



**ADDENDUM TO TECHNICAL DRAINAGE STUDY
FOR
*Kyle Canyon Road and Oso Blanca Road***

**JOB NO. 200203
AUGUST 2022**

Prepared by:

ACG Design
4310 Cameron St, Suite 12-A
Las Vegas, NV 89103
(702) 448-8737

Prepared for:

Kyle Canyon Next And Last Frontier, LLC
Michael Swecker
6655 West Sahara Avenue #B200-113
Las Vegas, NV 89146



8/10/2022

HYDROLOGIC CRITERIA AND DRAINAGE MANUAL
DRAINAGE STUDY INFORMATION FORM

Name of Development: KYLE CANYON RD. AND OSO BLANCA RD. Date: AUGUST 11, 2022

Location of Development: a) Descriptive (Cross Streets) North/South: OSO BLANCA RD.
East/West: KYLE CANYON RD.

b) Section: 1 Township: 19 SOUTH Range: 59 EAST

c) APN : 126-01-702-007 & 126-01-799-006 (PUBLIC R/W)

Name of Owner: KYLE CANYON NEXT & LAST FRONTIER, LLC - MICHAEL SWECKER

Telephone No.: N/A Fax No.: _____ E-Mail Address: MIKESWECKER@GMAIL.COM

Address: 6655 WEST SAHARA AVENUE, #B200-113 LAS VEGAS, NV 89146

Contact Person-Name: RANDY SKORPINSKI, PE Telephone No.: 702-448-8737

* E-Mail Address: RSKORPINSKI@ACG.DESIGN Fax No.: N/A

Firm: ACG DESIGN

Address: 4310 CAMERON ST., SUITE 12-A LAS VEGAS, NV 89103

Type of Land Development/Land Disturbance Process:

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

1. Total Owned Land Area: At Site: 2.48+/- ACRES Being Developed/Disturbed: 2.48+/- ACRES

2. Is a portion or all of the subject property located in a designated FEMA Flood Hazard Area? ☐ Yes** ☒ No

3. Is the property bordered or crossed by an existing or proposed Clark County Regional Flood Control District Master Planned Facility? ☒ Yes** ☐ No

4. Proposed type of development (Residential, Commercial, Etc.): COMMERCIAL - CONVENIENCE STORE

5. Approximate upstream land area which drains to the subject site: 25.00+/- ACRES

6. Has the site drainage been evaluated in the past? ☒ YES ☐ NO If yes, please identify documentation: TDS FOR US95 KYLE CANYON ROAD INTERCHANGE

7. If known, please briefly identify the proposed discharge point(s) of runoff from the site: EAST TO EXISTING DUAL RCBS (6' X 3' RCB's)

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



Engineer's Seal 8/10/2022

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

COMMENT LETTER

CITY OF LAS VEGAS		DATE:
INTER-OFFICE MEMORANDUM		June 15, 2022
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:	
	Kyle Canyon Road & Oso Blanca Road	
Cross Streets:	SWC of Kyle Canyon Road & Oso Blanca Road	Kyle Canyon Next & Last Frontier LLC
File Number:	F:\Depot\DSMemos\DS5573A.doc	Bart Anderson, P.E., DevCo
Parcel Number:	126-01-702-007	CCRFCD
Zoning Action:	22-0102-TMP1; 22-0106-SDR1 & 22-0106-SUP1	NDOT
FEMA Flood Zone	YES	NO X
Proposed Storm Drain	YES	NO X

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1 st Submittal (Paid on 6/14/2022)	5/25/2022 & 6/14/2022	6/15/2022	See Comments Below	\$400.00	4827859: \$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. Sites with a grade difference of 2 feet above or below existing are required to have approval from the *City Planning and Development Department*. The engineer must submit copies of the grading plans and detail sheet with a letter justifying the grade difference to the *City Planning Department* (229-6301). The engineer must provide Planning approval with the next submittal.
2. The site is adjacent to or crosses an existing or proposed *Clark County Regional Flood Control District* (CCRFCD) master planned facility. Therefore, CCRFCD concurrence is required prior to final approval of the drainage study.

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

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

3. The project proposes to construct facilities and/or increase flows within *Nevada Department of Transportation* (NDOT) right-of-way. The engineer must contact NDOT for encroachment permit for the proposed project.

4. Provide an *Ultimate Drainage Map* that accounts for the offsite basin **OFFE** under developed condition. *Ultimate Condition* shall be the worse case condition over the *Developed Condition* and presents the highest runoff situation.
5. **DR1** and **DR2**: Explain where the $Q_{10}/Q_{25}/Q_{100}$ in *Kyle Canyon Road* and *Oso Blanca Road* are referenced from in the next submittal.
6. **DR2**: Provide *Street Flow Summary* for *Rufian Road*.
7. **Sheet C6**: Construction Note #28 proposed a Type B drop inlet which is not allowed in the *City of Las Vegas*. Revise all drop inlets to Type "C-D" Modified Drop Inlet per Standard Drawing 412.1 or Neenah Pre-cast inlets. Note that the lengths of "C-D" modified inlets are in the multiple of 2.5'. Revise all pertinent construction notes and callouts accordingly.
8. Provide a storm drain manhole in *Rufian Road* above the proposed dual-6'x3' RCB and another one at the downstream end of the box. Revise all pertinent sheets accordingly.
9. **Sheet C6**: Remove an existing 24"-RCP culvert in *Oso Blanca Road* at the proposed driveway location. Provide a note for such action.
10. **Sheet C6**: The callout for *Section Details E/C10* and *F/C10* are incorrect. Revise to **E/C11** and **F/C11**.
11. **Sheet C6 and Sheet C7**: Provide a minimum 12'-wide access ramp down to the upstream end of the proposed dual-6'x3' RCBs for maintenance purpose.
12. It is not clear where the upstream of the RCBs and the riprap pad ends. Keep the improvements in the *Rufian* right-of-way. Otherwise a public drainage easement has to be obtained from the adjacent property owner.

Show full street *Rufian Road* right-of-way on the grading plan and plan & profile sheets.
13. **Sheet C7**: The profile indicates that there is a junction structure to connect the existing and proposed dual boxes. Provide structural detail of the structure in the next submittal.
14. Dedicate the proposed 30' easement as "Public Drainage Easement with Surface to be Privately Maintained by the Property Owner". Record as such in the Subdivision Plat Map.
15. **Sheet C10**: *Section Detail A*: Clearly show that the top three courses of the retaining wall to be 8"-thickness CMU to be solid grouted or equivalent above the adjacent high grade.
16. **Sheet C11**: Apply same comment to *Section Detail G* as in Comment #12.
17. **Sheet C11**: *Section Details E and F*: Per grading plan design, there is a swale behind the curb along the south property line. Revise the details accordingly in the next submittal.
18. Provide preliminary plan and profile sheets for all proposed perimeter streets (*Kyle Canyon Road*, *Oso Blanca Road* and *Rufian Road*). Plan and profile sheets must show existing and proposed grade at centerline, but may be preliminary in all other respects. These plans are necessary to determine the effect of the proposed development on the adjacent properties.

19. Add a note in all pertinent sheets for the construction of all storm drain drop inlets per a newly adopted USDCCA Drawing No. 421 (*Stormwater Quality Management Stamp and Sign Detail*).
20. Provide the Stormwater Management Notes on the Improvement Plans.
21. Provide a note on the grading plan (Standard Note No. 6): Post-Construction BMPs (PCBMPs) / Control Measures noted on the Grading Plans are mandatory permanent regulatory stormwater pollution controls. These PCBMPs must be installed per the approved plans and must be permanently maintained.
22. Provide a note on the grading plan: All onsite storm drains and the associated storm drain facilities are Privately Owned and to be Privately Maintained by the owner".

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
AYS

T/R/S: T19S/R59E/01
AREA F-01

August 10, 2022

Albert Sung, P.E.
Flood Control Project Engineer
Department of Public Works
City of Las Vegas
495 S. Main Street
Las Vegas, NV 89101

Subject: Addendum to Technical Drainage Study for Kyle Canyon Road & Oso Blanca Road
APN: 126-01-702-007
DS 5573A

Dear Albert Sung,

We are in receipt of your comment letter, dated: June 15, 2022, for the above referenced project.

In response to your comments, the following responses are being offered:

- 1) Sites with a grade difference of 2 feet above or below existing are required to have approval from the *City Planning and Development Department*. The engineer must submit copies of the grading plans and detail sheet with a letter justifying the grade difference to the *City Planning Department* (229-6301). The engineer must provide Planning approval with the next submittal.

Response 1: Noted.

- 2) The site is adjacent to or crosses an existing or proposed *Clark County Regional Flood Control District* (CCRFCD) master planned facility. Therefore, CCRFCD concurrence is required prior to final approval of the drainage study.

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

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

Response 2: Noted.

- 3) The project proposes to construct facilities and/or increase flows within *Nevada Department of Transportation* (NDOT) right-of-way. The engineer must contact NDOT for encroachment permit for the proposed project.

Response 3: Noted. We have submitted for NDOT Concurrence.

- 4) Provide an *Ultimate Drainage Map* that accounts for the offsite basin OFFE under developed condition. *Ultimate Condition* shall be the worse-case condition over the *Developed Condition* and presents the highest runoff situation.

Response 4: In the initial submittal, we included approved Exhibit H, which is the Ultimate Condition Drainage and Facility Map. This Exhibit H has been re-included. On this Exhibit, the future ultimate condition facility at the downstream end of our Site shows Facility ID E-7. Facility E-7 was shown to be designed for 44cfs for Ultimate conditions. This is what we initially submitted for and designed our drainage facilities for. Our site and offsite area is a small portion of the future offsite basin NW35-C (192 acres; 423cfs/260cfs/191cfs), which discharges 191, 260 and 423cfs in the 10yr, 25yr and 100yr storm events.

However, after speaking with Oh-Sang Kwon, to get a better idea of what the Ultimate flow rates are that impact our Site from the west, we have performed a ratio calculation using the same area as approved offsite basin OFFE (24.48 acres) which includes the offsite area for our Site and our Site itself. Using the approved Ultimate basin NW35-C and the future flows the basin discharges, we have provided a ratio calculation using the total offsite area and our site (24.48 acres, same as existing) to come up with a more accurate future flow. The ratio calculation shows the ultimate condition flows of 25, 34 and 54cfs for our offsite area and our site itself. This 100yr flow (54cfs) makes sense since they designed the existing facilities (2-6'x3' RCBs) for 44cfs (100yr). However, we will use the worst case for our design and utilize the 54cfs in the design of our site.

Referenced excerpts have been included from the appropriate approved studies. All the necessary hydrology and hydraulic calculations have been revised. This includes street hydraulics, inlet calculations and storm drain calculations. We have also provided referenced Exhibit E (Ultimate Condition Drainage Map) and a revised DR2 (Developed Drainage Plan) with the revised flows and updated street table.

- 5) **DR1** and **DR2**: Explain where the Q10/Q25/Q100 in *Kyle Canyon Road* and *Oso Blanca Road* are referenced from in the next submittal.

Response 5: The street flows were not exactly referenced. For DR1, we utilized approved offsite basin OFFE (24.48 acres) flows, which included *Kyle Canyon Road* and the offsite area south of it. As our initial hydraulic calculations show, we assumed conservatively that 1/3 of the referenced OFFE basin flow would remain in the street. We say this is conservative because the street itself is a very small area in relation to the offsite area. So assuming 33% of the OFFE flows is how we determined street flows for Kyle Canyon Rd. For *Oso Blanca Rd.*, we assumed the flows in *Kyle Canyon Rd.* turn south into Oso Blanca Rd. and combine with the basin OSOD flows (1/1/2cfs), which is Oso Blanca Rd. itself. There are no revisions to DR1 and the initial submittal of DR1 still remains as there are no revisions.

For the revised DR2, we again assumed 33% of the offsite ultimate flows, which has been calculated using a Ratio Calculation from the approved future flow basin NW35-C. From the response in Comment #4, it was assumed that 33% of the offsite area (24.48acres) will remain in the street and continue to Oso Blanca. This flow will combine with Oso Blanca flows from basin OSOD (1/1/2cfs) and discharge south toward the proposed 20ft Modified Type C drop inlet.

These flows are all notated on the hydraulic calculations provided for clarity on how the flows came about. See Comment #4 for hydraulic calculations.

- 6) **DR2**: Provide *Street Flow Summary* for *Rufian Road*.

Response 6: Noted. We have conservatively assumed half of our Ultimate Condition offsite flow for the 10yr/25yr/100yr storm events will discharge east into Rufian Rd. From our Response to Comment #4, the flows utilized in Rufian Rd. are 27cfs for the 100yr storm, 17cfs for the 25yr storm and 13cfs for the 10yr storm. A street table has been provided for Rufian Road for the 10yr and 100yr storm events only since Rufian is not NDOT R/W. The hydraulic street calculations have been provided utilizing the Ultimate condition flow rates (worse-case). See revised DR2 and street table printout in Comment #4.

- 7) **Sheet C6**: Construction Note #28 proposed a Type B drop inlet which is not allowed in the *City of Las Vegas*. Revise all drop inlets to Type "C-D" Modified Drop Inlet per Standard Drawing 412.1 or Neenah Pre-cast inlets. Note that the lengths of "C-D" modified inlets are in the multiple of 2.5'. Revise all pertinent construction notes and callouts accordingly.

Response 7: Noted.

- 8) Provide a storm drain manhole in *Rufian Road* above the proposed dual - 6' x 3' RCBs and another one at the downstream end of the box. Revise all pertinent sheets accordingly.

Response 8: Noted.

- 9) **Sheet C6:** Remove an existing 24"- RCP culvert in *Oso Blanca Road* at the proposed driveway location. Provide a note for such action.

Response 9: Noted.

- 10) **Sheet C6:** The callout for *Section Details E/C10* and *F/C10* are incorrect. Revise to **E/C11** and **F/C11**.

Response 10: Noted. The Section Details E/C10 and F/C10 are both revised.

- 11) **Sheet C6 and Sheet C7:** Provide a minimum 12'-wide access ramp down to the upstream end of the proposed dual - 6' x 3' RCBs for maintenance purpose.

Response 11: Noted.

- 12) It is not clear where the upstream of the RCBs and the riprap pad ends. Keep the improvements in the *Rufian* right-of-way. Otherwise a public drainage easement has to be obtained from the adjacent property owner.

Show full street *Rufian* right-of-way on the grading plan and plan & profile sheets.

Response 12: Noted.

- 13) **Sheet C7:** The profile indicates that there is a junction structure to connect the existing and proposed dual boxes. Provide structural detail of the structure in the next submittal.

Response 13: Noted.

- 14) Dedicate the proposed 30' easement as "Public Drainage Easement with Surface to be Privately Maintained by the Property Owner". Record as such in the Subdivision Plat Map.

Response 14: Noted.

- 15) **Sheet C10: Section Detail A:** Clearly show that the top three courses of the retaining wall to be 8"-thickness CMU to be solid grouted or equivalent above the adjacent high grade.

Response 15: Noted.

- 16) **Sheet C11:** Apply same comment to *Section Detail G* as in Comment #12.

Response 16: Noted.

- 17) **Sheet C11: Section Details E and F:** Per grading plan design, there is a swale behind the curb along the south property line. Revise the details accordingly in the next submittal.

Response 17: Noted. Section Details 'E' and 'F' have been revised to include the swale behind the curb along the south property line.

- 18) Provide preliminary plan and profile sheets for all proposed perimeter streets (*Kyle Canyon Road, Oso Blanca Road and Rufian Road*). Plan and profile sheets must show existing and proposed grade at centerline, but may be preliminary in all other respects. These plans are necessary to determine the effect of the proposed development on the adjacent properties.

Response 18: Noted. Plan and Profile Sheets have been provided for all proposed perimeter streets (Kyle Canyon Rd., Oso Blanca Rd. and Rufian Rd.).

- 19) Add a note in all pertinent sheets for the construction of all storm drain drop inlets per a newly adopted USDCCA Drawing No. 421 (*Stormwater Quality Management Stamp and Sign Detail*).

Response 19: Noted.

20) Provide the Stormwater Management Notes on the Improvement Plans.

Response 20: Noted.

21) Provide a note on the grading plan (Standard Note No. 6): Post-Construction BMPs (PCBMPs)/Control Measures noted on the Grading Plans are mandatory permanent regulatory storm water pollution controls. These PCBMPs must be installed per the approved plans and must be permanently maintained.

Response 21: Noted.

22) Provide a note on the grading plan: All onsite storm drains and the associated storm drain facilities are Privately Owned and to be Privately Maintained by the owner”.

Response 22: Noted.

If you have any questions or further comments, please contact our office at your convenience.

Sincerely,

ACG Design
Randy Skorpinski, PE



8/10/2022

COMMENT #1

COMMENT #4

REFERENCED HEC-1 ULTIMATE CONDITIONS

(APPROVED FLOWS FROM FUTURE BASIN 'NW35-C')

ultimate3.OUT

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* FLOOD HYDROGRAPH PACKAGE (HEC-1) *
* JUN 1998 *
* VERSION 4.1 *
* RUN DATE 10MAR13 TIME 14:28:45 *
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* U.S. ARMY CORPS OF ENGINEERS *
* HYDROLOGIC ENGINEERING CENTER *
* 609 SECOND STREET *
* DAVIS, CALIFORNIA 95616 *
* (916) 756-1104 *
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X X X X X
X X XXXXXX XXXX XXXX

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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1GB, AND HEC1KH.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE. THE DEFINITION OF -AMSK- 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

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LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
*DIAGRAM
1 ID SLATER MANIFAN GROUP
2 ID OLYMPIA COMPANIES
3 ID SKYE CANYON - MASTER DRAINAGE STUDY UPDATE 2
4 ID OVERALL PROPERTY ULTIMATE DRAINAGE CONDITION
5 ID
6 ID RETURN PERIOD ----- 100 & 10-YEAR
7 ID DISTRIBUTION ----- 6-HOUR SDN3
8 ID PROJECT NO. ----- OLY1401.001
9 ID FILENAME ----- Ultimate.H1
10 ID DATE ----- 03/10/15
11 ID MODELED BY ----- SMJ/ETH
12 ID
13 ID SIX HOUR DEPTH-AREA REDUCTION FACTORS
14 ID DRAINAGE AREA (MI^2) DARF
15 ID 0.0-0.49 1.00
16 ID 0.5-0.99 0.98
17 ID 1.0-1.99 0.97
18 ID 2.0-3.99 0.93
19 ID 4.0-5.99 0.91
20 ID 6.0-7.99 0.90
21 ID 25-YR 0.70
22 ID 10-YR 0.57
23 ID
24 ID 5 0 0 300
25 ID 5 0 0
26 ID 5 0 0
27 ID PREC 1.00 0.98 0.97 0.93 0.91 0.90 0.70 0.57
*
28 KK 95-5
29 KM REVISED FROM GCW MASTER DRAINAGE STUDY, MINUS OFFV
30 BA .0303
31 PB 2.77
32 PC 0 0.020 0.057 0.070 0.087 0.108 0.124 0.130 0.130 0.130
33 PC 0.130 0.130 0.130 0.133 0.140 0.142 0.148 0.158 0.172 0.181
34 PC 0.190 0.197 0.199 0.200 0.201 0.204 0.214 0.229 0.241 0.249
35 PC 0.251 0.256 0.270 0.278 0.281 0.283 0.295 0.322 0.352 0.409
36 PC 0.499 0.590 0.710 0.744 0.781 0.812 0.819 0.835 0.851 0.856
37 PC 0.860 0.868 0.876 0.888 0.910 0.926 0.937 0.950 0.970 0.976
38 PC 0.982 0.985 0.987 0.989 0.990 0.993 0.993 0.994 0.995 0.998
39 PC 0.998 0.999 1.000
40 LS 0 92.2
41 UD 0.074
*
42 KK DHD01R
43 KM FACILITY E-9
44 KM FLOW SPLIT AT VTN CULVERT 1
45 KM FLOW SPLITS TO BETWEEN NB AND SB ROADS OF US-95
46 KM REFERENCED FROM GCW MASTER DRAINAGE STUDY
47 DT DCHD1R
48 DT 0 133 187 250
49 DQ 0 120 135 150
*

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100yr
25yr
10yr

1

HEC-1 INPUT

PAGE 2

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LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
50 KK OFFB
51 KM REFERENCED FROM GCW MASTER DRAINAGE STUDY
52 BA .0133
53 PB 2.77
54 LS 0 92.2
55 UD 0.103
*

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1090 KK 2CNW1C
1091 KM COMBINE RCOFFS-1 AND CNW1-C
1092 KM REFERENCED FROM 2008 MPU
1093 HC 2

1094 KK R2CNW1-C
1095 KM ROUTE 2CNW1-C TO CNW-7
1096 KM FACILITY =MOCCASIN AND KYLE CANYON ROAD
1097 KM FACILITY ID-MILE = MOKC 0325
1098 KM LINING = RCB
1099 KM REFERENCED FROM 2008 MPU
1100 RD 5700 0.0365 0.015 0 TRAP 9 0

HEC-1 INPUT

PAGE 31

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

1101 KK NW7-C
1102 KM REFERENCED FROM 2008 MPU
1103 BA 0.488
1104 PB 3.03
1105 LS 0 87.2
1106 UD 0.364

1107 KK CNW-7
1108 KM COMBINE NW7-C AND R2CNW1-C
1109 KM REFERENCED FROM 2008 MPU
1110 HC 2

1111 KK RCNW7C
1112 KM ROUTE CNW7-C TO CNW21-C
1113 KM FACILITY =MOCCASIN AND KYLE CANYON ROAD
1114 KM FACILITY ID-MILE = MOKC
1115 KM LINING = RCB
1116 KM REVISED FROM 2008 MPU
1117 RD 2660 0.0338 0.015 0 TRAP 20 0

1118 KK NW21-C
1119 KM PROPOSED ULTIMATE CONDITION MPA BASIN
1120 BA .1552
1121 PB 3.00
1122 LS 0 92.0
1123 UD 0.199

1124 KK CNW21C
1125 KM COMBINE NW21-C AND CNW-7
1126 HC 2

1127 KK RCNW21-C
1128 KM ROUTE CNW21-C TO CNW35-C
1129 KM FACILITY =MOCCASIN AND KYLE CANYON ROAD
1130 KM FACILITY ID-MILE = MOKC
1131 KM LINING = RCB
1132 KM REVISED FROM 2008 MPU
1133 RD 5450 0.0339 0.015 0 TRAP 20 0

1134 KK NW35-C
1135 KM PROPOSED ULTIMATE CONDITION MPA BASIN
1136 BA .3447
1137 PB 2.93
1138 LS 0 90.5
1139 UD 0.291

HEC-1 INPUT

PAGE 32

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

1140 KK CNW35C
1141 KM COMBINE NW35-C AND CNW21-C
1142 HC 2

1143 KK CKC5
1144 KM COMBINE HU-IR, CNW35C
1145 HC 2

1146 KK NW50-C
1147 KM PROPOSED ULTIMATE CONDITION MPA BASIN
1148 BA .1677
1149 PB 2.92
1150 LS 0 87.8
1151 UD 0.179

1152 KK CKC6
1153 KM COMBINE CKC5, NW50-C
1154 HC 2

1155 KK OFFZ
1156 BA .0523
1157 PB 2.77
1158 LS 0 87.0
1159 UD 0.138

1107	CNW-7			
	V			
1111	RCNW7C			
	V			
1118		NW21-C		
	V			
1124	CNW21C			
	V			
1127	RCNW21			
	V			
1134		NW35-C		
	V			
1140	CNW35C			
	V			
1143	CKC5			
	V			
1146		NW50-C		
	V			
1152	CKC6			
	V			
1155	OFFZ			
	V			
1160		HUAL3		
	V			
1165			EMLA4	
	V			
1170				STRT10
	V			
1175	DUMMY			
	V			
1177		EMLA3		
	V			
1182			STRT11	
	V			
1187	DUMMY			
	V			
1189		SHEEP3		
	V			
1194			EMLAS	
	V			
1199				EPRK1
	V			
1204	SM-MO			
	V			
1210	RETDIR	DCHD18		
1207				
	V			
1211		SHEP2B		
	V			
1216	LC-SM			
	V			
1220		EGC1		
	V			
1225			IRON1	
	V			
1230				EL8
	V			
1235	DUMMY			
	V			
1237		LOG1A		
	V			
1242			STRT6A	
	V			
1247	DUMMY			
	V			
1249		EL1		
	V			
1254			EML1	
	V			
1259				EL2
	V			

Ultimate3.OUT

1578 CP45.....
1585 -----> RACEL
1582 HORSE

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

* FLOOD HYDROGRAPH PACKAGE (HEC-1) *
* JUN 1998 *
* VERSION 4.1 *
* RUN DATE 10MAR15 TIME 14:28:45 *

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

SLATER HANIFAN GROUP
OLYMPIA COMPANIES
SKYE CANYON - MASTER DRAINAGE STUDY UPDATE 2
OVERALL PROPERTY ULTIMATE DRAINAGE CONDITION

RETURN PERIOD ----- 100 & 10-YEAR
DISTRIBUTION ----- 6-HOUR SDN3
PROJECT NO. ----- OLY1401.001
FILENAME ----- Ultimate.H1
DATE ----- 03/10/15
MODELED BY ----- SMJ/ETM

SIX HOUR DEPTH-AREA REDUCTION FACTORS
DRAINAGE AREA (MIA2) DAF
0.0-0.49 1.00
0.5-0.99 0.98
1.0-1.99 0.97
2.0-3.99 0.93
4.0-5.99 0.91
6.0-7.99 0.90
25-YR 0.70
10-YR 0.57

25 ID 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

3P MULTI-PLAN OPTION
NPLAN 1 NUMBER OF PLANS

3R MULTI-RATIO OPTION
RATIOS OF PRECIPITATION
1.00 .98 .97 .93 .91 .90 .70 .57

1

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

OPERATION	STATION	AREA	PLAN	RATIOS APPLIED TO PRECIPITATION							
				RATIO 1	RATIO 2	RATIO 3	RATIO 4	RATIO 5	RATIO 6	RATIO 7	RATIO 8
				1.00	.98	.97	.93	.91	.90	.70	.57
HYDROGRAPH AT	95-5	.03	1	57. 3.50	55. 3.50	55. 3.50	52. 3.50	51. 3.50	50. 3.50	36. 3.50	27. 3.50
DIVERSION TO	DCHD1B	.03	1	51. 3.50	50. 3.50	49. 3.50	47. 3.50	46. 3.50	45. 3.50	32. 3.50	24. 3.50
HYDROGRAPH AT	DHD01B	.03	1	6. 3.50	5. 3.50	5. 3.50	5. 3.50	5. 3.50	5. 3.50	4. 3.50	3. 3.50
HYDROGRAPH AT	OFFB	.01	1	22. 3.50	22. 3.50	22. 3.50	20. 3.50	20. 3.50	20. 3.50	14. 3.50	10. 3.50
2 COMBINED AT	CHD02B	.04	1	28.	27.	27.	26.	25.	25.	18.	13.

site is at NEC of
this Future Basin

100 yr

25 yr

10 yr

				Ultimate 3.0UT							
+ 2 COMBINED AT	CNN21C	2.35	1 FLOW TIME	2649. 3.75	2562. 3.75	2533. 3.75	2373. 3.75	2295. 3.75	2255. 3.75	1500. 3.75	1030. 3.83
+ ROUTED TO	RCNW21	2.35	1 FLOW TIME	2605. 3.75	2517. 3.75	2486. 3.75	2323. 3.75	2251. 3.75	2209. 3.75	1483. 3.83	1030. 3.83
+ HYDROGRAPH AT	NW35-C	.34	1 FLOW TIME	423. 3.75	413. 3.75	407. 3.75	385. 3.75	374. 3.75	369. 3.75	260. 3.75	191. 3.75
+ 2 COMBINED AT	CNN35C	2.69	1 FLOW TIME	3028. 3.75	2929. 3.75	2893. 3.75	2709. 3.75	2626. 3.75	2578. 3.75	1721. 3.83	1206. 3.83
+ 2 COMBINED AT	CKC5	4.86	1 FLOW TIME	3802. 3.75	3685. 3.75	3639. 3.75	3419. 3.75	3318. 3.75	3260. 3.75	2209. 3.75	1550. 3.75
+ HYDROGRAPH AT	NW50-C	.17	1 FLOW TIME	228. 3.58	222. 3.58	218. 3.58	205. 3.58	199. 3.58	196. 3.58	132. 3.58	93. 3.58
+ 2 COMBINED AT	CKC6	5.03	1 FLOW TIME	3979. 3.67	3860. 3.67	3807. 3.75	3577. 3.75	3471. 3.75	3411. 3.75	2313. 3.75	1625. 3.75
+ HYDROGRAPH AT	OFFZ	.05	1 FLOW TIME	69. 3.58	67. 3.58	66. 3.58	62. 3.58	60. 3.58	59. 3.58	40. 3.58	28. 3.58
+ HYDROGRAPH AT	HUAL3	.00	1 FLOW TIME	7. 3.58	7. 3.58	6. 3.58	6. 3.58	6. 3.58	6. 3.58	5. 3.58	4. 3.58
+ HYDROGRAPH AT	EMLA4	.07	1 FLOW TIME	105. 3.58	103. 3.58	101. 3.58	96. 3.58	93. 3.58	92. 3.58	66. 3.58	49. 3.58
+ HYDROGRAPH AT	STR110	.00	1 FLOW TIME	8. 3.50	8. 3.50	8. 3.50	7. 3.50	7. 3.50	7. 3.50	6. 3.50	4. 3.50
+ 4 COMBINED AT	DUMMY	.13	1 FLOW TIME	186. 3.58	181. 3.58	179. 3.58	169. 3.58	164. 3.58	162. 3.58	113. 3.58	83. 3.58
+ HYDROGRAPH AT	EMLA3	.01	1 FLOW TIME	25. 3.50	24. 3.50	24. 3.50	23. 3.50	22. 3.50	22. 3.50	16. 3.50	12. 3.50
+ HYDROGRAPH AT	STR111	.01	1 FLOW TIME	15. 3.58	15. 3.58	15. 3.58	14. 3.58	14. 3.58	13. 3.58	10. 3.58	8. 3.58
+ 3 COMBINED AT	DUMMY	.15	1 FLOW TIME	224. 3.58	218. 3.58	215. 3.58	204. 3.58	198. 3.58	195. 3.58	138. 3.58	102. 3.58
+ HYDROGRAPH AT	SHEEP3	.04	1 FLOW TIME	80. 3.58	78. 3.58	77. 3.58	74. 3.58	72. 3.58	72. 3.58	55. 3.58	44. 3.58
+ HYDROGRAPH AT	EMLA5	.07	1 FLOW TIME	115. 3.58	112. 3.58	111. 3.58	105. 3.58	102. 3.58	101. 3.58	72. 3.58	54. 3.58
+ HYDROGRAPH AT	EPRK1	.00	1 FLOW TIME	1. 3.58	1. 3.58	1. 3.58	1. 3.58	1. 3.58	1. 3.58	0. 3.58	0. 3.75
+ 5 COMBINED AT	SM-WO	5.30	1 FLOW TIME	4330. 3.67	4202. 3.67	4140. 3.67	3888. 3.67	3766. 3.67	3699. 3.67	2486. 3.75	1757. 3.75
+ HYDROGRAPH AT	RETD18	.00	1 FLOW TIME	51. 3.50	50. 3.50	49. 3.50	47. 3.50	46. 3.50	45. 3.50	32. 3.50	24. 3.50
+ HYDROGRAPH AT	SHEP28	.09	1 FLOW TIME	164. 3.58	160. 3.58	159. 3.58	152. 3.58	149. 3.58	147. 3.58	113. 3.58	91. 3.58
+ 2 COMBINED AT	LC-SM	.09	1 FLOW TIME	208. 3.50	204. 3.50	202. 3.50	193. 3.50	188. 3.50	186. 3.50	141. 3.50	111. 3.50
+ HYDROGRAPH AT	EGC1	.01	1 FLOW TIME	14. 3.50	14. 3.50	14. 3.50	13. 3.50	13. 3.50	12. 3.50	9. 3.50	7. 3.50
+ HYDROGRAPH AT	IRON1	.00	1 FLOW TIME	8. 3.50	7. 3.50	7. 3.50	7. 3.50	7. 3.50	7. 3.50	5. 3.50	4. 3.50
+ HYDROGRAPH AT	EL8	.05	1 FLOW TIME	48. 3.58	46. 3.58	45. 3.58	42. 3.58	41. 3.58	40. 3.58	24. 3.58	15. 3.58
+ 4 COMBINED AT	DUMMY	.15	1 FLOW TIME	270. 3.50	264. 3.50	261. 3.50	248. 3.50	241. 3.50	238. 3.50	174. 3.58	134. 3.58
+ HYDROGRAPH AT	LOG1A	.01	1 FLOW	14. 3.50	13. 3.50	13. 3.50	13. 3.50	12. 3.50	12. 3.50	10. 3.58	8. 3.58



P30E	206	89	0.5	876	
P31E	212	76	2.7	1287	
P31AE	33	33	0.5	625	
P31BE	88	88	0.5	398	
P31CE	138	138	0.5	329	
P32E	1888	3411	2.3	3420	14-ft v
P33E					Removed I
P34AE	366	230	2.6	2145	
P34E	2369	3756	2.6	571	14-ft v
P35E	28	80	2.3	3188	Interim Channel,
P36E					Removed I
P37E					Removed I
P38E	2056	3766	3.0	357	14-ft v
P39E	2118	3828	2.1	851	14-ft v
P40E	2589	N/A	N/A	7400	12-ft wide by 8-ft grant in Moccasin Vegas wash I

1 - Contributing HEC-1 flow s obtained from the Ultimate Condition hydrologic analysis.

Flow Breakdown ¹
SHEEP3
CP43
CNW64-C
C213B-5
N/A
sis.

Summary of Future Facilities Skye Canyon West - Ultimate Condition					
Facility ID	Q ₁₀₀ (cfs)	Design Slope (%)	Length (ft)	Description	Flow Breakdown ¹
U1	110	N/A	1139	Future Offsite Local Facility (By Others)	WGED2 + OFFW + OFFY
U2	147	N/A	865	Future Offsite Local Facility (By Others)	CHD04B
U3	323	N/A	620	Future Offsite Local Facility (By Others)	WPT46 + OFF14
U4	51	N/A	1740	Future Offsite Local Facility (By Others), Replaces Facility P35W	SHEP1A
U5	144	N/A	565	Future Offsite Local Facility (By Others), Replaces Facility P35AW	SHEP1A + PH2ML4 + PH2PK2 + SHAUM1
U6	99	N/A	2594	Future Offsite Local Facility (By Others), Replaces Facility P42W	SHEP1B
U7	47	N/A	1551	Future Offsite Local Facility (By Others), Replaces Facility P20W	SHEP1C
F-2	2709	N/A	N/A	Future Offsite Regional Facility (By Others)	CNW35-C

1 - Contributing HEC-1 flow s obtained from Local Ultimate Condition hydrologic analysis.

