTHER OBJECT, OTHER THAN TRAFFIC CONTROL DEVICES, FIRE HYDRANTS, TREES, AND STREET LIGHT POLES, MAY BE CONSTRUCTED OR INSTALLED WITHIN THE SIGHT VISIBILITY ZONE UNLESS SAID OBJECT IS MAINTAINED AT LESS THAN 24 INCHES IN HEIGHT, MEASURED FROM TOP OF CURB, OR WHERE NO CURB EXISTS, A HEIGHT OF 27 INCHES MEASURED FROM THE TOP OF ADJACENT ASPHALT, GRAVEL OR PAVEMENT STREET SURFACE. THIS RESTRICTION EXTENDS ALONG THE SIGHT VISIBILITY LINE THROUGH LANDSCAPED MEDIANS.

Call before you dig
AVOID CUTTING UNDERGROUND UTILITY LINES, IT'S COSTLY.
Call 811
OR
1-800-227-2600

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

FAST
Call before you UnderGround
1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

ENGINEER'S NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR EROSION AND DUST CONTROL, AND STORMWATER MANAGEMENT DURING CONSTRUCTION.
2. SEE HORIZONTAL CONTROL PLAN FOR EXACT PROPERTY LINE DIMENSIONS
3. ENGINEER TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES BETWEEN THESE PLANS AND FIELD CONDITIONS.
4. THESE PLANS SHALL NOT IN PART, OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY GOVERNING AGENCIES.
5. ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS.
6. DURING CONSTRUCTION, SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE. SAME MUST UTILIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES.
7. SOILS REPORT NOTE:
   GRADING SHALL BE IN ACCORDANCE WITH SOILS REPORT
   PREPARED BY: GEOTEK, INC.
   PROJECT NO.: 14379-LV
   DATE: OCTOBER 2, 2018
8. CUT/FILL ESTIMATES (PUBLIC AND PRIVATE):
   FROM EXISTING TO FINISH GRADE ELEVATIONS
   NET CUT: _____ CY
   NET FILL: _____ CY
   TOTAL: _____ CY (FILL)
9. FLOOR SECTION ASSUMES 5" SLAB OVER MIN. 8.5" TYPE II. CONTRACTOR TO VERIFY WITH STRUCTURAL PLANS AND GEOTECHNICAL ENGINEER.
10. ADD 2100' TO GRADING ELEVATIONS SHOWN HEREON TO ADJUST THEM TO THE ASSOCIATED DATUM. FINISHED GRADE CONTOURS ARE APPROXIMATE. REFER TO SPOT ELEVATION GRADE TAGS FOR CONSTRUCTION STAKING PURPOSES.

GRADING KEY NOTES:

- G1 CONSTRUCT 3" AC PAVEMENT OVER 4" TYPE II AGG BASE.
- G2 CONSTRUCT 4.5" AC PAVEMENT OVER 4" TYPE II AGG BASE.
- G3 CONSTRUCT 24" "L" TYPE CURB PER CCAUSD #216.
- G4 CONSTRUCT 30" ROLL CURB PER CCAUSD #217.2.S1.
- G5 CONSTRUCT 6" "A" TYPE CURB PER CCAUSD #219.
- G6 CONSTRUCT SIDEWALK DRAIN PER CCAUSD #236.
- G7 CONSTRUCT 5' SIDEWALK 4" THICK PER CCAUSD #234.
- G8 CONSTRUCT 4' SIDEWALK 4" THICK PER CCAUSD #234.
- G9 INSTALL WROUGHT IRON GATE.
- G10 CONSTRUCT 3' CONCRETE VALLEY GUTTER PER CCAUSD #228.
- G11 SAWCUT & REMOVE EXISTING PAVEMENT.
- G12 INSTALL LANDSCAPING BY OTHERS.
- G13 EXISTING FENCE TO REMAIN.
- G14 INSTALL RETAINING WALL BY SEPARATE PERMIT. HEIGHT DEPICTED BY PLAN.
- G15 EXISTING FENCE TO BE REMOVED.
- G16 EXISTING POWER POLE TO BE RELOCATED.
- G17 ADJUST EXISTING UTILITIES TO NEW FINISHED GRADE.
- G18 CONSTRUCT 5" THICK CONCRETE DRIVEWAY.
- G19 INSTALL SCREEN WALL. HEIGHT DEPICTED PER PLAN.
- G20 INSTALL BLOCK WALL OPENING PER DETAIL #20 ON SHEET C.6.1.
- G21 CONSTRUCT 10' TRANSITION FROM "L" CURB TO ROLL CURB PER DETAIL #18 SHEET C.6.1.
- G22 INSTALL 4" SIDEWALK DRAIN PIPE PER CCAUSD #236.
- G23 CONSTRUCT SIDEWALK UNDERDRAIN PER CCAUSD #236.
- G24 INSTALL WROUGHT IRON GATE/FENCE PER CCAUSD #425.S1
- G25 CONSTRUCT 2' WIDE CURB OPENING PER DETAIL 31 ON SHEET C.6.1
- G26 INSTALL 6" CONCRETE PAVEMENT OVER 6" TYPE II AGG BASE
- G27 INSTALL RIP RAP PER PLAN
- G28 CONSTRUCT 30" ROLL CURB WITH REVERSE LIP PER DETAIL 32 ON SHEET C.6.1
- G29 INSTALL RIP-RAP D50=3",T=6" SUBGRADE @ 90% COMPACTION LENGTH & WIDTH SPECIFIED PER PLAN
- G30 CONSTRUCT STEM WALL. SOLID GROUT FOR 3 COURSES & 10.5' EASEMENT OPENING
- G31 CONSTRUCT 8' CONCRETE VALLEY GUTTER PER CCAUSD #228.

EASEMENT KEY NOTES:

1. 20' PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED BY THE HOA
2. 30' PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED BY THE HOA.

DRAINAGE CERTIFICATION:

THIS SET OF IMPROVEMENT PLANS IS CERTIFIED TO CONFORM TO THE REQUIREMENTS OF THE APPROVED DRAINAGE STUDY.
DS# 5273 .

ANTHONY C. DELEON JR., P.E. NO. 023113 DATE

HORROCKS ENGINEERS
1401 North Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
0 1 2
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE

REVISIONS
REV # | DATE
*SEE GENERAL NOTES SHEET

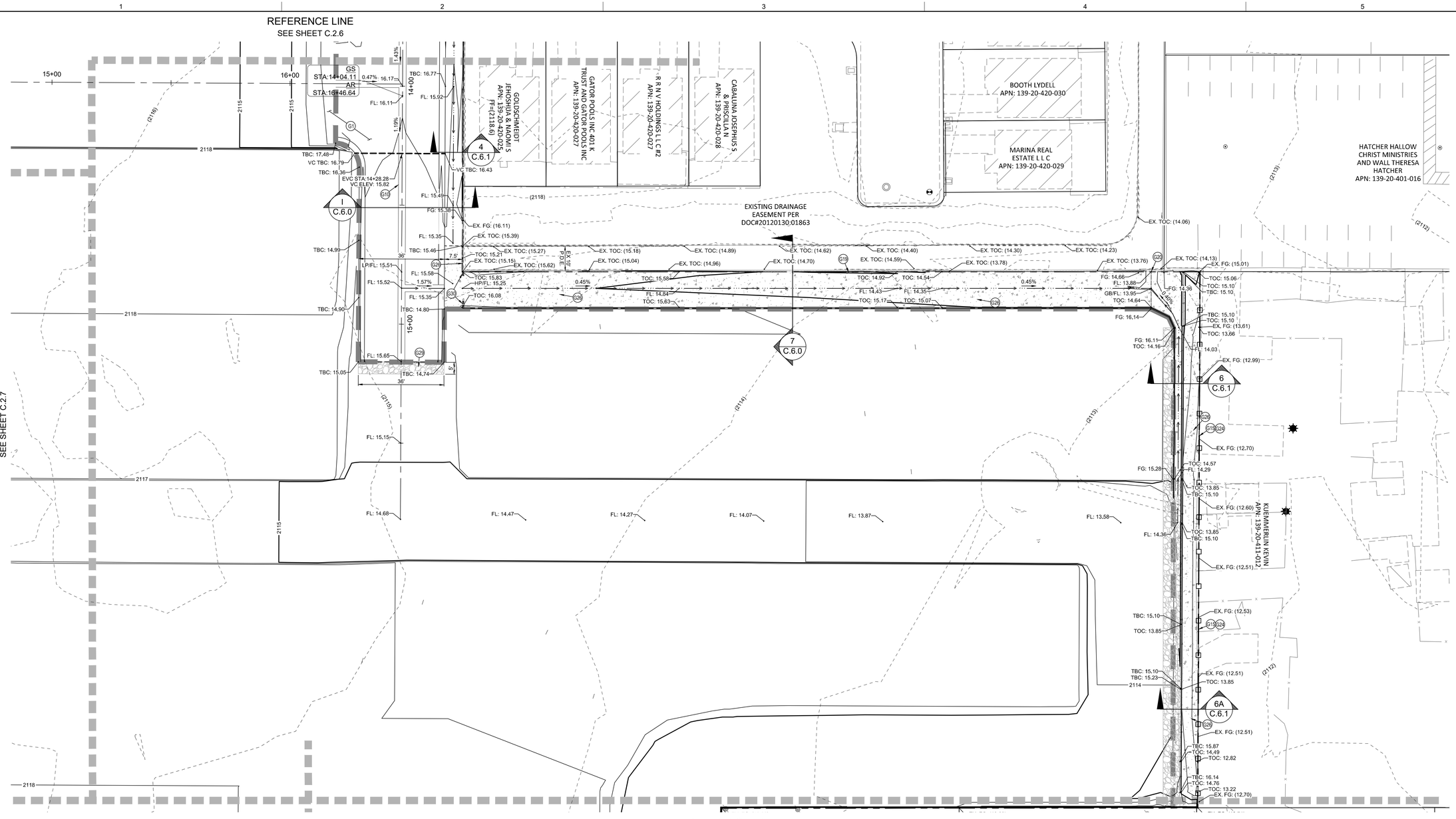
DRAWING INFO
DATE 6/11/2020
DESIGNED ACD
DRAWN PMP
CHECKED ACD
PROJECT NV-2105-1911

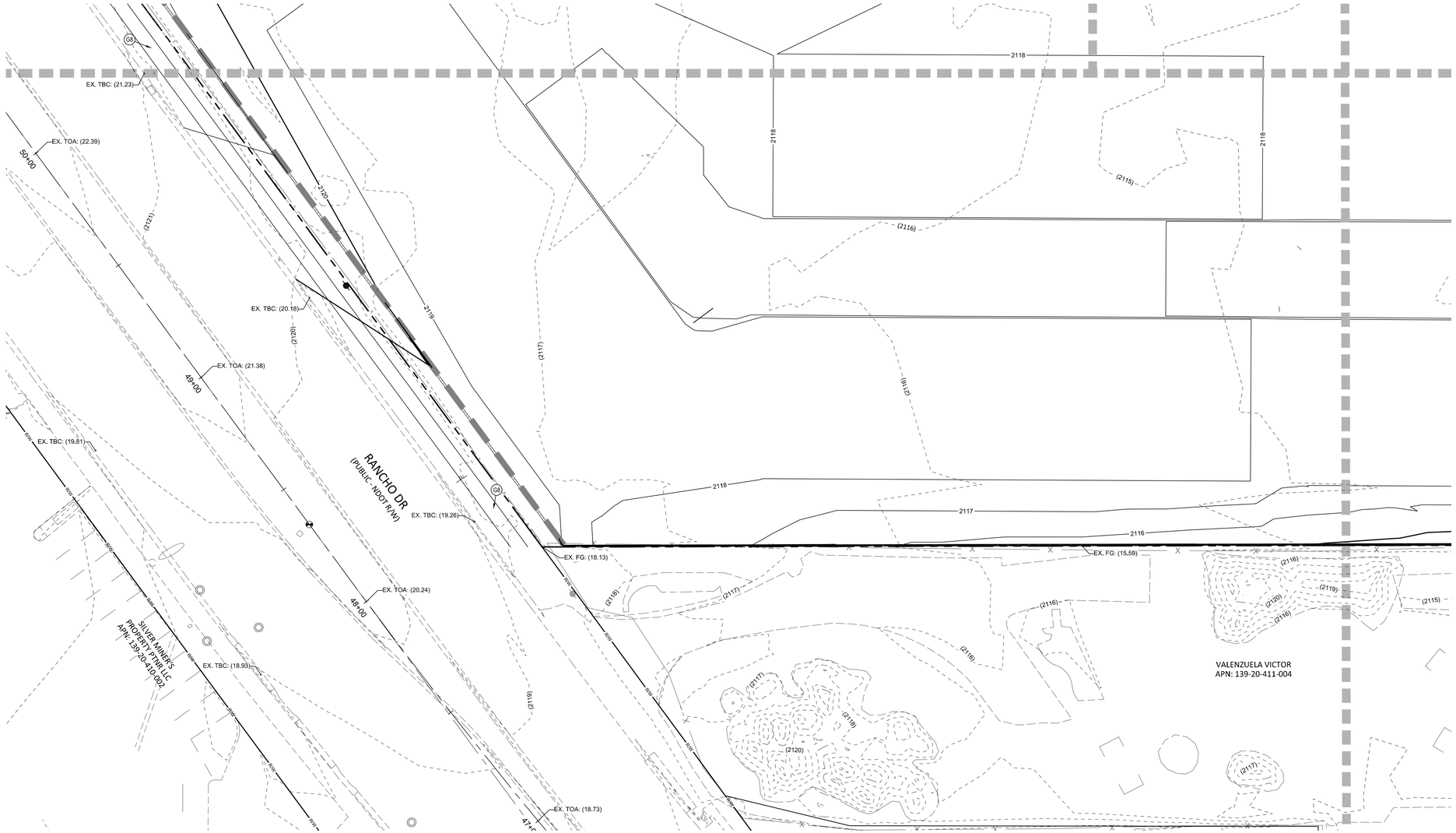
PROFESSIONAL ENGINEER-STATE OF NEVADA
ANTHONY C. DELEON JR
EXP. 12-31-20
CIVIL
No. 023113
6/8/2020

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

RANCHO & VEGAS
CITY OF LAS VEGAS, NEVADA
GRADING SHEET 7

C.2.7


REFERENCE LINE
SEE SHEET C.2.6
REFERENCE LINE
SEE SHEET C.2.7
REFERENCE LINE
SEE SHEET C.2.10
GS
STA: 14+04.11
AR
STA: 16+46.64
EVC STA: 14+28.28
VC ELEV: 15.82
EXISTING DRAINAGE EASEMENT PER DOC#20120130:01863
GOLDSCHMEIDT JEHOSHUA & NAOMI S APN: 139-20-420-025 FF=(2118.6)
GATOR POOLS INC 401 K TRUST AND GATOR POOLS INC APN: 139-20-420-027
R R N V HOLDINGS L L C #2 APN: 139-20-420-027
CABALUNA JOSEPHUS S APN: 139-20-420-028
BOOTH LYDELL APN: 139-20-420-030
MARINA REAL ESTATE L L C APN: 139-20-420-029
HATCHER HALLOW CHRIST MINISTRIES AND WALL THERESA HATCHER APN: 139-20-401-016
KUEMMERLIN KEVIN APN: 139-20-411-012
15+00
16+00
14+00
2118
2115
2116
2117
2114
2112
2113
2119
2120
2121
2122
2123
2124
2125
2126
2127
2128
2129
2130
2131
2132
2133
2134
2135
2136
2137
2138
2139
2140
2141
2142
2143
2144
2145
2146
2147
2148
2149
2150
2151
2152
2153
2154
2155
2156
2157
2158



BASIS OF BEARING

SEE SHEET C.2.0

BENCHMARK

SEE SHEET C.2.0

LEGAL DESCRIPTION

SEE SHEET C.2.0

FLOOD ZONE

SEE SHEET C.2.0

SIGHT VISIBILITY ZONE PER CCAUSD# 201.2 (TYP)

SIGHT VISIBILITY ZONE NOTE:

NO WALLS, FENCES, SHRUBS, UTILITY APPURTENANCES OR ANY OTHER OBJECT, OTHER THAN TRAFFIC CONTROL DEVICES, FIRE HYDRANTS, TREES, AND STREET LIGHT POLES, MAY BE CONSTRUCTED OR INSTALLED WITHIN THE SIGHT VISIBILITY ZONE UNLESS SAID OBJECT IS MAINTAINED AT LESS THAN 24 INCHES IN HEIGHT, MEASURED FROM TOP OF CURB, OR WHERE NO CURB EXISTS, A HEIGHT OF 27 INCHES MEASURED FROM THE TOP OF ADJACENT ASPHALT, GRAVEL OR PAVEMENT STREET SURFACE. THIS RESTRICTION EXTENDS ALONG THE SIGHT VISIBILITY LINE THROUGH LANDSCAPED MEDIANS.

Call before you dig
AVOID CUTTING UNDERGROUND UTILITY LINES & STREETS.
Call 811
1-800-227-2600

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

FAST
Call before you UnderGround
1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

ENGINEER'S NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR EROSION AND DUST CONTROL, AND STORMWATER MANAGEMENT DURING CONSTRUCTION.
2. SEE HORIZONTAL CONTROL PLAN FOR EXACT PROPERTY LINE DIMENSIONS
3. ENGINEER TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES BETWEEN THESE PLANS AND FIELD CONDITIONS.
4. THESE PLANS SHALL NOT IN PART, OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY GOVERNING AGENCIES.
5. ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS.
6. DURING CONSTRUCTION, SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE. SAME MUST UTILIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES.
7. SOILS REPORT NOTE:
   GRADING SHALL BE IN ACCORDANCE WITH SOILS REPORT
   PREPARED BY: GEOTEK, INC.
   PROJECT NO.: 14379-LV
   DATE: OCTOBER 2, 2018
8. CUT/FILL ESTIMATES (PUBLIC AND PRIVATE):
   FROM EXISTING TO FINISH GRADE ELEVATIONS
   NET CUT: _____ CY
   NET FILL: _____ CY
   TOTAL: _____ CY (FILL)
9. FLOOR SECTION ASSUMES 5" SLAB OVER MIN. 8.5" TYPE II. CONTRACTOR TO VERIFY WITH STRUCTURAL PLANS AND GEOTECHNICAL ENGINEER.
10. ADD 2100' TO GRADING ELEVATIONS SHOWN HEREON TO ADJUST THEM TO THE ASSOCIATED DATUM. FINISHED GRADE CONTOURS ARE APPROXIMATE. REFER TO SPOT ELEVATION GRADE TAGS FOR CONSTRUCTION STAKING PURPOSES.

GRADING KEY NOTES:

- G1 CONSTRUCT 3" AC PAVEMENT OVER 4" TYPE II AGG BASE.
- G2 CONSTRUCT 4.5" AC PAVEMENT OVER 4" TYPE II AGG BASE.
- G3 CONSTRUCT 24" "L" TYPE CURB PER CCAUSD #216.
- G4 CONSTRUCT 30" ROLL CURB PER CCAUSD #217.2.S1.
- G5 CONSTRUCT 6" "A" TYPE CURB PER CCAUSD #219.
- G6 CONSTRUCT SIDEWALK DRAIN PER CCAUSD #236.
- G7 CONSTRUCT 5' SIDEWALK 4" THICK PER CCAUSD #234.
- G8 CONSTRUCT 4' SIDEWALK 4" THICK PER CCAUSD #234.
- G9 INSTALL WROUGHT IRON GATE.
- G10 CONSTRUCT 3' CONCRETE VALLEY GUTTER PER CCAUSD #228.
- G11 SAWCUT & REMOVE EXISTING PAVEMENT.
- G12 INSTALL LANDSCAPING BY OTHERS.
- G13 EXISTING FENCE TO REMAIN.
- G14 INSTALL RETAINING WALL BY SEPARATE PERMIT. HEIGHT DEPICTED BY PLAN.
- G15 EXISTING FENCE TO BE REMOVED.
- G16 EXISTING POWER POLE TO BE RELOCATED.
- G17 ADJUST EXISTING UTILITIES TO NEW FINISHED GRADE.
- G18 CONSTRUCT 5" THICK CONCRETE DRIVEWAY.
- G19 INSTALL SCREEN WALL. HEIGHT DEPICTED PER PLAN.
- G20 INSTALL BLOCK WALL OPENING PER DETAIL #20 ON SHEET C.6.1.
- G21 CONSTRUCT 10' TRANSITION FROM "L" CURB TO ROLL CURB PER DETAIL #18 SHEET C.6.1.
- G22 INSTALL 4" SIDEWALK DRAIN PIPE PER CCAUSD #236.
- G23 CONSTRUCT SIDEWALK UNDERDRAIN PER CCAUSD #236.
- G24 INSTALL WROUGHT IRON GATE/FENCE PER CCAUSD #425.S1
- G25 CONSTRUCT 2' WIDE CURB OPENING PER DETAIL 31 ON SHEET C.6.1
- G26 INSTALL 6" CONCRETE PAVEMENT OVER 6" TYPE II AGG BASE
- G27 INSTALL RIP RAP PER PLAN
- G28 CONSTRUCT 30" ROLL CURB WITH REVERSE LIP PER DETAIL 32 ON SHEET C.6.1
- G29 INSTALL RIP-RAP D50=3",T=6" SUBGRADE @ 90% COMPACTION LENGTH & WIDTH SPECIFIED PER PLAN
- G30 CONSTRUCT STEM WALL. SOLID GROUT FOR 3 COURSES & 10.5' EASEMENT OPENING
- G31 CONSTRUCT 8' CONCRETE VALLEY GUTTER PER CCAUSD #228.

EASEMENT KEY NOTES:

1. 20' PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED BY THE HOA
2. 30' PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED BY THE HOA.

DRAINAGE CERTIFICATION:

THIS SET OF IMPROVEMENT PLANS IS CERTIFIED TO CONFORM TO THE REQUIREMENTS OF THE APPROVED DRAINAGE STUDY.
DS# 5273 .

ANTHONY C. DELEON JR., P.E. NO. 023113 DATE

HORROCKS ENGINEERS
1401 North Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
0 1 2
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE

REVISIONS
REV # | DATE
*SEE GENERAL NOTES SHEET

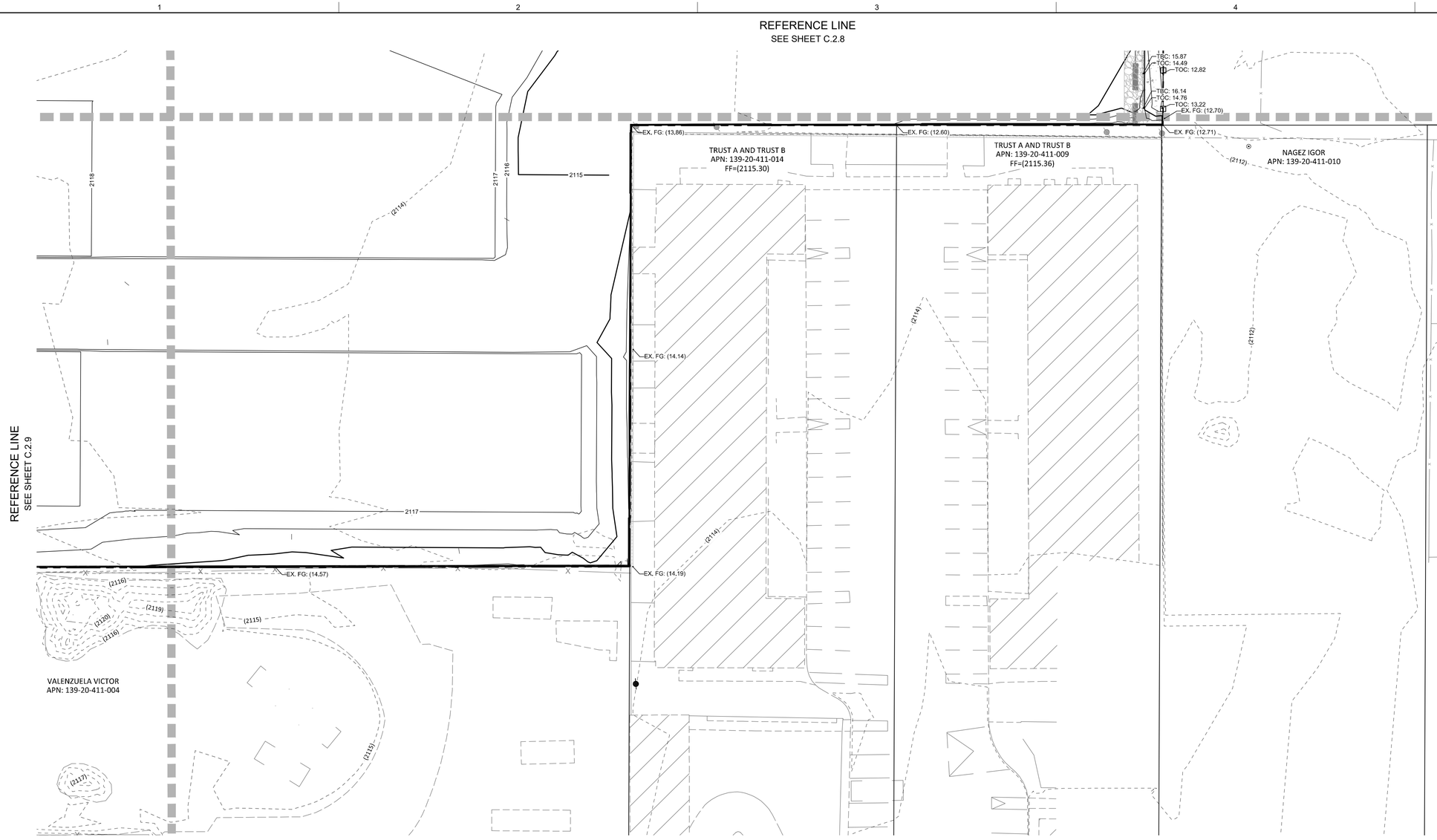
DRAWING INFO
DATE 6/11/2020
DESIGNED ACD
DRAWN PMP
CHECKED ACD
PROJECT NV-2105-1911

PROFESSIONAL ENGINEER-STATE OF NEVADA
ANTHONY C. DELEON JR
EXP. 12-31-20
CIVIL
No. 023113
6/8/2020

RANCHO & VEGAS
CITY OF LAS VEGAS, NEVADA
GRADING SHEET 9

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

C.2.9



BASIS OF BEARING
SEE SHEET C.2.0

BENCHMARK
SEE SHEET C.2.0

LEGAL DESCRIPTION
SEE SHEET C.2.0

FLOOD ZONE
SEE SHEET C.2.0

SIGHT VISIBILITY ZONE PER CCAUS# 201.2 (TYP)

SIGHT VISIBILITY ZONE NOTE:

NO WALLS, FENCES, SHRUBS, UTILITY APPURTENANCES OR ANY OTHER OBJECT, OTHER THAN TRAFFIC CONTROL DEVICES, FIRE HYDRANTS, TREES, AND STREET LIGHT POLES, MAY BE CONSTRUCTED OR INSTALLED WITHIN THE SIGHT VISIBILITY ZONE UNLESS SAID OBJECT IS MAINTAINED AT LESS THAN 24 INCHES IN HEIGHT, MEASURED FROM TOP OF CURB, OR WHERE NO CURB EXISTS, A HEIGHT OF 27 INCHES MEASURED FROM THE TOP OF ADJACENT ASPHALT, GRAVEL OR PAVEMENT STREET SURFACE. THIS RESTRICTION EXTENDS ALONG THE SIGHT VISIBILITY LINE THROUGH LANDSCAPED MEDIANS.

Call before you dig
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.
Call 811
or
1-800-227-2600

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

FAST
Call before you UnderGround
1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

ENGINEER'S NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR EROSION AND DUST CONTROL, AND STORMWATER MANAGEMENT DURING CONSTRUCTION.
2. SEE HORIZONTAL CONTROL PLAN FOR EXACT PROPERTY LINE DIMENSIONS
3. ENGINEER TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES BETWEEN THESE PLANS AND FIELD CONDITIONS.
4. THESE PLANS SHALL NOT IN PART, OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY GOVERNING AGENCIES.
5. ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS.
6. DURING CONSTRUCTION, SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE. SAME MUST UTILIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES.
7. SOILS REPORT NOTE:
   GRADING SHALL BE IN ACCORDANCE WITH SOILS REPORT
   PREPARED BY: GEOTEK, INC.
   PROJECT NO.: 14379-LV
   DATE: OCTOBER 2, 2018
8. CUT/FILL ESTIMATES (PUBLIC AND PRIVATE):
   FROM EXISTING TO FINISH GRADE ELEVATIONS
   NET CUT: _____ CY
   NET FILL: _____ CY
   TOTAL: _____ CY (FILL)
9. FLOOR SECTION ASSUMES 5" SLAB OVER MIN. 8.5" TYPE II. CONTRACTOR TO VERIFY WITH STRUCTURAL PLANS AND GEOTECHNICAL ENGINEER.
10. ADD 2100' TO GRADING ELEVATIONS SHOWN HEREON TO ADJUST THEM TO THE ASSOCIATED DATUM. FINISHED GRADE CONTOURS ARE APPROXIMATE. REFER TO SPOT ELEVATION GRADE TAGS FOR CONSTRUCTION STAKING PURPOSES.

GRADING KEY NOTES:

- G1 CONSTRUCT 3" AC PAVEMENT OVER 4" TYPE II AGG BASE.
- G2 CONSTRUCT 4.5" AC PAVEMENT OVER 4" TYPE II AGG BASE.
- G3 CONSTRUCT 24" "L" TYPE CURB PER CCAUSD #216.
- G4 CONSTRUCT 30" ROLL CURB PER CCAUSD #217.2.S1.
- G5 CONSTRUCT 6" "A" TYPE CURB PER CCAUSD #219.
- G6 CONSTRUCT SIDEWALK DRAIN PER CCAUSD #236.
- G7 CONSTRUCT 5' SIDEWALK 4" THICK PER CCAUSD #234.
- G8 CONSTRUCT 4' SIDEWALK 4" THICK PER CCAUSD #234.
- G9 INSTALL WROUGHT IRON GATE.
- G10 CONSTRUCT 3' CONCRETE VALLEY GUTTER PER CCAUSD #228.
- G11 SAWCUT & REMOVE EXISTING PAVEMENT.
- G12 INSTALL LANDSCAPING BY OTHERS.
- G13 EXISTING FENCE TO REMAIN.
- G14 INSTALL RETAINING WALL BY SEPARATE PERMIT. HEIGHT DEPICTED BY PLAN.
- G15 EXISTING FENCE TO BE REMOVED.
- G16 EXISTING POWER POLE TO BE RELOCATED.
- G17 ADJUST EXISTING UTILITIES TO NEW FINISHED GRADE.
- G18 CONSTRUCT 5" THICK CONCRETE DRIVEWAY.
- G19 INSTALL SCREEN WALL. HEIGHT DEPICTED PER PLAN.
- G20 INSTALL BLOCK WALL OPENING PER DETAIL #20 ON SHEET C.6.1.
- G21 CONSTRUCT 10' TRANSITION FROM "L" CURB TO ROLL CURB PER DETAIL #18 SHEET C.6.1.
- G22 INSTALL 4" SIDEWALK DRAIN PIPE PER CCAUSD #236.
- G23 CONSTRUCT SIDEWALK UNDERDRAIN PER CCAUSD #236.
- G24 INSTALL WROUGHT IRON GATE/FENCE PER CCAUSD #425.S1
- G25 CONSTRUCT 2' WIDE CURB OPENING PER DETAIL 31 ON SHEET C.6.1
- G26 INSTALL 6" CONCRETE PAVEMENT OVER 6" TYPE II AGG BASE
- G27 INSTALL RIP RAP PER PLAN
- G28 CONSTRUCT 30" ROLL CURB WITH REVERSE LIP PER DETAIL 32 ON SHEET C.6.1
- G29 INSTALL RIP-RAP D50=3",T=6" SUBGRADE @ 90% COMPACTION LENGTH & WIDTH SPECIFIED PER PLAN
- G30 CONSTRUCT STEM WALL. SOLID GROUT FOR 3 COURSES & 10.5' EASEMENT OPENING
- G31 CONSTRUCT 8' CONCRETE VALLEY GUTTER PER CCAUSD #228.

EASEMENT KEY NOTES:

1. 20' PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED BY THE HOA
2. 30' PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED BY THE HOA.

DRAINAGE CERTIFICATION:

THIS SET OF IMPROVEMENT PLANS IS CERTIFIED TO CONFORM TO THE REQUIREMENTS OF THE APPROVED DRAINAGE STUDY.
DS# 5273 .

ANTHONY C. DELEON JR., P.E. NO. 023113 DATE

HORROCKS ENGINEERS
1401 North Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
0 1 2
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE

REVISIONS
REV # | DATE
*SEE GENERAL NOTES SHEET

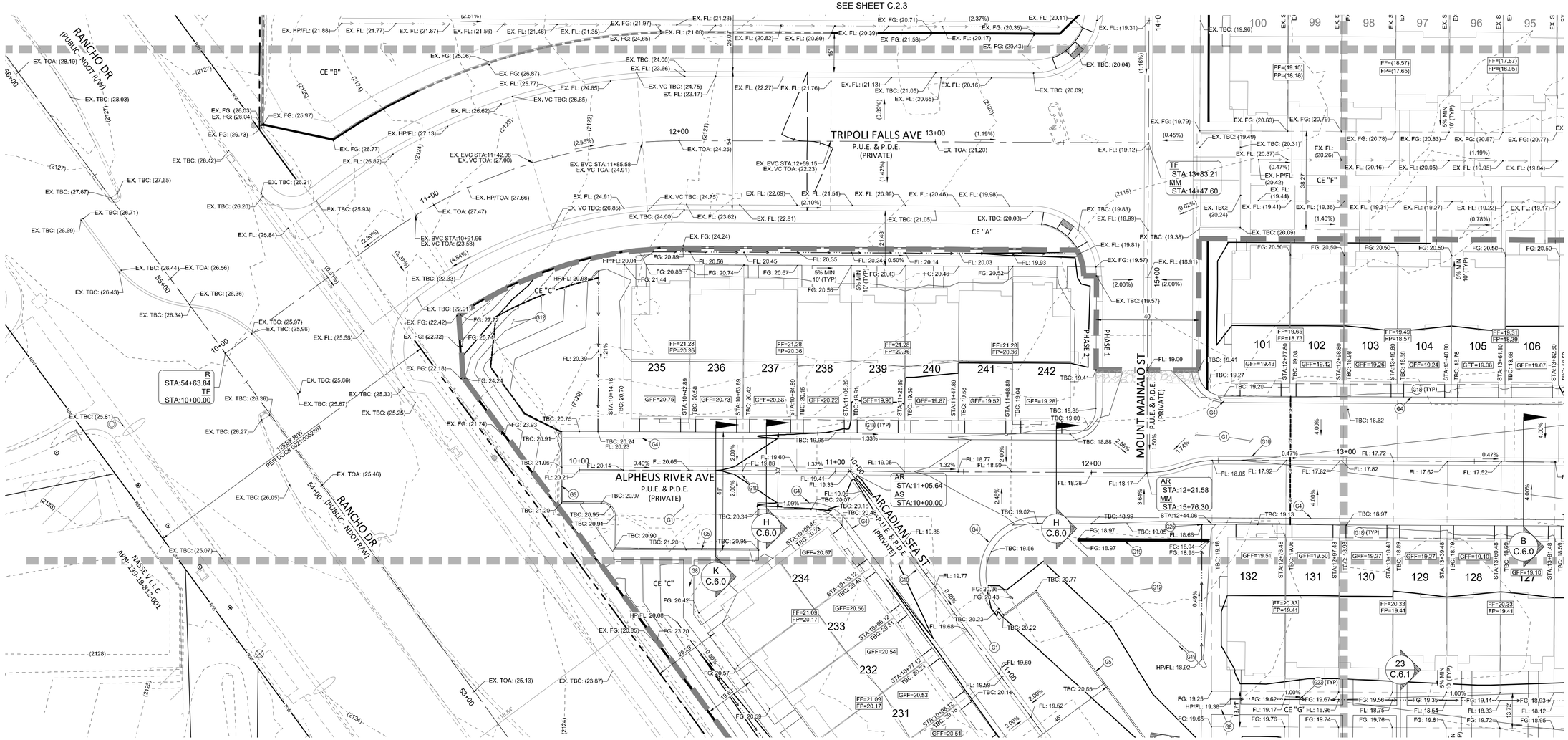
DRAWING INFO
DATE 6/1/2020
DESIGNED ACD
DRAWN PMP
CHECKED ACD
PROJECT NV-2105-1911

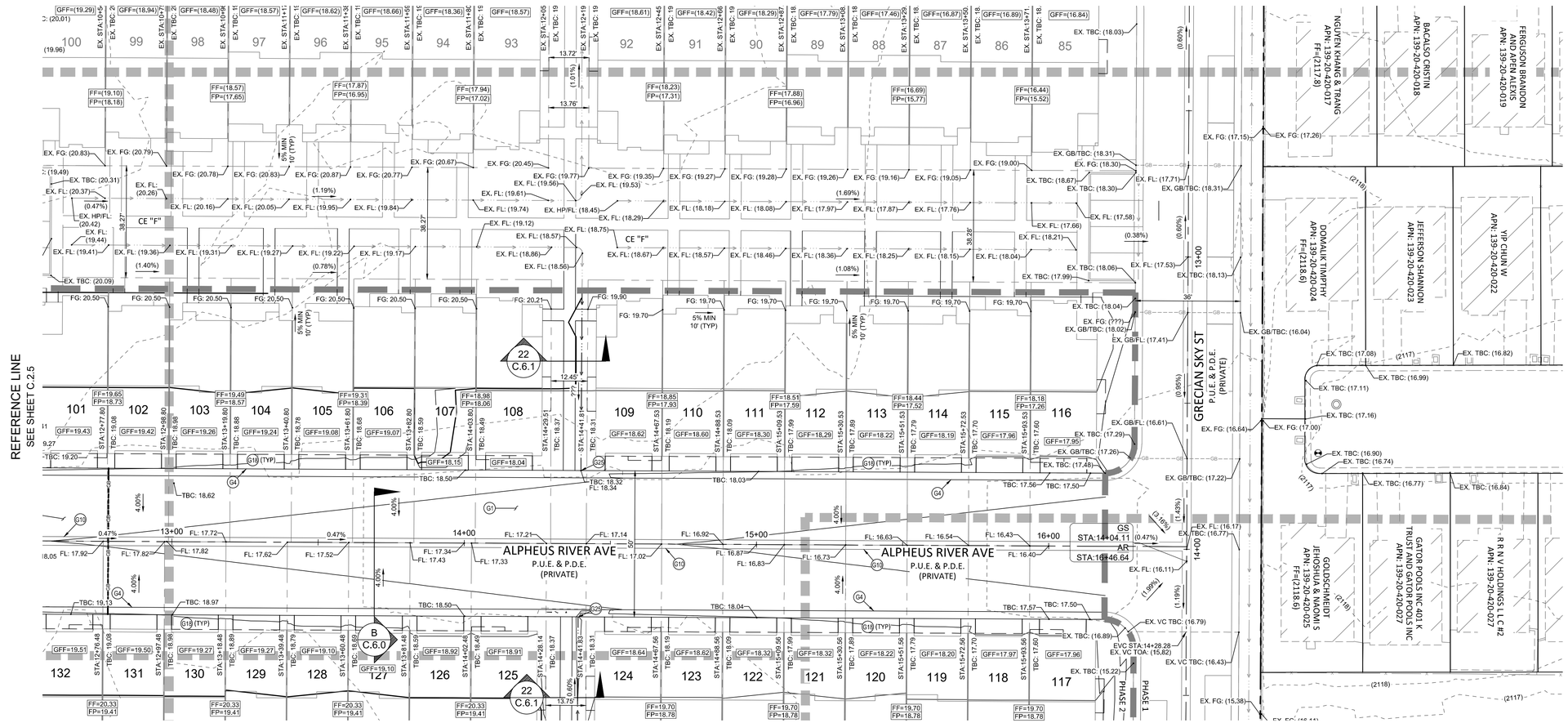
PROFESSIONAL ENGINEER-STATE OF NEVADA
ANTHONY C. DELEON JR
EXP. 12-31-20
CIVIL
No.023113
6/8/2020

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

RANCHO & VEGAS
CITY OF LAS VEGAS, NEVADA
GRADING SHEET 10

C.2.10


REFERENCE LINE
SEE SHEET C.2.3
REFERENCE LINE
SEE SHEET C.2.6
REFERENCE LINE
SEE SHEET C.2.7
RANCHO DR
(PUBLIC - NDOT R/W)
TRIPOLI FALLS AVE
P.U.E. & P.D.E.
(PRIVATE)
ALPHEUS RIVER AVE
P.U.E. & P.D.E.
(PRIVATE)
ARCADIAN SEA ST
P.U.E. & P.D.E.
(PRIVATE)
MOUNT MAINALO ST
P.U.E. & P.D.E.
(PRIVATE)
CE "A"
CE "B"
CE "C"
CE "E"
CE "F"
CE "G"
PHASE 1
PHASE 2
NASSE VI LLC
APN: 139-19-812-001
EX. TOA (28.19)
EX. TBC (28.03)
EX. TOA (25.46)
EX. TBC (26.05)
EX. TBC (25.07)
EX. TOA (25.13)
EX. TBC (23.87)
EX. TOA (24.25)
EX. TOA (27.47)
EX. TOA (22.33)
EX. TOA (26.56)
EX. TBC (19.96)
EX. TBC (20.04)
EX. TBC (20.09)
EX. TBC (19.79)
EX. TBC (19.49)
EX. TBC (20.31)
EX. TBC (20.24)
EX. TBC (19.83)
EX. TBC (19.38)
EX. TBC (19.81)
EX. TBC (19.57)
EX. TBC (19.57)
EX. TBC (20.09)
EX. TBC (19.41)
EX. TBC (19.27)
EX. TBC (19.20)
EX. TBC (18.62)
EX. TBC (18.88)
EX. TBC (18.17)
EX. TBC (18.99)
EX. TBC (19.05)
EX. TBC (18.66)
EX. TBC (19.13)
EX. TBC (18.97)
EX. TBC (19.56)
EX. TBC (20.77)
EX. TBC (20.23)
EX. TBC (20.22)
EX. TBC (20.55)
EX. TBC (19.14)
EX. TBC (20.14)
EX. TBC (19.59)
EX. TBC (19.60)
EX. TBC (19.52)
EX. TBC (19.18)
EX. TBC (18.98)
EX. TBC (18.79)
EX. TBC (18.59)
EX. TBC (18.39)
EX. TBC (18.19)
EX. TBC (17.99)
EX. TBC (17.79)
EX. TBC (17.59)
EX. TBC (17.39)
EX. TBC (17.19)
EX. TBC (16.99)
EX. TBC (16.79)
EX. TBC (16.59)
EX. TBC (16.39)
EX. TBC (16.19)
EX. TBC (15.99)
EX. TBC (15.79)
EX. TBC (15.59)
EX. TBC (15.39)
EX. TBC (15.19)
EX. TBC (14.99)
EX. TBC (14.79)
EX. TBC (14.59)
EX. TBC (14.39)
EX. TBC (14.19)
EX. TBC (13.99)
EX. TBC (13.79)
EX. TBC (13.59)
EX. TBC (13.39)
EX. TBC (13.19)
EX. TBC (12.99)
EX. TBC (12.79)
EX. TBC (12.59)
EX. TBC (12.39)
EX. TBC (12.19)
EX. TBC (11.99)
EX. TBC (11.79)
EX. TBC (11.59)
EX. TBC (11.39)
EX. TBC (11.19)
EX. TBC (10.99)
EX. TBC (10.79)
EX. TBC (10.59)
EX. TBC (10.39)
EX. TBC (10.19)
EX. TBC (9.99)
EX. TBC (9.79)
EX. TBC (9.59)
EX. TBC (9.39)
EX. TBC (9.19)
EX. TBC (8.99)
EX. TBC (8.79)
EX. TBC (8.59)
EX. TBC (8.39)
EX. TBC (8.19)
EX. TBC (7.99)
EX. TBC (7.79)
EX. TBC (7.59)
EX. TBC (7.39)
EX. TBC (7.19)
EX. TBC (6.99)
EX. TBC (6.79)
EX. TBC (6.59)
EX. TBC (6.39)
EX. TBC (6.19)
EX. TBC (5.99)
EX. TBC (5.79)
EX. TBC (5.59)
EX. TBC (5.39)
EX. TBC (5.19)
EX. TBC (4.99)
EX. TBC (4.79)
EX. TBC (4.59)
EX. TBC (4.39)
EX. TBC (4.19)
EX. TBC (3.99)
EX. TBC (3.79)
EX. TBC (3.59)
EX. TBC (3.39)
EX. TBC (3.19)
EX. TBC (2.99)
EX. TBC (2.79)
EX. TBC (2.59)
EX. TBC (2.39)
EX. TBC (2.19)
EX. TBC (1.99)
EX. TBC (1.79)
EX. TBC (1.59)
EX. TBC (1.39)
EX. TBC (1.19)
EX. TBC (0.99)
EX. TBC (0.79)
EX. TBC (0.59)
EX. TBC (0.39)
EX. TBC (0.19)
EX. TBC (-0.01)
EX. TBC (-0.21)
EX. TBC (-0.41)
EX. TBC (-0.61)
EX. TBC (-0.81)
EX. TBC (-1.01)
EX. TBC (-1.21)
EX. TBC (-1.41)
EX. TBC (-1.61)
EX. TBC (-1.81)
EX. TBC (-2.01)
EX. TBC (-2.21)
EX. TBC (-2.41)
EX. TBC



BASIS OF BEARING
SEE SHEET C.2.0

BENCHMARK
SEE SHEET C.2.0

LEGAL DESCRIPTION
SEE SHEET C.2.0

FLOOD ZONE
SEE SHEET C.2.0

SIGHT VISIBILITY ZONE PER CCAUSD# 201.2 (TYP)

SIGHT VISIBILITY ZONE NOTE:
NO WALLS, FENCES, SHRUBS, UTILITY APPURTENANCES OR ANY OTHER OBJECT, OTHER THAN TRAFFIC CONTROL DEVICES, FIRE HYDRANTS, TREES, AND STREET LIGHT POLES, MAY BE CONSTRUCTED OR INSTALLED WITHIN THE SIGHT VISIBILITY ZONE UNLESS SAID OBJECT IS MAINTAINED AT LESS THAN 24 INCHES IN HEIGHT, MEASURED FROM TOP OF CURB, OR WHERE NO CURB EXISTS, A HEIGHT OF 27 INCHES MEASURED FROM THE TOP OF ADJACENT ASPHALT, GRAVEL OR PAVEMENT STREET SURFACE. THIS RESTRICTION EXTENDS ALONG THE SIGHT VISIBILITY LINE THROUGH LANDSCAPED MEDIANS.

Call before you Dig
AVOID CUTTING UNDERGROUND UTILITY LINES, IT'S COSTLY.
Call 811 or 1-800-227-2600

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

FAST
Call before you UnderGround
1-702-432-5300
FIBER/TWO WAY INTERNAL SYSTEM OF TRANSPORTATION

ENGINEER'S NOTES:
1. CONTRACTOR IS RESPONSIBLE FOR EROSION AND DUST CONTROL, AND STORMWATER MANAGEMENT DURING CONSTRUCTION.
2. SEE HORIZONTAL CONTROL PLAN FOR EXACT PROPERTY LINE DIMENSIONS
3. ENGINEER TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES BETWEEN THESE PLANS AND FIELD CONDITIONS.
4. THESE PLANS SHALL NOT IN PART, OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY GOVERNING AGENCIES.
5. ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS.
6. DURING CONSTRUCTION, SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE. SAME MUST UTILIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES.
7. SOILS REPORT NOTE:
   GRADING SHALL BE IN ACCORDANCE WITH SOILS REPORT
   PREPARED BY: GEOTEK, INC.
   PROJECT NO.: 14379-LV
   DATE: OCTOBER 2, 2018
8. CUT/FILL ESTIMATES (PUBLIC AND PRIVATE):
   FROM EXISTING TO FINISH GRADE ELEVATIONS
   NET CUT: ____ CY
   NET FILL: ____ CY
   TOTAL: ____ CY (FILL)
9. FLOOR SECTION ASSUMES 5" SLAB OVER MIN. 8.5" TYPE II. CONTRACTOR TO VERIFY WITH STRUCTURAL PLANS AND GEOTECHNICAL ENGINEER.
10. ADD 2100' TO GRADING ELEVATIONS SHOWN HEREON TO ADJUST THEM TO THE ASSOCIATED DATUM. FINISHED GRADE CONTOURS ARE APPROXIMATE. REFER TO SPOT ELEVATION GRADE TAGS FOR CONSTRUCTION STAKING PURPOSES.

GRADING KEY NOTES:
- G1 CONSTRUCT 3" AC PAVEMENT OVER 4" TYPE II AGG BASE.
- G2 CONSTRUCT 4.5" AC PAVEMENT OVER 4" TYPE II AGG BASE.
- G3 CONSTRUCT 24" "L" TYPE CURB PER CCAUSD #216.
- G4 CONSTRUCT 30" ROLL CURB PER CCAUSD #217.2.S1.
- G5 CONSTRUCT 6" "A" TYPE CURB PER CCAUSD #219.
- G6 CONSTRUCT SIDEWALK DRAIN PER CCAUSD #236.
- G7 CONSTRUCT 5' SIDEWALK 4" THICK PER CCAUSD #234.
- G8 CONSTRUCT 4' SIDEWALK 4" THICK PER CCAUSD #234.
- G9 INSTALL WROUGHT IRON GATE.
- G10 CONSTRUCT 3' CONCRETE VALLEY GUTTER PER CCAUSD #228.
- G11 SAWCUT & REMOVE EXISTING PAVEMENT.
- G12 INSTALL LANDSCAPING BY OTHERS.
- G13 EXISTING FENCE TO REMAIN.
- G14 INSTALL RETAINING WALL BY SEPARATE PERMIT. HEIGHT DEPICTED BY PLAN.
- G15 EXISTING FENCE TO BE REMOVED.
- G16 EXISTING POWER POLE TO BE RELOCATED.
- G17 ADJUST EXISTING UTILITIES TO NEW FINISHED GRADE.
- G18 CONSTRUCT 5" THICK CONCRETE DRIVEWAY.
- G19 INSTALL SCREEN WALL. HEIGHT DEPICTED PER PLAN.
- G20 INSTALL BLOCK WALL OPENING PER DETAIL #20 ON SHEET C.6.1.
- G21 CONSTRUCT 10' TRANSITION FROM "L" CURB TO ROLL CURB PER DETAIL #18 SHEET C.6.1.
- G22 INSTALL 4" SIDEWALK DRAIN PIPE PER CCAUSD #236.
- G23 CONSTRUCT SIDEWALK UNDERDRAIN PER CCAUSD #236.
- G24 INSTALL WROUGHT IRON GATE/FENCE PER CCAUSD #425.S1
- G29 CONSTRUCT 2' WIDE CURB OPENING PER DETAIL 31 ON SHEET C.6.1
- G26 INSTALL 6" CONCRETE PAVEMENT OVER 6" TYPE II AGG BASE
- G27 INSTALL RIP RAP PER PLAN
- G28 CONSTRUCT 30" ROLL CURB WITH REVERSE LIP PER DETAIL 32 ON SHEET C.6.1
- G29 INSTALL RIP-RAP D50=3",T=6" SUBGRADE @ 90% COMPACTION LENGTH & WIDTH SPECIFIED PER PLAN
- G30 CONSTRUCT STEM WALL. SOLID GROUT FOR 3 COURSES & 10.5' EASEMENT OPENING
- G31 CONSTRUCT 8' CONCRETE VALLEY GUTTER PER CCAUSD #228.