ULTIMATE CONDITION (FACILITY IN KYLE CANYON RD. NORTH OF SITE)

Should reduce Flows from impacting our site from the West as future flows will be taken North to this Facility when constructed

RATIO CALCULATION FOR OFFSITE FLOWS IMPACTING OUR SITE

(ULTIMATE CONDITIONS)

ULTIMATE CONDITION (RATIO CALC. FOR OFFSITE FLOW)

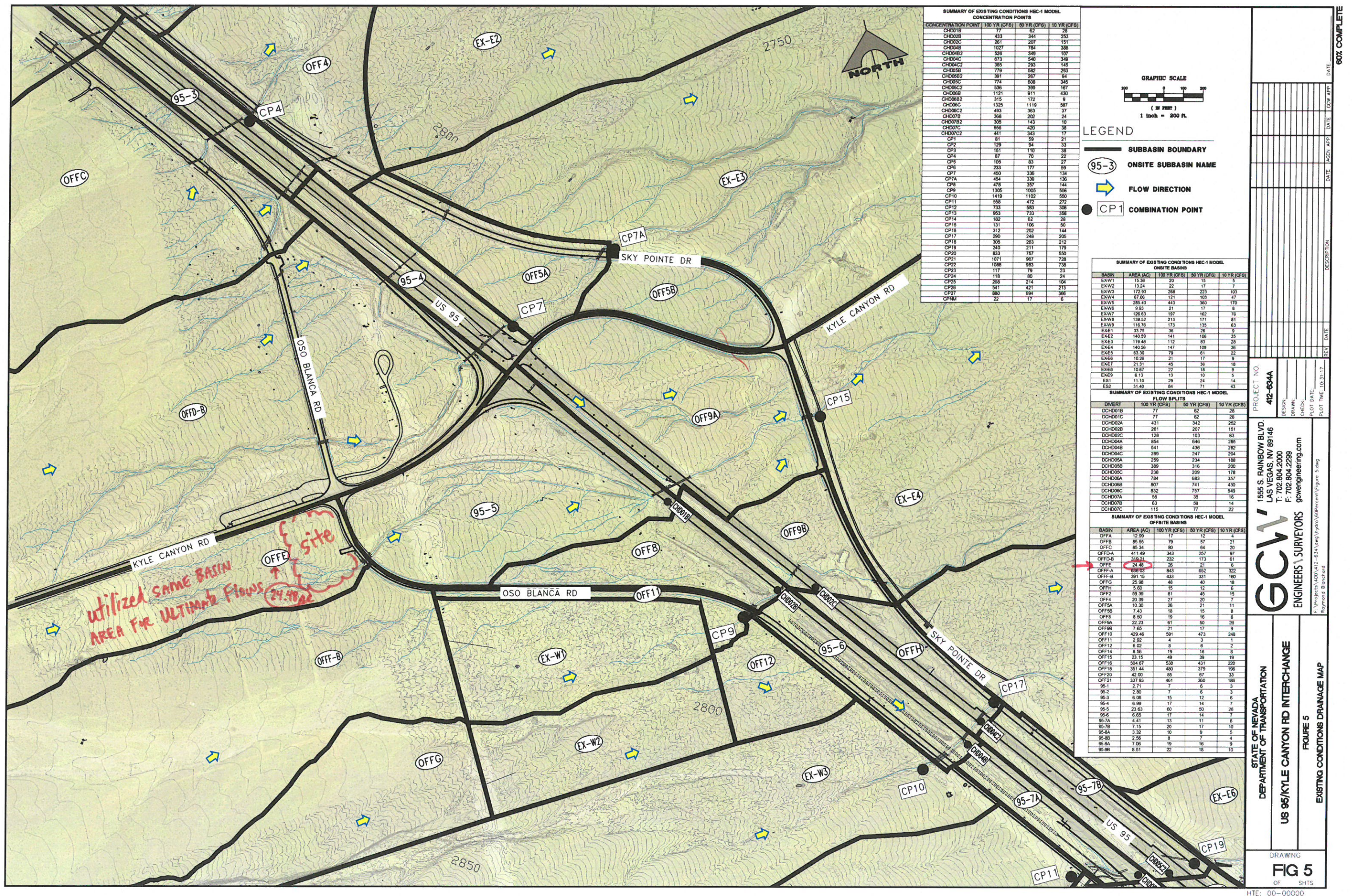
BASIN 'NW35-C' - $Q_{100} = 423 \text{ cfs}$
(192 acres) $Q_{25} = 260 \text{ cfs}$
 $Q_{10} = 191 \text{ cfs}$

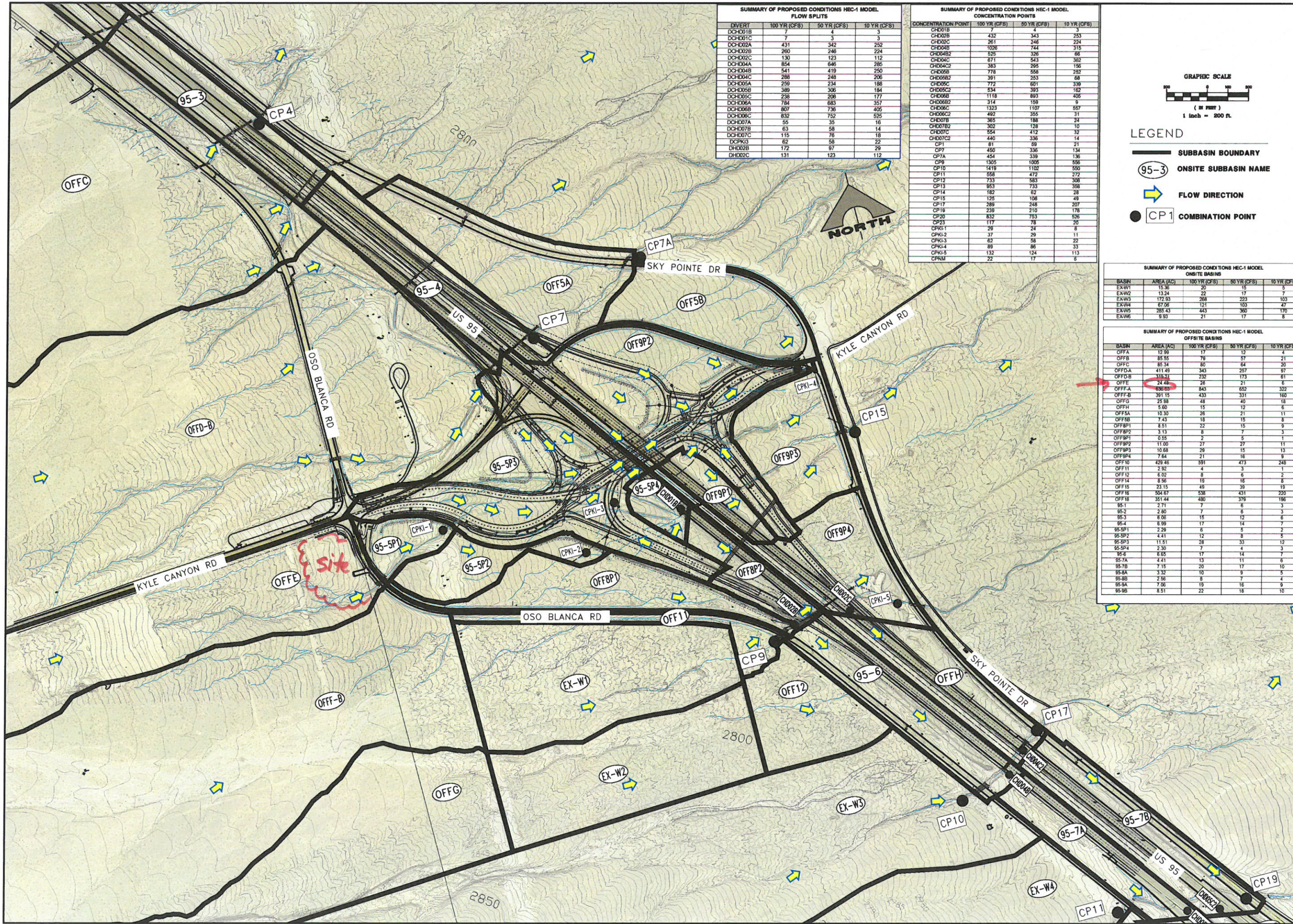
Using offsite Area of 'OFFE' (24.48 Ac), which is the Area that impacts our Site, A RATIO CALC. is performed for Ultimate condition using ultimate Flows from 'NW35-C'

$$Q_{100} - \frac{423 \text{ cfs}}{192 \text{ Ac}} = \frac{Q_{100}}{24.48 \text{ Ac}} \quad Q_{100} \approx \underline{\underline{54 \text{ cfs}}}$$

$$Q_{25} - \frac{260 \text{ cfs}}{192 \text{ Ac}} = \frac{Q_{25}}{24.48 \text{ Ac}} \quad Q_{25} \approx \underline{\underline{34 \text{ cfs}}}$$

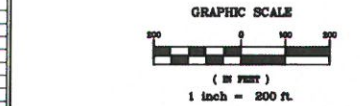
$$Q_{10} - \frac{191 \text{ cfs}}{192 \text{ Ac}} = \frac{Q_{10}}{24.48 \text{ Ac}} \quad Q_{10} \approx \underline{\underline{25 \text{ cfs}}}$$





SUMMARY OF PROPOSED CONDITIONS HEC-1 MODEL FLOW SPLITS			
DIVERT	100 YR (CFS)	50 YR (CFS)	10 YR (CFS)
DCH001B	7	4	3
DCH001C	7	4	3
DCH002A	431	342	252
DCH002B	260	246	224
DCH002C	130	123	112
DCH004A	854	646	285
DCH004B	541	419	250
DCH004C	288	248	206
DCH005A	259	234	186
DCH005B	389	306	184
DCH005C	238	208	177
DCH006A	784	683	357
DCH006B	807	736	405
DCH006C	832	752	525
DCH007A	55	35	16
DCH007B	63	58	14
DCH007C	115	76	18
DCH008	62	58	22
DCH009	172	97	29
DCH002C	131	123	112

SUMMARY OF PROPOSED CONDITIONS HEC-1 MODEL CONCENTRATION POINTS			
CONCENTRATION POINT	100 YR (CFS)	50 YR (CFS)	10 YR (CFS)
CH001B	7	4	3
CH002B	432	343	253
CH002C	261	246	224
CH004B	1026	744	315
CH004B2	125	386	86
CH004C	671	543	362
CH004C2	383	295	156
CH005B	778	558	252
CH005B2	391	253	58
CH005C	772	601	339
CH005C2	534	393	182
CH006B	1118	893	405
CH006B2	314	169	9
CH006C	1223	1107	597
CH006C2	492	355	31
CH007B	365	188	24
CH007B2	302	128	10
CH007C	554	412	32
CH007C2	440	336	14
CP1	81	69	21
CP7	450	336	134
CP7A	454	339	136
CP9	1305	1005	585
CP10	1419	1102	550
CP11	556	472	272
CP12	733	583	308
CP13	803	733	388
CP14	182	82	28
CP15	125	108	49
CP17	289	248	207
CP18	239	210	176
CP20	832	753	526
CP23	117	78	20
CPK1-1	29	24	8
CPK1-2	37	29	11
CPK1-3	42	38	22
CPK1-4	89	66	33
CPK1-5	132	124	113
CPNM	22	17	6



- LEGEND**
- SUBBASIN BOUNDARY
 - 95-3 ONSITE SUBBASIN NAME
 - FLOW DIRECTION
 - CP1 COMBINATION POINT

SUMMARY OF PROPOSED CONDITIONS HEC-1 MODEL ONSITE BASINS				
BASIN	AREA (AC)	100 YR (CFS)	50 YR (CFS)	10 YR (CFS)
EX-W1	15.35	20	15	5
EX-W2	13.24	22	17	7
EX-W3	172.93	268	223	103
EX-W4	67.06	121	103	47
EX-W5	288.43	443	360	170
EX-W6	9.93	21	17	8

SUMMARY OF PROPOSED CONDITIONS HEC-1 MODEL OFFSITE BASINS				
BASIN	AREA (AC)	100 YR (CFS)	50 YR (CFS)	10 YR (CFS)
OFFA	12.99	17	12	4
OFFB	85.55	76	57	21
OFFC	85.34	80	64	20
OFFDA	411.49	343	257	97
OFFDB	116.51	232	173	61
OFFE	24.48	26	21	8
OFFFA	636.00	843	652	322
OFFFB	391.15	433	331	160
OFFG	29.98	48	40	18
OFFH	5.60	15	12	6
OFFIA	10.30	26	21	11
OFFIB	7.43	18	15	8
OFFBP1	8.51	22	15	6
OFFBP2	3.13	8	7	3
OFFBP3	0.55	2	5	1
OFFBP4	11.00	27	21	11
OFFBP5	10.88	26	15	13
OFFBP6	7.84	21	16	9
OFF10	429.48	591	473	248
OFF11	2.92	4	3	1
OFF12	6.02	8	6	2
OFF14	8.56	19	16	8
OFF15	23.15	49	39	19
OFF16	504.67	538	431	220
OFF18	351.44	480	379	196
95-1	2.71	7	4	3
95-2	2.80	7	6	3
95-3	6.06	15	12	6
95-4	6.99	17	14	7
95-5P1	2.29	6	5	2
95-5P2	4.41	12	8	5
95-5P3	11.51	28	33	12
95-5P4	2.30	7	4	3
95-6	6.65	17	14	7
95-7A	4.41	13	11	6
95-7B	7.15	20	17	10
95-8A	3.32	10	9	5
95-8B	2.56	8	7	4
95-8A	7.06	19	16	9
95-9B	8.51	22	16	10

PROJECT NO.
412-634A

DESIGN
DRAWN
CHECK
PLOT DATE: 01-15-16
PLOT TIME: 16:18:18

STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

US 95/KYLE CANYON RD INTERCHANGE

FIGURE 6
PROPOSED CONDITIONS DRAINAGE MAP

FIG 6
1 OF 1 SHTS

HTC: 00-00000

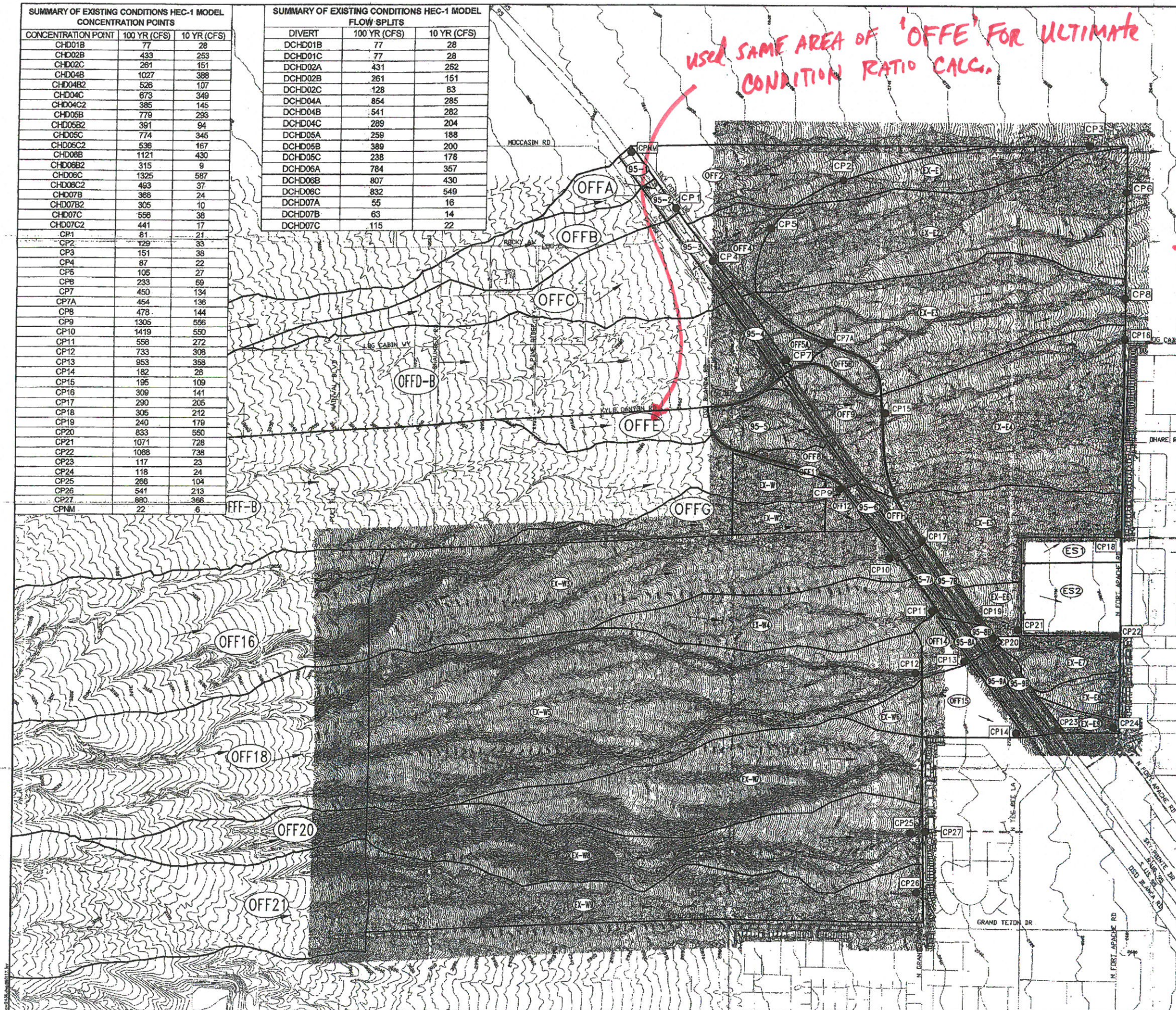
1555 S. RAINBOW BLVD.
LAS VEGAS, NV 89146
T: 702.804.2000
F: 702.804.2299
gcnwengineering.com

ENGINEERS & SURVEYORS

90% COMPLETE

SUMMARY OF EXISTING CONDITIONS HEC-1 MODEL CONCENTRATION POINTS		
CONCENTRATION POINT	100 YR (CFS)	10 YR (CFS)
CHD01B	77	28
CHD02B	433	263
CHD02C	261	151
CHD04B	1027	388
CHD04B2	526	107
CHD04C	873	349
CHD04C2	385	145
CHD05B	779	293
CHD05B2	391	94
CHD05C	774	345
CHD05C2	536	167
CHD06B	1121	430
CHD06B2	315	9
CHD06C	1325	587
CHD08C2	493	37
CHD07B	368	24
CHD07B2	305	10
CHD07C	556	38
CHD07C2	441	17
CP1	81	21
CP2	129	33
CP3	151	38
CP4	87	22
CP5	105	27
CP6	233	59
CP7	450	134
CP7A	454	136
CP8	478	144
CP9	1306	556
CP10	1419	550
CP11	558	272
CP12	733	308
CP13	953	358
CP14	182	28
CP15	195	109
CP16	309	141
CP17	290	205
CP18	306	212
CP19	240	179
CP20	833	550
CP21	1071	728
CP22	1088	738
CP23	117	23
CP24	118	24
CP25	268	104
CP26	541	213
CP27	880	366
CPNM	22	6

SUMMARY OF EXISTING CONDITIONS HEC-1 MODEL FLOW SPLITS		
DIVERT	100 YR (CFS)	10 YR (CFS)
DCHD01B	77	28
DCHD01C	77	28
DCHD02A	431	262
DCHD02B	261	151
DCHD02C	128	83
DCHD04A	854	285
DCHD04B	541	282
DCHD04C	289	204
DCHD05A	259	188
DCHD05B	389	200
DCHD05C	238	178
DCHD06A	784	357
DCHD06B	807	430
DCHD06C	832	549
DCHD07A	55	16
DCHD07B	63	14
DCHD07C	115	22



LEGEND

— SUBBASIN BOUNDARY

ON2 SUBBASIN NAME

→ FLOW DIRECTION

CP20 COMBINATION POINT

NORTH

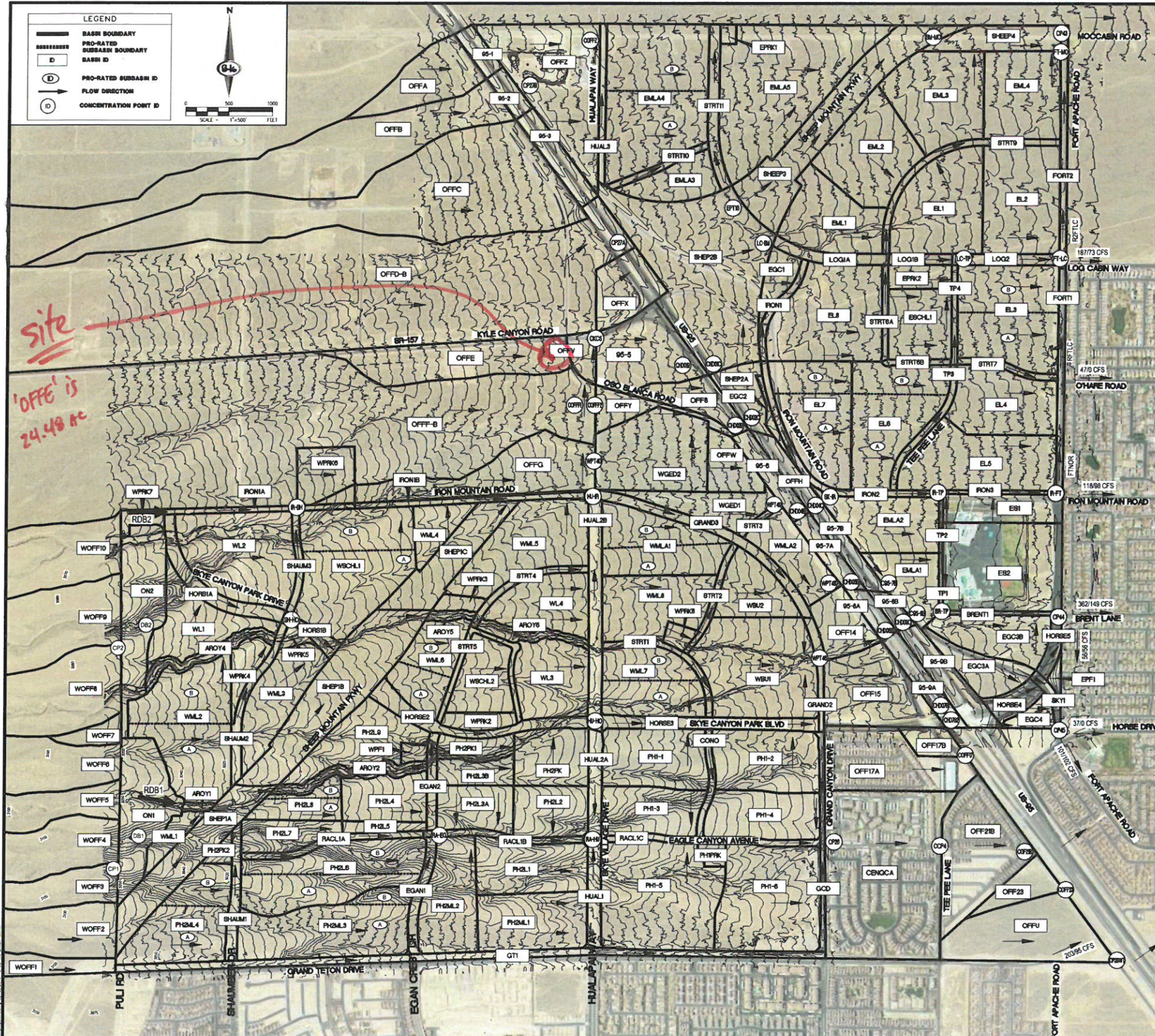
GRAPHIC SCALE
(IN FEET)
1 inch = 600 ft.

SUMMARY OF EXISTING CONDITIONS HEC-1 MODEL OFFSITE BASINS			
BASIN	AREA (AC)	100 YR (CFS)	10 YR (CFS)
OFFA	12.99	17	4
OFFB	85.55	79	21
OFFC	85.34	80	20
OFFD-A	411.49	343	97
OFFD-B	319.21	232	61
OFFE	24.48	26	6
OFFF-A	636.03	843	322
OFFF-B	391.15	433	160
OFFG	25.98	48	18
OFFH	5.60	15	6
OFFI	59.39	61	15
OFFJ	20.39	27	7
OFFK	10.30	26	11
OFFL	7.43	18	8
OFFM	8.50	19	8
OFFN	29.87	60	25
OFFO	429.46	591	248
OFFP	2.92	4	1
OFFQ	6.02	8	2
OFFR	8.56	19	8
OFFS	23.15	49	19
OFFT	504.67	538	220
OFFU	351.44	480	196
OFFV	42.00	85	33
OFFW	337.93	461	186
95-1	2.71	7	3
95-2	2.80	7	3
95-3	6.06	15	6
95-4	6.99	17	7
95-5	23.63	60	26
95-6	6.85	17	7
95-7A	4.41	13	6
95-7B	7.15	20	10
95-8A	3.32	10	5
95-8B	2.56	8	4
95-9A	7.06	19	9
95-9B	8.51	22	10

SUMMARY OF EXISTING CONDITIONS HEC-1 MODEL ONSITE BASINS			
BASIN	AREA (AC)	100 YR (CFS)	10 YR (CFS)
EX-W1	15.36	20	5
EX-W2	13.24	22	7
EX-W3	172.93	268	103
EX-W4	67.06	121	47
EX-W5	285.43	443	170
EX-W6	9.93	21	8
EX-W7	126.63	197	78
EX-W8	139.62	213	81
EX-W9	118.76	173	63
EX-E1	33.76	36	9
EX-E2	140.59	141	35
EX-E3	119.48	112	28
EX-E4	140.66	147	36
EX-E5	63.30	79	22
EX-E6	10.26	21	9
EX-E7	21.31	45	18
EX-E8	10.67	22	9
EX-E9	6.13	13	5
ES1	11.10	29	14
ES2	31.40	84	43

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1855 S. RAINBOW BOULEVARD - LAS VEGAS, NV 89146
TEL: 702.894.2000 - FAX: 702.894.2399 - GOWALLA@GOWALLA.COM

KYLE ACQUISITION GROUP, LLC.
KYLE CANYON MASTER DRAINAGE STUDY
FIGURE 5A
EXISTING CONDITIONS ONSITE DRAINAGE MAP



NOTE: PHASE 1 BASINS (PH1-1, PH1-2, PH1-3, PH1-4, PH1-5, PH1-6, CONQ, RACL1C, PH1PRK AND GCD) HAVE BEEN REFERENCED FROM THE APPROVED SKYE CANYON PHASE 1 INFRASTRUCTURE STUDY

Storm Flow Summary Skye Canyon Offsite Diversions				
Diverion ID	Q ₁₀₀ (cfs)	Q ₁₀ (cfs)	Diverion From	Diverion To
CKC7	1559	738	CKC5	EPT16

Storm Flow Summary Skye Canyon US-95 Diversions				
Diverion ID	Q ₁₀₀ (cfs)	Q ₁₀ (cfs)	Diverion From	Diverion To
CH01B	23	6	CH01C	CH01C
CH02B	27	41	CH02C	CH02C
CH03B	61	28	CH03C	CH03C
CH04B	126	106	CH04C	CH04C
CH05B	109	52	CH05C	CH05C
CH06B	66	31	CH06C	CH06C
CH07B	360	489	CH07C	CH07C
CH08B	18	18	CH08C	CH08C
CH09B	263	240	CH09C	CH09C
CH10B	23	6	CH10C	CH10C
CH11B	217	107	CH11C	CH11C
CH12B	84	38	CH12C	CH12C
CH13B	4	4	CH13C	CH13C
CH14B	217	107	CH14C	CH14C
CH15B	66	31	CH15C	CH15C
CH16B	254	213	CH16C	CH16C
CH17B	367	267	CH17C	CH17C
CH18B	1037	455	CH18C	CH18C

Storm Flow Summary Skye Canyon East Diversions				
Diverion ID	Q ₁₀₀ (cfs)	Q ₁₀ (cfs)	Diverion From	Diverion To
BRENT	362	149	CP44	Brent Lane
SOUTH	56	56	CP44	Racer Street
HORSE	37	0	CP45	Horse Drive
RACEL	101	102	CP45	Racer Street
IRASAT	118	96	FT-LC	Iron Mountain Road
FTNOR	149	26	FT-LC	Fort Apache Road
OKARE	47	0	FT-LC	Off Road
RFTLC	177	52	FTNOR	Fort Apache Road
RFTLCB	187	73	RFTLC	Log Cabin Way
RFTLC	183	54	FT-LC	Fort Apache Road

Storm Flow Summary Skye Canyon West Basins			
Basin ID	Area (ac)	Q ₁₀₀ (cfs)	Q ₁₀ (cfs)
AROY1	0.8	2	1
AROY2	5.2	13	6
AROY3	4.8	12	5
AROY4	1.3	3	1
AROY5	3.6	9	4
ON1	19.4	8	4
ON2	20.2	9	4
PH2L1	17.4	45	21
PH2L2	11.5	31	14
PH2L3A	10.5	29	13
PH2L3B	6.1	17	8
PH2L4	11.9	33	15
PH2L5	2.7	8	4
PH2L6	30.0	77	34
PH2L7	8.3	23	10
PH2L8	8.1	22	10
PH2L9	16.8	52	23
PH2M1	18.8	60	31
PH2M2	18.1	59	31
PH2M3	28.7	81	40
PH2M4	22.7	66	32
PH2PK	13.1	29	10
PH2PK1	5.5	13	5
PH2PK2	1.6	4	2
WB1	33.8	102	53
WB2	11.6	37	19
WG1	10.7	33	17
WG2	25.1	66	31
WL1	15.5	41	18
WL2	28.6	75	34
WL3	16.4	43	20
WL4	15.1	37	16
WML1	21.6	67	35
WML2	11.8	39	20
WML3	4.2	13	6
WML4	32.9	98	51
WML5	16.0	51	26
WML6	6.9	23	12
WML7	24.8	75	39
WML8	14.8	48	25
WML9	19.8	64	33
WML10	19.4	59	31
WPF1	1.4	6	3
WPRK1	3.6	8	3
WPRK2	1.1	5	2
WPRK3	4.8	11	4
WPRK4	1.4	3	1
WPRK5	10.0	21	7
WPRK6	2.4	6	2
WPRK7	1.9	4	2
WSCH1	37.4	101	47
WSCH2	11.8	34	15

Storm Flow Summary Skye Canyon East Basins			
Basin ID	Area (ac)	Q ₁₀₀ (cfs)	Q ₁₀ (cfs)
EGC1	4.9	14	7
EGC2	1.4	15	9
EGC3A	11.8	36	19
EGC3B	11.2	36	19
EGC4	3.2	12	6
EL1	25.1	39	12
EL2	25.6	39	12
EL3	30.8	48	15
EL4	19.9	33	11
EL5	28.5	42	13
EL6	27.2	43	13
EL7	24.7	41	13
EL8	29.8	48	15
ELM1	18.4	46	22
ELM2	22.8	57	27
ELM3	24.7	62	28
ELM4	20.6	51	24
ELM5	11.1	33	17
ELM6	15.0	41	21
ELM7	9.3	25	12
ELM8	43.7	105	49
ELM9	46.8	115	54
EPP1	1.0	4	2
EPRK1	0.9	1	<1
EPRK2	4.6	4	<1
ESCH1	13.6	27	10

Storm Flow Summary Skye Canyon Offsite Basins			
Basin ID	Area (ac)	Q ₁₀₀ (cfs)	Q ₁₀ (cfs)
CENGA	61.2	152	73
EB1	11.1	29	14
EB2	37.4	84	43
OFF10	426.5	591	248
OFF14	9.3	20	8
OFF15	22.3	47	19
OFF17A	19.5	51	24
OFF17B	5.1	15	7
OFF17C	20.5	75	38
OFF23	5.8	17	8
OFFA	13.0	17	4
OFFB	85.6	73	18
OFFC	85.3	80	20
OFFD	411.5	343	97
OFFE	24.48	235	69
OFFF	24.5	26	6
OFFFA	686.0	643	322
OFFFB	384.0	414	152
OFFG	25.5	47	18
OFFH	25.5	246	110
OFFI	3.6	4	1
OFFJ	7.7	9	2
OFFK	6.4	7	2
OFFL	33.4	35	8

Roadway Basins			
Basin ID	Area (ac)	Q ₁₀₀ (cfs)	Q ₁₀ (cfs)
BRENT1	1.2	5	3
FORT1	5.8	14	8
FORT2	5.7	14	8
HORSE4	4.0	16	9
HORSE5	2.4	9	5
HUAL3	2.4	7	4
IRON1	2.4	8	4
IRON2	5.4	15	9
IRON3	1.4	5	3
LOG1A	4.0	14	8
LOG1B	2.2	8	4
LOG2	3.7	13	7
SKY1	1.6	6	3
SHEP2A	7.3	8	2
SHEP2B	58.7	68	14
SHEP3	28.2	28	7
SHEP4	9.2	10	2
STR16A	1.7	5	3
STR16B	1.2	4	2
STR17	2.1	7	4
STR18	4.9	14	8
STR19	2.2	8	4
STR11	5.5	15	8
TP1	0.6	2	1
TP2	0.6	2	1
TP3	3.0	9	5
TP4	1.8	5	3

Storm Flow Summary Skye Canyon US-95 Concentration Points			
Concentration Point	Area (ac)	Q ₁₀₀ (cfs)	Q ₁₀ (cfs)
CONQ	0.38	281	138
CONQ1	0.42	411	205
CONQ2	0.48	138	102
CONQ3	0.28	180	85
CONQ4	0.28	233	109
CONQ5	0.30	287	134
CONQ6	0.12	78	18
CONQ7	0.12	136	48
CONQ8	0.12	136	48
CONQ9	0.56	320	127
CONQ10	1.00	645	246
CONQ11	8.15	1888	801
CONQ12	8.71	2088	828
CONQ13	7.71	2588	1173

Storm Flow Summary Skye Canyon US-95 Concentration Points			
Concentration Point	Area (ac)	Q ₁₀₀ (cfs)	Q ₁₀ (cfs)
CH01B	0.03	28	8
CH02B	0.03	82	41
CH03B	0.13	81	28
CH04B	0.26	251	130
CH05B	0.18	305	159
CH06B	0.01	19	9
CH07B	0.40	314	155
CH08B	0.04	85	31
CH09B	0.56	880	489
CH10B	0.01	19	9
CH11B	0.03	23	8
CH12B	0.09	82	41
CH13B	0.13	81	28
CH14B	0.18	217	107
CH15B	0.04	86	31
CH16B	0.80	880	489
CH17B	0.81	743	285
CH18B	1.95	1437	655
CH19B	0.14	22	11
CH20B	0.19	224	110
CH21B	0.31	173	44

Storm Flow Summary Skye Canyon US-95 Concentration Points			
Concentration Point	Area (ac)	Q ₁₀₀ (cfs)	Q ₁₀ (cfs)
CONQ	0.38	281	138
CONQ1	0.42	411	205
CONQ2	0.48	138	102
CONQ3	0.28	180	85
CONQ4	0.28	233	109
CONQ5	0.30	287	134
CONQ6	0.12	78	18
CONQ7	0.12	136	48
CONQ8	0.12	136	48
CONQ9	0.56	320	127
CONQ10	1.00	645	246
CONQ11	8.15	1888	801
CONQ12	8.71	2088	828
CONQ13	7.71	2588	1173

Storm Flow Summary Skye Canyon US-95 Concentration Points			
Concentration Point	Area (ac)	Q ₁₀₀ (cfs)	Q ₁₀ (cfs)
CONQ	0.38	281	138
CONQ1	0.42	411	205
CONQ2	0.48	138	102
CONQ3	0.28	180	85
CONQ4	0.28	233	109
CONQ5	0.30	287	134
CONQ6	0.12	78	18
CONQ7	0.12	136	48
CONQ8	0.12	136	48
CONQ9	0.56	320	127
CONQ10	1.00	645	246
CONQ11	8.15	1888	801
CONQ12	8.71	2088	828
CONQ13	7.71	2588	1173

Storm Flow Summary Skye Canyon US-95 Concentration Points			
Concentration Point	Area (ac)	Q ₁₀₀ (cfs)	Q ₁₀ (cfs)
CONQ	0.38	281	138
CONQ1	0.42	411	205
CONQ2	0.48	138	102
CONQ3	0.28	180	85
CONQ4	0.28	233	109
CONQ5	0.30	287	134
CONQ6	0.12	78	18
CONQ7	0.12	136	48
CONQ8	0.12	136	48
CONQ9	0.56	320	127
CONQ10	1.00	645	246
CONQ11	8.15	1888	801
CONQ12	8.71	2088	828
CONQ13	7.71	2588	1173

Storm Flow Summary Skye Canyon East Basins			
Basin ID	Area (ac)	Q ₁₀₀ (cfs)	Q ₁₀ (cfs)
EGC1	4.9	14	7
EGC2	1.4	15	9
EGC3A	11.8	36	19
EGC3B	11.2	36	19
EGC4	3.2	12	6
EL1	25.1	39	12
EL2	25.6	39	12
EL3	30.8	48	15
EL4	19.9	33	11
EL5	28.5	42	13
EL6	27.2	43	13
EL7	24.7	41	13
EL8	29.8	48	15
ELM1	18.4	46	22
ELM2	22.8	57	27
ELM3	24.7	62	28
ELM4	20.6	51	24
ELM5	11.1	33	17
ELM6	15.0	41	21
ELM7	9.3	25	12
ELM8	43.7	105	49
ELM9	46.8	115	54
EPP1	1.0	4	2
EPRK1	0.9	1	<1
EPRK2	4.6	4	<1
ESCH1	13.6	27	10

Storm Flow Summary Skye Canyon Offsite Basins			
Basin ID	Area (ac)	Q ₁₀₀ (cfs)	Q ₁₀ (cfs)
CENGA	61.2	152	73
EB1	11.1	29	14
EB2	37.4	84	43
OFF10	426.5	591	248
OFF14	9.3	20	8
OFF15	22.3	47	19
OFF17A	19.5	51	24
OFF17B	5.1	15	7
OFF17C	20.5	75	38
OFF23	5.8	17	8
OFFA	13.0	17	4
OFFB	85.6	73	18
OFFC	85.3	80	20
OFFD	411.5	343	97
OFFE	24.48	235	69
OFFF	24.5	26	6
OFFFA	686.0	643	322
OFFFB	384.0	414	152
OFFG	25.5	47	18
OFFH	25.5	246	110
OFFI	3.6	4	1
OFFJ	7.7	9	2

REVISED HEC-1 MODEL OUTPUT

(DEVELOPED CONDITIONS)

Peak Flow Summary

Interim/Developed Condition

HEC-1 ID	Area (acres)	10-year Flow (cfs)	25-year Flow (cfs)	100-year Flow (cfs)	
RATIO CALC.	-	25	34	54	
FD1	0.41	1	1	2	
CPD1	-	26	35	56	(manually add RATIO CALC. Flow+FD1)
ND1	0.89	1	2	3	
ND2	1.46	2	3	5	
OSOD	0.41	1	1	2	
CPD2	-	30	41	64	(RATIO FLOW +FD1+ND1+ND2+OSOD)
ND3	0.13	<1	<1	<1	


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*****
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1)
*   JUN 1998
*   VERSION 4.1
*
* RUN DATE 01JUL22 TIME 07:54:51
*
*****

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d

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

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      X   X   XXXXXX   XXXX   X
      X   X   X   X   X   X
      X   X   X   X   X   X
      XXXXXX XXXX   X   XXXXX
      X   X   X   X   X   X
      X   X   X   X   X   X
      X   X   XXXXXX   XXXX   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

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LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
1          ID          GV GROCERY at KYLE CANYON AND OSO BLANCO
2          ID          ***** TECHNICAL DRAINAGE STUDY *****
3          ID          INTERIM/DEVELOPED CONDITIONS - ONSITE AND OFFSITE
4          ID          USING SCS METHODS AND KINEMATIC WAVE ROUTING
5          ID          MASTER PLAN ADJUSTED 6-HOUR RAINFALL AND STORM DISTRIBUTION
6          ID
7          ID
8          ID
9          ID
10         ID          INPUT FILE NAME: D.DAT
11         ID
12         ID          JULY 2022
13         ID
14         ID          *****
15         ID          *****
16         ID          OUTSIDE MCCARRAN AIRPORT RAINFALL AREA
17         ID          10 & 100 YEAR - 6 HOUR STORM EVENT
18         ID          PRECIPITATION:
19         ID          10-YEAR          : 1.30 X 1.24 = 1.61 INCHES
20         ID          100-YEAR         : 2.00 X 1.43 = 2.86 INCHES
21         ID          10-YEAR/100-YEAR : 1.61/2.86 = 0.5629
22         ID          25-YEAR/100 YEAR : 2.12/2.86= 0.7412
23         ID          *****
24         ID          *****
25         ID          *DIAGRAM
26         IT          5          200
27         IO          5          0
28         IN          5
29         JR          PREC .5629 .7412 1.0
30
31         KK          FD1
32         KM          DEVELOPED OFFSITE RUFIAN RD. DISCHARGING TO SUMP DROP INLET
33         PB          2.860
34         PC          0.0 .02 .057 .07 .087 .108 .124 .13 .13 .13
35         PC          .13 .13 .13 .133 .14 .142 .148 .158 .172 .181
36         PC          .19 .197 .199 .2 .201 .204 .214 .229 .241 .249
37         PC          .251 .256 .27 .278 .281 .283 .295 .322 .352 .409
38         PC          .499 .59 .71 .744 .781 .812 .819 .835 .851 .856
39         PC          .86 .868 .876 .888 .91 .926 .937 .95 .97 .976
40         PC          .982 .985 .987 .989 .99 .993 .993 .994 .995 .998
41         PC          .998 .999 1.0
42         BA          .00064
43         LS          0 98.0
44         UD          .053
45         *
46
47         KK          ND1
48         KM          DEVELOPED ONSITE BASIN ON NORTH DISCHARGING TO PROP. DI IN OSO BLANCO
49         BA          .00139
50         LS          0 90.1
51         UD          0.050
52         *
53
54         KK          OSOD
55         KM          DEVELOPED STREET BASIN EAST OF SITE DISCHARGING SOUTH TO PROP. DI
56         BA          .00064
57         LS          0 98.0
58         UD          0.050
59         *
60
61         KK          CPD2
62         KM          COMBINE FD1 ND1, ND2, OSOD AND REF. FLOWS (6/26CFS) AT EXISTING RCB'S
63         HC          4

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1

HEC-1 INPUT

PAGE 2

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LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
48         KK          ND2
49         KM          DEVELOPED ONSITE BASIN ON CENTRAL OF SITE DISCHARGING TO PROP. DI IN OSO BLAN
50         BA          .00228
51         LS          0 90.1
52         UD          0.050
53         *
54
55         KK          OSOD
56         KM          DEVELOPED STREET BASIN EAST OF SITE DISCHARGING SOUTH TO PROP. DI
57         BA          .00064
58         LS          0 98.0
59         UD          0.050
60         *
61
62         KK          CPD2
63         KM          COMBINE FD1 ND1, ND2, OSOD AND REF. FLOWS (6/26CFS) AT EXISTING RCB'S
64         HC          4

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d

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*
61      KK      ND3
62      KM      DEVELOPED ONSITE BASIN ON SOUTH OF SITE DISCHARGING TO BMP SWALE AND SOUTH
63      BA      .00020
64      LS      0      90.1
65      UD      0.058
*
66      ZZ

```

1

SCHEMATIC DIAGRAM OF STREAM NETWORK

```

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

29      FD1
      .
      .
43      .      ND1
      .      .
      .      .
48      .      .      ND2
      .      .      .
      .      .      .
53      .      .      .      OSOD
      .      .      .      .
      .      .      .      .
58      CPD2.....
      .
      .
61      .      ND3

```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

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*****
* FLOOD HYDROGRAPH PACKAGE (HEC-1)
* JUN 1998
* VERSION 4.1
* RUN DATE 01JUL22 TIME 07:54:51
*****

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

```

GV GROCERY at KYLE CANYON AND OSO BLANCO
 ***** TECHNICAL DRAINAGE STUDY *****
 INTERIM/DEVELOPED CONDITIONS - ONSITE AND OFFSITE
 USING SCS METHODS AND KINEMATIC WAVE ROUTING
 MASTER PLAN ADJUSTED 6-HOUR RAINFALL AND STORM DISTRIBUTION

INPUT FILE NAME: D.DAT

JULY 2022

```

*****
*****
***** OUTSIDE MCCARRAN AIRPORT RAINFALL AREA *****
***** 10 & 100 YEAR - 6 HOUR STORM EVENT *****
***** PRECIPITATION: *****
***** 10-YEAR : 1.30 X 1.24 = 1.61 INCHES *****
***** 100-YEAR : 2.00 X 1.43 = 2.86 INCHES *****
***** 10-YEAR/100-YEAR : 1.61/2.86 = 0.5629 *****
***** 25-YEAR/100 YEAR : 2.12/2.86 = 0.7412 *****
*****
*****

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```

26 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      0200      STARTING TIME
      NQ      101      NUMBER OF HYDROGRAPH ORDINATES
      NDDATE      1      0      ENDING DATE
      NDTIME      1020      ENDING TIME
      ICENT      19      CENTURY MARK

      COMPUTATION INTERVAL .08 HOURS
      TOTAL TIME BASE 8.33 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
      .56      .74      1.00

```

1

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

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO PRECIPITATION		
					RATIO 1	RATIO 2	RATIO 3
					.56	.74	1.00
HYDROGRAPH AT							
+	FD1	.00	1	FLOW TIME	1. 3.50	1. 3.50	2. 3.50
HYDROGRAPH AT							
+	ND1	.00	1	FLOW TIME	1. 3.50	2. 3.50	3. 3.50
HYDROGRAPH AT							
+	ND2	.00	1	FLOW TIME	2. 3.50	3. 3.50	5. 3.50
HYDROGRAPH AT							
+	OSOD	.00	1	FLOW TIME	1. 3.50	1. 3.50	2. 3.50
4 COMBINED AT							
+	CPD2	.00	1	FLOW TIME	5. 3.50	7. 3.50	10. 3.50
HYDROGRAPH AT							
+	ND3	.00	1	FLOW TIME	0. 3.50	0. 3.50	0. 3.50

$$+ \text{Ref. } (25/34/54) = \frac{Q_{10}}{30} \quad \frac{Q_{25}}{41} \quad \frac{Q_{100}}{64}$$

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

NORMAL DEPTH STREET CALCULATIONS

(INTERIM/DEVELOPED CONDITIONS)

Street Flow Summary
(Interim/Developed Condition)

10-year, 6-hour Storm

Street	Right of Way Width (ft)	Hydraulic Cross-Section Identifier	10-Year Flow [Q10] (cfs)	10-Year Velocity [v] (fps)	10-Year Flow Depth [d] (ft)	10-Year Velocity x Depth [v x d]	Dry Lane Width (within 1/2 ROW) (ft)
Kyle Canyon	200	1	8	6.01	0.40	2.40	Meets
Oso Blanca	100	2	9	2.56	0.52	1.33	Meets
Rufian	60	3	13	2.25	0.47	1.06	N/A

Street Flow Summary
(Interim/Developed Condition)

25-year, 6-hour Storm

Street	Right of Way Width (ft)	Hydraulic Cross-Section Identifier	25-Year Flow [Q100] (cfs)	25-Year Velocity [v] (fps)	25-Year Flow Depth [d] (ft)	25-Year Velocity x Depth [v x d]
Kyle Canyon	200	1	12	6.41	0.46	2.95
Oso Blanca	100	2	13	2.79	0.58	1.62

Street Flow Summary
(Interim/Developed Condition)

100-year, 6-hour Storm

Street	Right of Way Width (ft)	Hydraulic Cross-Section Identifier	100-Year Flow [Q100] (cfs)	100-Year Velocity [v] (fps)	100-Year Flow Depth [d] (ft)	100-Year Velocity x Depth [v x d]
Kyle Canyon	200	1	18	6.63	0.53	3.51
Oso Blanca	100	2	20	3.09	0.66	2.04
Rufian	60	3	27	2.34	0.60	1.40

Street Section 1 - Kyle Canyon Road - 10year Worksheet for Irregular Channel

Project Description	
Worksheet	Street Section 1 - Kyle Canyon Road (10yr)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data	
Slope	0.37100 ft/ft
Discharge	8.00 cfs

Options	
Current Roughness Method	over Lotter's Method
Open Channel Weighting	over Lotter's Method
Closed Channel Weighting	Horton's Method

Results	
Mannings Coefficient	0.013
Water Surface Elev.	54.81 ft
Elevation Range	54.41 to 56.34
Flow Area	1.3 ft ²
Wetted Perimeter	9.15 ft
Top Width	8.70 ft
Actual Depth	0.40 ft
Critical Elevation	54.96 ft
Critical Slope	0.004457 ft/ft
Velocity	6.01 ft/s
Velocity Head	0.56 ft
Specific Energy	55.37 ft
Froude Number	2.71
Flow Type	Supercritical

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00.00	0+55.00	0.016
0+55.00	0+57.00	0.013

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00.00	56.34
0+55.00	54.58
0+55.00	54.54
0+56.50	54.41
0+56.50	54.91
0+57.00	54.91

Assumed $\frac{1}{3}$ of Ratio calc. ultimate Flows ($\frac{1}{3} \times 25 \approx 8\text{cfs}$)

conservative

d_{10}

V_{10}

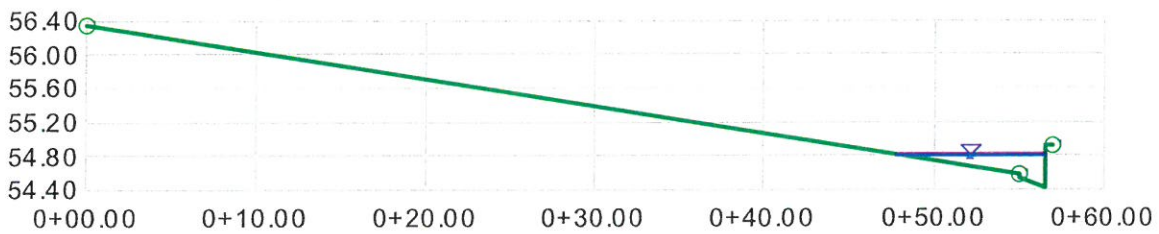
$$.40 \times 6.01 \times = \underline{\underline{2.40}} < 6.0 \text{ OK}$$

Street Section 1 - Kyle Canyon Road - 10year Cross Section for Irregular Channel

Project Description	
Worksheet	Street Section 1 - Kyle Canyon Road
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data	
Mannings Coefficient	0.013
Slope	0.037100 ft/ft
Water Surface Elev.	54.81 ft
Elevation Range	54.41 to 56.34
Discharge	8.00 cfs

dry lane met ✓



V:5.0
H:1
NTS

Street Section 1 - Kyle Canyon Road - 25year **Worksheet for Irregular Channel**

Project Description	
Worksheet	Street Section 1 - Kyle Canyon Road (25yr)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data	
Slope	0.037100 ft/ft
Discharge	12.00 cfs

Assumed $\frac{1}{3}$ of Ratio calc. ultimate Flows ($\frac{1}{3} \times 34 \approx 12 \text{ cfs}$)

Options	
Current Roughness Method	over Lotter's Method
Open Channel Weighting	over Lotter's Method
Closed Channel Weighting	Horton's Method

Results	
Mannings Coefficient	0.014
Water Surface Elev.	54.87 ft
Elevation Range	54.41 to 56.34
Flow Area	1.9 ft ²
Wetted Perimeter	10.97 ft
Top Width	10.46 ft
Actual Depth	0.46 ft
Critical Elevation	55.04 ft
Critical Slope	0.004570 ft/ft
Velocity	6.41 ft/s
Velocity Head	0.64 ft
Specific Energy	55.51 ft
Froude Number	2.67
Flow Type	Supercritical

less than $\frac{1}{2}$ width of lane plus factor in gutter/bike lane

d₂₅

v₂₅

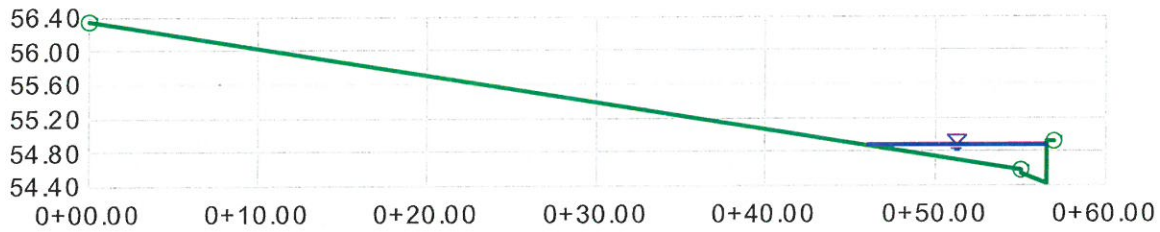
Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00.00	0+55.00	0.016
0+55.00	0+57.00	0.013

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00.00	56.34
0+55.00	54.58
0+55.00	54.54
0+56.50	54.41
0+56.50	54.91
0+57.00	54.91

Street Section 1 - Kyle Canyon Road - 25year Cross Section for Irregular Channel

Project Description	
Worksheet	Street Section 1 - Kyle Canyon Road
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data	
Mannings Coefficient	0.014
Slope	0.037100 ft/ft
Water Surface Elev.	54.87 ft
Elevation Range	54.41 to 56.34
Discharge	12.00 cfs



V:5.0
H:1
NTS

Street Section 1 - Kyle Canyon Road - 100year Worksheet for Irregular Channel

Project Description	
Worksheet	Street Section 1 - Kyle Canyon Road (100yr)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data	
Slope	.037100 ft/ft
Discharge	18.00 cfs

Assumed $\frac{1}{3}$ of Ratio calc. ultimate flows ($\frac{1}{3} \times 54 = 18 \text{ cfs}$)

Options	
Current Roughness Method	over Lotter's Method
Open Channel Weighting	over Lotter's Method
Closed Channel Weighting	Horton's Method

Results	
Mannings Coefficient	0.015
Water Surface Elev.	54.94 ft
Elevation Range	54.41 to 56.34
Flow Area	2.7 ft ²
Wetted Perimeter	13.77 ft
Top Width	13.19 ft
Actual Depth	0.53 ft
Critical Elevation	55.13 ft
Critical Slope	0.004888 ft/ft
Velocity	6.63 ft/s
Velocity Head	0.68 ft
Specific Energy	55.62 ft
Froude Number	2.58
Flow Type	Supercritical

d_{100}

$$.53 \times 6.63 = 3.51 < 8 \text{ OK}$$

V_{100}

Calculation Messages:
Water elevation exceeds lowest end station by 0.28221786e-1 ft.

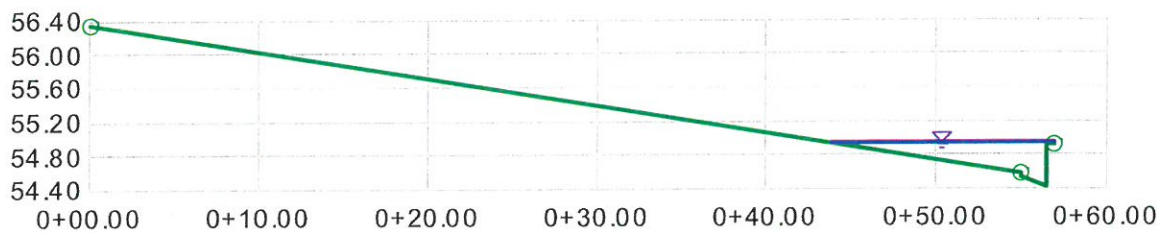
Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00.00	0+55.00	0.016
0+55.00	0+57.00	0.013

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00.00	56.34
0+55.00	54.58
0+55.00	54.54
0+56.50	54.41
0+56.50	54.91
0+57.00	54.91

Street Section 1 - Kyle Canyon Road - 100year Cross Section for Irregular Channel

Project Description	
Worksheet	Street Section 1 - Kyle Canyon Road
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data	
Mannings Coefficient	0.015
Slope	0.037100 ft/ft
Water Surface Elev.	54.94 ft
Elevation Range	1.41 to 56.34
Discharge	18.00 cfs



V:5.0
H:1
NTS

Street Section 2 - Oso Blanco Road - 10year (Future) Worksheet for Irregular Channel

Project Description	
Worksheet	Street Section 2 - Oso Blanco Road (10yr)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data	
Slope	.006000 ft/ft
Discharge	9.00 cfs

Options	
Current Roughness Method	oved Lotter's Method
Open Channel Weighting	oved Lotter's Method
Closed Channel Weighting	Horton's Method

Results	
Mannings Coefficient	0.015
Water Surface Elev.	43.75 ft
Elevation Range	43.23 to 44.40
Flow Area	3.5 ft²
Wetted Perimeter	18.50 ft
Top Width	17.93 ft
Actual Depth	0.52 ft
Critical Elevation	43.76 ft
Critical Slope	0.005783 ft/ft
Velocity	2.56 ft/s
Velocity Head	0.10 ft
Specific Energy	43.86 ft
Froude Number	1.02
Flow Type	Supercritical

Assumed $\frac{1}{3}$ of Ratio calc. ultimate flows (8) + 0500 (1) = 9

d_{10}

V_{10}

$$.52 \times 2.56 = 1.33 < 6 \text{ OK}$$

Calculation Messages:

Water elevation exceeds lowest end station by 0.23988213e-1 ft.

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00.00	0+45.00	0.016
0+45.00	0+47.00	0.013

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00.00	44.40
0+45.00	43.40
0+45.00	43.36
0+46.50	43.23
0+46.50	43.73
0+47.00	43.73

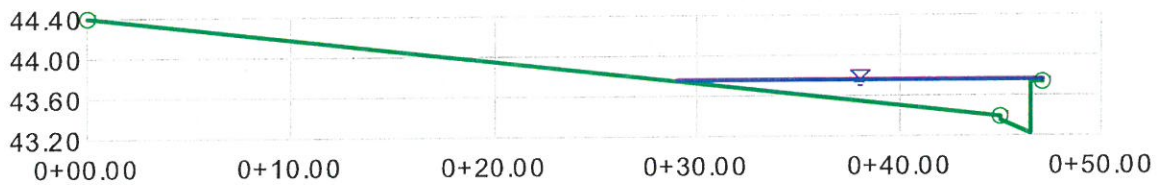
Street Section 2 - Oso Blanco Road - 10year Cross Section for Irregular Channel

Project Description	
Worksheet	Street Section 2 - Oso Blanco Road
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data	
Mannings Coefficient	0.015
Slope	0.006000 ft/ft
Water Surface Elev.	43.75 ft
Elevation Range	43.23 to 44.40
Discharge	9.00 cfs

$$\text{dry lane} = \frac{44.40 - 43.75}{0.0222} = 29.28'$$

dry lane met ✓



V:5.0
H:1
NTS

Street Section 2 - Oso Blanco Road - 25year Worksheet for Irregular Channel

(Future)

Project Description	
Worksheet	Street Section 2 - Oso Blanco Road (25yr)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data	
Slope	.006000 ft/ft
Discharge	13.00 cfs

Assumed $\frac{1}{3}$ of Ratio calc. ultimate flows (12) + 0500(1) = 13

Options	
Current Roughness Method	oved Lotter's Method
Open Channel Weighting	oved Lotter's Method
Closed Channel Weighting	Horton's Method

Results	
Mannings Coefficient	0.015
Water Surface Elev.	43.81 ft
Elevation Range	43.23 to 44.40
Flow Area	4.7 ft ²
Wetted Perimeter	21.23 ft
Top Width	20.60 ft
Actual Depth	0.58 ft
Critical Elevation	43.82 ft
Critical Slope	0.005599 ft/ft
Velocity	2.79 ft/s
Velocity Head	0.12 ft
Specific Energy	43.93 ft
Froude Number	1.03
Flow Type	Supercritical

d₂₅

V₂₅

Calculation Messages:
Water elevation exceeds lowest end station by 0.83361199e-1 ft.

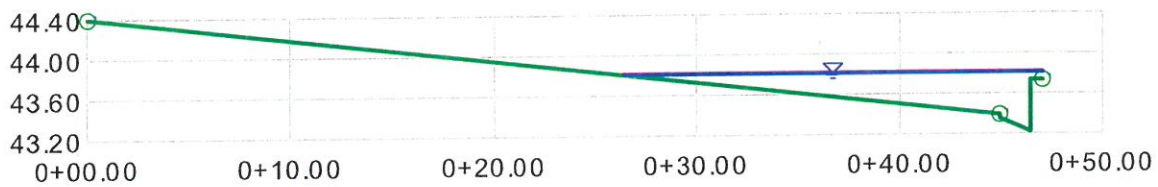
Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00.00	0+45.00	0.016
0+45.00	0+47.00	0.013

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00.00	44.40
0+45.00	43.40
0+45.00	43.36
0+46.50	43.23
0+46.50	43.73
0+47.00	43.73

Street Section 2 - Oso Blanco Road - 25year Cross Section for Irregular Channel

Project Description	
Worksheet	Street Section 2 - Oso Blanco Road
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data	
Mannings Coefficient	0.015
Slope	0.006000 ft/ft
Water Surface Elev.	43.81 ft
Elevation Range	43.23 to 44.40
Discharge	13.00 cfs



V:5.0
H:1
NTS

Street Section 2 - Oso Blanco Road - 100year (Future) Worksheet for Irregular Channel

Project Description	
Worksheet	Street Section 2 - Oso Blanco Road (100yr)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data	
Slope	.006000 ft/ft
Discharge	20.00 cfs

Assumed $\frac{1}{3}$ of Ratio calc. Flows ultimate (18) + 0.00D (2) = 20 cfs

Options	
Current Roughness Method	Overlotter's Method
Open Channel Weighting Method	Overlotter's Method
Closed Channel Weighting Method	Horton's Method

Results	
Mannings Coefficient	0.015
Water Surface Elev.	43.89 ft
Elevation Range	43.23 to 44.40
Flow Area	6.5 ft ²
Wetted Perimeter	24.97 ft
Top Width	24.25 ft
Actual Depth	0.66 ft
Critical Elevation	43.91 ft
Critical Slope	0.005383 ft/ft
Velocity	3.09 ft/s
Velocity Head	0.15 ft
Specific Energy	44.04 ft
Froude Number	1.05
Flow Type	Supercritical

← d_{100}

← V_{100}

$$.66 \times 3.09 = 2.04 < 8 \text{ OK}$$

Calculation Messages:
Water elevation exceeds lowest end station by 0.16445437 ft.

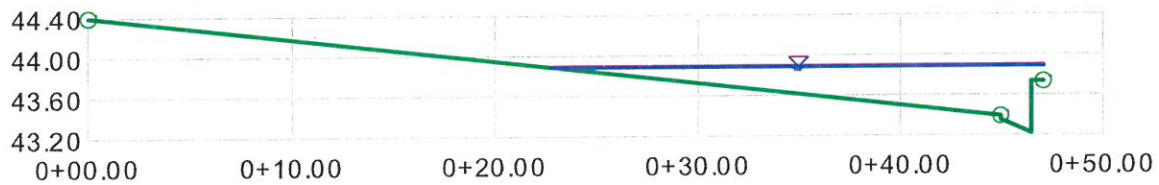
Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00.00	0+45.00	0.016
0+45.00	0+47.00	0.013

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00.00	44.40
0+45.00	43.40
0+45.00	43.36
0+46.50	43.23
0+46.50	43.73
0+47.00	43.73

Street Section 2 - Oso Blanco Road - 100year Cross Section for Irregular Channel

Project Description	
Worksheet	Street Section 2 - Oso Blanco Road
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data	
Mannings Coefficient	0.015
Slope	0.006000 ft/ft
Water Surface Elev.	43.89 ft
Elevation Range	43.23 to 44.40
Discharge	20.00 cfs



V:5.0
H:1
NTS

Street Section 3 - Rufian Road - 10year Worksheet for Irregular Channel

Project Description	
Worksheet	Street Section 3 - Rufian Road - 10yr
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data	
Slope	.005000 ft/ft
Discharge	13.00 cfs

Assumed 1/2 of ultimate 10yr Flow (.5 x 25 cfs)

Options	
Current Roughness Method	over Lotter's Method
Open Channel Weighting Method	over Lotter's Method
Closed Channel Weighting Method	Horton's Method

Results	
Mannings Coefficient	0.014
Water Surface Elev.	0.47 ft
Elevation Range	.00 to 0.63
Flow Area	5.8 ft ²
Wetted Perimeter	34.26 ft
Top Width	33.22 ft
Actual Depth	0.47 ft
Critical Elevation	0.46 ft
Critical Slope	0.005594 ft/ft
Velocity	2.25 ft/s
Velocity Head	0.08 ft
Specific Energy	0.55 ft
Froude Number	0.95
Flow Type	Subcritical

d₁₀

v₁₀

$$d \times v = 1.06 < 6 \text{ OK}$$

Calculation Messages:
Flow is divided.

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00.00	0+07.00	0.013
0+07.00	0+53.00	0.016
0+53.00	0+60.00	0.013

Natural Channel Points	
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	0.13
0+07.00	0.17
0+30.00	0.63
0+53.00	0.17

Project Engineer

FlowMaster v6.1 (10/14/01)

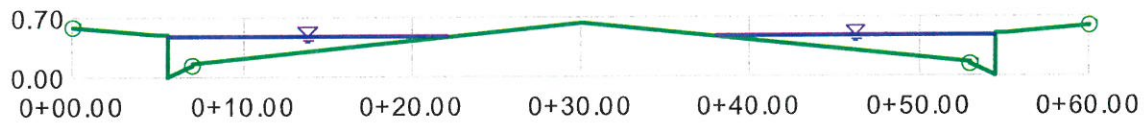
Street Section 3 - Rufian Road - 10year Worksheet for Irregular Channel

Natural Channel Points	
Station (ft)	Elevation (ft)
0+53.00	0.13
0+54.50	0.00
0+54.50	0.50
0+55.00	0.50
0+60.00	0.60

Street Section 3 - Rufian Road - 10year Cross Section for Irregular Channel

Project Description	
Worksheet	Street Section 3 - Rufian Road -
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data	
Mannings Coefficient	0.014
Slope	0.005000 ft/ft
Water Surface Elev.	0.47 ft
Elevation Range	.00 to 0.63
Discharge	13.00 cfs



V:5.0
H:1
NTS

Street Section 3 - Rufian Road - 100year Worksheet for Irregular Channel

Project Description	
Worksheet	Street Section 3 - Rufian Road - 100yr
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data	
Slope	.005000 ft/ft
Discharge	27.00 cfs

← Assumed $\frac{1}{2}$ of offsite ultimate flows ($.5 \times 54 \text{ cfs}$)

Options	
Current Roughness Method	over Lotter's Method
Open Channel Weighting	over Lotter's Method
Closed Channel Weighting	Horton's Method

Results	
Mannings Coefficient	0.015
Water Surface Elev.	0.60 ft
Elevation Range	.00 to 0.63
Flow Area	11.5 ft ²
Wetted Perimeter	58.25 ft
Top Width	57.15 ft
Actual Depth	0.60 ft
Critical Elevation	0.59 ft
Critical Slope	0.005981 ft/ft
Velocity	2.34 ft/s
Velocity Head	0.09 ft
Specific Energy	0.69 ft
Froude Number	0.92
Flow Type	Subcritical

d_{100} (pointing to Actual Depth)
 v_{100} (pointing to Velocity)
 $d \times v < 8 \text{ OK}$ (with $d = 1.40$)

Calculation Messages:
 Water elevation exceeds lowest end station by 0.14951349e-2 ft.
 Flow is divided.

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00.00	0+07.00	0.013
0+07.00	0+53.00	0.016
0+53.00	0+60.00	0.013

Natural Channel Points	
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	0.13
0+07.00	0.17
0+30.00	0.63

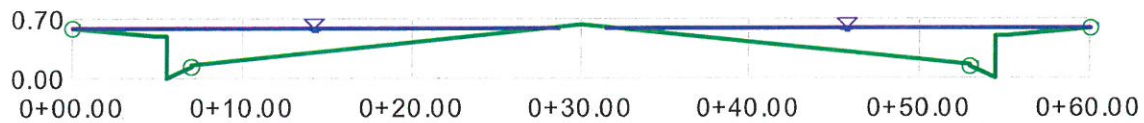
Street Section 3 - Rufian Road - 100year Worksheet for Irregular Channel

Natural Channel Points	
Station (ft)	Elevation (ft)
0+53.00	0.17
0+53.00	0.13
0+54.50	0.00
0+54.50	0.50
0+55.00	0.50
0+60.00	0.60

Street Section 3 - Rufian Road - 100year Cross Section for Irregular Channel

Project Description	
Worksheet	Street Section 3 - Rufian Road -
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data	
Mannings Coefficient	0.015
Slope	0.005000 ft/ft
Water Surface Elev.	0.60 ft
Elevation Range	.00 to 0.63
Discharge	27.00 cfs



V:5.0
H:1
NTS

REVISED NOMOGRAPH CALCULATIONS

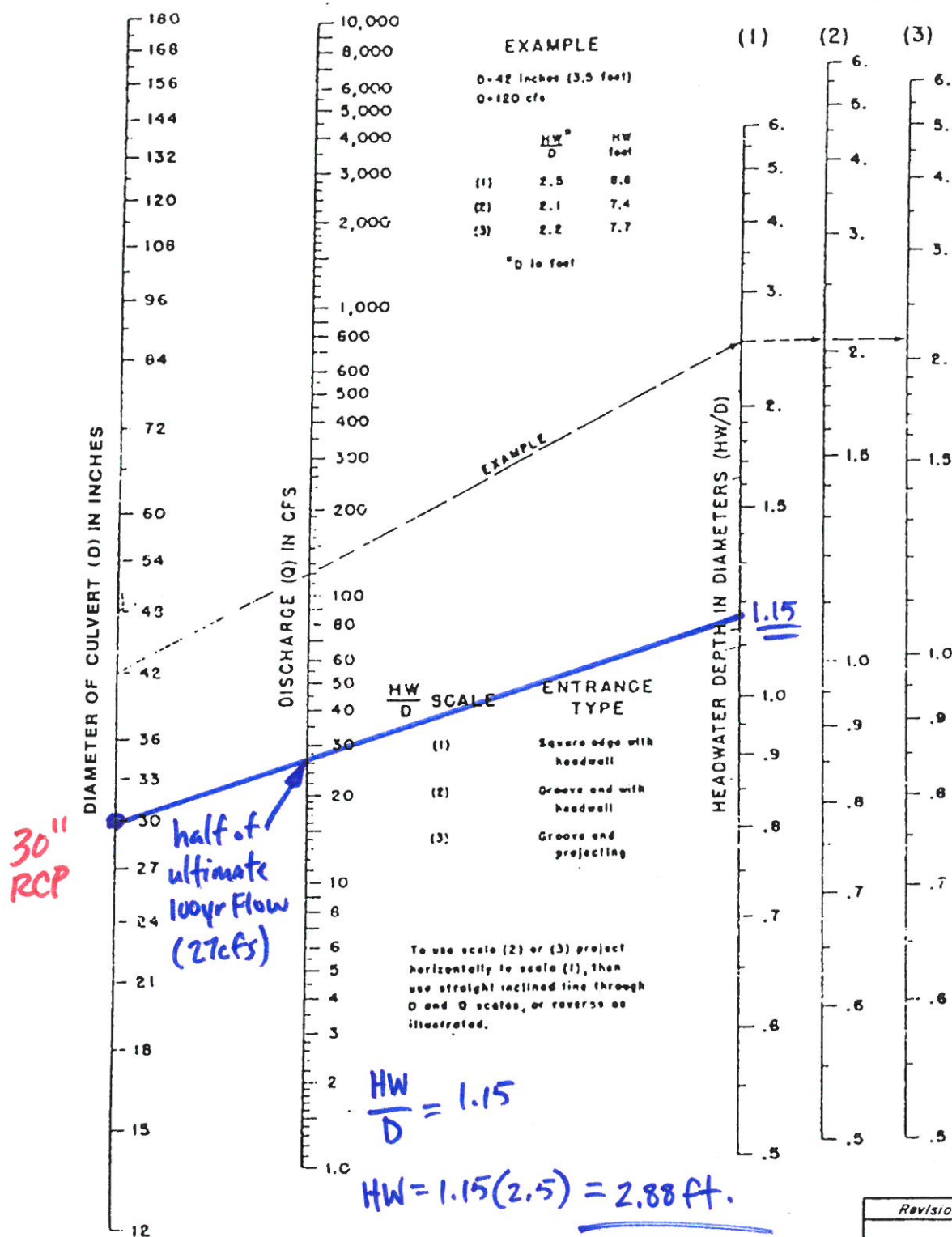
NOMOGRAPH

(INLET CONTROL OF RCP)

(IN RUFIAN RD.)