EASEMENT KEY NOTES:
1. 20' PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED BY THE HOA
2. 30' PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED BY THE HOA.

DRAINAGE CERTIFICATION:
THIS SET OF IMPROVEMENT PLANS IS CERTIFIED TO CONFORM TO THE REQUIREMENTS OF THE APPROVED DRAINAGE STUDY.
DS# 5273 .

ANTHONY C. DELEON JR., P.E. NO. 023113 DATE

HORROCKS ENGINEERS
1401 North Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE
0 1 2

REVISIONS
REV #	DATE

*SEE GENERAL NOTES SHEET

DRAWING INFO
DATE	6/11/2020
DESIGNED	ACD
DRAWN	PMP
CHECKED	ACD
PROJECT	NV-2105-1911

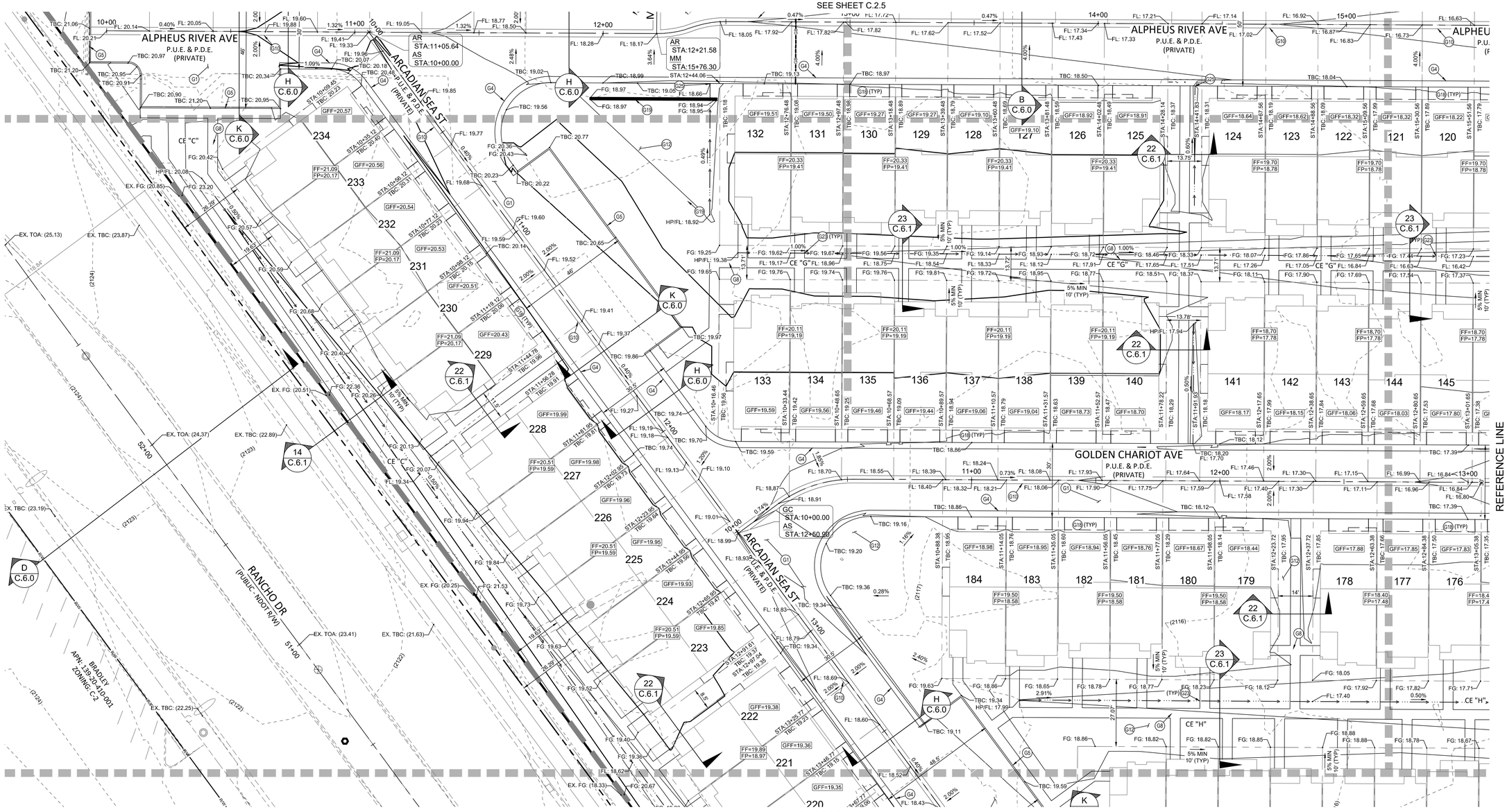
PROFESSIONAL ENGINEER STATE OF NEVADA
ANTHONY C. DELEON JR
EXP. 12-31-20
CIVIL
No. 023113
6/8/2020

RANCHO & VEGAS
CITY OF LAS VEGAS, NEVADA
GRADING SHEET 2 PHASE 2

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

C.2.6A

PAGE 17



BASIS OF BEARING
SEE SHEET C.2.0

BENCHMARK
SEE SHEET C.2.0

LEGAL DESCRIPTION
SEE SHEET C.2.0

FLOOD ZONE
SEE SHEET C.2.0

SIGHT VISIBILITY ZONE NOTE:

NO WALLS, FENCES, SHRUBS, UTILITY APPURTENANCES OR ANY OTHER OBJECT, OTHER THAN TRAFFIC CONTROL DEVICES, FIRE HYDRANTS, TREES, AND STREET LIGHT POLES, MAY BE CONSTRUCTED OR INSTALLED WITHIN THE SIGHT VISIBILITY ZONE UNLESS SAID OBJECT IS MAINTAINED AT LESS THAN 24 INCHES IN HEIGHT, MEASURED FROM TOP OF CURB, OR WHERE NO CURB EXISTS, A HEIGHT OF 27 INCHES MEASURED FROM THE TOP OF ADJACENT ASPHALT, GRAVEL OR PAVEMENT STREET SURFACE. THIS RESTRICTION EXTENDS ALONG THE SIGHT VISIBILITY LINE THROUGH LANDSCAPED MEDIANS.

Call before you dig
AVOID CUTTING UNDERGROUND UTILITY LINES, IT'S COSTLY.
Call 811 OR 1-800-227-2600

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

FAST
Call before you UnderGround
1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

ENGINEER'S NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR EROSION AND DUST CONTROL, AND STORMWATER MANAGEMENT DURING CONSTRUCTION.
2. SEE HORIZONTAL CONTROL PLAN FOR EXACT PROPERTY LINE DIMENSIONS
3. ENGINEER TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES BETWEEN THESE PLANS AND FIELD CONDITIONS.
4. THESE PLANS SHALL NOT IN PART, OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY GOVERNING AGENCIES.
5. ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS.
6. DURING CONSTRUCTION, SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE. SAME MUST UTILIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES.
7. SOILS REPORT NOTE:
   GRADING SHALL BE IN ACCORDANCE WITH SOILS REPORT
   PREPARED BY: GEOTEK, INC.
   PROJECT NO.: 14379-LV
   DATE: OCTOBER 2, 2018
8. CUT/FILL ESTIMATES (PUBLIC AND PRIVATE):
   FROM EXISTING TO FINISH GRADE ELEVATIONS
   NET CUT: _____ CY
   NET FILL: _____ CY
   TOTAL: _____ CY (FILL)
9. FLOOR SECTION ASSUMES 5" SLAB OVER MIN. 8.5" TYPE II. CONTRACTOR TO VERIFY WITH STRUCTURAL PLANS AND GEOTECHNICAL ENGINEER.
10. ADD 2'100' TO GRADING ELEVATIONS SHOWN HEREON TO ADJUST THEM TO THE ASSOCIATED DATUM. FINISHED GRADE CONTOURS ARE APPROXIMATE. REFER TO SPOT ELEVATION GRADE TAGS FOR CONSTRUCTION STAKING PURPOSES.

GRADING KEY NOTES:

- G1 CONSTRUCT 3" AC PAVEMENT OVER 4" TYPE II AGG BASE.
- G2 CONSTRUCT 4.5" AC PAVEMENT OVER 4" TYPE II AGG BASE.
- G3 CONSTRUCT 24" "L" TYPE CURB PER CCAUSD #216.
- G4 CONSTRUCT 30" ROLL CURB PER CCAUSD #217.2.S1.
- G5 CONSTRUCT 6" "A" TYPE CURB PER CCAUSD #219.
- G6 CONSTRUCT SIDEWALK DRAIN PER CCAUSD #236.
- G7 CONSTRUCT 5' SIDEWALK 4" THICK PER CCAUSD #234.
- G8 CONSTRUCT 4' SIDEWALK 4" THICK PER CCAUSD #234.
- G9 INSTALL WROUGHT IRON GATE.
- G10 CONSTRUCT 3' CONCRETE VALLEY GUTTER PER CCAUSD #228.
- G11 SAWCUT & REMOVE EXISTING PAVEMENT.
- G12 INSTALL LANDSCAPING BY OTHERS.
- G13 EXISTING FENCE TO REMAIN.
- G14 INSTALL RETAINING WALL BY SEPARATE PERMIT. HEIGHT DEPICTED BY PLAN.
- G15 EXISTING FENCE TO BE REMOVED.
- G16 EXISTING POWER POLE TO BE RELOCATED.
- G17 ADJUST EXISTING UTILITIES TO NEW FINISHED GRADE.
- G18 CONSTRUCT 5" THICK CONCRETE DRIVEWAY.
- G19 INSTALL SCREEN WALL. HEIGHT DEPICTED PER PLAN.
- G20 INSTALL BLOCK WALL OPENING PER DETAIL #20 ON SHEET C.6.1.
- G21 CONSTRUCT 10' TRANSITION FROM "L" CURB TO ROLL CURB PER DETAIL #18 SHEET C.6.1.
- G22 INSTALL 4" SIDEWALK DRAIN PIPE PER CCAUSD #236.
- G23 CONSTRUCT SIDEWALK UNDERDRAIN PER CCAUSD #236.
- G24 INSTALL WROUGHT IRON GATE/FENCE PER CCAUSD #425.S1
- G25 CONSTRUCT 2' WIDE CURB OPENING PER DETAIL 31 ON SHEET C.6.1
- G26 INSTALL 6" CONCRETE PAVEMENT OVER 6" TYPE II AGG BASE
- G27 INSTALL RIP RAP PER PLAN
- G28 CONSTRUCT 30" ROLL CURB WITH REVERSE LIP PER DETAIL 32 ON SHEET C.6.1
- G29 INSTALL RIP-RAP D50=3",T=6" SUBGRADE @ 90% COMPACTION LENGTH & WIDTH SPECIFIED PER PLAN
- G30 CONSTRUCT STEM WALL. SOLID GROUT FOR 3 COURSES & 10.5' EASEMENT OPENING
- G31 CONSTRUCT 8' CONCRETE VALLEY GUTTER PER CCAUSD #228.

EASEMENT KEY NOTES:

1. 20' PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED BY THE HOA
2. 30' PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED BY THE HOA.

DRAINAGE CERTIFICATION:

THIS SET OF IMPROVEMENT PLANS IS CERTIFIED TO CONFORM TO THE REQUIREMENTS OF THE APPROVED DRAINAGE STUDY.
DS# 5273 .

ANTHONY C. DELEON JR., P.E. NO. 023113 DATE

HORROCKS ENGINEERS
1401 North Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
0 1 2
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE

REVISIONS
REV # | DATE
*SEE GENERAL NOTES SHEET

DRAWING INFO
DATE 6/11/2020
DESIGNED ACD
DRAWN PMP
CHECKED ACD
PROJECT NV-2105-1911

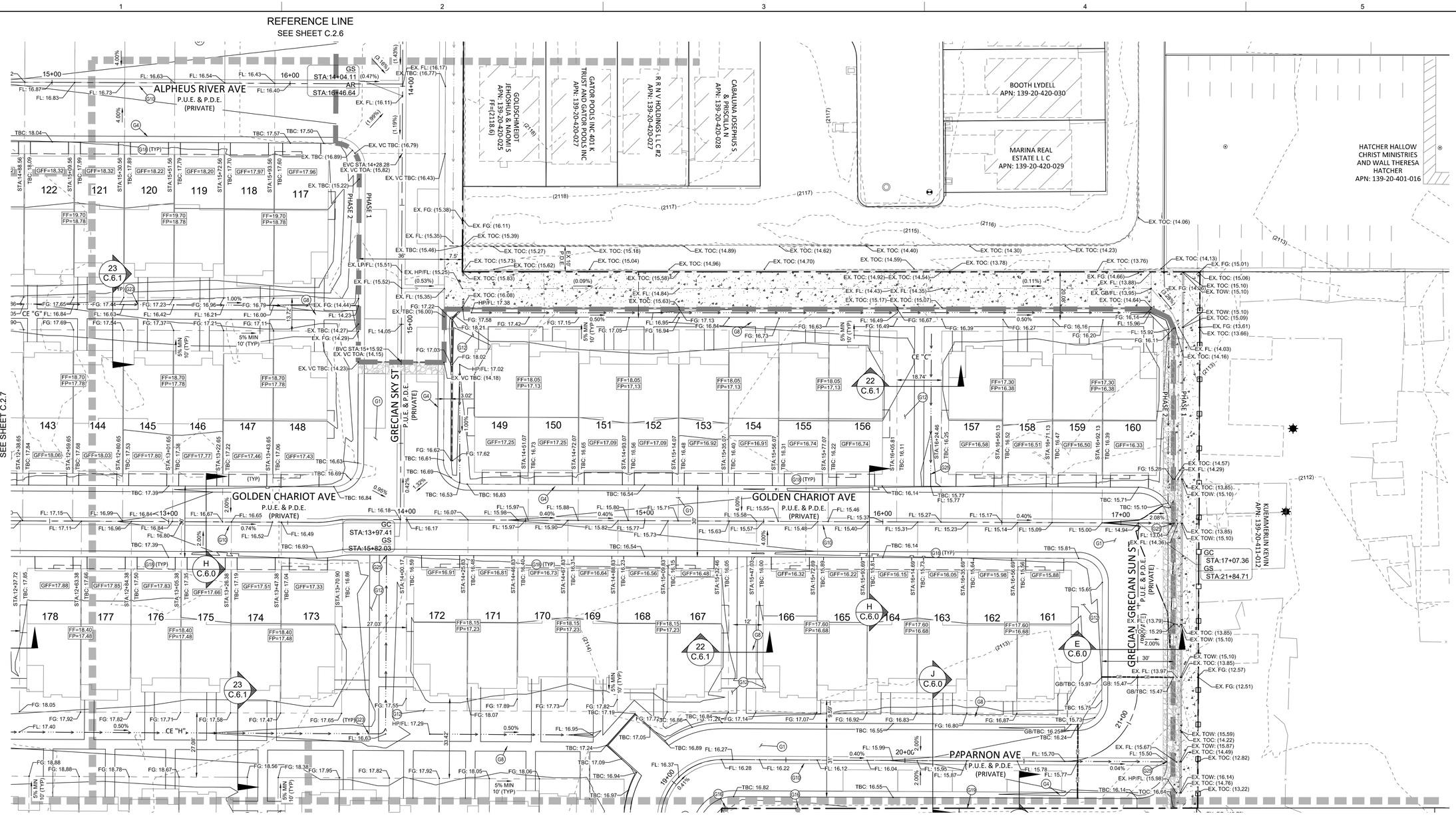
PROFESSIONAL ENGINEER STATE OF NEVADA
ANTHONY C. DELEON JR
EXP. 12-31-20
CIVIL
No. 023113
6/8/2020

HORROCKS ENGINEERS

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

RANCHO & VEGAS
CITY OF LAS VEGAS, NEVADA
GRADING SHEET 3 PHASE 2

C.2.7A



BASIS OF BEARING
SEE SHEET C.2.0

BENCHMARK
SEE SHEET C.2.0

LEGAL DESCRIPTION
SEE SHEET C.2.0

FLOOD ZONE
SEE SHEET C.2.0

SIGHT VISIBILITY ZONE PER CCAUS# 201.2 (TYP)

SIGHT VISIBILITY ZONE NOTE:
NO WALLS, FENCES, SHRUBS, UTILITY APPURTENANCES OR ANY OTHER OBJECT, OTHER THAN TRAFFIC CONTROL DEVICES, FIRE HYDRANTS, TREES, AND STREET LIGHT POLES, MAY BE CONSTRUCTED OR INSTALLED WITHIN THE SIGHT VISIBILITY ZONE UNLESS SAID OBJECT IS MAINTAINED AT LESS THAN 24 INCHES IN HEIGHT, MEASURED FROM TOP OF CURB, OR WHERE NO CURB EXISTS, A HEIGHT OF 27 INCHES MEASURED FROM THE TOP OF ADJACENT ASPHALT, GRAVEL OR PAVEMENT STREET SURFACE. THIS RESTRICTION EXTENDS ALONG THE SIGHT VISIBILITY LINE THROUGH LANDSCAPED MEDIANS.

Call before you dig
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.
Call 811 OR 1-800-227-2600

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

FAST
Call before you UnderGround
1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

ENGINEER'S NOTES:
1. CONTRACTOR IS RESPONSIBLE FOR EROSION AND DUST CONTROL, AND STORMWATER MANAGEMENT DURING CONSTRUCTION.
2. SEE HORIZONTAL CONTROL PLAN FOR EXACT PROPERTY LINE DIMENSIONS
3. ENGINEER TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES BETWEEN THESE PLANS AND FIELD CONDITIONS.
4. THESE PLANS SHALL NOT IN PART, OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY GOVERNING AGENCIES.
5. ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS.
6. DURING CONSTRUCTION, SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE. SAME MUST UTILIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES.
7. SOILS REPORT NOTE:
   GRADING SHALL BE IN ACCORDANCE WITH SOILS REPORT
   PREPARED BY: GEOTEK, INC.
   PROJECT NO.: 14379-LV
   DATE: OCTOBER 2, 2018
8. CUT/FILL ESTIMATES (PUBLIC AND PRIVATE):
   FROM EXISTING TO FINISH GRADE ELEVATIONS
   NET CUT: _____ CY
   NET FILL: _____ CY
   TOTAL: _____ CY (FILL)
9. FLOOR SECTION ASSUMES 5" SLAB OVER MIN. 8.5" TYPE II. CONTRACTOR TO VERIFY WITH STRUCTURAL PLANS AND GEOTECHNICAL ENGINEER.
10. ADD 2100' TO GRADING ELEVATIONS SHOWN HEREON TO ADJUST THEM TO THE ASSOCIATED DATUM. FINISHED GRADE CONTOURS ARE APPROXIMATE. REFER TO SPOT ELEVATION GRADE TAGS FOR CONSTRUCTION STAKING PURPOSES.

GRADING KEY NOTES:
- G1 CONSTRUCT 3" AC PAVEMENT OVER 4" TYPE II AGG BASE.
- G2 CONSTRUCT 4.5" AC PAVEMENT OVER 4" TYPE II AGG BASE.
- G3 CONSTRUCT 24" "L" TYPE CURB PER CCAUSD #216.
- G4 CONSTRUCT 30" ROLL CURB PER CCAUSD #217.2.S1.
- G5 CONSTRUCT 6" "A" TYPE CURB PER CCAUSD #219.
- G6 CONSTRUCT SIDEWALK DRAIN PER CCAUSD #236.
- G7 CONSTRUCT 5' SIDEWALK 4" THICK PER CCAUSD #234.
- G8 CONSTRUCT 4' SIDEWALK 4" THICK PER CCAUSD #234.
- G9 INSTALL WROUGHT IRON GATE.
- G10 CONSTRUCT 3' CONCRETE VALLEY GUTTER PER CCAUSD #228.
- G11 SAWCUT & REMOVE EXISTING PAVEMENT.
- G12 INSTALL LANDSCAPING BY OTHERS.
- G13 EXISTING FENCE TO REMAIN.
- G14 INSTALL RETAINING WALL BY SEPARATE PERMIT. HEIGHT DEPICTED BY PLAN.
- G15 EXISTING FENCE TO BE REMOVED.
- G16 EXISTING POWER POLE TO BE RELOCATED.
- G17 ADJUST EXISTING UTILITIES TO NEW FINISHED GRADE.
- G18 CONSTRUCT 5" THICK CONCRETE DRIVEWAY.
- G19 INSTALL SCREEN WALL. HEIGHT DEPICTED PER PLAN.
- G20 INSTALL BLOCK WALL OPENING PER DETAIL #20 ON SHEET C.6.1.
- G21 CONSTRUCT 10' TRANSITION FROM "L" CURB TO ROLL CURB PER DETAIL #18 SHEET C.6.1.
- G22 INSTALL 4" SIDEWALK DRAIN PIPE PER CCAUSD #236.
- G23 CONSTRUCT SIDEWALK UNDERDRAIN PER CCAUSD #236.
- G24 INSTALL WROUGHT IRON GATE/FENCE PER CCAUSD #425.S1
- G25 CONSTRUCT 2' WIDE CURB OPENING PER DETAIL 31 ON SHEET C.6.1
- G26 INSTALL 6" CONCRETE PAVEMENT OVER 6" TYPE II AGG BASE
- G27 INSTALL RIP RAP PER PLAN
- G28 CONSTRUCT 30" ROLL CURB WITH REVERSE LIP PER DETAIL 32 ON SHEET C.6.1
- G29 INSTALL RIP-RAP D50=3",T=6" SUBGRADE @ 90% COMPACTION LENGTH & WIDTH SPECIFIED PER PLAN
- G30 CONSTRUCT STEM WALL. SOLID GROUT FOR 3 COURSES & 10.5' EASEMENT OPENING
- G31 CONSTRUCT 8' CONCRETE VALLEY GUTTER PER CCAUSD #228.

EASEMENT KEY NOTES:
1. 20' PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED BY THE HOA
2. 30' PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED BY THE HOA.

DRAINAGE CERTIFICATION:
THIS SET OF IMPROVEMENT PLANS IS CERTIFIED TO CONFORM TO THE REQUIREMENTS OF THE APPROVED DRAINAGE STUDY.
DS# 5273 .

ANTHONY C. DELEON JR., P.E. NO. 023113 DATE

HORROCKS ENGINEERS
1401 North Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE
0 1 2

REVISIONS
REV # | DATE
*SEE GENERAL NOTES SHEET

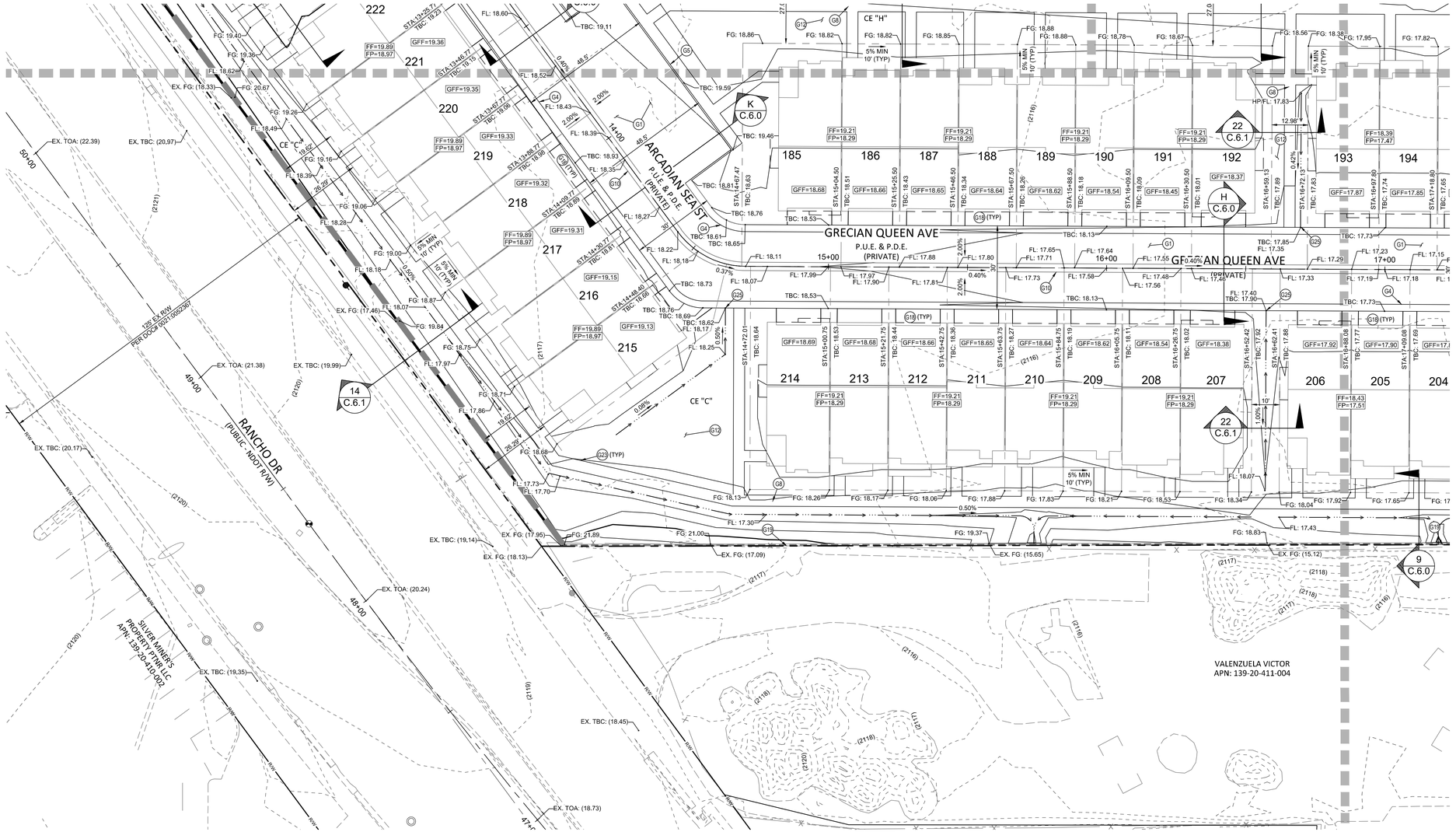
DRAWING INFO
DATE: 6/11/2020
DESIGNED: ACD
DRAWN: PMP
CHECKED: ACD
PROJECT: NV-2105-1911

PROFESSIONAL ENGINEER STATE OF NEVADA
ANTHONY C. DELEON JR
EXP. 12-31-20
CIVIL
NO. 023113
6/8/2020

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

RANCHO & VEGAS
CITY OF LAS VEGAS, NEVADA
GRADING SHEET 4 PHASE 2

C.2.8A



BASIS OF BEARING
SEE SHEET C.2.0

BENCHMARK
SEE SHEET C.2.0

LEGAL DESCRIPTION
SEE SHEET C.2.0

FLOOD ZONE
SEE SHEET C.2.0

SIGHT VISIBILITY ZONE PER CCAUSD# 201.2 (TYP)

SIGHT VISIBILITY ZONE NOTE:

NO WALLS, FENCES, SHRUBS, UTILITY APPURTENANCES OR ANY OTHER OBJECT, OTHER THAN TRAFFIC CONTROL DEVICES, FIRE HYDRANTS, TREES, AND STREET LIGHT POLES, MAY BE CONSTRUCTED OR INSTALLED WITHIN THE SIGHT VISIBILITY ZONE UNLESS SAID OBJECT IS MAINTAINED AT LESS THAN 24 INCHES IN HEIGHT, MEASURED FROM TOP OF CURB, OR WHERE NO CURB EXISTS, A HEIGHT OF 27 INCHES MEASURED FROM THE TOP OF ADJACENT ASPHALT, GRAVEL OR PAVEMENT STREET SURFACE. THIS RESTRICTION EXTENDS ALONG THE SIGHT VISIBILITY LINE THROUGH LANDSCAPED MEDIANS.

Call before you dig
AVOID CUTTING UNDERGROUND UTILITY LINES ACCIDENTALLY.
Call 811
1-800-227-2600

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

FAST
Call before you UnderGround
1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

ENGINEER'S NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR EROSION AND DUST CONTROL, AND STORMWATER MANAGEMENT DURING CONSTRUCTION.
2. SEE HORIZONTAL CONTROL PLAN FOR EXACT PROPERTY LINE DIMENSIONS
3. ENGINEER TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES BETWEEN THESE PLANS AND FIELD CONDITIONS.
4. THESE PLANS SHALL NOT IN PART, OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY GOVERNING AGENCIES.
5. ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS.
6. DURING CONSTRUCTION, SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE. SAME MUST UTILIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES.
7. SOILS REPORT NOTE:
   GRADING SHALL BE IN ACCORDANCE WITH SOILS REPORT
   PREPARED BY: GEOTEK, INC.
   PROJECT NO.: 14379-LV
   DATE: OCTOBER 2, 2018
8. CUT/FILL ESTIMATES (PUBLIC AND PRIVATE):
   FROM EXISTING TO FINISH GRADE ELEVATIONS
   NET CUT: _____ CY
   NET FILL: _____ CY
   TOTAL: _____ CY (FILL)
9. FLOOR SECTION ASSUMES 5" SLAB OVER MIN. 8.5" TYPE II. CONTRACTOR TO VERIFY WITH STRUCTURAL PLANS AND GEOTECHNICAL ENGINEER.
10. ADD 2'100' TO GRADING ELEVATIONS SHOWN HEREON TO ADJUST THEM TO THE ASSOCIATED DATUM. FINISHED GRADE CONTOURS ARE APPROXIMATE. REFER TO SPOT ELEVATION GRADE TAGS FOR CONSTRUCTION STAKING PURPOSES.

GRADING KEY NOTES:

- G1 CONSTRUCT 3" AC PAVEMENT OVER 4" TYPE II AGG BASE.
- G2 CONSTRUCT 4.5" AC PAVEMENT OVER 4" TYPE II AGG BASE.
- G3 CONSTRUCT 24" "L" TYPE CURB PER CCAUSD #216.
- G4 CONSTRUCT 30" ROLL CURB PER CCAUSD #217.2.S1.
- G5 CONSTRUCT 6" "A" TYPE CURB PER CCAUSD #219.
- G6 CONSTRUCT SIDEWALK DRAIN PER CCAUSD #236.
- G7 CONSTRUCT 5' SIDEWALK 4" THICK PER CCAUSD #234.
- G8 CONSTRUCT 4' SIDEWALK 4" THICK PER CCAUSD #234.
- G9 INSTALL WROUGHT IRON GATE.
- G10 CONSTRUCT 3' CONCRETE VALLEY GUTTER PER CCAUSD #228.
- G11 SAWCUT & REMOVE EXISTING PAVEMENT.
- G12 INSTALL LANDSCAPING BY OTHERS.
- G13 EXISTING FENCE TO REMAIN.
- G14 INSTALL RETAINING WALL BY SEPARATE PERMIT. HEIGHT DEPICTED BY PLAN.
- G15 EXISTING FENCE TO BE REMOVED.
- G16 EXISTING POWER POLE TO BE RELOCATED.
- G17 ADJUST EXISTING UTILITIES TO NEW FINISHED GRADE.
- G18 CONSTRUCT 5" THICK CONCRETE DRIVEWAY.
- G19 INSTALL SCREEN WALL. HEIGHT DEPICTED PER PLAN.
- G20 INSTALL BLOCK WALL OPENING PER DETAIL #20 ON SHEET C.6.1.
- G21 CONSTRUCT 10' TRANSITION FROM "L" CURB TO ROLL CURB PER DETAIL #18 SHEET C.6.1.
- G22 INSTALL 4" SIDEWALK DRAIN PIPE PER CCAUSD #236.
- G23 CONSTRUCT SIDEWALK UNDERDRAIN PER CCAUSD #236.
- G24 INSTALL WROUGHT IRON GATE/FENCE PER CCAUSD #425.S1
- G25 CONSTRUCT 2' WIDE CURB OPENING PER DETAIL 31 ON SHEET C.6.1
- G26 INSTALL 6" CONCRETE PAVEMENT OVER 6" TYPE II AGG BASE
- G27 INSTALL RIP RAP PER PLAN
- G28 CONSTRUCT 30" ROLL CURB WITH REVERSE LIP PER DETAIL 32 ON SHEET C.6.1
- G29 INSTALL RIP-RAP D50=3",T=6" SUBGRADE @ 90% COMPACTION LENGTH & WIDTH SPECIFIED PER PLAN
- G30 CONSTRUCT STEM WALL. SOLID GROUT FOR 3 COURSES & 10.5' EASEMENT OPENING
- G31 CONSTRUCT 8' CONCRETE VALLEY GUTTER PER CCAUSD #228.

EASEMENT KEY NOTES:

1. 20' PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED BY THE HOA
2. 30' PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED BY THE HOA.

DRAINAGE CERTIFICATION:

THIS SET OF IMPROVEMENT PLANS IS CERTIFIED TO CONFORM TO THE REQUIREMENTS OF THE APPROVED DRAINAGE STUDY.
DS# 5273 .

ANTHONY C. DELEON JR., P.E. NO. 023113 DATE

HORROCKS ENGINEERS
1401 North Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
0 1 2
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE

REVISIONS
REV # | DATE

*SEE GENERAL NOTES SHEET

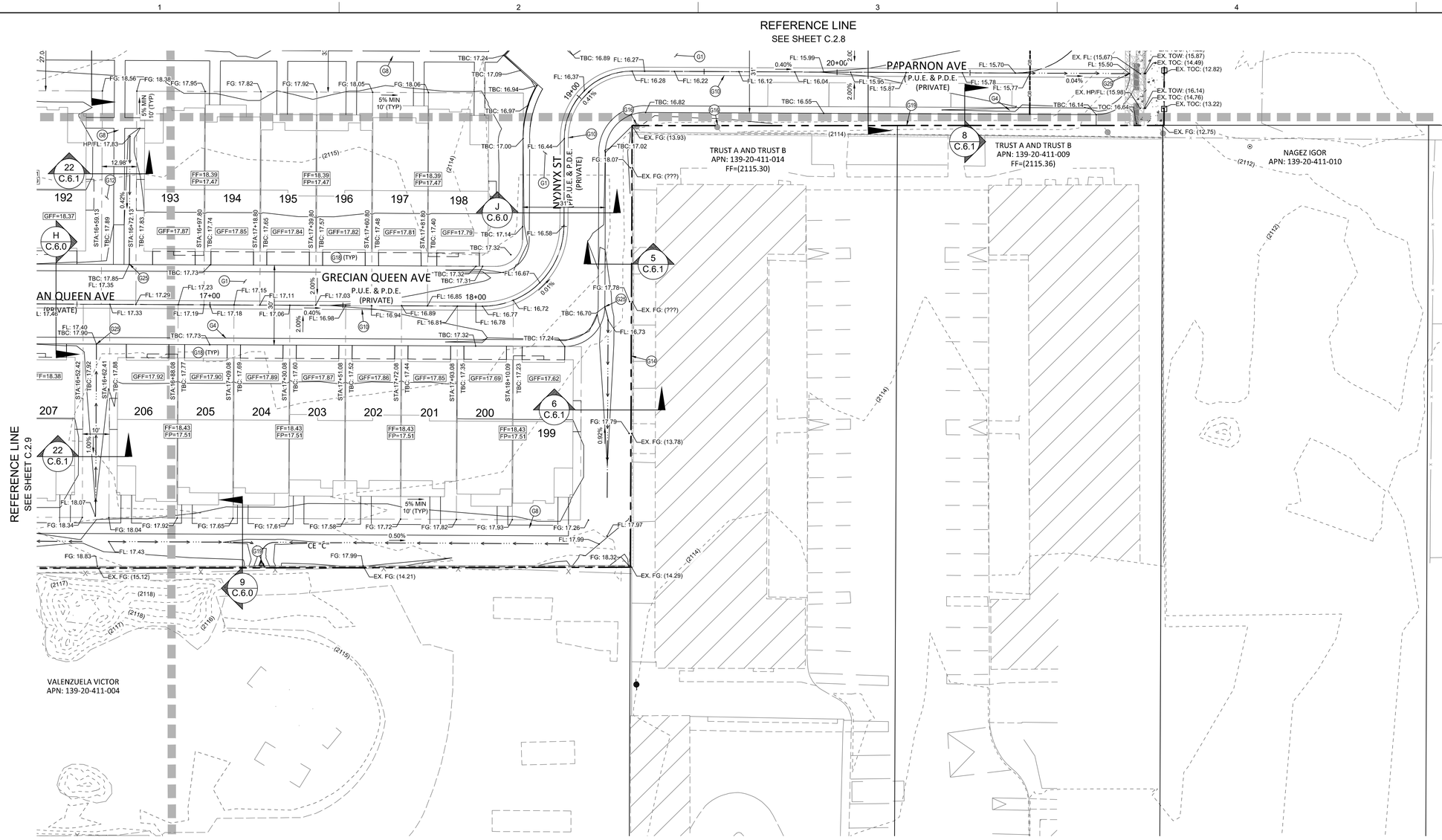
DRAWING INFO
DATE 6/11/2020
DESIGNED ACD
DRAWN PMP
CHECKED ACD
PROJECT NV-2105-1911

PROFESSIONAL ENGINEER-STATE OF NEVADA
ANTHONY C. DELEON JR
EXP. 12-31-20
CIVIL
No.023113
6/8/2020

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

RANCHO & VEGAS
CITY OF LAS VEGAS, NEVADA
GRADING SHEET 5 PHASE 2

C.2.9A



BASIS OF BEARING
SEE SHEET C.2.0

BENCHMARK
SEE SHEET C.2.0

LEGAL DESCRIPTION
SEE SHEET C.2.0

FLOOD ZONE
SEE SHEET C.2.0

SIGHT VISIBILITY ZONE PER CCAUSD# 201.2 (TYP)

SIGHT VISIBILITY ZONE NOTE:

NO WALLS, FENCES, SHRUBS, UTILITY APPURTENANCES OR ANY OTHER OBJECT, OTHER THAN TRAFFIC CONTROL DEVICES, FIRE HYDRANTS, TREES, AND STREET LIGHT POLES, MAY BE CONSTRUCTED OR INSTALLED WITHIN THE SIGHT VISIBILITY ZONE UNLESS SAID OBJECT IS MAINTAINED AT LESS THAN 24 INCHES IN HEIGHT, MEASURED FROM TOP OF CURB, OR WHERE NO CURB EXISTS, A HEIGHT OF 27 INCHES MEASURED FROM THE TOP OF ADJACENT ASPHALT, GRAVEL OR PAVEMENT STREET SURFACE. THIS RESTRICTION EXTENDS ALONG THE SIGHT VISIBILITY LINE THROUGH LANDSCAPED MEDIANS.

Call before you dig
AVOID CUTTING UNDERGROUND UTILITY LINES & STAY SAFE.
Call 811
1-800-227-2600

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

FAST
Call before you UnderGround
1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

ENGINEER'S NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR EROSION AND DUST CONTROL, AND STORMWATER MANAGEMENT DURING CONSTRUCTION.
2. SEE HORIZONTAL CONTROL PLAN FOR EXACT PROPERTY LINE DIMENSIONS
3. ENGINEER TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES BETWEEN THESE PLANS AND FIELD CONDITIONS.
4. THESE PLANS SHALL NOT IN PART, OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY GOVERNING AGENCIES.
5. ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS.
6. DURING CONSTRUCTION, SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE. SAME MUST UTILIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES.
7. SOILS REPORT NOTE:
   GRADING SHALL BE IN ACCORDANCE WITH SOILS REPORT
   PREPARED BY: GEOTEK, INC.
   PROJECT NO.: 14379-LV
   DATE: OCTOBER 2, 2018
8. CUT/FILL ESTIMATES (PUBLIC AND PRIVATE):
   FROM EXISTING TO FINISH GRADE ELEVATIONS
   NET CUT: _____ CY
   NET FILL: _____ CY
   TOTAL: _____ CY (FILL)
9. FLOOR SECTION ASSUMES 5" SLAB OVER MIN. 8.5" TYPE II. CONTRACTOR TO VERIFY WITH STRUCTURAL PLANS AND GEOTECHNICAL ENGINEER.
10. ADD 2100' TO GRADING ELEVATIONS SHOWN HEREON TO ADJUST THEM TO THE ASSOCIATED DATUM. FINISHED GRADE CONTOURS ARE APPROXIMATE. REFER TO SPOT ELEVATION GRADE TAGS FOR CONSTRUCTION STAKING PURPOSES.

GRADING KEY NOTES:

- G1 CONSTRUCT 3" AC PAVEMENT OVER 4" TYPE II AGG BASE.
- G2 CONSTRUCT 4.5" AC PAVEMENT OVER 4" TYPE II AGG BASE.
- G3 CONSTRUCT 24" "L" TYPE CURB PER CCAUSD #216.
- G4 CONSTRUCT 30" ROLL CURB PER CCAUSD #217.2.S1.
- G5 CONSTRUCT 6" "A" TYPE CURB PER CCAUSD #219.
- G6 CONSTRUCT SIDEWALK DRAIN PER CCAUSD #236.
- G7 CONSTRUCT 5' SIDEWALK 4" THICK PER CCAUSD #234.
- G8 CONSTRUCT 4' SIDEWALK 4" THICK PER CCAUSD #234.
- G9 INSTALL WROUGHT IRON GATE.
- G10 CONSTRUCT 3' CONCRETE VALLEY GUTTER PER CCAUSD #228.
- G11 SAWCUT & REMOVE EXISTING PAVEMENT.
- G12 INSTALL LANDSCAPING BY OTHERS.
- G13 EXISTING FENCE TO REMAIN.
- G14 INSTALL RETAINING WALL BY SEPARATE PERMIT. HEIGHT DEPICTED BY PLAN.
- G15 EXISTING FENCE TO BE REMOVED.
- G16 EXISTING POWER POLE TO BE RELOCATED.
- G17 ADJUST EXISTING UTILITIES TO NEW FINISHED GRADE.
- G18 CONSTRUCT 5" THICK CONCRETE DRIVEWAY.
- G19 INSTALL SCREEN WALL. HEIGHT DEPICTED PER PLAN.
- G20 INSTALL BLOCK WALL OPENING PER DETAIL #20 ON SHEET C.6.1.
- G21 CONSTRUCT 10' TRANSITION FROM "L" CURB TO ROLL CURB PER DETAIL #18 SHEET C.6.1.
- G22 INSTALL 4" SIDEWALK DRAIN PIPE PER CCAUSD #236.
- G23 CONSTRUCT SIDEWALK UNDERDRAIN PER CCAUSD #236.
- G24 INSTALL WROUGHT IRON GATE/FENCE PER CCAUSD #425.S1
- G25 CONSTRUCT 2' WIDE CURB OPENING PER DETAIL 31 ON SHEET C.6.1
- G26 INSTALL 6" CONCRETE PAVEMENT OVER 6" TYPE II AGG BASE
- G27 INSTALL RIP RAP PER PLAN
- G28 CONSTRUCT 30" ROLL CURB WITH REVERSE LIP PER DETAIL 32 ON SHEET C.6.1
- G29 INSTALL RIP-RAP D50=3",T=6" SUBGRADE @ 90% COMPACTION LENGTH & WIDTH SPECIFIED PER PLAN
- G30 CONSTRUCT STEM WALL. SOLID GROUT FOR 3 COURSES & 10.5' EASEMENT OPENING
- G31 CONSTRUCT 8' CONCRETE VALLEY GUTTER PER CCAUSD #228.

EASEMENT KEY NOTES:

- 1 20' PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED BY THE HOA
- 2 30' PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED BY THE HOA.

DRAINAGE CERTIFICATION:

THIS SET OF IMPROVEMENT PLANS IS CERTIFIED TO CONFORM TO THE REQUIREMENTS OF THE APPROVED DRAINAGE STUDY.
DS# 5273 .

ANTHONY C. DELEON JR., P.E. NO. 023113 DATE

HORROCKS ENGINEERS
1401 North Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
0 1 2
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE

REVISIONS
REV # | DATE
*SEE GENERAL NOTES SHEET

DRAWING INFO
DATE 6/11/2020
DESIGNED ACD
DRAWN PMP
CHECKED ACD
PROJECT NV-2105-1911

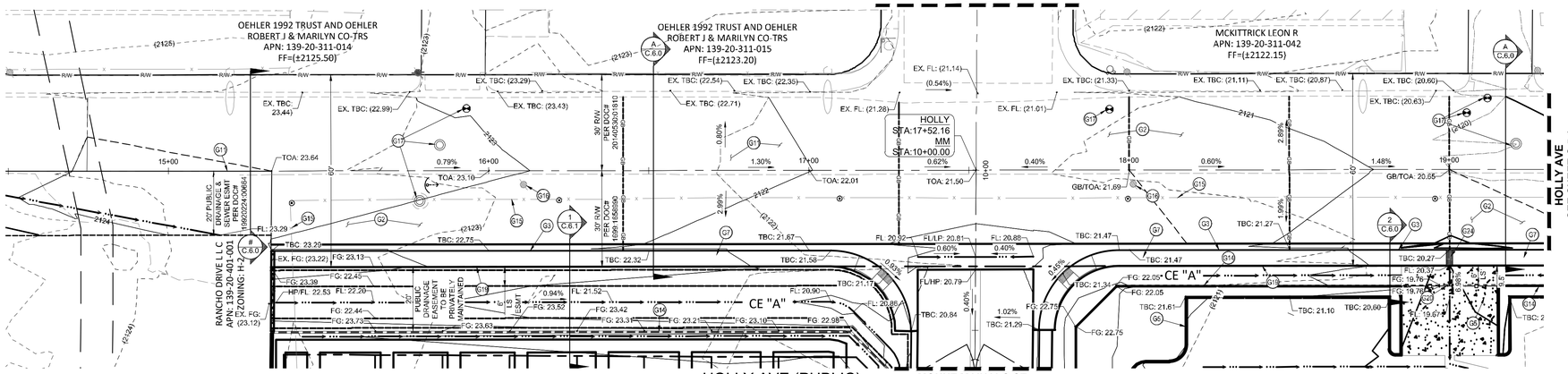
PROFESSIONAL ENGINEER-STATE OF NEVADA
ANTHONY C. DELEON JR
EXP. 12-31-20
CIVIL
No.023113
6/8/2020

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

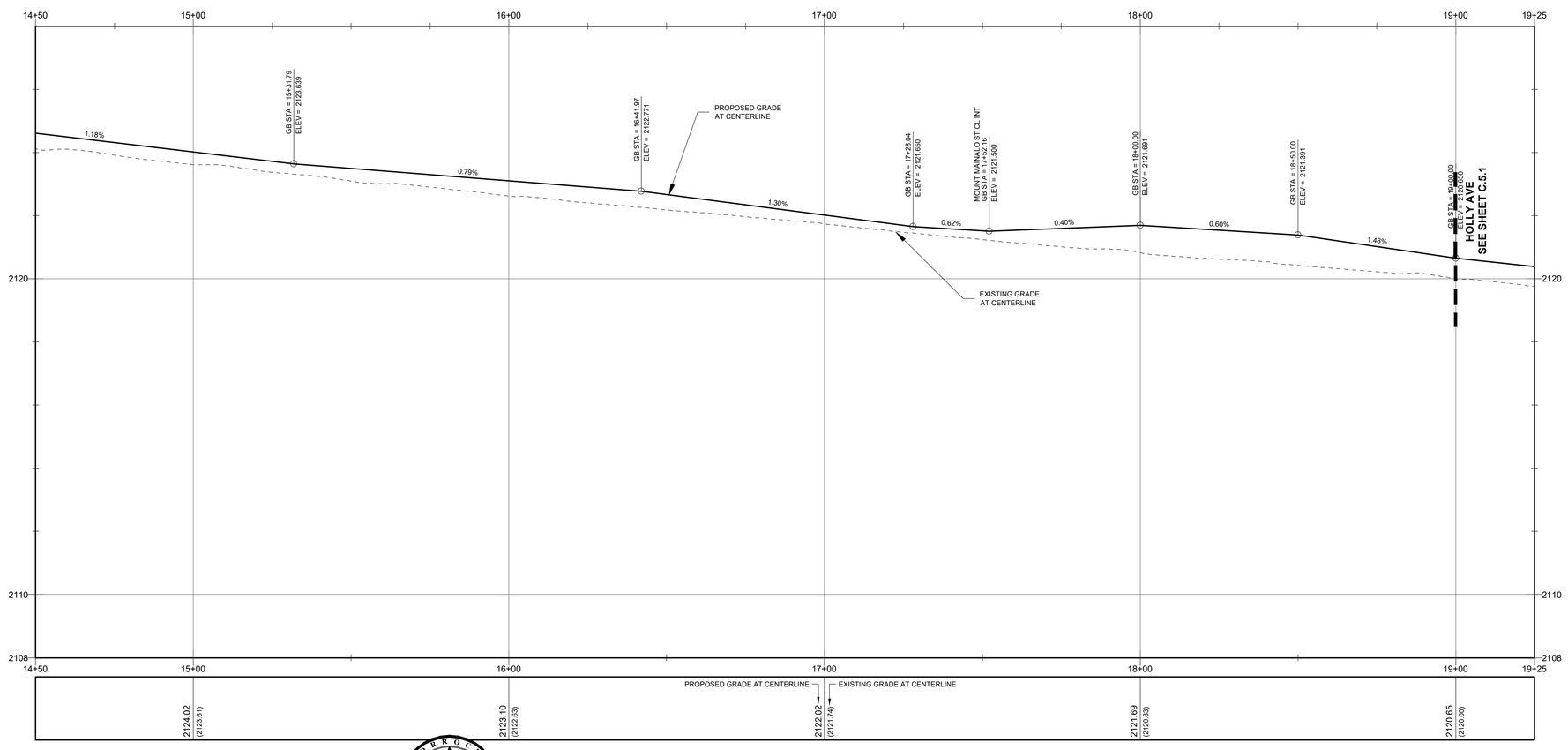
RANCHO & VEGAS
CITY OF LAS VEGAS, NEVADA
GRADING SHEET 6 PHASE 2

C.2.10A

PAGE 21



HOLLY AVE (PUBLIC)
PLAN VIEW
(STA. 14+50 TO 19+25)



HOLLY AVE (PUBLIC)
PROFILE VIEW
(STA. 14+50 TO 19+25)

SCALE: 1" = 20' H
SCALE: 1" = 2' V

SCALE: 1" = 20'

LEGAL DESCRIPTION	BASIS OF BEARING
SEE SHEET C.2.0	SEE SHEET C.2.0
FLOOD ZONE	**BENCHMARK**
SEE SHEET C.2.0	SEE SHEET C.2.0

UTILITY DISCLAIMER NOTE:

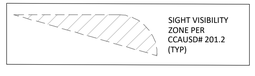
EXISTING UTILITY LOCATIONS SHOWN HEREIN ARE APPROXIMATE ONLY. IT SHALL BE AT THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPPER LOCATIONS.