NOMOGRAPH - INLET CONTROL RCP

(Rutian Rd.)



(well below Rim elev. at inlet)

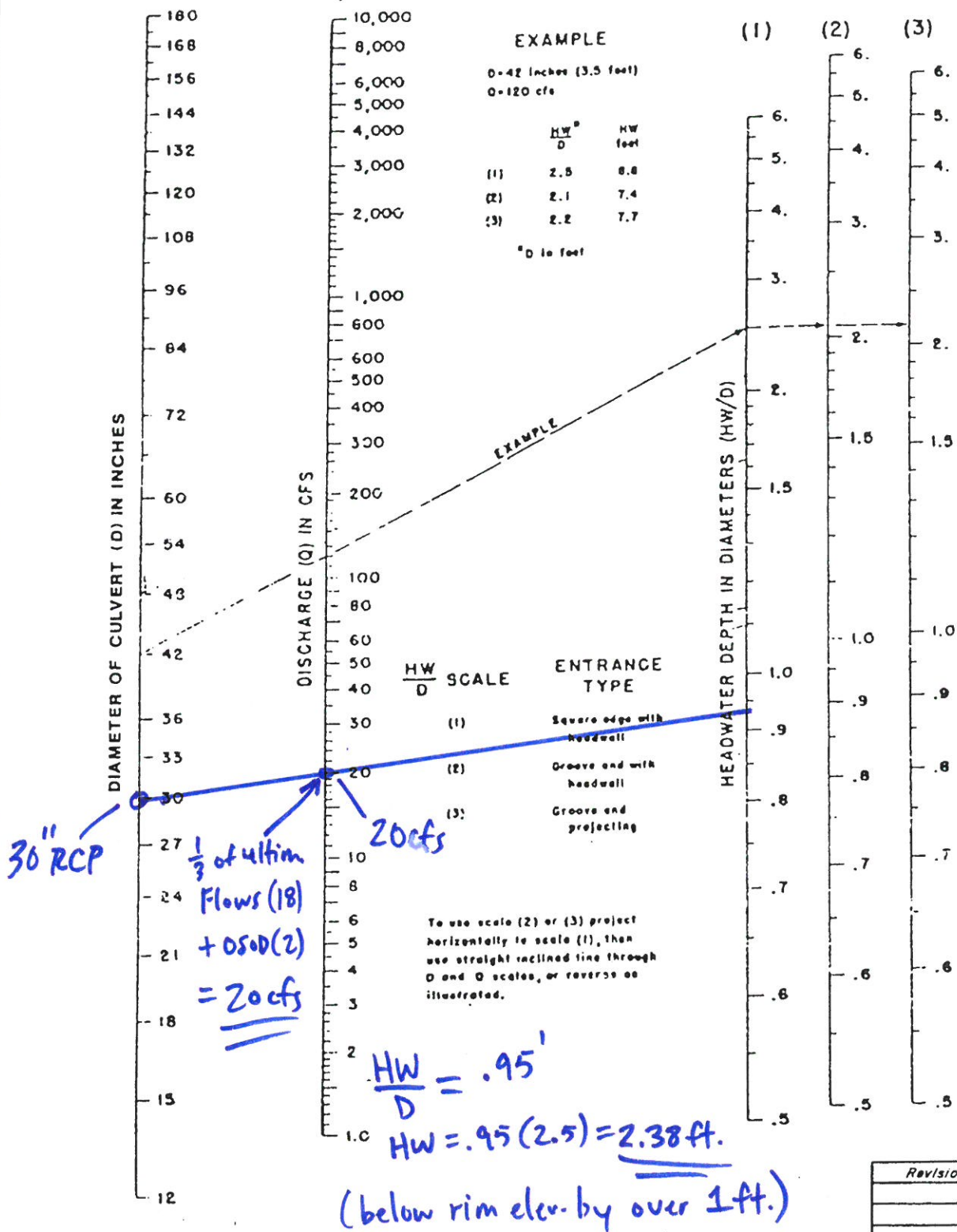
Revision	Date

NOMOGRAPH

(INLET CONTROL OF RCP)

(IN OSO BLANCA)

NOMOGRAPH - INLET CONTROL RCP (OSO BLANCA)

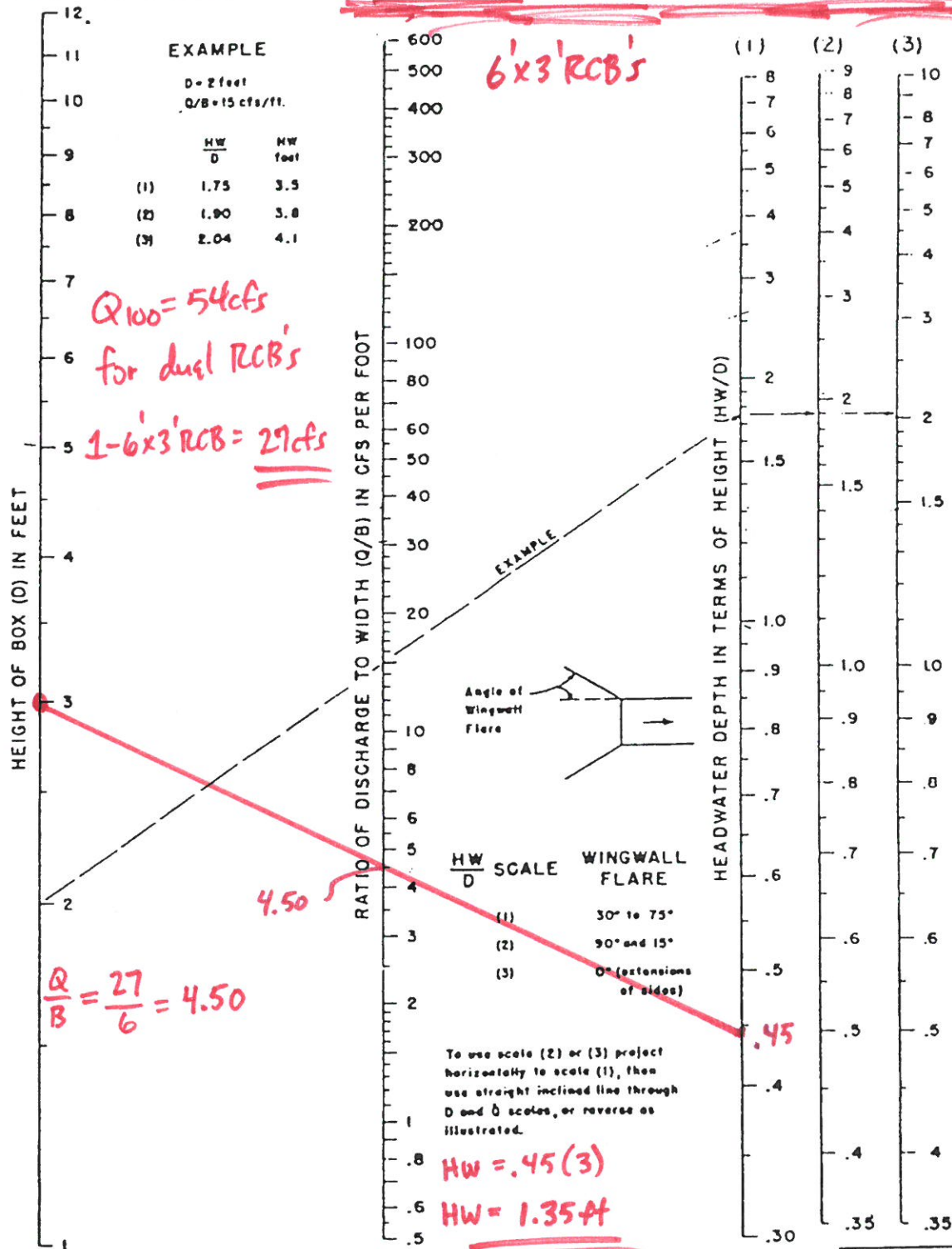


Revision	Date

NOMOGRAPH

(INLET CONTROL OF RCB)

NOMOGRAPH - INLET CONTROL BOX CULVERT



Revision	Date

30" RCP CALCULATION

(100YR STORM)

30" RCP (100yr) Worksheet for Circular Channel

Project Description	
Worksheet	30" RCP (100y
Flow Element	Circular Chann
Method	Manning's Forr
Solve For	Channel Depth

Input Data	
Mannings Coeffic	0.013
Slope	020000 ft/ft
Diameter	30 in
Discharge	27.00 cfs

Assumed $\frac{1}{2}$ of Ratio a/calc. ultimate flows ($\frac{1}{2} \times 54 = 27\text{cfs}$)

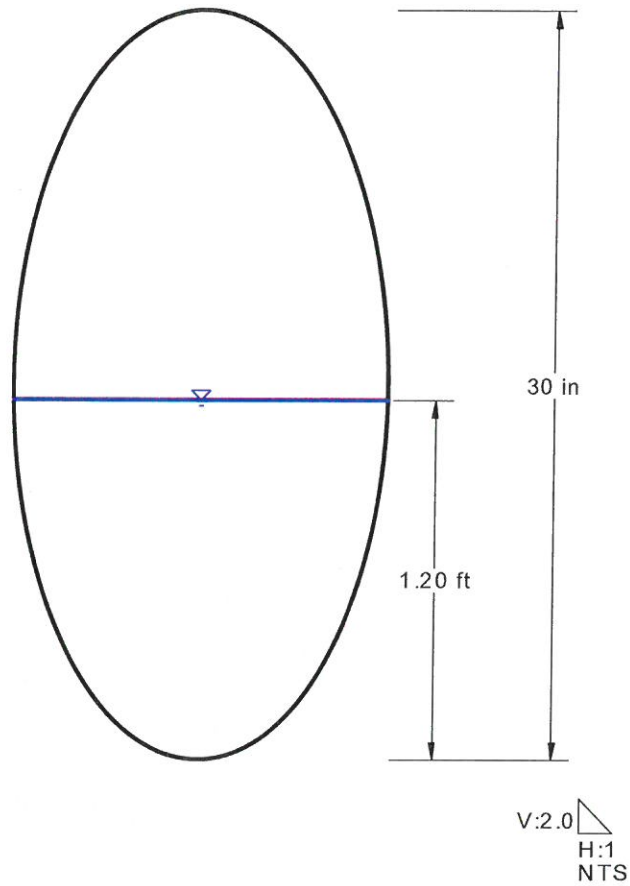
Results	
Depth	1.20 ft
Flow Area	2.3 ft ²
Wetted Perime	3.82 ft
Top Width	2.50 ft
Critical Depth	1.77 ft
Percent Full	48.0 %
Critical Slope	0.005986 ft/ft
Velocity	11.61 ft/s
Velocity Head	2.09 ft
Specific Energ	3.29 ft
Froude Numbe	2.12
Maximum Disc	62.40 cfs
Discharge Full	58.00 cfs
Slope Full	0.004334 ft/ft
Flow Type	supercritical

divo - conservative since majority of flows goes directly into the dual 6'x3'RCB's

30" RCP (100yr)
Cross Section for Circular Channel

Project Description	
Worksheet	30" RCP (100y
Flow Element	Circular Chann
Method	Manning's Forr
Solve For	Channel Depth

Section Data	
Mannings Coeffic	0.013
Slope	020000 ft/ft
Depth	1.20 ft
Diameter	30 in
Discharge	27.00 cfs



18" RCP Calculation (100yr)

18" RCP (100yr)
Worksheet for Circular Channel

Project Description	
Worksheet	18" RCP (100yr)
Flow Element	Circular Chann
Method	Manning's Forr
Solve For	Channel Depth

Input Data	
Mannings Coeffic	0.013
Slope	0.058000 ft/ft
Diameter	18 in
Discharge	20.00 cfs

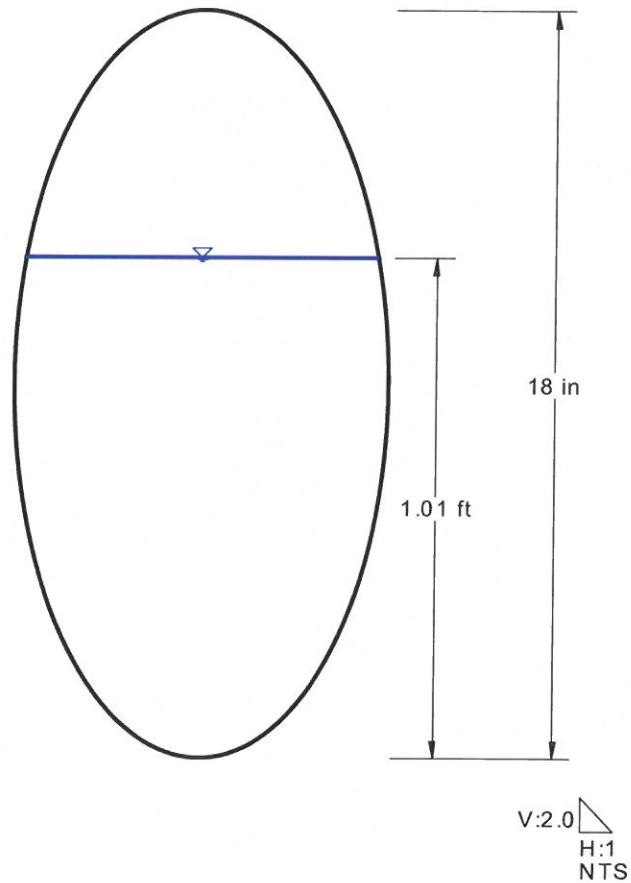
0.058000 ft/ft

Results	
Depth	1.01 ft
Flow Area	1.3 ft ²
Wetted Perime	2.88 ft
Top Width	1.41 ft
Critical Depth	1.47 ft
Percent Full	67.1 %
Critical Slope	0.032348 ft/ft
Velocity	15.87 ft/s
Velocity Head	3.91 ft
Specific Energ	4.92 ft
Froude Numbe	2.96
Maximum Disc	27.21 cfs
Discharge Full	25.30 cfs
Slope Full	0.036255 ft/ft
Flow Type	supercritical

18" RCP (100yr)
Cross Section for Circular Channel

Project Description	
Worksheet	18" RCP (100y
Flow Element	Circular Chann
Method	Manning's Forr
Solve For	Channel Depth

Section Data	
Mannings Coeffic	0.013
Slope	058000 ft/ft
Depth	1.01 ft
Diameter	18 in
Discharge	20.00 cfs



STANDARD FORM 6

ONSITE STORM DRAIN ANALYSIS

Proposed 6ft x 3ft RCB Mainline through the Site
Ultimate Condition, 100-year events

Project Name: Kyle Canyon/Oso Blanco
Project #: 200308
Manning's "n"-value: 0.013
Definition of Full Flow: 100%
Allowable Dist. from HGL to FG: 1.0 ft

[illegible]
$$Sf = \frac{(I)(Hv)}{R^{1.33}}$$

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

Notes

* Starting EGL= HGL + 1.0 x Velocity Head

Notes

- (1) 35.0 Degree Manhole - Loss Coefficient = 0.26
- (2) 0.0 Degree Manhole - Loss Coefficient = 0.02
- (3) 90 Degree Junction - Loss Coefficient = 0.25
- (4) 90.0 Degree Manhole - Loss Coefficient = 1.32
- (3) Entrance - Loss Coefficient = 0.50

- (CCRFCD Drainage Design Manual, Figure 815)
(CCRFCD Drainage Design Manual, Figure 815)
(CCRFCD Drainage Design Manual, Table 803 (3 of 3))
(CCRFCD Drainage Design Manual, Figure 815)
(CCRFCD Drainage Design Manual, Table 1001 (2 of 2))

REVISED SUMP DROP INLET CALCULATIONS

(RUFIAN RD. AND OSO BLANCA RD.)

Modified Type 'C' @ Rufian Road Low Point (Ultimate Condition, 100-Year)
Worksheet for Combination Inlet In Sag

Project Description	
Worksheet	Modified Type 'C' @ Rufian Road Low Point (Ultimate Condition) <i>2. - 100 yr</i>
Type	Combination Inlet In Sag
Solve For	Spread

Input Data	
Discharge	27.00 cfs
Local Depression	2.0 in
Local Depression \	2.00 ft
Gutter Width	1.50 ft
Gutter Cross Slope	0.086667 ft/ft
Road Cross Slope	0.020000 ft/ft
Curb Opening Length	12.50 ft
Opening Height	0.50 ft
Curb Throat Type	Horizontal
Grate Width	1.50 ft
Grate Length	11.25 ft
Grate Type	3 mm (P-1-7/8")
Clogging	0.0 %

*Ratio calculated ultimate flows (54) x 1/2
 (Assumed) ↑ = 27 cfs*

1/2 length of actual inlet size (50% clogging)

1/2 length of grate (50% clogging)

Options	
Calculation Option	Both

Results	
Spread	16.96 ft
Throat Incline Angle	30.00 degree
Depth	0.44 ft
Gutter Depression	1.2 in
Total Depression	3.2 in
Open Grate Area	15.19 ft²
Active Grate Weir Length	14.25 ft

less than curb height for head required

Notes: $Q_{100} = 1/2$ of Ultimate offsite flows ($.5 \times 54 = 27 \text{ cfs}$)

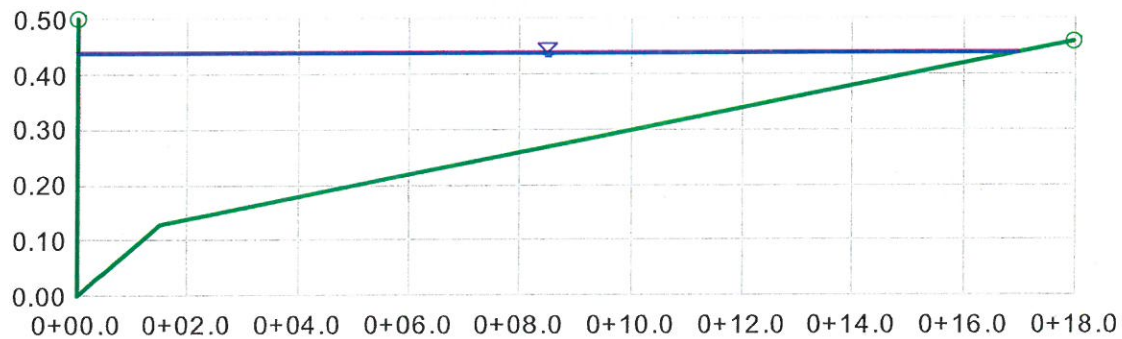
* Half the proposed drop inlet length is used in the calculations to account for a 50% Clogging.

* Per the Clark County uniform standard drawing 412A, the first 2.5ft of the grate length is not utilized to account for the solid lid.

Modified Type 'C' @ Rufian Road Low Point (Ultimate Condition, 100-Year) Cross Section for Combination Inlet In Sag

Project Description	
Worksheet	Modified Type 'C' @ Rufian Road Low Point (Ultimate Con
Type	Combination Inlet In Sag
Solve For	Spread

Section Data	
Discharge	27.00 cfs
Local Depression	2.0 in
Local Depression \	2.00 ft
Spread	16.96 ft
Gutter Width	1.50 ft
Gutter Cross Slope	0.086667 ft/ft
Road Cross Slope	0.020000 ft/ft
Curb Opening Len	12.50 ft
Opening Height	0.50 ft
Curb Throat Type	Horizontal
Throat Incline Angl	90.00 degree
Grate Width	1.50 ft
Grate Length	11.25 ft
Grate Type	3 mm (P-1-7/8")
Clogging	0.0 %



V:10.0
H:1
NTS

u.H.

Modified Type 'C' @ Oso Blanco Road Low Point (Interim Condition, 100-Year)
Worksheet for Combination Inlet In Sag

Project Description	
Worksheet	Modified Type 'C' @ Oso Blanco Road Low Point (Interim Co
Type	Combination Inlet In Sag <i>u.H.</i>
Solve For	Spread

Input Data	
Discharge	28.00 cfs
Local Depression	2.0 in
Local Depression \	2.00 ft
Gutter Width	1.50 ft
Gutter Cross Slope	0.086667 ft/ft
Road Cross Slope	0.020000 ft/ft
Curb Opening Len	10.00 ft
Opening Height	0.50 ft
Curb Throat Type	Horizontal
Grate Width	1.50 ft
Grate Length	8.75 ft
Grate Type	3 mm (P-1-7/8")
Clogging	0.0 %

Options	
Calculation Opt se Both	

Results	
Spread	21.07 ft
Throat Incline Angle	30.00 degree
Depth	0.52 ft
Gutter Depression	1.2 in
Total Depression	3.2 in
Open Grate Area	11.81 ft ²
Active Grate Weir Le	11.75 ft

Notes: $Q_{100} = 1/3 \text{ of Ultimate flows (18cfs) + OSOD (2) + ND1 (3) + ND@ (5) = 28cfs}$

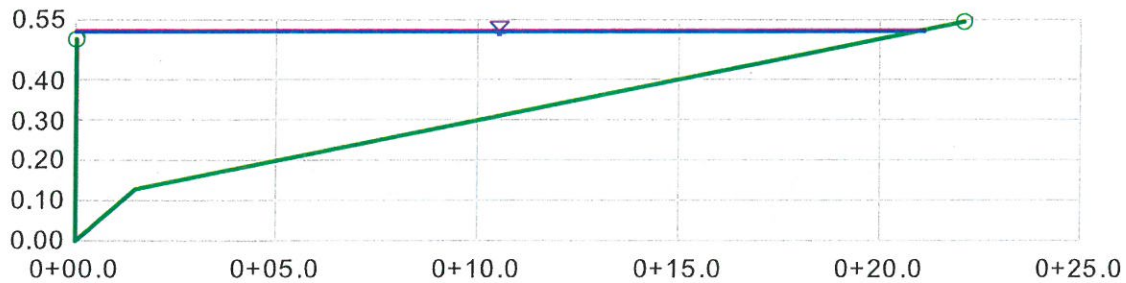
* Half the proposed drop inlet length is used in the calculations to account for a 50% Clogging.

* Per the Clark County uniform standard drawing 412A, the first 2.5ft of the grate length is not utilized to account for the solid lid.

Modified Type 'C' @ Oso Blanco Road Low Point (Interim Condition, 100-Year) **Cross Section for Combination Inlet In Sag**

Project Description	
Worksheet	Modified Type 'C' @ Oso Blanco Road Low Point (Interim Co
Type	Combination Inlet In Sag
Solve For	Spread

Section Data	
Discharge	28.00 cfs
Local Depression	2.0 in
Local Depression \	2.00 ft
Spread	21.07 ft
Gutter Width	1.50 ft
Gutter Cross Slope	0.086667 ft/ft
Road Cross Slope	0.020000 ft/ft
Curb Opening Length	10.00 ft
Opening Height	0.50 ft
Curb Throat Type	Horizontal
Throat Incline Angle	90.00 degree
Grate Width	1.50 ft
Grate Length	8.75 ft
Grate Type	3 mm (P-1-7/8")
Clogging	0.0 %



V:10.0
H:1
NTS

Rip-Rap Size Determination at Entrance of Dual RCBs

(100yr storm)

Section Upstream of Proposed RCBs (100yr) **Worksheet for Irregular Channel**

Project Description	
Worksheet	Section Upstream of Proposed RC
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data	
Slope	0.033000 ft/ft
Discharge	54.00 cfs

Ratio calc. Ultimate Flows ←

Options	
Current Roughness Method	oved Lotter's Method
Open Channel Weighting	oved Lotter's Method
Closed Channel Weighting	Horton's Method

Results	
Mannings Coefficient	0.030
Water Surface Elev.	2,856.83 ft
Elevation Range	56.00 to 2,858.00
Flow Area	10.8 ft ²
Wetted Perimeter	25.90 ft
Top Width	25.84 ft
Actual Depth	0.83 ft
Critical Elevation	2,856.95 ft
Critical Slope	0.016883 ft/ft
Velocity	5.01 ft/s
Velocity Head	0.39 ft
Specific Energy	2,857.22 ft
Froude Number	1.37
Flow Type	Supercritical

used for riprap calc. At entrance of dual RCB's ←

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00.00	0+62.00	0.030

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00.00	2,858.00
0+32.00	2,856.00
0+62.00	2,858.00

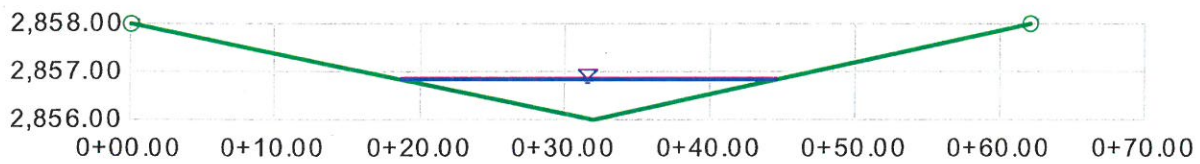
Project Engineer:

FlowMaster v6.1 (614K)

Section Upstream of Proposed RCBs (100yr) **Cross Section for Irregular Channel**

Project Description	
Worksheet	Section Upstream of Proposed RC
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data	
Mannings Coefficient	0.030
Slope	0.033000 ft/ft
Water Surface Elev.	2,856.83 ft
Elevation Range	56.00 to 2,858.00
Discharge	54.00 cfs



V:3.33333333
H:1
NTS

Storm Drain

Date: JULY, 2022

Equation 734, Section 405.4.6 of the 1999 Hydrologic Criteria and Drainage Design Manual

$$V = 3(d_{50}^{0.5})(S_s - 1)/(S^{0.17})$$

V = Mean channel velocity in fps;

S = Longitudinal channel slope in feet per foot

S_s = Specific gravity of rock (minimum S_s = 2.50)

d₅₀ = Mean stone size in ft, rock size in for which 50% (by weight) of the riprap is smaller

Solve for d₅₀:

$$d_{50} = [V(S^{0.17}) / (3(S_s - 1))]^2$$

V = 5.01 fps <<<< From Reference Study, Q 100 = 54 cfs

S = 0.0330 ft/ft

S_s = 2.65

d₅₀ = 0.32 ft

3.85 inches

* d₅₀ = 8-inch Loose Riprap is being proposed at entrance of RCBs

use 8" riprap (conservative) at
entrance of dual 6'x3' RCB's

From Ratio calc.
of offsite 100yr
ultimate Flows

Z:\PROJECTS-CURRENT\COMMERCIAL CLIENTS\MICHAEL SWECKER\2020\23-KYLE CANYON\ENGINEERING\DWG\DRAWINGS\IMPROVEMENT PLANS\2020\23-CL-CV.DWG 8/9/2022 4:11 PM

KYLE CANYON ROAD AND OSO BLANCA ROAD IMPROVEMENT PLANS

10051 KYLE CANYON ROAD
LAS VEGAS, NEVADA 89166

ACRES: 2.48

APN 126-01-702-007 / 008

ON-SITE DISTURBED ACREAGE: 2.48 AC

OFF-SITE DISTURBED ACREAGE: 1.27 AC

NEVADA DEPARTMENT OF TRANSPORTATION (NDOT) PERMIT REQUIRED

AN APPROVED NDOT OCCUPANCY PERMIT SHALL BE OBTAINED THROUGH THE AGENCY PRIOR TO ANY CONSTRUCTION WITHIN THE NDOT RIGHT-OF-WAY. PLANS SHOWING WORK IN THE NDOT RIGHT-OF-WAY MUST SHOW NDOT STATIONING. THE DEVELOPER ASSUMED ALL LIABILITY FOR WORK CONDUCTED UNDER THE AGENCY OBTAINED PERMIT THROUGH WARRANTY EXPIRATION.

NDOT OCCUPANCY PERMIT REQUIREMENTS

PLANS FOR THE PROJECT SHOW PROPOSED WORK WITHIN EXISTING NDOT RIGHT-OF-WAY. DRAWING MUST BE SUBMITTED TO NDOT FOR REVIEW PRIOR TO SUBMITTAL OF MYLARS TO CLV UTILITY DEPARTMENT FOR APPROVAL. THE CLV UTILITY DEPARTMENT WILL SUBMIT APPLICATION FOR ENCROACHMENT PERMIT AFTER PLAN APPROVAL. NDOT REQUIRES THAT THE FOLLOWING INFORMATION BE INCLUDED ON THE PLANS:

- STREET NAME (NDOT RIGHT-OF-WAY IDENTIFIED AS SR-157 AND OSO BLANCA ROAD)
- NDOT RIGHT-OF-WAY BOUNDARY IDENTIFIED AND CLEARLY STATED
- NDOT TRENCH DETAIL OR BORE DETAIL
- MAJOR CROSS STREETS
- NDOT STATIONING
- UNDERLYING FEE OWNERSHIP OF PARCEL (CONTACT NDOT OFFICIAL AND PROVIDE AT PLAN APPROVAL)
- DISTANCE FROM WORK LOCATION TO MAJOR CROSS STREET
- DIMENSION OF TRENCH OR WORK AREA
- IDENTIFY NDOT CENTERLINE

CLV UTILITY WORK - NDOT PERMIT # XXXXXX-XXXX1

ENGINEERING FIRM

ACG DESIGN
RANDOLPH SKORPINSKI
4310 CAMERON ST. STE. 12-A
LAS VEGAS, NV 89103
PHONE: (702) 448-8737
EMAIL: RSKORPINSKI@ACG.DESIGN

OWNER/DEVELOPER

KYLE CANYON NEXT AND LAST FRONTIER, LLC
MICHAEL SWECKER
6655 WEST SAHARA AVENUE #B200-113
LAS VEGAS, NV 89146
PHONE:
EMAIL: MIKESWECKER@GMAIL.COM

CAUTION TO CONTRACTOR

THE CONTRACTOR SHALL BE RESPONSIBLE TO INVESTIGATE AND VERIFY THE ACTUAL LOCATION AND DEPTH OF ALL EXISTING UNDERGROUND FACILITIES AT LEAST 48 HOURS IN ADVANCE OF THE PERFORMANCE OF ANY WORK.

NOTE

THESE PLANS SHALL NOT, IN PART OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY THE GOVERNING AGENCY.

ENGINEER TO BE NOTIFIED OF ANY DISCREPANCIES IMMEDIATELY.

BASIS OF BEARINGS

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS ZONE (LOW DISTORTION PROJECTION), NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN. THE BEARING EQUATION FOR THIS PROJECT WOULD BE THE EAST LINE OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 1, TOWNSHIP 19 SOUTH, RANGE 59 EAST, M.D.M., CLARK COUNTY, NEVADA, HAVING A BEARING OF N 00° 16' 23" E, ALSO BEING N 00° 04' 52" W AS SHOWN ON MAP THEREOF ON FILE IN FILE 98 OF SURVEYS, PAGE 26, OFFICIAL RECORDS, CLARK COUNTY NEVADA.

BENCHMARK

CLARK COUNTY VERTICAL CONTROL V.2003, BENCHMARK STATION 7LV90 65W66, BEING AN NDOT BRASS DISC ON WEST SIDE OF WEST FRONTAGE ROAD 0.15 MILE SOUTH OF KYLE CANYON ROAD STAMPED "311+73.68 PC DIST 39.47 90 DEGREES".

PUBLISHED ELEVATION: 863.230 METERS (NAVDS88)
PUBLISHED CONVERSION FACTOR: METERS C (3937/1200) = U.S. SURVEY FEET
CONVERTED ELEVATION: 2832.11 FEET

LEGAL DESCRIPTION

THE LAND REFERRED TO HEREIN BELOW IS SITUATED IN THE COUNTY OF CLARK, STATE OF NEVADA, AND DESCRIBED AS FOLLOWS:

PARCEL 1:

THE WEST HALF (W 1/2) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 1, TOWNSHIP 19 SOUTH, RANGE 59 EAST, M.D.B & M., CLARK COUNTY, NEVADA.

PARCEL 2:

THE EAST HALF (E 1/2) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 1, TOWNSHIP 19 SOUTH, RANGE 59 EAST, M.D.B&M CLARK COUNTY, NEVADA.

SURVEY MONUMENTATION NOTE

OWNER RESPONSIBLE TO PROVIDE SURVEY MONUMENTATION AS SHOWN AND TO REPLACE ALL SURVEY MONUMENTATION DAMAGED, DISTURBED, DESTROYED OR OBSCURED DURING CONSTRUCTION.

FLOOD ZONE INFORMATION

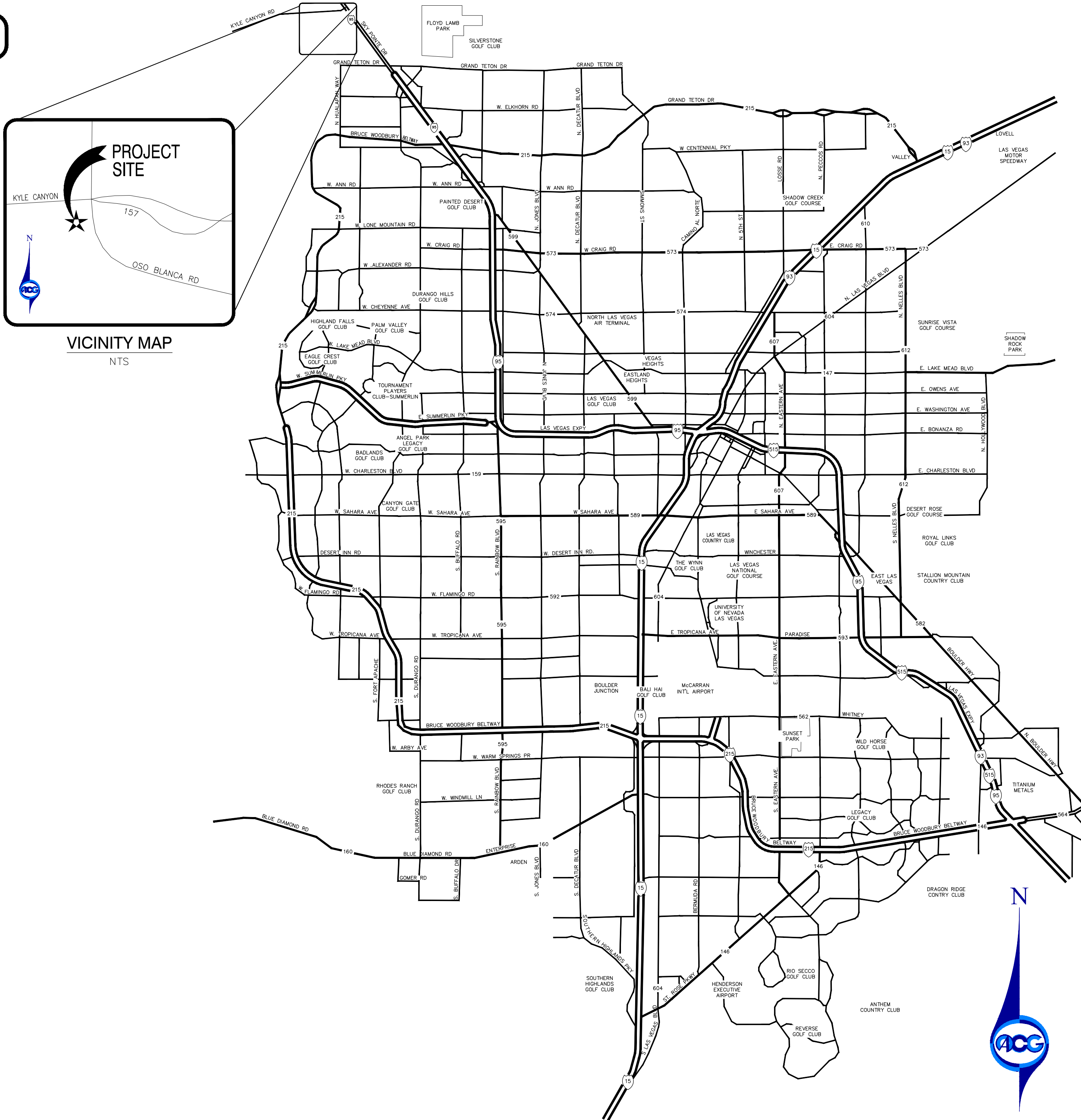
AS SHOWN BY FLOOD INSURANCE RATE MAP NO. 320203C1750 E, DATED SEPTEMBER 27, 2002, LOCATED IN UNSHADED ZONE X, AN AREA DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN.

GEOTECHNICAL REPORT

ALL GRADING AND EARTHWORK SHALL CONFORM TO THE GEOTECHNICAL EVALUATION REPORT:

TITLE: GEOTECHNICAL EVALUATION
FOR A 2.48± ACRE COMMERCIAL DEVELOPMENT
LOCATED AT 10051 KYLE CANYON ROAD
LAS VEGAS, NEVADA

ENGINEER: GEOTEK, INC.
DATE: AUGUST 31, 2020
PROJECT NO: 15707-LV



SHEET INDEX

DRAWING NO.	DESCRIPTION
C1	COVER SHEET
C2	GENERAL NOTES SHEET 1
C3	GENERAL NOTES SHEET 2
C4	LEGEND & ABBREVIATIONS
C5	HORIZONTAL CONTROL PLAN
C6	GRADING PLAN
C7	RCB PLAN & PROFILE
C8	KYLE CANYON ROAD PLAN & PROFILE
C9	OSO BLANCA ROAD PLAN & PROFILE
C10	RUFIAN ROAD PLAN & PROFILE
C11	UTILITY PLAN
C12	TRAFFIC CONTROL PLAN
C13	CROSS SECTIONS
C14	CROSS SECTIONS
C15	DETAILS
C16	DUAL 6' X 3' JUNCTION STRUCTURAL DETAILS
C17	NDOT DETAILS
C18	NDOT DETAILS

APPROVALS

LAS VEGAS FIRE & RESCUE DATE

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT PLANNING AND ENGINEERING SERVICES

PROJECT NO. _____ FIRST APPROVED DATE: _____
LVVWD APPROVED FIRE FLOW: TOTAL 1,500 GPM/ONSITE 1,500 GPM
SHEETS C1 - C4, & C8

NEVADA POWER D.B.A. NV ENERGY DATE

NV 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.

CENTRAL TELEPHONE COMPANY, D.B.A. CENTURYLINK DATE

THE AFFIXED CENTRAL TELEPHONE COMPANY, D.B.A. CENTURYLINK APPROVAL DOES NOT ASSUME OR GUARANTEE LIABILITY FOR KNOWN OR UNKNOWN CONFLICTS WITH EXISTING OR PROPOSED IMPROVEMENTS. RESOLUTION OF ANY CONFLICT WILL BE ACCOMPLISHED PURSUANT TO LOCAL ORDINANCES, NEVADA REVISED STATUTES AND/OR PUBLIC UTILITY COMMISSION RULES AND REGULATIONS.

COX COMMUNICATIONS LAS VEGAS, INC. DATE

SOUTHWEST GAS CORPORATION DATE

ENGINEER'S SEAL

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION, AND THAT I AM A LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF NEVADA.

Michael A. Skorpinski
LICENSE #14985

8/10/2022
DATE

APPROVAL

REVISIONS

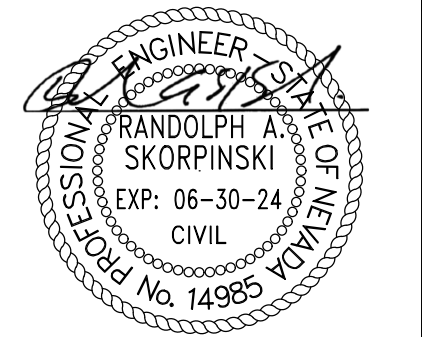
KYLE CANYON ROAD AND
OSO BLANCA ROAD
COVER SHEET

COVER SHEET

APN: 126-01-702-007 / 008
10051 KYLE CANYON ROAD
LAS VEGAS, NV 89166

ACG DESIGN
ACG DESIGN
4310 CAMERON ST. SUITE 12-A
LAS VEGAS, NEVADA 89103
OFFICE: 702.448.8737
WEBSITE: WWW.ACG.DESIGN

ENGINEER'S SEAL



8/10/2022

DATE: 8/9/2022
PROJ. NO: 200203
DRAWN BY: ARB
CHECKED BY: RAS
SCALE: AS NOTED
JURISDICTION: CLV

DRAWING NUMBER:

C1

SHEET 1 OF 18

AGENCY NUMBER:

Call before you Dig
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.
Call
811
OR
1-800-642-2444

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY.
CALL BEFORE YOU DO OVERHEAD
Call before you UnderGround
1-702-432-5300

FAST
Call before you UnderGround
1-702-432-5300
FREWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

Z:\PROJECTS-CURRENT\COMMERCIAL CLIENTS\MICHAEL SNECKERY\202023- CIVS @ OSO-BLANCA & KYLE CANYON\ENGINEERING\CIVIL DRAWINGS\IMPROVEMENT PLANS\202023-CL-CV.DWG 8/9/2022 4:11 PM

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 (1/2") ABOVE LIP OF ALL GUTTERS AFTER COMPACTION, EXCEPT AT SIDEWALK RUMPS 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. AFTER HAUNCHING AND PRIOR TO BACKFILL OPERATIONS WHICH WOULD COVER SANITARY SEWER AND STORM DRAIN FACILITIES, CONTRACTOR IS REQUIRED TO SCHEDULE CLV OPEN-TRENCH UTILITY SURVEY INSPECTION FOR DETERMINATION OF FINAL LOCATION COORDINATES. FACILITIES TO BE LOCATED BY CLV SHALL INCLUDE AT A MINIMUM THE HORIZONTAL AND VERTICAL (INVERT) LOCATION OF PUBLIC SEWER MANHOLE, STORM DRAIN MANHOLES AND TRANSITION STRUCTURES, STORM DRAIN LATERALS AND 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 STORM DRAIN MAIN ALIGNMENT, INCLUDING DEFLECTION POINTS.
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 ADDITION.
23. A SEPARATE BORING PERMIT IS REQUIRED FOR ALL BORING ACTIVITIES.

Call before you Dig

AVOID CUTTING UNDERGROUND UTILITY LINES ITS COSTLY.

Call 811

OR

1-800-642-2444

AVOID HITTING OVERHEAD POWER LINES ITS COSTLY.

CALL BEFORE YOU DO OVERHEAD

FAST

Call before you UnderGround

1-702-432-5300

FREEMAN AND ARTERIAL SYSTEM OF TRANSPORTATION

NOTICE TO CONTRACTOR

1. CONSTRUCTION CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONSTRUCTION CONTRACTOR SHALL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY, THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND CONSTRUCTION CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD DESIGN PROFESSIONALS HARMLESS FROM ALL LIABILITY, REAL OR ALLEGED IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF DESIGN PROFESSIONAL.
2. CONTRACTOR SHALL VERIFY ALL CONDITIONS AND DIMENSIONS AND SHALL REPORT ALL DISCREPANCIES TO THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK.
3. THE EXISTENCE AND APPROXIMATE LOCATION OF ANY UNDERGROUND FACILITIES SHOWN HEREON WERE OBTAINED FROM A SEARCH OF AVAILABLE RECORDS. THERE MAY, HOWEVER BE EXISTING UTILITIES NOT SHOWN ON THE PLANS. THE CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO PROTECT THE UTILITIES OR STRUCTURES SHOWN HEREON AND ANY OTHER NOT OF RECORD OR NOT SHOWN ON THESE PLANS.
4. 14 GAUGE SOLID COPPER WIRE FOR LINE LOCATION SHALL BE REQUIRED OVER ALL SERVICE LATERALS NOT INSTALLED PERPENDICULAR TO THE MAIN IN ACCORDANCE WITH UDACS PLATE No. 27.
5. SEE PLAN AND PROFILE AND MASTER UTILITY SHEETS FOR COMPLETE WATER AND SEWER DESIGN.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR DUST AND EROSION CONTROL DURING CONSTRUCTION.
7. SEE LANDSCAPE PLANS FOR LANDSCAPING. (SEE ARCH PACKAGE- COMPLETED BY OTHERS)

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 VEGAS TRAFFIC NOTES

1. ALL CONSTRUCTION SIGNING, BARRICADING, AND TRAFFIC DELINEATION SHALL CONFORM TO THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", LATEST EDITION.
2. THE STREET SIGN CONTRACTOR SHALL OBTAIN STREET NAMES AND BLOCK NUMBERING FROM THE PLANNING DEPARTMENT PRIOR TO CONSTRUCTION.
3. BEFORE ANY WORK IS STARTED IN THE RIGHT-OF-WAY, THE CONTRACTOR SHALL INSTALL ALL ADVANCE WARNING SIGNS FOR THE CONSTRUCTION ZONE. THE CONTRACTOR SHALL INSTALL TEMPORARY STOP SIGNS AT ALL NEW STREET ENCROACHMENTS INTO EXISTING CITY STREETS WHERE WARRANTED IMMEDIATELY AFTER FIRST GRADING WORK IS ACCOMPLISHED, AND SHALL MAINTAIN SAID SIGNS UNTIL PERMANENT SIGNS ARE INSTALLED.
4. WHEN A DESIGNATED "SAFE ROUTE TO SCHOOL" IS ENCLOSED 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 11600 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 SEWER NOTES

1. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE DESIGN AND CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS AND THE UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA, AS AMENDED. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO BE AWARE OF THE CONTENTS OF THE ABOVE SPECIFICATIONS.
2. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PERFORM CONSTRUCTION AS PER PLANS. ANY ADDITIONS, DELETIONS, OR CHANGES SHALL FIRST MEET WITH THE APPROVAL OF THE CITY ENGINEER.
3. CHISEL "S" OR "G" IN CURBS WHERE SEWER OR GAS LATERALS PASS UNDER THE CURB.
4. POLYVINYL (PVC) SEWER PIPE SHALL MEET ASTM D-3034 SDR 35 SPECIFICATIONS, INSTALLED WITH SAND BEDDING AND BACKFILL OF TYPE II AGGREGATE BASE.\
5. ALL MANHOLES PAVED IN STREETS EIGHTY (80') FOOT R/W AND LARGER SHALL HAVE CONCRETE COLLARS. STREETS LESS THAN EIGHTY (80') FOOT R/W WILL REQUIRE RETROFIT IF PAVING DOES NOT CONFORM TO CITY STANDARDS AT THE MANHOLE.
6. TEE SADDLES SHALL BE USED TO CONNECT SEWER LATERALS TO EXISTING MAIN LINES UP TO TWELVE INCH (12") DIAMETER. CONNECTIONS TO FIFTEEN INCH (15") OR LARGER MAINS SHALL REQUIRE SPECIAL PROCEDURES. IN LINE "Y" 'S SHALL BE USED ON LINES TWELVE INCHES (12") OR ABOVE.
7. WATER MAINS SHALL BE PROTECTED IN ACCORDANCE WITH LVVWD STANDARDS WHENEVER A SEWER MAIN CROSSES OVER A WATER MAIN OR THE SEWER IS LESS THAN EIGHTEEN INCH (18") UNDER A WATER MAIN.
8. ALL CONTRACTORS INSTALLING SEWER MAINS THAT WILL BE UNDER THE JURISDICTION OF THE CITY OF LAS VEGAS MUST BE STATE OF NEVADA CLASS "A" CONTRACTORS.
9. THE CITY OF LAS VEGAS WILL NOT ACCEPT ANY SEWER MAINS WHICH HAVE A VERTICAL DEFLECTION OF MORE THAN ONE TENTH (0.1) OF A FOOT FROM THE APPROVED CONSTRUCTION PLANS AT ANY LOCATION. SEWER MAINS FOUND TO EXCEED THIS TOLERANCE WILL HAVE TO BE REPAIRED OR REMOVED OR REPLACED TO THE SATISFACTION OF THE CITY ENGINEER PRIOR TO ACCEPTANCE BY THE CITY OF LAS VEGAS.
10. INSTALLATION OF CURVED SEWER REQUIRES THE USE OF C-900 PIPE WHICH ALLOWS FOR PIPE DEFLECTION AT THE JOINTS.

CITY OF LAS VEGAS STREETLIGHT NOTES

1. ALL STREET LIGHTING INSTALLATIONS SHALL BE IN ACCORDANCE WITH THE STREET LIGHTING PLANS, THE "UNIFORM STANDARD SPECIFICATION FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA", LATEST REVISION (USS), AND THE "UNIFORM STANDARD DRAWINGS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA" (USD), LATEST REVISION.
2. NO DEVIATION OF STREET LIGHT, PULL BOX, CONDUITS, ETC., LOCATIONS SHALL BE PERMITTED WITHOUT WRITTEN APPROVAL OF TRAFFIC ENGINEERING AND THE CITY ENGINEER. ANY DEVIATION FROM THE PLAN LOCATION WILL REQUIRE COMPLIANCE WITH SECTION 623 OF THE USS.
3. ALL EXISTING STREET LIGHTING SHALL REMAIN OPERATIONAL DURING CONSTRUCTION IN ACCORDANCE WITH SECTION 623 G.03.01 OF THE USS..
4. ALL EMPTY CONDUIT SHALL HAVE AT LEAST ONE GREEN #8 AWG WIRE INSTALLED AS TRACER WIRE IN ACCORDANCE WITH SECTION 623 G.02.01 OF THE USS PRIOR TO BACKFILLING AND 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 WHEN POLE IS INSTALLED BEHIND SIDEWALK, AND SHALL AT NO TIME COMPLETELY ENCLOSE THE STREET LIGHTING POLE.
6. AS-BUILT DRAWINGS SHALL BE SUPPLIED TO THE TRAFFIC ENGINEERING DIVISION 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. WHEREVER THERE IS AN OVERHEAD UTILITY THAT MAY CONFLICT WITH THE INSTALLATION OF STREETLIGHTING CIRCUITS AND/OR POLES, THESE CONFLICTS MUST BE RESOLVED BETWEEN THE DEVELOPER AND THE UTILITIES INVOLVED BEFORE STREETLIGHT BASES ARE INSTALLED. AT NO EXPENSE TO THE CITY OF LAS VEGAS.
9. THE CONTRACTOR SHALL FURNISH COMPLETE CONDUIT, WIRE, ETC., FROM SERVICE TO TRANSFORMERS AND CONTROL SYSTEMS IF REQUIRED ON PLANS.

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT PLANNING AND ENGINEERING SERVICES

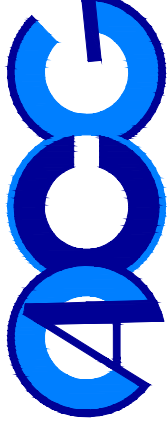
PROJECT NO. _____ FIRST APPROVED DATE: _____

APPROVAL						APPROD. BY	DATE
REVISIONS							DESCRIPTION
							REV1

KYLE CANYON ROAD AND OSO BLANCA ROAD

GENERAL NOTES SHEET 1

APN: 126-01-702-007 / 008
10051 KYLE CANYON ROAD
LAS VEGAS, NV 89166



ACG DESIGN
4310 CAMERON ST. SUITE 12-A
LAS VEGAS, NEVADA 89103
OFFICE: 702.448.8737
WEBSITE: WWW.ACGDESIGN.COM

ENGINEER'S SEAL



8/10/2022

DATE:	8/9/2022
PROJ. NO:	200203
DRAWN BY:	ARB
CHECKED BY:	RAS
SCALE:	AS NOTED
JURISDICTION:	CLV

DRAWING NUMBER:

C2

SHEET 2 OF 18

AGENCY NUMBER:

1. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH THE LAS VEGAS FIRE AND RESCUE ADOPTED FIRE CODE ORDINANCE #6631 FOR HYDRANT SPECIFICATIONS AND HYDRANT INSTALLATION SPECIFICATIONS.
2. ONLY FIRE HYDRANTS THAT ARE ON THE LAS VEGAS VALLEY WATER DISTRICTS –APPROVED PRODUCTS LIST ARE ALLOWED TO BE INSTALLED.
3. A PERMIT IS REQUIRED FROM LAS VEGAS FIRE AND RESCUE FOR THE INSTALLATION OF ON-SITE WATER LINES AND FIRE HYDRANTS. THE PERMIT AND CONTRACTORS MATERIAL TEST CERTIFICATE FOR UNDERGROUND PIPING FORM SHALL BE OBTAINED FROM THE FIRE PROTECTION ENGINEER BEFORE COMMENCEMENT OF WORK. IFC § 105.6.15
4. ON ANY RESIDENTIAL OR COMMERCIAL INSTALLATIONS, FIRE HYDRANTS SHALL BE INSTALLED AND FIRE APPARATUS ACCESS ROADS SHALL BE MAINTAINED BEFORE COMMENCEMENT OF ANY COMBUSTIBLE CONSTRUCTION. ALL FIRE HYDRANTS SHALL BE IN GOOD WORKING ORDER AND SHALL BE CAPABLE OF DELIVERING THE REQUIRED FIRE FLOW. IFC § 3310, IFC § 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, THE 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 § C102.10
15. A MAXIMUM DISTANCE FROM A FIRE HYDRANT TO A ONE-TWO FAMILY DWELLING SHALL NOT EXCEED 300 FT, AS MEASURED BY AN APPROVED ROUTE. IFC § 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. FOR SYSTEMS REQUIRED TO HAVE TWO (2) SOURCES OF WATER SUPPLY, SECTIONAL CONTROL VALVES SHALL BE INSTALLED SO THAT NO MORE THAN 2 FIRE HYDRANTS AND/OR FIRE SPRINKLER LEAD-INS CAN BE OUT OF SERVICE DUE TO A SERVICE INTERRUPTION. FOR SYSTEMS PERMITTED TO HAVE ONE SOURCE OF WATER SUPPLY, SECTIONAL CONTROL VALVES SHALL BE INSTALLED SO THAT NO MORE THAN 3 FIRE HYDRANTS AND/OR FIRE SPRINKLER LEAD-INS CAN BE OUT OF SERVICE DUE TO A SERVICE INTERRUPTION. IFC § C104
19. ALL FIRE APPARATUS ACCESS ROADS SHALL BE PAVED TO PROVIDE ALL-WEATHER DRIVING CAPABILITIES, AND SHALL BE DESIGNED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF THE FIRE APPARATUS. IFC § 503.2.3
20. THE GRADIENT FOR THE FIRE APPARATUS ACCESS ROADS SHALL NOT EXCEED 12% ANGLES OF APPROACH AND ANGLES OF DEPARTURE SHALL NOT EXCEED 6% FOR 25 FT PRIOR TO OR AFTER THE GRADE CHANGE. ADJACENT TO THE STRUCTURES GRADIENT SHALL NOT EXCEED 6%. IFC § 503.2.7, § 503.2.8
21. THE TURNING RADIUS OF THE FIRE APPARATUS ACCESS ROADS SHALL BE NO LESS THAN 52 FT OUTSIDE AND 28 FT INSIDE TURNING RADIUS. IFC § 503.2.4
22. VERTICAL CLEARANCE OF ALL FIRE APPARATUS ACCESS ROADS SHALL NOT BE LESS THAN 13FT 6 INS. IFC § 503.2.1
23. FIRE DEPARTMENT ACCESS ROADS SHALL HAVE A MINIMUM UNOBSTRUCTED WIDTH OF NOT LESS THAN 33 FT WITH PARKING ON BOTH SIDES MEASURED TO FACE OF CURB. NOT LESS THAN 28 FT WIDE WITH PARKING RESTRICTED TO ONE SIDE MEASURED TO FACE OF CURB. NOT LESS THAN 24 FT WIDE WITH NO PARKING ON EITHER SIDE MEASURED TO FACE OF CURB. FIRE LANES THROUGH PARKING LOTS SHALL BE NOT LESS THAN 24 FT. IFC § 503.2.1.1
24. A FIRE APPARATUS ACCESS ROAD SHALL BE REQUIRED WHEN ANY PORTION OF AN EXTERIOR WALL OF THE FIRST STORY IS LOCATED MORE THAN 150 FT FROM A FIRE DEPARTMENT VEHICLE ACCESS. IFC § 503.1.1
25. APPROVED SECONDARY FIRE APPARATUS ACCESS SHALL BE PROVIDED FOR 200 OR MORE DWELLING UNITS, ROAD(S) WITH DEAD-ENDS OR A SINGLE POINT OF ACCESS IN EXCESS OF 600 FT. CLV REGULATION AND MOU
26. ALL DEAD-END FIRE APPARATUS ROADS AND/OR FIRE LANES, PUBLIC OR PRIVATE, IN EXCESS OF 150 FT IN LENGTH SHALL BE PROVIDED WITH AN APPROVED TURN AROUND HAVING A MINIMUM DIAMETER OF 81 FT. CLV REGULATION
27. ALL FIRE APPARATUS ACCESS ROADS SHALL BE MARKED BY PLACING APPROVED SIGNS AT THE START OF THE DESIGNATED FIRE LANE, ONE SIGN AT THE END OF THE FIRE LANE AND WITH SIGNS AT INTERVALS OF 100 FT ALONG THE DESIGNATED FIRE LANES. SIGNS TO BE PLACED ON BOTH SIDES OF AN ACCESS ROADWAY IF NEEDED TO PREVENT PARKING ON EITHER SIDE. SIGNS TO BE INSTALLED NO HIGHER THAN 10 FT OR LESS THAN 6 FT FROM THE ROADWAY LEVEL. THE CURB ALONG OR ON THE PAVEMENT OR CEMENT (IF NO CURB IS PROVIDED) SHALL BE PAINTED WITH A RED WEATHER RESISTANT PAINT IN ADDITION TO THE SIGNS. IFC § 503.3
28. ELECTRICALLY CONTROLLED ACCESS GATES SHALL BE PROVIDED WITH AN APPROVED EMERGENCY VEHICLE DETECTOR/RECEIVER SYSTEM. IFC § 503.6
29. WHERE STREETS ARE PROVIDED WITH MEDIAN DIVIDERS, OR HAVING FOUR OR MORE TRAVEL LANES AND A TRAFFIC COUNT OF MORE THAN 30,000 VEHICLES PER DAY, ALL HYDRANTS BEING UTILIZED TO DELIVER FIRE FLOW TO THE PROPOSED LOCATION SHALL BE LOCATED ON THE SAME SIDE OF THE STREET AS THE PROPOSED DEVELOPMENT. CLV REGULATION

REVISÉD 10/18/20

1. **REVISED 10/18/2021**
NO WORK SHALL BEGIN UNTIL THE WATER PLANS HAVE BEEN APPROVED FOR CONSTRUCTION BY THE LVVWD. FUTURE WORK SHALL BE APPROVED BY THE LVVWD. NOTICE SHALL BE GIVEN TO THE LVVWD COMMUNICATION SUPPORT CENTER (258-7171) TWO (2) WORKING DAYS PRIOR TO THE START OF CONSTRUCTION. FOR FUTURE INSPECTIONS, NOTICE MUST BE GIVEN BY 2:00 P.M. THE BUSINESS DAY PRIOR TO THE REQUESTED LVVWD INSPECTION. WHEN REQUESTING INSPECTIONS, PLEASE REFER TO THE PROJECT # IDENTIFIED ABOVE.
2. ALL WORK SHALL CONFORM TO LVVWD STANDARD PLANS, DRAWINGS, AND SPECIFICATIONS, AND TO THE 2010 EDITION OF THE UNIFORM DESIGN AND CONSTRUCTION STANDARDS FOR POTABLE WATER SYSTEMS (UDACS). THE LATEST EDITION OF THE UDACS SHALL SUPERSEDE ANY CONFLICTS CONTAINED IN THE APPROVED DRAWINGS AND/OR SPECIFICATIONS.
3. ALL WORK, EXCEPT AS MODIFIED BY THESE PLANS OR BY NOTE 2 ABOVE, SHALL BE DONE IN ACCORDANCE WITH THE LATEST RECENT DRAFT OR EDITION OF THE UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFFSITE IMPROVEMENT, CLARK COUNTY AREA.
4. A SINGLE PIPE MATERIAL SHALL BE USED THROUGHOUT THE PROJECT UNLESS OTHERWISE APPROVED BY THE LVVWD.
5. ALL SERVICE LATERALS TWO (2) INCHES IN DIAMETER AND SMALLER SHALL BE TYPE K COPPER TUBING WITH LVVWD APPROVED SERVICE SADDLES.
6. ALL WATER METER BOXES SHALL BE LOCATED OUTSIDE OF DRIVEWAY AREAS.
7. ALL VALVES SHALL BE LOCATED OUTSIDE OF DRIVEWAYS, WALK AND CURB GUTTERS.
8. ALL WATER AND STORM DRAIN OR SANITARY SEWER CROSSINGS SHALL CONFORM TO SECTION 2.22 OF THE 2010 EDITION OF THE UDACS.
9. ALL WATER FACILITIES AND APPURTENANCES SHALL BE DISINFECTED, PRESSURE TESTED AND HAVE AN ACCEPTABLE WATER SAMPLE OBTAINED, PRIOR TO OPERATION AND USE.
10. THE CONTRACTOR MUST OBTAIN ALL METERS TWO (2) INCHES AND SMALLER FROM LVVWD CENTRAL STORES. TELEPHONE 258-3152 OR 258-3802, TWO (2) WORKING DAYS PRIOR TO METER PICKUP.
11. ANY INTERRUPTION OF SERVICE MUST BE PERFORMED IN ACCORDANCE WITH UDACS SECTION 3.14.01, AND APPROVED BY THE LVVWD INSPECTION DIVISION PRIOR TO SHUTDOWN. PROPER WRITTEN NOTIFICATION MUST BE GIVEN TO ALL AFFECTED CUSTOMERS.
12. ALL WATER FACILITY CONSTRUCTION MATERIALS USED MUST BE AS LISTED ON THE LVVWD APPROVED PRODUCTS LIST FOR NEW CONSTRUCTION, LATEST REVISION, OR SPECIFICALLY APPROVED ON THESE PLANS BY SUBMITTING SHOP DRAWINGS.
13. TELEPHONE USA NORTH 811 "CALL BEFORE YOU DIG" AT "811" OR 1-800-642-2444.
14. THE INSTALLATION OF LAS VEGAS VALLEY WATER DISTRICT (LVVWD) MUNICIPAL WATER FACILITIES WITHIN ALL STREETS IS ASSUMED TO BE IN COMPLIANCE WITH THE UNIFORM STANDARDS, INCLUDING THE PLACEMENT OF ASPHALT PAVING AND STREET SURFACES. ANY REPAIR WORK DONE BY THE LVVWD TO THE MUNICIPAL WATER FACILITIES WILL INCLUDE THE PLACEMENT OF AN APPROPRIATELY SIZED ASPHALT REPAIR PATCH ON THE STREET SURFACE.

ANY DECORATIVE PAVING SURFACE WITHIN THE STREET IS THE RESPONSIBILITY OF THE OWNER'S ASSOCIATION, OR THE INDIVIDUAL PROPERTY OWNERS IF NO OWNER'S ASSOCIATION IS IN EXISTENCE, OR THE AGENCY HAVING JURISDICTION. DECORATIVE SURFACE MATERIALS PLACED WITHIN THE TEN FOOT EASEMENT ADJUTING A PUBLIC OR PRIVATE STREET OR STREET SURFACE SHALL BE REMOVED DURING THE REPAIR OR OPERATION OF THE FACILITY. IT WILL BE REPLACED BY LVVWD WITH AN APPROPRIATELY SIZED PLAIN FINISH CONCRETE PATCH. THE LVVWD WILL NOT RESTORE, AND WILL NOT BE RESPONSIBLE FOR THE RESTORATION OF ANY DECORATIVE PAVING SURFACE WITHIN THE STREET. THE LVVWD WILL NOT ATTEMPT TO MATCH COLOR OR FINISH OF ANY ADJACENT MATERIALS.
15. **NO LEAD COMPLIANCE NOTE:**
TO COMPLY WITH THE FEDERAL SAFE DRINKING WATER ACT, ALL WATER WORKS BRASS PRODUCTS PROPOSED TO BE RELOCATED, OR INSTALLED AS NEW MUST BE INSTALLED WITH THE LEAD FREE APPROVED PRODUCT. THE OLD LEADED PRODUCT MAY NOT BE REUSED.
16. PROTECT IN PLACE AND ADJUST LVVWD EXISTING FACILITIES TO FINISHED GRADE PER UDACS PLATES. ALL LVVWD FACILITIES SHALL BE ACCESSIBLE AT ALL TIMES.
17. **DRY UTILITY NOTES:** MAINTAIN A MINIMUM 12" VERTICAL SEPARATION AT ALL POINTS OF CROSSINGS, MAINTAIN A MINIMUM 3' PARALLEL SEPARATION.

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 BE DETAINED, STORED, OR MANIPULATED IN THE PUBLIC RIGHTS OF WAY OF THE CITY OF LAS VEGAS AS A RESULT OF CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS SITE DEVELOPMENT PROJECT. EXCEPT FOR CLAY CONTAMINANT, SUCH MATERIAL 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 THE CLAY COUNTY SPECIFIC TYPICAL AND THE LAS VEGAS 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. EROSION CONTROL MEASURES SHALL APPLY TO ALL DISTURBED AREAS. GENERAL PERMIT FOR CONSTRUCTION ACTIVITY NVRI00000, SECTION III.A.5.
4. AT A MINIMUM, THE CONTRACTOR OR HIS AGENT SHALL INSPECT ALL DISTURBED AREAS, AREAS USED FOR STORAGE OF MATERIALS AND EQUIPMENT THAT ARE EXPOSED TO PRECIPITATION, VEHICLE ENTRANCE AND EXIT LOCATIONS, AND ALL BMP'S 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:
a. DISTURBANCE ACTIVITIES RELATED TO THE NEVADA STORMWATER GENERAL PERMIT FOR CONSTRUCTION ACTIVITY NVRI00000, SECTION III.A.12.
5. ACCUMULATED SEDIMENT IN BMP'S SHALL BE REMOVED WITHIN SEVEN DAYS AFTER A STORMWATER RUNOFF EVENT OR PRIOR TO THE NEXT AVAILABLE PHOTOGRAPHIC INSPECTION. WHEN SEDIMENT LAND BE REMOVED WHEN BMP DESIGN CAPACITY HAS BEEN REDUCED BY 50 PERCENT OR MORE.
6. AT A MINIMUM, THE CONTRACTOR OR HIS AGENT SHALL RESPOND TO STORMWATER INSPECTION CORRECTIVE ACTIONS IN THE MANNER PRESCRIBED BY THE CITY OF LAS VEGAS, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
a. THE CONTRACTOR SHALL COMPLETE THE CORRECTION COMPLETED BY THE CONTRACTOR OR HIS AGENT.

- NONE

- NONE

1. IN THE EVENT OF NATURAL GAS EMERGENCIES CALL 911 AND 1-877-860-6020.
2. MINIMUM HORIZONTAL AND VERTICAL CLEARANCE BETWEEN NATURAL GAS FACILITIES AND ANY UNDERGROUND UTILITIES AND/OR STRUCTURES, INCLUDING BUT NOT LIMITED TO WATER, SEWER, STORM DRAIN, COMMUNICATIONS, AND ELECTRIC SHALL BE AT LEAST 12-INCHES OR GREATER AS DICTATED BY LOCAL CODES AND STANDARDS.

(a) ANY DEVIATION FROM SPECIFIED MINIMUM CLEARANCES MUST BE APPROVED BY ALL AFFECTED UTILITIES AND/OR MUNICIPALITIES.
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 STRUCTURES CONTACT (702)365-2099.
5. FOR STANDBY WHEN EXCAVATING INCLUDING SAW CUTTING AND PAVEMENT REMOVAL) OVER OR NEAR HIGH-PRESSURE GAS LINES CONTACT (702)-278-8451 48 HOURS PRIOR TO CONSTRUCTION.

ALL CIVIL IMPROVEMENT PLANS MUST INCLUDE SOUTHWEST GAS CORPORATION HIGH PRESSURE NOTES ON ALL SHEETS DEPICTING HIGH PRESSURE NATURAL GAS MAINS AS INDICATED BELOW:

CALL SOUTHWEST GAS AT (702)278-8451 FOR STANDBY WHEN EXCAVATING
OVER OR NEAR HIGH PRESSURE GAS LINES 48 HOURS PRIOR TO CONSTRUCTION.