DEPTH OF COVER DURING CONSTRUCTION:

MAINTAIN MINIMUM TWENTY-FOUR (24) INCH COVER PER UDACS SECTION 2.08.04. GRADING MUST BE COMPLETED PRIOR TO WATERLINE INSTALLATION.

SIGHT VISIBILITY ZONE NOTE:

NO WALLS, FENCES, SHRUBS, UTILITY APPURTENANCES OR ANY OTHER OBJECT, OTHER THAN TRAFFIC CONTROL DEVICES, FIRE HYDRANTS, TREES, AND STREET LIGHT POLES, MAY BE CONSTRUCTED OR INSTALLED WITHIN THE SIGHT VISIBILITY ZONE UNLESS SAID OBJECT IS MAINTAINED AT LESS THAN 24 INCHES IN HEIGHT, MEASURED FROM TOP OF CURB, OR WHERE NO CURB EXISTS, A HEIGHT OF 27 INCHES MEASURED FROM THE TOP OF ADJACENT ASPHALT, GRAVEL OR PAVEMENT STREET SURFACE. THIS RESTRICTION EXTENDS ALONG THE SIGHT VISIBILITY LINE THROUGH LANDSCAPED MEDIANS.



GRADING KEY NOTES:

- G1 CONSTRUCT 3" AC PAVEMENT OVER 4" TYPE II AGG BASE.
- G2 CONSTRUCT 4.5" AC PAVEMENT OVER 4" TYPE II AGG BASE.
- G3 CONSTRUCT 24" "L" TYPE CURB PER CCAUSD #216.
- G4 CONSTRUCT 30" ROLL CURB PER CCAUSD #217.2.S1.
- G5 CONSTRUCT 6" "A" TYPE CURB PER CCAUSD #219.
- G6 CONSTRUCT SIDEWALK DRAIN PER CCAUSD #236.
- G7 CONSTRUCT 5' SIDEWALK 4" THICK PER CCAUSD #234.
- G8 CONSTRUCT 4' SIDEWALK 4" THICK PER CCAUSD #234.
- G9 INSTALL WROUGHT IRON GATE.
- G10 CONSTRUCT 3' CONCRETE VALLEY GUTTER PER CCAUSD #228.
- G11 SAWCUT & REMOVE EXISTING PAVEMENT.
- G12 INSTALL LANDSCAPING BY OTHERS.
- G13 EXISTING FENCE TO REMAIN.
- G14 INSTALL RETAINING WALL BY SEPARATE PERMIT. HEIGHT DEPICTED BY PLAN.
- G19 EXISTING FENCE TO BE REMOVED.
- G18 EXISTING POWER POLE TO BE RELOCATED.
- G17 ADJUST EXISTING UTILITIES TO NEW FINISHED GRADE.
- G18 CONSTRUCT 5" THICK CONCRETE DRIVEWAY.
- G19 INSTALL SCREEN WALL. HEIGHT DEPICTED PER PLAN.
- G20 INSTALL BLOCK WALL OPENING PER DETAIL #20 ON SHEET C.6.1.
- G21 CONSTRUCT 10' TRANSITION FROM "L" CURB TO ROLL CURB PER DETAIL #18 SHEET C.6.1.
- G22 INSTALL 4" SIDEWALK DRAIN PIPE PER CCAUSD #236.
- G23 CONSTRUCT SIDEWALK UNDERDRAIN PER CCAUSD #236.
- G24 INSTALL WROUGHT IRON GATE/FENCE PER CCAUSD #425.S1
- G25 CONSTRUCT 2' WIDE CURB OPENING PER DETAIL 31 ON SHEET C.6.1
- G26 INSTALL 6" CONCRETE PAVEMENT OVER 6" TYPE II AGG BASE
- G27 INSTALL RIP RAP PER PLAN
- G28 CONSTRUCT 30" ROLL CURB WITH REVERSE LIP PER DETAIL 32 ON SHEET C.6.1
- G29 INSTALL RIP-RAP D50=3",T=6" SUBGRADE @ 90% COMPACTION LENGTH & WIDTH SPECIFIED PER PLAN
- G30 CONSTRUCT STEM WALL. SOLID GROUT FOR 3 COURSES & 10.5' EASEMENT OPENING
- G31 CONSTRUCT 8' CONCRETE VALLEY GUTTER PER CCAUSD #228.

ENGINEER'S NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR EROSION AND DUST CONTROL, AND STORMWATER MANAGEMENT DURING CONSTRUCTION.
2. SEE HORIZONTAL CONTROL PLAN FOR EXACT PROPERTY LINE DIMENSIONS
3. ENGINEER TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES BETWEEN THESE PLANS AND FIELD CONDITIONS.
4. THESE PLANS SHALL NOT IN PART, OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY GOVERNING AGENCIES.
5. ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS.
6. DURING CONSTRUCTION, SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE. SAME MUST UTILIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES.
7. FLOOR SECTION ASSUMES 5" SLAB OVER MIN. 8.5" TYPE II. CONTRACTOR TO VERIFY WITH STRUCTURAL PLANS AND GEOTECHNICAL ENGINEER.
8. ADD 2100' TO GRADING ELEVATIONS SHOWN HEREON TO ADJUST THEM TO THE ASSOCIATED DATUM. FINISHED GRADE CONTOURS ARE APPROXIMATE. REFER TO SPOT ELEVATION GRADE TAGS FOR CONSTRUCTION STAKING PURPOSES.

APPROVED FOR CONSTRUCTION

SOUTHWEST GAS CORPORATION DATE

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO. _____ FIRST APPROVAL DATE: _____
LVVWD APPROVED FIRE FLOW_____GPM AT 20 PSI RESIDENTIAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW_____N/A_____GPM

Call before you AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY. Call 811 or 1-800-227-2600

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

FAST Call before you UnderGround 1-702-432-5300 HOLIDAY AND WEEKEND SYSTEM OF TRANSPORT SYSTEM

HORROCKS ENGINEERS
1401 North Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE
0 1 2

REVISIONS
REV # | DATE

*SEE GENERAL NOTES SHEET

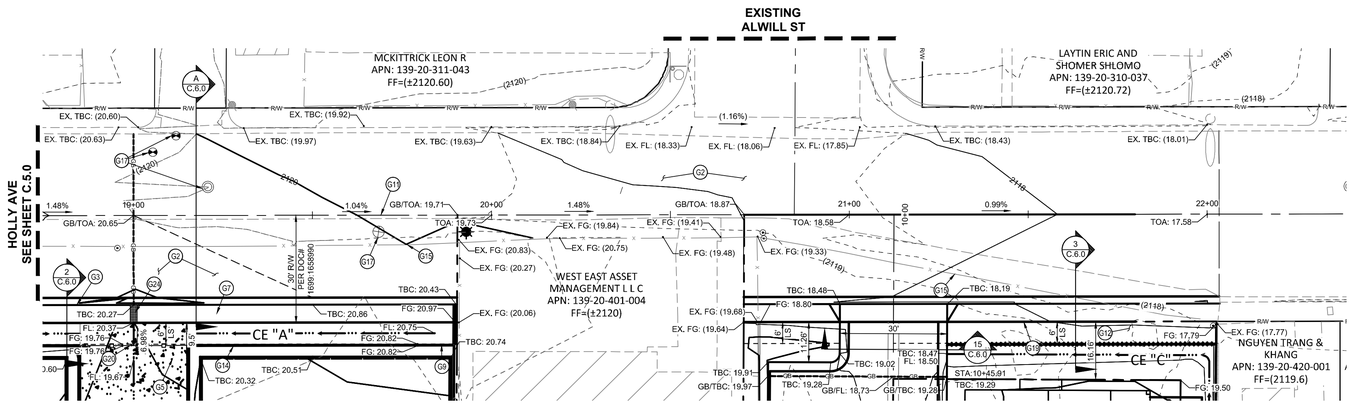
DRAWING INFO
DATE 6/8/2020
DESIGNED ACD
DRAWN PMP
CHECKED ACD
PROJECT NV-2105-1911

PROFESSIONAL ENGINEER-STATE OF NEVADA
ANTHONY C. DELEON JR
EXP. 12-31-20
CIVIL
No. 023113
6/8/2020

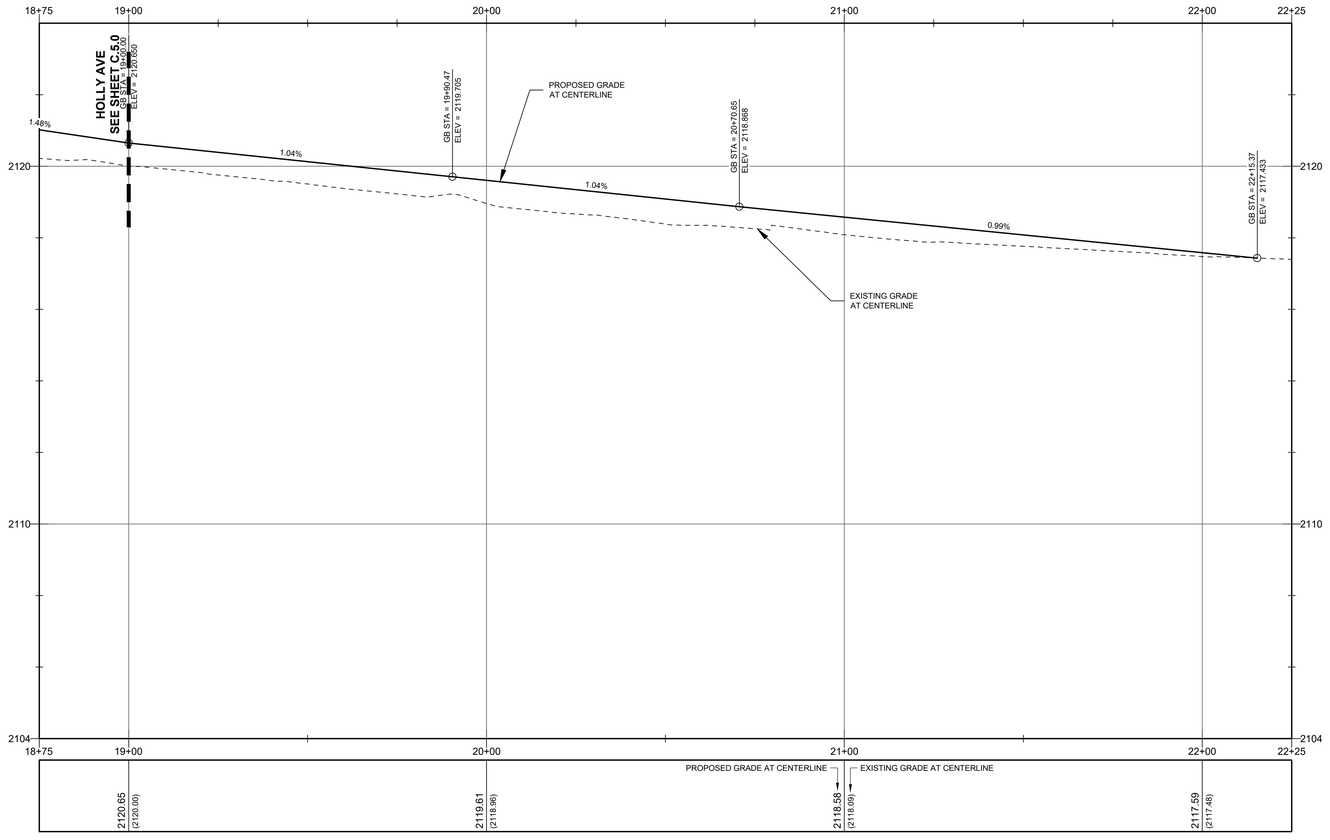
RANCHO & VEGAS
CITY OF LAS VEGAS, NEVADA
HOLLY AVE PLAN & PROFILE (STA 14+50 TO STA 19+25)

C.5.0

PAGE 22



HOLLY AVE (PUBLIC)
PLAN VIEW
(STA. 18+75 TO 22+25)



HOLLY AVE (PUBLIC)
PROFILE VIEW
(STA. 18+75 TO 22+25)
SCALE: 1" = 20' H
SCALE: 1" = 2' V

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

GRADING KEY NOTES:

(G1) CONSTRUCT 3" AC PAVEMENT OVER 4" TYPE II AGG BASE.
(G2) CONSTRUCT 4.5" AC PAVEMENT OVER 4" TYPE II AGG BASE.
(G3) CONSTRUCT 24" "L" TYPE CURB PER CCAUSD #216.
(G4) CONSTRUCT 30" ROLL CURB PER CCAUSD #217.2.S1.
(G5) CONSTRUCT 6" "A" TYPE CURB PER CCAUSD #219.
(G6) CONSTRUCT SIDEWALK DRAIN PER CCAUSD #236.
(G7) CONSTRUCT 5' SIDEWALK 4" THICK PER CCAUSD #234.
(G8) CONSTRUCT 4' SIDEWALK 4" THICK PER CCAUSD #234.
(G9) INSTALL WROUGHT IRON GATE.
(G10) CONSTRUCT 3' CONCRETE VALLEY GUTTER PER CCAUSD #228.
(G11) SAWCUT & REMOVE EXISTING PAVEMENT.
(G12) INSTALL LANDSCAPING BY OTHERS.
(G13) EXISTING FENCE TO REMAIN.
(G14) INSTALL RETAINING WALL BY SEPARATE PERMIT. HEIGHT DEPICTED BY PLAN.
(G15) EXISTING FENCE TO BE REMOVED.
(G16) EXISTING POWER POLE TO BE RELOCATED.
(G17) ADJUST EXISTING UTILITIES TO NEW FINISHED GRADE.
(G18) CONSTRUCT 5" THICK CONCRETE DRIVEWAY.
(G19) INSTALL SCREEN WALL. HEIGHT DEPICTED PER PLAN.
(G20) INSTALL BLOCK WALL OPENING PER DETAIL #20 ON SHEET C.6.1.
(G21) CONSTRUCT 10' TRANSITION FROM "L" CURB TO ROLL CURB PER DETAIL #18 SHEET C.6.1.
(G22) INSTALL 4" SIDEWALK DRAIN PIPE PER CCAUSD #236.
(G23) CONSTRUCT SIDEWALK UNDERDRAIN PER CCAUSD #236.
(G24) INSTALL WROUGHT IRON GATE/FENCE PER CCAUSD #425.S1
(G25) CONSTRUCT 2' WIDE CURB OPENING PER DETAIL 31 ON SHEET C.6.1
(G26) INSTALL 6" CONCRETE PAVEMENT OVER 6" TYPE II AGG BASE
(G27) INSTALL RIP RAP PER PLAN
(G28) CONSTRUCT 30" ROLL CURB WITH REVERSE LIP PER DETAIL 32 ON SHEET C.6.1
(G29) INSTALL RIP-RAP D50=3",T=6" SUBGRADE @ 90% COMPACTION LENGTH & WIDTH SPECIFIED PER PLAN
(G30) CONSTRUCT STEM WALL. SOLID GROUT FOR 3 COURSES & 10.5' EASEMENT OPENING
(G31) CONSTRUCT 8' CONCRETE VALLEY GUTTER PER CCAUSD #228.

LEGAL DESCRIPTION
SEE SHEET C.2.0

BASIS OF BEARING
SEE SHEET C.2.0

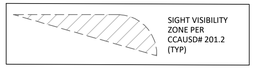
FLOOD ZONE
SEE SHEET C.2.0

BENCHMARK
SEE SHEET C.2.0

UTILITY DISCLAIMER NOTE:
EXISTING UTILITY LOCATIONS SHOWN HEREIN ARE APPROXIMATE ONLY. IT SHALL BE AT THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTIING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPPER LOCATIONS.

DEPTH OF COVER DURING CONSTRUCTION:
MAINTAIN MINIMUM TWENTY-FOUR (24) INCH COVER PER UDACS SECTION 2.08.04. GRADING MUST BE COMPLETED PRIOR TO WATERLINE INSTALLATION.

SIGHT VISIBILITY ZONE NOTE:
NO WALLS, FENCES, SHRUBS, UTILITY APPURTENANCES OR ANY OTHER OBJECT, OTHER THAN TRAFFIC CONTROL DEVICES, FIRE HYDRANTS, TREES, AND STREET LIGHT POLES, MAY BE CONSTRUCTED OR INSTALLED WITHIN THE SIGHT VISIBILITY ZONE UNLESS SAID OBJECT IS MAINTAINED AT LESS THAN 24 INCHES IN HEIGHT, MEASURED FROM TOP OF CURB, OR WHERE NO CURB EXISTS, A HEIGHT OF 27 INCHES MEASURED FROM THE TOP OF ADJACENT ASPHALT, GRAVEL OR PAVEMENT STREET SURFACE. THIS RESTRICTION EXTENDS ALONG THE SIGHT VISIBILITY LINE THROUGH LANDSCAPED MEDIANS.



ENGINEER'S NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR EROSION AND DUST CONTROL, AND STORMWATER MANAGEMENT DURING CONSTRUCTION.
2. SEE HORIZONTAL CONTROL PLAN FOR EXACT PROPERTY LINE DIMENSIONS
3. ENGINEER TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES BETWEEN THESE PLANS AND FIELD CONDITIONS.
4. THESE PLANS SHALL NOT IN PART, OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY GOVERNING AGENCIES.
5. ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS.
6. DURING CONSTRUCTION, SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE. SAME MUST UTILIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES.
7. FLOOR SECTION ASSUMES 5" SLAB OVER MIN. 8.5" TYPE II. CONTRACTOR TO VERIFY WITH STRUCTURAL PLANS AND GEOTECHNICAL ENGINEER.
8. ADD 2100' TO GRADING ELEVATIONS SHOWN HEREON TO ADJUST THEM TO THE ASSOCIATED DATUM. FINISHED GRADE CONTOURS ARE APPROXIMATE. REFER TO SPOT ELEVATION GRADE TAGS FOR CONSTRUCTION STAKING PURPOSES.

APPROVED FOR CONSTRUCTION
SOUTHWEST GAS CORPORATION DATE

APPROVED FOR CONSTRUCTION
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES
PROJECT NO._____ FIRST APPROVAL DATE:_____
LVVWD APPROVED FIRE FLOW_____GPM AT 20 PSI RESIDENTIAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW_____N/A_____GPM

HORROCKS ENGINEERS
1401 North Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE
0 1 2

REVISIONS
REV # | DATE
*SEE GENERAL NOTES SHEET

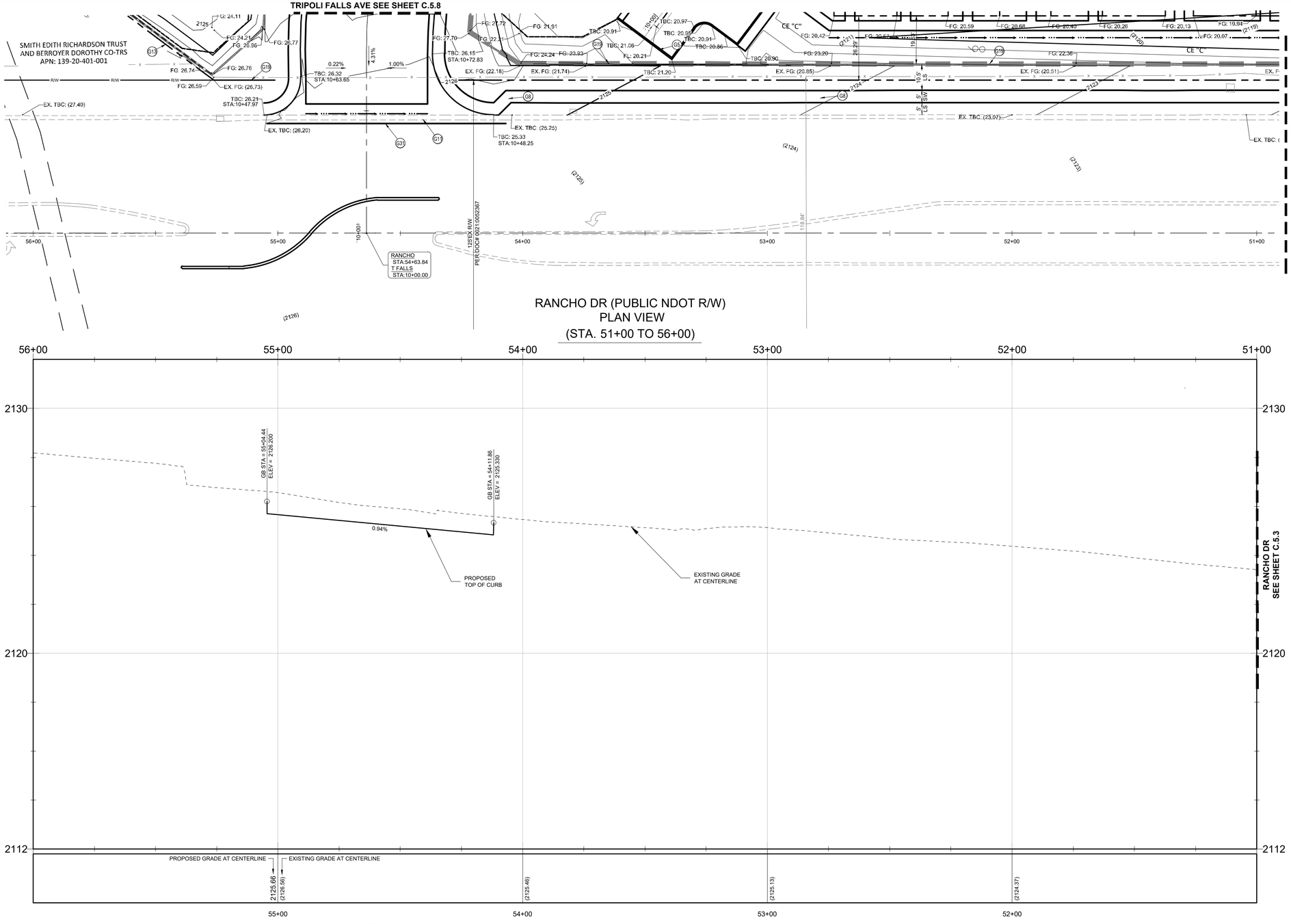
DRAWING INFO
DATE 6/8/2020
DESIGNED ACD
DRAWN PMP
CHECKED ACD
PROJECT NV-2105-1911

PROFESSIONAL ENGINEER-STATE OF NEVADA
ANTHONY C. DELEON JR
EXP. 12-31-20
CIVIL
No. 023113
6/8/2020

RANCHO & VEGAS
CITY OF LAS VEGAS, NEVADA
HOLLY AVE PLAN & PROFILE (STA 18+75 TO STA 22+25)

C.5.1

H:\!2019\NV-2105-1911 Rancho & Vegas Townhomes\Project Data\02 CAD\2.03 Sheet Files\Construction Drawings\C.5.0 PLAN & PROFILE (EW).dwg - C.5.1 - 6/08/2020 02:29pm, anthony.deleon



GRADING KEY NOTES:

- (G1) CONSTRUCT 3" AC PAVEMENT OVER 4" TYPE II AGG BASE.
- (G2) CONSTRUCT 4.5" AC PAVEMENT OVER 4" TYPE II AGG BASE.
- (G3) CONSTRUCT 24" "L" TYPE CURB PER CCAUSD #216.
- (G4) CONSTRUCT 30" ROLL CURB PER CCAUSD #217.2.S1.
- (G5) CONSTRUCT 6" "A" TYPE CURB PER CCAUSD #219.
- (G6) CONSTRUCT SIDEWALK DRAIN PER CCAUSD #236.
- (G7) CONSTRUCT 5' SIDEWALK 4" THICK PER CCAUSD #234.
- (G8) CONSTRUCT 4' SIDEWALK 4" THICK PER CCAUSD #234.
- (G9) INSTALL WROUGHT IRON GATE.
- (G10) CONSTRUCT 3' CONCRETE VALLEY GUTTER PER CCAUSD #228.
- (G11) SAWCUT & REMOVE EXISTING PAVEMENT.
- (G12) INSTALL LANDSCAPING BY OTHERS.
- (G13) EXISTING FENCE TO REMAIN.
- (G14) INSTALL RETAINING WALL BY SEPARATE PERMIT. HEIGHT DEPICTED BY PLAN.
- (G15) EXISTING FENCE TO BE REMOVED.
- (G16) EXISTING POWER POLE TO BE RELOCATED.
- (G17) ADJUST EXISTING UTILITIES TO NEW FINISHED GRADE.
- (G18) CONSTRUCT 5" THICK CONCRETE DRIVEWAY.
- (G19) INSTALL SCREEN WALL. HEIGHT DEPICTED PER PLAN.
- (G20) INSTALL BLOCK WALL OPENING PER DETAIL #20 ON SHEET C.6.1.
- (G21) CONSTRUCT 10' TRANSITION FROM "L" CURB TO ROLL CURB PER DETAIL #18 SHEET C.6.1.
- (G22) INSTALL 4" SIDEWALK DRAIN PIPE PER CCAUSD #236.
- (G23) CONSTRUCT SIDEWALK UNDERDRAIN PER CCAUSD #236.
- (G24) INSTALL WROUGHT IRON GATE/FENCE PER CCAUSD #425.S1
- (G25) CONSTRUCT 2' WIDE CURB OPENING PER DETAIL 31 ON SHEET C.6.1
- (G26) INSTALL 6" CONCRETE PAVEMENT OVER 6" TYPE II AGG BASE
- (G27) INSTALL RIP RAP PER PLAN
- (G28) CONSTRUCT 30" ROLL CURB WITH REVERSE LIP PER DETAIL 32 ON SHEET C.6.1
- (G29) INSTALL RIP-RAP D50=3",T=6" SUBGRADE @ 90% COMPACTION LENGTH & WIDTH SPECIFIED PER PLAN
- (G30) CONSTRUCT STEM WALL. SOLID GROUT FOR 3 COURSES & 10.5' EASEMENT OPENING
- (G31) CONSTRUCT 8' CONCRETE VALLEY GUTTER PER CCAUSD #228.

RANCHO DR (PUBLIC NDOT R/W)
PLAN VIEW
(STA. 51+00 TO 56+00)
SCALE: 1" = 20' H
SCALE: 1" = 2' V

SCALE: 1" = 20'

LEGAL DESCRIPTION
SEE SHEET C.2.0

BASIS OF BEARING
SEE SHEET C.2.0

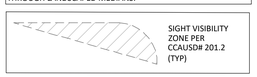
FLOOD ZONE
SEE SHEET C.2.0

BENCHMARK
SEE SHEET C.2.0

UTILITY DISCLAIMER NOTE:
EXISTING UTILITY LOCATIONS SHOWN HEREIN ARE APPROXIMATE ONLY. IT SHALL BE AT THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTIING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPPER LOCATIONS.

DEPTH OF COVER DURING CONSTRUCTION:
MAINTAIN MINIMUM TWENTY-FOUR (24) INCH COVER PER UDACS SECTION 2.08.04. GRADING MUST BE COMPLETED PRIOR TO WATERLINE INSTALLATION.

SIGHT VISIBILITY ZONE NOTE:
NO WALLS, FENCES, SHRUBS, UTILITY APPURTENANCES OR ANY OTHER OBJECT, OTHER THAN TRAFFIC CONTROL DEVICES, FIRE HYDRANTS, TREES, AND STREET LIGHT POLES, MAY BE CONSTRUCTED OR INSTALLED WITHIN THE SIGHT VISIBILITY ZONE UNLESS SAID OBJECT IS MAINTAINED AT LESS THAN 24 INCHES IN HEIGHT, MEASURED FROM TOP OF CURB, OR WHERE NO CURB EXISTS, A HEIGHT OF 27 INCHES MEASURED FROM THE TOP OF ADJACENT ASPHALT, GRAVEL OR PAVEMENT STREET SURFACE. THIS RESTRICTION EXTENDS ALONG THE SIGHT VISIBILITY LINE THROUGH LANDSCAPED MEDIANS.



ENGINEER'S NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR EROSION AND DUST CONTROL, AND STORMWATER MANAGEMENT DURING CONSTRUCTION.
2. SEE HORIZONTAL CONTROL PLAN FOR EXACT PROPERTY LINE DIMENSIONS
3. ENGINEER TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES BETWEEN THESE PLANS AND FIELD CONDITIONS.
4. THESE PLANS SHALL NOT IN PART, OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY GOVERNING AGENCIES.
5. ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS.
6. DURING CONSTRUCTION, SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE. SAME MUST UTILIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES.
7. FLOOR SECTION ASSUMES 0" SLAB OVER MIN. 8.5" TYPE II. CONTRACTOR TO VERIFY WITH STRUCTURAL PLANS AND GEOTECHNICAL ENGINEER.
8. ADD 2100' TO GRADING ELEVATIONS SHOWN HEREON TO ADJUST THEM TO THE ASSOCIATED DATUM. FINISHED GRADE CONTOURS ARE APPROXIMATE. REFER TO SPOT ELEVATION GRADE TAGS FOR CONSTRUCTION STAKING PURPOSES.

APPROVED FOR CONSTRUCTION

SOUTHWEST GAS CORPORATION DATE

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO._____ FIRST APPROVAL DATE:_____
LVVWD APPROVED FIRE FLOW_____GPM AT 20 PSI RESIDENTIAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW_____N/A_____GPM

Call before you Dig
AVOID CUTTING, INTERRUPTING AND UTILITY LINE SERVICE OUTAGE
Call 811 or 1-800-227-2600

AVOID HITTING OVERHEAD POWER LINES WITH EQUIPMENT
CALL BEFORE YOU DO OVERHEAD WORK
1-702-227-2929

FAST
Call before you UnderGround
1-702-432-5300
PROTECTING AND SUPPORTING SYSTEM OF TRANSPORTATION

HORROCKS ENGINEERS
1401 North Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
0 1 2
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE

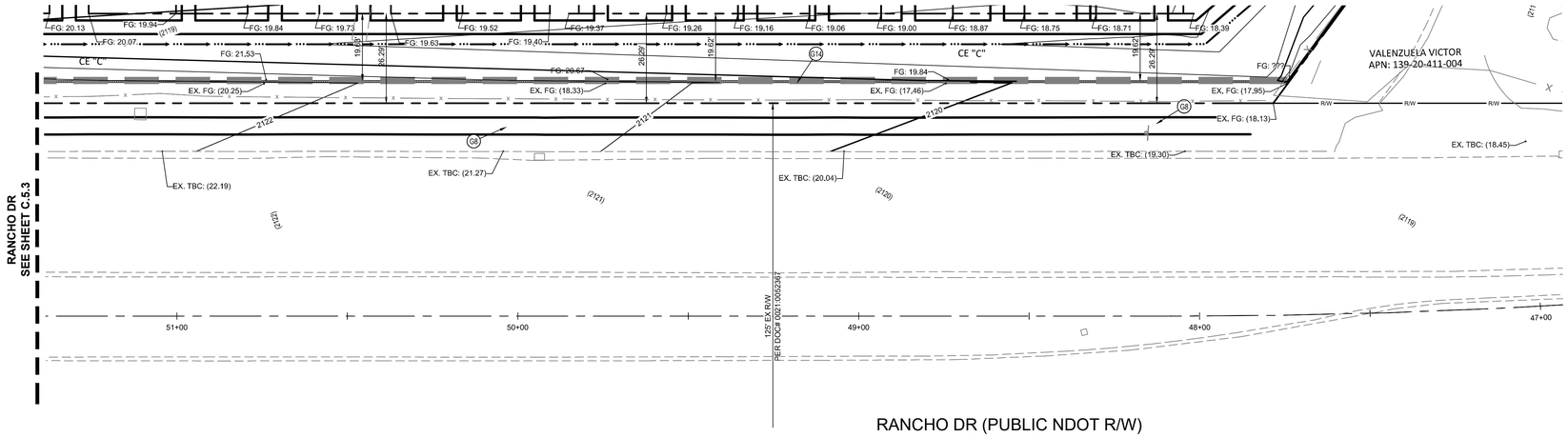
REVISIONS
REV # | DATE
*SEE GENERAL NOTES SHEET

DRAWING INFO
DATE 6/8/2020
DESIGNED ACD
DRAWN PMP
CHECKED ACD
PROJECT NV-2105-1911

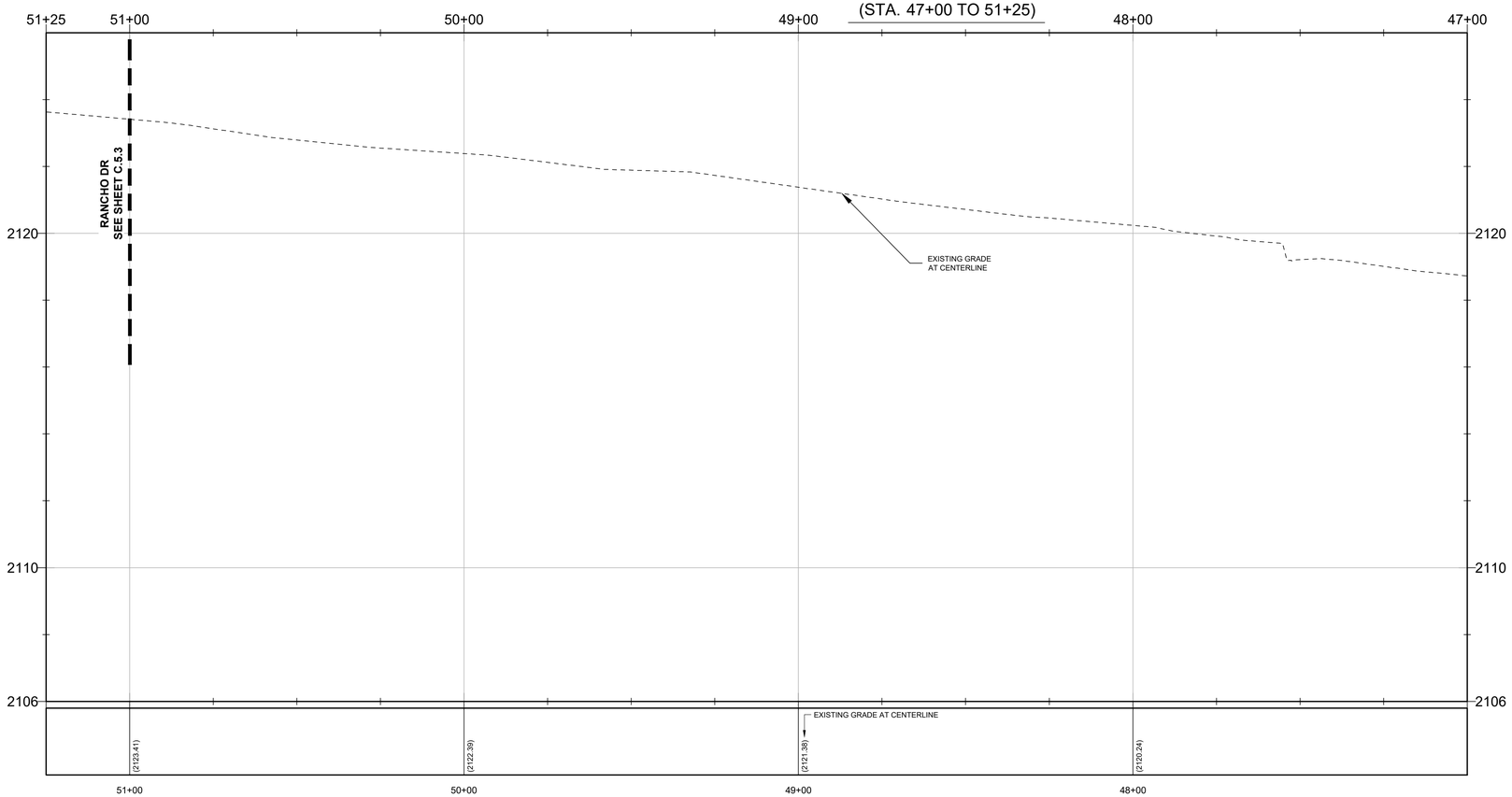
PROFESSIONAL ENGINEER-STATE OF NEVADA
ANTHONY C. DELEON JR
EXP. 12-31-20
CIVIL
No. 023113
6/8/2020

RANCHO & VEGAS
CITY OF LAS VEGAS, NEVADA
RANCHO DR PLAN & PROFILE (STA 51+00 TO STA 56+00)

C.5.2
PAGE 24



RANCHO DR (PUBLIC NDOT R/W)
PLAN VIEW
(STA. 47+00 TO 51+25)



RANCHO DR (PUBLIC NDOT R/W)
PLAN VIEW
(STA. 47+00 TO 51+25)
SCALE: 1" = 20' H
SCALE: 1" = 2' V

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

GRADING KEY NOTES:

G1 CONSTRUCT 3" AC PAVEMENT OVER 4" TYPE II AGG BASE.
G2 CONSTRUCT 4.5" AC PAVEMENT OVER 4" TYPE II AGG BASE.
G3 CONSTRUCT 24" "L" TYPE CURB PER CCAUSD #216.
G4 CONSTRUCT 30" ROLL CURB PER CCAUSD #217.2.S1.
G5 CONSTRUCT 6" "A" TYPE CURB PER CCAUSD #219.
G6 CONSTRUCT SIDEWALK DRAIN PER CCAUSD #236.
G7 CONSTRUCT 5' SIDEWALK 4" THICK PER CCAUSD #234.
G8 CONSTRUCT 4' SIDEWALK 4" THICK PER CCAUSD #234.
G9 INSTALL WROUGHT IRON GATE.
G10 CONSTRUCT 3' CONCRETE VALLEY GUTTER PER CCAUSD #228.
G11 SAWCUT & REMOVE EXISTING PAVEMENT.
G12 INSTALL LANDSCAPING BY OTHERS.
G13 EXISTING FENCE TO REMAIN.
G14 INSTALL RETAINING WALL BY SEPARATE PERMIT. HEIGHT DEPICTED BY PLAN.
G15 EXISTING FENCE TO BE REMOVED.
G16 EXISTING POWER POLE TO BE RELOCATED.
G17 ADJUST EXISTING UTILITIES TO NEW FINISHED GRADE.
G18 CONSTRUCT 5" THICK CONCRETE DRIVEWAY.
G19 INSTALL SCREEN WALL. HEIGHT DEPICTED PER PLAN.
G20 INSTALL BLOCK WALL OPENING PER DETAIL #20 ON SHEET C.6.1.
G21 CONSTRUCT 10' TRANSITION FROM "L" CURB TO ROLL CURB PER DETAIL #18 SHEET C.6.1.
G22 INSTALL 4" SIDEWALK DRAIN PIPE PER CCAUSD #236.
G23 CONSTRUCT SIDEWALK UNDERDRAIN PER CCAUSD #236.
G24 INSTALL WROUGHT IRON GATE/FENCE PER CCAUSD #425.S1
G25 CONSTRUCT 2' WIDE CURB OPENING PER DETAIL 31 ON SHEET C.6.1
G26 INSTALL 6" CONCRETE PAVEMENT OVER 6" TYPE II AGG BASE
G27 INSTALL RIP RAP PER PLAN
G28 CONSTRUCT 30" ROLL CURB WITH REVERSE LIP PER DETAIL 32 ON SHEET C.6.1
G29 INSTALL RIP-RAP D50=3",T=6" SUBGRADE @ 90% COMPACTION LENGTH & WIDTH SPECIFIED PER PLAN
G30 CONSTRUCT STEM WALL. SOLID GROUT FOR 3 COURSES & 10.5' EASEMENT OPENING
G31 CONSTRUCT 8' CONCRETE VALLEY GUTTER PER CCAUSD #228.

Call before you dig
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.
Call 811 or 1-800-227-2600

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

FAST
Call before you UnderGround
1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

LEGAL DESCRIPTION	BASIS OF BEARING
SEE SHEET C.2.0	SEE SHEET C.2.0
FLOOD ZONE	**BENCHMARK**
SEE SHEET C.2.0	SEE SHEET C.2.0

UTILITY DISCLAIMER NOTE:

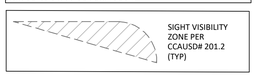
EXISTING UTILITY LOCATIONS SHOWN HEREIN ARE APPROXIMATE ONLY. IT SHALL BE AT THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTIING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPPER LOCATIONS.

DEPTH OF COVER DURING CONSTRUCTION:

MAINTAIN MINIMUM TWENTY-FOUR (24) INCH COVER PER UDACS SECTION 2.08.04. GRADING MUST BE COMPLETED PRIOR TO WATERLINE INSTALLATION.

SIGHT VISIBILITY ZONE NOTE:

NO WALLS, FENCES, SHRUBS, UTILITY APPURTENANCES OR ANY OTHER OBJECT, OTHER THAN TRAFFIC CONTROL DEVICES, FIRE HYDRANTS, TREES, AND STREET LIGHT POLES, MAY BE CONSTRUCTED OR INSTALLED WITHIN THE SIGHT VISIBILITY ZONE UNLESS SAID OBJECT IS MAINTAINED AT LESS THAN 24 INCHES IN HEIGHT, MEASURED FROM TOP OF CURB, OR WHERE NO CURB EXISTS, A HEIGHT OF 27 INCHES MEASURED FROM THE TOP OF ADJACENT ASPHALT, GRAVEL OR PAVEMENT STREET SURFACE. THIS RESTRICTION EXTENDS ALONG THE SIGHT VISIBILITY LINE THROUGH LANDSCAPED MEDIANS.



ENGINEER'S NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR EROSION AND DUST CONTROL, AND STORMWATER MANAGEMENT DURING CONSTRUCTION.
2. SEE HORIZONTAL CONTROL PLAN FOR EXACT PROPERTY LINE DIMENSIONS
3. ENGINEER TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES BETWEEN THESE PLANS AND FIELD CONDITIONS.
4. THESE PLANS SHALL NOT IN PART, OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY GOVERNING AGENCIES.
5. ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS.
6. DURING CONSTRUCTION, SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE. SAME MUST UTILIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES.
7. FLOOR SECTION ASSUMES 5" SLAB OVER MIN. 8.5" TYPE II. CONTRACTOR TO VERIFY WITH STRUCTURAL PLANS AND GEOTECHNICAL ENGINEER.
8. ADD 2100' TO GRADING ELEVATIONS SHOWN HEREON TO ADJUST THEM TO THE ASSOCIATED DATUM. FINISHED GRADE CONTOURS ARE APPROXIMATE. REFER TO SPOT ELEVATION GRADE TAGS FOR CONSTRUCTION STAKING PURPOSES.

APPROVED FOR CONSTRUCTION

SOUTHWEST GAS CORPORATION DATE

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO._____ FIRST APPROVAL DATE:_____
LVVWD APPROVED FIRE FLOW_____GPM AT 20 PSI RESIDENTIAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW_____N/A_____GPM

HORROCKS ENGINEERS
1401 North Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
0 1 2
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE

REVISIONS
REV # | DATE
*SEE GENERAL NOTES SHEET

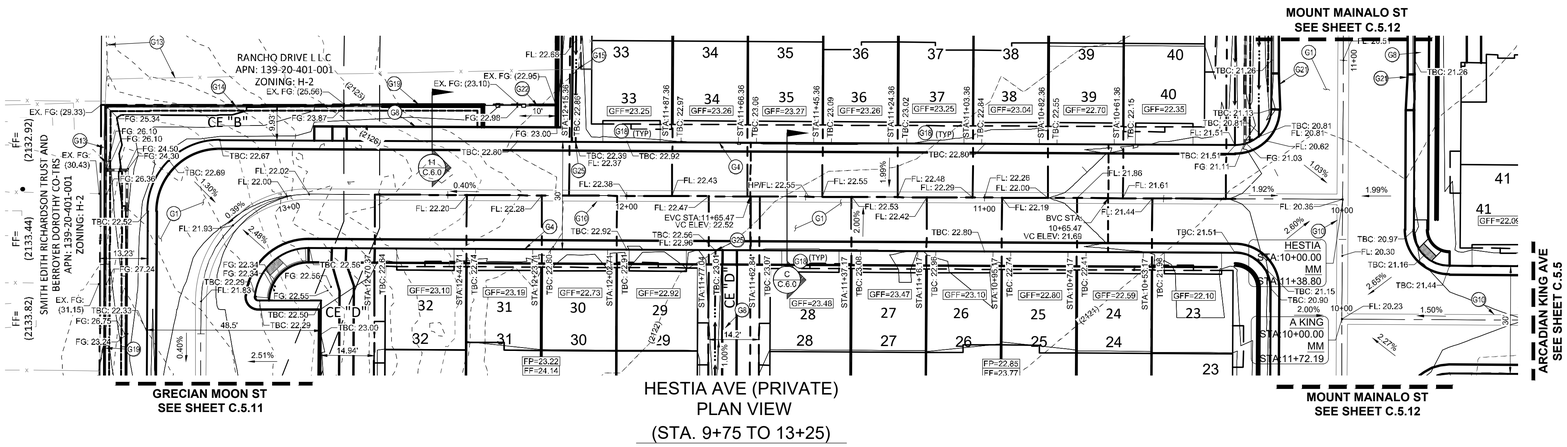
DRAWING INFO
DATE 6/8/2020
DESIGNED ACD
DRAWN PMP
CHECKED ACD
PROJECT NV-2105-1911

PROFESSIONAL ENGINEER-STATE OF NEVADA
ANTHONY C. DELEON JR
EXP. 12-31-20
CIVIL
No. 023113
6/8/2020

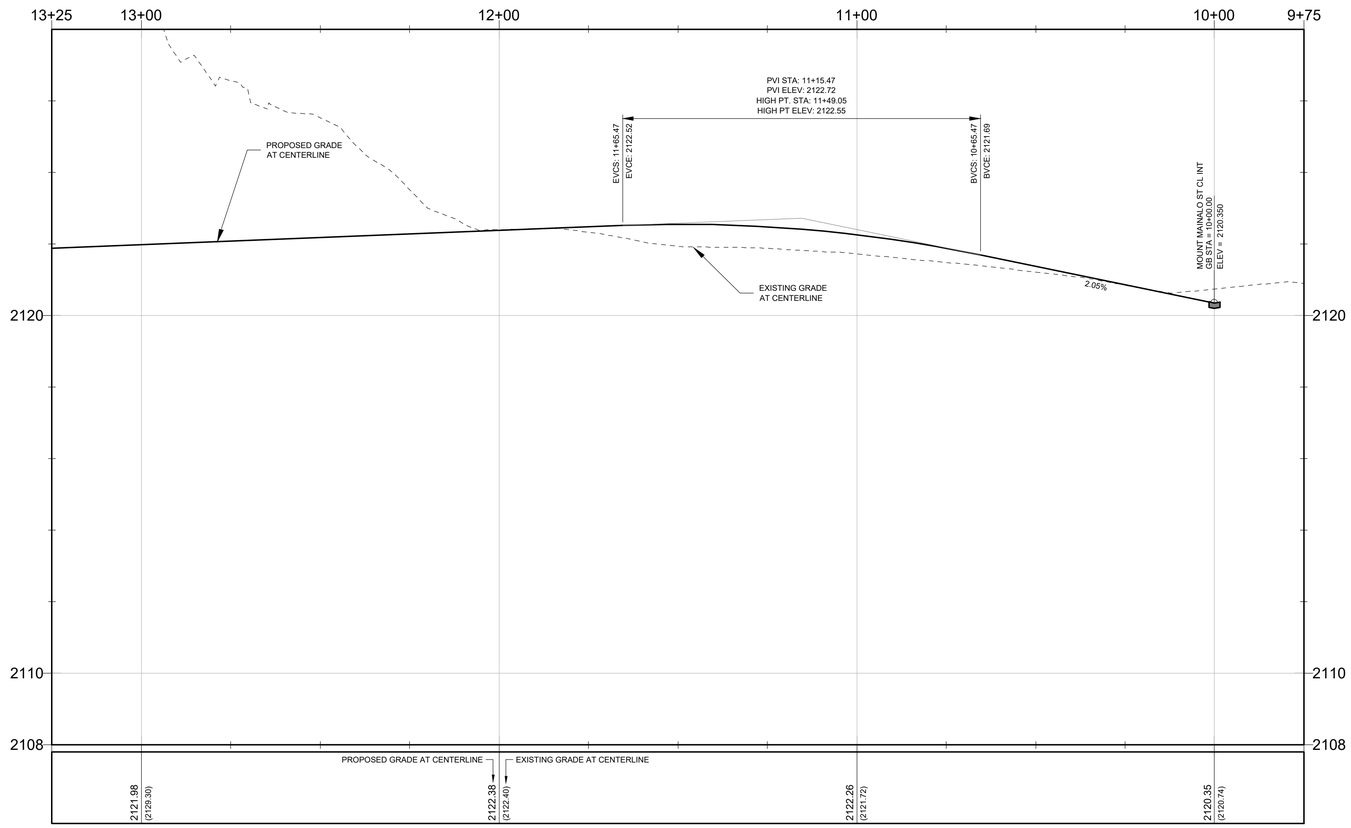
RANCHO & VEGAS
CITY OF LAS VEGAS, NEVADA
RANCHO DR PLAN & PROFILE (STA 47+00 TO STA 51+25)

C.5.3

H:\\2019\NV-2105-1911 Rancho & Vegas Townhomes\Project Data\02 CAD\2.03 Sheet Files\Construction Drawings\C.5.0 PLAN & PROFILE (NS).dwg - C.5.3 - 6/08/2020 02:30pm, anthony.deleon



HESTIA AVE (PRIVATE)
PLAN VIEW
(STA. 9+75 TO 13+25)



HESTIA AVE (PRIVATE)
PROFILE VIEW
(STA. 13+25 TO 9+50)

SCALE: 1" = 20' H
SCALE: 1" = 2' V

GRADING KEY NOTES:

- G1 CONSTRUCT 3" AC PAVEMENT OVER 4" TYPE II AGG BASE.
- G2 CONSTRUCT 4.5" AC PAVEMENT OVER 4" TYPE II AGG BASE.
- G3 CONSTRUCT 24" "L" TYPE CURB PER CCAUSD #216.
- G4 CONSTRUCT 30" ROLL CURB PER CCAUSD #217.2.S1.
- G5 CONSTRUCT 6" "A" TYPE CURB PER CCAUSD #219.
- G6 CONSTRUCT SIDEWALK DRAIN PER CCAUSD #236.
- G7 CONSTRUCT 5' SIDEWALK 4" THICK PER CCAUSD #234.
- G8 CONSTRUCT 4' SIDEWALK 4" THICK PER CCAUSD #234.
- G9 INSTALL WROUGHT IRON GATE.
- G10 CONSTRUCT 3' CONCRETE VALLEY GUTTER PER CCAUSD #228.
- G11 SAWCUT & REMOVE EXISTING PAVEMENT.
- G12 INSTALL LANDSCAPING BY OTHERS.
- G13 EXISTING FENCE TO REMAIN.
- G14 INSTALL RETAINING WALL BY SEPARATE PERMIT. HEIGHT DEPICTED BY PLAN.
- G19 EXISTING FENCE TO BE REMOVED.
- G18 EXISTING POWER POLE TO BE RELOCATED.
- G17 ADJUST EXISTING UTILITIES TO NEW FINISHED GRADE.
- G19 CONSTRUCT 5" THICK CONCRETE DRIVEWAY.
- G19 INSTALL SCREEN WALL. HEIGHT DEPICTED PER PLAN.
- G20 INSTALL BLOCK WALL OPENING PER DETAIL #20 ON SHEET C.6.1.
- G21 CONSTRUCT 10' TRANSITION FROM "L" CURB TO ROLL CURB PER DETAIL #18 SHEET C.6.1.
- G22 INSTALL 4" SIDEWALK DRAIN PIPE PER CCAUSD #236.
- G23 CONSTRUCT SIDEWALK UNDERDRAIN PER CCAUSD #236.
- G24 INSTALL WROUGHT IRON GATE/FENCE PER CCAUSD #425.S1
- G25 CONSTRUCT 2' WIDE CURB OPENING PER DETAIL 31 ON SHEET C.6.1
- G26 INSTALL 6" CONCRETE PAVEMENT OVER 6" TYPE II AGG BASE
- G27 INSTALL RIP RAP PER PLAN
- G28 CONSTRUCT 30" ROLL CURB WITH REVERSE LIP PER DETAIL 32 ON SHEET C.6.1
- G29 INSTALL RIP-RAP D50=3",T=6" SUBGRADE @ 90% COMPACTION LENGTH & WIDTH SPECIFIED PER PLAN
- G30 CONSTRUCT STEM WALL. SOLID GROUT FOR 3 COURSES & 10.5' EASEMENT OPENING
- G31 CONSTRUCT 8' CONCRETE VALLEY GUTTER PER CCAUSD #228.

Call before you dig 811 or 1-800-227-2600

AVOID CUTTING OVERHEAD POWER LINES WITH CRANES. CALL BEFORE YOU DO OVERHEAD. 1-702-227-2929

EAST Call before you UnderGround 1-702-432-5300

SCALE: 1" = 20'

LEGAL DESCRIPTION
SEE SHEET C.2.0

BASIS OF BEARING
SEE SHEET C.2.0

FLOOD ZONE
SEE SHEET C.2.0

BENCHMARK
SEE SHEET C.2.0

UTILITY DISCLAIMER NOTE:

EXISTING UTILITY LOCATIONS SHOWN HEREIN ARE APPROXIMATE ONLY. IT SHALL BE AT THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTIING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPPER LOCATIONS.

DEPTH OF COVER DURING CONSTRUCTION:

MAINTAIN MINIMUM TWENTY-FOUR (24) INCH COVER PER UDACS SECTION 2.08.04. GRADING MUST BE COMPLETED PRIOR TO WATERLINE INSTALLATION.

SIGHT VISIBILITY ZONE NOTE:

NO WALLS, FENCES, SHRUBS, UTILITY APPURTENANCES OR ANY OTHER OBJECT, OTHER THAN TRAFFIC CONTROL DEVICES, FIRE HYDRANTS, TREES, AND STREET LIGHT POLES, MAY BE CONSTRUCTED OR INSTALLED WITHIN THE SIGHT VISIBILITY ZONE UNLESS SAID OBJECT IS MAINTAINED AT LESS THAN 24 INCHES IN HEIGHT, MEASURED FROM TOP OF CURB, OR WHERE NO CURB EXISTS, A HEIGHT OF 27 INCHES MEASURED FROM THE TOP OF ADJACENT ASPHALT, GRAVEL OR PAVEMENT STREET SURFACE. THIS RESTRICTION EXTENDS ALONG THE SIGHT VISIBILITY LINE THROUGH LANDSCAPED MEDIANS.

SIGHT VISIBILITY ZONE PER CCAUSD# 201.2 (TYP)

ENGINEER'S NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR EROSION AND DUST CONTROL, AND STORMWATER MANAGEMENT DURING CONSTRUCTION.
2. SEE HORIZONTAL CONTROL PLAN FOR EXACT PROPERTY LINE DIMENSIONS
3. ENGINEER TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES BETWEEN THESE PLANS AND FIELD CONDITIONS.
4. THESE PLANS SHALL NOT IN PART, OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY GOVERNING AGENCIES.
5. ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS.
6. DURING CONSTRUCTION, SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE. SAME MUST UTILIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES.
7. FLOOR SECTION ASSUMES 5" SLAB OVER MIN. 8.5" TYPE II. CONTRACTOR TO VERIFY WITH STRUCTURAL PLANS AND GEOTECHNICAL ENGINEER.
8. ADD 2100' TO GRADING ELEVATIONS SHOWN HEREON TO ADJUST THEM TO THE ASSOCIATED DATUM. FINISHED GRADE CONTOURS ARE APPROXIMATE. REFER TO SPOT ELEVATION GRADE TAGS FOR CONSTRUCTION STAKING PURPOSES.

APPROVED FOR CONSTRUCTION

SOUTHWEST GAS CORPORATION DATE

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO._____ FIRST APPROVAL DATE:_____
LVVWD APPROVED FIRE FLOW_____GPM AT 20 PSI RESIDENTIAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW_____N/A_____GPM

HORROCKS ENGINEERS
1401 North Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE
0 1 2

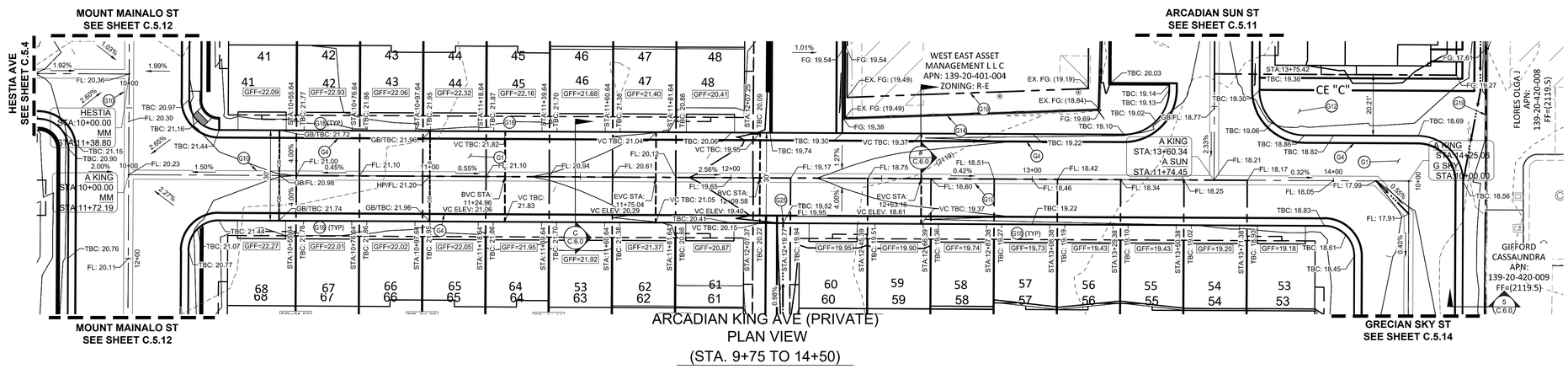
REVISIONS
REV # | DATE
*SEE GENERAL NOTES SHEET

DRAWING INFO
DATE 6/8/2020
DESIGNED ACD
DRAWN PMP
CHECKED ACD
PROJECT NV-2105-1911

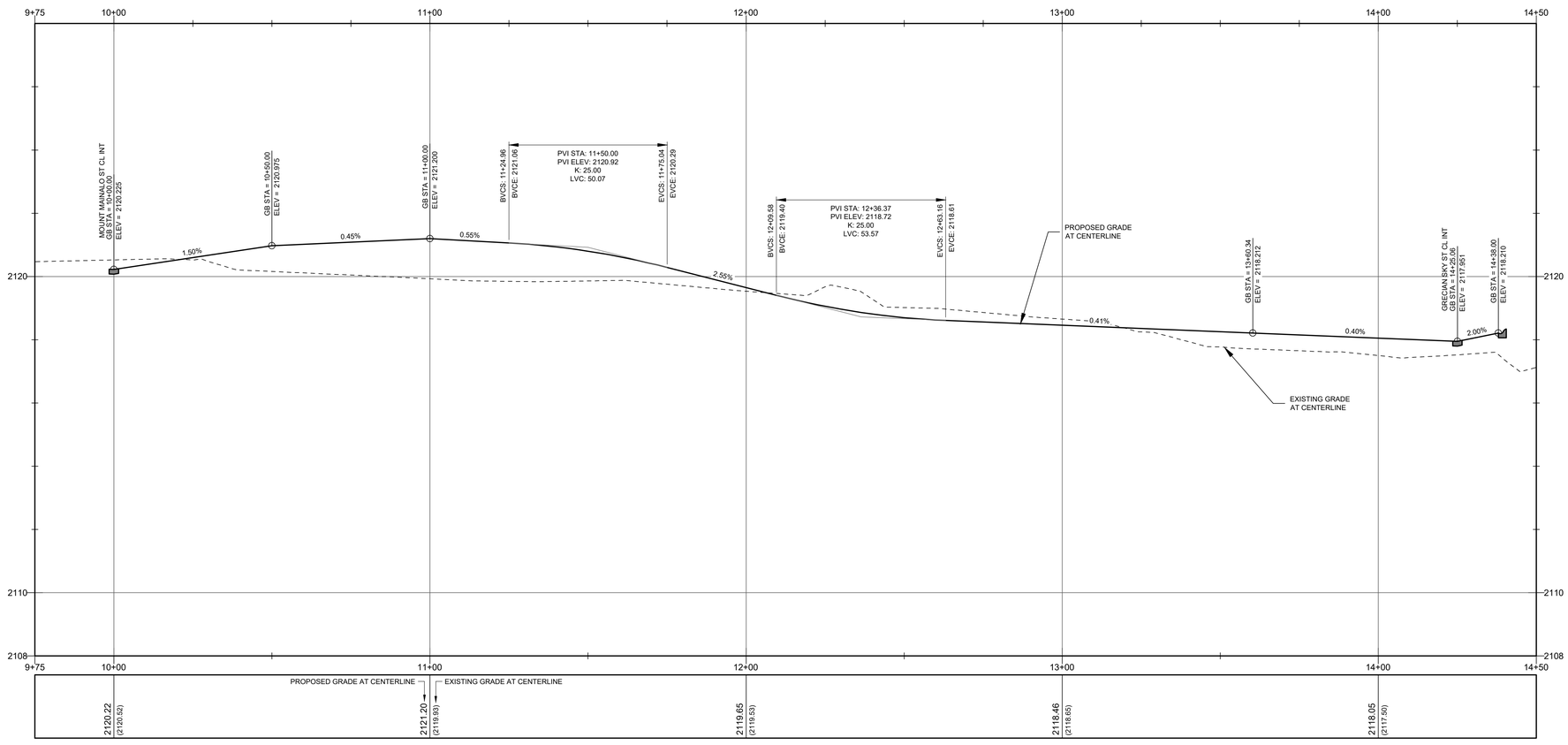
PROFESSIONAL ENGINEER-STATE OF NEVADA
ANTHONY C. DELEON JR
EXP. 12-31-20
CIVIL
No.023113
6/8/2020

RANCHO & VEGAS
CITY OF LAS VEGAS, NEVADA
HESTIA AVE PLAN & PROFILE (STA 9+75 TO STA 13+25)

C.5.4



ARCADIAN KING AVE (PRIVATE)
PLAN VIEW
(STA. 9+75 TO 14+50)



ARCADIAN KING AVE (PRIVATE)
PROFILE VIEW
(STA. 9+75 TO 14+50)
SCALE: 1" = 20' H
SCALE: 1" = 2' V

GRADING KEY NOTES:

(G1) CONSTRUCT 3" AC PAVEMENT OVER 4" TYPE II AGG BASE.
(G2) CONSTRUCT 4.5" AC PAVEMENT OVER 4" TYPE II AGG BASE.
(G3) CONSTRUCT 24" "L" TYPE CURB PER CCAUSD #216.
(G4) CONSTRUCT 30" ROLL CURB PER CCAUSD #217.2.S1.
(G5) CONSTRUCT 6" "A" TYPE CURB PER CCAUSD #219.
(G6) CONSTRUCT SIDEWALK DRAIN PER CCAUSD #236.
(G7) CONSTRUCT 5' SIDEWALK 4" THICK PER CCAUSD #234.
(G8) CONSTRUCT 4' SIDEWALK 4" THICK PER CCAUSD #234.
(G9) INSTALL WROUGHT IRON GATE.
(G10) CONSTRUCT 3' CONCRETE VALLEY GUTTER PER CCAUSD #228.
(G11) SAWCUT & REMOVE EXISTING PAVEMENT.
(G12) INSTALL LANDSCAPING BY OTHERS.
(G13) EXISTING FENCE TO REMAIN.
(G14) INSTALL RETAINING WALL BY SEPARATE PERMIT. HEIGHT DEPICTED BY PLAN.
(G15) EXISTING FENCE TO BE REMOVED.
(G16) EXISTING POWER POLE TO BE RELOCATED.
(G17) ADJUST EXISTING UTILITIES TO NEW FINISHED GRADE.
(G18) CONSTRUCT 5" THICK CONCRETE DRIVEWAY.
(G19) INSTALL SCREEN WALL. HEIGHT DEPICTED PER PLAN.
(G20) INSTALL BLOCK WALL OPENING PER DETAIL #20 ON SHEET C.6.1.
(G21) CONSTRUCT 10' TRANSITION FROM "L" CURB TO ROLL CURB PER DETAIL #18 SHEET C.6.1.
(G22) INSTALL 4" SIDEWALK DRAIN PIPE PER CCAUSD #236.
(G23) CONSTRUCT SIDEWALK UNDERDRAIN PER CCAUSD #236.
(G24) INSTALL WROUGHT IRON GATE/FENCE PER CCAUSD #425.S1
(G25) CONSTRUCT 2' WIDE CURB OPENING PER DETAIL 31 ON SHEET C.6.1
(G26) INSTALL 6" CONCRETE PAVEMENT OVER 6" TYPE II AGG BASE
(G27) INSTALL RIP RAP PER PLAN
(G28) CONSTRUCT 30" ROLL CURB WITH REVERSE LIP PER DETAIL 32 ON SHEET C.6.1
(G29) INSTALL RIP-RAP D50=3",T=6" SUBGRADE @ 90% COMPACTION LENGTH & WIDTH SPECIFIED PER PLAN
(G30) CONSTRUCT STEM WALL. SOLID GROUT FOR 3 COURSES & 10.5' EASEMENT OPENING
(G31) CONSTRUCT 8' CONCRETE VALLEY GUTTER PER CCAUSD #228.

HORROCKS ENGINEERS
1401 North Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
0 1 2
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE

REVISIONS
REV # | DATE
*SEE GENERAL NOTES SHEET

DRAWING INFO
DATE 6/8/2020
DESIGNED ACD
DRAWN PMP
CHECKED ACD
PROJECT NV-2105-1911

PROFESSIONAL ENGINEER-STATE OF NEVADA
ANTHONY C. DELEON JR
EXP. 12-31-20
CIVIL
No. 023113
6/8/2020

RANCHO & VEGAS
CITY OF LAS VEGAS, NEVADA
ARCADIAN KING AVE PLAN & PROFILE (STA 9+75 TO STA 14+50)

C.5.5
PAGE 27

Call before you Dig
AVOID CUTTING UNDERGROUND UTILITY LINES, IT'S COSTLY
Call 811 or 1-800-227-2600

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

FAST
Call before you UnderGround
1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

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

LEGAL DESCRIPTION
SEE SHEET C.2.0

BASIS OF BEARING
SEE SHEET C.2.0

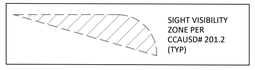
FLOOD ZONE
SEE SHEET C.2.0

BENCHMARK
SEE SHEET C.2.0

UTILITY DISCLAIMER NOTE:
EXISTING UTILITY LOCATIONS SHOWN HEREIN ARE APPROXIMATE ONLY. IT SHALL BE AT THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTIING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPPER LOCATIONS.

DEPTH OF COVER DURING CONSTRUCTION:
MAINTAIN MINIMUM TWENTY-FOUR (24) INCH COVER PER UDACS SECTION 2.08.04. GRADING MUST BE COMPLETED PRIOR TO WATERLINE INSTALLATION.

SIGHT VISIBILITY ZONE NOTE:
NO WALLS, FENCES, SHRUBS, UTILITY APPURTENANCES OR ANY OTHER OBJECT, OTHER THAN TRAFFIC CONTROL DEVICES, FIRE HYDRANTS, TREES, AND STREET LIGHT POLES, MAY BE CONSTRUCTED OR INSTALLED WITHIN THE SIGHT VISIBILITY ZONE UNLESS SAID OBJECT IS MAINTAINED AT LESS THAN 24 INCHES IN HEIGHT, MEASURED FROM TOP OF CURB, OR WHERE NO CURB EXISTS, A HEIGHT OF 27 INCHES MEASURED FROM THE TOP OF ADJACENT ASPHALT, GRAVEL OR PAVEMENT STREET SURFACE. THIS RESTRICTION EXTENDS ALONG THE SIGHT VISIBILITY LINE THROUGH LANDSCAPED MEDIANS.

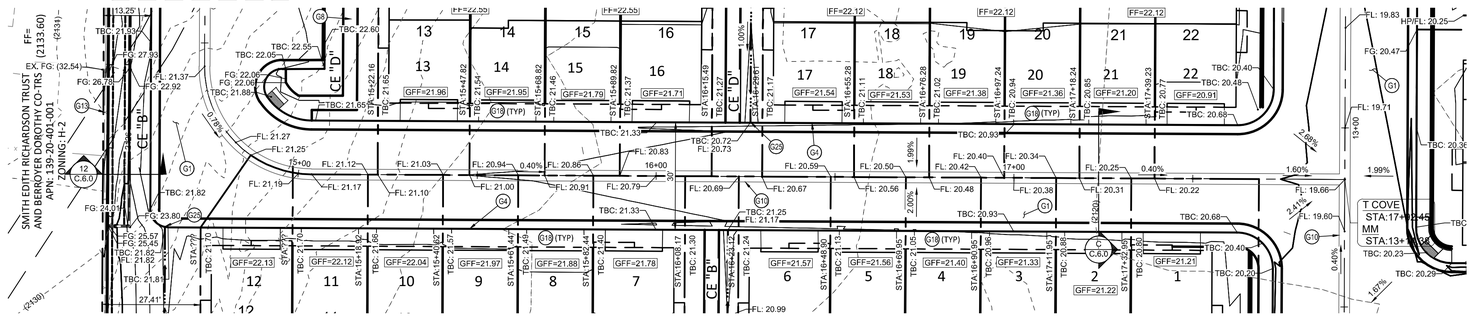


ENGINEER'S NOTES:

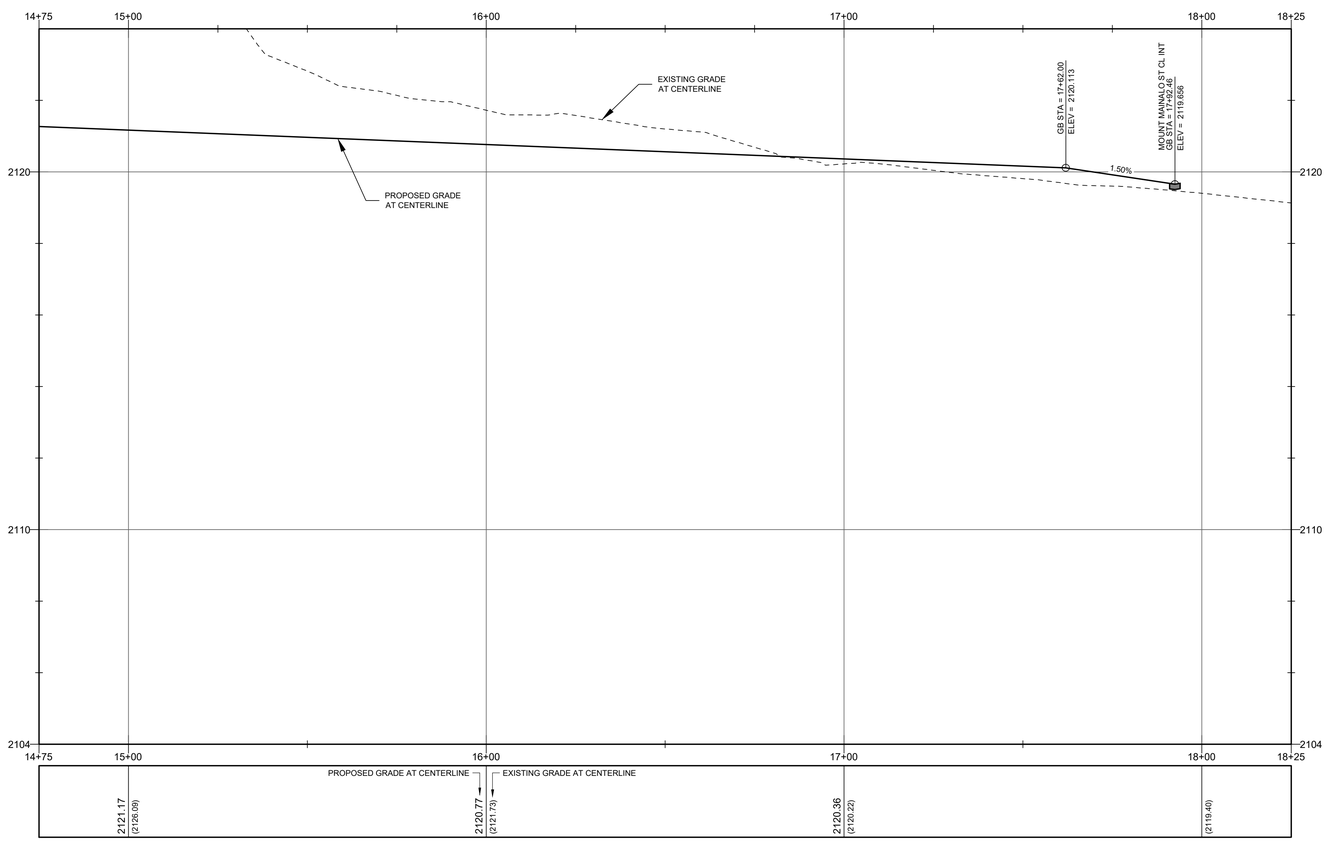
1. CONTRACTOR IS RESPONSIBLE FOR EROSION AND DUST CONTROL, AND STORMWATER MANAGEMENT DURING CONSTRUCTION.
2. SEE HORIZONTAL CONTROL PLAN FOR EXACT PROPERTY LINE DIMENSIONS
3. ENGINEER TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES BETWEEN THESE PLANS AND FIELD CONDITIONS.
4. THESE PLANS SHALL NOT IN PART, OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY GOVERNING AGENCIES.
5. ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS.
6. DURING CONSTRUCTION, SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE. SAME MUST UTILIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES.
7. FLOOR SECTION ASSUMES 5" SLAB OVER MIN. 8.5" TYPE II. CONTRACTOR TO VERIFY WITH STRUCTURAL PLANS AND GEOTECHNICAL ENGINEER.
8. ADD 2100' TO GRADING ELEVATIONS SHOWN HEREON TO ADJUST THEM TO THE ASSOCIATED DATUM. FINISHED GRADE CONTOURS ARE APPROXIMATE. REFER TO SPOT ELEVATION GRADE TAGS FOR CONSTRUCTION STAKING PURPOSES.

APPROVED FOR CONSTRUCTION
SOUTHWEST GAS CORPORATION DATE

APPROVED FOR CONSTRUCTION
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES
PROJECT NO. FIRST APPROVAL DATE:
LVVWD APPROVED FIRE FLOW GPM AT 20 PSI RESIDENTIAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW N/A GPM



TRIPOLI COVE AVE (PRIVATE)
PLAN VIEW
(STA. 14+75 TO 18+25)



TRIPOLI COVE AVE (PRIVATE)
PROFILE VIEW
(STA. 14+75 TO 18+25)

SCALE: 1" = 20' H
SCALE: 1" = 2' V

SCALE: 1" = 20'

GRADING KEY NOTES:

(G1) CONSTRUCT 3" AC PAVEMENT OVER 4" TYPE II AGG BASE.
(G2) CONSTRUCT 4.5" AC PAVEMENT OVER 4" TYPE II AGG BASE.
(G3) CONSTRUCT 24" "L" TYPE CURB PER CCAUSD #216.
(G4) CONSTRUCT 30" ROLL CURB PER CCAUSD #217.2.S1.
(G5) CONSTRUCT 6" "A" TYPE CURB PER CCAUSD #219.
(G6) CONSTRUCT SIDEWALK DRAIN PER CCAUSD #236.
(G7) CONSTRUCT 5' SIDEWALK 4" THICK PER CCAUSD #234.
(G8) CONSTRUCT 4' SIDEWALK 4" THICK PER CCAUSD #234.
(G9) INSTALL WROUGHT IRON GATE.
(S10) CONSTRUCT 3' CONCRETE VALLEY GUTTER PER CCAUSD #228.
(S11) SAWCUT & REMOVE EXISTING PAVEMENT.
(S12) INSTALL LANDSCAPING BY OTHERS.
(S13) EXISTING FENCE TO REMAIN.
(S14) INSTALL RETAINING WALL BY SEPARATE PERMIT. HEIGHT DEPICTED BY PLAN.
(S15) EXISTING FENCE TO BE REMOVED.
(S16) EXISTING POWER POLE TO BE RELOCATED.
(S17) ADJUST EXISTING UTILITIES TO NEW FINISHED GRADE.
(S18) CONSTRUCT 5" THICK CONCRETE DRIVEWAY.
(S19) INSTALL SCREEN WALL. HEIGHT DEPICTED PER PLAN.
(S20) INSTALL BLOCK WALL OPENING PER DETAIL #20 ON SHEET C.6.1.
(S21) CONSTRUCT 10' TRANSITION FROM "L" CURB TO ROLL CURB PER DETAIL #18 SHEET C.6.1.
(S22) INSTALL 4" SIDEWALK DRAIN PIPE PER CCAUSD #236.
(S23) CONSTRUCT SIDEWALK UNDERDRAIN PER CCAUSD #236.
(S24) INSTALL WROUGHT IRON GATE/FENCE PER CCAUSD #425.S1
(S25) CONSTRUCT 2' WIDE CURB OPENING PER DETAIL 31 ON SHEET C.6.1
(S26) INSTALL 6" CONCRETE PAVEMENT OVER 6" TYPE II AGG BASE
(S27) INSTALL RIP RAP PER PLAN
(S28) CONSTRUCT 30" ROLL CURB WITH REVERSE LIP PER DETAIL 32 ON SHEET C.6.1
(S29) INSTALL RIP-RAP D50=3",T=6" SUBGRADE @ 90% COMPACTION LENGTH & WIDTH SPECIFIED PER PLAN
(S30) CONSTRUCT STEM WALL. SOLID GROUT FOR 3 COURSES & 10.5' EASEMENT OPENING
(S31) CONSTRUCT 8' CONCRETE VALLEY GUTTER PER CCAUSD #228.

HORROCKS ENGINEERS
1401 North Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
0 1 2
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE

REVISIONS
REV # | DATE
*SEE GENERAL NOTES SHEET

DRAWING INFO
DATE 6/8/2020
DESIGNED ACD
DRAWN PMP
CHECKED ACD
PROJECT NV-2105-1911

PROFESSIONAL ENGINEER-STATE OF NEVADA
ANTHONY C. DELEON JR
EXP. 12-31-20
CIVIL
No. 023113
6/8/2020

RANCHO & VEGAS
CITY OF LAS VEGAS, NEVADA
TRIPOLI COVE AVE PLAN & PROFILE (STA 14+75 TO STA 18+25)

C.5.6

PAGE 28

LEGAL DESCRIPTION
SEE SHEET C.2.0

BASIS OF BEARING
SEE SHEET C.2.0

FLOOD ZONE
SEE SHEET C.2.0

BENCHMARK
SEE SHEET C.2.0

UTILITY DISCLAIMER NOTE:
EXISTING UTILITY LOCATIONS SHOWN HEREIN ARE APPROXIMATE ONLY. IT SHALL BE AT THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTIING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPPER LOCATIONS.

DEPTH OF COVER DURING CONSTRUCTION:
MAINTAIN MINIMUM TWENTY-FOUR (24) INCH COVER PER UDACS SECTION 2.08.04. GRADING MUST BE COMPLETED PRIOR TO WATERLINE INSTALLATION.

SIGHT VISIBILITY ZONE NOTE:
NO WALLS, FENCES, SHRUBS, UTILITY APPURTENANCES OR ANY OTHER OBJECT, OTHER THAN TRAFFIC CONTROL DEVICES, FIRE HYDRANTS, TREES, AND STREET LIGHT POLES, MAY BE CONSTRUCTED OR INSTALLED WITHIN THE SIGHT VISIBILITY ZONE UNLESS SAID OBJECT IS MAINTAINED AT LESS THAN 24 INCHES IN HEIGHT, MEASURED FROM TOP OF CURB, OR WHERE NO CURB EXISTS, A HEIGHT OF 27 INCHES MEASURED FROM THE TOP OF ADJACENT ASPHALT, GRAVEL OR PAVEMENT STREET SURFACE. THIS RESTRICTION EXTENDS ALONG THE SIGHT VISIBILITY LINE THROUGH LANDSCAPED MEDIANS.

SIGHT VISIBILITY ZONE PER CCAUSD# 201.2 (TYP)

ENGINEER'S NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR EROSION AND DUST CONTROL, AND STORMWATER MANAGEMENT DURING CONSTRUCTION.
2. SEE HORIZONTAL CONTROL PLAN FOR EXACT PROPERTY LINE DIMENSIONS
3. ENGINEER TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES BETWEEN THESE PLANS AND FIELD CONDITIONS.
4. THESE PLANS SHALL NOT IN PART, OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY GOVERNING AGENCIES.
5. ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS.
6. DURING CONSTRUCTION, SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE. SAME MUST UTILIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES.
7. FLOOR SECTION ASSUMES 5" SLAB OVER MIN. 8.5" TYPE II. CONTRACTOR TO VERIFY WITH STRUCTURAL PLANS AND GEOTECHNICAL ENGINEER.
8. ADD 2100' TO GRADING ELEVATIONS SHOWN HEREON TO ADJUST THEM TO THE ASSOCIATED DATUM. FINISHED GRADE CONTOURS ARE APPROXIMATE. REFER TO SPOT ELEVATION GRADE TAGS FOR CONSTRUCTION STAKING PURPOSES.

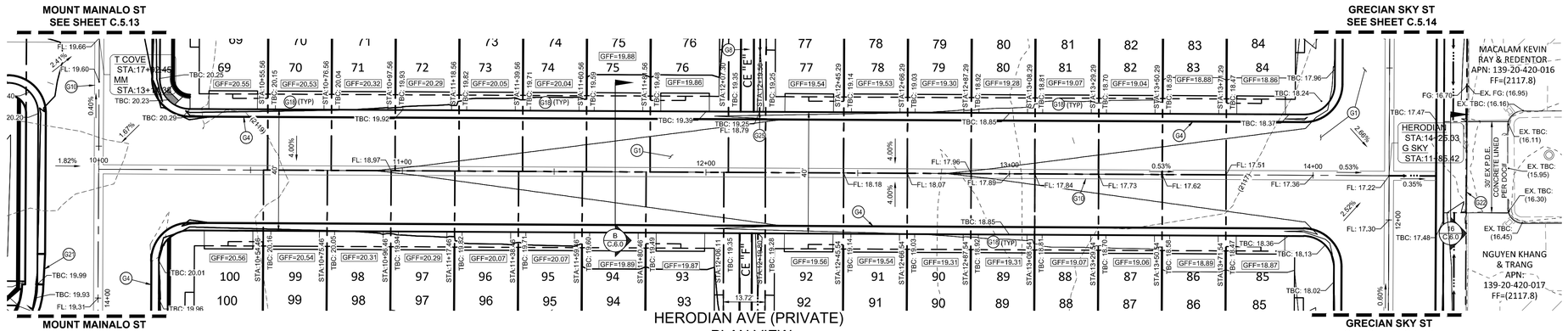
APPROVED FOR CONSTRUCTION
SOUTHWEST GAS CORPORATION DATE

APPROVED FOR CONSTRUCTION
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES
PROJECT NO._____ FIRST APPROVAL DATE:_____
LVVWD APPROVED FIRE FLOW_____GPM AT 20 PSI RESIDENTIAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW_____N/A_____GPM

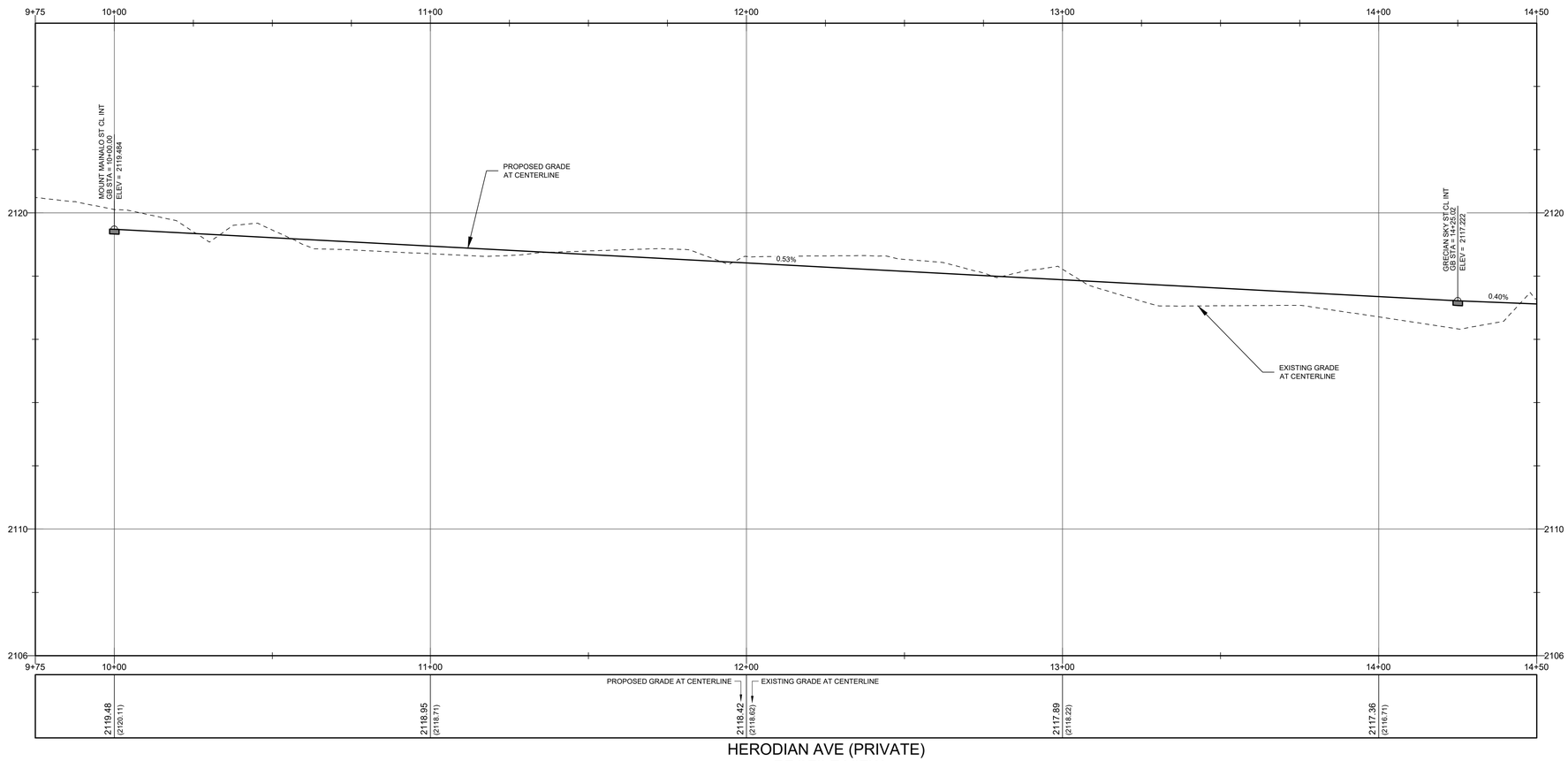
Call before you DIG
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.
Call 811 or 1-800-227-2600

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

FAST
Call before you UnderGround
1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION



HERODIAN AVE (PRIVATE)
PLAN VIEW
(STA. 9+75 TO 14+50)



HERODIAN AVE (PRIVATE)
PROFILE VIEW
(STA. 9+75 TO 14+50)

SCALE: 1" = 20' H
SCALE: 1" = 2' V

GRADING KEY NOTES:

- G1 CONSTRUCT 3" AC PAVEMENT OVER 4" TYPE II AGG BASE.
- G2 CONSTRUCT 4.5" AC PAVEMENT OVER 4" TYPE II AGG BASE.
- G3 CONSTRUCT 24" "L" TYPE CURB PER CCAUSD #216.
- G4 CONSTRUCT 30" ROLL CURB PER CCAUSD #217.2.S1.
- G5 CONSTRUCT 6" "A" TYPE CURB PER CCAUSD #219.
- G6 CONSTRUCT SIDEWALK DRAIN PER CCAUSD #236.
- G7 CONSTRUCT 5' SIDEWALK 4" THICK PER CCAUSD #234.
- G8 CONSTRUCT 4' SIDEWALK 4" THICK PER CCAUSD #234.
- G9 INSTALL WROUGHT IRON GATE.
- G10 CONSTRUCT 3' CONCRETE VALLEY GUTTER PER CCAUSD #228.
- G11 SAWCUT & REMOVE EXISTING PAVEMENT.
- G12 INSTALL LANDSCAPING BY OTHERS.
- G13 EXISTING FENCE TO REMAIN.
- G14 INSTALL RETAINING WALL BY SEPARATE PERMIT. HEIGHT DEPICTED BY PLAN.
- G15 EXISTING FENCE TO BE REMOVED.
- G16 EXISTING POWER POLE TO BE RELOCATED.
- G17 ADJUST EXISTING UTILITIES TO NEW FINISHED GRADE.
- G18 CONSTRUCT 5" THICK CONCRETE DRIVEWAY.
- G19 INSTALL SCREEN WALL. HEIGHT DEPICTED PER PLAN.
- G20 INSTALL BLOCK WALL OPENING PER DETAIL #20 ON SHEET C.6.1.
- G21 CONSTRUCT 10' TRANSITION FROM "L" CURB TO ROLL CURB PER DETAIL #18 SHEET C.6.1.
- G22 INSTALL 4" SIDEWALK DRAIN PIPE PER CCAUSD #236.
- G23 CONSTRUCT SIDEWALK UNDERDRAIN PER CCAUSD #236.
- G24 INSTALL WROUGHT IRON GATE/FENCE PER CCAUSD #425.S1
- G25 CONSTRUCT 2' WIDE CURB OPENING PER DETAIL 31 ON SHEET C.6.1
- G26 INSTALL 6" CONCRETE PAVEMENT OVER 6" TYPE II AGG BASE
- G27 INSTALL RIP RAP PER PLAN
- G28 CONSTRUCT 30" ROLL CURB WITH REVERSE LIP PER DETAIL 32 ON SHEET C.6.1
- G29 INSTALL RIP-RAP D50=3",T=6" SUBGRADE @ 90% COMPACTION LENGTH & WIDTH SPECIFIED PER PLAN
- G30 CONSTRUCT STEM WALL. SOLID GROUT FOR 3 COURSES & 10.5' EASEMENT OPENING
- G31 CONSTRUCT 8' CONCRETE VALLEY GUTTER PER CCAUSD #228.

HORROCKS ENGINEERS
1401 North Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE
0 1 2

REVISIONS
REV # | DATE

*SEE GENERAL NOTES SHEET

DRAWING INFO
DATE 6/8/2020
DESIGNED ACD
DRAWN PMP
CHECKED ACD
PROJECT NV-2105-1911

PROFESSIONAL ENGINEER-STATE OF NEVADA
ANTHONY C. DELEON JR
EXP. 12-31-20
CIVIL
No. 023113
6/8/2020

RANCHO & VEGAS
CITY OF LAS VEGAS, NEVADA
HERODIAN AVE PLAN & PROFILE (STA 9+75 TO STA 14+50)

C.5.7

PAGE 29

Call before you dig
AVOID CUTTING UNDERGROUND UTILITY LINES IT'S COSTLY
Call 811 or 1-800-227-2600

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

FAST
Call before you UnderGround
1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

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

LEGAL DESCRIPTION
SEE SHEET C.2.0

BASIS OF BEARING
SEE SHEET C.2.0

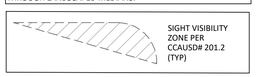
FLOOD ZONE
SEE SHEET C.2.0

BENCHMARK
SEE SHEET C.2.0

UTILITY DISCLAIMER NOTE:
EXISTING UTILITY LOCATIONS SHOWN HEREIN ARE APPROXIMATE ONLY. IT SHALL BE AT THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTIING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPPER LOCATIONS.

DEPTH OF COVER DURING CONSTRUCTION:
MAINTAIN MINIMUM TWENTY-FOUR (24) INCH COVER PER UDACS SECTION 2.08.04. GRADING MUST BE COMPLETED PRIOR TO WATERLINE INSTALLATION.

SIGHT VISIBILITY ZONE NOTE:
NO WALLS, FENCES, SHRUBS, UTILITY APPURTENANCES OR ANY OTHER OBJECT, OTHER THAN TRAFFIC CONTROL DEVICES, FIRE HYDRANTS, TREES, AND STREET LIGHT POLES, MAY BE CONSTRUCTED OR INSTALLED WITHIN THE SIGHT VISIBILITY ZONE UNLESS SAID OBJECT IS MAINTAINED AT LESS THAN 24 INCHES IN HEIGHT, MEASURED FROM TOP OF CURB, OR WHERE NO CURB EXISTS, A HEIGHT OF 27 INCHES MEASURED FROM THE TOP OF ADJACENT ASPHALT, GRAVEL OR PAVEMENT STREET SURFACE. THIS RESTRICTION EXTENDS ALONG THE SIGHT VISIBILITY LINE THROUGH LANDSCAPED MEDIANS.



ENGINEER'S NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR EROSION AND DUST CONTROL, AND STORMWATER MANAGEMENT DURING CONSTRUCTION.
2. SEE HORIZONTAL CONTROL PLAN FOR EXACT PROPERTY LINE DIMENSIONS
3. ENGINEER TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES BETWEEN THESE PLANS AND FIELD CONDITIONS.
4. THESE PLANS SHALL NOT IN PART, OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY GOVERNING AGENCIES.
5. ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS.
6. DURING CONSTRUCTION, SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE. SAME MUST UTILIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES.
7. FLOOR SECTION ASSUMES 5" SLAB OVER MIN. 8.5" TYPE II. CONTRACTOR TO VERIFY WITH STRUCTURAL PLANS AND GEOTECHNICAL ENGINEER.
8. ADD 2100' TO GRADING ELEVATIONS SHOWN HEREON TO ADJUST THEM TO THE ASSOCIATED DATUM. FINISHED GRADE CONTOURS ARE APPROXIMATE. REFER TO SPOT ELEVATION GRADE TAGS FOR CONSTRUCTION STAKING PURPOSES.

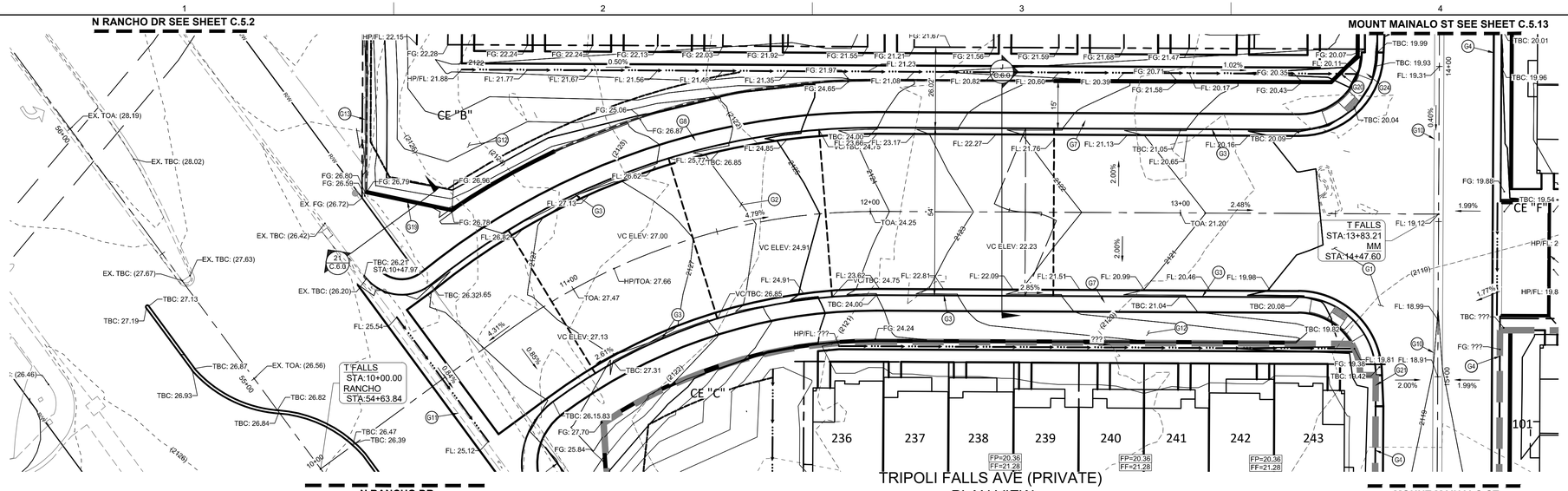
APPROVED FOR CONSTRUCTION

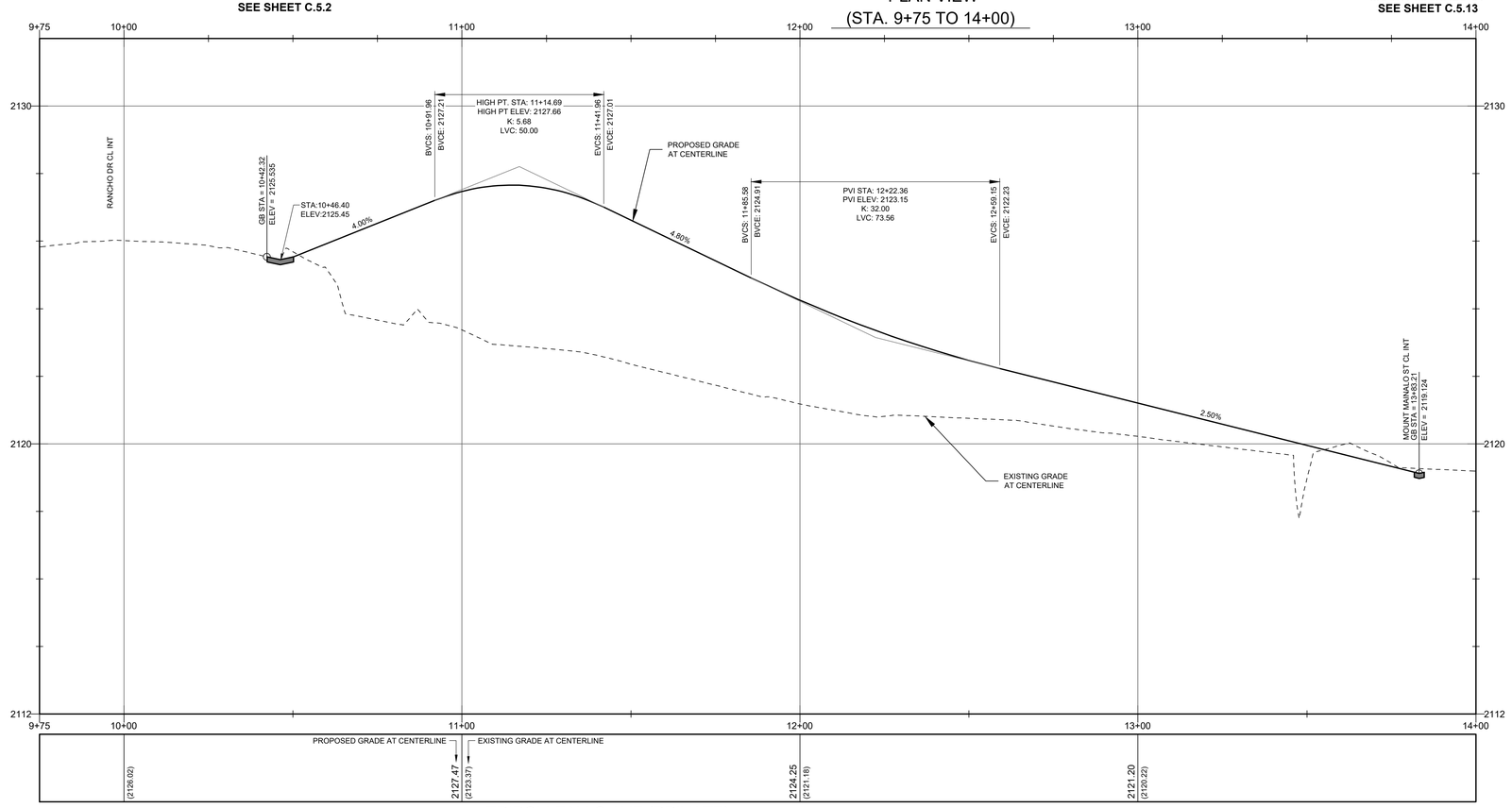
SOUTHWEST GAS CORPORATION DATE

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO._____ FIRST APPROVAL DATE:_____
LVVWD APPROVED FIRE FLOW_____GPM AT 20 PSI RESIDENTIAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW_____N/A_____GPM





TRIPOLI FALLS AVE (PRIVATE)
PROFILE VIEW
(STA. 9+75 TO 14+00)
SCALE: 1" = 20' H
SCALE: 1" = 2' V

SCALE: 1" = 20'

GRADING KEY NOTES:

G1 CONSTRUCT 3" AC PAVEMENT OVER 4" TYPE II AGG BASE.
G2 CONSTRUCT 4.5" AC PAVEMENT OVER 4" TYPE II AGG BASE.
G3 CONSTRUCT 24" "L" TYPE CURB PER CCAUSD #216.
G4 CONSTRUCT 30" ROLL CURB PER CCAUSD #217.2.S1.
G5 CONSTRUCT 6" "A" TYPE CURB PER CCAUSD #219.
G6 CONSTRUCT SIDEWALK DRAIN PER CCAUSD #236.
G7 CONSTRUCT 5' SIDEWALK 4" THICK PER CCAUSD #234.
G8 CONSTRUCT 4' SIDEWALK 4" THICK PER CCAUSD #234.
G9 INSTALL WROUGHT IRON GATE.
G10 CONSTRUCT 3' CONCRETE VALLEY GUTTER PER CCAUSD #228.
G11 SAWCUT & REMOVE EXISTING PAVEMENT.
G12 INSTALL LANDSCAPING BY OTHERS.
G13 EXISTING FENCE TO REMAIN.
G14 INSTALL RETAINING WALL BY SEPARATE PERMIT. HEIGHT DEPICTED BY PLAN.
G15 EXISTING FENCE TO BE REMOVED.
G16 EXISTING POWER POLE TO BE RELOCATED.
G17 ADJUST EXISTING UTILITIES TO NEW FINISHED GRADE.
G18 CONSTRUCT 5" THICK CONCRETE DRIVEWAY.
G19 INSTALL SCREEN WALL. HEIGHT DEPICTED PER PLAN.
G20 INSTALL BLOCK WALL OPENING PER DETAIL #20 ON SHEET C.6.1.
G21 CONSTRUCT 10' TRANSITION FROM "L" CURB TO ROLL CURB PER DETAIL #18 SHEET C.6.1.
G22 INSTALL 4" SIDEWALK DRAIN PIPE PER CCAUSD #236.
G23 CONSTRUCT SIDEWALK UNDERDRAIN PER CCAUSD #236.
G24 INSTALL WROUGHT IRON GATE/FENCE PER CCAUSD #425.S1
G25 CONSTRUCT 2' WIDE CURB OPENING PER DETAIL 31 ON SHEET C.6.1
G26 INSTALL 6" CONCRETE PAVEMENT OVER 6" TYPE II AGG BASE
G27 INSTALL RIP RAP PER PLAN
G28 CONSTRUCT 30" ROLL CURB WITH REVERSE LIP PER DETAIL 32 ON SHEET C.6.1
G29 INSTALL RIP-RAP D50=3",T=6" SUBGRADE @ 90% COMPACTION LENGTH & WIDTH SPECIFIED PER PLAN
G30 CONSTRUCT STEM WALL. SOLID GROUT FOR 3 COURSES & 10.5' EASEMENT OPENING
G31 CONSTRUCT 8' CONCRETE VALLEY GUTTER PER CCAUSD #228.