REVISÉD 09/08/2020

SOUTHWEST GAS CORPORATION

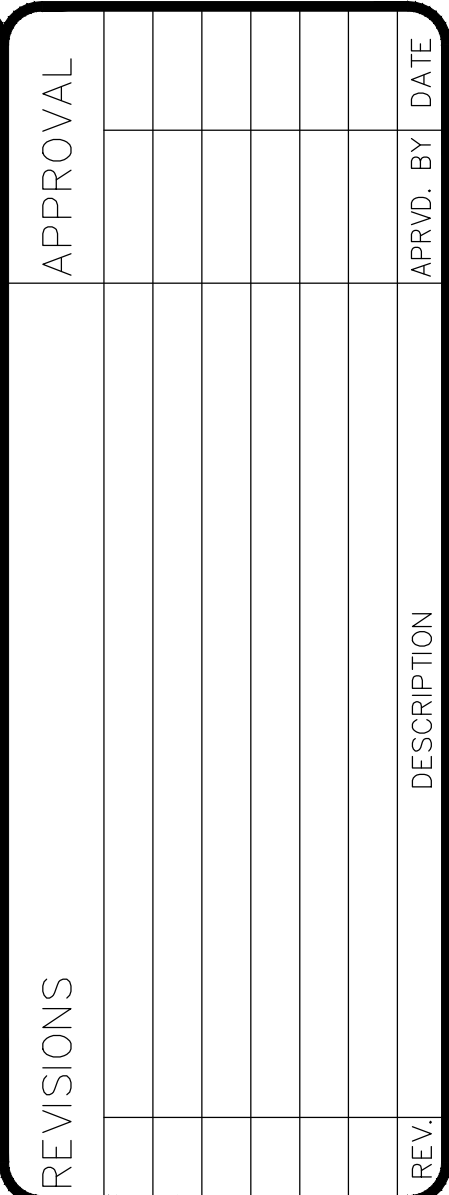
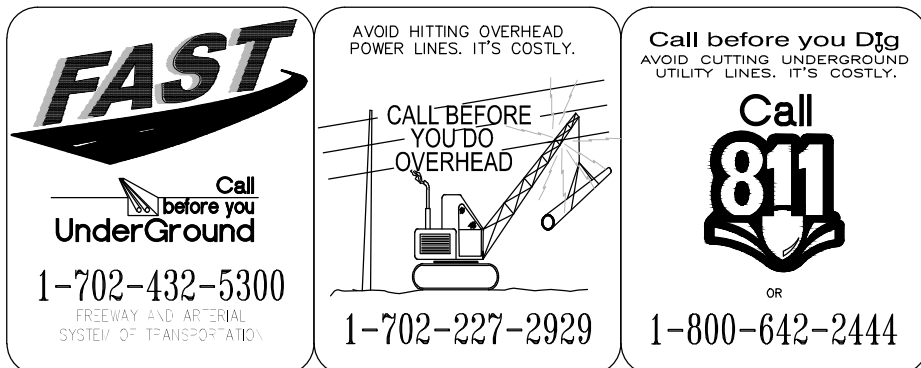
DATE:

LAS VEGAS FIRE & RESCUE

DATE:

LAS VEGAS VALLEY WATER DISTRICT PLANNING AND ENGINEERING SERVICES

PROJECT NO. _____ FIRST APPROVED DATE: _____



LYLE CANYON ROAD AND
OSO BLANCA ROAD

GENERAL NOTES SHEET 2

APN: 126-01-702-007 / 008
10051 KYLE CANYON ROAD
LAS VEGAS, NV 89166



ENGINEER'S SEAL



8/10/2022

DATE:	8/9/2022
PROJ. NO:	200203
DRAWN BY:	ARB
CHECKED BY:	RAS
SCALE:	AS NOTED
JURISDICTION:	CLV

DRAWING NUMBER

C3

AGENCY NUMBER

ABAND	ABANDON	GB	GRADE BREAK
AB	AGGREGATE BASE	GM	GAS METER
ABS	ABSOLUTE	GPM	GALLONS PER MINUTE
AC	ASPHALTIC CONCRETE	GRD	GRADE
ACKV	AUTOMATIC CHECK VALVE	GRT	GRATE
ADA	AMERICAN DISABILITY ACT	GUT	GUTTER
ADOL	ADDITIONAL	GV	GATE VALVE
ADDM	ADDENDUM	HERCP	HORIZONTAL/ELLIPTICAL REINFORCED CONCRETE P
ADJ	ADJUSTABLE	HP	HIGH POINT
AGG	AGGREGATE	IN	INCH
AL	ALUMINUM	INSTR	INSTRUMENT
AMT	AMOUNT	INT	INTERIOR
&	AND	INV	INVERT
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE	IRR	IRRIGATION
APN	ASSESSOR PARCEL NUMBER	LEN OR L	LENGTH OF CURVATURE
APPROX	APPROXIMATE	LF	LINEAR FOOT
APPVD	APPROVED	LT	LEFT/LIGHT
ASPH	ASPHALT	LVWD	LAS VEGAS VALLEY WATER DISTRICT
ASSN	ASSOCIATION	M	METER
ASSY	ASSEMBLY	MAX	MAXIMUM
ASTM	AMERICAN SOCIETY OF TESTING MATERIALS	N	NORTH
AVE	AVENUE	NAP	NOT-A-PART
AWWA	AMERICAN WATER WORKS ASSOCIATION	NDOT	NEVADA DEPARTMENT OF TRANSPORTATION
BC	BOLT CIRCLE/BACK OF CURB	NE	NORTHEAST
BCR	BACK OF CURB RADIUS BEGINNING OF CURVE RETURN	NG	NATURAL GROUND
BDRY LINE	BOUNDARY LINE	NO. #	NUMBER
BETW. B/W	BETWEEN	NPC	NEVADA POWER COMPANY
BK	BOOK/BACK	NTS	NOT TO SCALE
BLDG	BUILDING	NW	NORTHWEST
BLK	BLOCK	MH	MANHOLE
BLM	BUREAU OF LAND MANAGEMENT	MIN	MINIMUM
BLVD	BOULEVARD	OHP	OVER HEAD POWER
BM	BENCHMARK	OHTL	OVER HEAD TELEPHONE
BO	BLOW OFF ASSEMBLY	P	POLE/PRESSURE/PIPE/POWER
BC, BOC	BACK OF CURB	P/L / R	PROPERTY LINE
BOT	BOTTOM	PERP	PERPENDICULAR
BW, BOW	BACK OF WALK	PG	PRESSURE GAGE
BPV	BACK PRESSURE VALVE	PKWY	PARKWAY
BRG	BEARING	PRIV	PRIVATE
BS	BACK SIGHT	PRV	PRESSURE REDUCING VALVE
BVC	BEGINNING OF VERTICAL CURVE	PSI	POUNDS PER SQUARE INCH
BSW	BACK OF SIDEWALK	PVC	POLYVINYL CHLORIDE PIPE
C	CONDUIT	QTY	QUANTITY
C&G	CURB & GUTTER	R	RADIUS
CAP	CAPACITY	(R)	RADIAL
CATV	CABLE TELEVISION	R.D.O.	ROOF DRAIN OUTLET PIPE LOCATION
CAV	COMBINATION AIR VALVE	RPDA	REDUCED PRESSURE DETECTOR ASSEMBLY
CC	CLARK COUNTY	RPPA	REDUCED PRESSURE PRINCIPLE ASSEMBLY
CCWRD	CLARK COUNTY WATER RECLAMATION DISTRICT	RR	RAILROAD
C	CAST IRON	R/W	RIGHT OF WAY
CIP	CAST IRON PIPE/CAST IN PLACE	S/C	SAW CUT
CIR	CIRCLE	SCCP	STEEL CYLINDER CONCRETE PIPE
CIRCUM	CIRCUMFERENCE	SD	STORM DRAIN
CL OR Ɠ	CENTERLINE	SDMH	STORM DRAIN MANHOLE
CO	COUNTY/COMPANY/CONTRACT	SE	SIDEWALK
COL	COLUMN	SE	SOUTHEAST
CONC	CONCRETE	SEC	SECTION/SECOND(ARY)
CONST	CONSTRUCTION	SHT	SHEET
COR	CORNER	SIG	SIGNAL
CONC	CONCRETE	SF, SQ FT	SQUARE FOOT (FEET)
CONN	CONNECTION	SF, SQ YD	SQUARE YARD
CONT	CONTINUE OR CONTINUOUS	SNBORS	SOUTHERN NEVADA BUILDING OFFICIALS REGIONAL STANDARD
CTR	CENTER	SS	SANITARY SEWER
CU	CUBIC	ST	STREET
CY	CUBIC YARD	STA	STATION
D OR Δ	DELTA ANGLE	STD	STANDARD
D/W	DRIVEWAY	ST, STLT	STREET LIGHT
DBO	DESIGNED BY OTHERS	SUR	SURVEY
DCSWCS	DESIGN AND CONSTRUCTION STANDARDS FOR WASTE WATER COLLECTION SYSTEMS	SVZ	SITE VISIBILITY ZONE
DEMO	DEMOLITION	T	TELEPHONE/TANGENT
DEPT	DEPARTMENT	TAN	TANGENT
DET	DETAIL	TC	TOP OF CURB
DEV	DEVELOPMENT	TF	TOP OF FOOTING
DI	DROP INLET OR DUCTILE IRON	TFW	TOP OF FLOOD WALL
DIA OR Ø	DIAMETER	TMH	TOP OF MANHOLE
DIM	DIMENSION	TR.DR.	TRENCH DRAIN
DIP	DUCTILE IRON PIPE	TRW	TOP OF RETAINING WALL
DIR	DIRECTION	TOT	TOTAL
DIST	DISTANCE	TW	TOP OF WALL
DMH	DROP MANHOLE	TS	TRAFFIC SIGNAL
DOM	DOMESTIC	TRANS	TRANSITION/TRANSMISSION
DR	DRIVE	(TYP)	TYPICAL
DWG	DRAWING	UDACS	UNIFORM DESIGN AND CONSTRUCTION STANDARDS
DWY	DRIVEWAY	USD	UNIFORM STANDARD DRAWINGS
E	EAST	VC	VERTICAL CURVE
EC	EXISTING CONCRETE	VERT	VERTICAL
ECR	END OF CURVE RETURN	VG	VALLEY GUTTER
EOC	END OF CURVE	W/	WITH
EOP	EDGE OF PAVEMENT	WM	WATER METER
EOS	EDGE OF SHOULDER	W	WATER
ESMT	EASEMENT	WV	WATER VALVE
EVC	END OF VERTICAL CURVE	YD	YARD
EX	EXISTING		
FC	FACE OF CURB		
FF	FINISHED FLOOR		
FG	FINISHED GRADE		
FH	FIRE HYDRANT		
FL OR ƒ	FLOW LINE		
FN	FENCE		
FW	FACE OF WALL		
FSTNR	FASTENER		
FT	FOOT OR FEET		
FUT	FUTURE		

NOTE:

THIS IS A STANDARD ABBREVIATION SHEET.

SOME ABBREVIATIONS MAY APPEAR ON THIS SHEET
BUT NOT USED IN THE PLANS. ALL ABBREVIATIONS
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WATER PIPELINE

BLOWOFF

COMBINATION AIR VALVE

REDUCER

WATER VALVE

FIRE HYDRANT ASSEMBLY

WATER METER

SANITARY SEWER MANHOLE

STREET LIGHT (GENERIC SYMBOL NOT RELATED TO WATTAGE)

ELECTRICAL BOX

ELECTRICAL PANEL BOX

CABLE TV

GAS LINE

SANITARY SEWER

UNDERGROUND POWER

UNDERGROUND TELEPHONE

EDGE OF PAVEMENT
FENCE
CURB, GUTTER AND SIDEWALK
CENTER LINE
BLOCK WALL/RETAINING WALL
SCREEN WALL
STREET NAME SIGN
DRIVEWAY
WHEELCHAIR RAMP

STEPS (NOTE TYPE AND NO. OF RISERS)

REFERENCE BUBBLE

STORM DRAIN MANHOLE (SIZE AS NOTED PER PLAN)

W	WATER PULLBOX/ METER/SHUT OFF		FIRE HYDRANT
E	ELECTRIC PULLBOX/ METER/TRANSFORMER		WATER VALVE
T	TELEPHONE PULLBOX/HANDHOLE		GAS METER
FO	FIBER OPTIC PULLBOX/HANDHOLE		SEWER MANHOLE
SL	STREETLIGHT PULLBOX/HANDHOLE		GAS VALVE
TS	TRAFFIC SIGNAL PULLBOX/HANDHOLE		SEWER CLEANOUT
ICV	IRRIGATION CONTROL VALVE		AREA LIGHT
SS	SANITARY SEWER		STREET LIGHT
CTV	CATV PULLBOX/HANDHOLE		SIGN
AL	AREA LIGHT PULLBOX/HANDHOLE		INTERCEPTOR MANHOLE
RB	RED BOX DVD RENTAL KIOSK		TILE WALKWAY
			DESERT LANDSCAPE AREA
			8" CONCRETE BOLLARD
			TRAFFIC SIGNAL POLE
			AREA LIGHT
			STORM MANHOLE
			SHRUB
			FLOWERS/PLANT
			TREE
			PALM TREE
			BUILDING COLUMN
			TRASH CAN

SURVEY MONUMENT

PROPERTY LINE

RIGHT-OF-WAY LINE

PATENT RESERVATION OR EASEMENT LINE

SECTION LINE

CONCRETE MONUMENT

CONCRETE MONUMENT SURVEY LINE

 WM

 ELEC
 ELEC PANEL

 CTV

 G

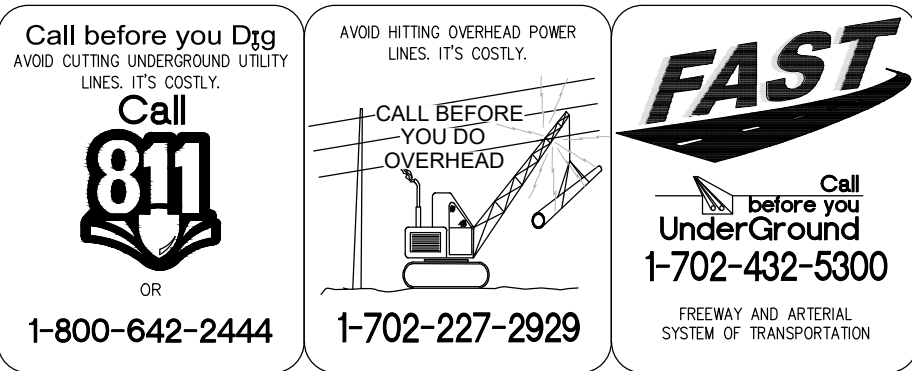
 SS

 UGP

 UGTEL

LAS VEGAS VALLEY WATER DISTRICT PLANNING AND ENGINEERING SERVICES

PROJECT NO. _____ FIRST APPROVED DATE: _____



NOTE:
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SOME ABBREVIATIONS MAY APPEAR ON THIS SHEET
BUT NOT USED IN THE PLANS. ALL ABBREVIATIONS
USED ON THE PLANS MUST APPEAR ON THIS SHEET.

FAST

Call before you Dig

UnderGround

1-702-432-5300

Freeway and Arterial System of Transportation

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY.

CALL BEFORE YOU DIG OVERHEAD

1-702-227-2929

Call before you Dig

AVOID HITTING UNDERGROUND UTILITY LINES. IT'S COSTLY.

Call 811

or

1-800-642-2444

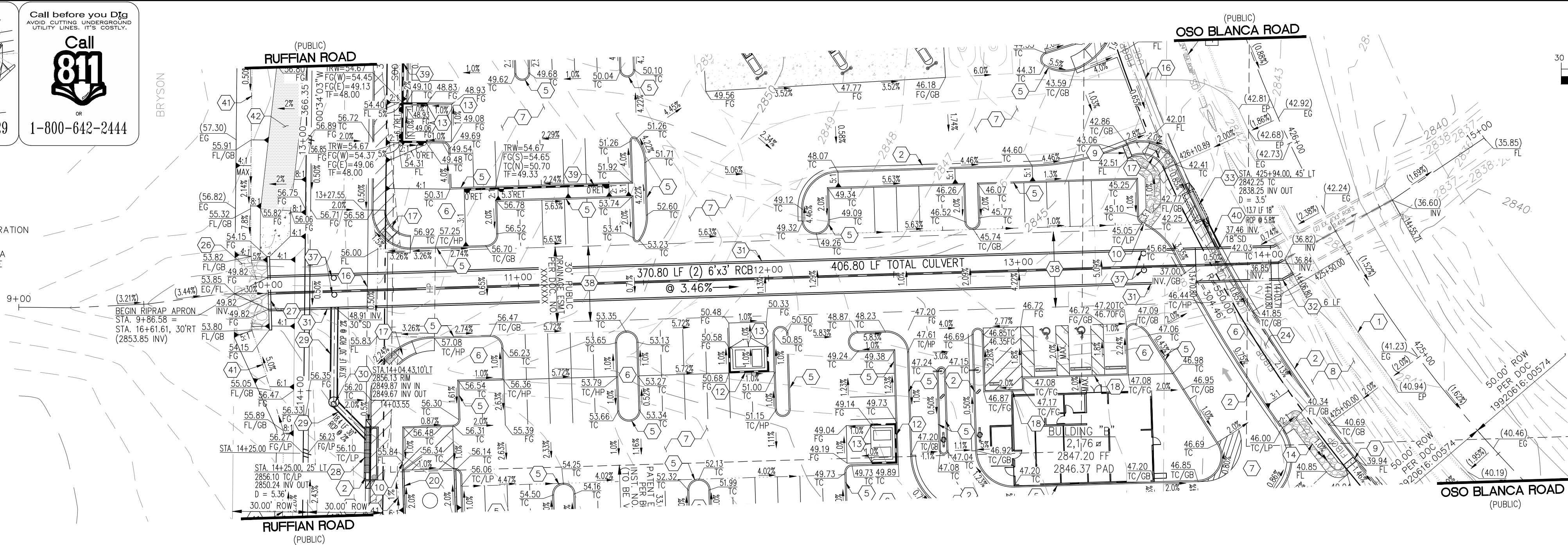
LEGEND

AC PAVEMENT

CONCRETE

LIMITS OF PAVEMENT RESTORATION PER CCAUSD NO. 500.5

PROPOSED NO PARKING AREA AND ADA ACCESSIBLE ROUTE



GRAPHIC SCALE

30

0

15

30

60

HORIZONTAL: 1" = 30'

VERTICAL: 1" = 3'

N

ACG

PROJECT SITE

KYLE CANYON

OSO BLANCA RD

VICINITY MAP

N

NTS

SITE DEMOLITION NOTES

- 1) REMOVE EXISTING 24" RCP STORM DRAIN PIPE.

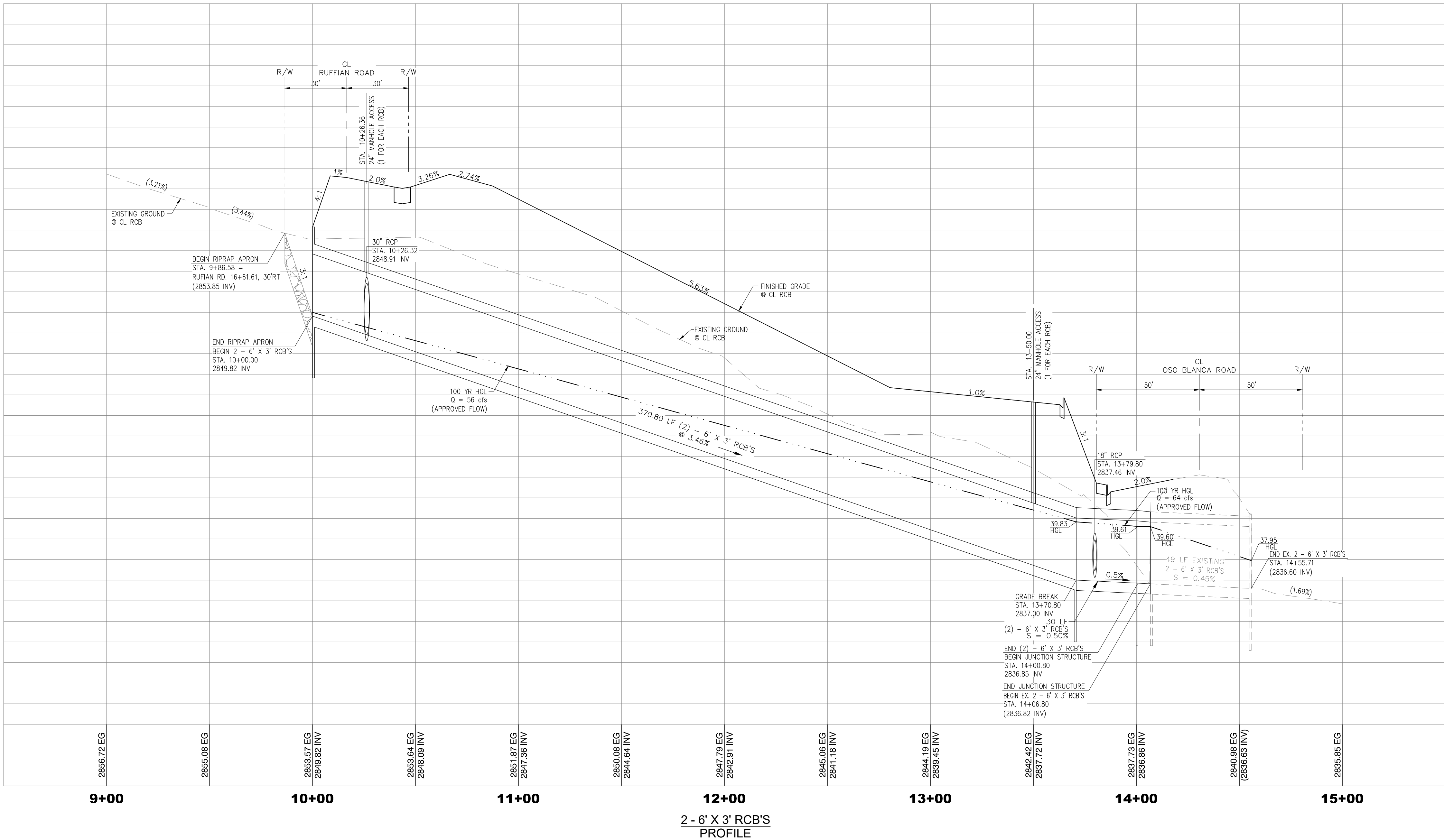
CONSTRUCTION NOTES

- SAW CUT & MATCH EXISTING PAVEMENT.
- CONSTRUCT 1" CURB AND GUTTER PER CCAUSD NO. 216.
- CONSTRUCT 3" WIDE VALLEY GUTTER. REFER TO DETAIL 5, SHEET C15.
- CONSTRUCT ON-SITE CONCRETE SIDEWALK PER DETAIL 6, SHEET C15.
- CONSTRUCT MODIFIED "A" TYPE CURB PER DETAIL 1, SHEET C15.
- LANDSCAPE AREA (DESIGNED BY OTHERS)
- INSTALL ON-SITE PAVEMENT (2" AC FOR AUTO PARKING, 3" AC FOR MAIN CORRIDOR AND TRUCK ACCESS) OVER 4" TYPE II AGGREGATE BASE (95% COMPACTION). 6" MINIMUM SCARIFICATION AND COMPACTION. REFER TO DETAIL 2, SHEET C15.
- INSTALL 5.5" OFF-SITE PAVEMENT OVER 6" TYPE II AGGREGATE BASE (95% COMPACTION). 6" MINIMUM SCARIFICATION AND COMPACTION. (KYLE CANYON RD AND OSO BLANCA RD). REFER TO DETAIL 11, SHEET C15.
- CONSTRUCT SIDEWALK DRAIN PER CCAUSD NO. 236.
- PROVIDE 2' CURB OPENING TO ALLOW RUN-OFF TO SPILL OUT OF CURB. REFER TO DETAIL 10, SHEET C15.
- INSTALL 8" X 6.5" PRECAST BUMPER BLOCKS PER CCAUSD NO. 238.
- CONSTRUCT TRASH ENCLOSURE PER ARCHITECTURAL PLANS.
- CONSTRUCT CONCRETE APRON FOR TRASH ENCLOSURE (6" CONCRETE SLAB WITH 6X6/1X1X1.4 W.W.F.) OVER 8" TYPE II AGGREGATE BASE. REFER TO DETAIL 4, SHEET C15.
- FLOWLINE OF PROPOSED SWALE PER BMP DESIGN CRITERIA. D₅₀=4 INCHES MIN., THICKNESS = 8 INCHES, 4:1 MAXIMUM SIDE SLOPES, 40' LONG X 6' WIDE TYP. (4' MIN.). REFER TO LIMITS SHOWN ON PLAN AND DETAIL 9, SHEET C15.
- LIMITS OF PAVEMENT RESTORATION PER CCAUSD NO. 500.5. TRENCH AND BACKFILL PER CCAUSD NO. 503.
- CONSTRUCT 8" CONCRETE CROSS GUTTER AND SPANDRELS PER CCAUSD NO. 228 FOR COMMERCIAL DRIVEWAY PER CCAUSD NO. 222A & 225.
- CONSTRUCT CONCRETE SIDEWALK RAMP WITH DETECTABLE TACTILE WARNINGS PER CCAUSD NO. 235. (CASE 1, A=8", B=8" UNLESS OTHERWISE NOTED). 2% MAX. SLOPE IN LANDING AREA.
- CONSTRUCT ZERO-INCH CURB FACE PER DETAIL 7, SHEET C15.
- CONSTRUCT CONCRETE CURB RAMP. ENSURE 8.3% MAXIMUM LONGITUDINAL/RUNNING SLOPE AND 2% MAXIMUM TRANSVERSE/CROSS SLOPE. RAMP LANDINGS TO BE 2% MAXIMUM SLOPE, EACH DIRECTION. REFER TO ON-SITE CONCRETE SIDEWALK DETAIL 6, SHEET C15.
- CONSTRUCT 6" HIGH CMU MASONRY SCREEN WALL PER SOUTHERN NEVADA BUILDING OFFICIALS REGIONAL STANDARD B-100-1.
- CONSTRUCT MASONRY RETAINING WALL (WALL HEIGHTS VARY SEE PLANS) WITH 8" THICK SOLID GROUTED CMU WALL 2" MINIMUM ABOVE, PER STRUCTURAL DESIGN BY OTHERS.
- CONSTRUCT CONCRETE PAVEMENT IN FUEL DISPENSING AREA. 6" CONCRETE OVER 8" TYPE II AGGREGATE BASE.
- CONSTRUCT 0-INCH TO 6-INCH CURB FACE TRANSITION.
- CONSTRUCT OFF-SITE CONCRETE SIDEWALK PER CCAUSD NO. 234.
- INSTALL 6-INCH PVC DRAIN PIPE UNDER SIDEWALK.
- CONSTRUCT RIPRAP APRON FOR EROSION CONTROL. D₅₀=9" MIN., THICKNESS = 18"
- CONSTRUCT NDOT TYPE I HEADWALL PER NDOT STANDARD DWG. NO. CH-5A.
- CONSTRUCT 20" TYPE "C-D" MODIFIED DROP INLET PER CCAUSD NO. 412.1. PROVIDE STORM WATER QUALITY MESSAGE PER CCAUSD NO. 421.
- INSTALL 30" CLASS IV RCP STORM DRAIN.
- CONSTRUCT TYPE I STORM DRAIN MANHOLE PER CCAUSD NO. 403.
- INSTALL DOUBLE 6" WIDE BY 3" HIGH RCB CULVERT PER NDOT STANDARD DWG. NO. CH-3A AND CH-3B.
- CONSTRUCT RCB JUNCTION STRUCTURE (6 LF ALONG CL). REFER TO DETAILS ON SHEET C16.
- CONSTRUCT 12.5" TYPE "C-D" MODIFIED DROP INLET PER CCAUSD NO. 412.1 WITH THREE (3) CURVED VANED GRATES (2.5' LONG EACH). (12.5' CURB OPENING LENGTH). PROVIDE STORM WATER QUALITY MESSAGE PER CCAUSD NO. 421.
- CONSTRUCT NDOT CONCRETE CURB & GUTTER PER NDOT STANDARD DWG. NO. CS-1 (TYPE 5).
- CONSTRUCT NDOT CONCRETE SIDEWALK PER NDOT STANDARD DWG. NO. CS-2.
- CONSTRUCT TYPE "A" SIDEWALK CURB RAMP PER NDOT STANDARD DETAILS CS-3A AND CS-3B.
- INSTALL 24" MANHOLE ACCESS TO PROPOSED RCB.
- 30' PUBLIC DRAINAGE EASEMENT WITH SURFACE TO BE PRIVATELY MAINTAINED BY PROPERTY OWNER.
- CONSTRUCT MASONRY RETAINING WALL (WALL HEIGHTS VARY SEE PLANS) PER STRUCTURAL DESIGN BY OTHERS.
- INSTALL 18" CLASS IV RCP STORM DRAIN.
- FLOWLINE OF SWALE. PROVIDE POSITIVE DRAINAGE AS INDICATED PER GRADES ON PLAN.
- INSTALL 12" WIDE MAINTENANCE ACCESS RAMP AND APRON TO RCB. 4" MINIMUM AC PAVEMENT OVER 6" TYPE II AGGREGATE BASE FOR THE RAMP. 6" CONCRETE OVER 6" TYPE II AGGREGATE BASE FOR THE BOTTOM APRON. TYPE II AGGREGATE BASE COMPACTED TO 95% DENSITY. 6" MINIMUM SCARIFICATION AND COMPACTION OF SUBBASE.
- INSTALL 3" OFF-SITE PAVEMENT OVER 4" TYPE II AGGREGATE BASE (95% COMPACTION). 6" MINIMUM SCARIFICATION AND COMPACTION. (RUFIAN RD). REFER TO DETAIL 12, SHEET C15.

STORMWATER INLET CONCRETE STAMP

ALL STORM DRAIN DROP INLETS TO BE CONSTRUCTED WITH A CONCRETE STAMP AND SIGN DETAIL PER USDOCA DRAWING NO. 421 (STORMWATER QUALITY MANAGEMENT STAMP AND SIGN DETAIL).

2 - 6' X 3' RCB'S PLAN



Z:\PROJECTS_CURRENT\COMMERCIAL CLIENTS\MICHAEL SNECKEN\202023-CVG @ OSO BLANCA & KYLE CANYON\ENGINEERING\CIVIL DRAWINGS\IMPROVEMENT PLANS\202023-CG.C7-gp_RCB-P.DWG. 8/9/2023 3:52 PM

APPROVAL

REVISIONS

KYLE CANYON ROAD AND OSO BLANCA ROAD

RCB PLAN & PROFILE

ACG DESIGN

ACG DESIGN

4310 CAMERON ST. SUITE 12-A

LAS VEGAS, NEVADA 89103

OFFICE: 702.448.8737

WEBSITE: WWW.ACG.DESIGN

ENGINEER'S SEAL

ENGINEER

RANDOLPH A. SKORPINSKI

EXP. 06-30-24

CIVIL

8/10/2022

DATE: 8/9/2022

PROJ. NO: 200203

DRAWN BY: ARB

CHECKED BY: RAS

SCALE: AS NOTED

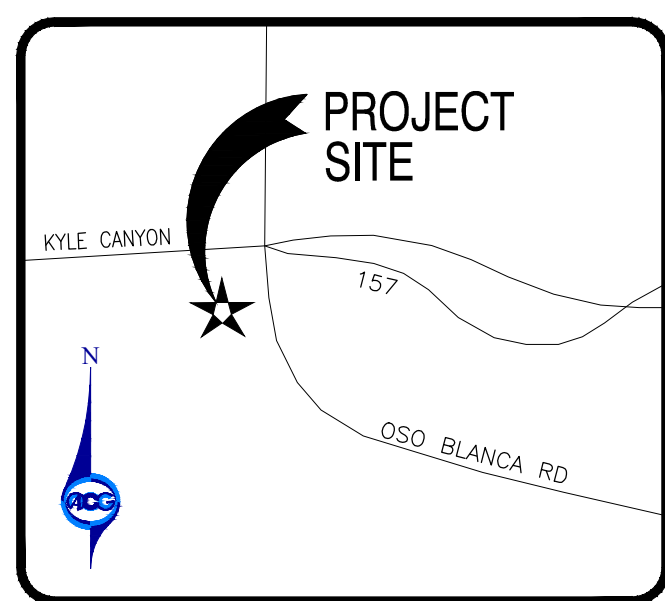
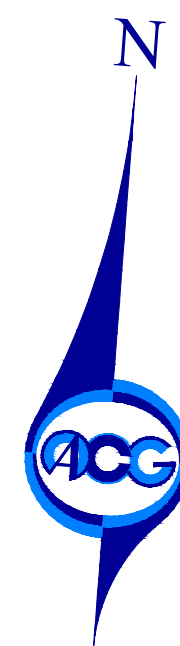
JURISDICTION: CLV

DRAWING NUMBER:

C7

SHEET 7 OF 18

AGENCY NUMBER:



VICINITY MAP

- ## CONSTRUCTION NOTES

- | REVISIONS | | APPROVAL | |
|-----------|-------------|-----------|------|
| | | | |
| | | | |
| | | | |
| | | | |
| REV | DESCRIPTION | APPRD. BY | DATE |

KYLE CANYON RD PLAN & PROFILE

NEVADA DEPARTMENT OF TRANSPORTATION (NDOT) PERMIT REQUIRED

NEVADA DEPARTMENT OF TRANSPORTATION (NDOT) PLAN REFERENCE

The profile view shows the vertical alignment of the proposed road improvement project. The vertical axis represents elevation in feet, ranging from 2835 to 2875. The horizontal axis represents stationing, ranging from 195+00 to 200+00. The profile includes the following data points and features:

- Existing AC Pavement @ Centerline (Dashed Line):**
 - Station 196+58.53: Ex. Cl. Elev. = 2858.10
 - Station 197+00.00: Ex. Cl. Elev. = 2856.64
 - Station 197+07.84: ECR TC Elev. = 2854.91
 - Station 198+00.00: Ex. Cl. Elev. = 2852.72
 - Station 199+00.00: Ex. Cl. Elev. = 2848.91
 - Station 199+19.40: BCR TC Elev. = 2846.83
 - Station 200+00.00: Ex. Cl. Elev. = 2843.38
- Proposed Grade @ Centerline (Solid Line):**
 - Station 197+00.00: Ex. Cl. Elev. = 2856.64
 - Station 198+00.00: Ex. Cl. Elev. = 2852.72
 - Station 199+00.00: Ex. Cl. Elev. = 2848.91
 - Station 199+19.40: BCR TC Elev. = 2846.83
 - Station 200+00.00: Ex. Cl. Elev. = 2843.38
- Proposed Grade @ South Top of Curb (Dashed Line):**
 - Station 196+58.53: Ex. Cl. Elev. = 2858.10
 - Station 197+00.00: Ex. Cl. Elev. = 2856.64
 - Station 197+07.84: ECR TC Elev. = 2854.91
 - Station 198+00.00: Ex. Cl. Elev. = 2852.72
 - Station 199+00.00: Ex. Cl. Elev. = 2848.91
 - Station 199+19.40: BCR TC Elev. = 2846.83
 - Station 200+00.00: Ex. Cl. Elev. = 2843.38
- Grades:**
 - 196+58.53 to 197+00.00: -3.75%
 - 197+00.00 to 197+07.84: -3.62%
 - 197+07.84 to 198+00.00: -3.52%
 - 198+00.00 to 199+00.00: -3.80%
 - 199+00.00 to 199+19.40: -3.82%
 - 199+19.40 to 200+00.00: -3.81%
 - 200+00.00 to 200+00.00: -3.53%
- Other Features:**
 - RUFFIAN ROAD:** Located at station 196+58.53.
 - OSO BLANCA ROAD:** Located at station 200+00.00.
 - EG AC @ CL:** Located at station 198+00.00.
 - PROP SOUTH TOP OF CURB:** Located at station 198+00.00.

SCALE: HORIZ.: 1" = 30'
VERT.: 1" = 6'

RANDOLPH SKORPINSKI, P.E.
(NV #14985)

DATE _____

C8

AGENCY NUMBER

8 OF 18

AGENCY NUMBER

Z:\PROJECTS_CURRENT\COMMERCIAL CLIENTS\MICHAEL SNECKER\200203- GVG @ OSO BLANCA & KYLE CANYON\ENGINEERING\CIVIL DRAWINGS\IMPROVEMENT PLANS\200203-C8-P&P-KYLE.DWG 8/9/2022 11:26 AM

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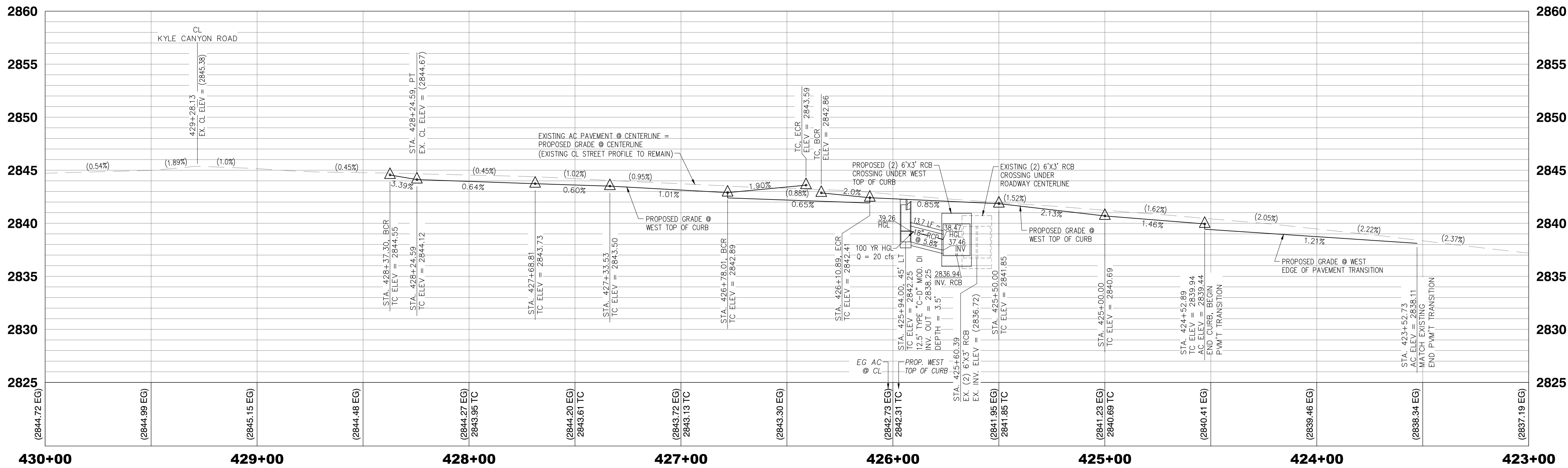
PLAN

NEVADA DEPARTMENT OF TRANSPORTATION (NDOT) PERMIT REQUIRED

AN APPROVED NDOT OCCUPANCY PERMIT SHALL BE OBTAINED THROUGH THE AGENCY PRIOR TO ANY CONSTRUCTION WITHIN THE NDOT RIGHT-OF-WAY. PLANS SHOWING WORK IN THE NDOT RIGHT-OF-WAY MUST SHOW NDOT STATIONING. THE DEVELOPER ASSUMED ALL LIABILITY FOR WORK CONDUCTED UNDER THE AGENCY OBTAINED PERMIT THROUGH WARRANTY EXPIRATION.