HORROCKS ENGINEERS
1401 North Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
0 1 2
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE

REVISIONS
REV # | DATE
*SEE GENERAL NOTES SHEET

DRAWING INFO
DATE 6/8/2020
DESIGNED ACD
DRAWN PMP
CHECKED ACD
PROJECT NV-2105-1911

PROFESSIONAL ENGINEER-STATE OF NEVADA
ANTHONY C. DELEON JR
EXP. 12-31-20
CIVIL
No. 023113
6/8/2020

RANCHO & VEGAS
CITY OF LAS VEGAS, NEVADA
TRIPOLI FALLS AVE PLAN & PROFILE (STA 10+00 TO STA 14+00)

C.5.8

PAGE 30

Call before you Dig
AVOID CUTTING UNDERGROUND UTILITY LINES, IT'S COSTLY
Call 811 or 1-800-227-2600

AVOID HITTING OVERHEAD POWER LINES, IT'S COSTLY
CALL BEFORE YOU DO OVERHEAD WORK
1-702-227-2929

FAST
Call before you UnderGround
1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

LEGAL DESCRIPTION
SEE SHEET C.2.0

BASIS OF BEARING
SEE SHEET C.2.0

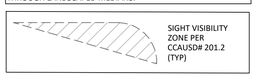
FLOOD ZONE
SEE SHEET C.2.0

BENCHMARK
SEE SHEET C.2.0

UTILITY DISCLAIMER NOTE:
EXISTING UTILITY LOCATIONS SHOWN HEREIN ARE APPROXIMATE ONLY. IT SHALL BE AT THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTIING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPPER LOCATIONS.

DEPTH OF COVER DURING CONSTRUCTION:
MAINTAIN MINIMUM TWENTY-FOUR (24) INCH COVER PER UDACS SECTION 2.08.04. GRADING MUST BE COMPLETED PRIOR TO WATERLINE INSTALLATION.

SIGHT VISIBILITY ZONE NOTE:
NO WALLS, FENCES, SHRUBS, UTILITY APPURTENANCES OR ANY OTHER OBJECT, OTHER THAN TRAFFIC CONTROL DEVICES, FIRE HYDRANTS, TREES, AND STREET LIGHT POLES, MAY BE CONSTRUCTED OR INSTALLED WITHIN THE SIGHT VISIBILITY ZONE UNLESS SAID OBJECT IS MAINTAINED AT LESS THAN 24 INCHES IN HEIGHT, MEASURED FROM TOP OF CURB, OR WHERE NO CURB EXISTS, A HEIGHT OF 27 INCHES MEASURED FROM THE TOP OF ADJACENT ASPHALT, GRAVEL OR PAVEMENT STREET SURFACE. THIS RESTRICTION EXTENDS ALONG THE SIGHT VISIBILITY LINE THROUGH LANDSCAPED MEDIANS.

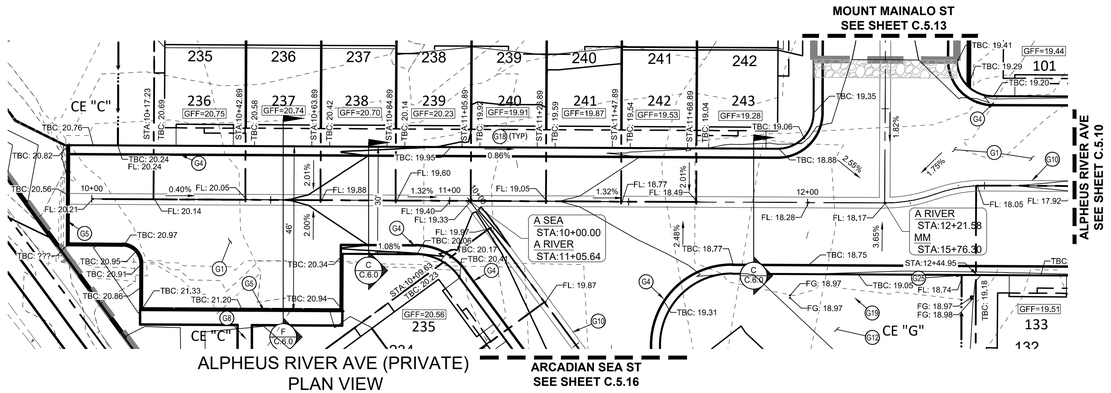


ENGINEER'S NOTES:

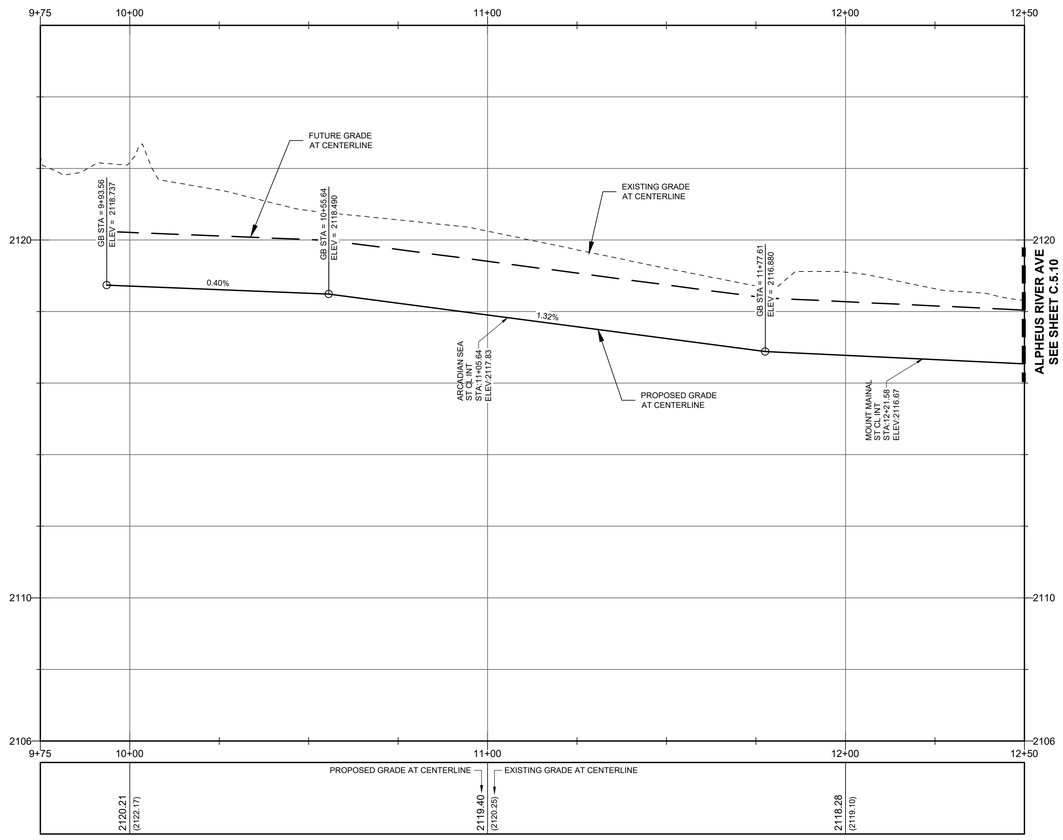
1. CONTRACTOR IS RESPONSIBLE FOR EROSION AND DUST CONTROL, AND STORMWATER MANAGEMENT DURING CONSTRUCTION.
2. SEE HORIZONTAL CONTROL PLAN FOR EXACT PROPERTY LINE DIMENSIONS
3. ENGINEER TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES BETWEEN THESE PLANS AND FIELD CONDITIONS.
4. THESE PLANS SHALL NOT IN PART, OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY GOVERNING AGENCIES.
5. ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS.
6. DURING CONSTRUCTION, SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE. SAME MUST UTILIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES.
7. FLOOR SECTION ASSUMES 9" SLAB OVER MIN. 8.5" TYPE II. CONTRACTOR TO VERIFY WITH STRUCTURAL PLANS AND GEOTECHNICAL ENGINEER.
8. ADD 2100' TO GRADING ELEVATIONS SHOWN HEREON TO ADJUST THEM TO THE ASSOCIATED DATUM. FINISHED GRADE CONTOURS ARE APPROXIMATE. REFER TO SPOT ELEVATION GRADE TAGS FOR CONSTRUCTION STAKING PURPOSES.

APPROVED FOR CONSTRUCTION
SOUTHWEST GAS CORPORATION DATE

APPROVED FOR CONSTRUCTION
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES
PROJECT NO. FIRST APPROVAL DATE:
LVVWD APPROVED FIRE FLOW GPM AT 20 PSI RESIDENTIAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW N/A GPM



ALPHEUS RIVER AVE (PRIVATE)
PLAN VIEW
(STA. 9+75 TO 12+50)



ALPHEUS RIVER AVE (PRIVATE)
PROFILE VIEW
(STA. 9+75 TO 12+50)

SCALE: 1" = 20' H
SCALE: 1" = 2' V

GRADING KEY NOTES:

- G1 CONSTRUCT 3" AC PAVEMENT OVER 4" TYPE II AGG BASE.
- G2 CONSTRUCT 4.5" AC PAVEMENT OVER 4" TYPE II AGG BASE.
- G3 CONSTRUCT 24" "L" TYPE CURB PER CCAUSD #216.
- G4 CONSTRUCT 30" ROLL CURB PER CCAUSD #217.2.S1.
- G5 CONSTRUCT 6" "A" TYPE CURB PER CCAUSD #219.
- G6 CONSTRUCT SIDEWALK DRAIN PER CCAUSD #236.
- G7 CONSTRUCT 5' SIDEWALK 4" THICK PER CCAUSD #234.
- G8 CONSTRUCT 4' SIDEWALK 4" THICK PER CCAUSD #234.
- G9 INSTALL WROUGHT IRON GATE.
- G10 CONSTRUCT 3' CONCRETE VALLEY GUTTER PER CCAUSD #228.
- G11 SAWCUT & REMOVE EXISTING PAVEMENT.
- G12 INSTALL LANDSCAPING BY OTHERS.
- G13 EXISTING FENCE TO REMAIN.
- G14 INSTALL RETAINING WALL BY SEPARATE PERMIT. HEIGHT DEPICTED BY PLAN.
- G15 EXISTING FENCE TO BE REMOVED.
- G16 EXISTING POWER POLE TO BE RELOCATED.
- G17 ADJUST EXISTING UTILITIES TO NEW FINISHED GRADE.
- G18 CONSTRUCT 5" THICK CONCRETE DRIVEWAY.
- G19 INSTALL SCREEN WALL. HEIGHT DEPICTED PER PLAN.
- G20 INSTALL BLOCK WALL OPENING PER DETAIL #20 ON SHEET C.6.1.
- G21 CONSTRUCT 10' TRANSITION FROM "L" CURB TO ROLL CURB PER DETAIL #18 SHEET C.6.1.
- G22 INSTALL 4" SIDEWALK DRAIN PIPE PER CCAUSD #236.
- G23 CONSTRUCT SIDEWALK UNDERDRAIN PER CCAUSD #236.
- G24 INSTALL WROUGHT IRON GATE/FENCE PER CCAUSD #425.S1
- G25 CONSTRUCT 2' WIDE CURB OPENING PER DETAIL 31 ON SHEET C.6.1
- G26 INSTALL 6" CONCRETE PAVEMENT OVER 6" TYPE II AGG BASE
- G27 INSTALL RIP RAP PER PLAN
- G28 CONSTRUCT 30" ROLL CURB WITH REVERSE LIP PER DETAIL 32 ON SHEET C.6.1
- G29 INSTALL RIP-RAP D50=3",T=6" SUBGRADE @ 90% COMPACTION LENGTH & WIDTH SPECIFIED PER PLAN
- G30 CONSTRUCT STEM WALL. SOLID GROUT FOR 3 COURSES & 10.5' EASEMENT OPENING
- G31 CONSTRUCT 8' CONCRETE VALLEY GUTTER PER CCAUSD #228.

HORROCKS ENGINEERS
1401 North Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
0 1 2
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE

REVISIONS
REV # | DATE
*SEE GENERAL NOTES SHEET

DRAWING INFO
DATE 6/8/2020
DESIGNED ACD
DRAWN PMP
CHECKED ACD
PROJECT NV-2105-1911

PROFESSIONAL ENGINEER - STATE OF NEVADA
ANTHONY C. DELEON JR
EXP. 12-31-20
CIVIL
No. 023113
6/8/2020

RANCHO & VEGAS
CITY OF LAS VEGAS, NEVADA
ALPHEUS RIVER AVE PLAN & PROFILE (STA 9+75 TO STA 12+50)

C.5.9

PAGE 31

Call before you Dig
AVOID CUTTING UNDERGROUND UTILITY LINES, IT'S COSTLY.
Call 811 or 1-800-227-2600

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

FAST
Call before you UnderGround
1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

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

LEGAL DESCRIPTION
SEE SHEET C.2.0

BASIS OF BEARING
SEE SHEET C.2.0

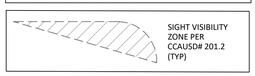
FLOOD ZONE
SEE SHEET C.2.0

BENCHMARK
SEE SHEET C.2.0

UTILITY DISCLAIMER NOTE:
EXISTING UTILITY LOCATIONS SHOWN HEREIN ARE APPROXIMATE ONLY. IT SHALL BE AT THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPPER LOCATIONS.

DEPTH OF COVER DURING CONSTRUCTION:
MAINTAIN MINIMUM TWENTY-FOUR (24) INCH COVER PER UDACS SECTION 2.08.04. GRADING MUST BE COMPLETED PRIOR TO WATERLINE INSTALLATION.

SIGHT VISIBILITY ZONE NOTE:
NO WALLS, FENCES, SHRUBS, UTILITY APPURTENANCES OR ANY OTHER OBJECT, OTHER THAN TRAFFIC CONTROL DEVICES, FIRE HYDRANTS, TREES, AND STREET LIGHT POLES, MAY BE CONSTRUCTED OR INSTALLED WITHIN THE SIGHT VISIBILITY ZONE UNLESS SAID OBJECT IS MAINTAINED AT LESS THAN 24 INCHES IN HEIGHT, MEASURED FROM TOP OF CURB, OR WHERE NO CURB EXISTS, A HEIGHT OF 27 INCHES MEASURED FROM THE TOP OF ADJACENT ASPHALT, GRAVEL OR PAVEMENT STREET SURFACE. THIS RESTRICTION EXTENDS ALONG THE SIGHT VISIBILITY LINE THROUGH LANDSCAPED MEDIANS.



ENGINEER'S NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR EROSION AND DUST CONTROL, AND STORMWATER MANAGEMENT DURING CONSTRUCTION.
2. SEE HORIZONTAL CONTROL PLAN FOR EXACT PROPERTY LINE DIMENSIONS
3. ENGINEER TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES BETWEEN THESE PLANS AND FIELD CONDITIONS.
4. THESE PLANS SHALL NOT IN PART, OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY GOVERNING AGENCIES.
5. ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS.
6. DURING CONSTRUCTION, SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE. SAME MUST UTILIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES.
7. FLOOR SECTION ASSUMES 5" SLAB OVER MIN. 8.5" TYPE II. CONTRACTOR TO VERIFY WITH STRUCTURAL PLANS AND GEOTECHNICAL ENGINEER.
8. ADD 2100' TO GRADING ELEVATIONS SHOWN HEREON TO ADJUST THEM TO THE ASSOCIATED DATUM. FINISHED GRADE CONTOURS ARE APPROXIMATE. REFER TO SPOT ELEVATION GRADE TAGS FOR CONSTRUCTION STAKING PURPOSES.

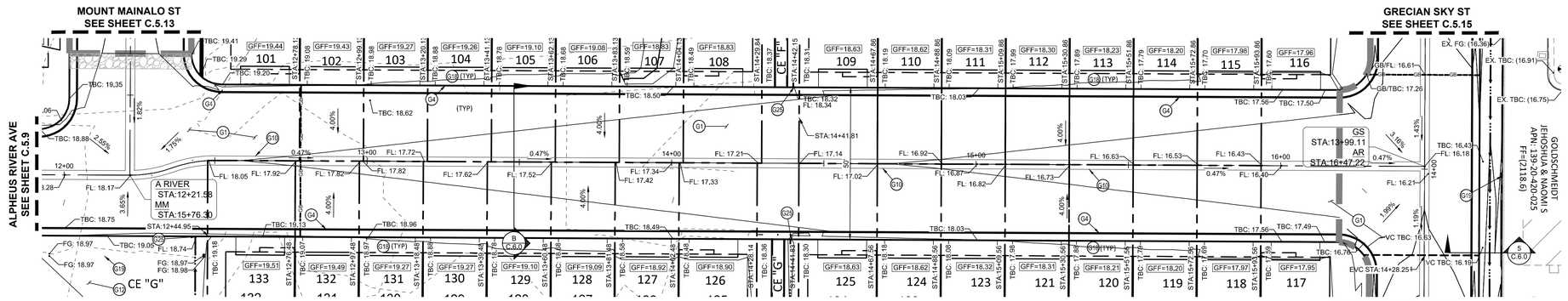
APPROVED FOR CONSTRUCTION

SOUTHWEST GAS CORPORATION DATE

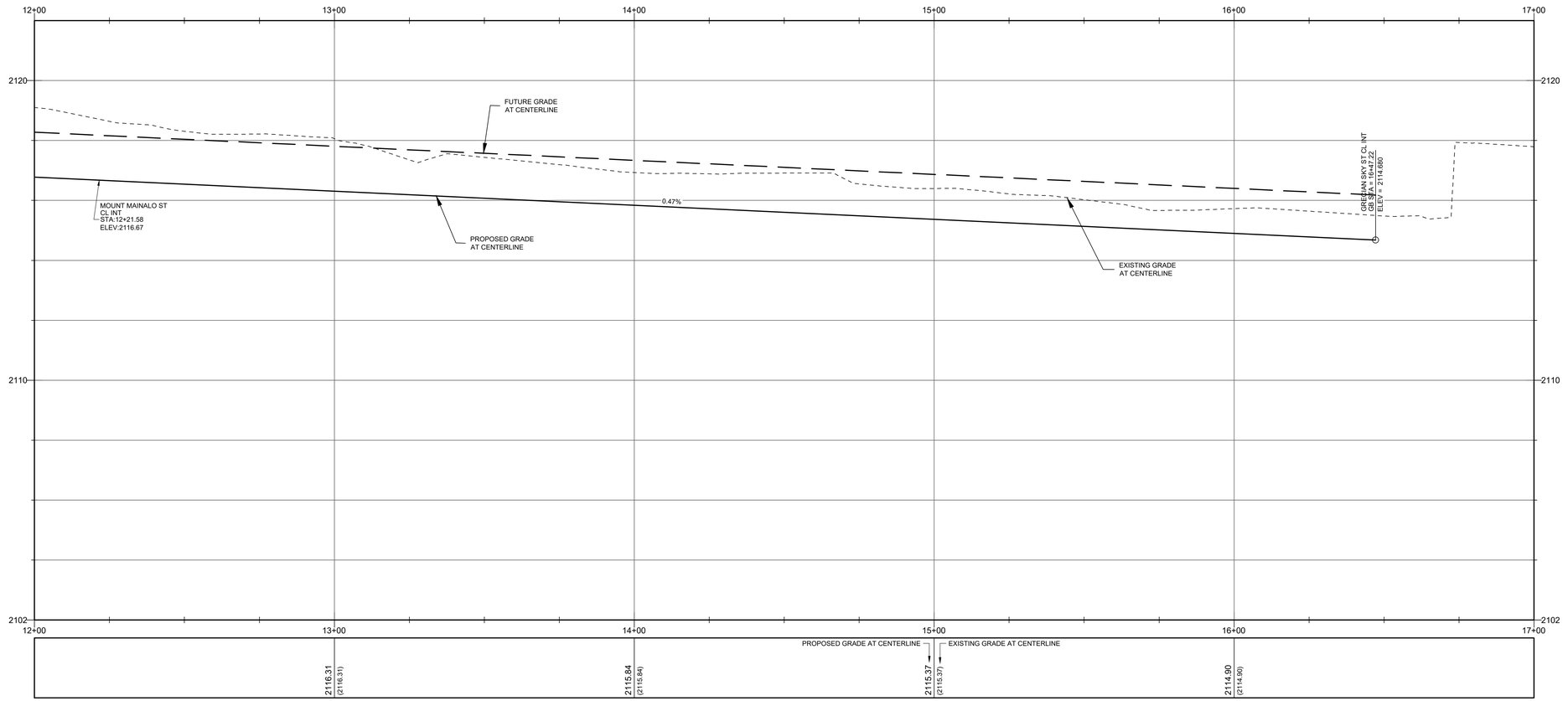
APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO. FIRST APPROVAL DATE:
LVVWD APPROVED FIRE FLOW GPM AT 20 PSI RESIDENTIAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW N/A GPM



ALPHEUS RIVER AVE (PRIVATE)
PLAN VIEW
(STA. 12+00 TO 17+00)



ALPHEUS RIVER AVE (PRIVATE)
PROFILE VIEW
(STA. 12+00 TO 17+00)
SCALE: 1" = 20' H
SCALE: 1" = 2' V

SCALE: 1" = 20'

GRADING KEY NOTES:

- G1 CONSTRUCT 3" AC PAVEMENT OVER 4" TYPE II AGG BASE.
- G2 CONSTRUCT 4.5" AC PAVEMENT OVER 4" TYPE II AGG BASE.
- G3 CONSTRUCT 24" "L" TYPE CURB PER CCAUSD #216.
- G4 CONSTRUCT 30" ROLL CURB PER CCAUSD #217.2.S1.
- G5 CONSTRUCT 6" "A" TYPE CURB PER CCAUSD #219.
- G6 CONSTRUCT SIDEWALK DRAIN PER CCAUSD #236.
- G7 CONSTRUCT 5' SIDEWALK 4" THICK PER CCAUSD #234.
- G8 CONSTRUCT 4' SIDEWALK 4" THICK PER CCAUSD #234.
- G9 INSTALL WROUGHT IRON GATE.
- G10 CONSTRUCT 3' CONCRETE VALLEY GUTTER PER CCAUSD #228.
- G11 SAWCUT & REMOVE EXISTING PAVEMENT.
- G12 INSTALL LANDSCAPING BY OTHERS.
- G13 EXISTING FENCE TO REMAIN.
- G14 INSTALL RETAINING WALL BY SEPARATE PERMIT. HEIGHT DEPICTED BY PLAN.
- G15 EXISTING FENCE TO BE REMOVED.
- G16 EXISTING POWER POLE TO BE RELOCATED.
- G17 ADJUST EXISTING UTILITIES TO NEW FINISHED GRADE.
- G18 CONSTRUCT 5" THICK CONCRETE DRIVEWAY.
- G19 INSTALL SCREEN WALL. HEIGHT DEPICTED PER PLAN.
- G20 INSTALL BLOCK WALL OPENING PER DETAIL #20 ON SHEET C.6.1.
- G21 CONSTRUCT 10' TRANSITION FROM "L" CURB TO ROLL CURB PER DETAIL #18 SHEET C.6.1.
- G22 INSTALL 4" SIDEWALK DRAIN PIPE PER CCAUSD #236.
- G23 CONSTRUCT SIDEWALK UNDERDRAIN PER CCAUSD #236.
- G24 INSTALL WROUGHT IRON GATE/FENCE PER CCAUSD #425.S1
- G25 CONSTRUCT 2' WIDE CURB OPENING PER DETAIL 31 ON SHEET C.6.1
- G26 INSTALL 6" CONCRETE PAVEMENT OVER 6" TYPE II AGG BASE
- G27 INSTALL RIP RAP PER PLAN
- G28 CONSTRUCT 30" ROLL CURB WITH REVERSE LIP PER DETAIL 32 ON SHEET C.6.1
- G29 INSTALL RIP-RAP D50=3",T=6" SUBGRADE @ 90% COMPACTION LENGTH & WIDTH SPECIFIED PER PLAN
- G30 CONSTRUCT STEM WALL. SOLID GROUT FOR 3 COURSES & 10.5' EASEMENT OPENING
- G31 CONSTRUCT 8' CONCRETE VALLEY GUTTER PER CCAUSD #228.

Call before you Dig
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.
Call 811
or
1-800-227-2600

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

FAST
Call before you UnderGround
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION
1-702-432-5300

LEGAL DESCRIPTION
SEE SHEET C.2.0

BASIS OF BEARING
SEE SHEET C.2.0

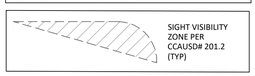
FLOOD ZONE
SEE SHEET C.2.0

BENCHMARK
SEE SHEET C.2.0

UTILITY DISCLAIMER NOTE:
EXISTING UTILITY LOCATIONS SHOWN HEREIN ARE APPROXIMATE ONLY. IT SHALL BE AT THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTIING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPPER LOCATIONS.

DEPTH OF COVER DURING CONSTRUCTION:
MAINTAIN MINIMUM TWENTY-FOUR (24) INCH COVER PER UDACS SECTION 2.08.04. GRADING MUST BE COMPLETED PRIOR TO WATERLINE INSTALLATION.

SIGHT VISIBILITY ZONE NOTE:
NO WALLS, FENCES, SHRUBS, UTILITY APPURTENANCES OR ANY OTHER OBJECT, OTHER THAN TRAFFIC CONTROL DEVICES, FIRE HYDRANTS, TREES, AND STREET LIGHT POLES, MAY BE CONSTRUCTED OR INSTALLED WITHIN THE SIGHT VISIBILITY ZONE UNLESS SAID OBJECT IS MAINTAINED AT LESS THAN 24 INCHES IN HEIGHT, MEASURED FROM TOP OF CURB, OR WHERE NO CURB EXISTS, A HEIGHT OF 27 INCHES MEASURED FROM THE TOP OF ADJACENT ASPHALT, GRAVEL OR PAVEMENT STREET SURFACE. THIS RESTRICTION EXTENDS ALONG THE SIGHT VISIBILITY LINE THROUGH LANDSCAPED MEDIANS.



ENGINEER'S NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR EROSION AND DUST CONTROL, AND STORMWATER MANAGEMENT DURING CONSTRUCTION.
2. SEE HORIZONTAL CONTROL PLAN FOR EXACT PROPERTY LINE DIMENSIONS
3. ENGINEER TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES BETWEEN THESE PLANS AND FIELD CONDITIONS.
4. THESE PLANS SHALL NOT IN PART, OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY GOVERNING AGENCIES.
5. ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS.
6. DURING CONSTRUCTION, SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE. SAME MUST UTILIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES.
7. FLOOR SECTION ASSUMES 9" SLAB OVER MIN. 8.5" TYPE II. CONTRACTOR TO VERIFY WITH STRUCTURAL PLANS AND GEOTECHNICAL ENGINEER.
8. ADD 2100' TO GRADING ELEVATIONS SHOWN HEREON TO ADJUST THEM TO THE ASSOCIATED DATUM. FINISHED GRADE CONTOURS ARE APPROXIMATE. REFER TO SPOT ELEVATION GRADE TAGS FOR CONSTRUCTION STAKING PURPOSES.

APPROVED FOR CONSTRUCTION

SOUTHWEST GAS CORPORATION DATE

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO._____ FIRST APPROVAL DATE:_____
LVVWD APPROVED FIRE FLOW_____GPM AT 20 PSI RESIDENTIAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW_____N/A_____GPM

HORROCKS ENGINEERS
1401 North Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
0 1 2
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE

REVISIONS
REV # | DATE
*SEE GENERAL NOTES SHEET

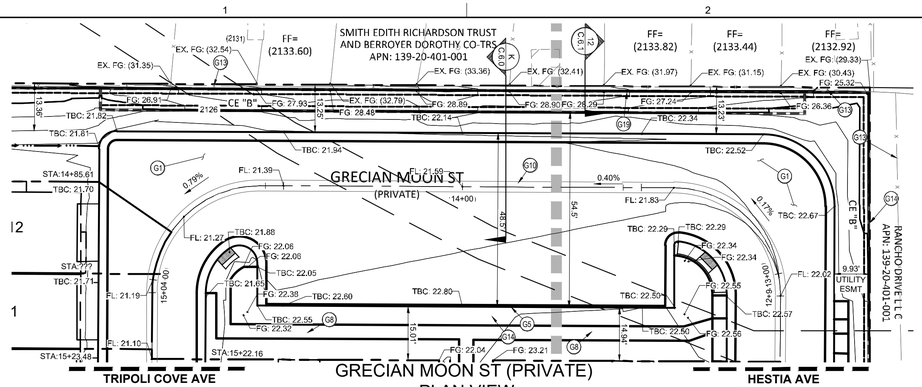
DRAWING INFO
DATE 6/8/2020
DESIGNED ACD
DRAWN PMP
CHECKED ACD
PROJECT NV-2105-1911

PROFESSIONAL ENGINEER - STATE OF NEVADA
ANTHONY C. DELEON JR
EXP. 12-31-20
CIVIL
No. 023113
6/8/2020

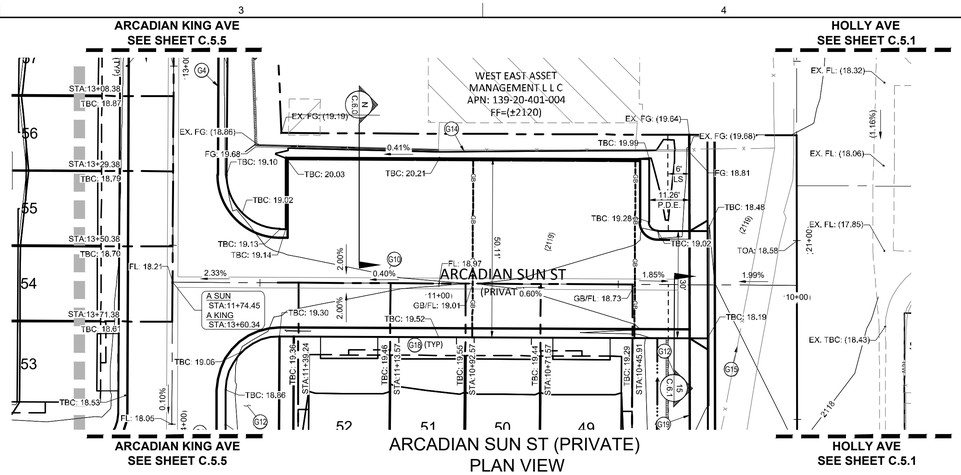
RANCHO & VEGAS
CITY OF LAS VEGAS, NEVADA
ALPHEUS RIVER AVE PLAN & PROFILE (STA 12+00 TO STA 16+50)

C.5.10

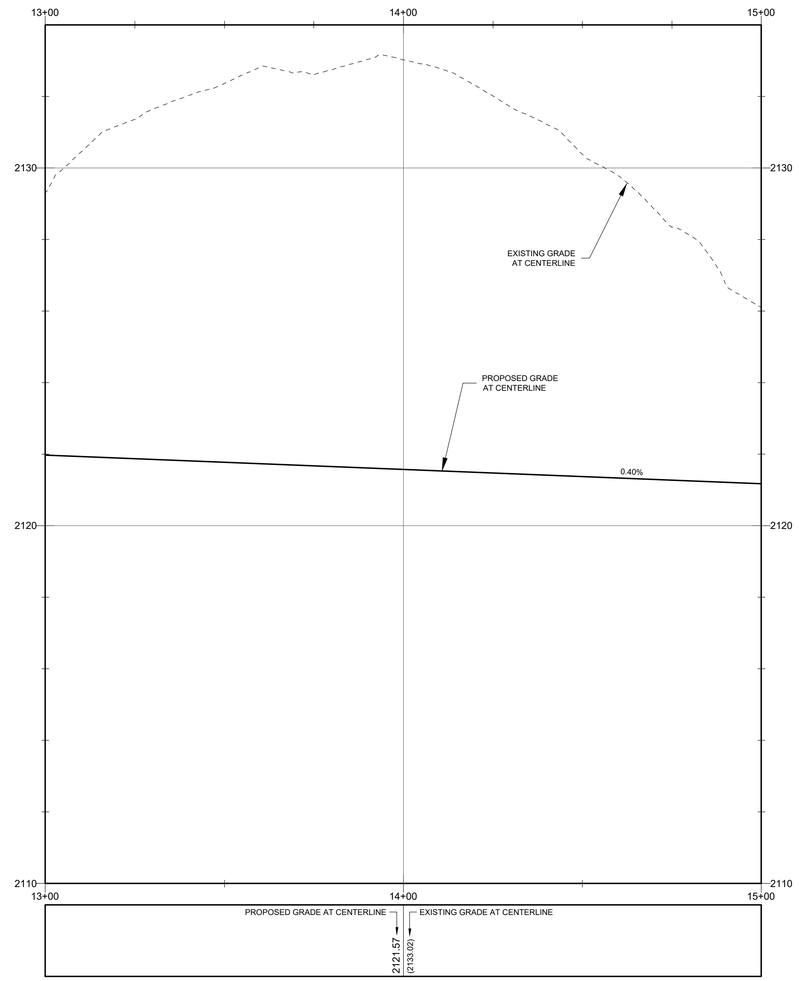
H:\(2019\NV-2105-1911 Rancho & Vegas Townhomes\Project Data\02 CAD\2.03 Sheet Files\Construction Drawings\C.5.0 PLAN & PROFILE (EW).dwg - C.5.10 - 6/08/2020 02:32pm, anthony.deleon



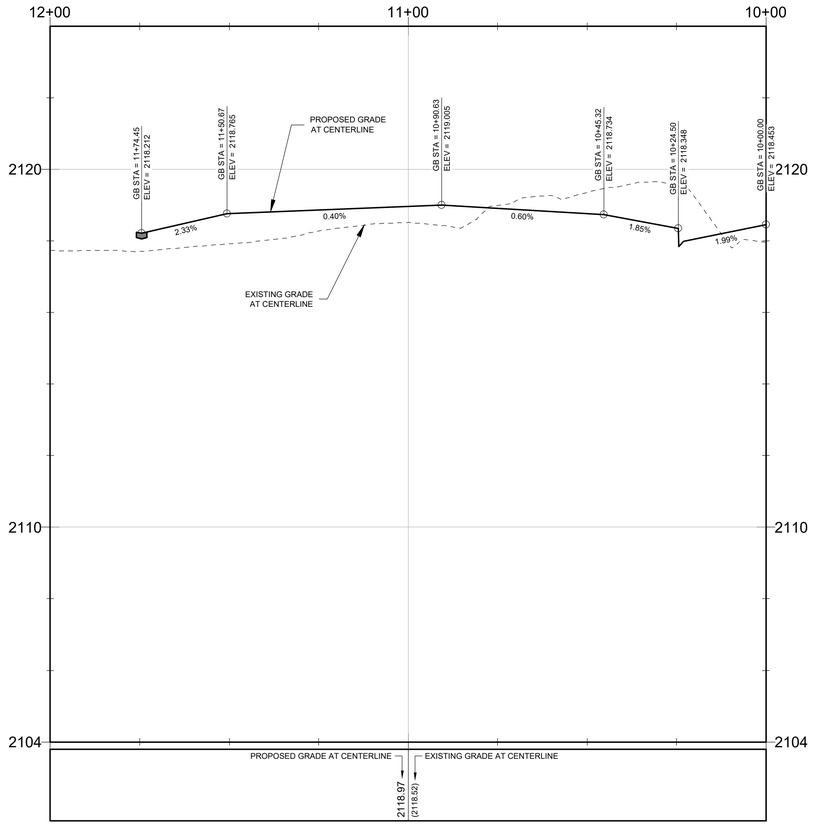
GRECIAN MOON ST (PRIVATE)
PLAN VIEW
(STA. 13+00 TO 15+00)



ARCADIAN SUN ST (PRIVATE)
PLAN VIEW
(STA. 10+00 TO 12+00)



GRECIAN MOON ST (PRIVATE)
PROFILE VIEW
(STA. 13+00 TO 15+00)
SCALE: 1" = 20' H
SCALE: 1" = 2' V



ARCADIAN SUN ST (PUBLIC)
PROFILE VIEW
(STA. 10+00 TO 12+00)
SCALE: 1" = 20' H
SCALE: 1" = 2' V

GRADING KEY NOTES:

(G1) CONSTRUCT 3" AC PAVEMENT OVER 4" TYPE II AGG BASE.
(G2) CONSTRUCT 4.5" AC PAVEMENT OVER 4" TYPE II AGG BASE.
(G3) CONSTRUCT 24" "L" TYPE CURB PER CCAUSD #216.
(G4) CONSTRUCT 30" ROLL CURB PER CCAUSD #217.2.S1.
(G5) CONSTRUCT 6" "A" TYPE CURB PER CCAUSD #219.
(G6) CONSTRUCT SIDEWALK DRAIN PER CCAUSD #236.
(G7) CONSTRUCT 5' SIDEWALK 4" THICK PER CCAUSD #234.
(G8) CONSTRUCT 4' SIDEWALK 4" THICK PER CCAUSD #234.
(G9) INSTALL WROUGHT IRON GATE.
(G10) CONSTRUCT 3' CONCRETE VALLEY GUTTER PER CCAUSD #228.
(G11) SAWCUT & REMOVE EXISTING PAVEMENT.
(G12) INSTALL LANDSCAPING BY OTHERS.
(G13) EXISTING FENCE TO REMAIN.
(G14) INSTALL RETAINING WALL BY SEPARATE PERMIT. HEIGHT DEPICTED BY PLAN.
(G15) EXISTING FENCE TO BE REMOVED.
(G16) EXISTING POWER POLE TO BE RELOCATED.
(G17) ADJUST EXISTING UTILITIES TO NEW FINISHED GRADE.
(G18) CONSTRUCT 5" THICK CONCRETE DRIVEWAY.
(G19) INSTALL SCREEN WALL. HEIGHT DEPICTED PER PLAN.
(G20) INSTALL BLOCK WALL OPENING PER DETAIL #20 ON SHEET C.6.1.
(G21) CONSTRUCT 10' TRANSITION FROM "L" CURB TO ROLL CURB PER DETAIL #18 SHEET C.6.1.
(G22) INSTALL 4" SIDEWALK DRAIN PIPE PER CCAUSD #236.
(G23) CONSTRUCT SIDEWALK UNDERDRAIN PER CCAUSD #236.
(G24) INSTALL WROUGHT IRON GATE/FENCE PER CCAUSD #425.S1
(G25) CONSTRUCT 2' WIDE CURB OPENING PER DETAIL 31 ON SHEET C.6.1
(G26) INSTALL 6" CONCRETE PAVEMENT OVER 6" TYPE II AGG BASE
(G27) INSTALL RIP RAP PER PLAN
(G28) CONSTRUCT 30" ROLL CURB WITH REVERSE LIP PER DETAIL 32 ON SHEET C.6.1
(G29) INSTALL RIP-RAP D50=3",T=6" SUBGRADE @ 90% COMPACTION LENGTH & WIDTH SPECIFIED PER PLAN
(G30) CONSTRUCT STEM WALL. SOLID GROUT FOR 3 COURSES & 10.5' EASEMENT OPENING
(G31) CONSTRUCT 8' CONCRETE VALLEY GUTTER PER CCAUSD #228.

HORROCKS ENGINEERS
1401 North Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
0 1 2
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE

REVISIONS		
REV #	DATE	
1		

*SEE GENERAL NOTES SHEET

DRAWING INFO	
DATE	6/8/2020
DESIGNED	ACD
DRAWN	PMP
CHECKED	ACD
PROJECT	NV-2105-1911

PROFESSIONAL ENGINEER-STATE OF NEVADA
ANTHONY C. DELEON JR
EXP. 12-31-20
CIVIL
No. 023113
6/8/2020

RANCHO & VEGAS
CITY OF LAS VEGAS, NEVADA

GRECIAN MOON ST PLAN & PROFILE (STA 13+00 TO STA 15+00)
ARCADIAN SUN ST PLAN & PROFILE (STA 10+00 TO STA 12+00)

C.5.11

PAGE 33

Call before you UNCOVER, CUT, BREAK, OR UNEARTH UTILITY LINES. IT'S LAW!
Call 811 or 1-800-227-2600

CALL BEFORE YOU DIG OVERHEAD
1-702-227-2929

EAST
Call before you UnderGround
1-702-432-5300
PROTECTION AND DETECTION SYSTEM OF TRANSPORTATION

LEGAL DESCRIPTION
SEE SHEET C.2.0

BASIS OF BEARING
SEE SHEET C.2.0

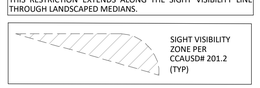
FLOOD ZONE
SEE SHEET C.2.0

BENCHMARK
SEE SHEET C.2.0

UTILITY DISCLAIMER NOTE:
EXISTING UTILITY LOCATIONS SHOWN HEREIN ARE APPROXIMATE ONLY. IT SHALL BE AT THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTIING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPPER LOCATIONS.

DEPTH OF COVER DURING CONSTRUCTION:
MAINTAIN MINIMUM TWENTY-FOUR (24) INCH COVER PER UIDACS SECTION 2.08.04. GRADING MUST BE COMPLETED PRIOR TO WATERLINE INSTALLATION.

SIGHT VISIBILITY ZONE NOTE:
NO WALLS, FENCES, SHRUBS, UTILITY APPURTENANCES OR ANY OTHER OBJECT, OTHER THAN TRAFFIC CONTROL DEVICES, FIRE HYDRANTS, TREES, AND STREET LIGHT POLES, MAY BE CONSTRUCTED OR INSTALLED WITHIN THE SIGHT VISIBILITY ZONE UNLESS SAID OBJECT IS MAINTAINED AT LESS THAN 24 INCHES IN HEIGHT, MEASURED FROM TOP OF CURB, OR WHERE NO CURB EXISTS, A HEIGHT OF 27 INCHES MEASURED FROM THE TOP OF ADJACENT ASPHALT, GRAVEL OR PAVEMENT STREET SURFACE. THIS RESTRICTION EXTENDS ALONG THE SIGHT VISIBILITY LINE THROUGH LANDSCAPED MEDIANS.

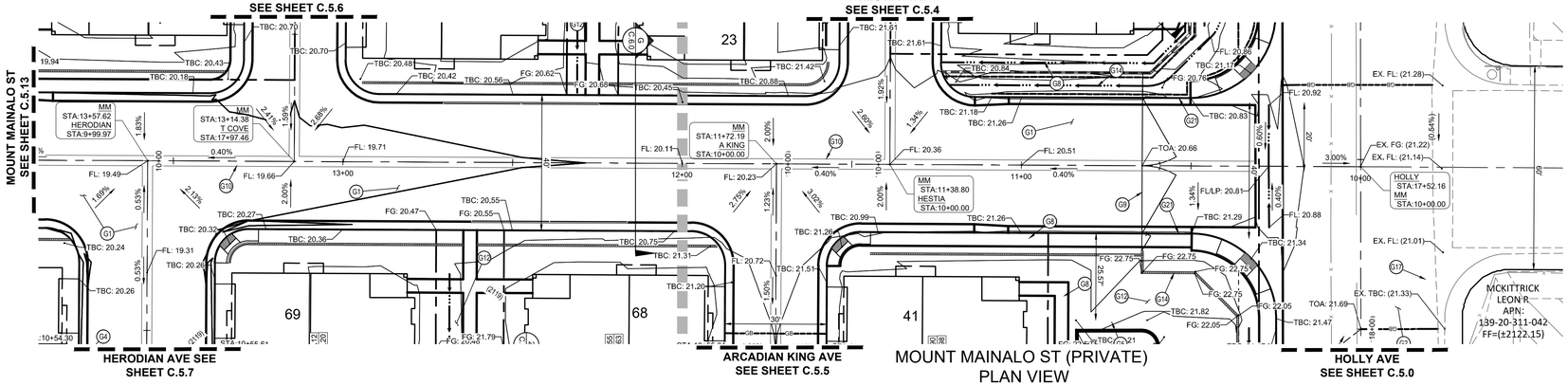


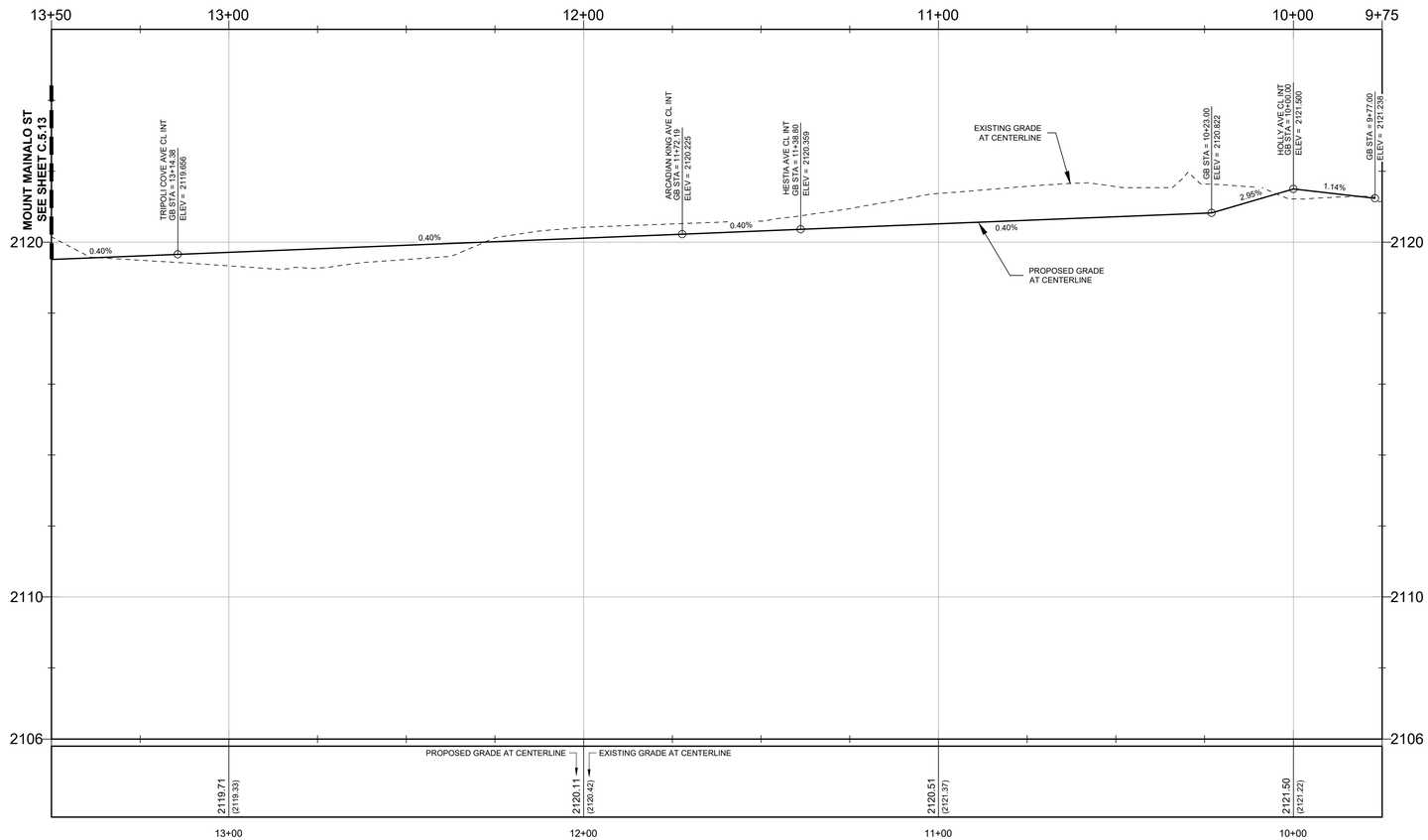
ENGINEER'S NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR EROSION AND DUST CONTROL, AND STORMWATER MANAGEMENT DURING CONSTRUCTION.
2. SEE HORIZONTAL CONTROL PLAN FOR EXACT PROPERTY LINE DIMENSIONS
3. ENGINEER TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES BETWEEN THESE PLANS AND FIELD CONDITIONS.
4. THESE PLANS SHALL NOT IN PART, OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY GOVERNING AGENCIES.
5. ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS.
6. DURING CONSTRUCTION, SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE. SAME MUST UTILIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES.
7. FLOOR SECTION ASSUMES 9" SLAB OVER MIN. 8.5" TYPE II. CONTRACTOR TO VERIFY WITH STRUCTURAL PLANS AND GEOTECHNICAL ENGINEER.
8. ADD 2100' TO GRADING ELEVATIONS SHOWN HEREON TO ADJUST THEM TO THE ASSOCIATED DATUM. FINISHED GRADE CONTOURS ARE APPROXIMATE. REFER TO SPOT ELEVATION GRADE TAGS FOR CONSTRUCTION STAKING PURPOSES.

APPROVED FOR CONSTRUCTION
SOUTHWEST GAS CORPORATION DATE

APPROVED FOR CONSTRUCTION
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES
PROJECT NO._____ FIRST APPROVAL DATE:_____
LVVWD APPROVED FIRE FLOW_____GPM AT 20 PSI RESIDENTIAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW_____N/A_____GPM





MOUNT MAINALO ST (PRIVATE)
PROFILE VIEW
(STA. 9+75 TO 13+50)

SCALE: 1" = 20' H
SCALE: 1" = 2' V

GRADING KEY NOTES:

(G1) CONSTRUCT 3" AC PAVEMENT OVER 4" TYPE II AGG BASE.
(G2) CONSTRUCT 4.5" AC PAVEMENT OVER 4" TYPE II AGG BASE.
(G3) CONSTRUCT 24" "L" TYPE CURB PER CCAUSD #216.
(G4) CONSTRUCT 30" ROLL CURB PER CCAUSD #217.2.S1.
(G5) CONSTRUCT 6" "A" TYPE CURB PER CCAUSD #219.
(G6) CONSTRUCT SIDEWALK DRAIN PER CCAUSD #236.
(G7) CONSTRUCT 5' SIDEWALK 4" THICK PER CCAUSD #234.
(G8) CONSTRUCT 4' SIDEWALK 4" THICK PER CCAUSD #234.
(G9) INSTALL WROUGHT IRON GATE.
(G10) CONSTRUCT 3' CONCRETE VALLEY GUTTER PER CCAUSD #228.
(G11) SAWCUT & REMOVE EXISTING PAVEMENT.
(G12) INSTALL LANDSCAPING BY OTHERS.
(G13) EXISTING FENCE TO REMAIN.
(G14) INSTALL RETAINING WALL BY SEPARATE PERMIT. HEIGHT DEPICTED BY PLAN.
(G15) EXISTING FENCE TO BE REMOVED.
(G16) EXISTING POWER POLE TO BE RELOCATED.
(G17) ADJUST EXISTING UTILITIES TO NEW FINISHED GRADE.
(G18) CONSTRUCT 5" THICK CONCRETE DRIVEWAY.
(G19) INSTALL SCREEN WALL. HEIGHT DEPICTED PER PLAN.
(G20) INSTALL BLOCK WALL OPENING PER DETAIL #20 ON SHEET C.6.1.
(G21) CONSTRUCT 10' TRANSITION FROM "L" CURB TO ROLL CURB PER DETAIL #18 SHEET C.6.1.
(G22) INSTALL 4" SIDEWALK DRAIN PIPE PER CCAUSD #236.
(G23) CONSTRUCT SIDEWALK UNDERDRAIN PER CCAUSD #236.
(G24) INSTALL WROUGHT IRON GATE/FENCE PER CCAUSD #425.S1
(G25) CONSTRUCT 2' WIDE CURB OPENING PER DETAIL 31 ON SHEET C.6.1
(G26) INSTALL 6" CONCRETE PAVEMENT OVER 6" TYPE II AGG BASE
(G27) INSTALL RIP RAP PER PLAN
(G28) CONSTRUCT 30" ROLL CURB WITH REVERSE LIP PER DETAIL 32 ON SHEET C.6.1
(G29) INSTALL RIP-RAP D50=3",T=6" SUBGRADE @ 90% COMPACTION LENGTH & WIDTH SPECIFIED PER PLAN
(G30) CONSTRUCT STEM WALL. SOLID GROUT FOR 3 COURSES & 10.5' EASEMENT OPENING
(G31) CONSTRUCT 8' CONCRETE VALLEY GUTTER PER CCAUSD #228.

HORROCKS ENGINEERS
1401 North Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
0 1 2
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE

REVISIONS
REV # | DATE
*SEE GENERAL NOTES SHEET

DRAWING INFO
DATE 6/8/2020
DESIGNED ACD
DRAWN PMP
CHECKED ACD
PROJECT NV-2105-1911

PROFESSIONAL ENGINEER-STATE OF NEVADA
ANTHONY C. DELEON JR
EXP. 12-31-20
CIVIL
No. 023113
6/8/2020

RANCHO & VEGAS
CITY OF LAS VEGAS, NEVADA
MOUNT MAINALO ST PLAN & PROFILE (STA 9+75 TO STA13+50)

C.5.12
PAGE 34

Call before you DIG
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.
Call 811 or 1-800-227-2600

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

FAST
Call before you UnderGround
1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

SCALE: 1" = 20'

LEGAL DESCRIPTION
SEE SHEET C.2.0

BASIS OF BEARING
SEE SHEET C.2.0

FLOOD ZONE
SEE SHEET C.2.0

BENCHMARK
SEE SHEET C.2.0

UTILITY DISCLAIMER NOTE:
EXISTING UTILITY LOCATIONS SHOWN HEREIN ARE APPROXIMATE ONLY. IT SHALL BE AT THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTIING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPPER LOCATIONS.

DEPTH OF COVER DURING CONSTRUCTION:
MAINTAIN MINIMUM TWENTY-FOUR (24) INCH COVER PER UDACS SECTION 2.08.04. GRADING MUST BE COMPLETED PRIOR TO WATERLINE INSTALLATION.

SIGHT VISIBILITY ZONE NOTE:
NO WALLS, FENCES, SHRUBS, UTILITY APPURTENANCES OR ANY OTHER OBJECT, OTHER THAN TRAFFIC CONTROL DEVICES, FIRE HYDRANTS, TREES, AND STREET LIGHT POLES, MAY BE CONSTRUCTED OR INSTALLED WITHIN THE SIGHT VISIBILITY ZONE UNLESS SAID OBJECT IS MAINTAINED AT LESS THAN 24 INCHES IN HEIGHT, MEASURED FROM TOP OF CURB, OR WHERE NO CURB EXISTS, A HEIGHT OF 27 INCHES MEASURED FROM THE TOP OF ADJACENT ASPHALT, GRAVEL OR PAVEMENT STREET SURFACE. THIS RESTRICTION EXTENDS ALONG THE SIGHT VISIBILITY LINE THROUGH LANDSCAPED MEDIANS.

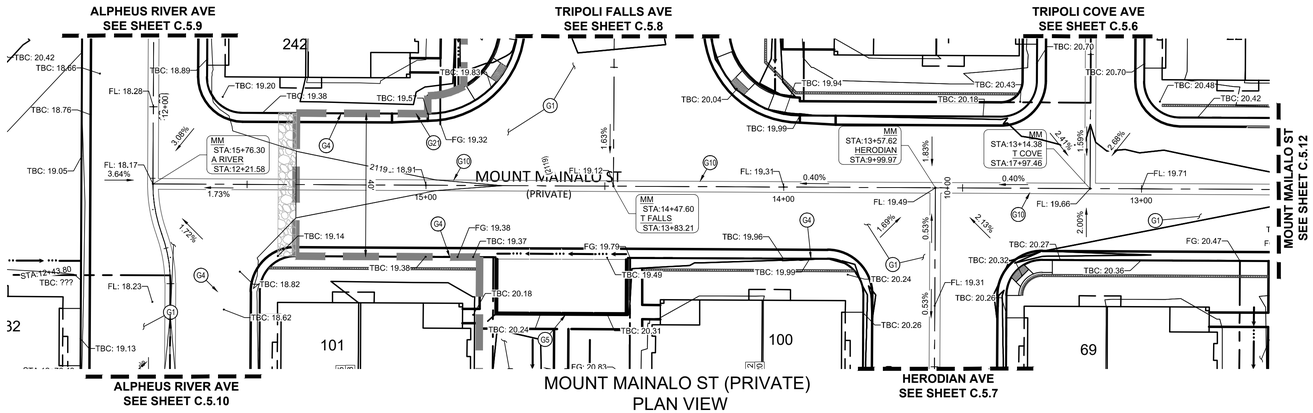
SIGHT VISIBILITY ZONE PER CCAUSD# 201.2 (TYP)

ENGINEER'S NOTES:

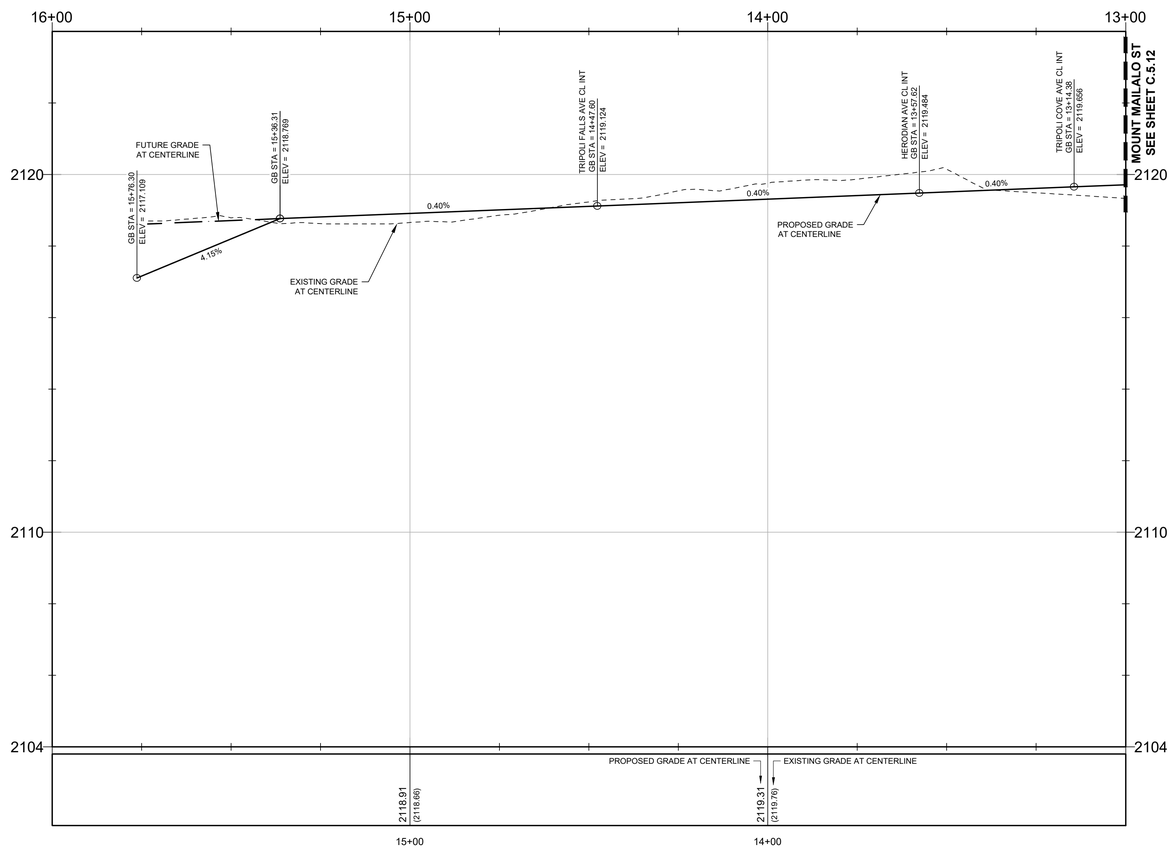
1. CONTRACTOR IS RESPONSIBLE FOR EROSION AND DUST CONTROL, AND STORMWATER MANAGEMENT DURING CONSTRUCTION.
2. SEE HORIZONTAL CONTROL PLAN FOR EXACT PROPERTY LINE DIMENSIONS
3. ENGINEER TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES BETWEEN THESE PLANS AND FIELD CONDITIONS.
4. THESE PLANS SHALL NOT IN PART, OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY GOVERNING AGENCIES.
5. ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS.
6. DURING CONSTRUCTION, SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE. SAME MUST UTILIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES.
7. FLOOR SECTION ASSUMES 5" SLAB OVER MIN. 8.5" TYPE II. CONTRACTOR TO VERIFY WITH STRUCTURAL PLANS AND GEOTECHNICAL ENGINEER.
8. ADD 2100' TO GRADING ELEVATIONS SHOWN HEREON TO ADJUST THEM TO THE ASSOCIATED DATUM. FINISHED GRADE CONTOURS ARE APPROXIMATE. REFER TO SPOT ELEVATION GRADE TAGS FOR CONSTRUCTION STAKING PURPOSES.

APPROVED FOR CONSTRUCTION
SOUTHWEST GAS CORPORATION DATE

APPROVED FOR CONSTRUCTION
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES
PROJECT NO._____ FIRST APPROVAL DATE:_____
LVVWD APPROVED FIRE FLOW_____GPM AT 20 PSI RESIDENTIAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW_____N/A_____GPM



MOUNT MAINALO ST (PRIVATE)
PLAN VIEW
(STA. 13+00 TO 16+00)



MOUNT MAINALO ST (PRIVATE)
PROFILE VIEW
(STA. 13+00 TO 16+00)

SCALE: 1" = 20' H
SCALE: 1" = 2' V

SCALE: 1" = 20'

GRADING KEY NOTES:

(G1) CONSTRUCT 3" AC PAVEMENT OVER 4" TYPE II AGG BASE.
(G2) CONSTRUCT 4.5" AC PAVEMENT OVER 4" TYPE II AGG BASE.
(G3) CONSTRUCT 24" "L" TYPE CURB PER CCAUSD #216.
(G4) CONSTRUCT 30" ROLL CURB PER CCAUSD #217.2.S1.
(G5) CONSTRUCT 6" "A" TYPE CURB PER CCAUSD #219.
(G6) CONSTRUCT SIDEWALK DRAIN PER CCAUSD #236.
(G7) CONSTRUCT 5' SIDEWALK 4" THICK PER CCAUSD #234.
(G8) CONSTRUCT 4' SIDEWALK 4" THICK PER CCAUSD #234.
(G9) INSTALL WROUGHT IRON GATE.
(G10) CONSTRUCT 3' CONCRETE VALLEY GUTTER PER CCAUSD #228.
(G11) SAWCUT & REMOVE EXISTING PAVEMENT.
(G12) INSTALL LANDSCAPING BY OTHERS.
(G13) EXISTING FENCE TO REMAIN.
(G14) INSTALL RETAINING WALL BY SEPARATE PERMIT. HEIGHT DEPICTED BY PLAN.
(G15) EXISTING FENCE TO BE REMOVED.
(G16) EXISTING POWER POLE TO BE RELOCATED.
(G17) ADJUST EXISTING UTILITIES TO NEW FINISHED GRADE.
(G18) CONSTRUCT 5" THICK CONCRETE DRIVEWAY.
(G19) INSTALL SCREEN WALL. HEIGHT DEPICTED PER PLAN.
(G20) INSTALL BLOCK WALL OPENING PER DETAIL #20 ON SHEET C.6.1.
(G21) CONSTRUCT 10' TRANSITION FROM "L" CURB TO ROLL CURB PER DETAIL #18 SHEET C.6.1.
(G22) INSTALL 4" SIDEWALK DRAIN PIPE PER CCAUSD #236.
(G23) CONSTRUCT SIDEWALK UNDERDRAIN PER CCAUSD #236.
(G24) INSTALL WROUGHT IRON GATE/FENCE PER CCAUSD #425.S1
(G25) CONSTRUCT 2' WIDE CURB OPENING PER DETAIL 31 ON SHEET C.6.1
(G26) INSTALL 6" CONCRETE PAVEMENT OVER 6" TYPE II AGG BASE
(G27) INSTALL RIP RAP PER PLAN
(G28) CONSTRUCT 30" ROLL CURB WITH REVERSE LIP PER DETAIL 32 ON SHEET C.6.1
(G29) INSTALL RIP-RAP D50=3",T=6" SUBGRADE @ 90% COMPACTION LENGTH & WIDTH SPECIFIED PER PLAN
(G30) CONSTRUCT STEM WALL. SOLID GROUT FOR 3 COURSES & 10.5' EASEMENT OPENING
(G31) CONSTRUCT 8' CONCRETE VALLEY GUTTER PER CCAUSD #228.

Call before you Dig
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.
Call 811 or 1-800-227-2600

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

FAST
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION
Call before you UnderGround
1-702-432-5300

LEGAL DESCRIPTION
SEE SHEET C.2.0

BASIS OF BEARING
SEE SHEET C.2.0

FLOOD ZONE
SEE SHEET C.2.0

BENCHMARK
SEE SHEET C.2.0

UTILITY DISCLAIMER NOTE:
EXISTING UTILITY LOCATIONS SHOWN HEREIN ARE APPROXIMATE ONLY. IT SHALL BE AT THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTIING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPPER LOCATIONS.

DEPTH OF COVER DURING CONSTRUCTION:
MAINTAIN MINIMUM TWENTY-FOUR (24) INCH COVER PER UDACS SECTION 2.08.04. GRADING MUST BE COMPLETED PRIOR TO WATERLINE INSTALLATION.

SIGHT VISIBILITY ZONE NOTE:
NO WALLS, FENCES, SHRUBS, UTILITY APPURTENANCES OR ANY OTHER OBJECT, OTHER THAN TRAFFIC CONTROL DEVICES, FIRE HYDRANTS, TREES, AND STREET LIGHT POLES, MAY BE CONSTRUCTED OR INSTALLED WITHIN THE SIGHT VISIBILITY ZONE UNLESS SAID OBJECT IS MAINTAINED AT LESS THAN 24 INCHES IN HEIGHT, MEASURED FROM TOP OF CURB, OR WHERE NO CURB EXISTS, A HEIGHT OF 27 INCHES MEASURED FROM THE TOP OF ADJACENT ASPHALT, GRAVEL OR PAVEMENT STREET SURFACE. THIS RESTRICTION EXTENDS ALONG THE SIGHT VISIBILITY LINE THROUGH LANDSCAPED MEDIANS.

SIGHT VISIBILITY ZONE PER CCAUSD# 201.2 (TYP)

ENGINEER'S NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR EROSION AND DUST CONTROL, AND STORMWATER MANAGEMENT DURING CONSTRUCTION.
2. SEE HORIZONTAL CONTROL PLAN FOR EXACT PROPERTY LINE DIMENSIONS
3. ENGINEER TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES BETWEEN THESE PLANS AND FIELD CONDITIONS.
4. THESE PLANS SHALL NOT IN PART, OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY GOVERNING AGENCIES.
5. ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS.
6. DURING CONSTRUCTION, SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE. SAME MUST UTILIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES.
7. FLOOR SECTION ASSUMES 5" SLAB OVER MIN. 8.5" TYPE II. CONTRACTOR TO VERIFY WITH STRUCTURAL PLANS AND GEOTECHNICAL ENGINEER.
8. ADD 2100' TO GRADING ELEVATIONS SHOWN HEREON TO ADJUST THEM TO THE ASSOCIATED DATUM. FINISHED GRADE CONTOURS ARE APPROXIMATE. REFER TO SPOT ELEVATION GRADE TAGS FOR CONSTRUCTION STAKING PURPOSES.

APPROVED FOR CONSTRUCTION
SOUTHWEST GAS CORPORATION DATE

APPROVED FOR CONSTRUCTION
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES
PROJECT NO._____ FIRST APPROVAL DATE:_____
LVVWD APPROVED FIRE FLOW_____GPM AT 20 PSI RESIDENTIAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW_____N/A_____GPM

HORROCKS ENGINEERS
1401 North Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
0 1 2
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE

REVISIONS
REV # | DATE
*SEE GENERAL NOTES SHEET

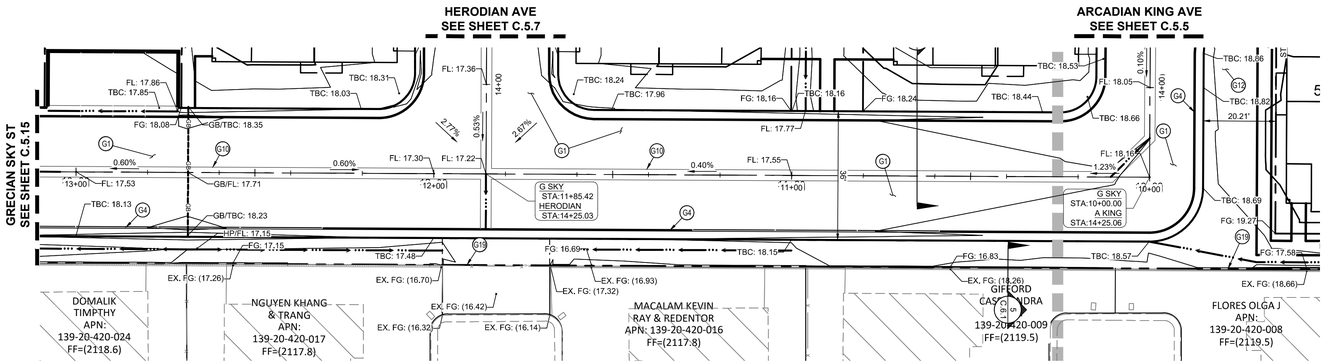
DRAWING INFO
DATE 6/8/2020
DESIGNED ACD
DRAWN PMP
CHECKED ACD
PROJECT NV-2105-1911

PROFESSIONAL ENGINEER-STATE OF NEVADA
ANTHONY C. DELEON JR
EXP. 12-31-20
CIVIL
No. 023113
6/8/2020

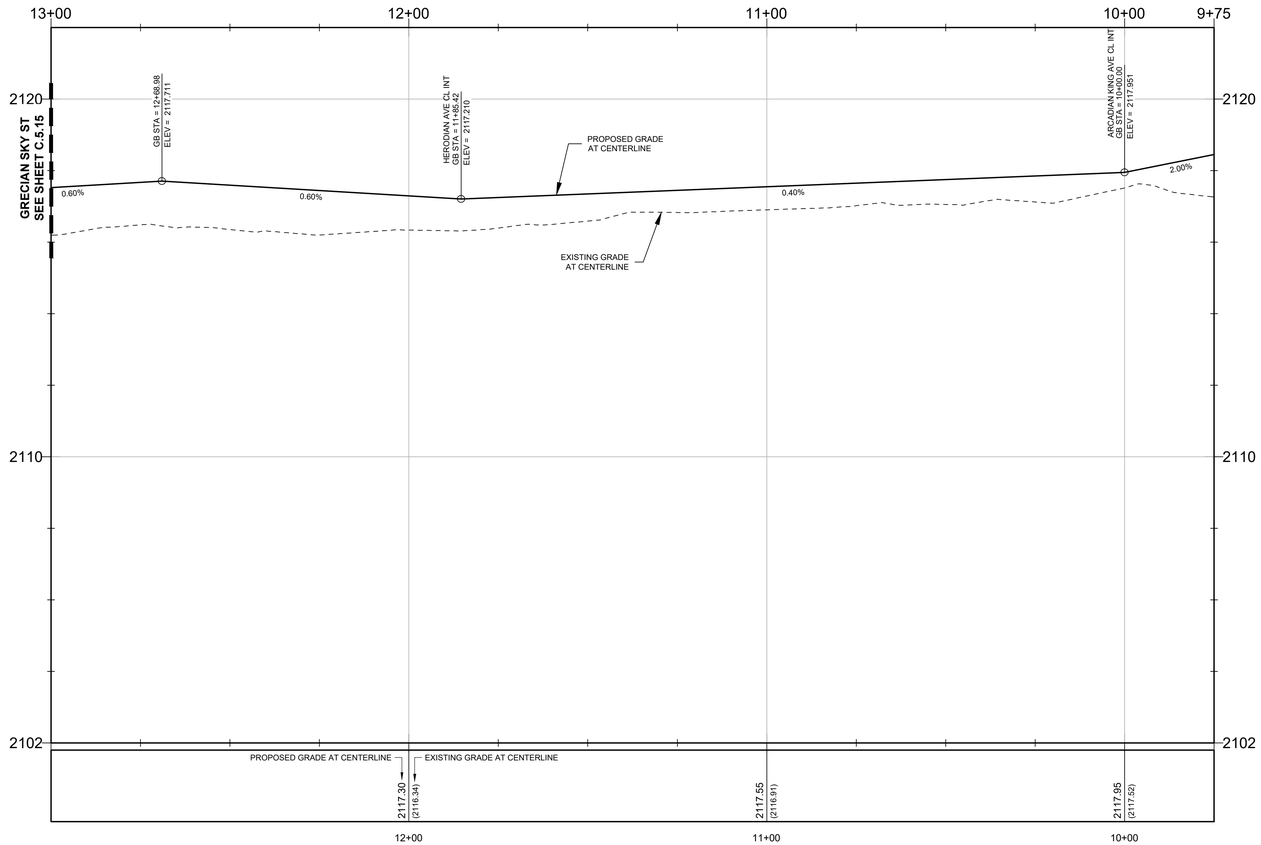
RANCHO & VEGAS
CITY OF LAS VEGAS, NEVADA
MOUNT MAINALO ST PLAN & PROFILE (STA 13+00 TO STA 16+00)

C.5.13

H:\\2019\NV-2105-1911 Rancho & Vegas Townhomes\Project Data\02 CAD\2.03 Sheet Files\Construction Drawings\C.5.0 PLAN & PROFILE (NS).dwg - C.5.13 - 6/08/2020 02:34pm, anthony.deleon



GRECIAN SKY ST (PRIVATE)
PLAN VIEW
(STA. 9+75 TO 13+00)



GRECIAN SKY ST (PRIVATE)
PROFILE VIEW
(STA. 9+75 TO 13+00)
SCALE: 1" = 20' H
SCALE: 1" = 2' V

SCALE: 1" = 20'

LEGAL DESCRIPTION
SEE SHEET C.2.0

BASIS OF BEARING
SEE SHEET C.2.0

FLOOD ZONE
SEE SHEET C.2.0

BENCHMARK
SEE SHEET C.2.0

UTILITY DISCLAIMER NOTE:

EXISTING UTILITY LOCATIONS SHOWN HEREIN ARE APPROXIMATE ONLY. IT SHALL BE AT THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTIING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPPER LOCATIONS.

DEPTH OF COVER DURING CONSTRUCTION:

MAINTAIN MINIMUM TWENTY-FOUR (24) INCH COVER PER UDACS SECTION 2.08.04. GRADING MUST BE COMPLETED PRIOR TO WATERLINE INSTALLATION.

SIGHT VISIBILITY ZONE NOTE:

NO WALLS, FENCES, SHRUBS, UTILITY APPURTENANCES OR ANY OTHER OBJECT, OTHER THAN TRAFFIC CONTROL DEVICES, FIRE HYDRANTS, TREES, AND STREET LIGHT POLES, MAY BE CONSTRUCTED OR INSTALLED WITHIN THE SIGHT VISIBILITY ZONE UNLESS SAID OBJECT IS MAINTAINED AT LESS THAN 24 INCHES IN HEIGHT, MEASURED FROM TOP OF CURB, OR WHERE NO CURB EXISTS, A HEIGHT OF 27 INCHES MEASURED FROM THE TOP OF ADJACENT ASPHALT, GRAVEL OR PAVEMENT STREET SURFACE. THIS RESTRICTION EXTENDS ALONG THE SIGHT VISIBILITY LINE THROUGH LANDSCAPED MEDIANS.



GRADING KEY NOTES:

(G1) CONSTRUCT 3" AC PAVEMENT OVER 4" TYPE II AGG BASE.
(G2) CONSTRUCT 4.5" AC PAVEMENT OVER 4" TYPE II AGG BASE.
(G3) CONSTRUCT 24" "L" TYPE CURB PER CCAUSD #216.
(G4) CONSTRUCT 30" ROLL CURB PER CCAUSD #217.2.S1.
(G5) CONSTRUCT 6" "A" TYPE CURB PER CCAUSD #219.
(G6) CONSTRUCT SIDEWALK DRAIN PER CCAUSD #236.
(G7) CONSTRUCT 5' SIDEWALK 4" THICK PER CCAUSD #234.
(G8) CONSTRUCT 4' SIDEWALK 4" THICK PER CCAUSD #234.
(G9) INSTALL WROUGHT IRON GATE.
(G10) CONSTRUCT 3' CONCRETE VALLEY GUTTER PER CCAUSD #228.
(G11) SAWCUT & REMOVE EXISTING PAVEMENT.
(G12) INSTALL LANDSCAPING BY OTHERS.
(G13) EXISTING FENCE TO REMAIN.
(G14) INSTALL RETAINING WALL BY SEPARATE PERMIT. HEIGHT DEPICTED BY PLAN.
(G15) EXISTING FENCE TO BE REMOVED.
(G16) EXISTING POWER POLE TO BE RELOCATED.
(G17) ADJUST EXISTING UTILITIES TO NEW FINISHED GRADE.
(G18) CONSTRUCT 5" THICK CONCRETE DRIVEWAY.
(G19) INSTALL SCREEN WALL. HEIGHT DEPICTED PER PLAN.
(G20) INSTALL BLOCK WALL OPENING PER DETAIL #20 ON SHEET C.6.1.
(G21) CONSTRUCT 10' TRANSITION FROM "L" CURB TO ROLL CURB PER DETAIL #18 SHEET C.6.1.
(G22) INSTALL 4" SIDEWALK DRAIN PIPE PER CCAUSD #236.
(G23) CONSTRUCT SIDEWALK UNDERDRAIN PER CCAUSD #236.
(G24) INSTALL WROUGHT IRON GATE/FENCE PER CCAUSD #425.S1
(G25) CONSTRUCT 2' WIDE CURB OPENING PER DETAIL 31 ON SHEET C.6.1
(G26) INSTALL 6" CONCRETE PAVEMENT OVER 6" TYPE II AGG BASE
(G27) INSTALL RIP RAP PER PLAN
(G28) CONSTRUCT 30" ROLL CURB WITH REVERSE LIP PER DETAIL 32 ON SHEET C.6.1
(G29) INSTALL RIP-RAP D50=3",T=6" SUBGRADE @ 90% COMPACTION LENGTH & WIDTH SPECIFIED PER PLAN
(G30) CONSTRUCT STEM WALL. SOLID GROUT FOR 3 COURSES & 10.5' EASEMENT OPENING
(G31) CONSTRUCT 8' CONCRETE VALLEY GUTTER PER CCAUSD #228.

ENGINEER'S NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR EROSION AND DUST CONTROL, AND STORMWATER MANAGEMENT DURING CONSTRUCTION.
2. SEE HORIZONTAL CONTROL PLAN FOR EXACT PROPERTY LINE DIMENSIONS
3. ENGINEER TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES BETWEEN THESE PLANS AND FIELD CONDITIONS.
4. THESE PLANS SHALL NOT IN PART, OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY GOVERNING AGENCIES.
5. ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS.
6. DURING CONSTRUCTION, SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE. SAME MUST UTILIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES.
7. FLOOR SECTION ASSUMES 5" SLAB OVER MIN. 8.5" TYPE II. CONTRACTOR TO VERIFY WITH STRUCTURAL PLANS AND GEOTECHNICAL ENGINEER.
8. ADD 2100' TO GRADING ELEVATIONS SHOWN HEREON TO ADJUST THEM TO THE ASSOCIATED DATUM. FINISHED GRADE CONTOURS ARE APPROXIMATE. REFER TO SPOT ELEVATION GRADE TAGS FOR CONSTRUCTION STAKING PURPOSES.

APPROVED FOR CONSTRUCTION

SOUTHWEST GAS CORPORATION DATE

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO._____ FIRST APPROVAL DATE:_____
LVVWD APPROVED FIRE FLOW_____GPM AT 20 PSI RESIDENTIAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW_____N/A_____GPM

Call before you DIG
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.
Call 811 or 1-800-227-2600

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

FAST
Call before you UnderGround
1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

HORROCKS ENGINEERS
1401 North Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE
0 1 2

REVISIONS
REV # | DATE
*SEE GENERAL NOTES SHEET

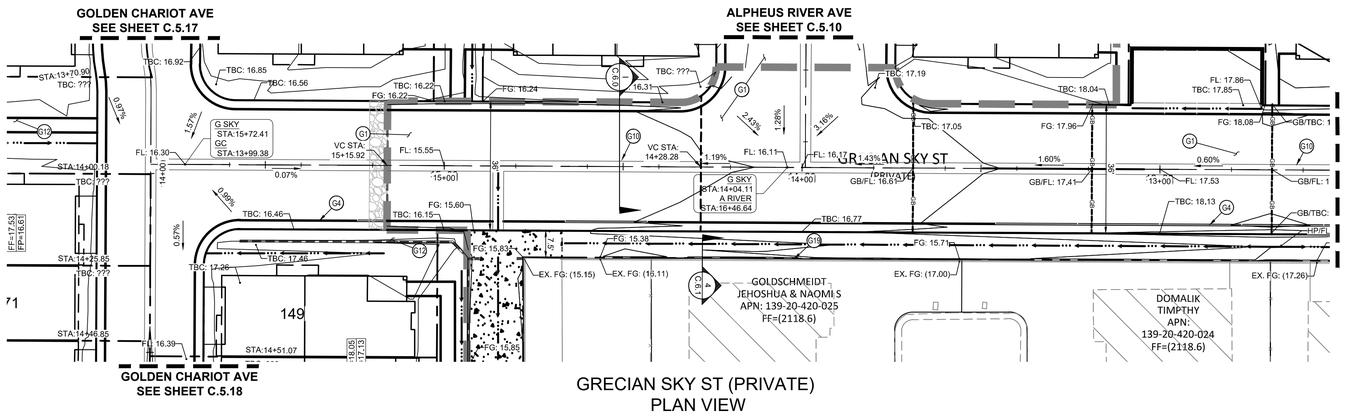
DRAWING INFO
DATE 6/8/2020
DESIGNED ACD
DRAWN PMP
CHECKED ACD
PROJECT NV-2105-1911

PROFESSIONAL ENGINEER-STATE OF NEVADA
ANTHONY C. DELEON JR
EXP. 12-31-20
CIVIL
No. 023113
6/8/2020

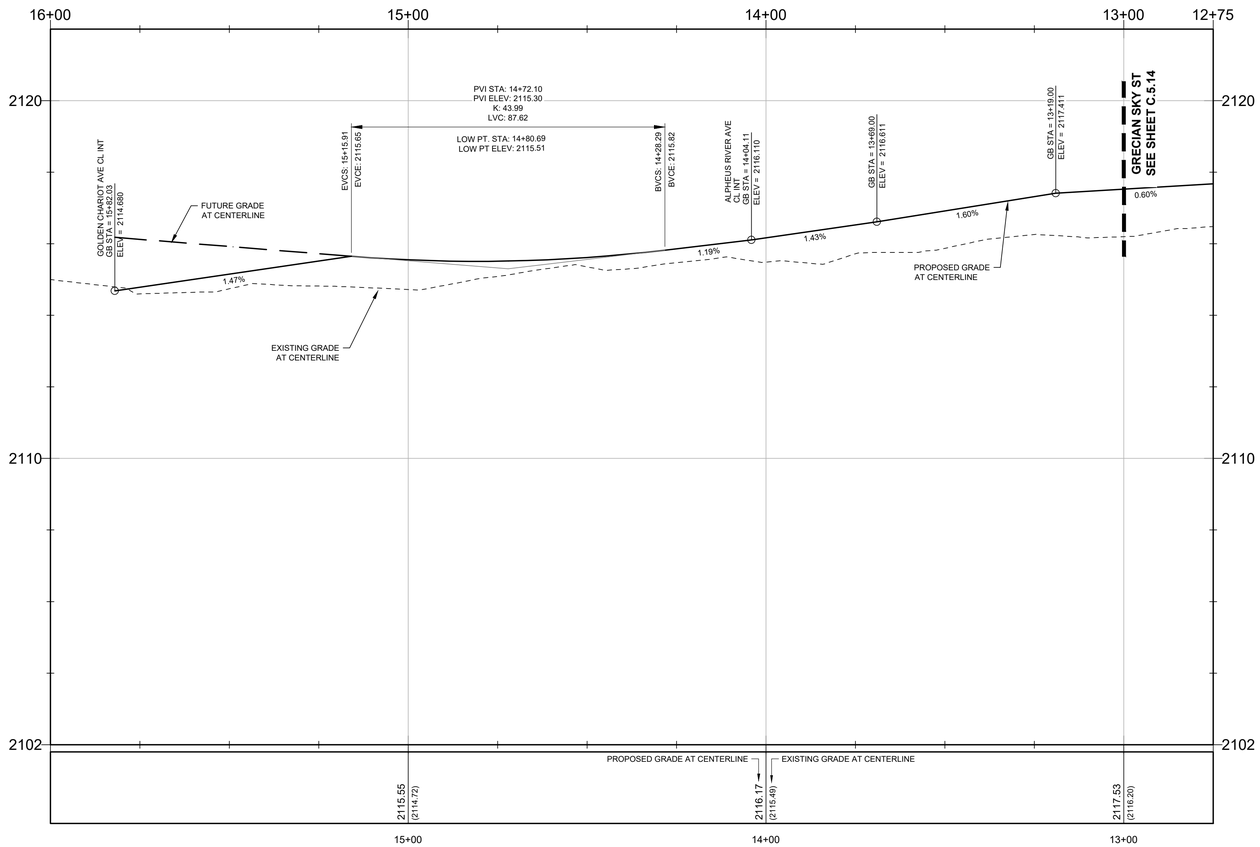
RANCHO & VEGAS
CITY OF LAS VEGAS, NEVADA
GRECIAN SKY ST PLAN & PROFILE (STA 9+75 TO STA 13+00)

C.5.14

H:\2019\NV-2105-1911 Rancho & Vegas Townhomes\Project Data\02 CAD\2.03 Sheet Files\Construction Drawings\C.5.0 PLAN & PROFILE (NS).dwg - C.5.14 - 6/08/2020 02:34pm, anthony.deleon



GRECIAN SKY ST (PRIVATE)
PLAN VIEW
(STA. 12+75 TO 16+00)



GRECIAN SKY ST (PRIVATE)
PROFILE VIEW
(STA. 12+75 TO 16+00)
SCALE: 1" = 20' H
SCALE: 1" = 2' V

SCALE: 1" = 20'

GRADING KEY NOTES:

(G1) CONSTRUCT 3" AC PAVEMENT OVER 4" TYPE II AGG BASE.
(G2) CONSTRUCT 4.5" AC PAVEMENT OVER 4" TYPE II AGG BASE.
(G3) CONSTRUCT 24" "L" TYPE CURB PER CCAUSD #216.
(G4) CONSTRUCT 30" ROLL CURB PER CCAUSD #217.2.S1.
(G5) CONSTRUCT 6" "A" TYPE CURB PER CCAUSD #219.
(G6) CONSTRUCT SIDEWALK DRAIN PER CCAUSD #236.
(G7) CONSTRUCT 5' SIDEWALK 4" THICK PER CCAUSD #234.
(G8) CONSTRUCT 4' SIDEWALK 4" THICK PER CCAUSD #234.
(G9) INSTALL WROUGHT IRON GATE.
(G10) CONSTRUCT 3' CONCRETE VALLEY GUTTER PER CCAUSD #228.
(G11) SAWCUT & REMOVE EXISTING PAVEMENT.
(G12) INSTALL LANDSCAPING BY OTHERS.
(G13) EXISTING FENCE TO REMAIN.
(G14) INSTALL RETAINING WALL BY SEPARATE PERMIT. HEIGHT DEPICTED BY PLAN.
(G15) EXISTING FENCE TO BE REMOVED.
(G16) EXISTING POWER POLE TO BE RELOCATED.
(G17) ADJUST EXISTING UTILITIES TO NEW FINISHED GRADE.
(G18) CONSTRUCT 5" THICK CONCRETE DRIVEWAY.
(G19) INSTALL SCREEN WALL. HEIGHT DEPICTED PER PLAN.
(G20) INSTALL BLOCK WALL OPENING PER DETAIL #20 ON SHEET C.6.1.
(G21) CONSTRUCT 10' TRANSITION FROM "L" CURB TO ROLL CURB PER DETAIL #18 SHEET C.6.1.
(G22) INSTALL 4" SIDEWALK DRAIN PIPE PER CCAUSD #236.
(G23) CONSTRUCT SIDEWALK UNDERDRAIN PER CCAUSD #236.
(G24) INSTALL WROUGHT IRON GATE/FENCE PER CCAUSD #425.S1
(G25) CONSTRUCT 2' WIDE CURB OPENING PER DETAIL 31 ON SHEET C.6.1
(G26) INSTALL 6" CONCRETE PAVEMENT OVER 6" TYPE II AGG BASE
(G27) INSTALL RIP RAP PER PLAN
(G28) CONSTRUCT 30" ROLL CURB WITH REVERSE LIP PER DETAIL 32 ON SHEET C.6.1
(G29) INSTALL RIP-RAP D50=3",T=6" SUBGRADE @ 90% COMPACTION LENGTH & WIDTH SPECIFIED PER PLAN
(G30) CONSTRUCT STEM WALL. SOLID GROUT FOR 3 COURSES & 10.5' EASEMENT OPENING
(G31) CONSTRUCT 8' CONCRETE VALLEY GUTTER PER CCAUSD #228.

Call before you Dig
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.
Call 811 or 1-800-227-2600

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

FAST
Call before you UnderGround
1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

LEGAL DESCRIPTION
SEE SHEET C.2.0

BASIS OF BEARING
SEE SHEET C.2.0

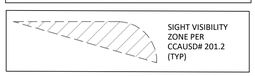
FLOOD ZONE
SEE SHEET C.2.0

BENCHMARK
SEE SHEET C.2.0

UTILITY DISCLAIMER NOTE:
EXISTING UTILITY LOCATIONS SHOWN HEREIN ARE APPROXIMATE ONLY. IT SHALL BE AT THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTIING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPPER LOCATIONS.

DEPTH OF COVER DURING CONSTRUCTION:
MAINTAIN MINIMUM TWENTY-FOUR (24) INCH COVER PER UDACS SECTION 2.08.04. GRADING MUST BE COMPLETED PRIOR TO WATERLINE INSTALLATION.

SIGHT VISIBILITY ZONE NOTE:
NO WALLS, FENCES, SHRUBS, UTILITY APPURTENANCES OR ANY OTHER OBJECT, OTHER THAN TRAFFIC CONTROL DEVICES, FIRE HYDRANTS, TREES, AND STREET LIGHT POLES, MAY BE CONSTRUCTED OR INSTALLED WITHIN THE SIGHT VISIBILITY ZONE UNLESS SAID OBJECT IS MAINTAINED AT LESS THAN 24 INCHES IN HEIGHT, MEASURED FROM TOP OF CURB, OR WHERE NO CURB EXISTS, A HEIGHT OF 27 INCHES MEASURED FROM THE TOP OF ADJACENT ASPHALT, GRAVEL OR PAVEMENT STREET SURFACE. THIS RESTRICTION EXTENDS ALONG THE SIGHT VISIBILITY LINE THROUGH LANDSCAPED MEDIANS.



ENGINEER'S NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR EROSION AND DUST CONTROL, AND STORMWATER MANAGEMENT DURING CONSTRUCTION.
2. SEE HORIZONTAL CONTROL PLAN FOR EXACT PROPERTY LINE DIMENSIONS
3. ENGINEER TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES BETWEEN THESE PLANS AND FIELD CONDITIONS.
4. THESE PLANS SHALL NOT IN PART, OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY GOVERNING AGENCIES.
5. ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS.
6. DURING CONSTRUCTION, SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE. SAME MUST UTILIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES.
7. FLOOR SECTION ASSUMES 9" SLAB OVER MIN. 8.5" TYPE II. CONTRACTOR TO VERIFY WITH STRUCTURAL PLANS AND GEOTECHNICAL ENGINEER.
8. ADD 2100' TO GRADING ELEVATIONS SHOWN HEREON TO ADJUST THEM TO THE ASSOCIATED DATUM. FINISHED GRADE CONTOURS ARE APPROXIMATE. REFER TO SPOT ELEVATION GRADE TAGS FOR CONSTRUCTION STAKING PURPOSES.