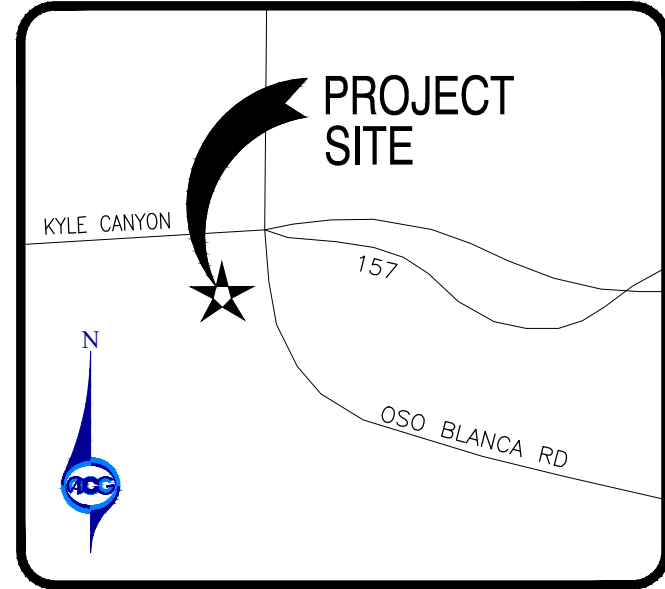
NEVADA DEPARTMENT OF TRANSPORTATION (NDOT) PLAN REFERENCE

THE BASIS FOR STATIONING FOR KYLE CANYON ROAD (SR 157) IS THE CENTERLINE INTERSECTION OF KYLE CANYON ROAD AND OSO BLANCA ROAD, AS SHOWN IN NDOT CONTRACT NUMBER 3692, PROJECT NO. NHP-STP-095-2(062). "KCW" STATION 200+00.00, IS HEREIN REFERRED TO AS "KNOWN POINT-A". THE BASIS FOR STATIONING FOR OSO BLANCA ROAD IS THE P.T. ALONG OSO BLANCA ROAD CENTERLINE SOUTH OF THE CENTERLINE INTERSECTION OF KYLE CANYON ROAD AND OSO BLANCA ROAD, AS SHOWN IN NDOT CONTRACT NUMBER 3692, PROJECT NO. NHP-STP-095-2(062). "OS3" STATION 428+24.59, P.T., IS HEREIN REFERRED TO AS "KNOWN POINT-B".



PROFILE

SCALE: HORIZ.: 1" = 30'
VERT.: 1" = 6'



VICINITY MAP

NTS

SITE DEMOLITION NOTES

- 1 REMOVE EXISTING 24" RCMP STORM DRAIN PIPE.

CONSTRUCTION NOTES

- 1 SAWCUT & MATCH EXISTING PAVEMENT.
- 2 CONSTRUCT "L" CURB AND GUTTER PER CCAUSD NO. 216.
- 3 CONSTRUCT 3" WIDE VALLEY GUTTER, REFER TO DETAIL 5, SHEET C15.
- 4 CONSTRUCT ON-SITE CONCRETE SIDEWALK PER DETAIL 6, SHEET C15.
- 5 CONSTRUCT MODIFIED "A" TYPE CURB PER DETAIL 1, SHEET C15.
- 6 LANDSCAPE AREA (DESIGNED BY OTHERS)
- 7 INSTALL ON-SITE PAVEMENT (2" AC FOR AUTO PARKING, 3" AC FOR MAIN CORRIDOR AND TRUCK ACCESS) OVER 4" TYPE II AGGREGATE BASE (95% COMPACTION). 6" MINIMUM SCARIFICATION AND COMPACTION. REFER TO DETAIL 2, SHEET C15.
- 8 INSTALL 5.5" OFF-SITE PAVEMENT OVER 6" TYPE II AGGREGATE BASE (95% COMPACTION). 6" MINIMUM SCARIFICATION AND COMPACTION. (KYLE CANYON RD AND OSO BLANCA RD). REFER TO DETAIL 11, SHEET C15.
- 9 CONSTRUCT SIDEWALK DRAIN PER CCAUSD NO. 236.
- 10 PROVIDE 2" CURB OPENING TO ALLOW RUN-OFF TO SPILL OUT OF CURB. REFER TO DETAIL 10, SHEET C15.
- 11 INSTALL 8" X 6.5" PRECAST BUMPER BLOCKS PER CCAUSD NO. 238.
- 12 CONSTRUCT TRASH ENCLOSURE PER ARCHITECTURAL PLANS.
- 13 CONSTRUCT CONCRETE APRON FOR TRASH ENCLOSURE (6" CONCRETE SLAB WITH 6X6/14X14 W.W.F.) OVER 8" TYPE II AGGREGATE BASE. REFER TO DETAIL 4, SHEET C15.
- 14 FLOWLINE OF PROPOSED SWALE PER BMP DESIGN CRITERIA. D₅₀=4 INCHES MIN., THICKNESS = 8 INCHES. 4:1 MAXIMUM SIDE SLOPES. 40' LONG X 6' WIDE TYP. (4' MIN.). REFER TO LIMITS SHOWN ON PLAN AND DETAIL 9, SHEET C15.
- 15 LIMITS OF PAVEMENT RESTORATION PER CCAUSD NO. 500.5. TRENCH AND BACKFILL PER CCAUSD NO. 503.
- 16 CONSTRUCT 6" CONCRETE CROSS GUTTER AND SPANDRELS PER CCAUSD NO. 228 FOR COMMERCIAL DRIVEWAY PER CCAUSD NO. 222A & 225.
- 17 CONSTRUCT CONCRETE SIDEWALK RAMP WITH DETECTABLE TACTILE WARNINGS PER CCAUSD NO. 235. (CASE 1, A=8", B=8" UNLESS OTHERWISE NOTED). 2% MAX. SLOPE IN LANDING AREA.
- 18 CONSTRUCT ZERO-INCH CURB FACE PER DETAIL 7, SHEET C15.
- 19 CONSTRUCT CONCRETE CURB RAMP. ENSURE 8.3% MAXIMUM LONGITUDINAL/RUNNING SLOPE AND 2% MAXIMUM TRANSVERSE/CROSS SLOPE. RAMP LANDINGS TO BE 2% MAXIMUM SLOPE, EACH DIRECTION. REFER TO ON-SITE CONCRETE SIDEWALK DETAIL 6, SHEET C15.
- 20 CONSTRUCT 6" HIGH CMU MASONRY SCREEN WALL PER SOUTHERN NEVADA BUILDING OFFICIALS REGIONAL STANDARD B-100-1.
- 21 CONSTRUCT MASONRY RETAINING WALL (WALL HEIGHTS VARY SEE PLANS) WITH 8" THICK SOLID GROUTED CMU WALL. 2" MINIMUM ABOVE PER STRUCTURAL DESIGN BY OTHERS.
- 22 CONSTRUCT CONCRETE PAVEMENT IN FUEL DISPENSING AREA. 6" CONCRETE OVER 8" TYPE II AGGREGATE BASE.
- 23 CONSTRUCT 0-INCH TO 6-INCH CURB FACE TRANSITION.
- 24 CONSTRUCT OFF-SITE CONCRETE SIDEWALK PER CCAUSD NO. 234.
- 25 INSTALL 6-INCH PVC DRAIN PIPE UNDER SIDEWALK.
- 26 CONSTRUCT RIPRAP APRON FOR EROSION CONTROL. D₅₀=9" MIN., THICKNESS = 18"
- 27 CONSTRUCT NDOT TYPE I HEADWALL PER NDOT STANDARD DWG. NO. CH-5A.
- 28 CONSTRUCT 20" TYPE "C-D" MODIFIED DROP INLET PER CCAUSD NO. 412.1. PROVIDE STORM WATER QUALITY MESSAGE PER CCAUSD NO. 421.
- 29 INSTALL 30" CLASS IV RCP STORM DRAIN.
- 30 CONSTRUCT TYPE I STORM DRAIN MANHOLE PER CCAUSD NO. 403.
- 31 INSTALL DOUBLE 6" WIDE BY 3" HIGH RCB CULVERT PER NDOT STANDARD DWG. NO. CH-3A AND CH-3B.
- 32 CONSTRUCT RCB JUNCTION STRUCTURE (6 LF ALONG CL). REFER TO DETAILS ON SHEET C16.
- 33 CONSTRUCT 12.5" TYPE "C-D" MODIFIED DROP INLET PER CCAUSD NO. 412.1 WITH THREE (3) CURVED VANED GRATES (2.5' LONG EACH). (12.5' CURB OPENING LENGTH). PROVIDE STORM WATER QUALITY MESSAGE PER CCAUSD NO. 421.
- 34 CONSTRUCT NDOT CONCRETE CURB & GUTTER PER NDOT STANDARD DWG. NO. CS-1 (TYPE 5).
- 35 CONSTRUCT NDOT CONCRETE SIDEWALK PER NDOT STANDARD DWG. NO. CS-2.
- 36 CONSTRUCT TYPE "A" SIDEWALK CURB RAMP PER NDOT STANDARD DETAILS CS-3A AND CS-3B.
- 37 INSTALL 24" MANHOLE ACCESS TO PROPOSED RCB.
- 38 30' PUBLIC DRAINAGE EASEMENT WITH SURFACE TO BE PRIVATELY MAINTAINED BY PROPERTY OWNER.
- 39 CONSTRUCT MASONRY RETAINING WALL (WALL HEIGHTS VARY SEE PLANS) PER STRUCTURAL DESIGN BY OTHERS.
- 40 INSTALL 18" CLASS IV RCP STORM DRAIN.
- 41 FLOWLINE OF SWALE. PROVIDE POSITIVE DRAINAGE AS INDICATED PER GRADES ON PLAN.
- 42 INSTALL 12" WIDE MAINTENANCE ACCESS RAMP AND APRON TO RCB. 4" MINIMUM AC PAVEMENT OVER 6" TYPE II AGGREGATE BASE FOR THE RAMP. 6" CONCRETE OVER 6" TYPE II AGGREGATE BASE FOR THE BOTTOM APRON. TYPE II AGGREGATE BASE COMPACTED TO 95% DENSITY. 6" MINIMUM SCARIFICATION AND COMPACTION OF SUBBASE.
- 43 INSTALL 3" OFF-SITE PAVEMENT OVER 4" TYPE II AGGREGATE BASE (95% COMPACTION). 6" MINIMUM SCARIFICATION AND COMPACTION. (RUFAN RD). REFER TO DETAIL 12, SHEET C15.

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

RANDOLPH SKORPINSKI, P.E.
(NV #14985)

DATE

APPROVAL	REV.	DESCRIPTION	APPROD. BY	DATE

KYLE CANYON ROAD AND OSO BLANCA ROAD

OSO BLANCA RD PLAN & PROFILE

APN: 126-01-702-007 / 008
10051 KYLE CANYON ROAD
LAS VEGAS, NV 89166

ACG DESIGN
ACG DESIGN
4310 CAMERON ST. SUITE 12-4
LAS VEGAS, NEVADA 89103
OFFICE: 702.448.8737
WEBSITE: WWW.ACG.DESIGN

ENGINEER'S SEAL
RANDOLPH A. SKORPINSKI
CIVIL ENGINEER
EXP: 06-30-24
PROF. NO. 14985

8/10/2022
DATE: 8/9/2022
PROJ. NO: 200203
DRAWN BY: ARB
CHECKED BY: RAS
SCALE: AS NOTED
JURISDICTION: CLV

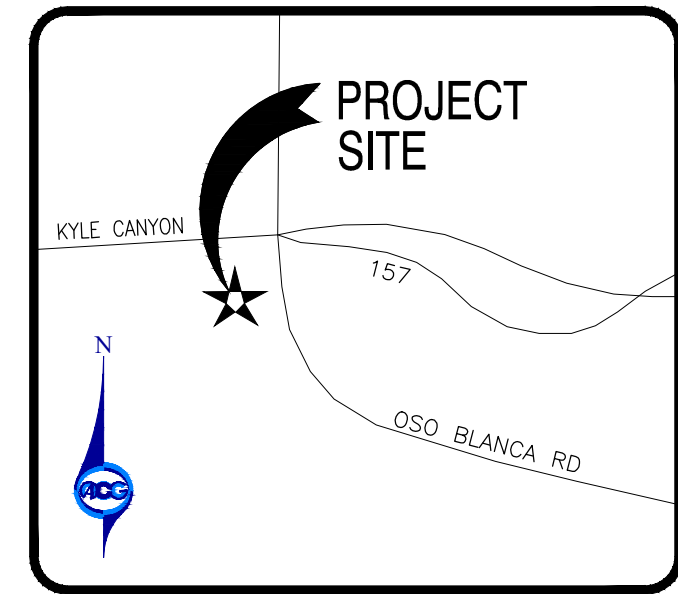
DRAWING NUMBER:
C9
SHEET 9 OF 18
AGENCY NUMBER:

[illegible]

GRAPHIC SCALE

(IN FEET)

1" = 30'



1 REMOVE EXISTING 24" RCMP STORM DRAIN PIPE.

1 SAWDUST & MATCH EXISTING PAVEMENT.

2 CONSTRUCT 1" CURB AND GUTTER PER CAUSD NO. 216.

3 CONSTRUCT 3" WIDE VALLEY GUTTER. REFER TO DETAIL 5, SHEET C15.

4 CONSTRUCT ON-SITE CONCRETE SIDEWALK PER DETAIL 6, SHEET C15.

5 CONSTRUCT MODIFIED "A" TYPE CURB PER DETAIL 1, SHEET C15.

6 LANDSCAPE AREA (DESIGNED BY OTHERS)

7 INSTALL ON-SITE PAVEMENT (2" AC FOR AUTO PARKING, 3" AC FOR MAIN CORRIDOR AND TRUCK ACCESS) OVER 4" TYPE II AGGREGATE BASE (95% COMPACTION), 6" MINIMUM SCARIFICATION AND COMPACTION. (KYLE CANYON RD TO DETAIL 2, SHEET C15).

8 INSTALL 5.5" OFF-SITE PAVEMENT OVER 6" TYPE II AGGREGATE BASE (95% COMPACTION), 6" MINIMUM SCARIFICATION AND COMPACTION. (KYLE CANYON RD AND OSO BLANCA RD). REFER TO DETAIL 11, SHEET C15.

9 CONSTRUCT SIDEWALK DRAIN PER CAUSD NO. 236.

10 PROVIDE 2" CURB OPENING TO ALLOW RUN-OFF TO SPILL OUT OF CURB. REFER TO DETAIL 10, SHEET C15.

11 INSTALL 8" X 6.5" PRECAST BUMPER BLOCKS PER CAUSD NO. 238.

12 CONSTRUCT TRASH ENCLOSURE FOR ARCHITECTURAL PLANS.

13 CONSTRUCT CONCRETE APRON FOR TRASH ENCLOSURE (6" CONCRETE SLAB WITH 6X6/14X14 W.F.F.) OVER 8" TYPE II AGGREGATE BASE. REFER TO DETAIL 4, SHEET C15.

14 FLOWLINE OF PROPOSED SWALE PER BMP DESIGN CRITERIA. $D_{50} = 4$ INCHES MIN. THICKNESS = 8 INCHES. 4'1" MAXIMUM SLOPE. 12' LONG X 6' WIDE (4' MIN.). REFER TO LIMITS SHOWN ON PLAN AND DETAIL 9, SHEET C15.

15 LIMITS OF PAVEMENT RESTORATION PER CAUSD NO. 500.5. TRENCH AND BACKFILL PER CAUSD NO. 503.

16 CONSTRUCT 8" CONCRETE CROSS GUTTER AND SPANDRELS PER CAUSD NO. 228 FOR COMMERCIAL. DRIVEWAY PER CAUSD NO. 224 & 225.

17 CONSTRUCT CONCRETE SIDEWALK RAMP WITH DETECTABLE TACTILE WARNINGS PER CAUSD NO. 235. (CASE 1, A=8", B=8" UNLESS OTHERWISE NOTED). 2% MAX. SLOPE IN LANDING AREA.

18 CONSTRUCT ZERO-INCH CURB FACE PER DETAIL 7, SHEET C15.

19 CONSTRUCT CONCRETE CURB RAMP. ENSURE 8.3% MAXIMUM LONGITUDINAL/RUNNING SLOPE AND 2% MAXIMUM TRANSVERSE/CROSS SLOPE. RAMP LANDINGS TO BE 2% MAXIMUM SLOPE. EACH DIRECTION. REFER TO ON-SITE CONCRETE SIDEWALK DETAIL 6, SHEET C15.

20 CONSTRUCT 6" HIGH CMU MASONRY SCREEN WALL PER SOUTHERN NEVADA BUILDING OFFICIALS REGIONAL STANDARD SPECIFICATIONS 102-1.

21 CONSTRUCT MASONRY RETAINING WALL (WALL HEIGHTS VARY SEE PLANS) FOR 8" THICK SOLID GROUTED CMU WALL 2" MINIMUM ABOVE, PER STRUCTURAL DESIGN BY OTHERS.

22 CONSTRUCT CONCRETE PAVEMENT IN FUEL DISPENSING AREA. 6" CONCRETE OVER 8" TYPE II AGGREGATE BASE.

23 CONSTRUCT 0-INCH TO 6-INCH CURB FACE TRANSITION.

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25 INSTALL 6-INCH PVC DRAIN PIPE UNDER SIDEWALK.

26 CONSTRUCT RIPRAP APRON FOR EROSION CONTROL. $d_{50} \geq 18"$ MIN. THICKNESS = 18"

27 CONSTRUCT NODT TYPE 1 HEADWALL PER NODT STANDARD DWG. NO. CH-5A.

28 CONSTRUCT 20" TYPE "C"-B" MODIFIED DROP INLET PER CAUSD NO. 412.1. PROVIDE STORM WATER QUALITY MESSAGE PER CAUSD NO. 421.

29 INSTALL 30" CLASS IV RCP STORM DRAIN.

30 CONSTRUCT TYPE 1 STORM DRAIN MANHOLE PER CAUSD NO. 403.

31 INSTALL DOUBLE 6" WIDE BY 3" HIGH RCB CULVERT PER NODT STANDARD DWGS. NO. CH-3A AND CH-3B.

32 CONSTRUCT RCB JUNCTION STRUCTURE (6" IF ALONG Q.L.) REFER TO DETAILS ON SHEET C16.

33 CONSTRUCT 12.5" TYPE "C"-D" MODIFIED DROP INLET PER CAUSD NO. 412.1 WITH THREE (3) CURVED VANED GRATES (2.5' LONG EACH). (12.5' CURB OPENING LENGTH). PROVIDE STORM WATER QUALITY MESSAGE PER CAUSD NO. 421.

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36 CONSTRUCT TYPE "A" SIDEWALK CURB AND GUTTER PER NODT STANDARD DETAILS CS-3A & CS-3B.

37 INSTALL 24" MANHOLE ACCESS TO PROPOSED RCB.

38 30' PUBLIC DRAINAGE EASEMENT WITH SURFACE TO BE PRIVATELY MAINTAINED BY PROPERTY OWNER.

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42 INSTALL 12" WIDE MAINTENANCE ACCESS RAMP AND APRON TO RCB. 6" MINIMUM AC PAVEMENT OVER 6" TYPE II AGGREGATE BASE FOR THE RAMP. 6" CONCRETE OVER 5" TYPE II AGGREGATE BASE FOR THE BOTTOM APRON. TYPE II AGGREGATE BASE COMPACTED TO 95% DENSITY. 6" MINIMUM SCARIFICATION AND COMPACTION OF SUBBASE.

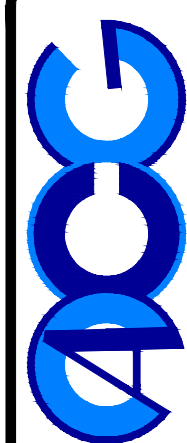
43 INSTALL 3" OFF-SITE PAVEMENT OVER 4" TYPE II AGGREGATE BASE (95% COMPACTION). 6"

RANDOLPH SKORPINSKI, P.E. DATE
(NV #14985)

REVIEWS		APPROVAL	
REV.	DESCRIPTION	APPRD.	DATE

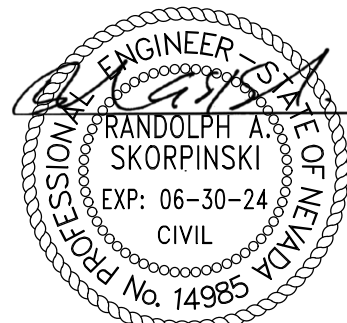
RUFIAN ROAD PLAN & PROFILE

APN: 126-01-702-007 / 008
10051 KYLE CANYON ROAD
LAS VEGAS, NV 89166



ACG DESIGN
310 CAMERON ST, SUITE 12-A
LAS VEGAS, NEVADA 89103
OFFICE: 702.448.8737
WEBSITE: WWW.ACG.DESIGN

ENGINEER'S SEAL



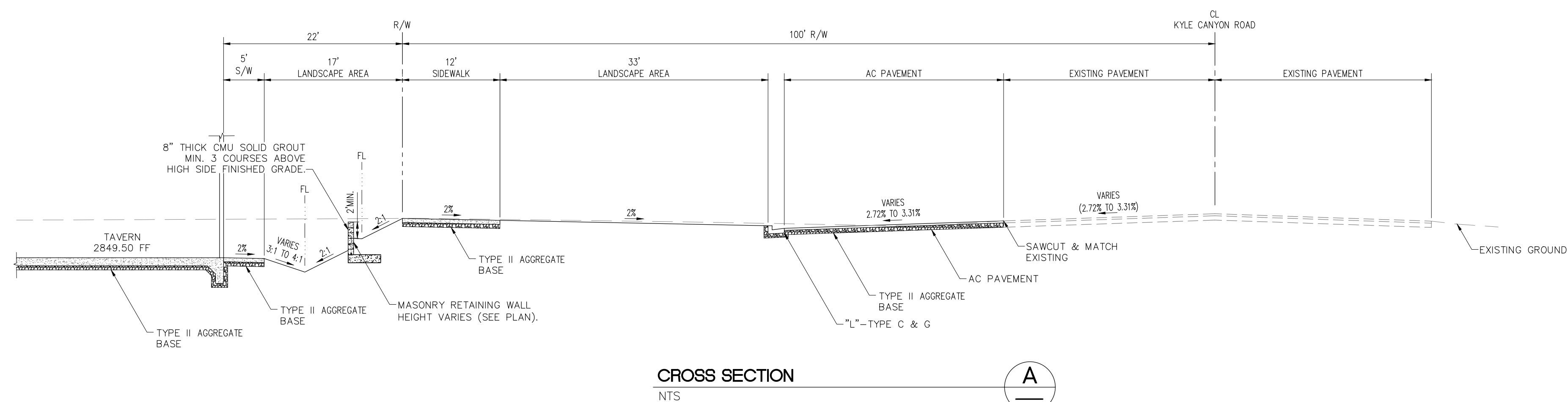
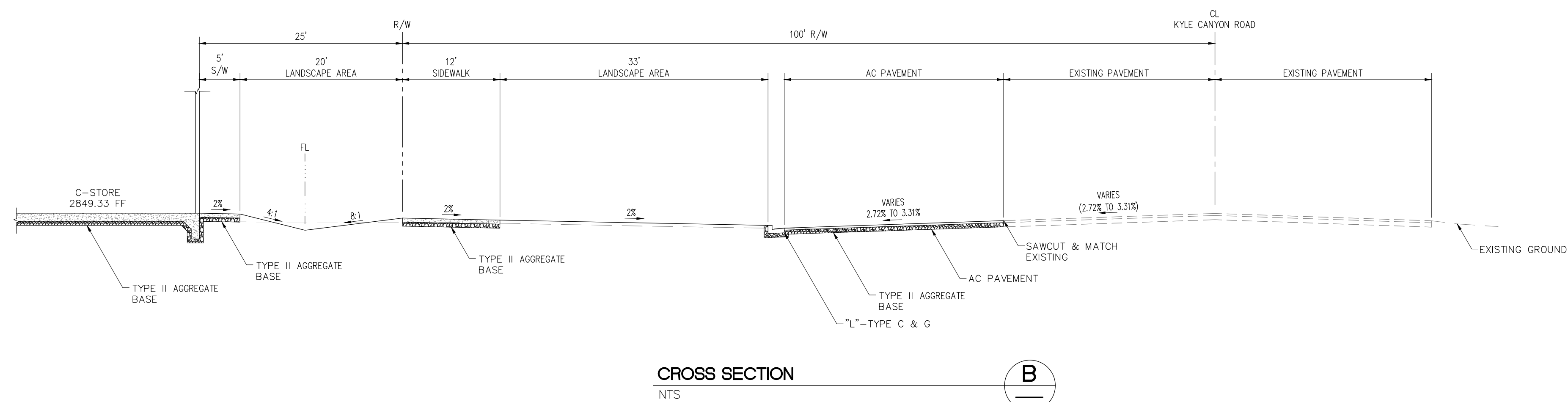
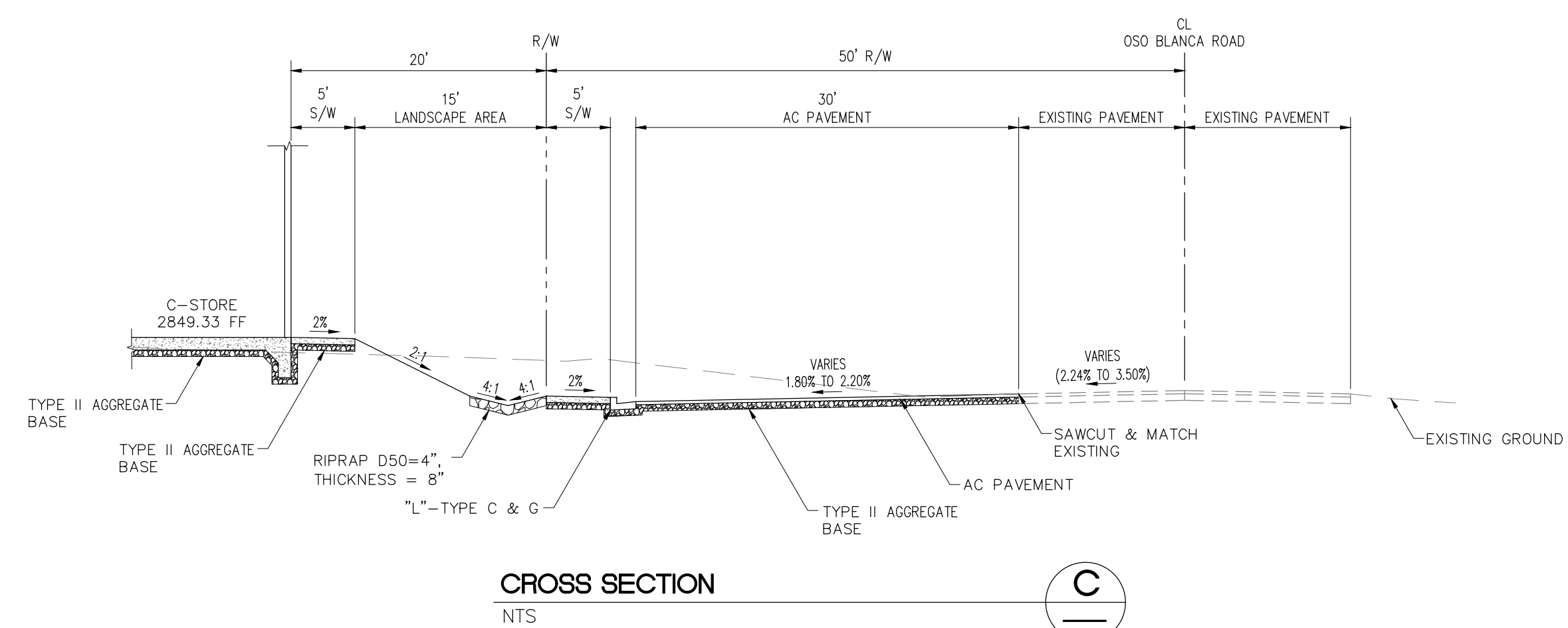
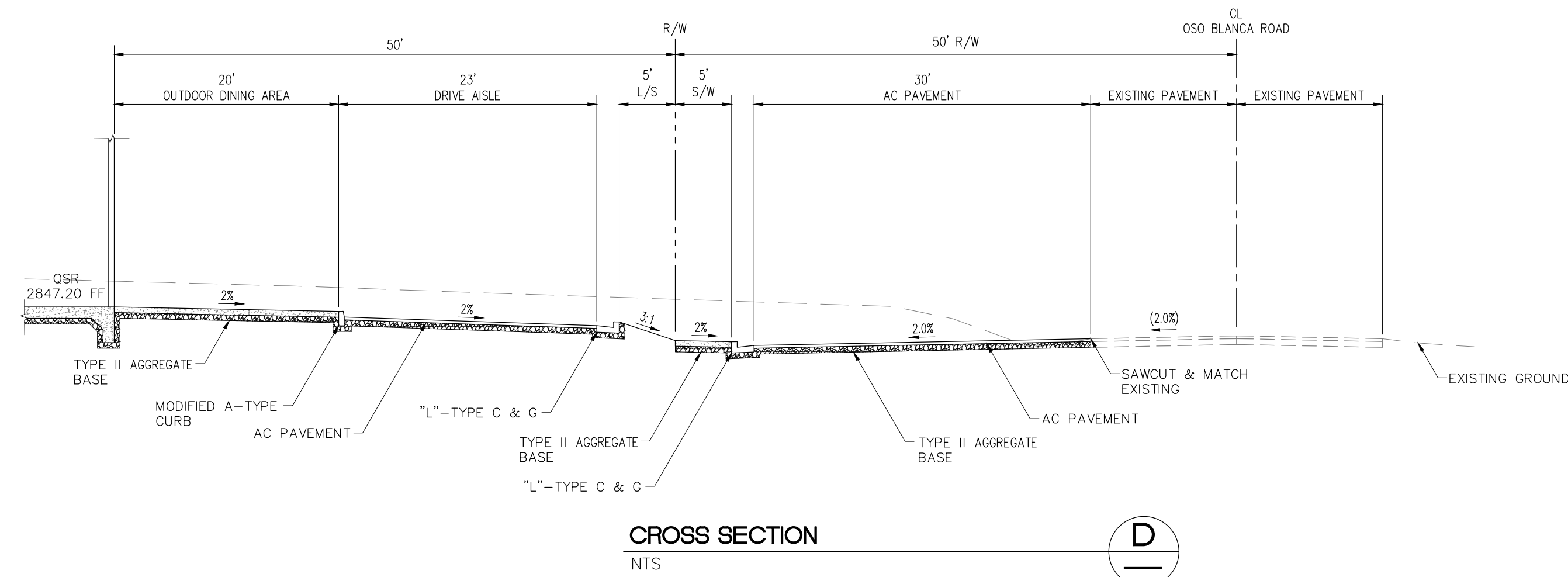
8/10/2022

DATE:	8/9/2022
PROJ. NO:	200203
DRAWN BY:	ARB
CHECKED BY:	RAS
SCALE:	AS NOTED
JURISDICTION:	CLV

DRAWING NUMBER:

C10

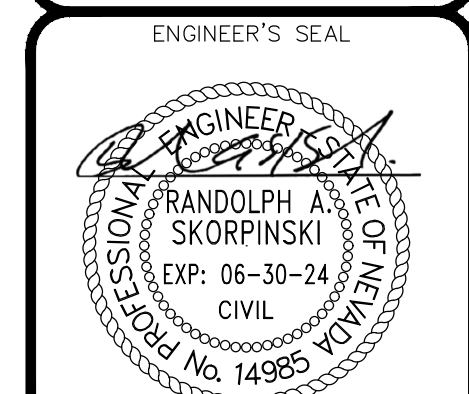
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REVISIONS		APPROVAL
REV.	DESCRIPTION	APPROV. BY DATE

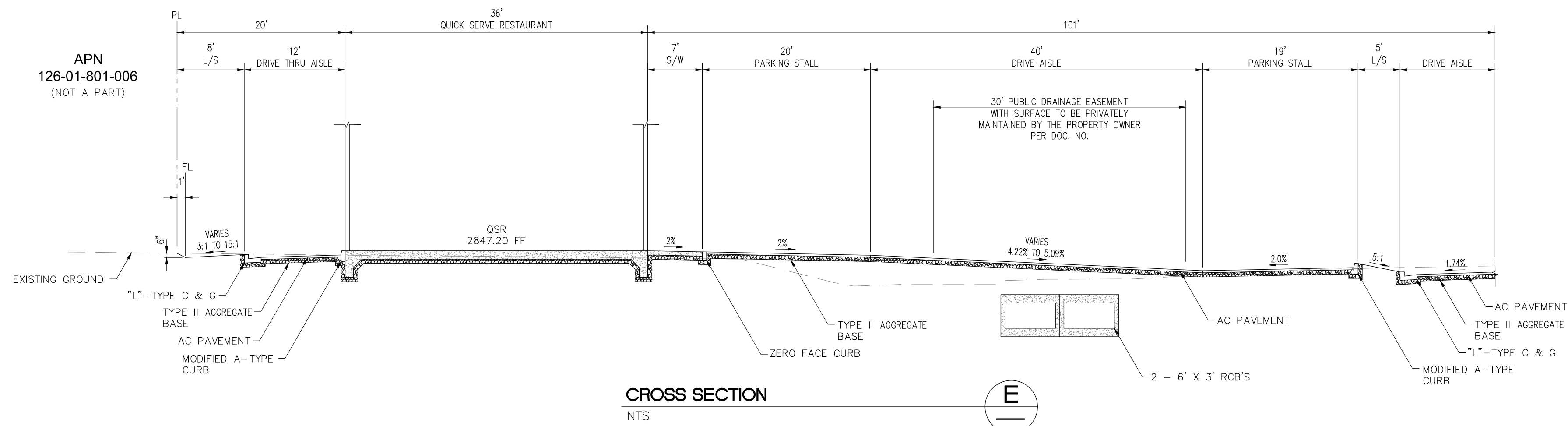
KYLE CANYON ROAD AND
OSO BLANCA ROAD

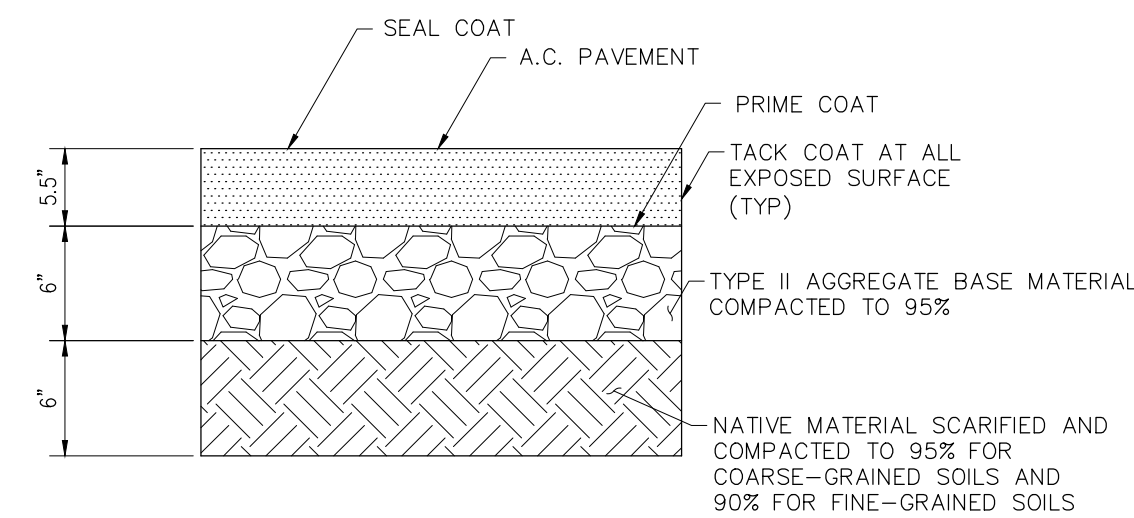
CROSS SECTIONS
APN: 126-01-702-007 / 008
10051 KYLE CANYON ROAD
LAS VEGAS, NV 89166



DATE:	8/9/2022
PROJ. NO:	200203
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CHECKED BY:	RAS
SCALE:	AS NOTED
JURISDICTION:	CLV

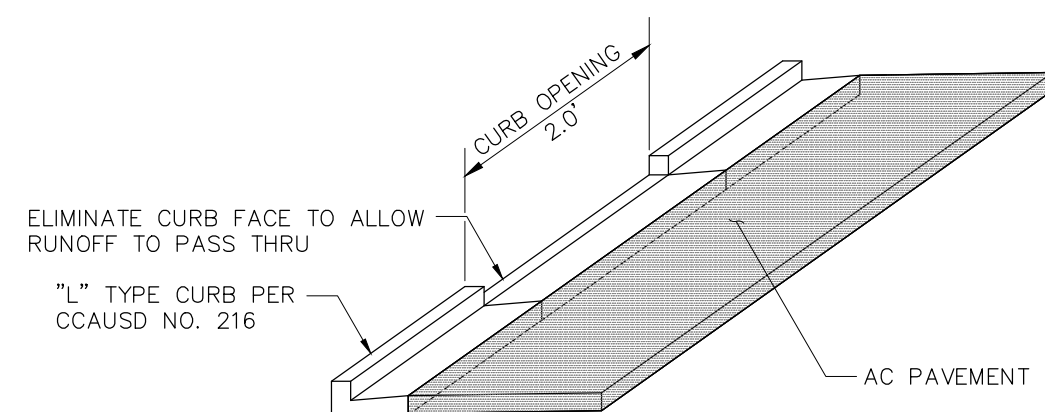
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C13
SHEET 13 OF 18
AGENCY NUMBER:

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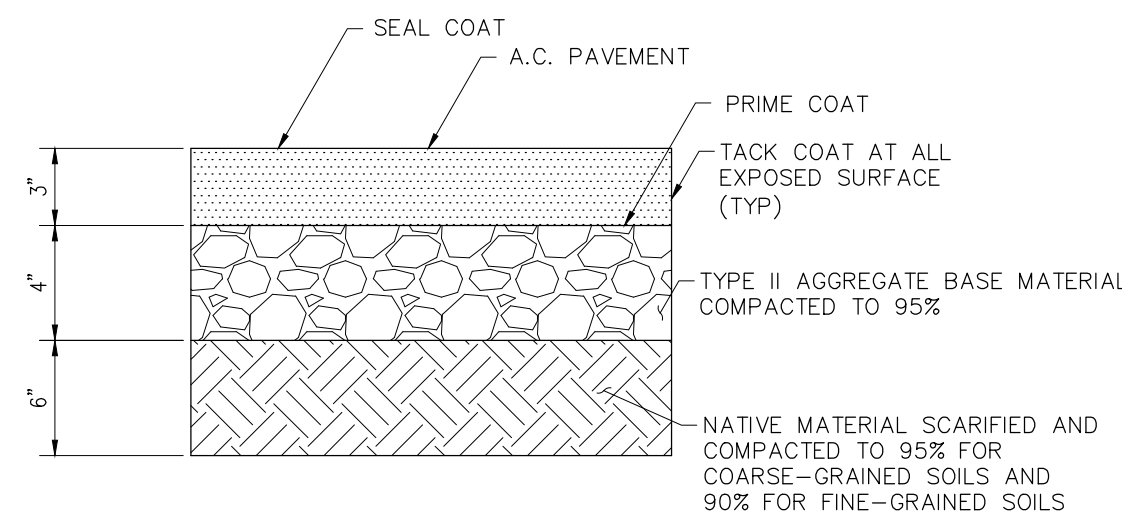


NOTE:
ALL AGGREGATE BASES SHALL BE COMPACTED PER GEOTECHNICAL
REPORT PW#
PRELIMINARY PAVEMENT SECTIONS SHALL BE VERIFIED WITH THE
FINAL PAVEMENT SECTION RECOMMENDATION REPORT PRIOR TO
CONSTRUCTION. IF FINAL PAVEMENT SECTIONS ARE DIFFERENT, A
REVISION TO THE IMPROVEMENT PLANS WILL BE REQUIRED.