APPROVED FOR CONSTRUCTION
SOUTHWEST GAS CORPORATION DATE

APPROVED FOR CONSTRUCTION
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES
PROJECT NO._____ FIRST APPROVAL DATE:_____
LVVWD APPROVED FIRE FLOW_____GPM AT 20 PSI RESIDENTIAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW_____N/A_____GPM

HORROCKS ENGINEERS
1401 North Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
0 1 2
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE

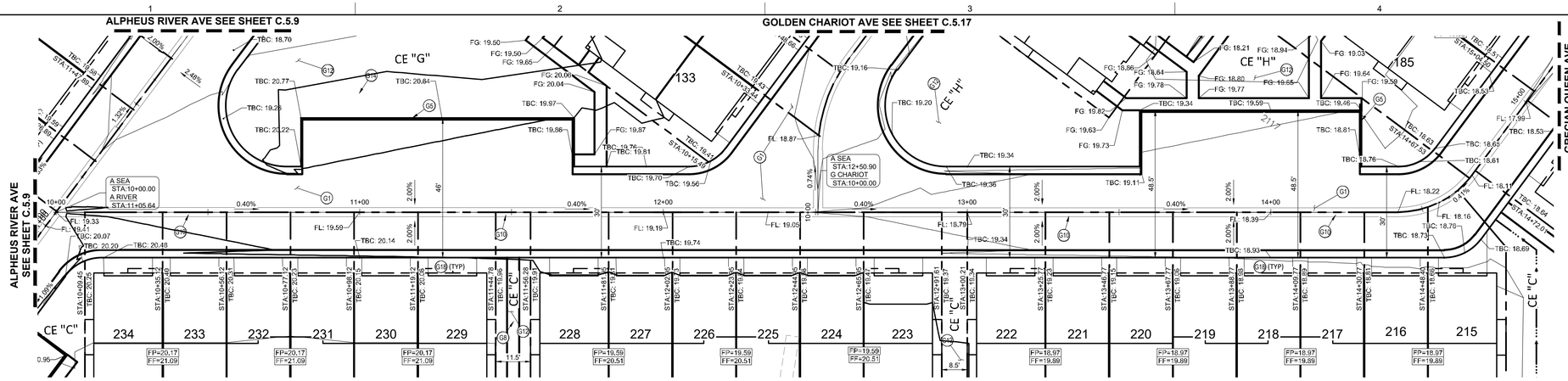
REVISIONS
REV # | DATE
*SEE GENERAL NOTES SHEET

DRAWING INFO
DATE 6/8/2020
DESIGNED ACD
DRAWN PMP
CHECKED ACD
PROJECT NV-2105-1911

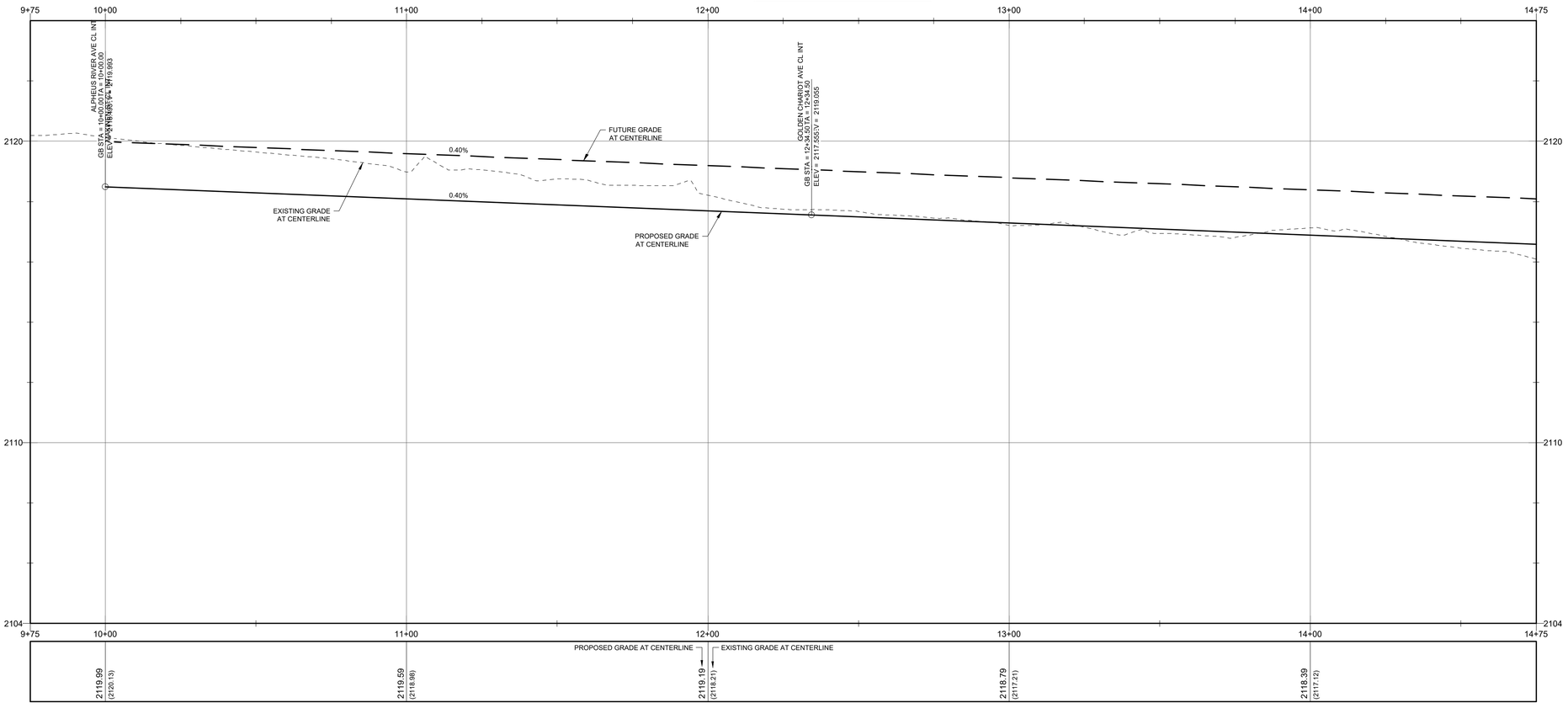
PROFESSIONAL ENGINEER - STATE OF NEVADA
ANTHONY C. DELEON JR
EXP. 12-31-20
CIVIL
No. 023113
6/8/2020

RANCHO & VEGAS
CITY OF LAS VEGAS, NEVADA
GRECIAN SKY ST PLAN & PROFILE (STA 12+75 TO 16+00)

C.5.15
PAGE



ARCADIAN SEA ST (PRIVATE)
PLAN VIEW
(STA. 9+75 TO 14+75)



ARCADIAN SEA ST (PRIVATE)
PROFILE VIEW
(STA. 9+75 TO 14+75)
SCALE: 1" = 20' H
SCALE: 1" = 2' V

SCALE: 1" = 20'

GRADING KEY NOTES:

G1 CONSTRUCT 3" AC PAVEMENT OVER 4" TYPE II AGG BASE.
G2 CONSTRUCT 4.5" AC PAVEMENT OVER 4" TYPE II AGG BASE.
G3 CONSTRUCT 24" "L" TYPE CURB PER CCAUSD #216.
G4 CONSTRUCT 30" ROLL CURB PER CCAUSD #217.2.S1.
G5 CONSTRUCT 6" "A" TYPE CURB PER CCAUSD #219.
G6 CONSTRUCT SIDEWALK DRAIN PER CCAUSD #236.
G7 CONSTRUCT 5' SIDEWALK 4" THICK PER CCAUSD #234.
G8 CONSTRUCT 4' SIDEWALK 4" THICK PER CCAUSD #234.
G9 INSTALL WROUGHT IRON GATE.
G10 CONSTRUCT 3' CONCRETE VALLEY GUTTER PER CCAUSD #228.
G11 SAWCUT & REMOVE EXISTING PAVEMENT.
G12 INSTALL LANDSCAPING BY OTHERS.
G13 EXISTING FENCE TO REMAIN.
G14 INSTALL RETAINING WALL BY SEPARATE PERMIT. HEIGHT DEPICTED BY PLAN.
G15 EXISTING FENCE TO BE REMOVED.
G16 EXISTING POWER POLE TO BE RELOCATED.
G17 ADJUST EXISTING UTILITIES TO NEW FINISHED GRADE.
G18 CONSTRUCT 5" THICK CONCRETE DRIVEWAY.
G19 INSTALL SCREEN WALL. HEIGHT DEPICTED PER PLAN.
G20 INSTALL BLOCK WALL OPENING PER DETAIL #20 ON SHEET C.6.1.
G21 CONSTRUCT 10' TRANSITION FROM "L" CURB TO ROLL CURB PER DETAIL #18 SHEET C.6.1.
G22 INSTALL 4" SIDEWALK DRAIN PIPE PER CCAUSD #236.
G23 CONSTRUCT SIDEWALK UNDERDRAIN PER CCAUSD #236.
G24 INSTALL WROUGHT IRON GATE/FENCE PER CCAUSD #425.S1
G25 CONSTRUCT 2' WIDE CURB OPENING PER DETAIL 31 ON SHEET C.6.1
G26 INSTALL 6" CONCRETE PAVEMENT OVER 6" TYPE II AGG BASE
G27 INSTALL RIP RAP PER PLAN
G28 CONSTRUCT 30" ROLL CURB WITH REVERSE LIP PER DETAIL 32 ON SHEET C.6.1
G29 INSTALL RIP-RAP D50=3",T=6" SUBGRADE @ 90% COMPACTION LENGTH & WIDTH SPECIFIED PER PLAN
G30 CONSTRUCT STEM WALL. SOLID GROUT FOR 3 COURSES & 10.5' EASEMENT OPENING
G31 CONSTRUCT 8' CONCRETE VALLEY GUTTER PER CCAUSD #228.

LEGAL DESCRIPTION
SEE SHEET C.2.0

BASIS OF BEARING
SEE SHEET C.2.0

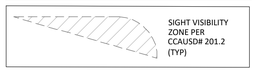
FLOOD ZONE
SEE SHEET C.2.0

BENCHMARK
SEE SHEET C.2.0

UTILITY DISCLAIMER NOTE:
EXISTING UTILITY LOCATIONS SHOWN HEREIN ARE APPROXIMATE ONLY. IT SHALL BE AT THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTIING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPPER LOCATIONS.

DEPTH OF COVER DURING CONSTRUCTION:
MAINTAIN MINIMUM TWENTY-FOUR (24) INCH COVER PER UDACS SECTION 2.08.04. GRADING MUST BE COMPLETED PRIOR TO WATERLINE INSTALLATION.

SIGHT VISIBILITY ZONE NOTE:
NO WALLS, FENCES, SHRUBS, UTILITY APPURTENANCES OR ANY OTHER OBJECT, OTHER THAN TRAFFIC CONTROL DEVICES, FIRE HYDRANTS, TREES, AND STREET LIGHT POLES, MAY BE CONSTRUCTED OR INSTALLED WITHIN THE SIGHT VISIBILITY ZONE UNLESS SAID OBJECT IS MAINTAINED AT LESS THAN 24 INCHES IN HEIGHT, MEASURED FROM TOP OF CURB, OR WHERE NO CURB EXISTS, A HEIGHT OF 27 INCHES MEASURED FROM THE TOP OF ADJACENT ASPHALT, GRAVEL OR PAVEMENT STREET SURFACE. THIS RESTRICTION EXTENDS ALONG THE SIGHT VISIBILITY LINE THROUGH LANDSCAPED MEDIANS.



ENGINEER'S NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR EROSION AND DUST CONTROL, AND STORMWATER MANAGEMENT DURING CONSTRUCTION.
2. SEE HORIZONTAL CONTROL PLAN FOR EXACT PROPERTY LINE DIMENSIONS
3. ENGINEER TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES BETWEEN THESE PLANS AND FIELD CONDITIONS.
4. THESE PLANS SHALL NOT IN PART, OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY GOVERNING AGENCIES.
5. ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS.
6. DURING CONSTRUCTION, SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE. SAME MUST UTILIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES.
7. FLOOR SECTION ASSUMES 5" SLAB OVER MIN. 8.5" TYPE II. CONTRACTOR TO VERIFY WITH STRUCTURAL PLANS AND GEOTECHNICAL ENGINEER.
8. ADD 2100' TO GRADING ELEVATIONS SHOWN HEREON TO ADJUST THEM TO THE ASSOCIATED DATUM. FINISHED GRADE CONTOURS ARE APPROXIMATE. REFER TO SPOT ELEVATION GRADE TAGS FOR CONSTRUCTION STAKING PURPOSES.

APPROVED FOR CONSTRUCTION
SOUTHWEST GAS CORPORATION DATE

APPROVED FOR CONSTRUCTION
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES
PROJECT NO._____ FIRST APPROVAL DATE: _____
LVVWD APPROVED FIRE FLOW_____GPM AT 20 PSI RESIDENTIAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW_____N/A_____GPM

Call before you dig
AVOID CUTTING, DISTURBING OR UTILITY LINES, PIPES, ETC.
Call 811 OR 1-800-227-2600

AVOID HITTING OVERHEAD POWER LINES, PIPES OR EQUIP.
CALL BEFORE YOU DO OVERHEAD
1-702-227-2929

FAST
Call before you UnderGround
1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

HORROCKS ENGINEERS
1401 North Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
0 1 2
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE

REVISIONS
REV # | DATE
*SEE GENERAL NOTES SHEET

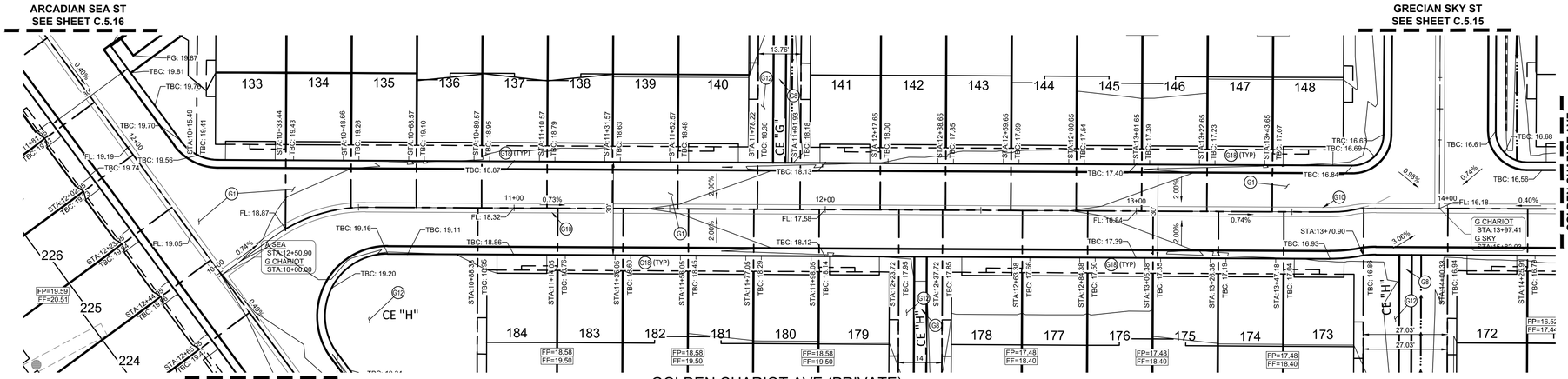
DRAWING INFO
DATE 6/8/2020
DESIGNED ACD
DRAWN PMP
CHECKED ACD
PROJECT NV-2105-1911

PROFESSIONAL ENGINEER-STATE OF NEVADA
ANTHONY C. DELEON JR
EXP. 12-31-20
CIVIL
No. 023113
6/8/2020

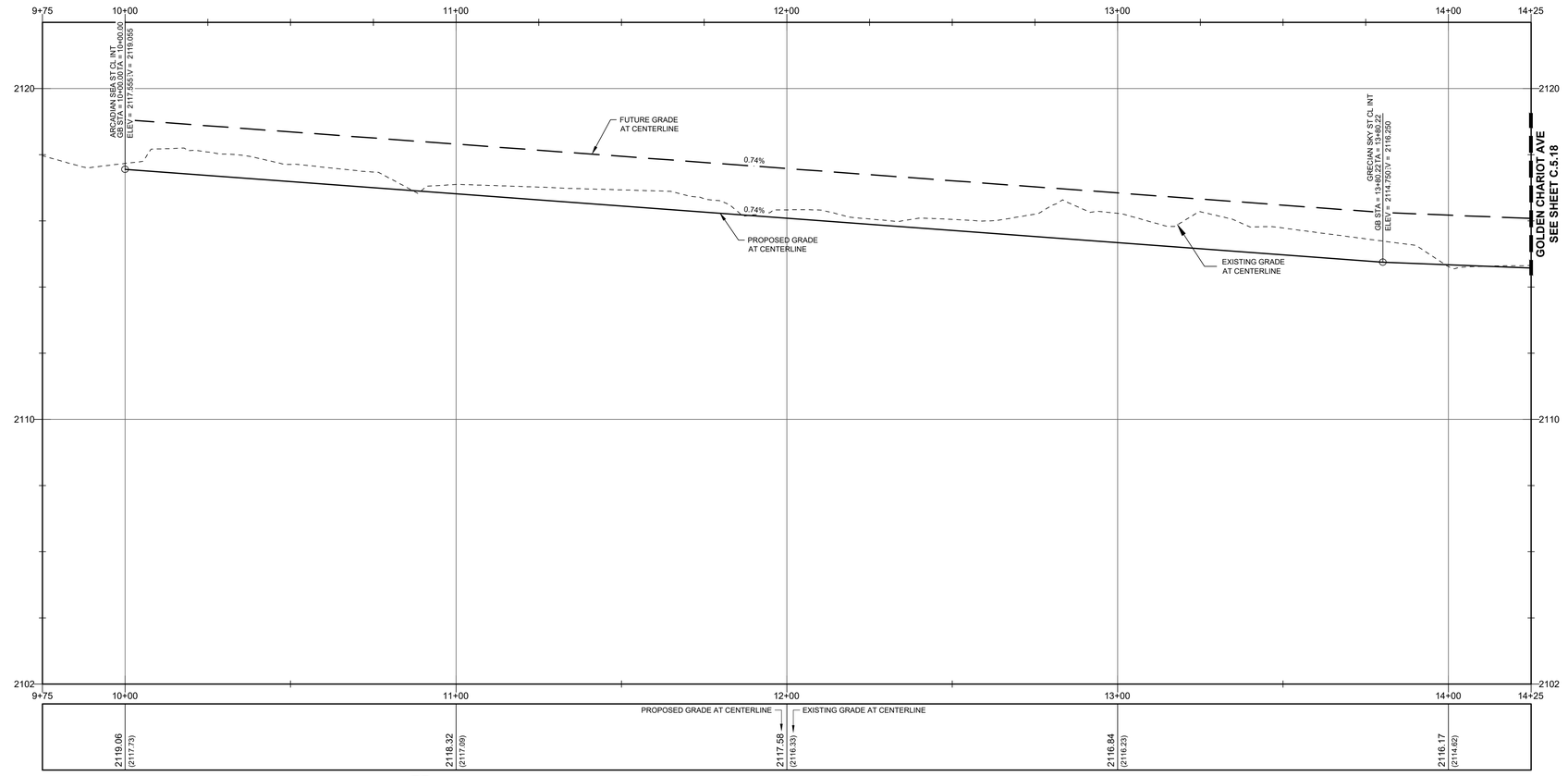
RANCHO & VEGAS
CITY OF LAS VEGAS, NEVADA
ARCADIAN SEA ST PLAN & PROFILE (STA 9+75 TO STA 14+75)

C.5.16

H:\2019\NV-2105-1911 Rancho & Vegas Townhomes\Project Data\02 CAD\2.03 Sheet Files\Construction Drawings\C.5.0 PLAN & PROFILE (EW2).dwg - C.5.16 - 6/08/2020 02:35pm, anthony.deleon



GOLDEN CHARIOT AVE (PRIVATE)
PLAN VIEW
(STA. 9+75 TO 14+25)



GOLDEN CHARIOT AVE (PRIVATE)
PROFILE VIEW
(STA. 9+75 TO 14+25)
SCALE: 1" = 20' H
SCALE: 1" = 2' V

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

Call before you dig
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.
Call 811 or 1-800-227-2600

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

FAST
Call before you UnderGround
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION
1-702-432-5300

LEGAL DESCRIPTION
SEE SHEET C.2.0

BASIS OF BEARING
SEE SHEET C.2.0

FLOOD ZONE
SEE SHEET C.2.0

BENCHMARK
SEE SHEET C.2.0

UTILITY DISCLAIMER NOTE:

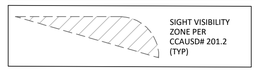
EXISTING UTILITY LOCATIONS SHOWN HEREIN ARE APPROXIMATE ONLY. IT SHALL BE AT THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTIING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPPER LOCATIONS.

DEPTH OF COVER DURING CONSTRUCTION:

MAINTAIN MINIMUM TWENTY-FOUR (24) INCH COVER PER UDACS SECTION 2.08.04. GRADING MUST BE COMPLETED PRIOR TO WATERLINE INSTALLATION.

SIGHT VISIBILITY ZONE NOTE:

NO WALLS, FENCES, SHRUBS, UTILITY APPURTENANCES OR ANY OTHER OBJECT, OTHER THAN TRAFFIC CONTROL DEVICES, FIRE HYDRANTS, TREES, AND STREET LIGHT POLES, MAY BE CONSTRUCTED OR INSTALLED WITHIN THE SIGHT VISIBILITY ZONE UNLESS SAID OBJECT IS MAINTAINED AT LESS THAN 24 INCHES IN HEIGHT, MEASURED FROM TOP OF CURB, OR WHERE NO CURB EXISTS, A HEIGHT OF 27 INCHES MEASURED FROM THE TOP OF ADJACENT ASPHALT, GRAVEL OR PAVEMENT STREET SURFACE. THIS RESTRICTION EXTENDS ALONG THE SIGHT VISIBILITY LINE THROUGH LANDSCAPED MEDIANS.



GRADING KEY NOTES:

(G1) CONSTRUCT 3" AC PAVEMENT OVER 4" TYPE II AGG BASE.
(G2) CONSTRUCT 4.5" AC PAVEMENT OVER 4" TYPE II AGG BASE.
(G3) CONSTRUCT 24" "L" TYPE CURB PER CCAUSD #216.
(G4) CONSTRUCT 30" ROLL CURB PER CCAUSD #217.2.S1.
(G5) CONSTRUCT 6" "A" TYPE CURB PER CCAUSD #219.
(G6) CONSTRUCT SIDEWALK DRAIN PER CCAUSD #236.
(G7) CONSTRUCT 5' SIDEWALK 4" THICK PER CCAUSD #234.
(G8) CONSTRUCT 4' SIDEWALK 4" THICK PER CCAUSD #234.
(G9) INSTALL WROUGHT IRON GATE.
(G10) CONSTRUCT 3' CONCRETE VALLEY GUTTER PER CCAUSD #228.
(G11) SAWCUT & REMOVE EXISTING PAVEMENT.
(G12) INSTALL LANDSCAPING BY OTHERS.
(G13) EXISTING FENCE TO REMAIN.
(G14) INSTALL RETAINING WALL BY SEPARATE PERMIT. HEIGHT DEPICTED BY PLAN.
(G15) EXISTING FENCE TO BE REMOVED.
(G16) EXISTING POWER POLE TO BE RELOCATED.
(G17) ADJUST EXISTING UTILITIES TO NEW FINISHED GRADE.
(G18) CONSTRUCT 5" THICK CONCRETE DRIVEWAY.
(G19) INSTALL SCREEN WALL. HEIGHT DEPICTED PER PLAN.
(G20) INSTALL BLOCK WALL OPENING PER DETAIL #20 ON SHEET C.6.1.
(G21) CONSTRUCT 10' TRANSITION FROM "L" CURB TO ROLL CURB PER DETAIL #18 SHEET C.6.1.
(G22) INSTALL 4" SIDEWALK DRAIN PIPE PER CCAUSD #236.
(G23) CONSTRUCT SIDEWALK UNDERDRAIN PER CCAUSD #236.
(G24) INSTALL WROUGHT IRON GATE/FENCE PER CCAUSD #425.S1
(G25) CONSTRUCT 2' WIDE CURB OPENING PER DETAIL 31 ON SHEET C.6.1
(G26) INSTALL 6" CONCRETE PAVEMENT OVER 6" TYPE II AGG BASE
(G27) INSTALL RIP RAP PER PLAN
(G28) CONSTRUCT 30" ROLL CURB WITH REVERSE LIP PER DETAIL 32 ON SHEET C.6.1
(G29) INSTALL RIP-RAP D50=3",T=6" SUBGRADE @ 90% COMPACTION LENGTH & WIDTH SPECIFIED PER PLAN
(G30) CONSTRUCT STEM WALL. SOLID GROUT FOR 3 COURSES & 10.5' EASEMENT OPENING
(G31) CONSTRUCT 8' CONCRETE VALLEY GUTTER PER CCAUSD #228.

ENGINEER'S NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR EROSION AND DUST CONTROL, AND STORMWATER MANAGEMENT DURING CONSTRUCTION.
2. SEE HORIZONTAL CONTROL PLAN FOR EXACT PROPERTY LINE DIMENSIONS
3. ENGINEER TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES BETWEEN THESE PLANS AND FIELD CONDITIONS.
4. THESE PLANS SHALL NOT IN PART, OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY GOVERNING AGENCIES.
5. ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS.
6. DURING CONSTRUCTION, SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE. SAME MUST UTILIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES.
7. FLOOR SECTION ASSUMES 9" SLAB OVER MIN. 8.5" TYPE II. CONTRACTOR TO VERIFY WITH STRUCTURAL PLANS AND GEOTECHNICAL ENGINEER.
8. ADD 2100' TO GRADING ELEVATIONS SHOWN HEREON TO ADJUST THEM TO THE ASSOCIATED DATUM. FINISHED GRADE CONTOURS ARE APPROXIMATE. REFER TO SPOT ELEVATION GRADE TAGS FOR CONSTRUCTION STAKING PURPOSES.

APPROVED FOR CONSTRUCTION

SOUTHWEST GAS CORPORATION DATE

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO._____ FIRST APPROVAL DATE:_____
LVVWD APPROVED FIRE FLOW_____GPM AT 20 PSI RESIDENTIAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW_____N/A_____GPM

HORROCKS ENGINEERS
1401 North Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
0 1 2
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE

REVISIONS
REV # | DATE
*SEE GENERAL NOTES SHEET

DRAWING INFO
DATE 6/8/2020
DESIGNED ACD
DRAWN PMP
CHECKED ACD
PROJECT NV-2105-1911

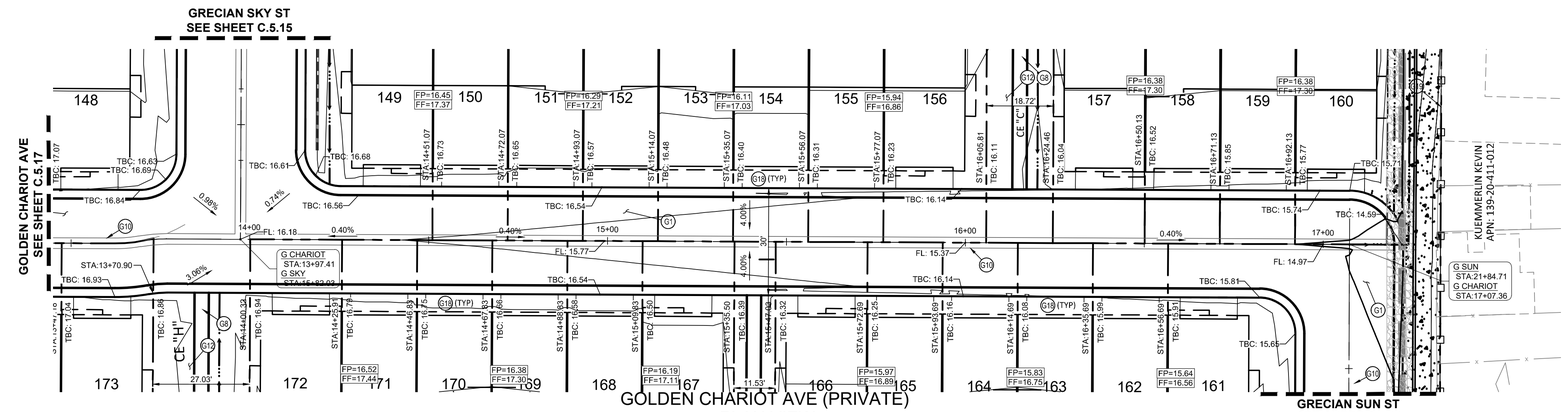
PROFESSIONAL ENGINEER-STATE OF NEVADA
ANTHONY C. DELEON JR
EXP. 12-31-20
CIVIL
No. 023113
6/8/2020

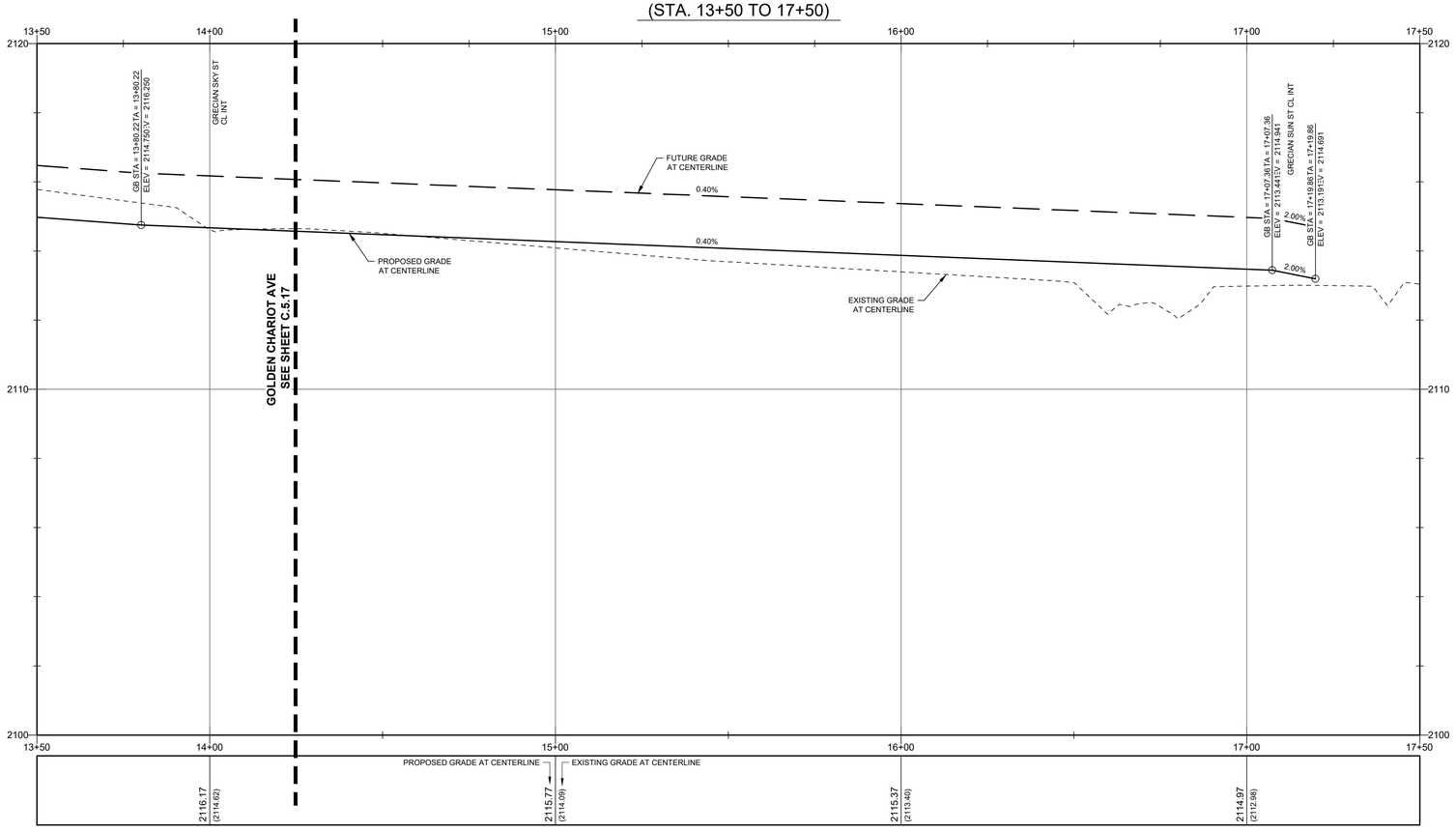
RANCHO & VEGAS
CITY OF LAS VEGAS, NEVADA
GOLDEN CHARIOT AVE PLAN & PROFILE (STA 9+75 TO STA 14+25)

C.5.17

PAGE 39

H:\!2019\NV-2105-1911 Rancho & Vegas Townhomes\Project Data\02 CAD\2.03 Sheet Files\Construction Drawings\C.5.0 PLAN & PROFILE (EW2).dwg - C.5.17 - 6/08/2020 02:36pm, anthony.deleon





GOLDEN CHARIOT AVE (PRIVATE)
PROFILE VIEW
(STA. 13+50 TO 17+50)

SCALE: 1" = 20' H
SCALE: 1" = 2' V

SCALE: 1" = 20'

GRADING KEY NOTES:

G1 CONSTRUCT 3" AC PAVEMENT OVER 4" TYPE II AGG BASE.
G2 CONSTRUCT 4.5" AC PAVEMENT OVER 4" TYPE II AGG BASE.
G3 CONSTRUCT 24" "L" TYPE CURB PER CCAUSD #216.
G4 CONSTRUCT 30" ROLL CURB PER CCAUSD #217.2.S1.
G5 CONSTRUCT 6" "A" TYPE CURB PER CCAUSD #219.
G6 CONSTRUCT SIDEWALK DRAIN PER CCAUSD #236.
G7 CONSTRUCT 5' SIDEWALK 4" THICK PER CCAUSD #234.
G8 CONSTRUCT 4' SIDEWALK 4" THICK PER CCAUSD #234.
G9 INSTALL WROUGHT IRON GATE.
S10 CONSTRUCT 3' CONCRETE VALLEY GUTTER PER CCAUSD #228.
S11 SAWCUT & REMOVE EXISTING PAVEMENT.
S12 INSTALL LANDSCAPING BY OTHERS.
S13 EXISTING FENCE TO REMAIN.
S14 INSTALL RETAINING WALL BY SEPARATE PERMIT. HEIGHT DEPICTED BY PLAN.
S15 EXISTING FENCE TO BE REMOVED.
S16 EXISTING POWER POLE TO BE RELOCATED.
S17 ADJUST EXISTING UTILITIES TO NEW FINISHED GRADE.
S18 CONSTRUCT 5" THICK CONCRETE DRIVEWAY.
S19 INSTALL SCREEN WALL. HEIGHT DEPICTED PER PLAN.
S20 INSTALL BLOCK WALL OPENING PER DETAIL #20 ON SHEET C.6.1.
S21 CONSTRUCT 10' TRANSITION FROM "L" CURB TO ROLL CURB PER DETAIL #18 SHEET C.6.1.
S22 INSTALL 4" SIDEWALK DRAIN PIPE PER CCAUSD #236.
S23 CONSTRUCT SIDEWALK UNDERDRAIN PER CCAUSD #236.
S24 INSTALL WROUGHT IRON GATE/FENCE PER CCAUSD #425.S1
S25 CONSTRUCT 2' WIDE CURB OPENING PER DETAIL 31 ON SHEET C.6.1
S26 INSTALL 6" CONCRETE PAVEMENT OVER 6" TYPE II AGG BASE
S27 INSTALL RIP RAP PER PLAN
S28 CONSTRUCT 30" ROLL CURB WITH REVERSE LIP PER DETAIL 32 ON SHEET C.6.1
S29 INSTALL RIP-RAP D50=3",T=6" SUBGRADE @ 90% COMPACTION LENGTH & WIDTH SPECIFIED PER PLAN
S30 CONSTRUCT STEM WALL. SOLID GROUT FOR 3 COURSES & 10.5' EASEMENT OPENING
S31 CONSTRUCT 8' CONCRETE VALLEY GUTTER PER CCAUSD #228.

HORROCKS ENGINEERS
1401 North Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
0 1 2
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE

REVISIONS
REV # | DATE
*SEE GENERAL NOTES SHEET

DRAWING INFO
DATE 6/8/2020
DESIGNED ACD
DRAWN PMP
CHECKED ACD
PROJECT NV-2105-1911

PROFESSIONAL ENGINEER-STATE OF NEVADA
ANTHONY C. DELEON JR
EXP. 12-31-20
CIVIL
No. 023113
6/8/2020

RANCHO & VEGAS
CITY OF LAS VEGAS, NEVADA
GOLDEN CHARIOT AVE PLAN & PROFILE (STA 13+50 TO STA 17+50)

C.5.18

PAGE 40

LEGAL DESCRIPTION
SEE SHEET C.2.0

BASIS OF BEARING
SEE SHEET C.2.0

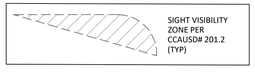
FLOOD ZONE
SEE SHEET C.2.0

BENCHMARK
SEE SHEET C.2.0

UTILITY DISCLAIMER NOTE:
EXISTING UTILITY LOCATIONS SHOWN HEREIN ARE APPROXIMATE ONLY. IT SHALL BE AT THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTIING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPPER LOCATIONS.

DEPTH OF COVER DURING CONSTRUCTION:
MAINTAIN MINIMUM TWENTY-FOUR (24) INCH COVER PER UDACS SECTION 2.08.04. GRADING MUST BE COMPLETED PRIOR TO WATERLINE INSTALLATION.

SIGHT VISIBILITY ZONE NOTE:
NO WALLS, FENCES, SHRUBS, UTILITY APPURTENANCES OR ANY OTHER OBJECT, OTHER THAN TRAFFIC CONTROL DEVICES, FIRE HYDRANTS, TREES, AND STREET LIGHT POLES, MAY BE CONSTRUCTED OR INSTALLED WITHIN THE SIGHT VISIBILITY ZONE UNLESS SAID OBJECT IS MAINTAINED AT LESS THAN 24 INCHES IN HEIGHT, MEASURED FROM TOP OF CURB, OR WHERE NO CURB EXISTS, A HEIGHT OF 27 INCHES MEASURED FROM THE TOP OF ADJACENT ASPHALT, GRAVEL OR PAVEMENT STREET SURFACE. THIS RESTRICTION EXTENDS ALONG THE SIGHT VISIBILITY LINE THROUGH LANDSCAPED MEDIANS.



ENGINEER'S NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR EROSION AND DUST CONTROL, AND STORMWATER MANAGEMENT DURING CONSTRUCTION.
2. SEE HORIZONTAL CONTROL PLAN FOR EXACT PROPERTY LINE DIMENSIONS
3. ENGINEER TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES BETWEEN THESE PLANS AND FIELD CONDITIONS.
4. THESE PLANS SHALL NOT IN PART, OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY GOVERNING AGENCIES.
5. ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS.
6. DURING CONSTRUCTION, SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE. SAME MUST UTILIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES.
7. FLOOR SECTION ASSUMES 5" SLAB OVER MIN. 8.5" TYPE II. CONTRACTOR TO VERIFY WITH STRUCTURAL PLANS AND GEOTECHNICAL ENGINEER.
8. ADD 2100' TO GRADING ELEVATIONS SHOWN HEREON TO ADJUST THEM TO THE ASSOCIATED DATUM. FINISHED GRADE CONTOURS ARE APPROXIMATE. REFER TO SPOT ELEVATION GRADE TAGS FOR CONSTRUCTION STAKING PURPOSES.

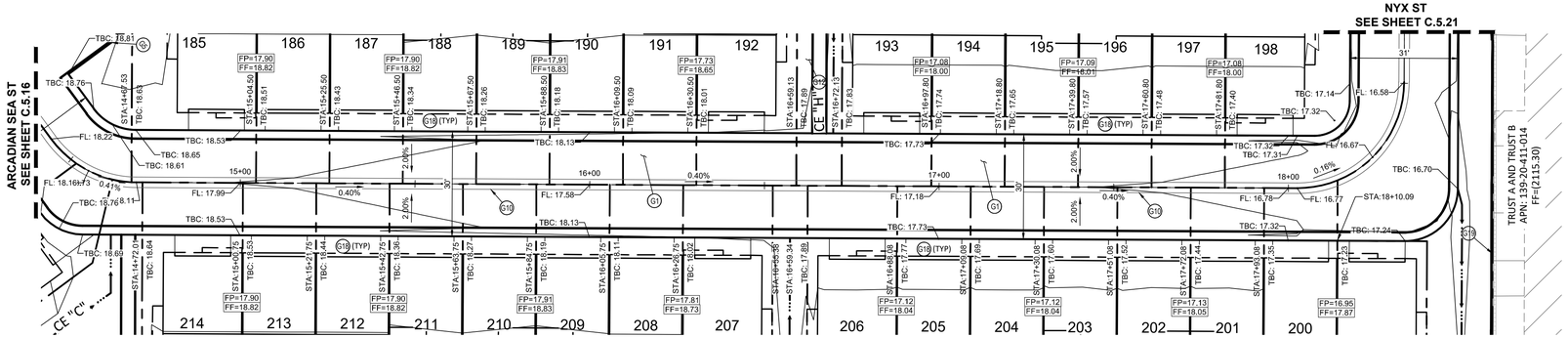
APPROVED FOR CONSTRUCTION
SOUTHWEST GAS CORPORATION DATE

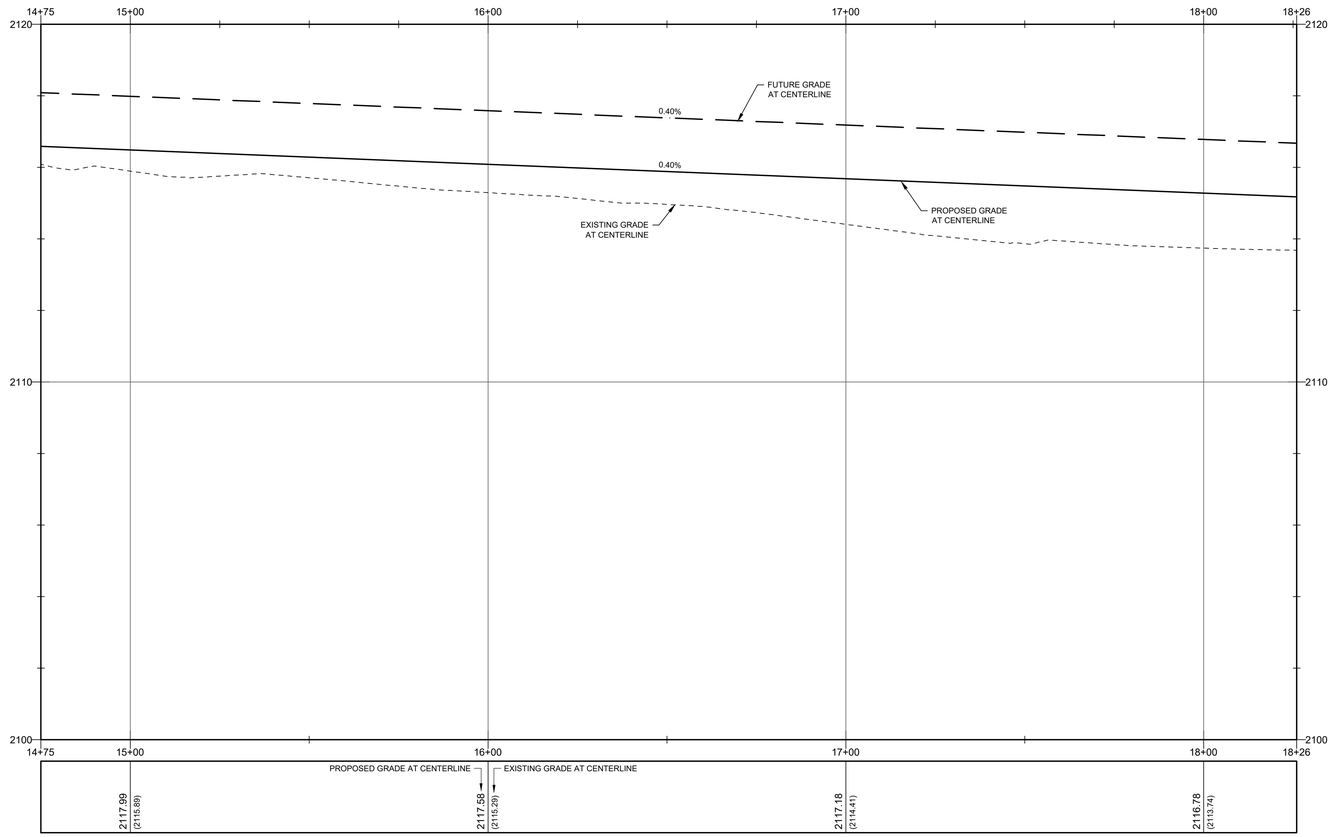
APPROVED FOR CONSTRUCTION
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES
PROJECT NO._____ FIRST APPROVAL DATE:_____
LVVWD APPROVED FIRE FLOW_____GPM AT 20 PSI RESIDENTIAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW_____N/A_____GPM

Call before you Dig
AVOID CUTTING UNDERGROUND UTILITY LINES, IT'S COSTLY!
Call 811 or 1-800-227-2600

AVOID HITTING OVERHEAD POWER LINES, IT'S COSTLY!
CALL BEFORE YOU DO OVERHEAD
1-702-227-2929

FAST
Call before you UnderGround
1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION





GRADING KEY NOTES:

(G1) CONSTRUCT 3" AC PAVEMENT OVER 4" TYPE II AGG BASE.
(G2) CONSTRUCT 4.5" AC PAVEMENT OVER 4" TYPE II AGG BASE.
(G3) CONSTRUCT 24" "L" TYPE CURB PER CCAUSD #216.
(G4) CONSTRUCT 30" ROLL CURB PER CCAUSD #217.2.S1.
(G5) CONSTRUCT 6" "A" TYPE CURB PER CCAUSD #219.
(G6) CONSTRUCT SIDEWALK DRAIN PER CCAUSD #236.
(G7) CONSTRUCT 5' SIDEWALK 4" THICK PER CCAUSD #234.
(G8) CONSTRUCT 4' SIDEWALK 4" THICK PER CCAUSD #234.
(G9) INSTALL WROUGHT IRON GATE.
(G10) CONSTRUCT 3' CONCRETE VALLEY GUTTER PER CCAUSD #228.
(G11) SAWCUT & REMOVE EXISTING PAVEMENT.
(G12) INSTALL LANDSCAPING BY OTHERS.
(G13) EXISTING FENCE TO REMAIN.
(G14) INSTALL RETAINING WALL BY SEPARATE PERMIT. HEIGHT DEPICTED BY PLAN.
(G15) EXISTING FENCE TO BE REMOVED.
(G16) EXISTING POWER POLE TO BE RELOCATED.
(G17) ADJUST EXISTING UTILITIES TO NEW FINISHED GRADE.
(G18) CONSTRUCT 5" THICK CONCRETE DRIVEWAY.
(G19) INSTALL SCREEN WALL. HEIGHT DEPICTED PER PLAN.
(G20) INSTALL BLOCK WALL OPENING PER DETAIL #20 ON SHEET C.6.1.
(G21) CONSTRUCT 10' TRANSITION FROM "L" CURB TO ROLL CURB PER DETAIL #18 SHEET C.6.1.
(G22) INSTALL 4" SIDEWALK DRAIN PIPE PER CCAUSD #236.
(G23) CONSTRUCT SIDEWALK UNDERDRAIN PER CCAUSD #236.
(G24) INSTALL WROUGHT IRON GATE/FENCE PER CCAUSD #425.S1
(G25) CONSTRUCT 2' WIDE CURB OPENING PER DETAIL 31 ON SHEET C.6.1
(G26) INSTALL 6" CONCRETE PAVEMENT OVER 6" TYPE II AGG BASE
(G27) INSTALL RIP RAP PER PLAN
(G28) CONSTRUCT 30" ROLL CURB WITH REVERSE LIP PER DETAIL 32 ON SHEET C.6.1
(G29) INSTALL RIP-RAP D50=3",T=6" SUBGRADE @ 90% COMPACTION LENGTH & WIDTH SPECIFIED PER PLAN
(G30) CONSTRUCT STEM WALL. SOLID GROUT FOR 3 COURSES & 10.5' EASEMENT OPENING
(G31) CONSTRUCT 8' CONCRETE VALLEY GUTTER PER CCAUSD #228.

HORROCKS ENGINEERS
1401 North Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE
0 1 2

REVISIONS
REV # | DATE
*SEE GENERAL NOTES SHEET

DRAWING INFO
DATE 6/8/2020
DESIGNED ACD
DRAWN PMP
CHECKED ACD
PROJECT NV-2105-1911

PROFESSIONAL ENGINEER-STATE OF NEVADA
ANTHONY C. DELEON JR
EXP. 12-31-20
CIVIL
No. 023113
6/8/2020

RANCHO & VEGAS
CITY OF LAS VEGAS, NEVADA
GRECIAN QUEEN AVE PLAN & PROFILE (STA 14+56 TO STA 18+26)

C.5.19
PAGE 41

Call before you DIG
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.
Call 811 or 1-800-227-2600

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

FAST
Call before you UnderGround
1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

LEGAL DESCRIPTION
SEE SHEET C.2.0

BASIS OF BEARING
SEE SHEET C.2.0

FLOOD ZONE
SEE SHEET C.2.0

BENCHMARK
SEE SHEET C.2.0

UTILITY DISCLAIMER NOTE:
EXISTING UTILITY LOCATIONS SHOWN HEREIN ARE APPROXIMATE ONLY. IT SHALL BE AT THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTIING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPPER LOCATIONS.

DEPTH OF COVER DURING CONSTRUCTION:
MAINTAIN MINIMUM TWENTY-FOUR (24) INCH COVER PER UDACS SECTION 2.08.04. GRADING MUST BE COMPLETED PRIOR TO WATERLINE INSTALLATION.

SIGHT VISIBILITY ZONE NOTE:
NO WALLS, FENCES, SHRUBS, UTILITY APPURTENANCES OR ANY OTHER OBJECT, OTHER THAN TRAFFIC CONTROL DEVICES, FIRE HYDRANTS, TREES, AND STREET LIGHT POLES, MAY BE CONSTRUCTED OR INSTALLED WITHIN THE SIGHT VISIBILITY ZONE UNLESS SAID OBJECT IS MAINTAINED AT LESS THAN 24 INCHES IN HEIGHT, MEASURED FROM TOP OF CURB, OR WHERE NO CURB EXISTS, A HEIGHT OF 27 INCHES MEASURED FROM THE TOP OF ADJACENT ASPHALT, GRAVEL OR PAVEMENT STREET SURFACE. THIS RESTRICTION EXTENDS ALONG THE SIGHT VISIBILITY LINE THROUGH LANDSCAPED MEDIANS.

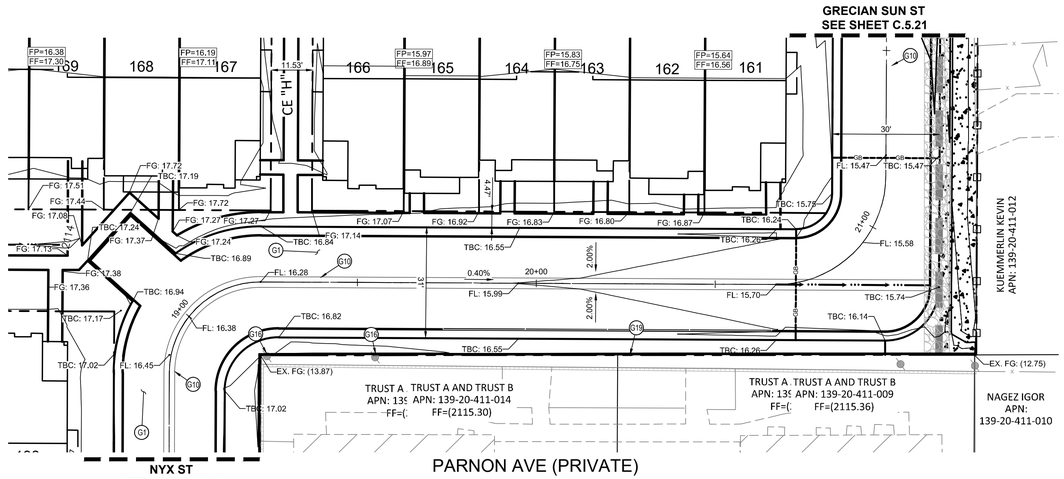
SIGHT VISIBILITY ZONE PER CCAUSD# 201.2 (TYP)

ENGINEER'S NOTES:

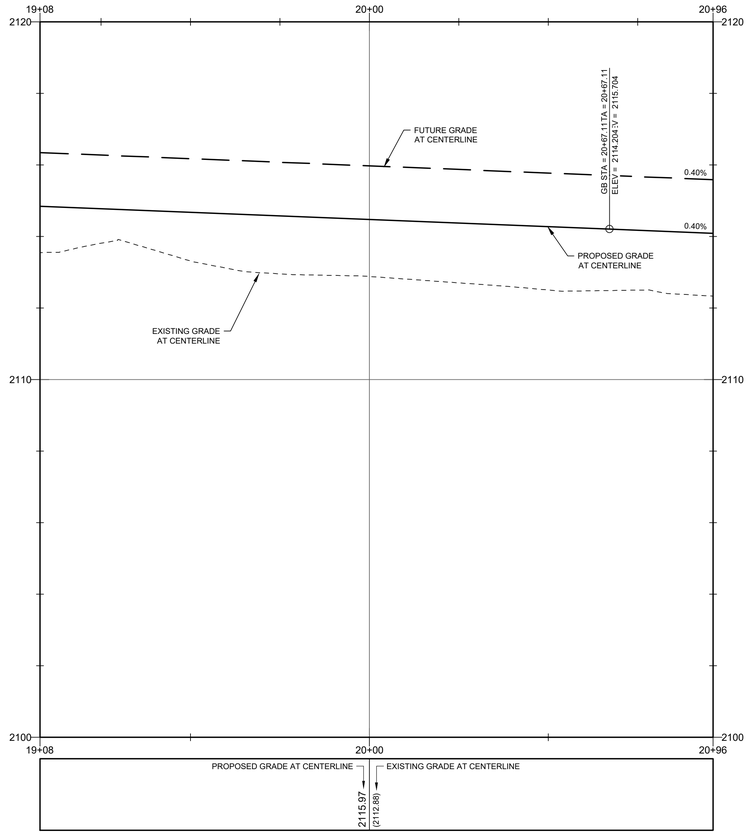
1. CONTRACTOR IS RESPONSIBLE FOR EROSION AND DUST CONTROL, AND STORMWATER MANAGEMENT DURING CONSTRUCTION.
2. SEE HORIZONTAL CONTROL PLAN FOR EXACT PROPERTY LINE DIMENSIONS
3. ENGINEER TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES BETWEEN THESE PLANS AND FIELD CONDITIONS.
4. THESE PLANS SHALL NOT IN PART, OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY GOVERNING AGENCIES.
5. ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS.
6. DURING CONSTRUCTION, SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE. SAME MUST UTILIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES.
7. FLOOR SECTION ASSUMES 5" SLAB OVER MIN. 8.5" TYPE II. CONTRACTOR TO VERIFY WITH STRUCTURAL PLANS AND GEOTECHNICAL ENGINEER.
8. ADD 2100' TO GRADING ELEVATIONS SHOWN HEREON TO ADJUST THEM TO THE ASSOCIATED DATUM. FINISHED GRADE CONTOURS ARE APPROXIMATE. REFER TO SPOT ELEVATION GRADE TAGS FOR CONSTRUCTION STAKING PURPOSES.

APPROVED FOR CONSTRUCTION
SOUTHWEST GAS CORPORATION DATE

APPROVED FOR CONSTRUCTION
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES
PROJECT NO._____ FIRST APPROVAL DATE:_____
LVVWD APPROVED FIRE FLOW_____GPM AT 20 PSI RESIDENTIAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW_____N/A_____GPM



PARNON AVE (PRIVATE)
PLAN VIEW
(STA. 19+08 TO 20+96)



PARNON AVE (PRIVATE)
PROFILE VIEW
(STA. 18+75 TO 21+25)

SCALE: 1" = 20' H
SCALE: 1" = 2' V

SCALE: 1" = 20'

Call before you dig
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.
Call 811
1-800-227-2600

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

FAST
Call before you UnderGround
1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

LEGAL DESCRIPTION	BASIS OF BEARING
SEE SHEET C.2.0	SEE SHEET C.2.0
FLOOD ZONE	**BENCHMARK**
SEE SHEET C.2.0	SEE SHEET C.2.0

UTILITY DISCLAIMER NOTE:

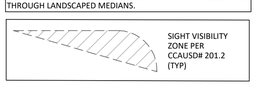
EXISTING UTILITY LOCATIONS SHOWN HEREIN ARE APPROXIMATE ONLY. IT SHALL BE AT THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTIING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPPER LOCATIONS.

DEPTH OF COVER DURING CONSTRUCTION:

MAINTAIN MINIMUM TWENTY-FOUR (24) INCH COVER PER UDACS SECTION 2.08.04. GRADING MUST BE COMPLETED PRIOR TO WATERLINE INSTALLATION.

SIGHT VISIBILITY ZONE NOTE:

NO WALLS, FENCES, SHRUBS, UTILITY APPURTENANCES OR ANY OTHER OBJECT, OTHER THAN TRAFFIC CONTROL DEVICES, FIRE HYDRANTS, TREES, AND STREET LIGHT POLES, MAY BE CONSTRUCTED OR INSTALLED WITHIN THE SIGHT VISIBILITY ZONE UNLESS SAID OBJECT IS MAINTAINED AT LESS THAN 24 INCHES IN HEIGHT, MEASURED FROM TOP OF CURB, OR WHERE NO CURB EXISTS, A HEIGHT OF 27 INCHES MEASURED FROM THE TOP OF ADJACENT ASPHALT, GRAVEL OR PAVEMENT STREET SURFACE. THIS RESTRICTION EXTENDS ALONG THE SIGHT VISIBILITY LINE THROUGH LANDSCAPED MEDIANS.



GRADING KEY NOTES:

- G1 CONSTRUCT 3" AC PAVEMENT OVER 4" TYPE II AGG BASE.
- G2 CONSTRUCT 4.5" AC PAVEMENT OVER 4" TYPE II AGG BASE.
- G3 CONSTRUCT 24" "L" TYPE CURB PER CCAUSD #216.
- G4 CONSTRUCT 30" ROLL CURB PER CCAUSD #217.2.S1.
- G5 CONSTRUCT 6" "A" TYPE CURB PER CCAUSD #219.
- G6 CONSTRUCT SIDEWALK DRAIN PER CCAUSD #236.
- G7 CONSTRUCT 5' SIDEWALK 4" THICK PER CCAUSD #234.
- G8 CONSTRUCT 4' SIDEWALK 4" THICK PER CCAUSD #234.
- G9 INSTALL WROUGHT IRON GATE.
- G10 CONSTRUCT 3' CONCRETE VALLEY GUTTER PER CCAUSD #228.
- G11 SAWCUT & REMOVE EXISTING PAVEMENT.
- G12 INSTALL LANDSCAPING BY OTHERS.
- G13 EXISTING FENCE TO REMAIN.
- G14 INSTALL RETAINING WALL BY SEPARATE PERMIT. HEIGHT DEPICTED BY PLAN.
- G15 EXISTING FENCE TO BE REMOVED.
- G16 EXISTING POWER POLE TO BE RELOCATED.
- G17 ADJUST EXISTING UTILITIES TO NEW FINISHED GRADE.
- G18 CONSTRUCT 5" THICK CONCRETE DRIVEWAY.
- G19 INSTALL SCREEN WALL. HEIGHT DEPICTED PER PLAN.
- G20 INSTALL BLOCK WALL OPENING PER DETAIL #20 ON SHEET C.6.1.
- G21 CONSTRUCT 10' TRANSITION FROM "L" CURB TO ROLL CURB PER DETAIL #18 SHEET C.6.1.
- G22 INSTALL 4" SIDEWALK DRAIN PIPE PER CCAUSD #236.
- G23 CONSTRUCT SIDEWALK UNDERDRAIN PER CCAUSD #236.
- G24 INSTALL WROUGHT IRON GATE/FENCE PER CCAUSD #425.S1
- G25 CONSTRUCT 2' WIDE CURB OPENING PER DETAIL 31 ON SHEET C.6.1
- G26 INSTALL 6" CONCRETE PAVEMENT OVER 6" TYPE II AGG BASE
- G27 INSTALL RIP RAP PER PLAN
- G28 CONSTRUCT 30" ROLL CURB WITH REVERSE LIP PER DETAIL 32 ON SHEET C.6.1
- G29 INSTALL RIP-RAP D50=3",T=6" SUBGRADE @ 90% COMPACTION LENGTH & WIDTH SPECIFIED PER PLAN
- G30 CONSTRUCT STEM WALL. SOLID GROUT FOR 3 COURSES & 10.5' EASEMENT OPENING
- G31 CONSTRUCT 8' CONCRETE VALLEY GUTTER PER CCAUSD #228.

ENGINEER'S NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR EROSION AND DUST CONTROL, AND STORMWATER MANAGEMENT DURING CONSTRUCTION.
2. SEE HORIZONTAL CONTROL PLAN FOR EXACT PROPERTY LINE DIMENSIONS
3. ENGINEER TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES BETWEEN THESE PLANS AND FIELD CONDITIONS.
4. THESE PLANS SHALL NOT IN PART, OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY GOVERNING AGENCIES.
5. ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS.
6. DURING CONSTRUCTION, SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE. SAME MUST UTILIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES.
7. FLOOR SECTION ASSUMES 5" SLAB OVER MIN. 8.5" TYPE II. CONTRACTOR TO VERIFY WITH STRUCTURAL PLANS AND GEOTECHNICAL ENGINEER.
8. ADD 2100' TO GRADING ELEVATIONS SHOWN HEREON TO ADJUST THEM TO THE ASSOCIATED DATUM. FINISHED GRADE CONTOURS ARE APPROXIMATE. REFER TO SPOT ELEVATION GRADE TAGS FOR CONSTRUCTION STAKING PURPOSES.

APPROVED FOR CONSTRUCTION

SOUTHWEST GAS CORPORATION DATE

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO._____ FIRST APPROVAL DATE:_____
LVVWD APPROVED FIRE FLOW_____GPM AT 20 PSI RESIDENTIAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW_____N/A_____GPM

HORROCKS ENGINEERS
1401 North Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
0 1 2
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE

REVISIONS
REV # | DATE
*SEE GENERAL NOTES SHEET

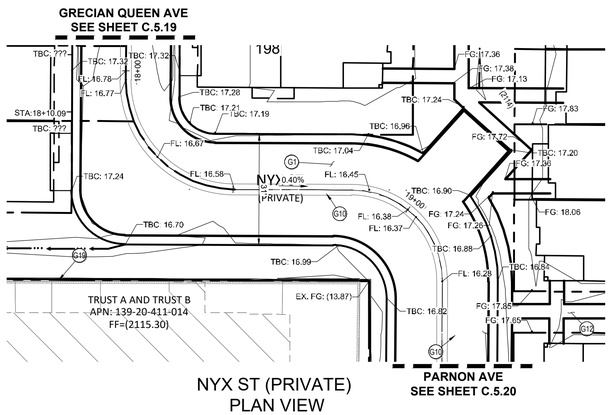
DRAWING INFO
DATE 6/8/2020
DESIGNED ACD
DRAWN PMP
CHECKED ACD
PROJECT NV-2105-1911

PROFESSIONAL ENGINEER-STATE OF NEVADA
ANTHONY C. DELEON JR
EXP. 12-31-20
CIVIL
No. 023113
6/8/2020

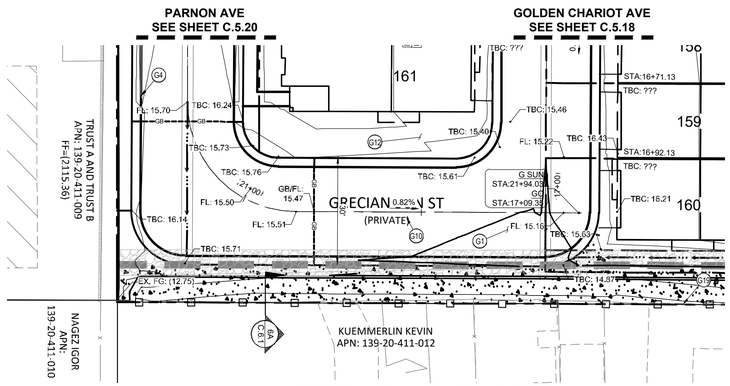
RANCHO & VEGAS
CITY OF LAS VEGAS, NEVADA
PARNON AVE PLAN & PROFILE (STA 19+08 TO STA 20+96)

C.5.20

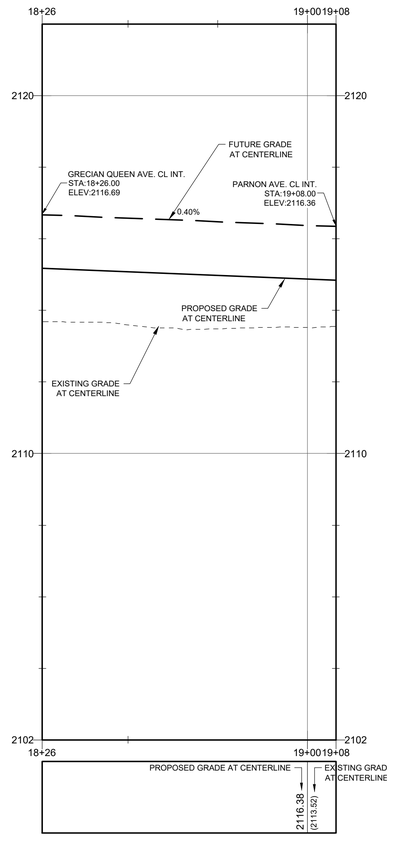
H:\!2019\NV-2105-1911 Rancho & Vegas Townhomes\Project Data\02 CAD\2.03 Sheet Files\Construction Drawings\C.5.0 PLAN & PROFILE (EW2).dwg - C.5.20 - 6/08/2020 02:36pm, anthony.deleon



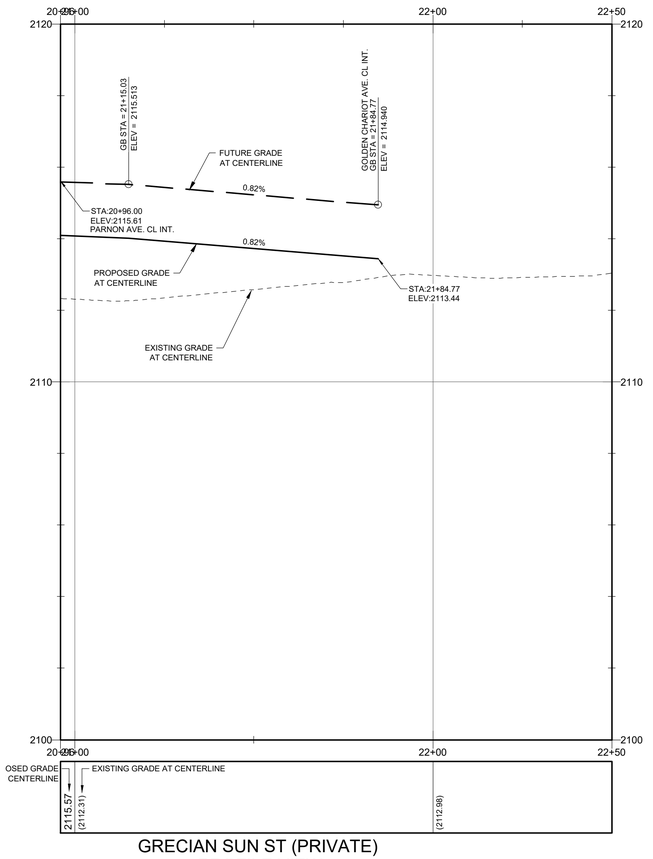
NYX ST (PRIVATE)
PLAN VIEW
(STA. 18+26 TO 19+08)



GRECIAN SUN ST (PRIVATE)
PLAN VIEW
(STA. 20+96 TO 22+25)



NYX ST (PRIVATE)
PROFILE VIEW
(STA. 18+26 TO 19+08)
SCALE: 1" = 20' H
SCALE: 1" = 2' V



GRECIAN SUN ST (PRIVATE)
PROFILE VIEW
(STA. 20+96 TO 22+50)
SCALE: 1" = 20' H
SCALE: 1" = 2' V



SCALE: 1" = 20'

LEGAL DESCRIPTION	BASIS OF BEARING
SEE SHEET C.2.0	SEE SHEET C.2.0
FLOOD ZONE	**BENCHMARK**
SEE SHEET C.2.0	SEE SHEET C.2.0

UTILITY DISCLAIMER NOTE:

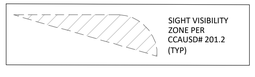
EXISTING UTILITY LOCATIONS SHOWN HEREIN ARE APPROXIMATE ONLY. IT SHALL BE AT THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPPER LOCATIONS.

DEPTH OF COVER DURING CONSTRUCTION:

MAINTAIN MINIMUM TWENTY-FOUR (24) INCH COVER PER UDACS SECTION 2.08.04. GRADING MUST BE COMPLETED PRIOR TO WATERLINE INSTALLATION.

SIGHT VISIBILITY ZONE NOTE:

NO WALLS, FENCES, SHRUBS, UTILITY APPURTENANCES OR ANY OTHER OBJECT, OTHER THAN TRAFFIC CONTROL DEVICES, FIRE HYDRANTS, TREES, AND STREET LIGHT POLES, MAY BE CONSTRUCTED OR INSTALLED WITHIN THE SIGHT VISIBILITY ZONE UNLESS SAID OBJECT IS MAINTAINED AT LESS THAN 24 INCHES IN HEIGHT, MEASURED FROM TOP OF CURB, OR WHERE NO CURB EXISTS, A HEIGHT OF 27 INCHES MEASURED FROM THE TOP OF ADJACENT ASPHALT, GRAVEL OR PAVEMENT STREET SURFACE. THIS RESTRICTION EXTENDS ALONG THE SIGHT VISIBILITY LINE THROUGH LANDSCAPED MEDIANS.



GRADING KEY NOTES:

(G1) CONSTRUCT 3" AC PAVEMENT OVER 4" TYPE II AGG BASE.
(G2) CONSTRUCT 4.5" AC PAVEMENT OVER 4" TYPE II AGG BASE.
(G3) CONSTRUCT 24" "L" TYPE CURB PER CCAUSD #216.
(G4) CONSTRUCT 30" ROLL CURB PER CCAUSD #217.2.S1.
(G5) CONSTRUCT 6" "A" TYPE CURB PER CCAUSD #219.
(G6) CONSTRUCT SIDEWALK DRAIN PER CCAUSD #236.
(G7) CONSTRUCT 5' SIDEWALK 4" THICK PER CCAUSD #234.
(G8) CONSTRUCT 4' SIDEWALK 4" THICK PER CCAUSD #234.
(G9) INSTALL WROUGHT IRON GATE.
(G10) CONSTRUCT 3' CONCRETE VALLEY GUTTER PER CCAUSD #228.
(G11) SAWCUT & REMOVE EXISTING PAVEMENT.
(G12) INSTALL LANDSCAPING BY OTHERS.
(G13) EXISTING FENCE TO REMAIN.
(G14) INSTALL RETAINING WALL BY SEPARATE PERMIT. HEIGHT DEPICTED BY PLAN.
(G15) EXISTING FENCE TO BE REMOVED.
(G16) EXISTING POWER POLE TO BE RELOCATED.
(G17) ADJUST EXISTING UTILITIES TO NEW FINISHED GRADE.
(G18) CONSTRUCT 5" THICK CONCRETE DRIVEWAY.
(G19) INSTALL SCREEN WALL. HEIGHT DEPICTED PER PLAN.
(G20) INSTALL BLOCK WALL OPENING PER DETAIL #20 ON SHEET C.6.1.
(G21) CONSTRUCT 10' TRANSITION FROM "L" CURB TO ROLL CURB PER DETAIL #18 SHEET C.6.1.
(G22) INSTALL 4" SIDEWALK DRAIN PIPE PER CCAUSD #236.
(G23) CONSTRUCT SIDEWALK UNDERDRAIN PER CCAUSD #236.
(G24) INSTALL WROUGHT IRON GATE/FENCE PER CCAUSD #425.S1
(G25) CONSTRUCT 2' WIDE CURB OPENING PER DETAIL 31 ON SHEET C.6.1
(G26) INSTALL 6" CONCRETE PAVEMENT OVER 6" TYPE II AGG BASE
(G27) INSTALL RIP RAP PER PLAN
(G28) CONSTRUCT 30" ROLL CURB WITH REVERSE LIP PER DETAIL 32 ON SHEET C.6.1
(G29) INSTALL RIP-RAP D50=3",T=6" SUBGRADE @ 90% COMPACTION LENGTH & WIDTH SPECIFIED PER PLAN
(G30) CONSTRUCT STEM WALL. SOLID GROUT FOR 3 COURSES & 10.5' EASEMENT OPENING
(G31) CONSTRUCT 8' CONCRETE VALLEY GUTTER PER CCAUSD #228.

ENGINEER'S NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR EROSION AND DUST CONTROL, AND STORMWATER MANAGEMENT DURING CONSTRUCTION.
2. SEE HORIZONTAL CONTROL PLAN FOR EXACT PROPERTY LINE DIMENSIONS
3. ENGINEER TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES BETWEEN THESE PLANS AND FIELD CONDITIONS.
4. THESE PLANS SHALL NOT IN PART, OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY GOVERNING AGENCIES.
5. ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS.
6. DURING CONSTRUCTION, SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE. SAME MUST UTILIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES.
7. FLOOR SECTION ASSUMES 5" SLAB OVER MIN. 8.5" TYPE II. CONTRACTOR TO VERIFY WITH STRUCTURAL PLANS AND GEOTECHNICAL ENGINEER.
8. ADD 2'00" TO GRADING ELEVATIONS SHOWN HEREON TO ADJUST THEM TO THE ASSOCIATED DATUM. FINISHED GRADE CONTOURS ARE APPROXIMATE. REFER TO SPOT ELEVATION GRADE TAGS FOR CONSTRUCTION STAKING PURPOSES.

APPROVED FOR CONSTRUCTION

SOUTHWEST GAS CORPORATION DATE

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO._____ FIRST APPROVAL DATE:_____
LVVWD APPROVED FIRE FLOW_____GPM AT 20 PSI RESIDENTIAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW_____N/A_____GPM

HORROCKS ENGINEERS
1401 North Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
0 1 2
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE

REVISIONS
REV # | DATE
*SEE GENERAL NOTES SHEET

DRAWING INFO
DATE 6/8/2020
DESIGNED ACD
DRAWN PMP
CHECKED ACD
PROJECT NV-2105-1911

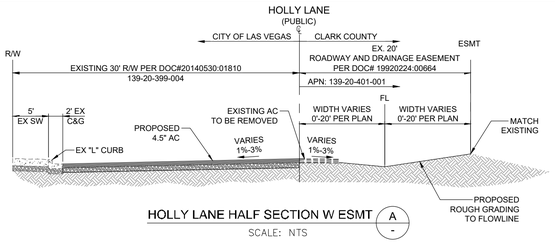
PROFESSIONAL ENGINEER-STATE OF NEVADA
ANTHONY C. DELEON JR
EXP. 12-31-20
CIVIL
No. 023113
6/8/2020

RANCHO & VEGAS
CITY OF LAS VEGAS, NEVADA

NYX ST PLAN & PROFILE (STA 18+26 TO STA 19+08)
GRECIAN SUN ST PLAN & PROFILE (STA 20+96 TO STA 22+94)

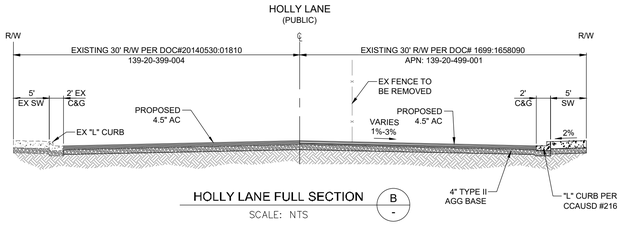
C.5.21

H:\2019\NV-2105-1911 Rancho & Vegas Townhomes\Project Data\02 CAD\2.03 Sheet Files\Construction Drawings\C.5.0 PLAN & PROFILE (NS).dwg - C.5.21 - 6/08/2020 02:37pm, anthony.deleon



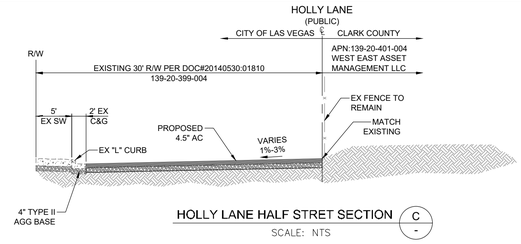
HOLLY LANE HALF SECTION W ESMT (A)

SCALE: NTS



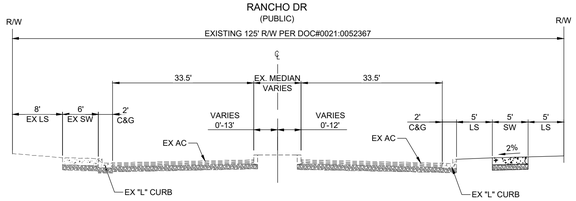
HOLLY LANE FULL SECTION (B)

SCALE: NTS



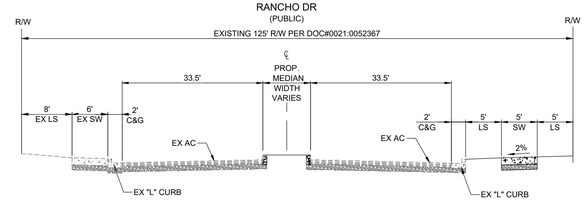
HOLLY LANE HALF STRET SECTION (C)

SCALE: NTS



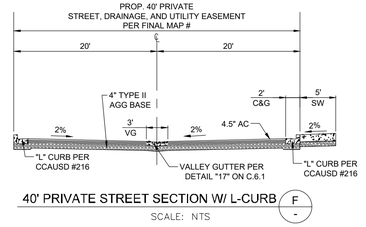
EX. RANCHO DR SECTION (D)

SCALE: NTS



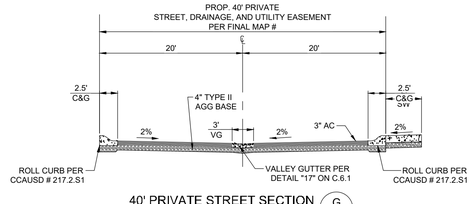
PR. RANCHO DR MEDIAN SECTION (E)

SCALE: NTS



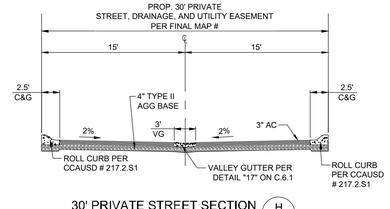
40' PRIVATE STREET SECTION W/ L-CURB (F)

SCALE: NTS



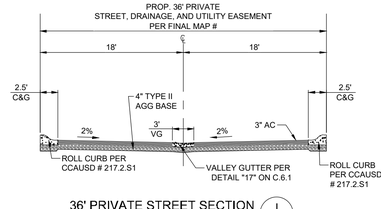
40' PRIVATE STREET SECTION (G)

SCALE: NTS



30' PRIVATE STREET SECTION (H)

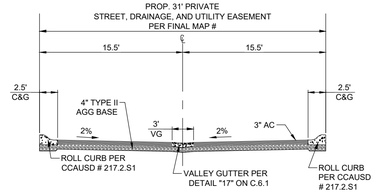
SCALE: NTS



36' PRIVATE STREET SECTION (I)

SCALE: NTS

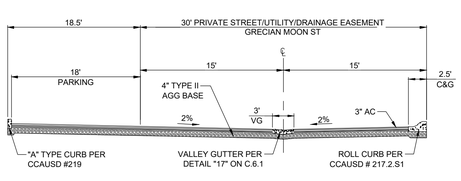
***NOTE:**
PARKING ONLY ALLOWED WHERE INDICATED ON PLANS.
NO PARKING IN FRONT OF DRIVEWAYS.



31' PRIVATE STREET SECTION (J)

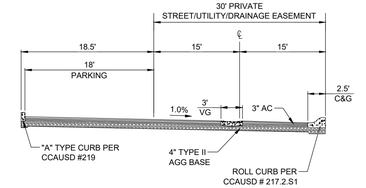
SCALE: NTS

***NOTE:**
PARKING ONLY ALLOWED WHERE INDICATED ON PLANS.
NO PARKING IN FRONT OF DRIVEWAYS.



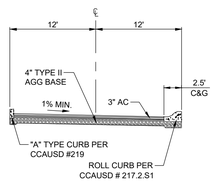
30' PRIVATE STREET SECTION
WITH ADDITIONAL PARKING (K)

SCALE: NTS



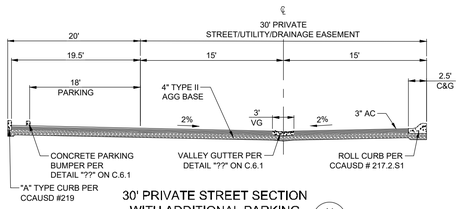
30' PRIVATE STREET SECTION
WITH ADDITIONAL PARKING (L)

SCALE: NTS



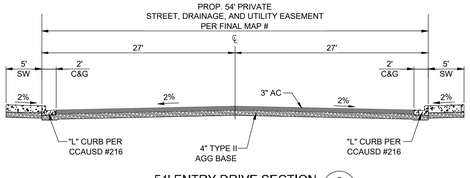
NORTH PARKING LOT ENTRY DRIVE (M)

SCALE: NTS



30' PRIVATE STREET SECTION
WITH ADDITIONAL PARKING (N)

SCALE: NTS



54' ENTRY DRIVE SECTION (O)

SCALE: NTS

HORROCKS ENGINEERS
1401 North Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE
0 1 2

REVISIONS		
REV #	DATE	
1		

*SEE GENERAL NOTES SHEET

DRAWING INFO	
DATE	4/10/2020
DESIGNED	ACD
DRAWN	PMP
CHECKED	ACD
PROJECT	NV-2105-1911

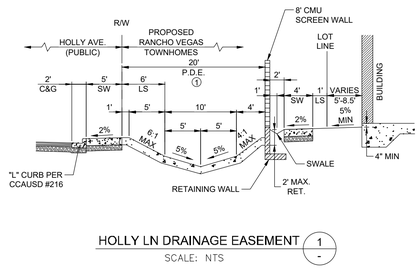
PROFESSIONAL ENGINEER-STATE OF NEVADA
ANTHONY C. DELEON JR
EXP. 12-31-20
CIVIL
No. 023113
6/8/2020

RANCHO & VEGAS

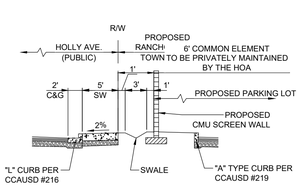
CITY OF LAS VEGAS, NEVADA

STREET SECTIONS

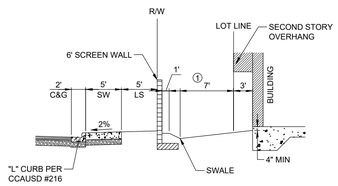
C.6.0



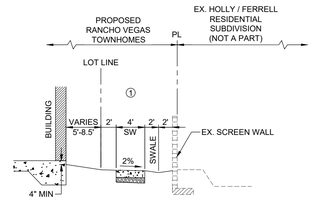
HOLLY LN DRAINAGE EASEMENT 1
SCALE: NTS



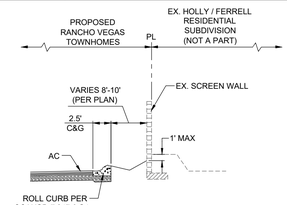
NORTH BOUNDARY SECTION 2
SCALE: NTS



NORTH BOUNDARY SECTION 3
SCALE: NTS



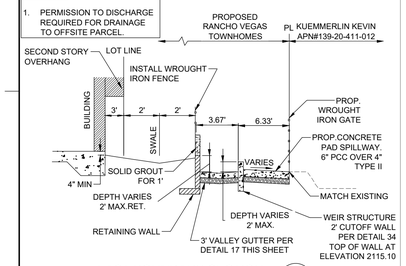
EAST BOUNDARY SECTION 4
SCALE: NTS



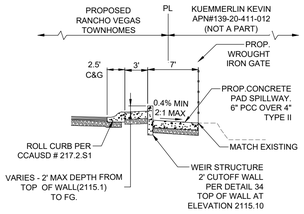
EAST BOUNDARY SECTION 5
SCALE: NTS

NOTES:

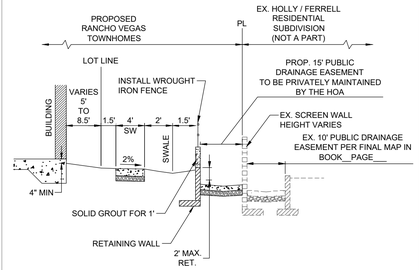
1. PERMISSION TO DISCHARGE REQUIRED FOR DRAINAGE TO OFFSITE PARCEL.



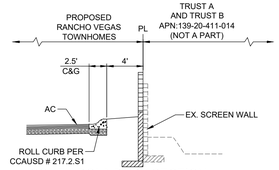
EAST BOUNDARY SECTION 6
SCALE: NTS



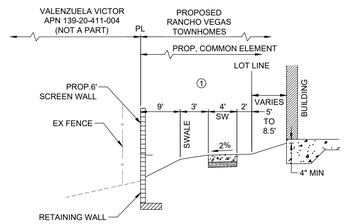
EAST BOUNDARY SECTION 6A
SCALE: NTS



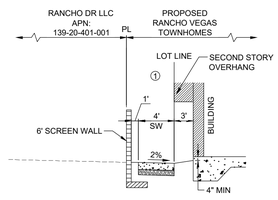
NORTH BOUNDARY SECTION - SOUTHEAST CORNER 7
SCALE: NTS



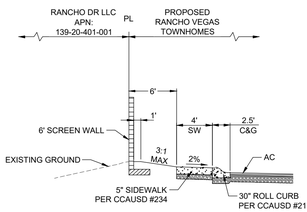
SOUTH BOUNDARY SECTION - PARNON 8
SCALE: NTS



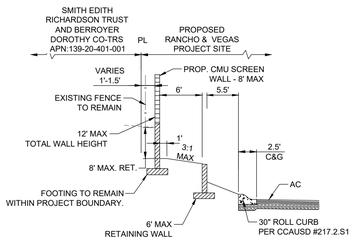
SOUTH BOUNDARY SECTION 9
SCALE: NTS



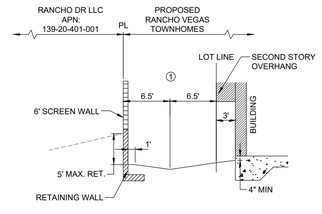
NORTH BOUNDARY SECTION 10
SCALE: NTS



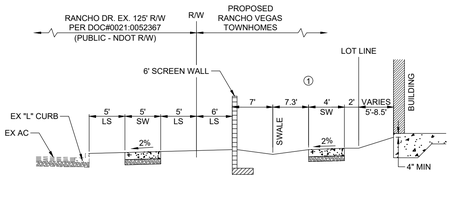
NORTH BOUNDARY - HESTIA AVENUE 11
SCALE: NTS



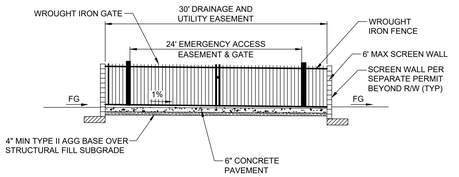
WEST BOUNDARY SECTION
GRECIAN MOON ST. 12
SCALE: NTS



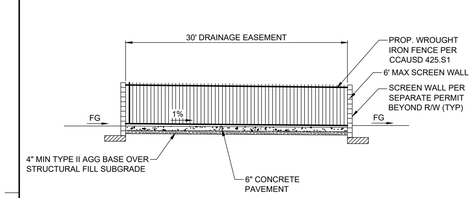
WEST BOUNDARY SECTION 13
SCALE: NTS



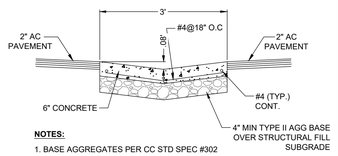
WEST BOUNDARY SECTION 14
SCALE: NTS



PRIVATE DRAINAGE EASEMENT 15
SCALE: NTS



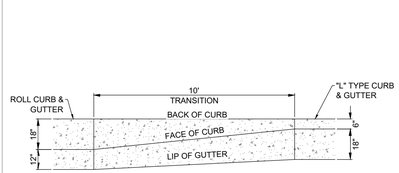
PRIVATE DRAINAGE EASEMENT 16
SCALE: NTS



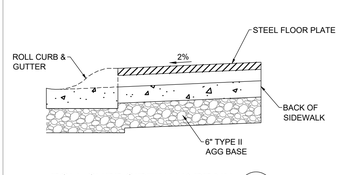
NOTES:

1. BASE AGGREGATES PER CC STD SPEC #302
2. CONCRETE PER CC STD SPEC #501
3. REFER TO SOILS REPORT BY ??, PROJECT #??, DATED JANUARY ??.

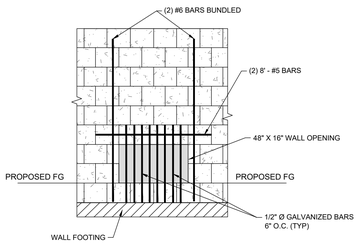
VALLEY GUTTER 17
SCALE: NTS



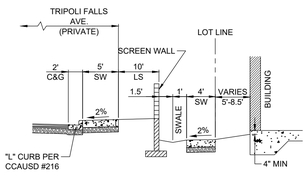
10' CURB TRANSITION 18
SCALE: NTS



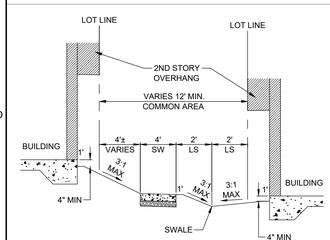
ROLL CURB SIDEWALK DRAIN 19
SCALE: NTS



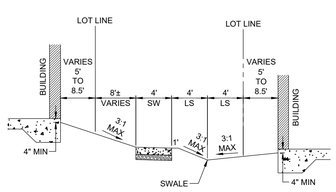
48" X 16" SCREEN WALL OPENING 20
SCALE: NTS



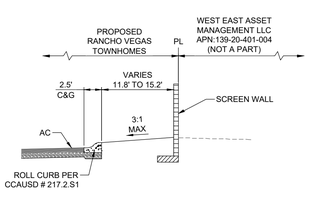
BUILDING SECTION 21
SCALE: NTS



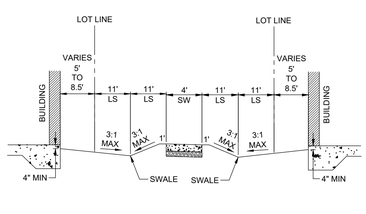
BUILDING SECTION 22
SCALE: NTS



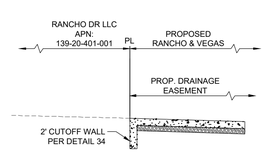
BUILDING SECTION 23
SCALE: NTS



NORTH BOUNDARY SECTION 24
SCALE: NTS



BUILDING SECTION 25
SCALE: NTS



HOLLY WEST BOUNDARY SECTION 26
SCALE: NTS

NOTES:

1. ALL COMMON ELEMENTS ARE PUBLIC DRAINAGE EASEMENTS TO BE PRIVATELY MAINTAINED BY THE HOA.

HORROCKS ENGINEERS
1401 North Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
0 1 2
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE

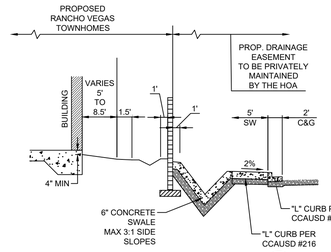
REVISIONS		
REV #	DATE	
1		*SEE GENERAL NOTES SHEET

DRAWING INFO	
DATE	4/13/2020
DESIGNED	ACD
DRAWN	PMP
CHECKED	ACD
PROJECT	NV-2105-1911

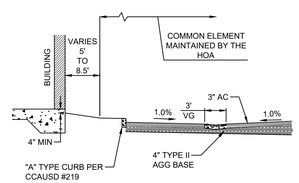
PROFESSIONAL ENGINEER-STATE OF NEVADA
ANTHONY C. DELEON JR
EXP. 12-31-20
CIVIL
No.023113
6/8/2020

RANCHO & VEGAS
CITY OF LAS VEGAS, NEVADA
DETAILS 1

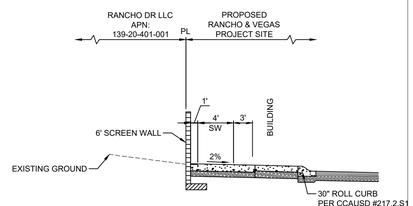
C.6.1
PAGE 45



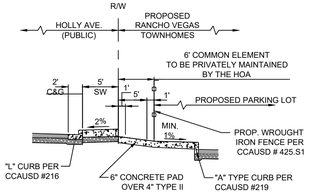
HOLLY DRAINAGE EASEMENT 27
SCALE: NTS



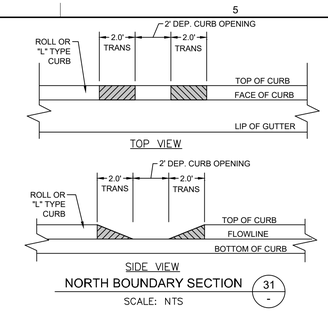
PARKING LOT SWALE 28
SCALE: NTS



NORTH BOUNDARY SECTION 29
SCALE: NTS



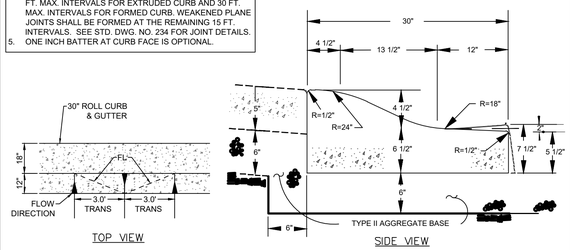
NORTH DRAINAGE EASEMENT
- HOLLY PARKING LOT. 30
SCALE: NTS



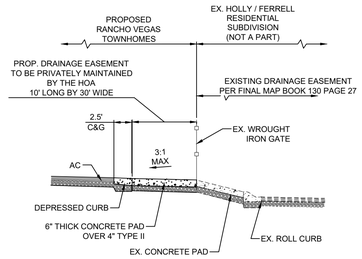
NORTH BOUNDARY SECTION 31
SCALE: NTS

NOTES:

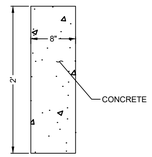
1. ASPHALT TO BE FLUSH AT LIP OF REVERSE ROLL CURB FLOWLINE.
2. SIDEWALK CONSTRUCTED CONTIGUOUS TO ROLL CURB SHALL BE 5 INCHES THICK (MIN).
3. WHERE LONGITUDINAL SLOPE IS LESS THAN 0.4% THE FLOW LINE SHALL BE WATER TESTED.
4. CONSTRUCT 1/2" EXPANSION JOINT AT ALL COLD JOINTS, AT BEGINNING AND END OF CURB RETURNS, AND AT 300 FT. MAX. INTERVALS FOR EXTRUDED CURB AND 30 FT. MAX. INTERVALS FOR FORMED CURB. WEAKENED PLANE JOINTS SHALL BE FORMED AT THE REMAINING 15 FT. INTERVALS. SEE STD. DWG. NO. 234 FOR JOINT DETAILS.
5. ONE INCH BATTER AT CURB FACE IS OPTIONAL.



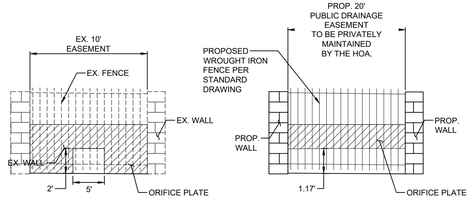
REVERSE ROLL CURB -
SPILL DETAIL 32
SCALE: NTS



HERODIAN DRAINAGE SECTION 33
SCALE: NTS



2'x8" CUTOFF WALL 34
SCALE: NTS



ORIFICE DETAILS 35
SCALE: NTS

HORROCKS ENGINEERS
1401 North Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
0 1 2
IF THIS BAR DOES NOT
MEASURE 2" THEN
DRAWING IS NOT TO SCALE

REVISIONS		
REV #	DATE	

*SEE GENERAL NOTES SHEET

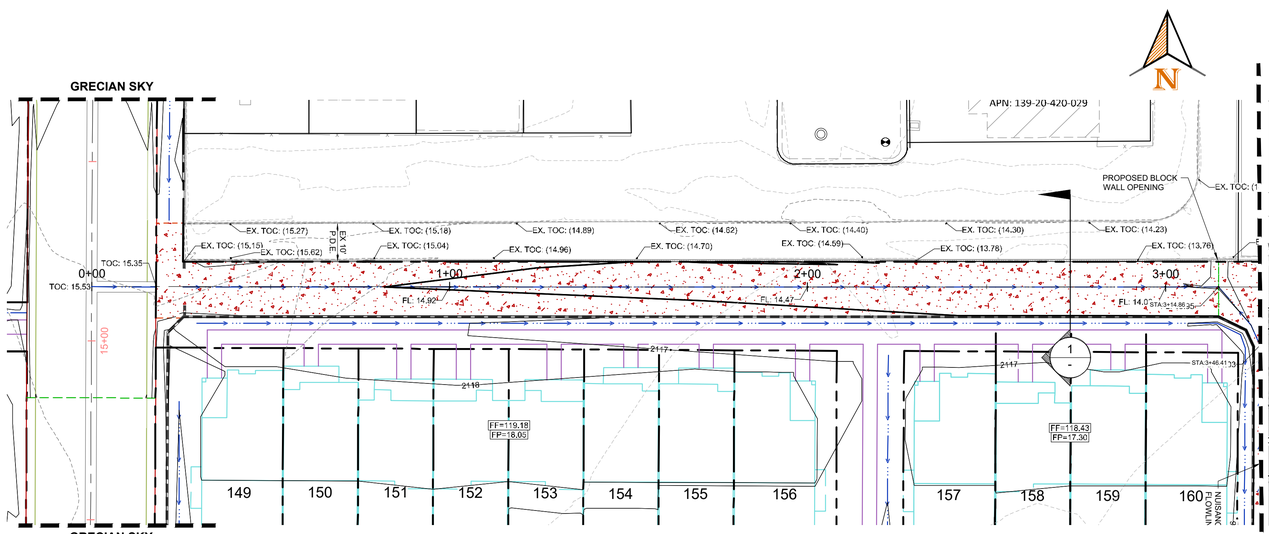
DRAWING INFO	
DATE	4/13/2020
DESIGNED	ACD
DRAWN	PMP
CHECKED	ACD
PROJECT	NV-2105-1911

PROFESSIONAL ENGINEER-STAMP
ANTHONY C. DELEON JR
EXP. 12-31-20
CIVIL
No. 023113
STATE OF NEVADA
6/8/2020

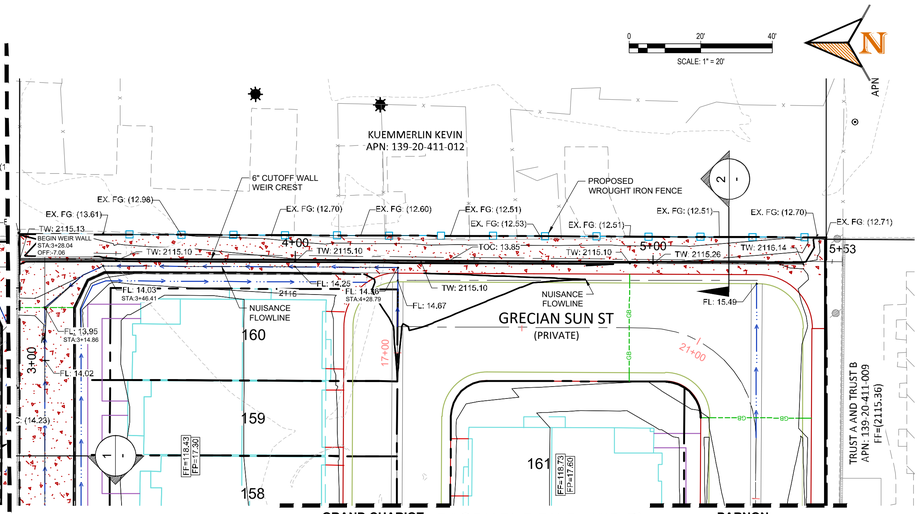
RANCHO & VEGAS
CITY OF LAS VEGAS, NEVADA
DETAILS 1

C.6.1

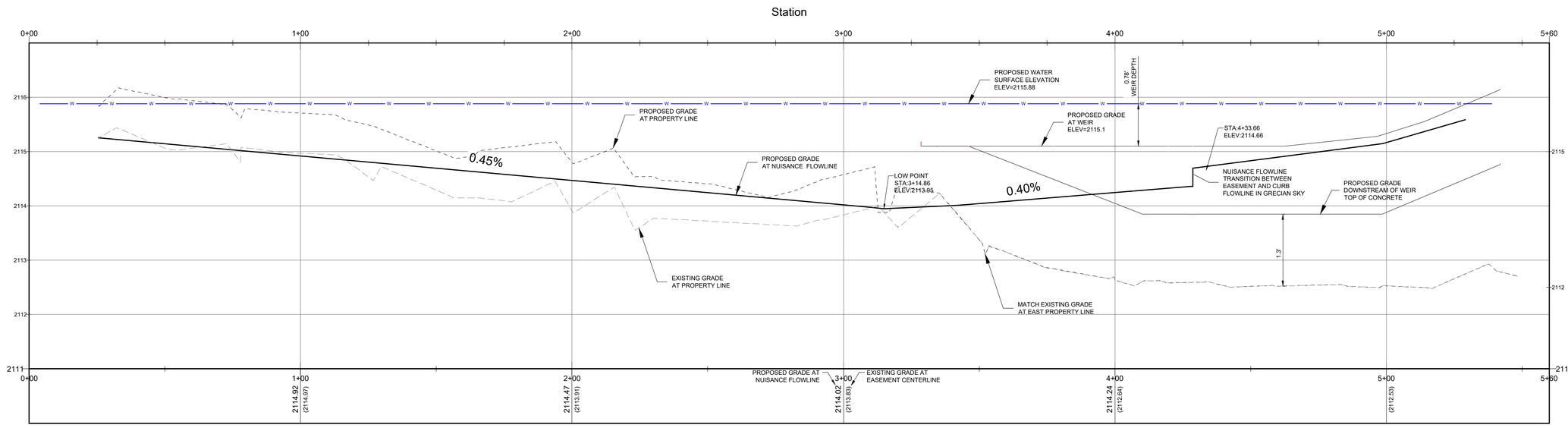
H:\2019\NV-2105-1911 Rancho & Vegas Townhomes\Project Data\02 CAD\2.03 Sheet Files\Construction Drawings\C.6.1 DETAILS.dwg - C.6.2 - 6/08/2020 02:37pm, anthony.deleon



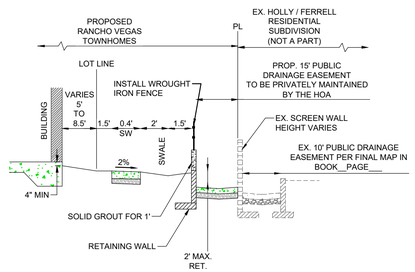
EASEMENT ENTRANCE)
PLAN VIEW
(STA. 0+00 TO 3+25)



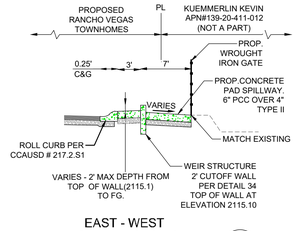
EASEMENT EXIT - WEIR)
PLAN VIEW
(STA. 3+25 TO 5+50)



PUBLIC DRAINAGE EASEMENT - ESP3
PROFILE VIEW
(STA. 0+00 TO 5+50)
SCALE: 1" = 20' H
SCALE: 1" = 2' V



NORTH - SOUTH
EASEMENT SECTION
SCALE: NTS
1



EAST - WEST
EASEMENT SECTION
SCALE: NTS
2

HORROCKS ENGINEERS
1401 North Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
0 1 2
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE

REVISIONS
REV # | DATE
*SEE GENERAL NOTES SHEET

DRAWING INFO
DATE 6/7/2020
DESIGNED AD
DRAWN AD
CHECKED DC
PROJECT NV-2105-1911

ANTHONY DELEON JR
EXP. 12-31-20
CIVIL
No 023115
STATE OF NEVADA
6/8/2020

RANCHO & VEGAS
LAS VEGAS, NEVADA
DRAINAGE EASEMENT PROFILE
EASEMENT ESP3

11
PAGE

H:\!2019\NV-2105-1911 Rancho & Vegas Townhomes\Project Data\02 CAD\2.03 Sheet Files\Concepts & Exhibits\2020 0607 Drainage esmt exhibit\Weir exhibit.dwg - ESP3 - 6/08/2020 02:38pm, anthony.deleon