OFF-SITE AC PAVEMENT SECTION
KYLE CANYON RD AND OSO BLANCA RD 11
NTS



2' CURB OPENING

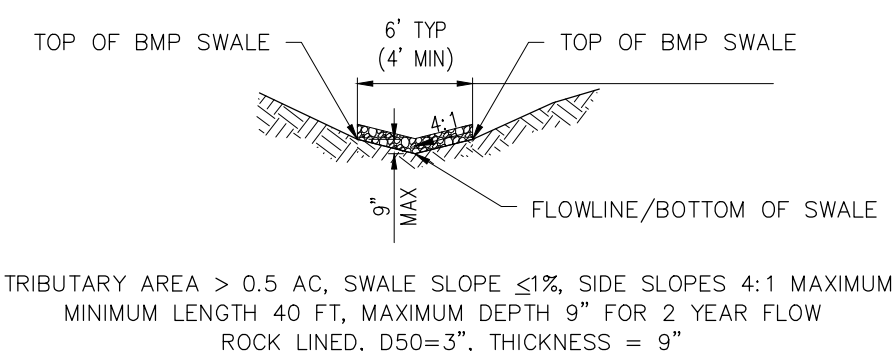


NOTE:
ALL AGGREGATE BASES SHALL BE COMPACTED PER GEOTECHNICAL
REPORT PW#
PRELIMINARY PAVEMENT SECTIONS SHALL BE VERIFIED WITH THE
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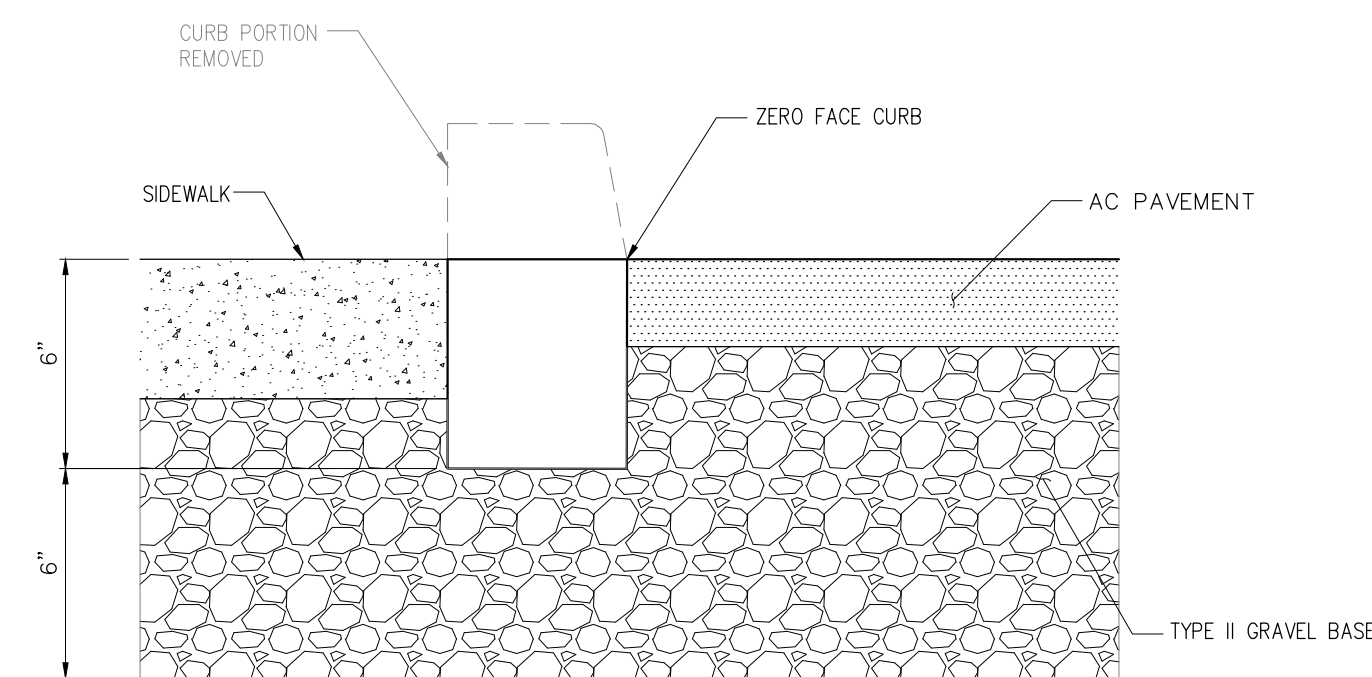
OFF-SITE AC PAVEMENT SECTION
RUFIAN ROAD

NTS

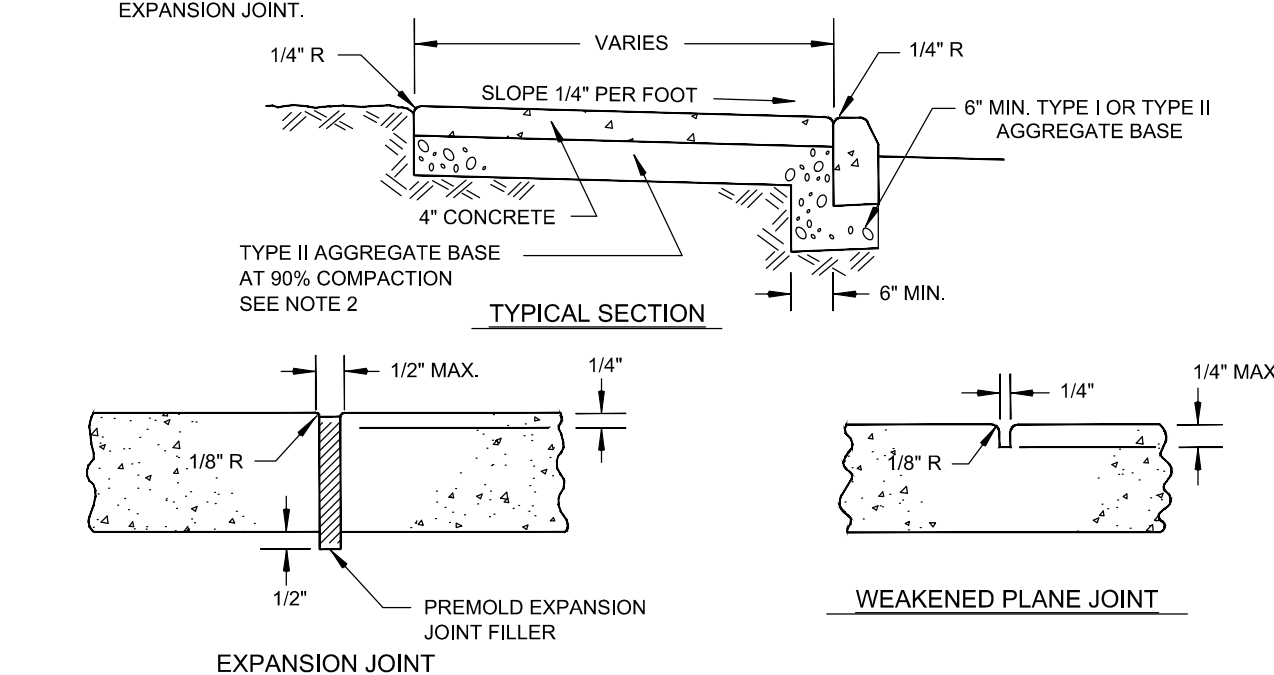
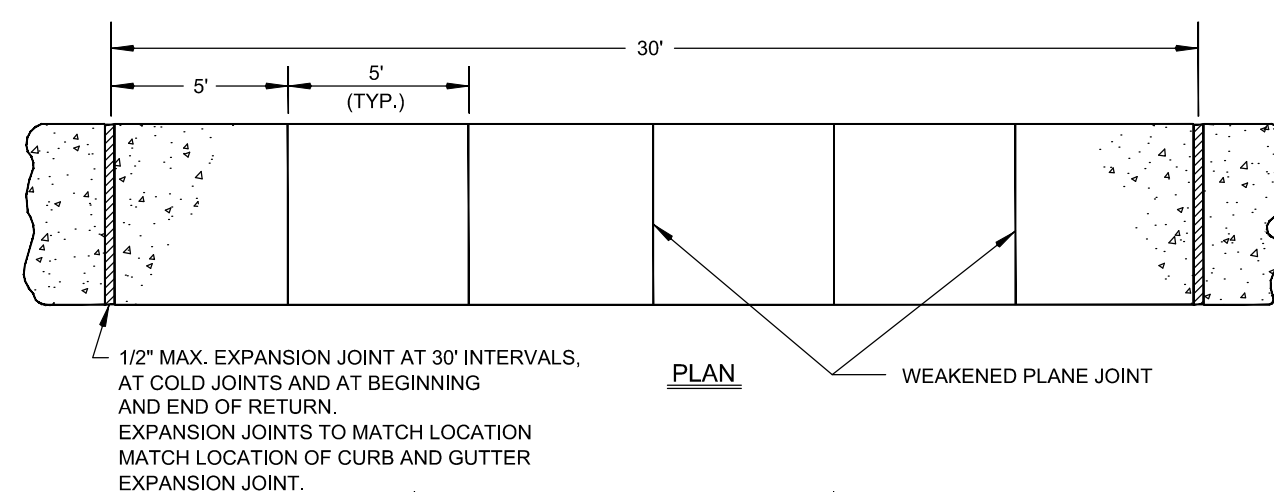
12



BMP SWALE DETAIL 9



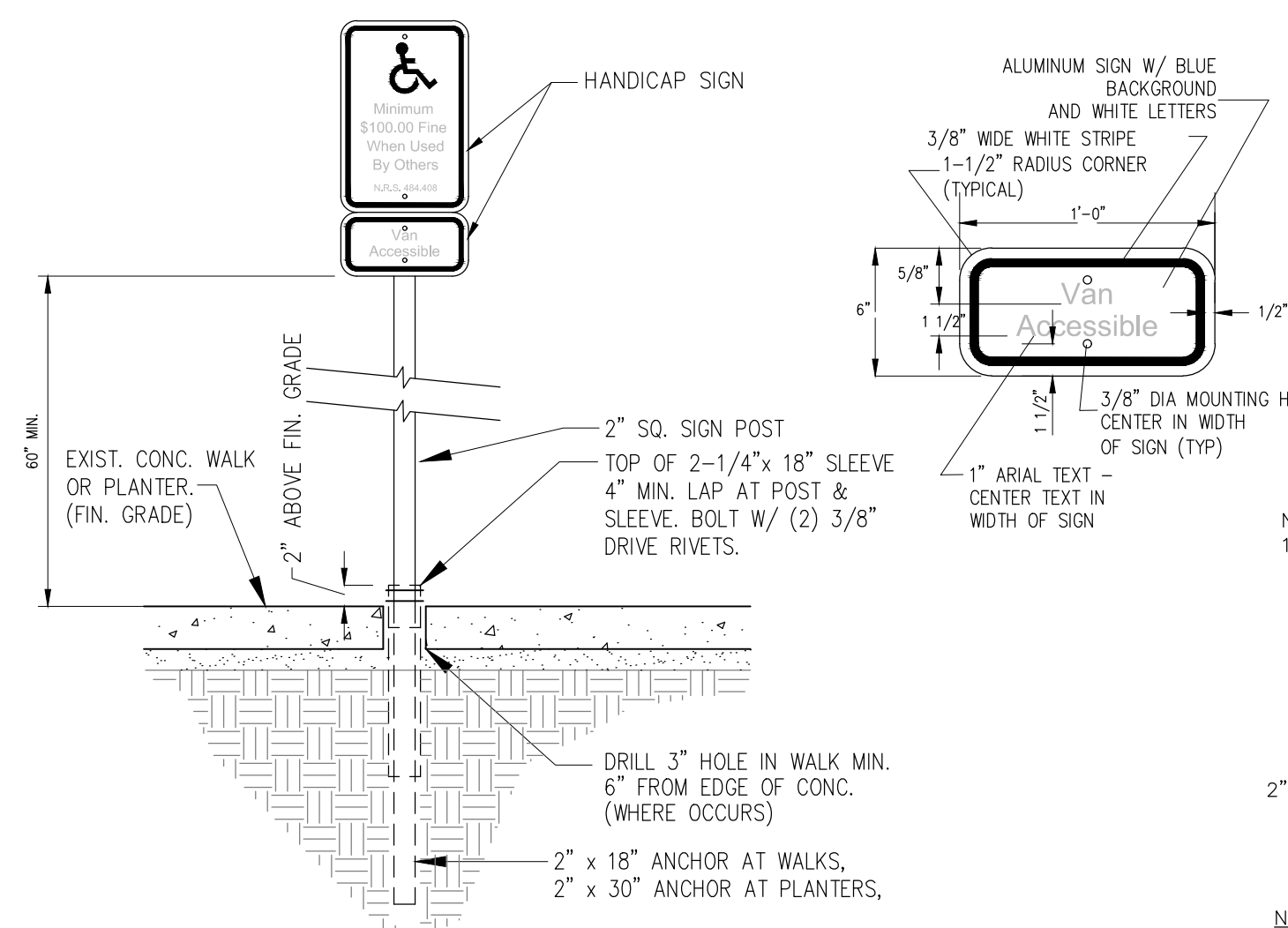
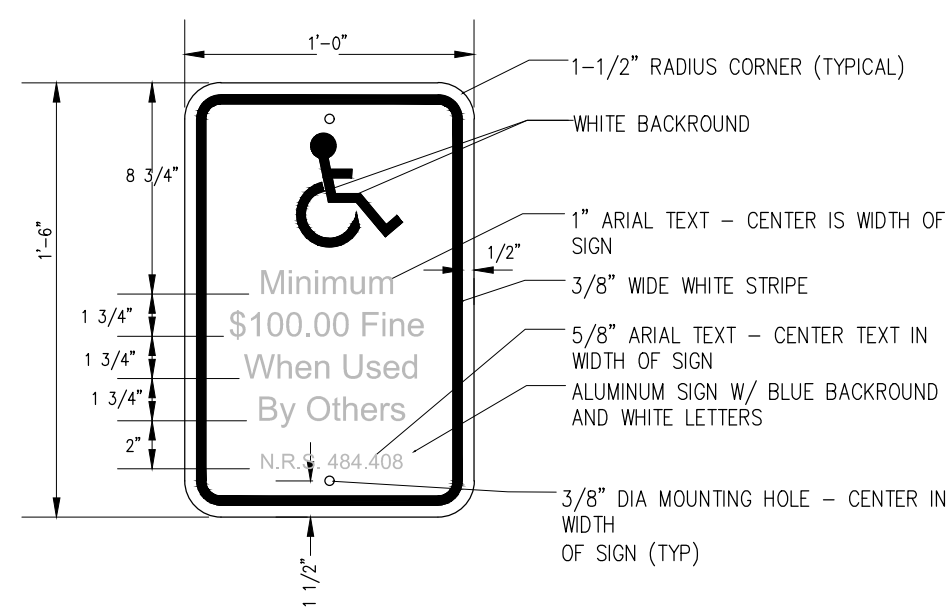
ZERO FACE CURB 7



NOTES:

1. ON ALL CURB RETURNS A 1/2" MAX. EXPANSION JOINT SHALL BE CONSTRUCTED BETWEEN THE BACK OF CURB AND THE SIDEWALK FOR THE ENTIRE LENGTH OF THE RETURN.
2. THE TYPE II AGGREGATE BASE THICKNESS IS SHOWN ON THE TYPICAL SECTION DRAWINGS PER USD NO. 202-207.
3. LONGITUDINAL WEAKENED PLANE JOINT REQUIRED AT MIDPOINT OF SIDEWALK 10' OR WIDER.
4. CONTRACTOR HAS THE OPTION TO SAWCUT OR TOOL WEAKENED PLANE JOINT.

ON-SITE SIDEWALK CONSTRUCTION DETAIL 6



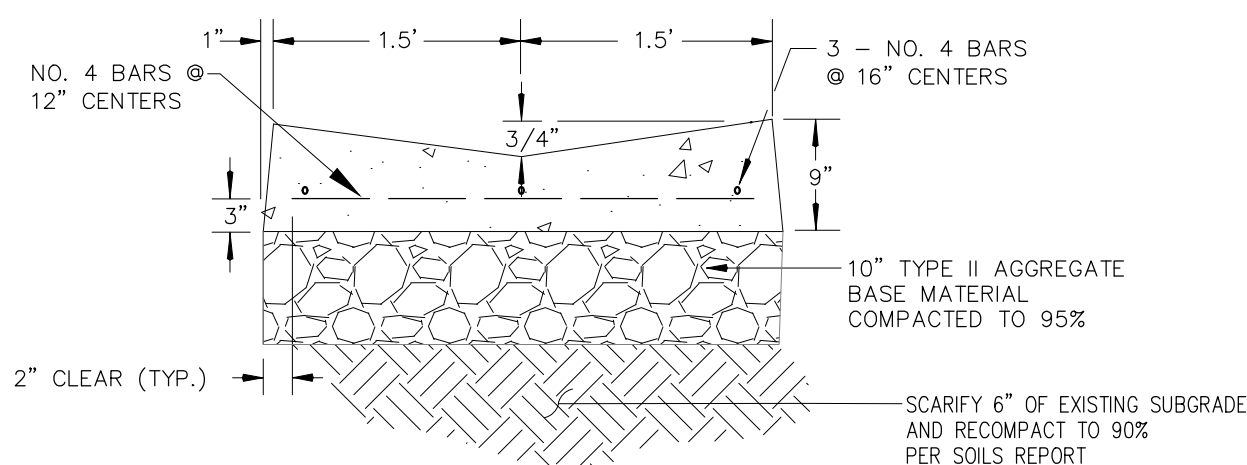
ALL COMPONENTS TO BE GALVANIZED SQUARE POST. ATTACH ANCHOR TO SLEEVE PRIOR TO DRIVING INTO GROUND.

HANDICAP ACCESSIBILITY SIGN

N.T.S.

8

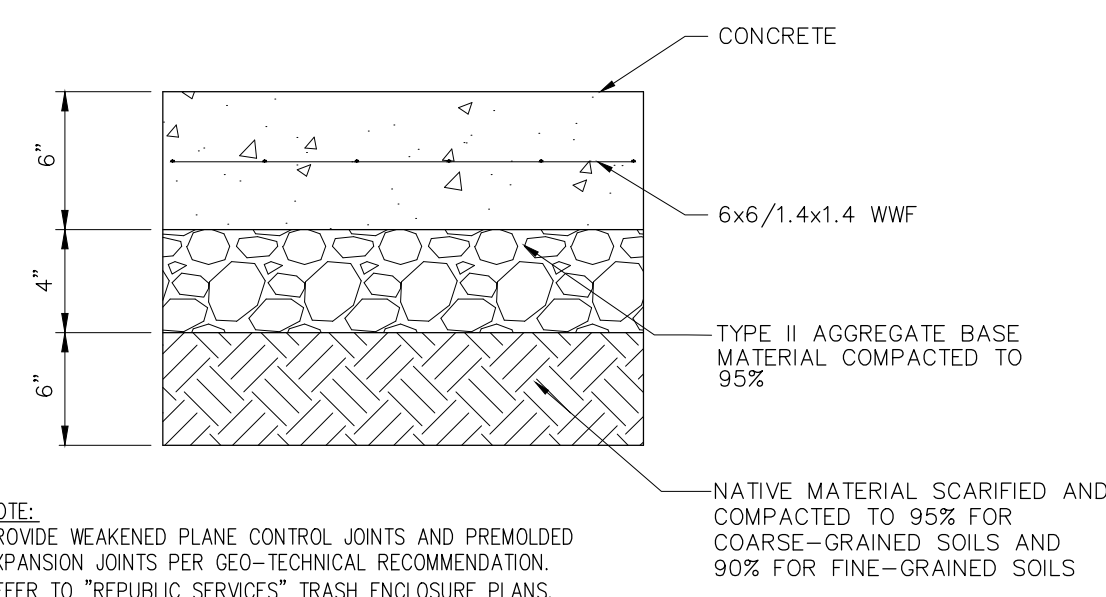
3' VALLEY GUTTER



NOTES:

1. FINISHED ASPHALT CONCRETE SURFACE TO BE FLUSH WITH VALLEY GUTTER LIP.

3' VALLEY GUTTER

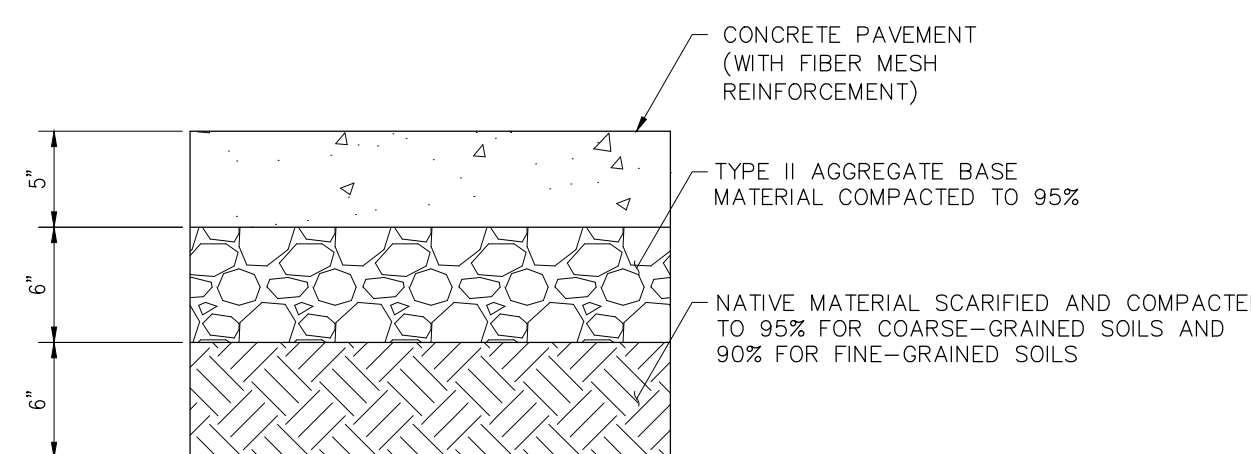


NOTE:
PROVIDE WEAKENED PLANE CONTROL JOINTS AND PREMOLDED
EXPANSION JOINTS PER GEO-TECHNICAL RECOMMENDATION.
REFER TO "REPUBLIC SERVICES" TRASH ENCLOSURE PLANS.

CONCRETE SECTION FOR
TRASH ENCLOSURE APRON

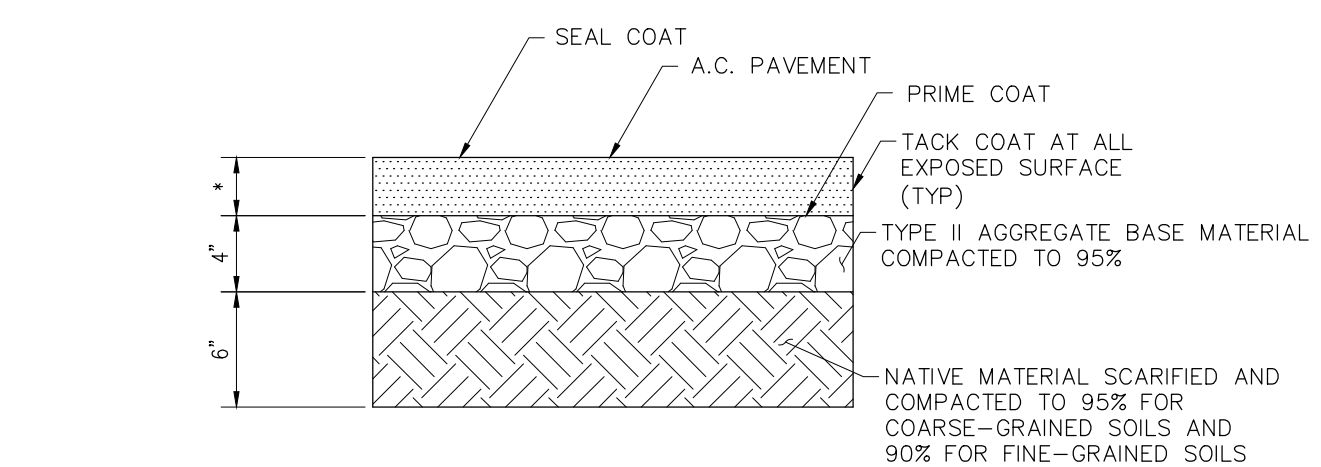
NTS

4



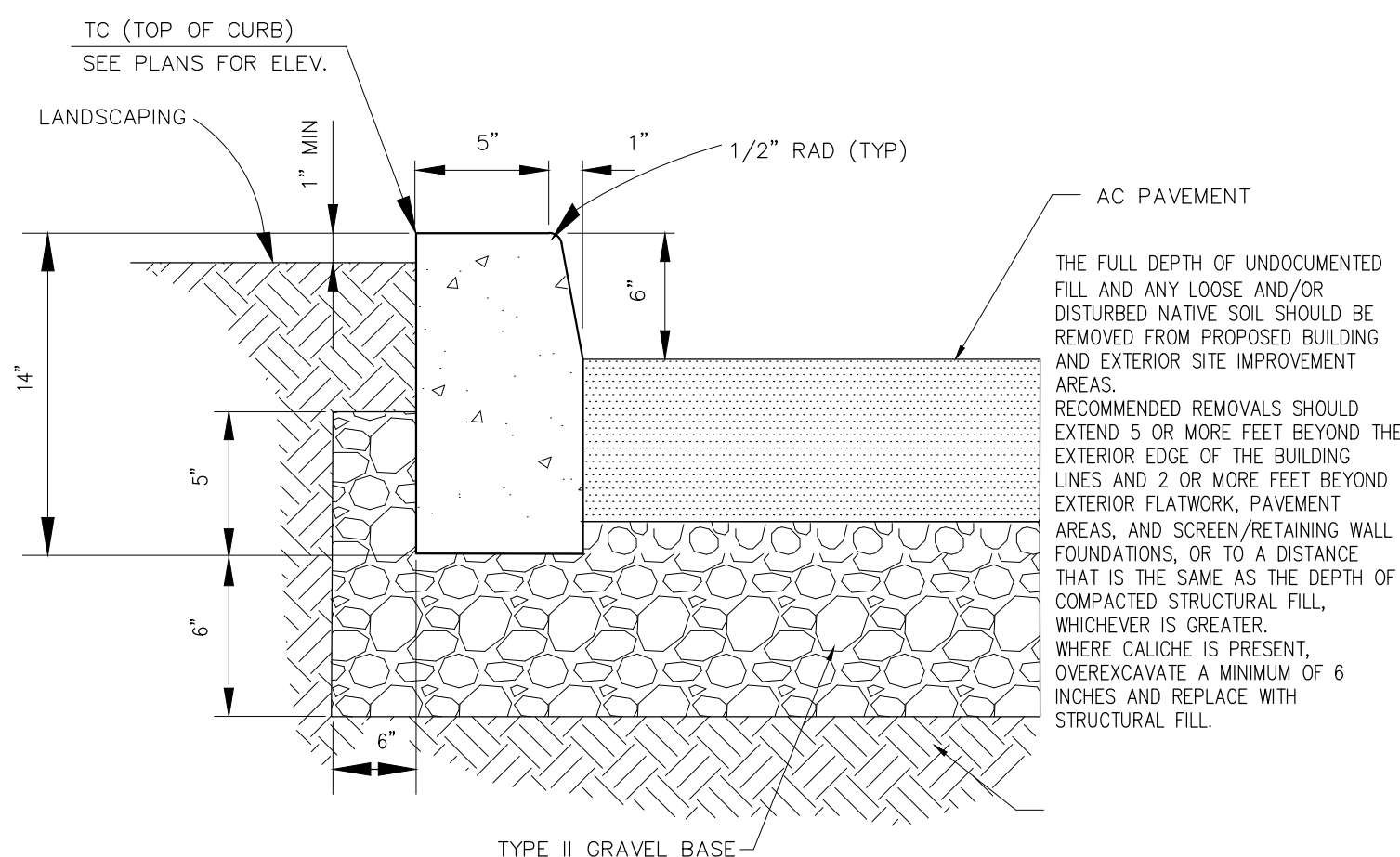
NOTE:
PROVIDE WEAKENED PLANE CONTROL JOINTS AND
PREMOLDED EXPANSION JOINTS PER GEO-TECHNICAL
REPORT, SECTION 5.7.1
REFER TO GEOTECHNICAL REPORT BEFORE
PLACEMENT OF PCC PAVEMENT

ON-SITE CONCRETE SECTION



* 2" AC FOR AUTO PARKING
3" AC FOR MAIN CORRIDOR AND TRUCK ACCESS

ON-SITE AC PAVEMENT SECTION 2



MODIFIED "A" CURB 1
NTS

REVISIONS		APPROVAL	
REV.	DESCRIPTION	APPROV. BY	DATE

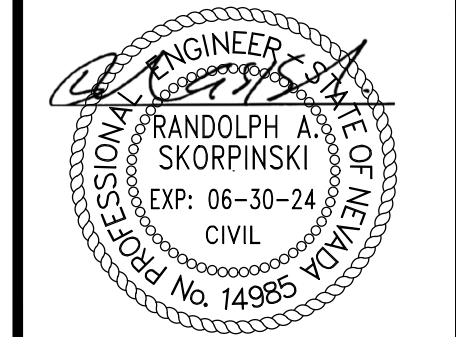
**KYLE CANYON ROAD AND
OSO BLANCA ROAD**

DETAILS

APN: 126-01-702-007 / 008
10051 KYLE CANYON ROAD
LAS VEGAS, NV 89166



ENGINEER'S SEAL



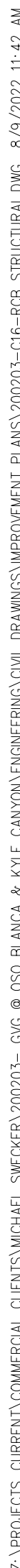
8/10/2022

DATE:	8/9/2022
PROJ. NO:	200203
DRAWN BY:	ARB
CHECKED BY:	RAS
SCALE:	AS NOTED
JURISDICTION:	CLV

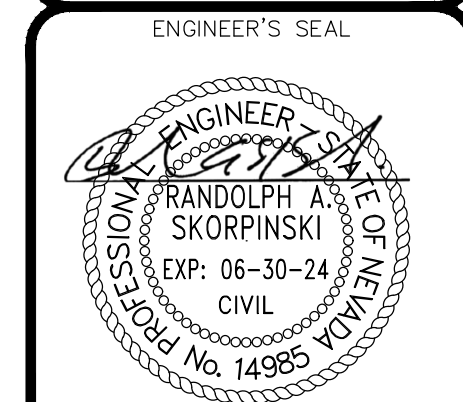
DRAWING NUMBER

C15

AGENCY NUMBER



**KYLE CANYON ROAD AND
OSO BLANCA ROAD
DUAL 6' X 3' JUNCTION
STRUCTURAL DETAILS**
APN: 126-01-702-007 / 008
10051 KYLE CANYON ROAD
LAS VEGAS, NV 89166



DRAWING NUMBER:
C16
SHEET 16 OF 18
AGENCY NUMBER:

DRAWING NUMBER:
C18
SHEET 18 OF 18
AGENCY NUMBER: