DS #: 5144

APN: 137-33-101-001

PROJECT: Summerlin West Village 24

SUBMITTAL: 1st

SCANNED BY/DATE:

CHECKED BY/DATE:

CITY OF LAS VEGAS
NEVADA

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM				DATE: June 25, 2019
TO: **Land Development Services** Department of Building & Safety				FROM: Albert Sung, P.E. Flood Control Project Engineer Department of Public Works
SUBJECT:	Drainage Study for: **Summerlin West Village 24 – Western Boundary Phase 2 for Fire Access & 2nd Source Water**			**COPIES TO:** VTN, Nevada
Cross Streets:	SW of Alta Drive & Crossbridge Drive			Howard Hughes Company, LLC
File Number:	F:\Depot\DSMemos\DS5144A.doc			Bart Anderson, P.E., DevCo
Parcel Number:	137-33-101-001			
Zoning Action:				
FEMA Flood Zone	YES	NO	X	
Proposed Storm Drain	YES	NO	X	

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1st Submittal	5/20/2019	6/24/2019	See Comments Below	$400.00	3139366: $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.

1. The proposed *Western Boundary Grading & Drainage Facilities* are interim facilities to be owned and maintained by the *Howard Hughes Company*. The *City of Las Vegas* will not take over ownership and maintenance liability until a permanent fully improved roadway dedicated and accepted as a public right-of-way is completed.

   Prior to final plan approval the developer must complete a maintenance and liability agreement for the interim drainage improvements (off-site berms, channels & storm drains) and post a minimum maintenance bond of $50,000 or 50-percent of the construction cost for the improvements, whichever is greater. The engineer must submit an estimate of the quantities for constructing the facility and an 8.5-inch by 11-inch exhibit that adequately shows the location and limits of the drainage facility to *Flood Control* for approval. Once the drainage study is conditionally approved, the engineer should contact the *City's Land Development Section* (229-6371) to begin the agreement process.

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

2. The title of the subject study is "*Summerlin West Village 24 Western Boundary Fire Access and 2nd Source Water*". However, the *Study* has not explained anything to do with "*Fire Access and 2nd Source Water*"?! It appears that the purpose of the *Study* and the project is to address paving and half street improvements. Revise the title of the subject *Study* to better reflect the true purpose in the next submittal.

3. In all pertinent plans, provide access ramp to the bottom of COS-1 and COS-3 washes at both the upstream and downstream sides.

4. The proposed improvement plans show drainage facilities of a size that must be reviewed for Maintenance and Access concerns. The engineer must submit an extra set of improvement plans to *CLV Streets & Sanitation Department* for their review. *Streets & Sanitation* approval must be secured prior to drainage study approval.

5. **Sheet GR5**: It appears that the stationing in the *Plan View* and the *Profile* do not match each other. For example, Station 30+00 in *Plan View* is more or less corresponding to Station 16+00 in the *Profile*. Review and revise accordingly.

6. **Sheet DT**: Cross Sections E and F: Show and identify the proposed 2# 5'x5' RCB and 5# 5'x5' RCB culverts accordingly.

7. Double check that nominal drop inlets are provided at a maximum spacing of 600' in the proposed roadway.

8. 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*).

In an effort to increase administrative efficiency, for all original and re-submittal packages including updates and the addenda, the City of Las Vegas Public Works Department requires both a hardcopy and a digital copy (PDF) on CD for the drainage study.

A letter sealed and signed by a Nevada registered civil engineer must be included in every submittal certifying documents on the electronic CD matches 100% of the hardcopy submittal. The new submittal requirement is effective on May 1, 2019. If there are any questions regarding these new requirements, please contact Albert Sung in the City Flood Control Section at (702) 229-6541.



Sample Letter to certify CD.pdf

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: T20S/R59E/33
AREA K-33

Technical Drainage Study for

Summerlin West Village 24 Western Boundary Fire Access and 2nd Source Water

Las Vegas, Nevada

Prepared for:
Howard Hughes Company, LLC

Submitted to:
City of Las Vegas
Land Development Services

HYDROLOGIC CRITERIA AND DRAINAGE MANUAL

DRAINAGE STUDY INFORMATION FORM

Name of Development: Summerlin Village 24 Western Boundary Fire Access & 2nd Source Water Date: May 16, 2019

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

East/West: Alta Drive

b) Section: 22 Township: 20S Range: 59E

c) APN : 137-22-000-017

Name of Owner: Howard Hughes Company, LLC

Telephone No.: (702) 791-4336 Fax No.: (702) 791-4453 E-Mail Address: chris.anderson@howardhughes.com

Address: 10801 W. Charleston Blvd. LV, NV, 89135

Contact Person-Name: Joanna Ayson **Telephone No.:** (702)-873-7550

* **E-Mail Address:** jayson@vtnnv.com **Fax No.:** (702)-362-2597

Firm: VTN Nevada

Address: 2727 S. Rainbow Blvd, LV, NV, 89146

Type of Land Development/Land Disturbance Process:

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

1. Total Owned Land Area: At Site: +/-14 Acres Being Developed/Disturbed: +/-14 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.): Roadway
5. Approximate upstream land area which drains to the subject site: +/- 484 acres
6. Has the site drainage been evaluated in the past? ☒ **YES** ☐ **NO** If yes, please identify documentation: Summerlin Village 24 Western Boundary Grading & Drainage (DS4992)
7. If known, please briefly identify the proposed discharge point(s) of runoff from the site: 66" RCP in Crossbridge Drive, Waters of the US COS-1 and COS-3 Wash,
8. Briefly describe your proposed schedule for the subject project: As soon as possible

PROFESSIONAL ENGINEER-STATE OF NEVADA
BRIAN TROY RUIZ
EXP: 12/31/19
CIVIL
No. 15967

5/14/19

Engineer's Seal

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

*New Required Field

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

Revision	Date

Local Entity File No.

REFERENCE:

STANDARD FORM 1

Updated 05/01/2008

PROVIDING QUALITY PROFESSIONAL
SERVICE SINCE 1960

May 14, 2019

Albert Sung, P.E.
Flood Control Division
Department of Public Works
CITY OF LAS VEGAS
333 N. Rancho Blvd, 7th Floor
Las Vegas, NV 89106

Subject: **Technical Drainage Study for Summerlin West Village 24 Western Boundary Fire Access & 2nd Source Water**

Mr. Sung:

This letter certifies that all items on the **Technical Drainage Study for Summerlin West Village 24 Western Boundary Fire Access & 2nd Source Water** electronic submittal matches the paper version bound into the study.

Respectfully submitted,

Brian Ruiz, P.E.

I. INTRODUCTION

A. STUDY OVERVIEW AND PURPOSE

This proposed project is Phase 2 of the construction of the Village 24 Western Boundary and addresses paving and public utility installation in the proposed roadway. The *Technical Drainage Study for Summerlin Village 24 Western Boundary Grading and Drainage* (hereinafter referred to as the Phase 1 study) was approved by the City of Las Vegas (CLV) on July 24, 2018 and addressed Phase 1 of the proposed project. Phase 1 of the project established the subgrade of the roadway and provided drainage swales and storm drain infrastructure to protect the rough grading and Village 24. The Phase 1 study established hydrologic patterns that have been referenced for this report.

This Phase 2 proposes to construct pavement and curb & gutter on the east half of the proposed roadway. Drop inlets proposed on the east half of the roadway tie into existing storm drain stubs constructed with Phase 1. Full street improvements and concrete culvert crossing are proposed at the COS washes. Landscaped mounding is proposed between the proposed roadway and the Village 24 boundary.

The methodology presented in this study is in accordance with the criteria set forth in the Clark County Regional Flood Control District (CCRFCD) *Hydrologic Criteria and Drainage Design Manual* (HCDDM) (Reference 1, hereinafter referred to as the Manual).

B. LOCATION

The proposed project is located within a portion of Section 33, Township 20 South, Range 59 East, M.D.M, Clark County, Nevada. Specifically, the site is located of the intersection of Alta Drive and Crossbridge Drive in the Summerlin Master Plan Community. (Refer to *Figure 1: Vicinity Map* included in *Appendix A*).

C. DESCRIPTION

The existing site slopes to the east at approximately 6% to 7% and is bounded by undeveloped land to the east and west. Currently, the site is adjacent to the future Summerlin Village 24 Parcels I, J, and K (Refer to *Figure 2: Site Description Map*)

D. FLOODPLAIN INFORMATION

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Community Panel Numbers 32003C2150E, Clark County, Nevada, and Incorporated Areas, dated September 17, 2002, (Reference 2) most of the site is located within a Zone "X". A Zone "X" is described as an area determined to be outside the 0.2% annual chance floodplain. (Refer to *Figure 3: Flood Insurance Rate Map*)

E. MASTER PLANNING INFORMATION

The proposed site is delineated on Figures F-27 and W-6, which were referenced from the 2018 CCRFCD Las Vegas Valley Flood Control Master Plan Update (Reference 3, hereinafter referred to as the MPU). The site lies within MPU sub-basin RD2 and RD5 and is not

adjacent to any existing or proposed CCRFCD facilities. (Refer to *Figure 4B: MPU Facilities Map and Figure 4C: MPU Hydrologic Map*)

F. REFERENCED HYDROLOGY STUDIES

The following drainage studies have been reviewed and referenced for the purposes of this report:

- *Technical Drainage Study for Summerlin Village 24 Western Boundary Grading and Drainage*, by G.C. Wallace Inc. (Reference 4, hereinafter referred to as the Village 24 Conceptual Study)

The referenced drainage studies have been reviewed and have been determined to be acceptable for use. Pertinent reference material has been included in Appendix D.

II. HYDROLOGIC ANALYSIS

Hydrologic analysis including relevant flow patterns and flow rates for the project was previously addressed in the Phase 1 study and has been fully referenced for this report. Pertinent reference material has been included in Appendix D. A description of each drainage condition is discussed in more detail in the following sections of this report.

A. EXISTING CONDITION ANALYSIS

Existing condition for the project was previously analyzed in the Phase 1 study, and this project assumes that the Phase 1 improvements are constructed. Existing condition for the project is depicted on the referenced Phase 1 Study *Figure 9: Interim Condition Basin Map* in Appendix C. In existing condition, the proposed roadway is rough graded to subgrade, and offsite flow generated to the west is conveyed through the site by existing COS washes. Flows generated onsite are discharged to three locations:

A) The existing 66-RCP stub located at Crossbridge Drive
B) The existing wash COS-1
C) The existing wash COS-3

B. PROPOSED CONDITION ANALYSIS

Interim condition for the project assumes that the proposed east half-street improvements are fully constructed, and the west half street remains rough graded with no pavement with the exception of the segments of roadway crossing the COS-washes. Offsite areas are consistent with existing condition and offsite flows do not enter the street. Flows are discharged to the same three locations as described in existing condition. Onsite flow rates for the developed street has been referenced from the Phase 1 Study ultimate condition. The referenced developed onsite basins ONA, ONB, AND ONC have been prorated to determine the specific flow rates within the street. A majority of flow within the landscaped area will be directed to the swales along the boundary of Village 24 constructed with Phase 1. The small portions of the landscaped areas that will flow into the street have been accounted for in the prorate calculations. The referenced Phase 1 study has accounted for the

flow generated in the fully developed condition, and therefore the proposed street improvements shall not negatively impact downstream facilities or properties. Refer to Figure 5: Proposed Condition Basin Map for a depiction of the proposed condition and flow rates.

C. ULTIMATE CONDITION ANALYSIS

Ultimate condition was previously addressed in the Phase 1 study; therefore an additional ultimate condition analysis is not required with this report. Refer to the referenced *Figure 10: Ultimate Condition Drainage Map* included in Appendix C. The ultimate condition assumes that the proposed site and adjacent parcels and roadways have been fully developed. Please note that the parcel layout shown on the referenced basin map for the development to the west is a conceptual layout created to estimate future development and subject to change based on the actual layouts determined by parcel builders.

III. STREET FLOW

A street hydraulic analysis has been provided to determine the normal depth and velocity of the anticipated storm flows within the proposed streets. As discussed previously, Phase 2 proposes to construct only east half street improvements. The results of the street flow analysis are summarized in Table 5. Refer to Figure 5 for the locations of the cross sections used in the analysis. Street hydraulic calculations are included in Appendix B.

PROPOSED CONDITION NORMAL DEPTH SUMMARY TABLE						
Section	**Q100 (cfs)**	**Slope**	**Velocity (ft/s)**	**Depth (ft)**	**V x D**	**Tributary Basins**
1	1.5	3.60%	3.34	0.25	0.84	(1/2) ONC-A
2	3	0.50%	1.75	0.39	0.68	(1/2) ONC-B
3	6	0.53%	2.10	0.47	0.99	(1/2) ONB-A
4	4	0.50%	1.86	0.42	0.78	(1/2) ONB-B
5	2	1.20%	2.25	0.31	0.70	(1/2) ONA-A

The product V x D has been calculated for each section to show that the flow within the drive aisles meets the Manual requirement. The manual requires the V x D to be less than 6 in the 10-year storm event and less than 8 in the 100-year storm event. The results show that the V x D requirements for both the 10-year and 100-year events have been met.

IV. STORM DRAIN FACILITIES

A. COS-1 AND COS-3 CULVERT CROSSINGS

The Phase 1 study addressed interim slope stabilization measures for the existing COS-1 and COS-3 washes crossing the rough graded roadway. Phase 2 of this project proposes to replace the interim riprap facilities with concrete culvert crossings and pavement. The concrete facilities will function during the ultimate condition, however interim condition (assuming upstream areas are undeveloped) present the

worst-case flow rates. The following table summarizes the proposed culvert facilities and their corresponding flow rates.

COS CULVERT CROSSING SUMMARY			
Culvert Location	**Facility Size**	**Q100-INT (cfs)**	**Q100-ULT (cfs)**
COS-1 WASH	(5) 5x5 RCBs	571	138
COS-3 WASH	(2) 5x5 RCBs	251	12

The culverts have been analyzed using HY-8, and calculations have been included in Appendix B. The hydraulic calculations demonstrate that the headwater depth meet manual criteria. In interim condition, the outlet velocities for the COS-1 culverts and COS-3 culverts are 15.25 fps and 10.86 fps, respectively. According to Figure 713 of the Manual, riprap is acceptable for use as outlet protection. Culvert outlet apron calculations based on the procedures outlined in the Manual Section 707.4 have been provided in Appendix B. Based on the provided calculations, a minimum 15-ft long riprap apron (D50=8" THK=16") should be provided for outlet protection.

B. DROP INLETS

Drop inlets are proposed along the length of the proposed roadway to intercept flows generated within the street. The proposed drop inlets tie into the existing 24-inch RCP lateral stubs constructed with Phase 1. Street normal depth calculations have been provided to determine Drop inlet calculations have been included in Appendix B.

V. CONCLUSIONS

The proposed *Summerlin West Village 24 Western Boundary Fire Access and 2nd Source Water* site has been designed to control storm water runoff for the 6-hour, 100-year floods as calculated in this study. This methodology used in this study is compliant with the Criteria established in the Manual. The proposed development does not adversely impact any proposed or existing CCRFCD MPU facilities. Flowrates shown in this study are very close to those developed in the previously approved in the Phase 1 Study. The proposed development does not significantly increase flow rates upstream or downstream of the project, therefore there are no adverse effects on upstream or downstream properties due to the proposed improvements.

REFERENCES

1. *Hydrologic Criteria and Drainage Design Manual*, Clark County Regional Flood Control District, 1999.

2. *Flood Insurance Rate Map*, Community Panel Number 32003C2150E, Clark County, Nevada and Incorporated Areas, effective date November 16, 2011, and is a digital duplication of the FIRM Map derived from the Clark County GIS database.

3. *CCRFCD Las Vegas Valley Flood Control Master Plan Update*, 2018.

4. *Technical Drainage Study for Summerlin Village 24 Western Boundary Grading and Drainage,* VTN Nevada, July 2018.

TECHNICAL DRAINAGE STUDY

FOR

SUMMERLIN WEST VILLAGE 24

WESTERN BOUNDARY FIRE ACCESS

AND SECOND SOURCE WATER

CITY OF LAS VEGAS, NEVADA

W.O. # 7851-MISC-5

Prepared for:
THE HOWARD HUGHES COMPANY, LLC
10801 WEST CHARLESTON BLVD, 3RD FLOOR
LAS VEGAS, NV 89135

Submitted to:
CITY OF LAS VEGAS
DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT SERVICES

PROVIDING QUALITY PROFESSIONAL SERVICE SINCE 1960

April 2, 2019
W.O. #7851

City of Las Vegas
333 North Rancho – 7th Floor
Las Vegas, NV 89106

Attention: Albert Sung, P.E.

SUBJECT: TECHNICAL DRAINAGE STUDY FOR SUMMERLIN WEST VILLAGE 24 WESTERN BOUNDARY FIRE ACCESS & 2ND SOURCE WATER

Mr. Albert Sung,

Transmitted herewith for your review is one (1) copy of the *Technical Drainage Study for Summerlin West Village 24 Western Boundary Fire Access and 2nd Source Water*. The site is rough graded roadway located within a portion of Section 33, Township 20 South, Range 59 East, M.D.M, Clark County, Nevada. If there are any questions concerning this study or if additional information is needed, please do not hesitate to contact this office.

Respectfully Submitted,

VTN Nevada

Joanna Y. Ayson, P.E.

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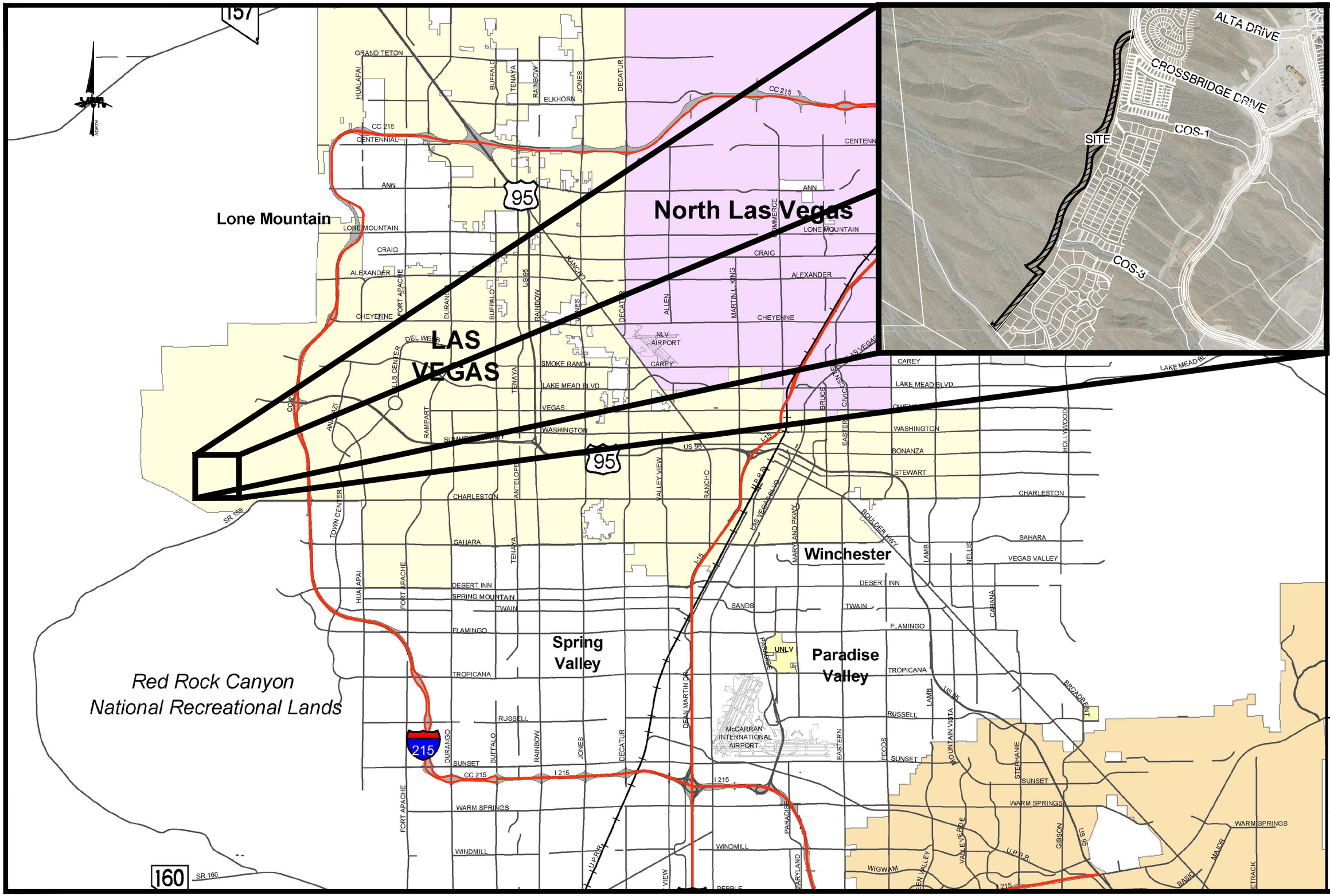
1) Street Normal Depth Calculations
2) HY-8 Calculations
3) Riprap Outlet Protection Calculations
4) Drop Inlet Calculations
5) Standard Form 6

APPENDIX D - REFERENCE INFORMATION

1) Summerlin Village 24 Western Boundary Grading and Drainage
    a. CLV Approval Letter
    b. Figure 9 – Interim Basin Map
    c. Figure 10 – Ultimate Basin Map
    d. Figure 11 – Facility Map

APPENDIX

APPENDIX A
FIGURES

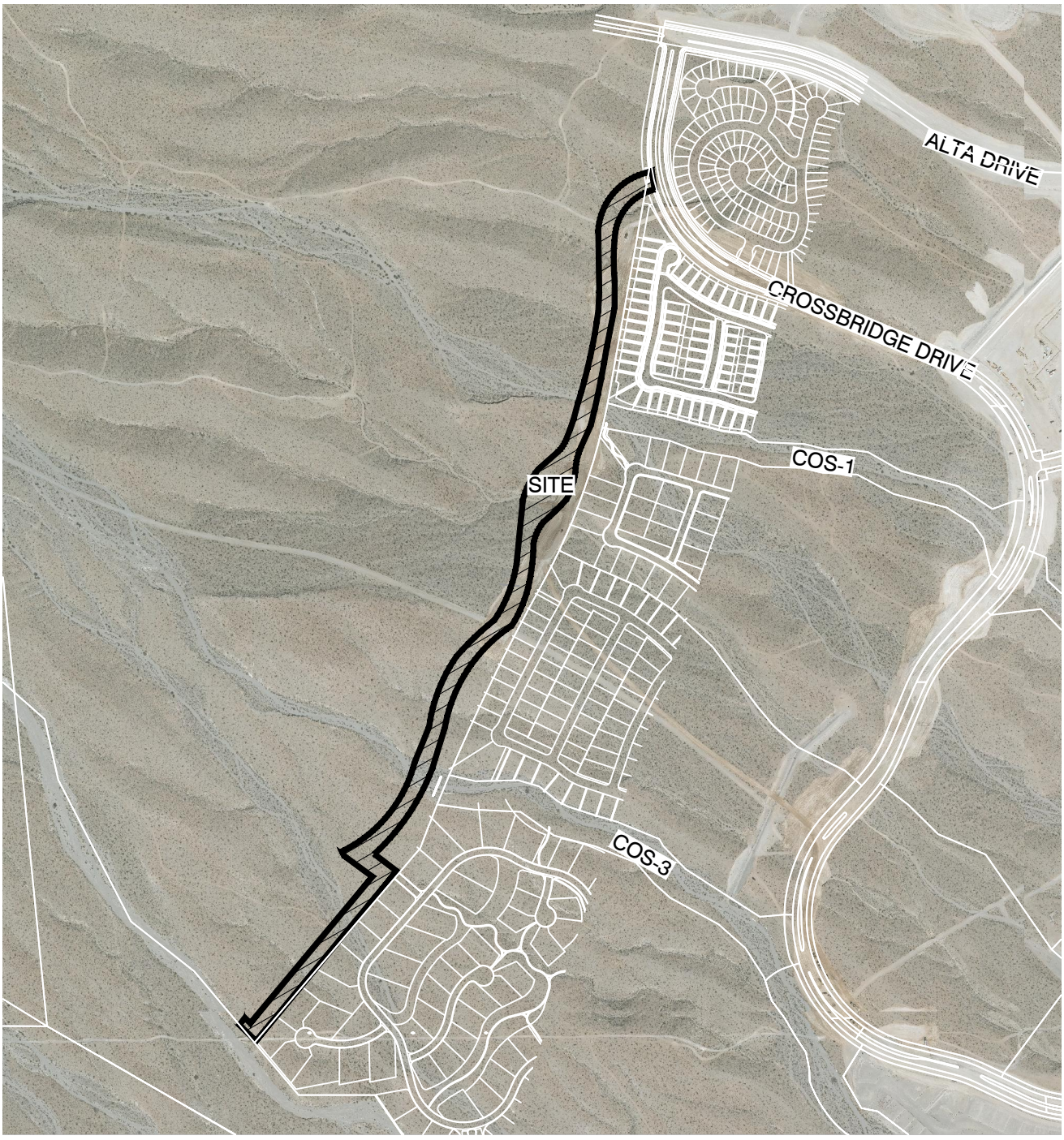


W.O.#:	7851
DATE:	MARCH 2019
BY:	RBR
SCALE:	N.T.S
SHEET	1 OF 1

FIGURE 1
VICINITY MAP
SUMMERLIN WEST VILLAGE 24
WESTERN BOUNDARY- PHASE 2

2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NV 89146-5148

H:\7851\Village 24 Collector-WATER\Drainage\Phase 2\A Figures\Fig 1 and 2.dwg;rachelr, Mar 26, 2019 - 9:57am



GRAPHIC SCALE

750 0 375 750 1500

1" = 750'

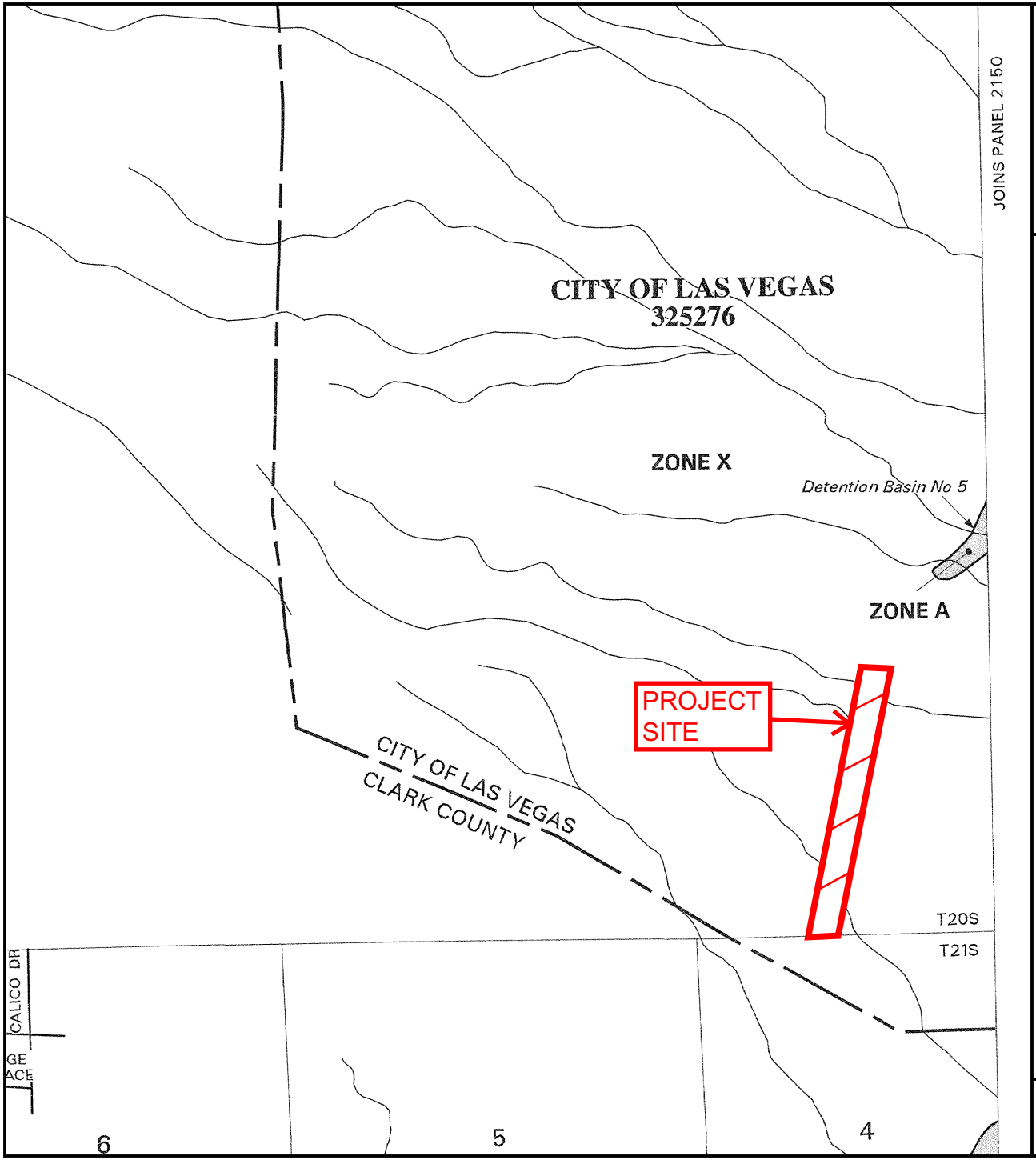
NORTH

2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NV 89146-5148

SUMMERLIN WEST VILLAGE 24
WESTERN BOUNDARY- PHASE 2

SITE DESCRIPTION MAP
FIGURE 2

SCALE	HORZ.	1"=750'
	VERT.	N/A
W.O. NO.		7851
DRAWN BY:		RBR
DATE:		MARCH 2019
SHEET 1 OF 1		



MAP SCALE 1" = 2000'

1000 0 2000 4000 FEET

NFIP NATIONAL FLOOD INSURANCE PROGRAM

PANEL 2125 E

FIRM

FLOOD INSURANCE RATE MAP

CLARK COUNTY, NEVADA AND INCORPORATED AREAS

PANEL 2125 OF 4090

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
LAS VEGAS, CITY OF	325276	2125	E
CLARK COUNTY, UNINCORPORATED AREAS	320003	2125	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER 32003C2125 E

MAP REVISED: SEPTEMBER 27, 2002

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

FIGURE 3

ID / Mile	Status	Facility Description	Length (ft.)	Flow (cfs)	HEC-1 Node	HEC-1 Model	Tributary Area (sq.mi.)	Channel Slope (%) **
APAD		ANGEL PARK - ALTA DRIVE BRANCH						
0000	E	2: 12' X 8' RCB	945	2801	CSWAA-3	GOW4A	8,22	6.00
0018	E	10' X 8' RCB	1392	2801	CSWAA-3	GOW4A	8,22	4,53
0044	E	11' X 8' RCAP	1565	2801	CSWAA-3	GOW4A	8,22	4,24
0073	E	11' X 8' RCAP	2232	2629	CSWAA-2	GOW3A	7,63	3,50
0115	E	10' X 8' RCB	1600	2629	CSWAA-2	GOW3A	7,63	2,20
0146	E	10' X 8' RCB	3057	2200	CSWAA-1	GOW3A	6,95	4,40
0203	E	2: 7' X 5,5' RCB	1104	2200	CSWAA-1	GOW3A	6,95	5,28
0225	E	2: 7' X 5,5' RCB OUTLET	360	2137	SUM5DB	GOW3A	6,73	3,40
APBE		ANGEL PARK - BELTWAY BRANCH						
0000	E	3: 12' X 8' RCB	712	3366	CCSWFH15	GOW3A	3,39	0,82
0013	E	3: 12' X 8' RCB	489	3366	CCSWFH15	GOW3A	3,39	6,50
0022	E	CONC CHNL 20'W 7'D 2:1 SS	1556	3366	CCSWFH15	GOW3A	3,39	1,81
APCB		ANGEL PARK - CHARLESTON BLVD BRANCH						
0000	E	2: 10' X 6' RCB	833	1364	CSW18	GOW3A	1.37	1.54
0001	E	12' X 6' RCB	1000	1364	CSW18	GOW3A	1,37	3,13
0019	E	11' X 6' RCB	1616	999	CSW17	GOW3A	0,96	1,39
0050	E	8' X 7' RCB	757	999	CSW17	GOW3A	0,96	1,00
0064	E	8' X 7' RCB	849	999	CSW17	GOW3A	0,96	2,08
0080	E	7' X 7' RCB	1489	623	SW11	GOW3A	0,61	1,67
APD2		ANGEL PARK - DESERT FOOTHILLS 2 BRANCH						
0000	E	7' X 7' RCB	207	674	SWAA-2	GOW3A	0,68	2,29
0002	E	7' X 6' RCB	883	674	SWAA-2	GOW3A	0,68	1,08
APD3		ANGEL PARK - DESERT FOOTHILLS 3 BRANCH						
0000	E	7' X 7' RCB	1090	623	SW11	GOW3A	0,61	1,67
0021	E	7' X 7' RCB	750	623	SW11	GOW3A	0,61	2,75
APM5		DETENTION BASIN #5						
0000	E	384 AC-FT DETENTION BASIN #5		6856	SUM5IN	GOW3A	6,73	
0001	E	12,153 CFS PMF SPILLWAY		12153	SUM5IN	GOW3A	6,73	
0009	P0	CONC CHNL 50'W 4'D 2:1 SS	4180	3495	CDB55-7	GOW3A	2,60	5,80
APMD		ANGEL PARK - MIDDLE BRANCH						
0195	E	TRANSITION STRUCTURE	145	5058	C11A-1*	GOW4A	11,81	3,59
0198	E	CONC CHNL 62'-68'W 5,5'-7,5'D 2:1 SS	500	5058	C11A-1*	GOW4A	11,81	3,59
0208	E	CONC CHNL 62'-68'W 6,5'-7,5'D 2:1 SS	550	5058	C11A-1*	GOW4A	11,81	2,81
0218	E	CONC CHNL 66'-69'W 6,5'-7,0'D 2:1 SS	500	5058	C11A-1*	GOW4A	11,81	2,00
0227	E	TRANSITION STRUCTURE	134	5058	C11A-1*	GOW4A	11,81	2,00
0230	E	3: 12' X 8' RCBC @ PAVILION CENTER DR	133	5058	C11A-1	GOW4A	11,81	2,00
0233	E	TRANSITION STRUCTURE	207	5058	C11A-1	GOW4A	11,81	4,00
0237	E	CONC CHNL 76' W 6,5'-9,0'D 2:1 SS	516	5058	C11A-1	GOW4A	11,81	4,00
0247	E	3: 12' X 8' RCBC @ ACCESS RD	52	5058	C11A-1	GOW4A	11,81	4,00
0248	E	TRANSITION STRUCTURE	128	5058	C11A-1	GOW4A	11,81	4,00
0253	E	CONC CHNL 76'W 6,5'D 2:1 SS	283	5058	C11A-1	GOW4A	11,81	4,00
0258	E	TRANSITION STRUCTURE	100	4929	CCSWAA-3	GOW4A	11,60	0,82
APSO		ANGEL PARK - SOUTH BRANCH						
0258	E	NATURAL WASH	3235	1736	C12A	GOW3A	1,76	1,36
0345	E	2: 8' X 8' RCBC @ PAVILION CENTER	120	1364	CSW18	GOW3A	1,37	2,00
0346	E	NATURAL WASH	880	1364	CSW18	GOW3A	1,37	1,40
RRBW		RED ROCK CHANNEL - BELTWAY LATERAL						
0000	E	6' X 6' RCB	1300	500	USACE	USACE	0,51	0,67
RRWA		RED ROCK CHANNEL						
0436	E	CONC CHNL 14'W 8'D 0:1 SS	800	2300	USACE	USACE	2,19	3,15
0440	E	CONC CHNL 10'W 7,5'D 2:1 SS	2660	2300	USACE	USACE	2,19	2,14
0490	E	CONC CHNL 13'W 10'D 0:1 SS	200	2300	USACE	USACE	2,19	1,00
0500	E	13' X 10' RCBC @ DESERT INN	190	1900	USACE	USACE	2,19	1,00
0502	E	CONC CHNL 10'W 7'D 2:1 SS	1580	1900	USACE	USACE	1,73	2,60
0534	E	CONC CHNL 16'W 7'D 0:1 SS	400	1500	USACE	USACE	1,73	1,24
0541	E	CONC CHNL 10'W 7'D 2:1 SS	2120	1500	USACE	USACE	1,04	0,80
0581	E	13' X 9' RCB	1040	1000	USACE	USACE	0,70	0,60
0606	E	10' X 9' RCB	320	750	USACE	USACE	0,70	0,60
0607	E	10' X 9' RCB	450	750	USACE	USACE	0,70	0,60
0608	E	96" RCP	4110	460	USACE	USACE	0,70	0,55
0692	E	96" CIPCP	170	180	USACE	USACE	0,19	1,40

ID / Mile	Status	Facility Description	Length (ft.)	Flow (cfs)	HEC-1 Node	HEC-1 Model	Tributary Area (sq.mi.)	Channel Slope (%) **
RRWA		RED ROCK CHANNEL						
0695	E	96" RCP	300	180	USACE	USACE	0.19	0.50
0701	E	72" RCP	125	180	USACE	USACE	0,19	0,50
0709	E	RIPRAP CHNL 10'W 6'D 2:1 SS	930	180	USACE	USACE	0,19	0,80
0714	E	2,25' X 2,25' RCBC OUTLET	445	180	USACE	USACE	54,73	
0715	E	110,000 CFS PMF SPILLWAY		110000	USACE	USACE	54,73	
0716	E	2,007 AC-FT RED ROCK DETENTION BASIN		12800	USACE	USACE	54,73	
0777	E	2 SPAN BRIDGE 200'W 17'D @ SR 159	50	1922	CRD3	FLAM3A	1,23	2,50

*The HEC-1 node shown identifies the controlling concentration point for the associated facility and is located upstream of this facility due to decreasing peak flow with increasing tributary area caused by storm distribution transitions, depth area reduction factors, or attenuation of flow from routing.
**As-built or design slopes were used when available. All other slopes are based on existing topography. The user should verify the facility slope listed prior to performing any facility specific analysis.
^ For parallel facilities, the existing facility flow equals its normal depth capacity, and the proposed parallel facility flow equals the remaining flow (i.e. HEC-1 Node flow = existing facility normal depth capacity + proposed parallel facility flow).
USACE - Refer to "Las Vegas Wash & Tributaries (Tropicana and Flamingo Washes) Hydrologic Basis for Design" prepared by U.S. Army Corps of Engineers, Los Angeles District, June 1993. See Figure W-6 for USACE Boundary.

REGIONAL FLOOD CONTROL DISTRICT

2018 LAS VEGAS VALLEY FLOOD CONTROL MASTER PLAN UPDATE

FACILITY INVENTORY FIGURE F-27

LEGEND

ID (Facility Identifier) AABB
Parent Stream Name
Stream Name
Mile 0000
Distance Above Confluence with Parent Stream (Miles)
Miles in Hundredths

Existing Facility.....E
Proposed or Modified Facility.....P
Contingency Level
Category A.....P
Category B.....P0

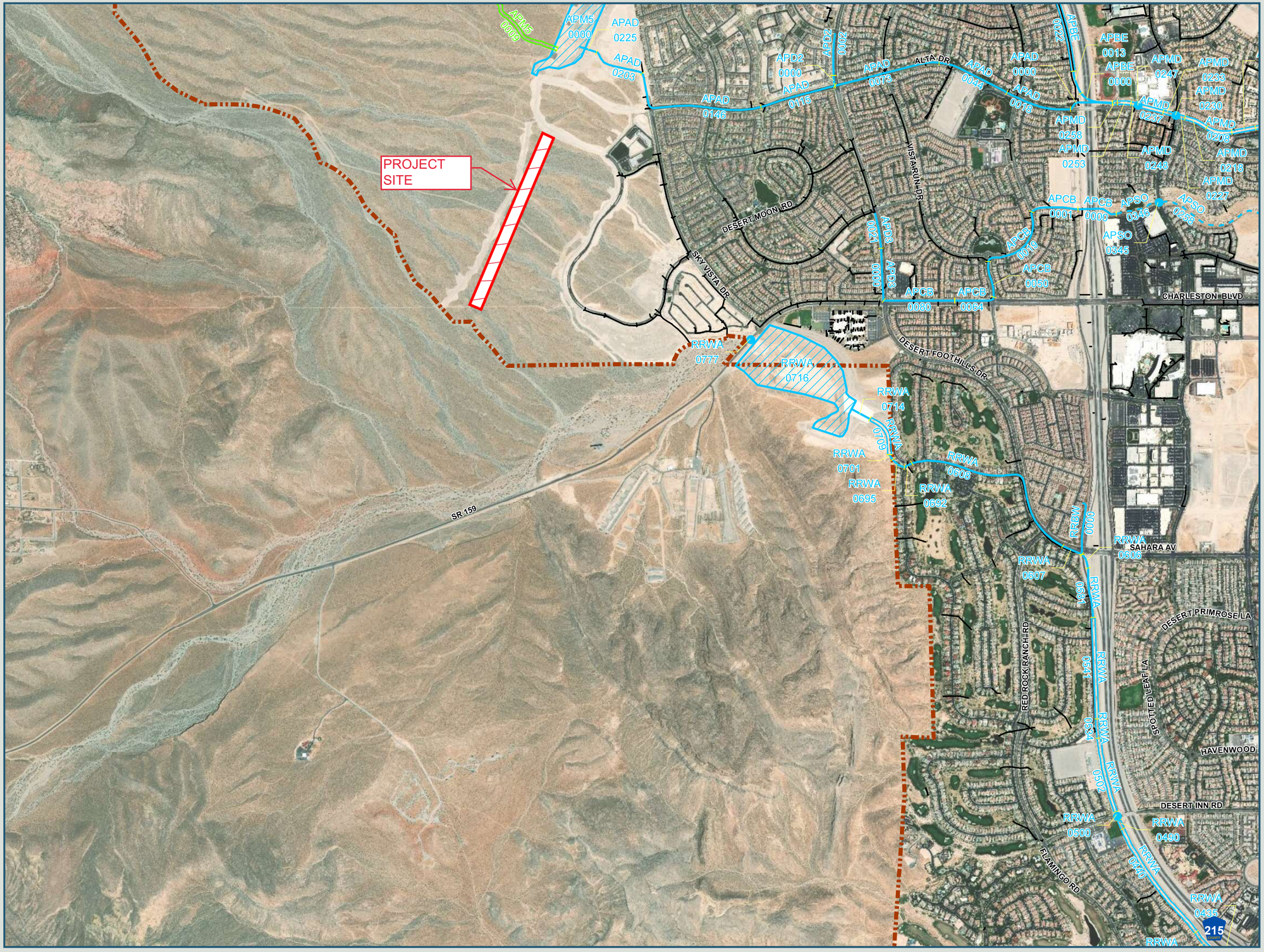
Bottom Width.....W
Depth.....D
Side Slope, H:V.....SS

Construction Features

Cast in Place Concrete Pipe	CIPCP	Reinforced Concrete Arch Culvert	RCAC
Corrugated Metal Arch Pipe Culvert	CMAP	Reinforced Concrete Box	RCB
Corrugated Metal Pipe Culvert	CMPC	Reinforced Concrete Box Culvert	RCBC
High Density Polyethylene	HDPE	Reinforced Concrete Pipe	RCP
Horizontal Elliptical Reinforced Concrete Pipe	HERCP	Reinforced Concrete Pipe Culvert	RCPC
Reinforced Concrete Arch Pipe	RCAP	Storm Sewer Pipe	SSP

ATKINS
Member of the SNC-Lavalin Group
Louis Berger

FIGURE 4A



REGIONAL FLOOD CONTROL DISTRICT

2018
LAS VEGAS VALLEY
FLOOD CONTROL
MASTER PLAN UPDATE

FIGURE F-27
FLOOD CONTROL FACILITIES

LEGEND

- Ultimate Development Boundary
- Existing Facilities
- Category A Proposed Facilities
- Category B Proposed Facilities
- Local Existing Facilities
- Detention Basin
- Culvert or Bridge Crossing
- Stormdrain
- Lined Channel
- Unlined Channel
- Levee/Dike
- Natural Wash/Floodway
- ID-Mile Separator

Remove & Replace/Parallel Facilities

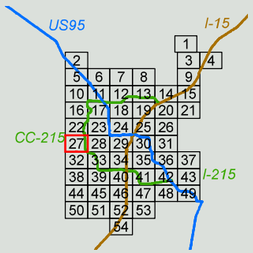
Category A	Category B
Channel	Channel
Stormdrain	Stormdrain
Crossing	Crossing

N

0 500 1,000 2,000 3,000
Feet

Scale: 1 inch = 2,000 feet

AerialSource:Esri World Imagery 2017



ATKINS
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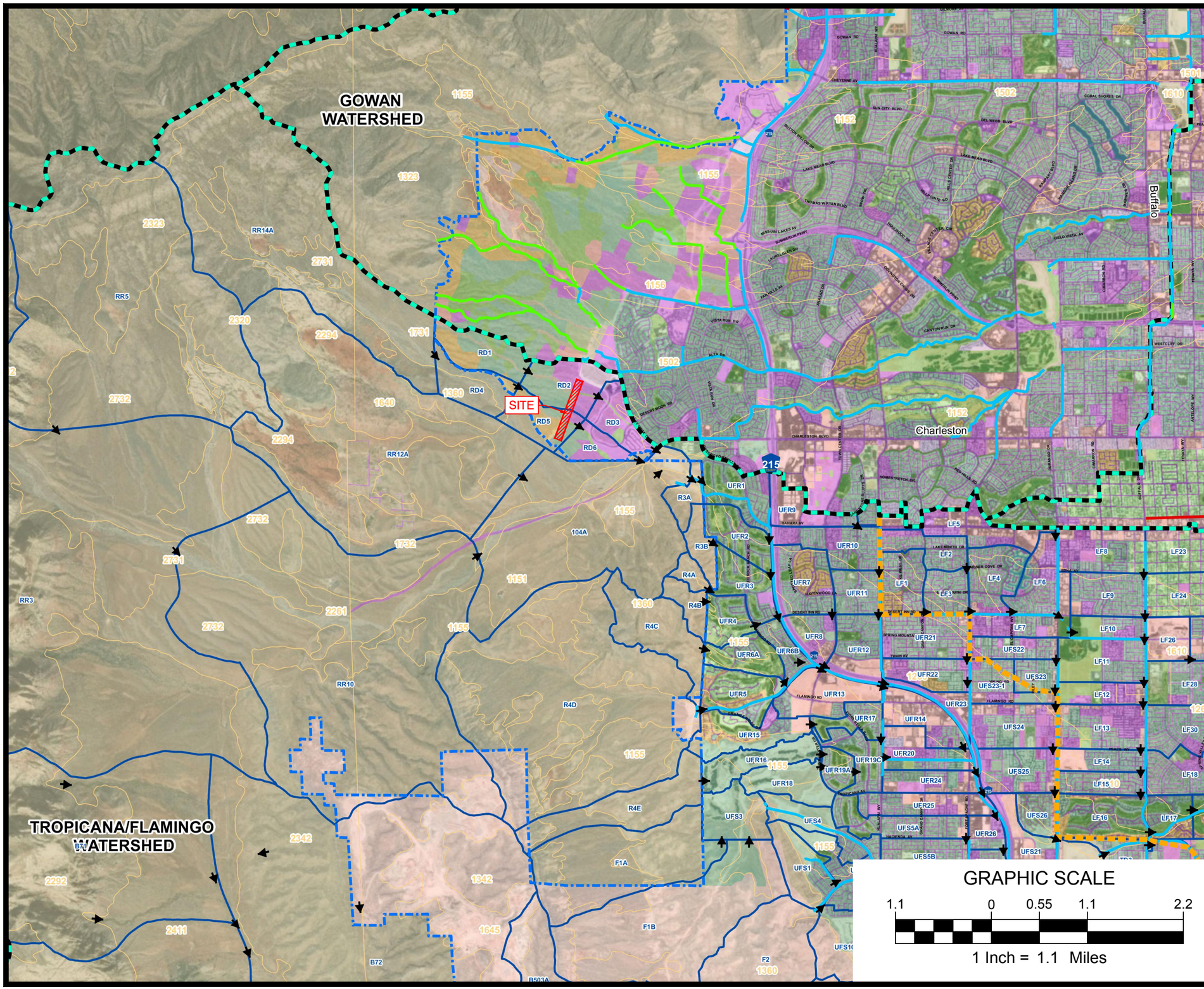
Louis Berger

FIGURE 4A



REGIONAL FLOOD CONTROL DISTRICT

2018 Las Vegas Valley Master Plan Update

Figure W-6
Flamingo/Tropicana Watershed

Legend

- Flow Arrows
- NodeID flow(cfs) Concentration Points
- Existing Facilities
- Category A Proposed Facilities
- Category B Proposed Facilities
- USACE Boundary*
- Ultimate Development Boundary
- Watershed
- BasinID Subbasins
- MUSYM Soils
- 1: Undeveloped Land, Open desert
- 2: Parks, Golf Courses
- 3: Rural, 0.5-1 units per acre (uses 1 unit/acre)
- 4: Low-Density Residential, 1-2 units per acre (uses 2 units/acre)
- 5: Medium-Density Residential, 2-4 units per acre (uses 3 units/acre)
- 6: High-Density Residential, 4-8 units per acre (uses 6 units/acre)
- 7: Public Facility and Residential, 8-12 units/acre
- 8: Very High-Density Residential, 12 units/acre or more
- 9: Commercial, Retail, Casino, High Rise Condominiums
- 10: Light Industrial
- 11: Heavy Industrial
- 12: Schools
- 13: Lakes

1 Range
2 Upper Northern Las Vegas Wash
3 Lower Northern Las Vegas Wash
4 Gowan
5 Central
6 Flamingo/Tropicana
7 Duck Creek/Blue Diamond
8 Pittman
9 C-1
10 Lower Las Vegas Wash
11 Apex

N

W.O.#: 7851
DATE: MAY 2019
BY:
SCALE:
SHEET OF

SUMMERLIN WEST VILLAGE
WESTERN BOUNDARY - PHASE 2
TRUNCATED W-6 FLAMINGO/ TROPICANA WATERSHED
CCRFCD 2018 MPU

2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NV 89146-5148

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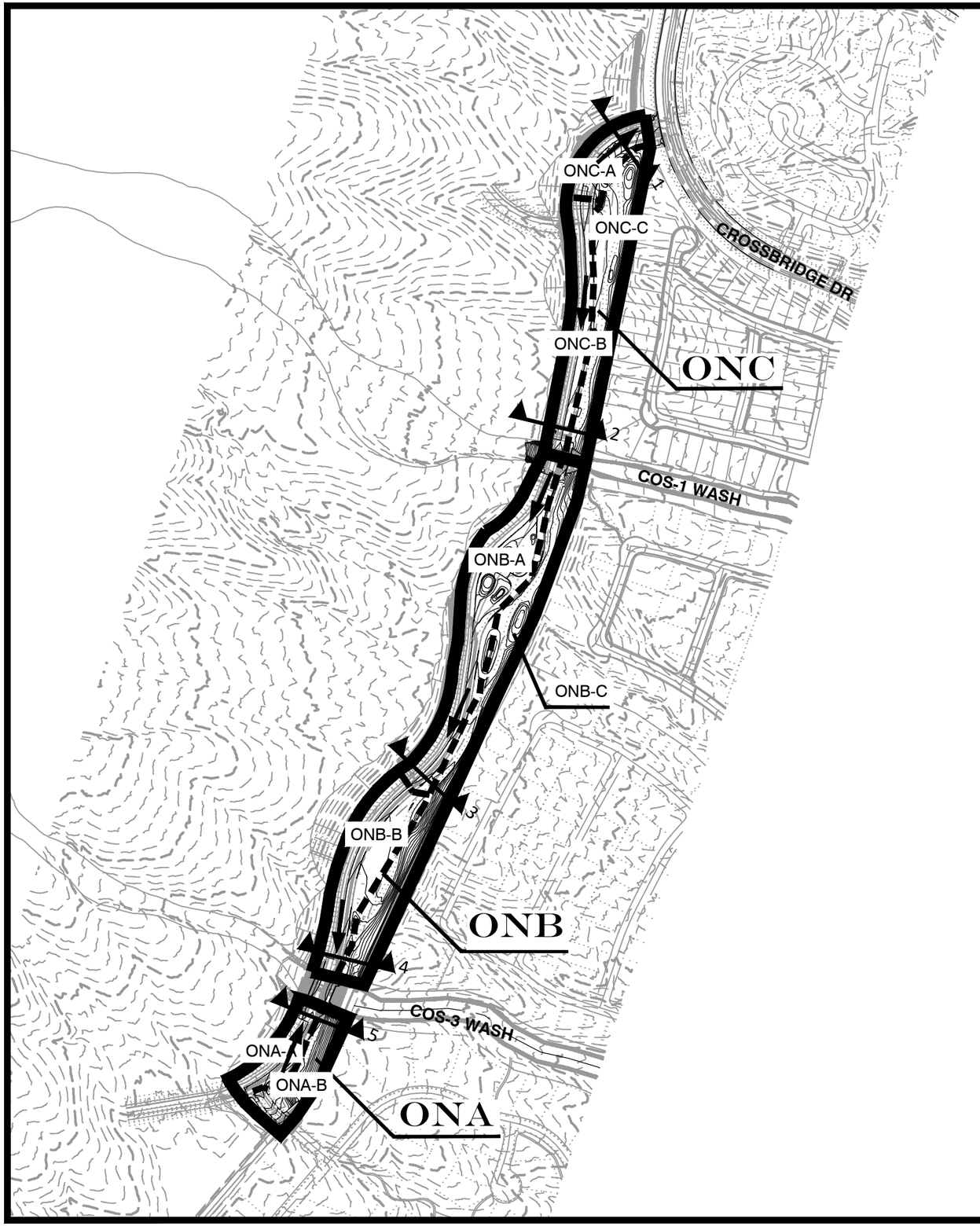


LEGEND

ON1 SUBBASIN DESIGNATION

ON1 BASIN DESIGNATION

BASIN BOUNDARY

STREET SECTION

FLOW DIRECTION

NORTH

GRAPHIC SCALE

400 0 200 400 800

1" = 400'

PRORATED SUBBASIN SUMMARY
ULTIMATE CONDITION

BASIN	BASIN AREA		Q100
ONA	1.98		8
ONB	9.02		32
ONC	4.66		17
SUBBASIN	**SUBBASIN AREA**	**% OF BASIN**	**Q100**
ONA-A	0.87	43.9%	4
ONA-B	1.11	56.1%	4
TOTAL	**1.98**	**100.0%**	**8**
ONB-A	3.32	36.8%	12
ONB-B	2.16	23.9%	8
ONB-C	3.54	39.3%	12
TOTAL	**9.02**	**100.0%**	**32**
ONC-A	0.86	18.5%	3
ONC-B	1.60	34.3%	6
ONC-C	2.20	47.2%	8
TOTAL	**4.66**	**100.0%**	**9**

PROPOSED CONDITION NORMAL DEPTH SUMMARY TABLE

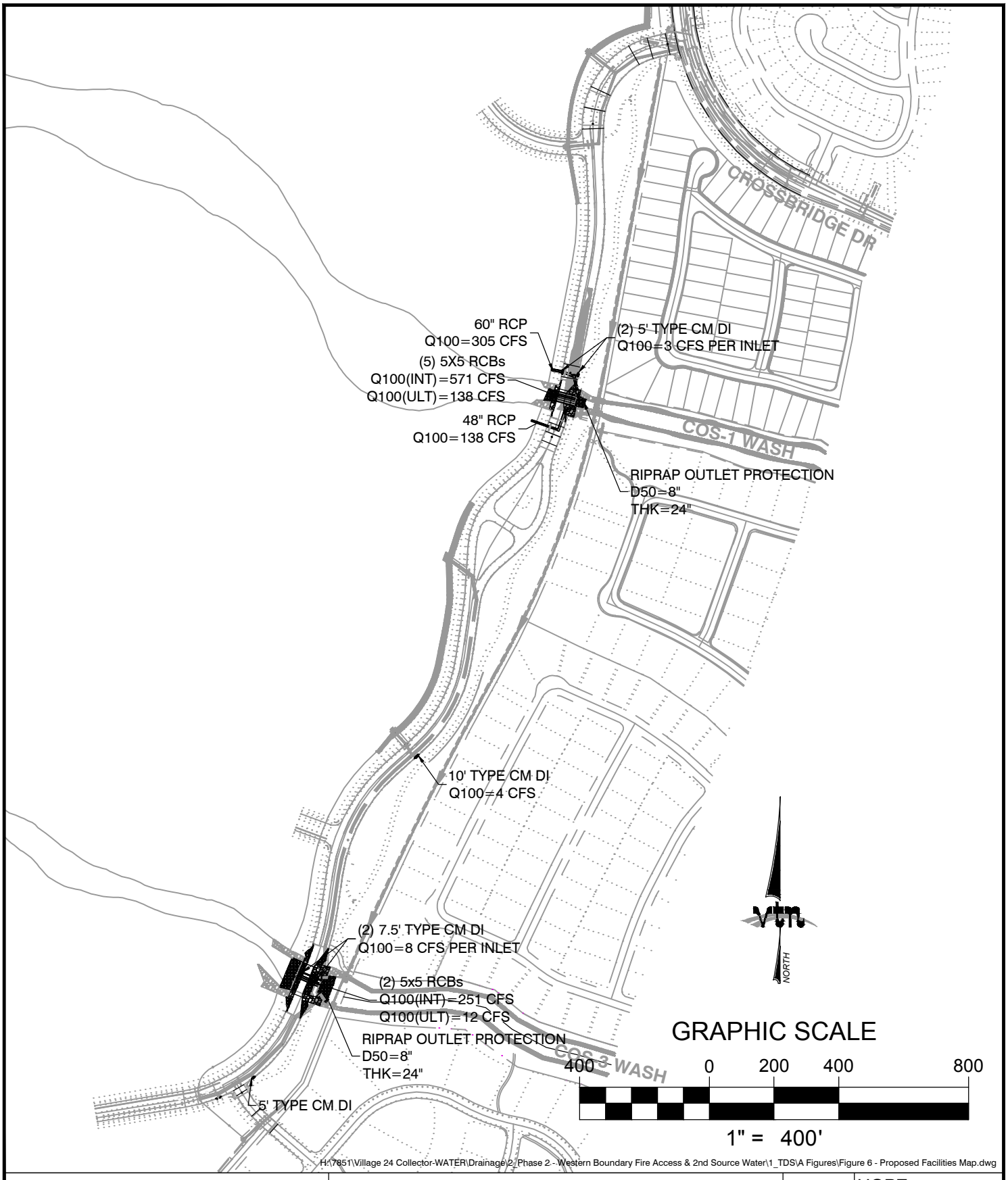
Section	Q100 (cfs)	Slope	Velocity (ft/s)	Depth (ft)	V x D	Tributary Basins
1	1.5	3.60%	3.34	0.25	0.84	(1/2)ONC-A
2	3	0.50%	1.75	0.39	0.68	(1/2)ONC-B
3	6	0.53%	2.10	0.47	0.99	(1/2)ONB-A
4	6	0.50%	2.05	0.47	0.96	(1/2)ONB-B + 2cfs bypass
5	2	1.20%	2.25	0.31	0.70	(1/2)ONA-A

W.O.#: 7851-MISC-5
DATE: 03/2019
BY: JYA
SCALE:
SHEET 1 OF 1

FIGURE 5: PROPOSED ONSITE DRAINAGE MAP

2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NV 89146-5148

H:\7851\Village 24 Collector-WATER\Drainage\2_Phase 2 - Western Boundary Fire Access & 2nd Source Water\1_TDSA Figures\Figure 5 - Proposed Condition.dwg jayson; May 15, 2019 - 5:19pm



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2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NV 89146-5148

FIGURE 6:
PROPOSED FACILITIES MAP

SUMMERLIN VILLAGE 24 WESTERN BOUNDARY FIRE ACCESS & SECOND SOURCE WATER

SCALE	HORZ.
	VERT. **N/A**
W.O. NO.	**7851-MISC-5**
DRAWN BY:	**JYA**
DATE:	**03/2019**
SHEET	**1** OF **1**

APPENDIX B
HYDRAULIC CALCULATIONS

STREET NORMAL DEPTH CALCULATIONS

Worksheet for Section 1 Half Street

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.03600	ft/ft
Discharge	1.50	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	0.79
0+31.17	0.17
0+31.17	0.13
0+32.67	0.00
0+32.67	0.50
0+33.17	0.50

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 0.79)	(0+31.17, 0.13)	0.016
(0+31.17, 0.13)	(0+33.17, 0.50)	0.013

Options

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

Results

Normal Depth	0.25	ft
Elevation Range	0.00 to 0.79 ft	
Flow Area	0.45	ft²
Wetted Perimeter	5.91	ft
Hydraulic Radius	0.08	ft
Top Width	5.61	ft

Worksheet for Section 1 Half Street

Results

Normal Depth		0.25	ft
Critical Depth		0.31	ft
Critical Slope		0.00764	ft/ft
Velocity		3.34	ft/s
Velocity Head		0.17	ft
Specific Energy		0.43	ft
Froude Number		2.08	
Flow Type	Supercritical		

GVF Input Data

Downstream Depth		0.00	ft
Length		0.00	ft
Number Of Steps		0	

GVF Output Data

Upstream Depth		0.00	ft
Profile Description			
Profile Headloss		0.00	ft
Downstream Velocity		Infinity	ft/s
Upstream Velocity		Infinity	ft/s
Normal Depth		0.25	ft
Critical Depth		0.31	ft
Channel Slope		0.03600	ft/ft
Critical Slope		0.00764	ft/ft

Cross Section for Section 1 Half Street

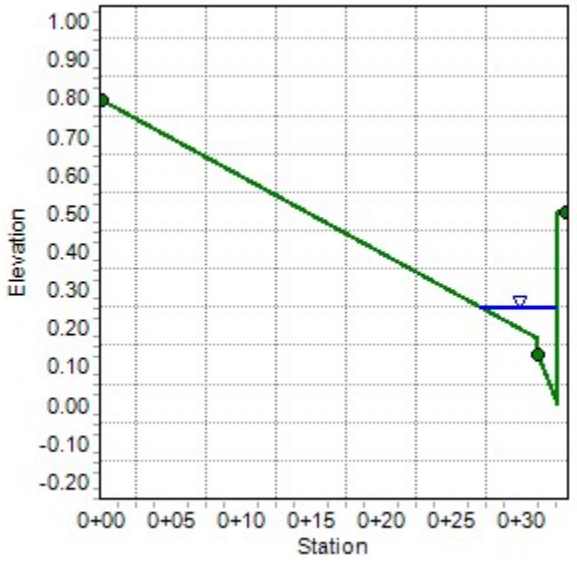
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.03600	ft/ft
Normal Depth	0.25	ft
Discharge	1.50	ft³/s

Cross Section Image



Worksheet for Section 2 Half Street

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00500	ft/ft
Discharge	3.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	0.63
0+23.00	0.17
0+23.00	0.13
0+24.50	0.00
0+24.50	0.50
0+25.00	0.50

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 0.63)	(0+23.00, 0.13)	0.016
(0+23.00, 0.13)	(0+25.00, 0.50)	0.013

Options

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

Results

Normal Depth	0.39	ft
Elevation Range	0.00 to 0.63 ft	
Flow Area	1.72	ft²
Wetted Perimeter	13.02	ft
Hydraulic Radius	0.13	ft
Top Width	12.58	ft

Worksheet for Section 2 Half Street

Results

Normal Depth		0.39	ft
Critical Depth		0.37	ft
Critical Slope		0.00738	ft/ft
Velocity		1.75	ft/s
Velocity Head		0.05	ft
Specific Energy		0.44	ft
Froude Number		0.83	
Flow Type	Subcritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.39	ft
Critical Depth	0.37	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.00738	ft/ft

Cross Section for Section 2 Half Street

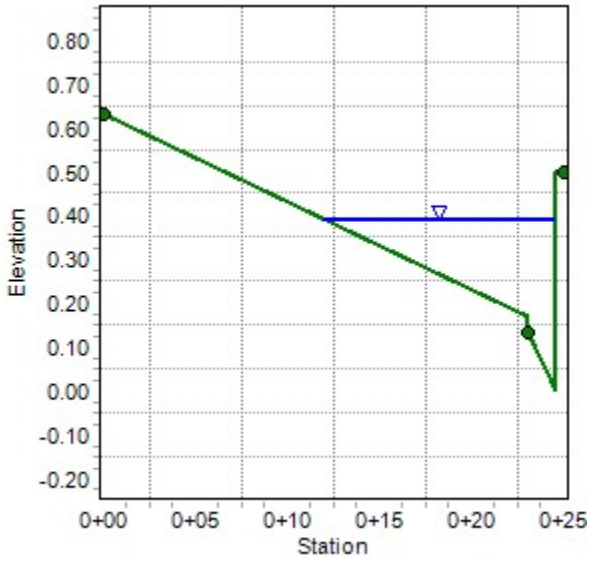
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00500	ft/ft
Normal Depth	0.39	ft
Discharge	3.00	ft³/s

Cross Section Image



Worksheet for Section 3 Half Street

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00530	ft/ft
Discharge	6.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	0.63
0+23.00	0.17
0+23.00	0.13
0+24.50	0.00
0+24.50	0.50
0+25.00	0.50

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 0.63)	(0+23.00, 0.13)	0.016
(0+23.00, 0.13)	(0+25.00, 0.50)	0.013

Options

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

Results

Normal Depth	0.47	ft
Elevation Range	0.00 to 0.63 ft	
Flow Area	2.85	ft²
Wetted Perimeter	17.01	ft
Hydraulic Radius	0.17	ft
Top Width	16.49	ft

Worksheet for Section 3 Half Street

Results

Normal Depth		0.47	ft
Critical Depth		0.45	ft
Critical Slope		0.00680	ft/ft
Velocity		2.10	ft/s
Velocity Head		0.07	ft
Specific Energy		0.54	ft
Froude Number		0.89	
Flow Type	Subcritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.47	ft
Critical Depth	0.45	ft
Channel Slope	0.00530	ft/ft
Critical Slope	0.00680	ft/ft

Cross Section for Section 3 Half Street

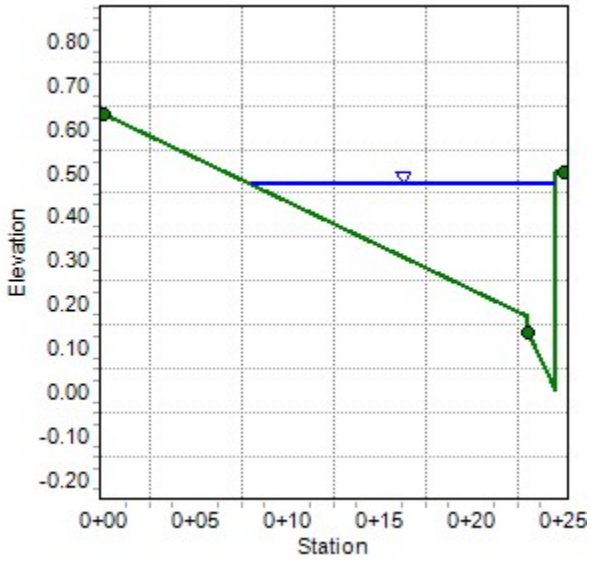
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00530	ft/ft
Normal Depth	0.47	ft
Discharge	6.00	ft³/s

Cross Section Image



Worksheet for Section 4 Half Street

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00500	ft/ft
Discharge	6.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	0.63
0+23.00	0.17
0+23.00	0.13
0+24.50	0.00
0+24.50	0.50
0+25.00	0.50

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 0.63)	(0+23.00, 0.13)	0.016
(0+23.00, 0.13)	(0+25.00, 0.50)	0.013

Options

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

Results

Normal Depth	0.47	ft
Elevation Range	0.00 to 0.63 ft	
Flow Area	2.92	ft²
Wetted Perimeter	17.23	ft
Hydraulic Radius	0.17	ft
Top Width	16.70	ft

Worksheet for Section 4 Half Street

Results

Normal Depth		0.47	ft
Critical Depth		0.45	ft
Critical Slope		0.00681	ft/ft
Velocity		2.05	ft/s
Velocity Head		0.07	ft
Specific Energy		0.54	ft
Froude Number		0.86	
Flow Type	Subcritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.47	ft
Critical Depth	0.45	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.00681	ft/ft

Cross Section for Section 4 Half Street

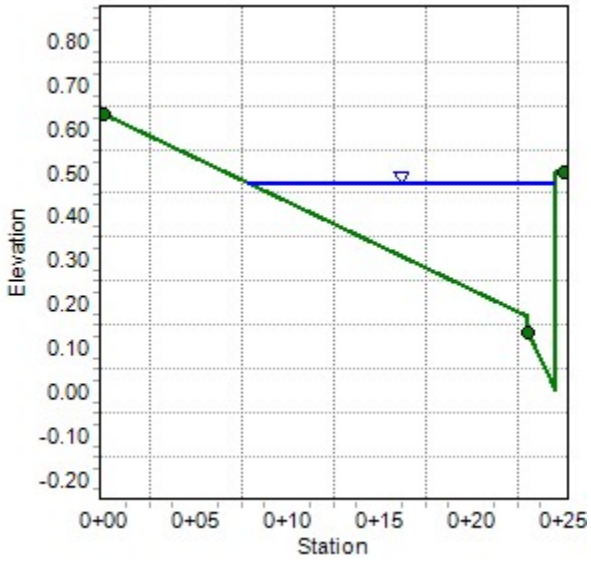
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00500	ft/ft
Normal Depth	0.47	ft
Discharge	6.00	ft³/s

Cross Section Image



Worksheet for Section 5 Half Street

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.01200	ft/ft
Discharge	2.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	0.63
0+23.00	0.17
0+23.00	0.13
0+24.50	0.00
0+24.50	0.50
0+25.00	0.50

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 0.63)	(0+23.00, 0.13)	0.016
(0+23.00, 0.13)	(0+25.00, 0.50)	0.013

Options

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

Results

Normal Depth	0.31	ft
Elevation Range	0.00 to 0.63 ft	
Flow Area	0.89	ft²
Wetted Perimeter	9.05	ft
Hydraulic Radius	0.10	ft
Top Width	8.69	ft

Worksheet for Section 5 Half Street

Results

Normal Depth		0.31	ft
Critical Depth		0.33	ft
Critical Slope		0.00763	ft/ft
Velocity		2.25	ft/s
Velocity Head		0.08	ft
Specific Energy		0.39	ft
Froude Number		1.24	
Flow Type	Supercritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.31	ft
Critical Depth	0.33	ft
Channel Slope	0.01200	ft/ft
Critical Slope	0.00763	ft/ft

Cross Section for Section 5 Half Street

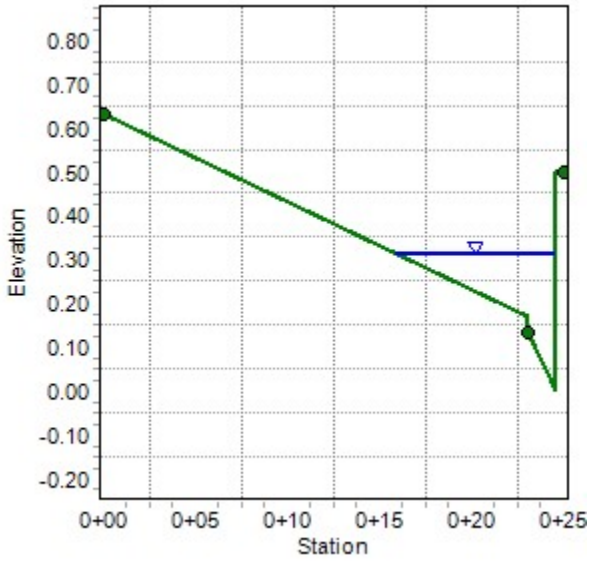
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.01200	ft/ft
Normal Depth	0.31	ft
Discharge	2.00	ft³/s

Cross Section Image



HY-8 CALCULATIONS

HY-8 Culvert Analysis Report

Crossing Discharge Data

Discharge Selection Method: Specify Minimum, Design, and Maximum Flow

Minimum Flow: 0 cfs

Design Flow: 571 cfs

Maximum Flow: 571 cfs

Table 1 - Summary of Culvert Flows at Crossing: Crossing 1

Headwater Elevation (ft)	Total Discharge (cfs)	(5) 5x5-COS-1 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
3561.83	0.00	0.00	0.00	1
3562.74	57.10	57.10	0.00	1
3563.28	114.20	114.20	0.00	1
3563.73	171.30	171.30	0.00	1
3564.13	228.40	228.40	0.00	1
3564.49	285.50	285.50	0.00	1
3564.83	342.60	342.60	0.00	1
3565.16	399.70	399.70	0.00	1
3565.46	456.80	456.80	0.00	1
3565.76	513.90	513.90	0.00	1
3566.05	571.00	571.00	0.00	1
3568.00	961.33	961.33	0.00	Overtopping

Rating Curve Plot for Crossing: Crossing 1

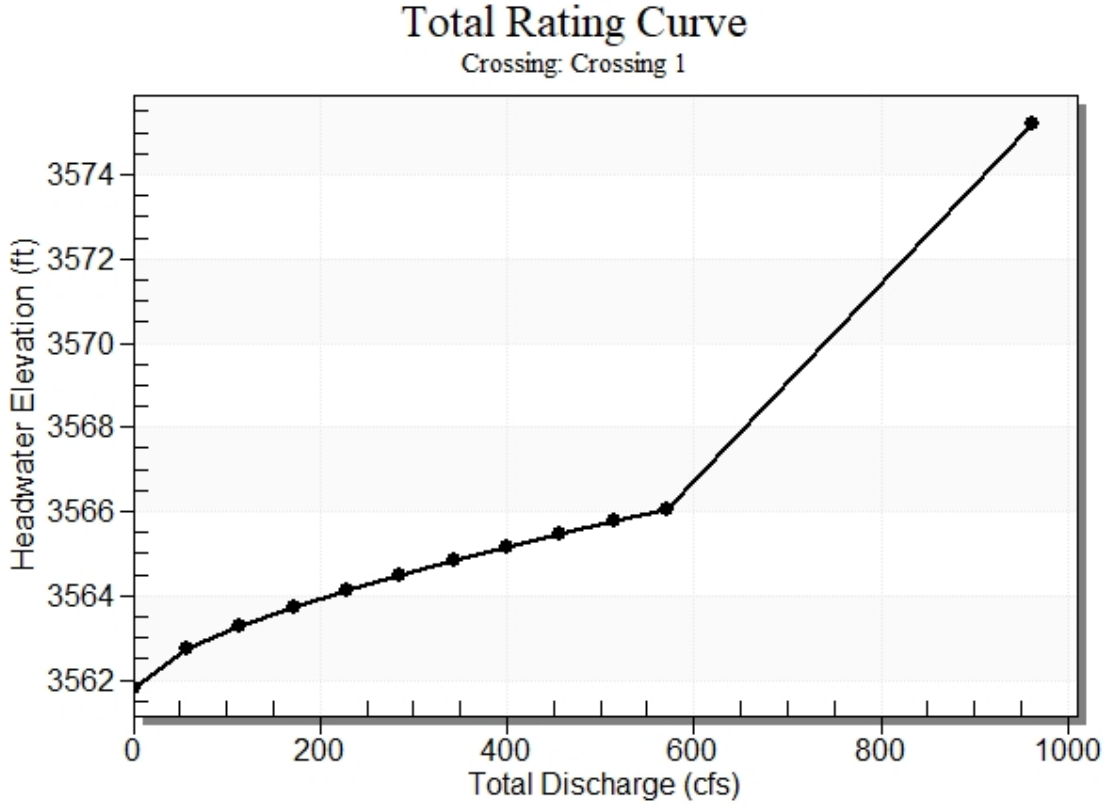


Table 2 - Culvert Summary Table: (5) 5x5-COS-1

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.00	0.00	3561.83	0.000	0.000	0-NF	0.000	0.000	0.000	0.000	0.000	0.000
57.10	57.10	3562.74	0.913	0.0*	1-S2n	0.319	0.545	0.319	0.682	7.170	3.488
114.20	114.20	3563.28	1.449	0.0*	1-S2n	0.500	0.865	0.524	1.046	8.710	4.550
171.30	171.30	3563.73	1.898	0.0*	1-S2n	0.651	1.134	0.686	1.346	9.991	5.303
228.40	228.40	3564.13	2.299	0.0*	1-S2n	0.787	1.374	0.850	1.612	10.743	5.903
285.50	285.50	3564.49	2.667	0.157	1-S2n	0.914	1.594	0.993	1.856	11.500	6.408
342.60	342.60	3564.83	3.007	0.451	1-S2n	1.034	1.800	1.140	2.084	12.023	6.849
399.70	399.70	3565.16	3.328	0.745	1-S2n	1.150	1.995	1.279	2.300	12.502	7.240
456.80	456.80	3565.46	3.635	1.042	1-S2n	1.261	2.181	1.414	2.506	12.924	7.594
513.90	513.90	3565.76	3.931	1.342	1-S2n	1.368	2.359	1.545	2.705	13.301	7.917
571.00	571.00	3566.05	4.218	1.648	1-S2n	1.474	2.530	1.674	2.896	13.646	8.215

* Full Flow Headwater elevation is below inlet invert.

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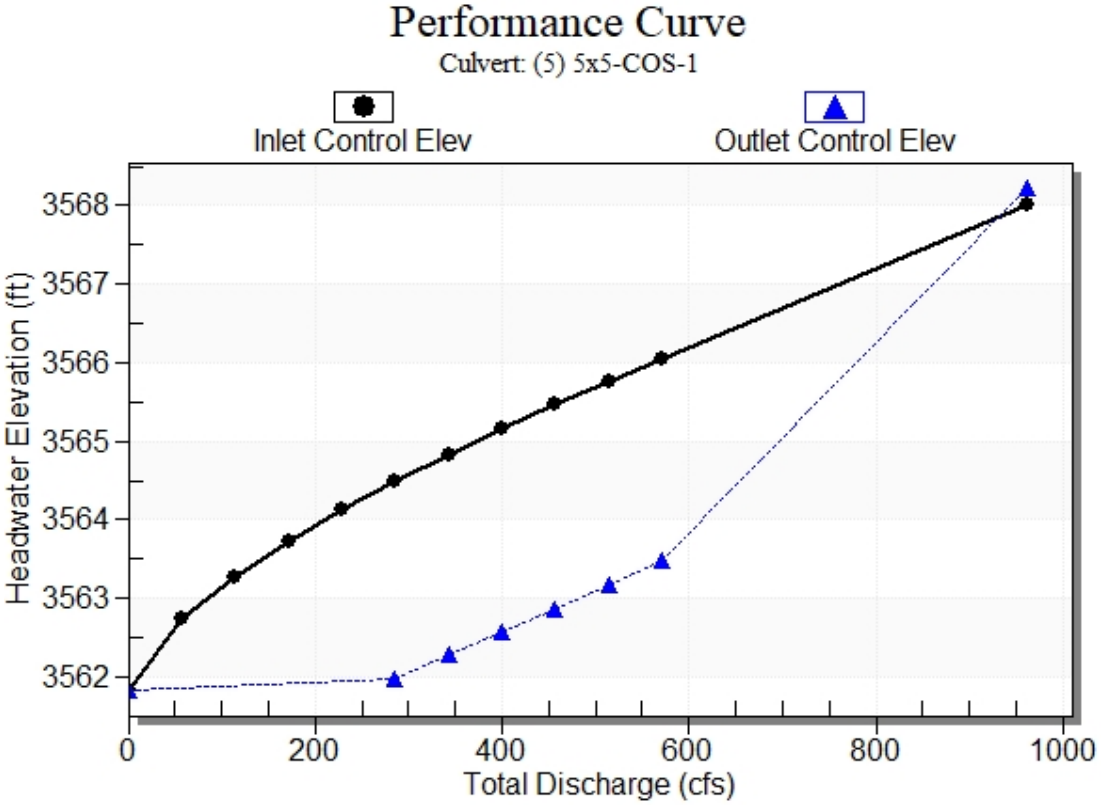
Straight Culvert

Inlet Elevation (invert): 3561.83 ft, Outlet Elevation (invert): 3559.98 ft

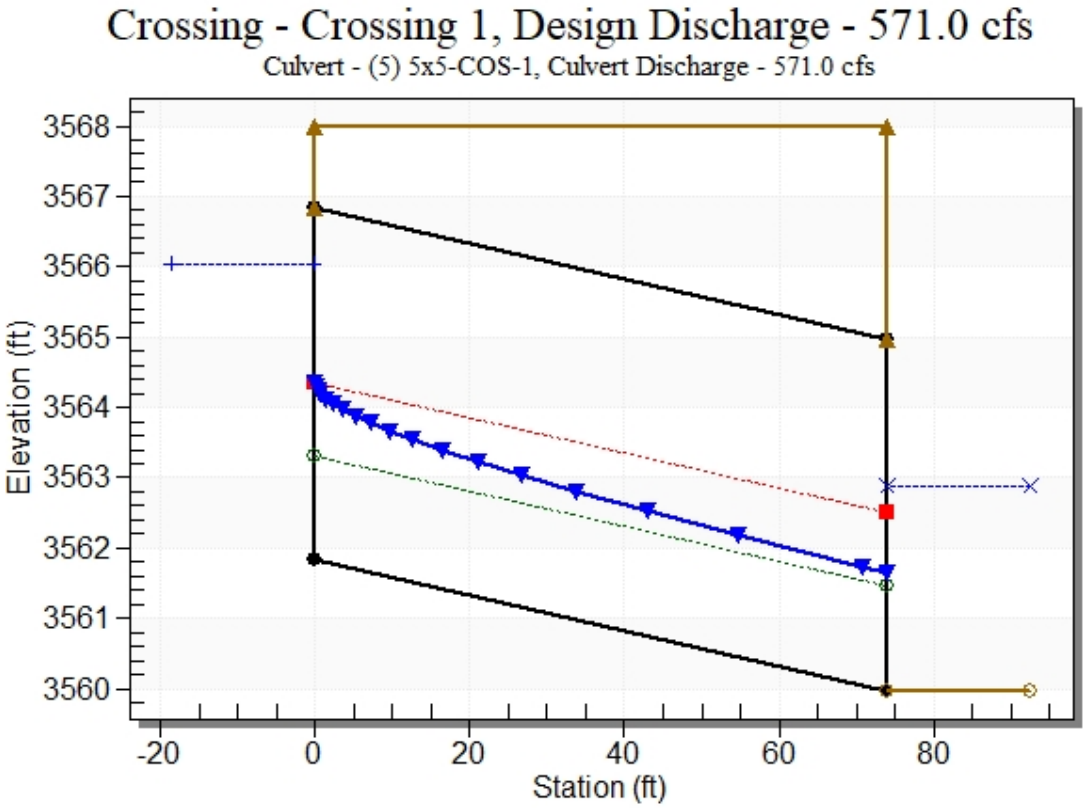
Culvert Length: 73.95 ft, Culvert Slope: 0.0250

****

Culvert Performance Curve Plot: (5) 5x5-COS-1



Water Surface Profile Plot for Culvert: (5) 5x5-COS-1



Site Data - (5) 5x5-COS-1

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 3561.83 ft

Outlet Station: 73.93 ft

Outlet Elevation: 3559.98 ft

Number of Barrels: 5

Culvert Data Summary - (5) 5x5-COS-1

Barrel Shape: Concrete Box

Barrel Span: 5.00 ft

Barrel Rise: 5.00 ft

Barrel Material: Concrete

Embedment: 0.00 in

Barrel Manning's n: 0.0150

Culvert Type: Straight

Inlet Configuration: Square Edge (90º) Headwall

Inlet Depression: None

Table 3 - Downstream Channel Rating Curve (Crossing: Crossing 1)

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
0.00	3559.98	0.00	0.00	0.00	0.00
57.10	3560.66	0.68	3.49	0.85	0.74
114.20	3561.02	1.05	4.55	1.31	0.78
171.30	3561.32	1.35	5.30	1.68	0.81
228.40	3561.59	1.61	5.90	2.01	0.82
285.50	3561.83	1.86	6.41	2.32	0.83
342.60	3562.06	2.08	6.85	2.60	0.84
399.70	3562.28	2.30	7.24	2.87	0.84
456.80	3562.48	2.51	7.59	3.13	0.85
513.90	3562.68	2.70	7.92	3.38	0.85
571.00	3562.87	2.90	8.21	3.61	0.85

Tailwater Channel Data - Crossing 1

Tailwater Channel Option: Rectangular Channel

Bottom Width: 24.00 ft

Channel Slope: 0.0200

Channel Manning's n: 0.0450

Channel Invert Elevation: 3559.98 ft

Roadway Data for Crossing: Crossing 1

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 10.00 ft

Crest Elevation: 3568.00 ft

Roadway Surface: Paved

Roadway Top Width: 73.93 ft

HY-8 Culvert Analysis Report

Crossing Discharge Data

Discharge Selection Method: Specify Minimum, Design, and Maximum Flow

Minimum Flow: 0 cfs

Design Flow: 251 cfs

Maximum Flow: 251 cfs

Table 1 - Summary of Culvert Flows at Crossing: Crossing 2

Headwater Elevation (ft)	Total Discharge (cfs)	(2) 5x5 COS-3 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
3554.24	0.00	0.00	0.00	1
3555.22	25.10	25.10	0.00	1
3555.80	50.20	50.20	0.00	1
3556.28	75.30	75.30	0.00	1
3556.72	100.40	100.40	0.00	1
3557.10	125.50	125.50	0.00	1
3557.47	150.60	150.60	0.00	1
3557.81	175.70	175.70	0.00	1
3558.14	200.80	200.80	0.00	1
3558.45	225.90	225.90	0.00	1
3558.77	251.00	251.00	0.00	1
3560.00	350.74	350.74	0.00	Overtopping

Rating Curve Plot for Crossing: Crossing 2

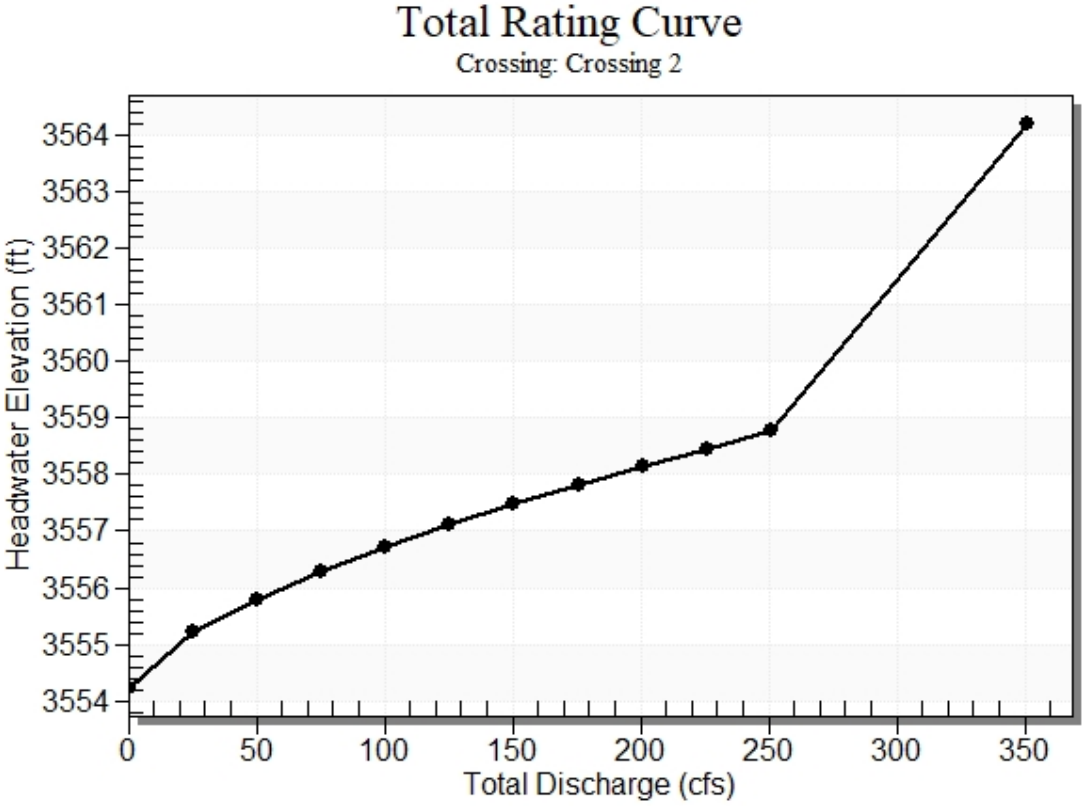


Table 2 - Culvert Summary Table: (2) 5x5 COS-3

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.00	0.00	3554.24	0.000	0.000	0-NF	0.000	0.000	0.000	0.000	0.000	0.000
25.10	25.10	3555.22	0.983	0.0*	1-S2n	0.412	0.581	0.412	0.263	6.089	1.906
50.20	50.20	3555.80	1.561	0.0*	1-S2n	0.647	0.922	0.672	0.400	7.470	2.510
75.30	75.30	3556.28	2.045	0.256	1-S2n	0.846	1.208	0.887	0.511	8.489	2.946
100.40	100.40	3556.72	2.477	0.562	1-S2n	1.028	1.463	1.085	0.608	9.255	3.300
125.50	125.50	3557.10	2.866	0.862	1-S2n	1.198	1.698	1.279	0.697	9.813	3.603
150.60	150.60	3557.47	3.228	1.162	1-S2n	1.360	1.917	1.457	0.778	10.335	3.871
175.70	175.70	3557.81	3.571	1.464	1-S2n	1.516	2.124	1.627	0.855	10.802	4.112
200.80	200.80	3558.14	3.898	1.771	1-S2n	1.668	2.322	1.799	0.927	11.162	4.333
225.90	225.90	3558.45	4.216	2.084	1-S2n	1.815	2.512	1.960	0.996	11.527	4.537
251.00	251.00	3558.77	4.526	2.406	1-S2n	1.959	2.695	2.122	1.062	11.826	4.727

* Full Flow Headwater elevation is below inlet invert.

****

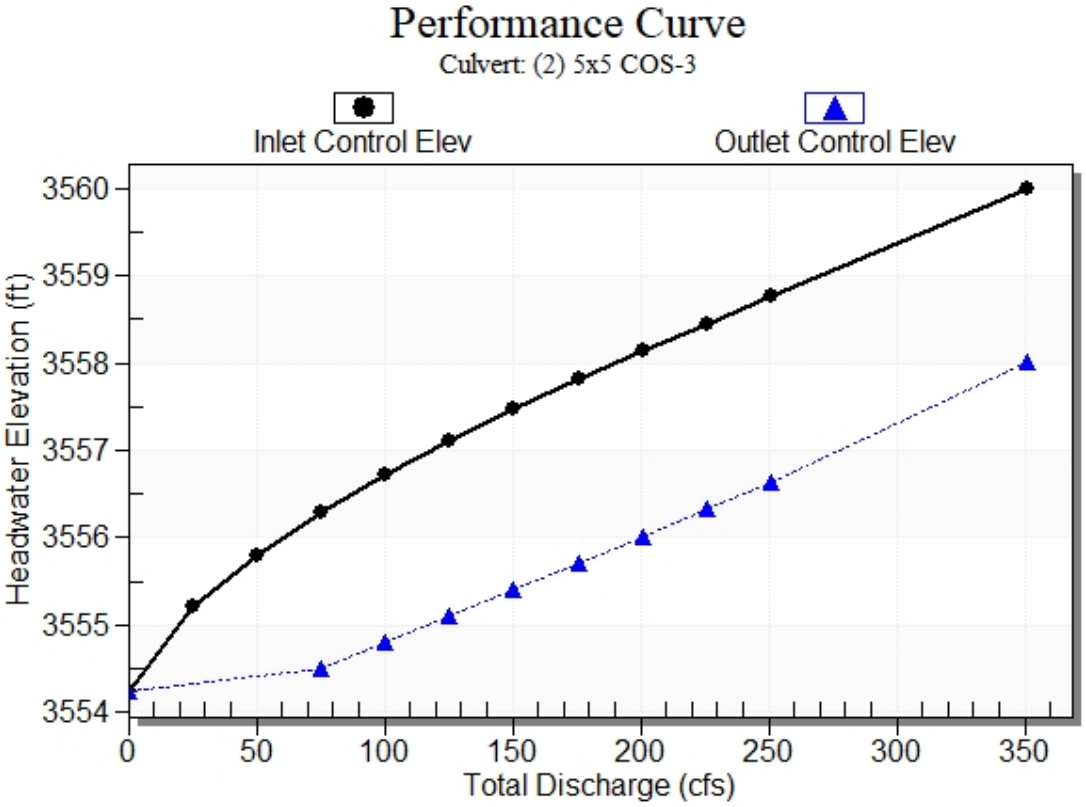
Straight Culvert

Inlet Elevation (invert): 3554.24 ft, Outlet Elevation (invert): 3553.22 ft

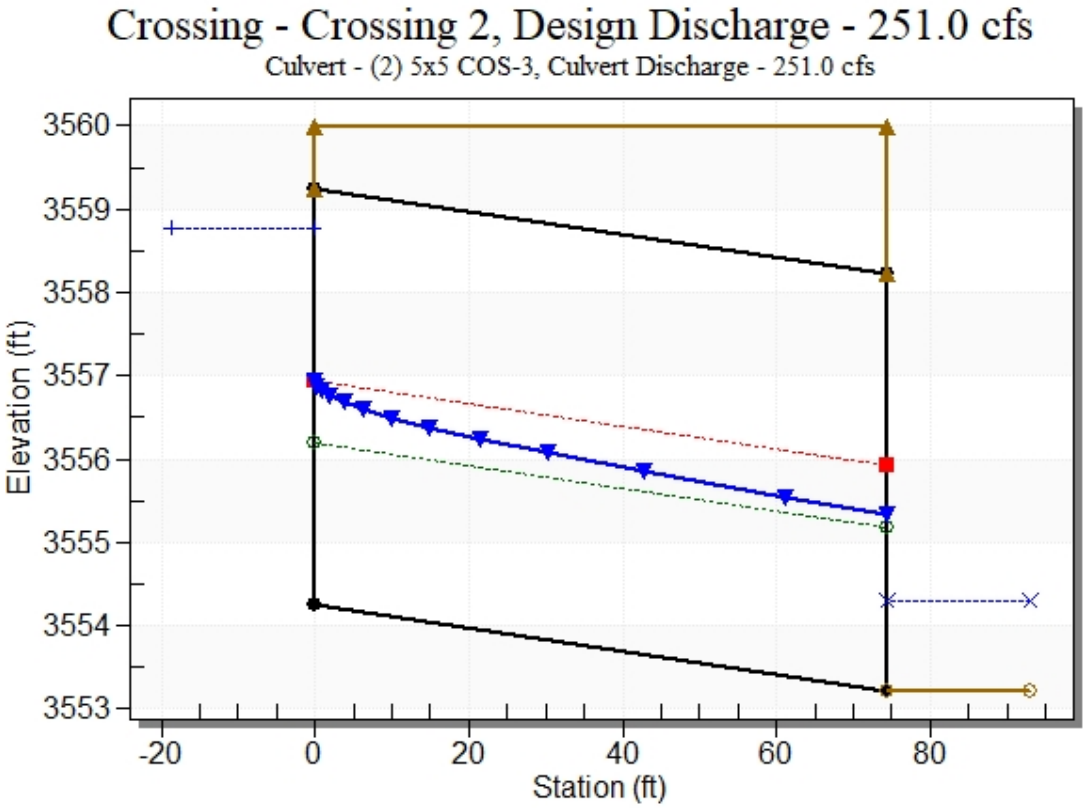
Culvert Length: 74.36 ft, Culvert Slope: 0.0137

****

Culvert Performance Curve Plot: (2) 5x5 COS-3



Water Surface Profile Plot for Culvert: (2) 5x5 COS-3



Site Data - (2) 5x5 COS-3

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 3554.24 ft

Outlet Station: 74.35 ft

Outlet Elevation: 3553.22 ft

Number of Barrels: 2

Culvert Data Summary - (2) 5x5 COS-3

Barrel Shape: Concrete Box

Barrel Span: 5.00 ft

Barrel Rise: 5.00 ft

Barrel Material: Concrete

Embedment: 0.00 in

Barrel Manning's n: 0.0150

Culvert Type: Straight

Inlet Configuration: Square Edge (90º) Headwall

Inlet Depression: None

Table 3 - Downstream Channel Rating Curve (Crossing: Crossing 2)

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
0.00	3553.22	0.00	0.00	0.00	0.00
25.10	3553.49	0.26	1.91	0.33	0.65
50.20	3553.62	0.40	2.51	0.50	0.70
75.30	3553.73	0.51	2.95	0.64	0.73
100.40	3553.83	0.61	3.30	0.76	0.75
125.50	3553.92	0.70	3.60	0.87	0.76
150.60	3554.00	0.78	3.87	0.97	0.77
175.70	3554.08	0.85	4.11	1.07	0.78
200.80	3554.15	0.93	4.33	1.16	0.79
225.90	3554.22	1.00	4.54	1.24	0.80
251.00	3554.28	1.06	4.73	1.33	0.81

Tailwater Channel Data - Crossing 2

Tailwater Channel Option: Rectangular Channel

Bottom Width: 50.00 ft

Channel Slope: 0.0200

Channel Manning's n: 0.0450

Channel Invert Elevation: 3553.22 ft

Roadway Data for Crossing: Crossing 2

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 10.00 ft

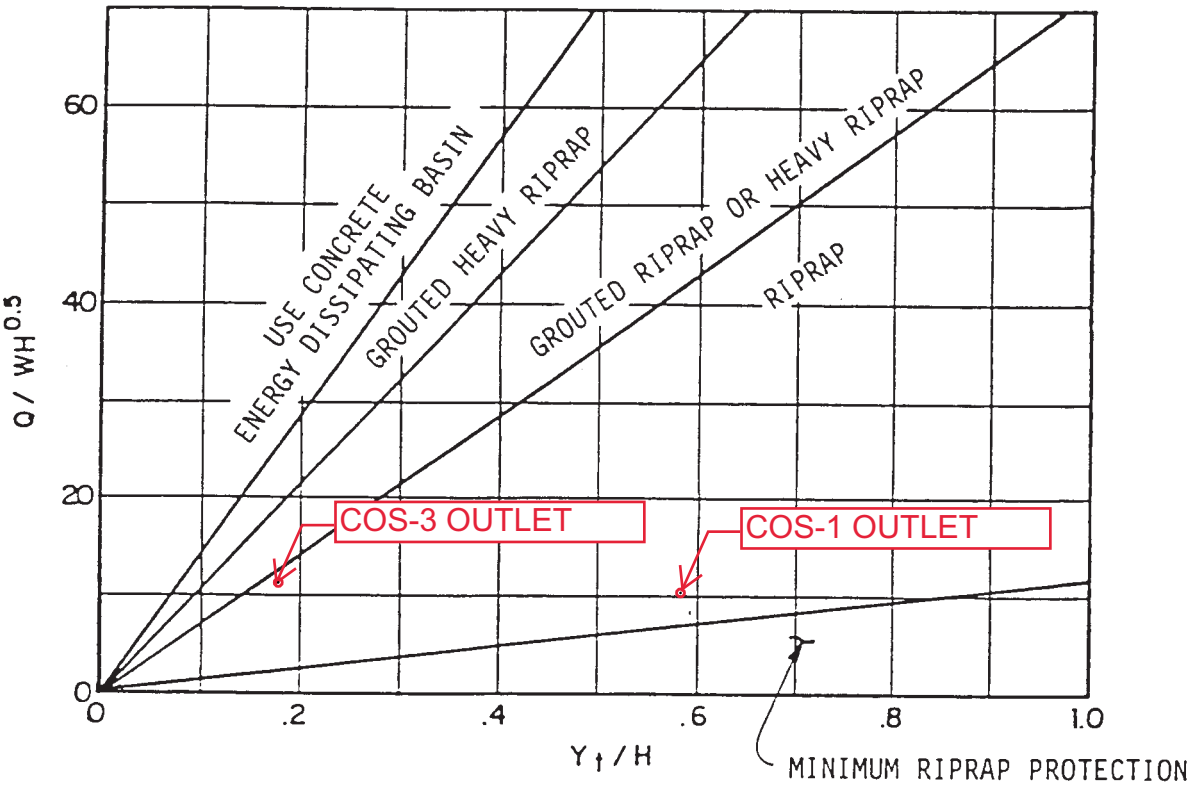
Crest Elevation: 3560.00 ft

Roadway Surface: Paved

Roadway Top Width: 74.35 ft

RIPRAP CALCULATIONS

RIPRAP EROSION PROTECTION AT RECTANGULAR CONDUIT OUTLET



Notes:

1. Use H_a instead of H whenever culvert has supercritical flow in the barrel.
2. Minimum Riprap Protection: Use Riprap for a distance of 3H downstream for 18" to 36" equivalent round pipe size and 4D downstream for 42" and larger equivalent round pipe size.

COS-1 (5) 5'x5' RCBs:
Yt/H = 2.9/5 = 0.58
Q/WH^0.5 = 571/25*5^0.5 = 10.21

COS-3 (2) 5'x5' RCBs:
Yt/H = 0.86/5 = 0.172
Q/WH^0.5 = 251/10*5^0.5 = 11.23

Revision	Date

WRC ENGINEERING

REFERENCE:
USDCM, DRCOG, March 1969 (with modifications)

FIGURE 713

VILLAGE 24 WESTERN BOUNDARY FIRE ACCESS & SECOND SOURCE WATER

RCB Culvert Outlet Apron Calculations

Based on procedures outlined in the CCRFCD HCDDM, Section 707.4

FACILITY NAME	FACILITY SIZE	Q100 DESIGN @ FACILITY	W Total	H	D Outlet	V Outlet	Fr	Fr Check	Q/WH1.5	Q/WH1.5 Check	Yt	Yn	Ha	D50 min (For Q/WH1.5<4)	D50 min (For Q/WH1.5>4)	D50 min	D50 Design	Allowable D/S Velocity	At	Θ	L Calculated	Lmin	Lmax	Ldesign	Notes
	Forumula Note		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
	Units		(ft)	(ft)	(ft)	(fps)					(ft)	(ft)	(ft)	(ft)	(ft)	(in)	(in)	(ft/s)	(sqft)	(deg)	(ft)	(ft)	(ft)	(ft)	
COS-1 Culvert	(5) 5' x 5' RCB	571	25	5	1.50	15.25	2.19	OK	2.04	OK	2.90	1.29	3.15	0.20	0.48	2.3	**8**	**5**	114.20	1	4.6	15	50	**15**	
COS-3 Culvert	(2) 5' x 5' RCB	251	10	5	2.31	10.86	1.26	OK	2.25	OK	1.06	2.20	3.60	0.63	0.46	7.5	**8**	**5**	50.20	1	12.0	15	50	**15**	

1 Total width of all RCB cells
2 Height of RCB
3 Depth of flow at RCB outlet from HY-8 Culvert Summary Table - Outlet Depth
4 Velocity at RCB outlet from HY-8 Culvert Summary Table - Outlet Velocity
5 Froude Number at outlet (V/sqrt(32.2*D))
6 Check if Fr < 2.5
7 Froude Parameter from CCRFCD HCDDM 707.4 (Q/W*H^1.5)
8 Froude parameter check < 14
9 Tailwater Depth from HY-8 Culvert Summary Table - Tailwater Depth
10 Normal Depth from HY-8 Culvert Summary Table - Normal Depth
11 Adjusted H for supercritical flows from CCRFCD HCDDM 707.4.2 Ha = 0.5*(H+Yn)
12 Minimum D50 for Q/WH1.5 < 4 from CCRFCD HCDDM 707.4.2 D50 = (0.014*(Q/W*Ha^1.5)*H^2)) / (Yt)
13 Minimum D50 for Q/WH1.5 >4 from CCRFCD HCDDM 7.0.4.2 D50 = ((0.0019*(Q/W*Ha^1.5)^2.5)*Ha)/((Yt/Ha)^2)
14 Chose Minimum D50 based on if Q/WH1.5 is less than or greater than 4
15 D50 for design
16 Allowable velocity at end of riprap apron
17 Flow area at end or riprap apron from CCRFCD HCDDM 707.4.3 At=Q/V
18 Expansion angle of water jet downstream of culvert
19 Minimum Apron Length from CCRFCD HCDDM 707.4.3 L=(1/(2*tan Θ))*(At/Yt-W)
20 Minimum Apron Length = 3*H
21 Maximum Apron Length = 10*H
22 Design Apron Length

*** Values taken from HEC-RAS**

3 Outlet Depth taken from HEC-RAS Six XS Bridge Table BR-DS W.S.E.
4 Outlet Velocity taken from HEC-RAS Six XS Bridge Table BR-DS Velocity.
9 Tailwater Depth taken from HEC-RAS Standard Table 1 Tailwater Cross Section Normal Depth
10 Normal Depth calculated by FlowMaster Normal Depth Cross Section of culvert facility

DROP INLET CALCULATIONS

Drop Inlet Interception

Project: V24 Western Boundary Fire Access & Second Source Water
Work Order no.: 7851-MISC-5
Calculated By: JYA
Date: Mar-19

Inlet ID: Station 32+92.14
Drainage Condition: Ultimate 100-Year Storm
Flow Summary: 1/2 ONC-B
Inlet Description: 5' Type CM DI

Equations referenced from CCRFCD HCDDM and FHWA HEC-22

Input:	**Variable:**	**Input:**
Street Flow (cfs)	Q	6.0
Longitudinal Slope (ft/ft)	S_o	0.0053
Manning's Coefficient	n	0.016
Street Flow Velocity (fps)	V	2.1
Street Flow Depth (ft)	D	0.47
Street Cross Slope (ft/ft)	S_x	0.02
Grate Width (ft)	W	1.5
Grate Depression (in)	D_g	0
Length of Grate (ft)	L_g	7.5
Length of Curb Opening (ft)	L_c	9.5
Clogging Factor - Grate (%)	CF_g	50%
Clogging Factor - Curb (%)	CF_c	50%
Effective Grate Length (ft)	L_{ge}	3.75
Effective Curb Opening Lenth (ft)	L_{ce}	4.75

Output (Grate):	**Equation:**	**Output (Grate):**
R_f - Frontal Flow Factor	1-0.09*(V-V_x) if V>V_x; else 1	1.00
V_o - Splash Over Velocity (fps)	p+q*L_{ge}-r*L_{ge}^2+sy*L_{ge}^3; where p=0.30, q=4.85, r=1.31, sy=0.15 (vane grate)	7.98
E - grate Flow Ratio	Q_w/Q_s	0.19
Q_w - Frontal Flow (cfs)	$Q[1-(1-(W/T))^{2.67}]$	0.97
Q_s - Side Flow (cfs)	$Q-Q_w$	5.03
T - Side Flow Spread (ft)	$(D-D_g)/S_x$	23.50
R_s - Side Flow Factor	$1/(1+(0.15*V^{1.8})/(S_x*L_{ge}^{2.3}))$	0.42
Q_{gi} - Intercepted Flow (cfs)	$(R_f*E+R_s*(1-E))*Q$	**3.2**

Output (Curb):	**Equation:**	**Output (Curb):**
S_e - Equivalent Cross Slope (ft/ft)	S_x+S_g*E	0.02
Q_{sx} - Remaining Flow After Grate Interception (cfs)	$Q-Q_{gi}$	2.80
S_g - Gutter Cross Slope (ft/ft)	D_g/W	0.00
L_t - Effective Interception Length (ft)	$0.60*Q_{sx}^{0.42}*S_o^{0.30}*[1/(n*S_e)]^{0.6}$	23.98
Q_{ci} - Intercepted Flow (cfs)	$(1-(1-L_{ce}/L_t)^{1.8})*Q_{sx}$ or Q_{sx} if $L_t<L_{ce}$	**0.9**

Output (Combination):	**Equation:**	**Output (Combination):**
Total Intercepted Flow (cfs)	Intercepted (Grate) + Intercepted (Curb)	**4.1**
Bypass Flow (cfs)	Street Flow - Total Intercepted Flow	**1.9**

Village 24 Western Boundary Fire Access & Second Source Water

Sump Condition Drop Inlet Flow Interception Calculations (100 - Year Ultimate Flows Used)

All calculations are based on FHWA HEC-22 method

W.O.# 7851-MISC-5
Calculations By: JYA
Date: Mar-19

unit system = **English** (metric or English)

Inlet Type	Location	Q cfs	$Q_{w/bypass}$ cfs	L_{grate} ft	W_{grate} ft	L_{curb} ft	S_x ft/ft	Clogging Factor	$d_{ponding}$ [1] ft	T [2] ft	P [3] ft	A_g [4] sq ft	Q_{grate_w} [5] cfs	Q_{grate_o} [6] cfs	Q_{curb_w} [7] cfs	Q_{curb_o} [8] cfs	$Q_{captured}$ [9] cfs	$Q_{bypassed}$ [10] cfs
5' Type C Modified	Station 22+08.69	3.00	3.00	2.5	1.5	5.0	2.00%	50.0%	0.35	17.50	5.50	2.63	1.7	4.2	1.6	4.0	3.0	0.0
5' Type C Modified	Station 42+75.41	8.00	8.00	5.0	1.5	7.5	2.00%	50.0%	0.50	25.00	8.00	5.25	4.2	10.0	4.0	7.1	8.0	0.0

[1] Ponding depth over grate
[2] Total spread of water, $T = d/S_x$
[3] Perimeter of the grate disregarding the side against the curb, $P = L_{grate}+2W_{grate}$
[4] Clear opening area of the grate, $A_g = L_{grate}W_{grate}*0.7$

To account for grate bar spacing = 0.70

[5] Capacity of grate inlet operating as a weir: $Q_w = C_wPd^{1.5}$(1-Clogging Factor)

C_w = (1.66 metric, 3.0 English) = 3.00

[6] Capacity of grate inlet operating as an orifice: $Q_o = C_oA_g(2gd)^{0.5}$(1-Clogging Factor)

C_0 = 0.67

g = (acceleration due to gravity) = 32.16 ft/(sq sec)

[7] Capacity of curb opening operating as a weir: $Q_w = C_wLd^{1.5}$(1-Clogging Factor)

C_w = (1.60 metric, 3.0 English) = 3.00

[8] Capacity of curb opening operating as an orifice: $Q_o = C_ohL(2gd_o)^{0.5}$(1-Clogging Factor)

C_0 = 0.67

g = (acceleration due to gravity) = 32.16 ft/(sq sec)

h = (height of curb-opening orifice) = 0.50 ft

[9] Combined grate and curb flow intercepted from the minimum of either wier or orifice flow
[10] Difference in total flow minus intercepted flow .: $Q-Q_{captured}$

STANDARD FORM 6 CALCULATIONS

Starting HGL and EGL

Tailwater Elevation	Outlet Invert Elevation	Tailwater Depth (ft)	Critical Depth-Dc (ft)	Pipe Diameter-D (ft)	(Dc+D)/2 (ft)	Starting HGL (ft)	Hv (ft)	Starting EGL (ft)
3564.98	3559.98	5.00	4.57	5.0	4.785466	3564.98	3.75	3568.73

$$Sf = \frac{\Phi Hv}{R^{1.33}} \qquad \Phi = \frac{2g\,(n^2)}{2.21}$$

Phi Index

n Value	Phi
0.013	0.004925

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

STANDARD FORM 6

DEVELOPMENT: V24 WESTERN BOUNDARY PHASE 2
CALCULATED BY: JYA **WO#** 7851
STORM DRAIN SEGMENT: STORM DRAIN B NORTH
DESCRIPTION: 100-YEAR ULTIMATE CONDITION

Segment Number	Segment Type	Starting Station	Ending Station	Diameter (ft)	D/S Invert	U/S Invert	Length (ft)	Area (sq, ft)	Phi	Flow (cfs)	Slope (%)	Velocity (fps)	Hv (ft)	Sf (ft/ft)	Ave. Sf (ft/ft)	Hf (ft)	Hj (ft)	Hm (ft)	Hb (ft)	Hi (ft)	H_ (ft)	H Total (ft)	U/S EGL Elevation	U/S HGL Elevation	Pressure Flow ?	D/S EGL of U/S Segment	Final U/S EGL	Final U/S HGL
1	PIPE	10+00.00	10+62.62	5	3559.98	3560.45	62.6	19.63	0.00492	305.0	0.75	15.53	3.75	0.01371	0.01371	0.86						0.86	3569.59	3565.84	Yes	3569.19	3569.59	3565.84
2	SDMH #7	10+62.62	10+62.62	5	3560.45	3560.45	0.0	19.63	0.00492	305.0	N/A	15.53	3.75	0.01371	0.01371	0.00		2.09				2.09	3571.68	3567.93	Yes	3569.19	3571.68	3567.93
3	PIPE	10+62.62	10+99.75	5	3560.45	3560.73	37.1	19.63	0.00492	305.0	0.75	15.53	3.75	0.01371	0.01371	0.51						0.51	3572.19	3568.44	Yes	3569.47	3572.19	3568.44
4	DI	10+99.75	10+99.75	5	3560.73	3560.73	0.0	19.63	0.00492	305.0	N/A	15.53	3.75	0.01371	0.01371	0.00		0.24				0.24	3572.43	3568.68	Yes	3569.47	3572.43	3568.68
5	PIPE	10+99.75	11+31.86	5	3560.73	3560.97	32.1	19.63	0.00492	305.0	0.75	15.53	3.75	0.01371	0.01371	0.44						0.44	3572.87	3569.12	Yes	3569.71	3572.87	3569.12
6	STUB	11+31.86	11+31.86	5	3560.97	3560.97	0.0	19.63	0.00492	305.0	N/A	15.53	3.75	0.01371	0.01371	0.00						0.00	3572.87	3569.12				

Manholes/Transition Losses

	Straight Through Manhole				Junction Manhole					Bend Losses				Inlet Losses		
Segment Number	Deflection Angle	Km	Hv (ft)	Hm (ft)	Junction Angle	Kj	D/S Hv (ft)	U/S Hv (ft)	Hj (ft)	Bend Angle	Kb	Hv (ft)	Hb (ft)	Ki	Hv (ft)	Hi (ft)
1																
2	56	0.558	3.747	2.091												
3																
4	11	0.065	3.747	0.244												
5																
6																

HGL Criteria Check			
Segment Description	TMH Elevation	Cover (ft)	Criteria Met?
PIPE			
SDMH #7	3570.55	2.62	Yes
PIPE			
DI	3570.33	1.65	Yes
PIPE			
STUB	3570.33	1.21	Yes

Box		Elliptical/ Other			
Span (ft)	Rise (ft)	Rise (ft)	Area (ft^2)	Hyd. Rad. (ft)	#
					1.00
					1.00
					1.00
					1.00
					1.00
					1.00

Starting HGL and EGL

Tailwater Elevation	Outlet Invert Elevation	Tailwater Depth (ft)	Critical Depth-Dc (ft)	Pipe Diameter-D (ft)	(Dc+D)/2 (ft)	Starting HGL (ft)	Hv (ft)	Starting EGL (ft)
3564.48	3559.98	4.50	2.58	4.5	3.540	3564.477	1.17	3565.65

$$Sf = \frac{\Phi Hv}{R^{1.33}} \qquad \Phi = \frac{2g\,(n^2)}{2.21}$$

STANDARD FORM 6

DEVELOPMENT: V24 WESTERN BOUNDARY PHASE 2
CALCULATED BY: JYA **WO#** 7851
STORM DRAIN SEGMENT: STORM DRAIN B SOUTH
DESCRIPTION: 100-YEAR ULTIMATE CONDITION

Phi Index

n Value	Phi
0.013	0.004925

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

Segment Number	Segment Type	Starting Station	Ending Station	Diameter (ft)	D/S Invert	U/S Invert	Length (ft)	Area (sq, ft)	Phi	Flow (cfs)	Slope (%)	Velocity (fps)	Hv (ft)	Sf (ft/ft)	Ave. Sf (ft/ft)	Hf (ft)	Hj (ft)	Hm (ft)	Hb (ft)	Hi (ft)	H_ (ft)	H Total (ft)	U/S EGL Elevation	U/S HGL Elevation	Pressure Flow ?	D/S EGL of U/S Segment	Final U/S EGL	Final U/S HGL
1	PIPE	10+00.00	10+35.72	4.5	3559.98	3560.81	35.7	15.90	0.00492	138.0	2.34	8.68	1.17	0.00492	0.00492	0.18						0.18	3565.82	3564.65	Yes	3566.48	3566.48	3565.31
2	SDMH #19	10+35.72	10+35.72	4.5	3560.81	3560.81	0.0	15.90	0.00492	138.0	N/A	8.68	1.17	0.00492	0.00492	0.00		0.45				0.45	3566.93	3565.76	Yes	3566.48	3566.93	3565.76
3	PIPE	10+35.72	10+95.18	4.5	3560.81	3562.70	59.5	15.90	0.00492	138.0	3.17	8.68	1.17	0.00492	0.00492	0.29						0.29	3567.22	3566.05	Yes	3568.36	3568.36	3567.20
4	SDMH #7	10+95.18	10+95.18	4.5	3562.70	3562.70	0.0	15.90	0.00492	138.0	N/A	8.68	1.17	0.00492	0.00492	0.00		1.55				1.55	3569.92	3568.75	Yes	3568.57	3569.92	3568.75
5	PIPE	10+95.18	11+83.08	4	3562.70	3565.59	87.9	12.57	0.00492	138.0	3.29	10.98	1.87	0.00922	0.00707	0.62						0.62	3570.54	3568.67	Yes	3571.46	3571.46	3569.59
6	STUB	11+83.08	11+83.08	4	3565.59	3565.59	0.0	12.57	0.00492	138.0	N/A	10.98	1.87	0.00922	0.00922	0.00						0.00	3571.46	3569.59				

Manholes/Transition Losses

	Straight Through Manhole				Junction Manhole					Bend Losses				Inlet Losses		
Segment Number	Deflection Angle	Km	Hv (ft)	Hm (ft)	Junction Angle	Kj	D/S Hv (ft)	U/S Hv (ft)	Hj (ft)	Bend Angle	Kb	Hv (ft)	Hb (ft)	Ki	Hv (ft)	Hi (ft)
1																
2	45	0.39	1.169	0.450												

HGL Criteria Check			
Segment Description	TMH Elevation	Cover (ft)	Criteria Met?
PIPE			
SDMH #19	3571.7	5.9	Yes

APPENDIX C
REFERENCE MATERIAL

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM	DATE: July 24, 2018
TO: **Land Development Services** Department of Building & Safety	FROM: Albert Sung, P.E. Flood Control Project Engineer Department of Public Works
SUBJECT: Drainage Study for: **Summerlin West Village 24 -** **Western Boundary Grading & Drainage**	COPIES TO: VTN Nevada
Cross Streets: SWC of Crossbridge Drive & Alta Drive	Howard Hughes Company, LLC
File Number: F:\Depot\DSMemos\DS4992B.doc	Bart Anderson, P.E., DevCo
Parcel Number: 137-22-000-017	
Zoning Action: PMP-72289	
FEMA Flood Zone YES NO X	
Proposed Storm Drain YES X NO	

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Type #
1st Submittal	5/16/2018	5/31/2018 & 6/6/2018	Not Approved	$400.00	495843: $400.00
2nd Submittal & Supplement	6/27/2018	7/12/2018 & 7/23/2018	See Comments Below	$400.00	496934: $400.00
			TOTAL FEES (LDDRS):	**$800.00**	---

REMARKS:

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

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

1. The proposed *Western Boundary Grading & Drainage Facilities* are interim facilities to be owned and maintained by the *Howard Hughes Company*. The *City of Las Vegas* will not take over ownership and maintenance liability until a permanent improved roadway dedicated and accepted as a public right-of-way is completed.

   Prior to final plan approval the developer must complete a maintenance and liability agreement for the interim drainage improvements (off-site berms, channels & storm drains) and post a minimum maintenance bond of $50,000 or 50-percent of the construction cost for the improvements, whichever is greater. The engineer must submit an estimate of the quantities for constructing the facility and an 8.5-inch by 11-inch exhibit that adequately shows the location and limits of the drainage facility to *Flood Control* for approval. Once the drainage study is conditionally approved the engineer should contact the *City's Land Development Section* (229-6371) to begin the agreement process.

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

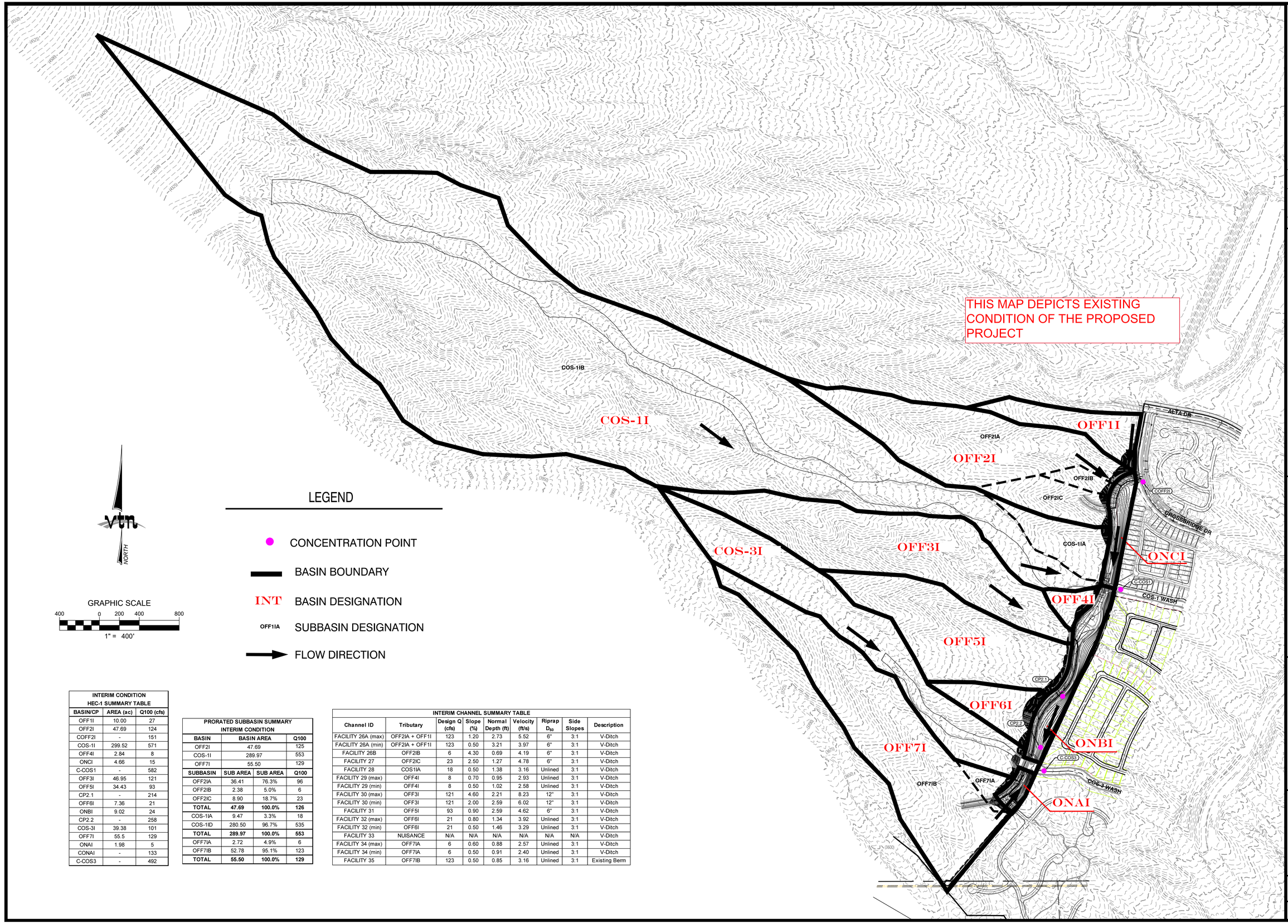
2. Previous Comment #3 regarding *Facilities 21 to 25* shall have a minimum of 3'-wide concrete valley gutter at the flow line to reduce maintenance burden for the future homeowners association. Revise typical *Cross Section C/DT1* and all pertinent plans and construction note accordingly.

   Facilities 21 to 25 must be within a public drainage easement to be privately maintained by the Homeowners Association. Dedicate as such either by map or by separate document. The dedication must be recorded prior to the final approval of the improvement plans.

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
WSP/AYS

T/R/S: T20S/R59E/22
AREA K-22



INTERIM CONDITION HEC-1 SUMMARY TABLE		
BASIN/CP	AREA (ac)	Q100 (cfs)
OFF1I	10.00	27
OFF2I	47.69	124
COFF2I	-	151
COS-1I	299.52	571
OFF4I	2.84	8
ONCI	4.66	15
C-COS1	-	582
OFF3I	46.95	121
OFF5I	34.43	93
CP2.1	-	214
OFF6I	7.36	21
ONBI	9.02	24
CP2.2	-	258
COS-3I	39.38	101
OFF7I	55.5	129
ONAI	1.98	5
CONAI	-	133
C-COS3	-	492

PRORATED SUBBASIN SUMMARY INTERIM CONDITION			
BASIN	BASIN AREA		Q100
OFF2I	47.69		125
COS-1I	289.97		553
OFF7I	55.50		129
SUBBASIN	SUB AREA	SUB AREA	Q100
OFF2IA	36.41	76.3%	96
OFF2IB	2.38	5.0%	6
OFF2IC	8.90	18.7%	23
TOTAL	**47.69**	**100.0%**	**126**
COS-1IA	9.47	3.3%	18
COS-1ID	280.50	96.7%	535
TOTAL	**289.97**	**100.0%**	**553**
OFF7IA	2.72	4.9%	6
OFF7IB	52.78	95.1%	123
TOTAL	**55.50**	**100.0%**	**129**

INTERIM CHANNEL SUMMARY TABLE								
Channel ID	Tributary	Design Q (cfs)	Slope (%)	Normal Depth (ft)	Velocity (ft/s)	Riprap D_{50}	Side Slopes	Description
FACILITY 26A (max)	OFF2IA + OFF1I	123	1.20	2.73	5.52	6"	3:1	V-Ditch
FACILITY 26A (min)	OFF2IA + OFF1I	123	0.50	3.21	3.97	6"	3:1	V-Ditch
FACILITY 26B	OFF2IB	6	4.30	0.69	4.19	6"	3:1	V-Ditch
FACILITY 27	OFF2IC	23	2.50	1.27	4.78	6"	3:1	V-Ditch
FACILITY 28	COS1IA	18	0.50	1.38	3.16	Unlined	3:1	V-Ditch
FACILITY 29 (max)	OFF4I	8	0.70	0.95	2.93	Unlined	3:1	V-Ditch
FACILITY 29 (min)	OFF4I	8	0.50	1.02	2.58	Unlined	3:1	V-Ditch
FACILITY 30 (max)	OFF3I	121	4.60	2.21	8.23	12"	3:1	V-Ditch
FACILITY 30 (min)	OFF3I	121	2.00	2.59	6.02	12"	3:1	V-Ditch
FACILITY 31	OFF5I	93	0.90	2.59	4.62	6"	3:1	V-Ditch
FACILITY 32 (max)	OFF6I	21	0.80	1.34	3.92	Unlined	3:1	V-Ditch
FACILITY 32 (min)	OFF6I	21	0.50	1.46	3.29	Unlined	3:1	V-Ditch
FACILITY 33	NUISANCE	N/A	N/A	N/A	N/A	N/A	N/A	V-Ditch
FACILITY 34 (max)	OFF7IA	6	0.60	0.88	2.57	Unlined	3:1	V-Ditch
FACILITY 34 (min)	OFF7IA	6	0.50	0.91	2.40	Unlined	3:1	V-Ditch
FACILITY 35	OFF7IB	123	0.50	0.85	3.16	Unlined	3:1	Existing Berm

REV	DATE	BY	REVISION

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LAS VEGAS, NV 89135

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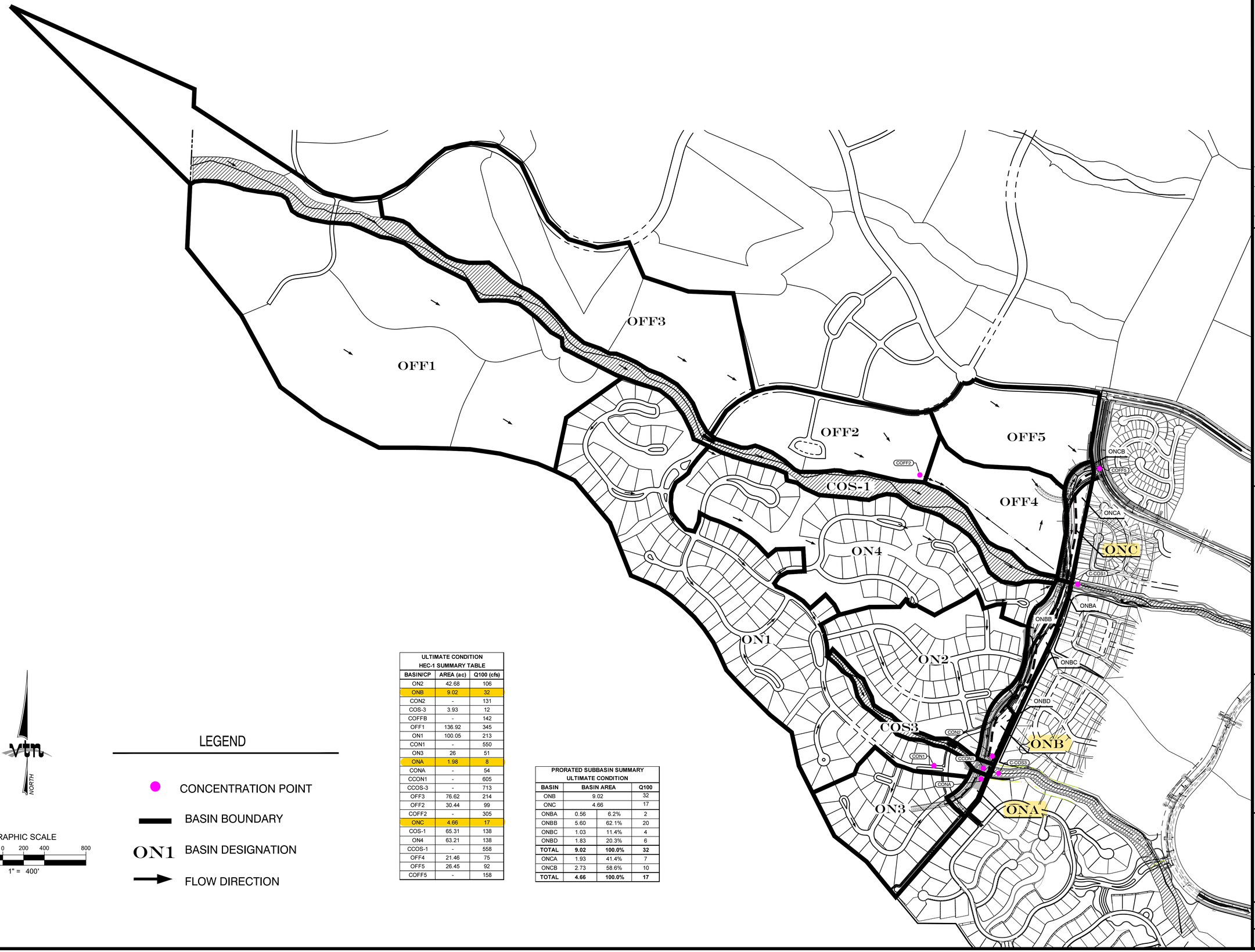
FIGURE 9: INTERIM CONDITION BASIN MAP

SUMMERLIN WEST VILLAGE 24 WESTERN BOUNDARY GRADING & DRAINAGE

DRAWN BY: JYA 02/2018
DESIGNED BY: JYA 02/2018
CHECKED BY: WJM 02/2018
PROJECT NO: 7851
SCALE: 1" = 400' HORIZ. N/A VERT.

SHEET
FIG 9
1 OF 1 SHEETS
DRAWING NO.

H:\7851\Village 24 Collector-WATER\Drainage\ADD #1\A Figures\Fig 9 - Interim Basin Map.dwg



ULTIMATE CONDITION HEC-1 SUMMARY TABLE		
BASIN/CP	AREA (ac)	Q100 (cfs)
ON2	42.68	106
ONB	9.02	32
CON2	-	131
COS-3	3.93	12
COFFB	-	142
OFF1	136.92	345
ON1	100.05	213
CON1	-	550
ON3	26	51
ONA	1.98	8
CONA	-	54
CCON1	-	605
CCOS-3	-	713
OFF3	76.62	214
OFF2	30.44	99
COFF2	-	305
ONC	4.66	17
COS-1	65.31	138
ON4	63.21	138
CCOS-1	-	558
OFF4	21.46	75
OFF5	26.45	92
COFF5	-	158

PRORATED SUBBASIN SUMMARY ULTIMATE CONDITION			
BASIN	BASIN AREA		Q100
ONB	9.02		32
ONC	4.66		17
ONBA	0.56	6.2%	2
ONBB	5.60	62.1%	20
ONBC	1.03	11.4%	4
ONBD	1.83	20.3%	6
TOTAL	**9.02**	**100.0%**	**32**
ONCA	1.93	41.4%	7
ONCB	2.73	58.6%	10
TOTAL	**4.66**	**100.0%**	**17**

NORTH

GRAPHIC SCALE

400 0 200 400 800

1" = 400'

LEGEND

- CONCENTRATION POINT
- BASIN BOUNDARY
- ON1 BASIN DESIGNATION
- FLOW DIRECTION

REV	DATE	BY	REVISION

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FIGURE 10: ULTIMATE CONDITION BASIN MAP

SUMMERLIN WEST VILLAGE 24 WESTERN BOUNDARY GRADING & DRAINAGE

DRAWN BY: JYA	02/2018	SCALE:	1" = 400' HORIZ.
DESIGNED BY: JYA	02/2018		N/A VERT.
CHECKED BY: KJM	02/2018		
PROJECT NO: ####			

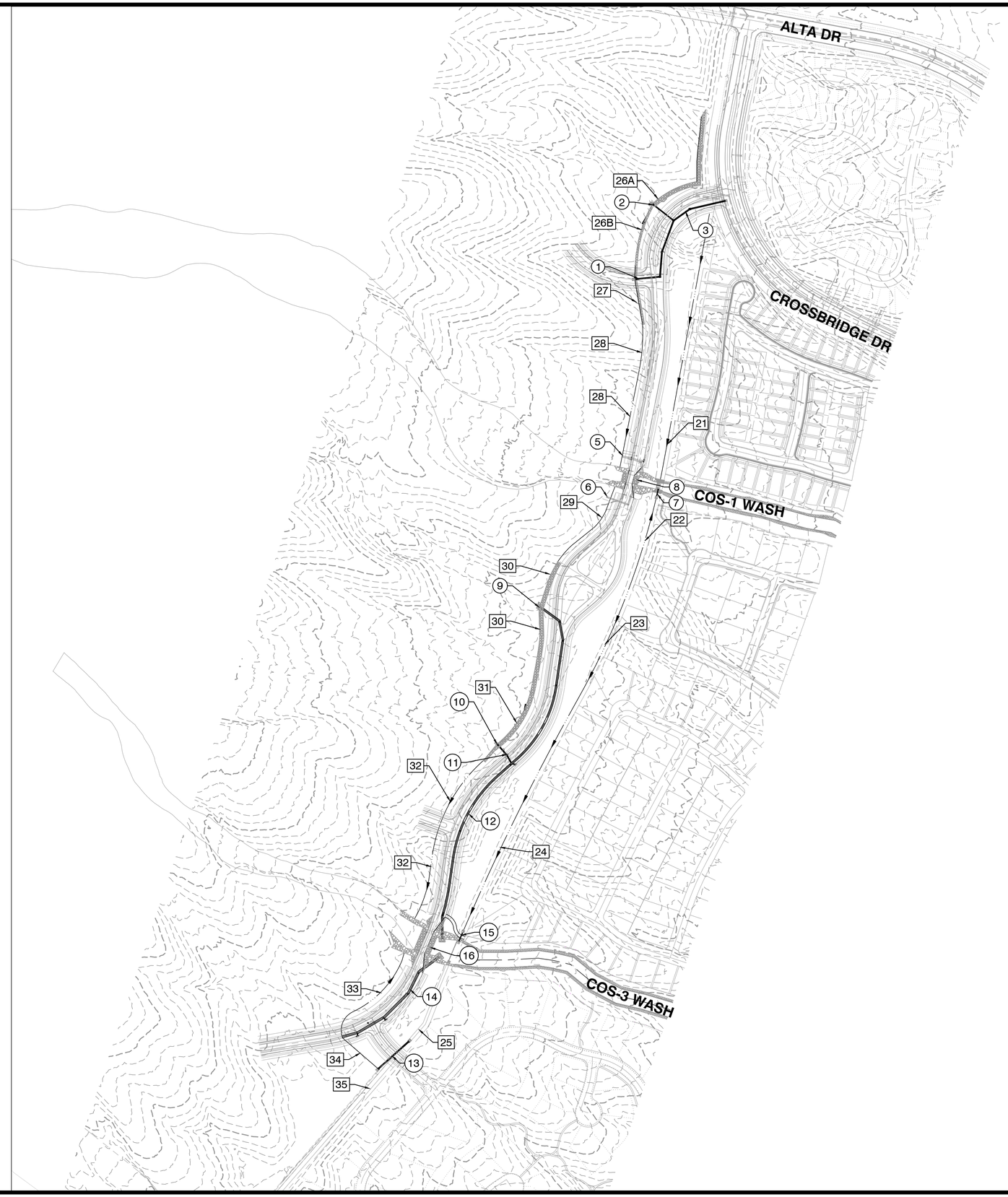
SHEET
FIG 10
1 OF 1 SHEETS
DRAWING NO.

H:\7851\Village 24 Collector-WATER\Drainage\2_ADD #1\A Figures\Fig 10 - Ultimate Basin Map.dwg

PROPOSED STORM DRAIN FACILITY SUMMARY TABLE						
STORM DRAIN	FACILITY ID	INTERIM		ULTIMATE		DESCRIPTION
		TRIBUTARY	Q100 (cfs)	TRIBUTARY	Q100 (cfs)	
A	1	OFF2IC	23	OFF4	75	36" RCP
	2	OFF1I+OFF2IA + OFF2IB	129	OFF5	92	48" RCP
	3	COFF2I	151	COFF5	158	48" RCP
B	5	N/A	N/A	COFF2	305	FUT 60" RCP
	6	N/A	N/A	ON4	138	FUT 48" RCP
	7	N/A	N/A	ONBA	2	24" RCP
	8	C-COS1	582	C-COS1	558	TEMPORARY RIPRAP*
C	9	OFF3I	121	ON2	106	6'X5' RCB
	10	OFF5I	93	ON2	106	42" RCP
	11	N/A	N/A	N/A	N/A	Type CM D.I.
	12	CP2.1	214	CON2	131	6'X5' RCB
	13	OFF7IB	129	N/A	N/A	48" RCP
	14	OFF7IA	6	CCON1	605	7'x6' RCB
	15	N/A	N/A	ONBC+ONBD	10	24" RCP
	16	C-COS3	492	C-COS3	713	TEMPORARY RIPRAP*

*Temporary riprap in COS-1 and COS-3 wash to be replaced by future concrete facilities

PROPOSED CHANNEL FACILITIES SUMMARY TABLE							
FACILITY ID	INTERIM		ULTIMATE		Slope		DESCRIPTION
	TRIBUTARY	Q100 (cfs)	TRIBUTARY	Q100 (cfs)	Min	Max	
21	N/A	N/A	ONCA	7	0.5%	N/A	2' DEEP MIN V-DITCH (3:1/3:1 SS, UNLINED)
22	N/A	N/A	ONBA	2	0.4%	N/A	2' DEEP MIN V-DITCH (3:1/3:1 SS, UNLINED)
23	N/A	N/A	ONBC	4	0.4%	N/A	2' DEEP MIN V-DITCH (3:1/3:1 SS, UNLINED)
24	N/A	N/A	ONBC+ONBD	10	0.4%	N/A	2.5' DEEP MIN V-DITCH (3:1/3:1 SS, UNLINED)
25	CONAI	133	CONA	54	0.7%	N/A	3.0' DEEP MIN TRAP (10' BW, 3:1/3:1SS, D50=6")
26A	OFF2IA + OFF1I	123	N/A	N/A	0.5%	1.2%	4.5' DEEP MIN V-DITCH (3:1/3:1 SS, D50=6")
26B	OFF2IB	6	N/A	N/A	4.3%	N/A	2' DEEP MIN V-DITCH (3:1/3:1 SS, D50=6")
27	OFF2IC	23	N/A	N/A	2.5%	N/A	2.5' DEEP MIN V-DITCH (3:1/3:1 SS, D50=6")
28	COS1IA	18	N/A	N/A	0.5%	N/A	2.5' DEEP MIN V-DITCH (3:1/3:1 SS, UNLINED)
29	OFF4I	8	N/A	N/A	0.5%	0.7%	2' DEEP MIN V-DITCH (3:1/3:1 SS, UNLINED)
30	OFF3I	121	N/A	N/A	2.0%	4.6%	4' DEEP MIN V-DITCH (3:1/3:1 SS, D50=12")
31	OFF5I	93	N/A	N/A	0.9%	N/A	3.5' DEEP MIN V-DITCH (3:1/3:1 SS, D50=6")
32	OFF6I	21	N/A	N/A	0.5%	0.8%	2.5' DEEP MIN V-DITCH (3:1/3:1 SS, UNLINED)
33	NUISANCE	N/A	N/A	N/A	N/A	N/A	2' DEEP MIN V-DITCH (3:1/3:1SS, UNLINED)
34	OFF7IA	6	N/A	N/A	0.5%	0.6%	2' DEEP MIN V-DITCH (3:1/3:1SS, UNLINED)
35	OFF7IB	123	N/A	N/A	0.5%	N/A	EX BERM (3' HEIGHT MIN, UNLINED)



NORTH

GRAPHIC SCALE

200 0 100 200 400

1" = 200'

REVISION | BY | DATE | REV

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FIGURE 11:
PROPOSED FACILITIES MAP

SUMMERLIN WEST VILLAGE 24
WESTERN BOUNDARY
GRADING & DRAINAGE

DRAWN BY: JYA 02/2018
DESIGNED BY: JYA 02/2018
CHECKED BY: WJM 02/2018
PROJECT NO: #### SCALE: 1" = 200' HORIZ. N/A VERT:

SHEET
FIG 11
1 OF 1 SHEETS
DRAWING NO.

H:\7951\Village 24 Collector WATER\Drainage\2_ADD #1\A Figures\Fig 11 - Facility Map.dwg

SUMMERLIN WEST VILLAGE 24A WESTERN BOUNDARY FIRE ACCESS, SEWER & SECOND SOURCE WATER (FUTURE MEADOW RUN STREET)

APN: 137-22-000-017

CITY OF LAS VEGAS

STATE OF NEVADA

DEVELOPED BY:

HOWARD HUGHES COMPANY, LLC

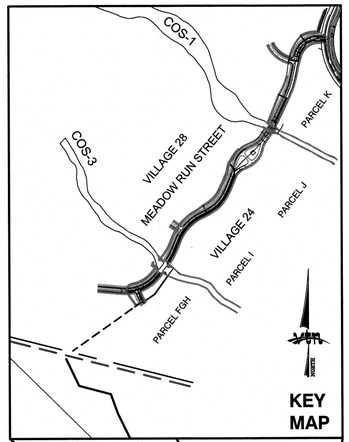
A DELEWARE LIMITED LIABILITY COMPANY

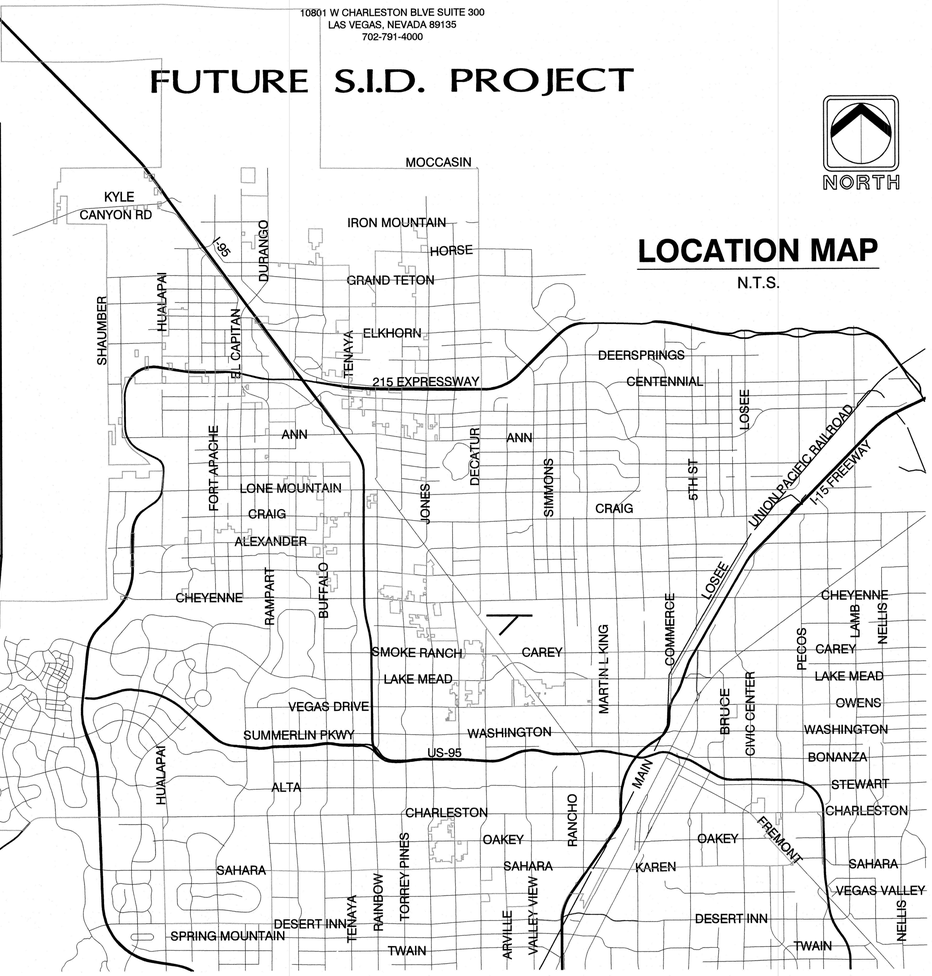
10801 W CHARLESTON BLVE SUITE 300
LAS VEGAS, NEVADA 89135
702-791-4000

FUTURE S.I.D. PROJECT

SHEET INDEX

SHEET #	SHEET	DESCRIPTION	STATION RANGE
1	CV	COVER SHEET	
2	NT	NOTE SHEET	
3	HC1	HORIZONTAL CONTROL PLAN 1	
4	HC2	HORIZONTAL CONTROL PLAN 2	
5	HC3	HORIZONTAL CONTROL PLAN 3	
6	HC4	HORIZONTAL CONTROL PLAN 4	
7	HC5	HORIZONTAL CONTROL PLAN 5	
8	HC6	HORIZONTAL CONTROL PLAN 6	
9	HC7	HORIZONTAL CONTROL PLAN 7	
10	HC8	HORIZONTAL CONTROL PLAN 8	
11	HC9	HORIZONTAL CONTROL PLAN 9	
12	D1	DEMOLITION SHEET 1	
13	D2	DEMOLITION SHEET 2	
14	MUTSS	MASTER SANITARY SEWER UTILITY	
15	MGRD	MASTER GRADING SHEET	
16	MUTW	MASTER WATER UTILITY	
17	MUTSD	MASTER UTILITY STORM DRAIN	
18	GR1	GRADING PLAN 1	47+50 TO 44+50
19	GR2	GRADING PLAN 2	44+50 TO 40+00
20	GR3	GRADING PLAN 3	40+00 TO 35+15
21	GR4	GRADING PLAN 4	35+15 TO 30+50
22	GR5	GRADING PLAN 5	30+50 TO 25+50
23	GR6	GRADING PLAN 6	25+50 TO 22+00
24	GR7	GRADING PLAN 7	22+00 TO 18+00
25	GR8	GRADING PLAN 8	18+00 TO 14+00
26	GR9	GRADING PLAN 9	14+00 TO 10+00
27	GR10	GRADING PLAN 10	
28	DT	DETAIL SHEET	
29	UT1	UTILITY PLAN & PROFILE 1	48+00 TO 44+90
30	UT2	UTILITY PLAN & PROFILE 2	44+90 TO 40+50
31	UT3	UTILITY PLAN & PROFILE 3	40+50 TO 36+00
32	UT4	UTILITY PLAN & PROFILE 4	36+00 TO 32+10
33	UT5	UTILITY PLAN & PROFILE 5	32+10 TO 28+00
34	UT6	UTILITY PLAN & PROFILE 6	28+00 TO 23+50
35	UT7	UTILITY PLAN & PROFILE 7	23+50 TO 18+50
36	UT8	UTILITY PLAN & PROFILE 8	18+50 TO 13+50
37	UT9	UTILITY PLAN & PROFILE 9	13+50 TO 10+00
38	UT10	UTILITY PLAN & PROFILE 10 WATER & SEWER LATERAL	
39	UT11	UTILITY PLAN & PROFILE 11 STORM DRAIN LATERAL	
40	UT12	UTILITY PLAN & PROFILE 12 STORM DRAIN LATERAL	
41	UT13	UTILITY PLAN & PROFILE 13 WATER LATERAL	
42	UT14	UTILITY PLAN & PROFILE 14 SANITARY SEWER LATERAL	
43	UT15	UTILITY PLAN & PROFILE 15 SANITARY SEWER LATERAL	
44	UT16	UTILITY PLAN & PROFILE 16 SANITARY SEWER LATERAL	
45	UT17	UTILITY PLAN & PROFILE 17 STORM DRAIN LATERAL	
46	UT18	UTILITY PLAN & PROFILE 18 STORM DRAIN LATERAL	
47	UT19	UTILITY PLAN & PROFILE 19 STORM DRAIN LATERAL	
48	UT20	UTILITY PLAN & PROFILE 20 WATER LATERAL	
49	UT21	UTILITY PLAN & PROFILE 21 SANITARY SEWER LATERAL	
50	UT22	UTILITY PLAN & PROFILE 22 WATER LATERAL	
51	UT23	UTILITY PLAN & PROFILE 23 SANITARY SEWER LATERAL	
52	S1	HEAD WALL STRUCTURAL SHEET	





LOCATION MAP

N.T.S.

BENCHMARK

PROJECT DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

CITY OF LAS VEGAS BENCHMARK: D368 (REVISED 2008)
NAVD88 ELEVATION: 989.574 METERS (3,246.63 FEET)

FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN.
T21S,R59E,S03

BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

LINEAR UNIT: US SURVEY FOOT (FTUS)

DATUM (REFERENCE FRAME): NAD 83 (2011) EPOCH 2010.00

SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)

ZONE: LAS VEGAS HIGH ELEVATION ZONE

PROJECTION: TRANSVERSE MERCATOR
STANDARD PARALLEL (AND LATITUDE OF GRID ORIGIN):36°15'00"N
LONGITUDE OF CENTRAL MERIDIAN:114°58'00"W
NORTHING AT GRID ORIGIN: 400,000.00 M (1,312,333.3333 FTUS)
EASTING AT CENTRAL MERIDIAN: 300,000 M (984,250.0000 FTUS)
SCALE FACTOR ON CENTRAL MERIDIAN: 1.000135 (EXACT)

NOTES:
1. ALL DISTANCES AND BEARINGS SHOWN HEREON ARE PROJECTED (GRID) VALUES BASED ON THE PRECEDING PROJECTION DEFINITION. THE PROJECTION WAS DEFINED SUCH THAT PROJECTED (GRID) DISTANCES ARE EQUIVALENT TO "GROUND" DISTANCES IN THE PROJECT AREA.

2. GRID BEARINGS SHOWN HEREON (OR IMPLIED BY GRID COORDINATES) DO NOT EQUAL GEODETIC BEARINGS DUE TO MERIDIAN CONVERGENCE.

THESE PLANS AND THE DESIGN CRITERIA CONTAINED WITHIN THESE PLANS ARE BASED UPON THE INFORMATION PRESENTLY KNOWN BY THE ENGINEER AND INTENDED SOLELY AS A GENERAL GUIDELINE FOR CONSTRUCTION. ALL CONSTRUCTION SHALL BE IN CONFORMANCE WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL STATUTES, LAWS, CODES, REGULATIONS AND ORDINANCES, INCLUDING BUT NOT LIMITED TO THE FEDERAL FAIR HOUSING AMENDMENTS ACT, AMERICANS WITH DISABILITIES ACT, THE ARCHITECTURAL BARRIERS ACT AND ANY APPLICABLE UNIFORM STANDARDS, SPECIFICATIONS OR DRAWINGS. THE PERSON OR ENTITY PERFORMING THE CONSTRUCTION SHALL BE SOLELY RESPONSIBLE TO MAKE SURE CONSTRUCTION IS IN CONFORMANCE WITH ALL LOCAL, STATE AND FEDERAL STATUES, LAWS, CODES, REGULATIONS, STANDARDS, GUIDELINES AND ORDINANCES AND FURTHER, IS IN CONFORMANCE WITH ANY APPLICABLE DESIGN CRITERIA, INCLUDING BUT NOT LIMITED TO SOILS REPORTS, TRAFFIC STUDIES, GEOTECHNICAL REPORTS, ARCHITECTURAL PLANS AND SPECIFICATIONS, DRAINAGE PLANS OR STUDIES AND ANY OTHER CRITERIA, STANDARDS OR REQUIREMENTS LISTED IN THE PLANS OR THE GENERAL NOTES RELATED TO THESE PLANS OR PROVIDED BY ANYONE IN REFERENCE TO THIS PROJECT.

APPROVALS

CITY ENGINEER ALLEN PAVELKA, P.E. # 9029

APPROVAL OF THESE PLANS BY THE CITY ENGINEER IS LIMITED TO THOSE IMPROVEMENTS CONSTRUCTED IN THE DEDICATED RIGHT-OF-WAY AND/OR DEDICATED EASEMENTS. THIS APPROVAL DOES NOT AUTHORIZE THE CONSTRUCTION OF ANY IMPROVEMENTS THAT DEVIATE FROM ADOPTED STANDARDS AND/OR SPECIFICATIONS EXCEPT THOSE SPECIFICALLY LISTED UNDER DEVIATIONS FROM STANDARD THE ENGINEER SHALL RESOLVE ANY DEVIATION OTHER THAN THOSE LISTED IN DEVIATIONS FROM STANDARDS IN FAVOR OF THE UNIFORM STANDARD DRAWINGS AND SPECIFICATIONS CLARK COUNTY AREA NEVADA.

DIRECTOR OF BUILDING & SAFETY DATE

THIS PLAN MEETS THE APPLICABLE STANDARDS OF THE PLANNING AND DEVELOPMENT DEPARTMENT

CENTRAL TELEPHONE COMPANY d/b/a CENTURYLINK DATE

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

NV ENERGY DATE

NV ENERGY ACKNOWLEDGES THAT WE HAVE RECEIVED YOUR PLANS AND WILL PROVIDE SERVICE TO ALL ELECTRICAL NEEDS ASSOCIATED WITH THIS PROJECT. NVENERGY 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.

COX COMMUNICATIONS LAS VEGAS, INC. DATE

SOUTHWEST GAS CORPORATION DATE

LAS VEGAS FIRE & RESCUE DATE

OWNER:DEVELOPER

KEVIN T. ORROCK, VICE PRESIDENT DATE

HOWARD HUGHES COMPANY, LLC
A DELAWARE LIMITED LIABILITY COMPANY

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT:--- FIRST APPROVED DATE:

SHEETS:CV,NT,MUTSS,UT1-UT13

FIRE DEPARTMENT APPROVAL

APPROVAL BY THE FIRE DEPARTMENT HAVING JURISDICTION IS REQUIRED PRIOR TO OBTAINING FINAL APPROVAL FROM THE LVVWD.

OWNER
HOWARD HUGHES COMPANY, LLC
10801 W CHARLESTON BLVE SUITE 300
LAS VEGAS, NEVADA 89135
702-791-4000

ENGINEERING FIRM
VTN
2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5148
PH. (702) 873-7550
FAX (702) 362-2597

DEVELOPER
HOWARD HUGHES COMPANY, LLC
A DELEWARE LIMITED LIABILITY COMPANY
10801 W CHARLESTON BLVE SUITE 300
LAS VEGAS, NEVADA 89135
702-791-4000

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

Call before you Dig
Avoid cutting underground utility lines. It's costly.
CALL 811 OR
1-800-227-2600 AND
1-702-455-6000
CLARK COUNTY TRAFFIC OPERATIONS

AVOID HITTING UNDERGROUND TRAFFIC SIGNAL AND STREET LIGHT SYSTEM CONDUITS IT'S COSTLY
Call before you Underground
1-702-455-7511
CLARK COUNTY TRAFFIC OPERATIONS
AND
1-702-229-6811
LAS VEGAS AREA COMPUTERIZED TRAFFIC SYSTEM

REV	DATE	BY	REVISION

HOWARD HUGHES COMPANY, LLC
A DELEWARE LIMITED LIABILITY COMPANY
10801 W CHARLESTON BLVE SUITE 300
LAS VEGAS, NEVADA 89135
702-791-4000

CITY OF LAS VEGAS

2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5148
PH. (702) 873-7550 FAX (702) 362-2597 WEB WWW.VTNNV.COM
CONSULTING ENGINEERS ● PLANNERS ● LAND SURVEYORS

COVER SHEET

SUMMERLIN WEST VILLAGE 24A
WESTERN BOUNDARY FIRE ACCESS,
SEWER & SECOND SOURCE WATE

DRAWN BY: DEH	10/23/2017
DESIGNED BY: DEH	10/23/2017
CHECKED BY: WJM	04/05/2019
PROJECT NO: 7851	SCALE: N/A HORIZ. N/A VERT.

PROFESSIONAL ENGINEER-STATE OF NEVADA
WILLIAM J. MEYER
EXP: 12/31/19
CIVIL
No. 15745
5/20/19

SHEET
CV
1 OF 52 SHEETS

DRAWING NO.

H:\7851\Village 24 Collector-WATER\Sheet Set\UNIT 2\7851-CV.dwg, May 20, 2019

CITY OF LAS VEGAS GENERAL NOTES

1. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE "UNIFORM STANDARD SPECIFICATIONS FOR PUBLICWORKS CONSTRUCTION OFFSITE 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 INTERFERENCE'S WHICH MAY AFFECT HIS OPERATION DURING CONSTRUCTION AND SHALL TAKE ALL NECESSARY PRECAUTIONS TO AVOID DAMAGE TO SAME. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING NEAR OVERHEAD UTILITIES SO AS TO SAFELY PROTECT ALL PERSONNEL AND EQUIPMENT, AND SHALL BE RESPONSIBLE FOR ALL COST AND LIABILITY IN CONNECTION THERE WITH.
3. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT EXISTING UTILITY LINES, STRUCTURES AND STREET IMPROVEMENTS WHICH ARE TO REMAIN IN PLACE, FROM DAMAGE, AND ALL SUCH IMPROVEMENTS OR STRUCTURES DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR REPLACED SATISFACTORY TO THE CITY ENGINEER AND OWNING UTILITY COMPANY AT THE EXPENSE OF THE CONTRACTOR.
4. ALL CONSTRUCTION SHALL BE AS SHOWN ON THESE PLANS, ANY REVISIONS SHALL HAVE THE PRIOR WRITTEN APPROVAL OF THE CITY ENGINEER.
5. TYPE V CEMENT SHALL BE USED IN ALL OFF-SITE CONCRETE WORK. CONCRETE TO BE 3000 P.S.I. MINIMUM @ 28 DAYS. MIX DESIGNS TO BE APPROVED BY THE CITY, PRIOR TO THE USE ON THE PROJECT.
6. PERMITS ARE REQUIRED FOR ANY WORK IN THE PUBLIC RIGHT-OF-WAY. THE CONTRACTOR SHALL SECURE ALL PERMITS AND INSPECTIONS REQUIRED FOR THIS CONSTRUCTION.
7. EXPANSION JOINTS REQUIRED, MAXIMUM EVERY 300' IN EXTRUDED-TYPE CURB.
8. AC PAVEMENT TO BE ONE-HALF INCH (½") ABOVE LIP OF ALL GUTTERS AFTER COMPACTION, EXCEPT AT SIDEWALK RAMPS AND CROSS GUTTERS.
9. CURB AND GUTTER FOUND TO BE UNACCEPTABLE TO THE CITY OF LAS VEGAS SHALL BE REMOVED AND REPLACED PER STANDARD DRAWING 216.
10. SIDEWALK RAMPS SHALL BE CONSTRUCTED IN EACH QUADRANT OF AN INTERSECTION PER STANDARD DRAWING 235. EXACT LOCATION OF RAMPS MAY BE ADJUSTED IN THE FIELD BY A CITY INSPECTOR.
11. CONTRACTOR SHALL PROVIDE ALL NECESSARY HORIZONTAL AND VERTICAL TRANSITIONS BETWEEN NEW CONSTRUCTION AND EXISTING SURFACES TO PROVIDE FOR PROPER DRAINAGE AND FOR INGRESS AND EGRESS TO NEW CONSTRUCTION. THE EXTENT OF THE TRANSITIONS TO BE AS SHOWN ON PLANS.
12. 12. ALL GRADING WORK SHALL CONFORM TO THE SOILS REPORT AS PREPARED BY: NOVA GEOTECHNICAL, PROJECT NO. G-17-188, DATED JANUARY 18, 2018, APPROVED BY THE CITY ENGINEER, AND AS SHOWN ON THESE PLAN.
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 MANHOLES, STORM DRAIN MANHOLES AND TRANSITION STRUCTURES, STORM DRAIN LATERALS AT THE CONNECTION TO THE STORM DRAIN MAIN AND AT THE CONNECTION TO A DROP INLET, THE CONNECTION OF SEWER SERVICE LATERALS TO THE SEWER MAIN AND WHERE THE SEWER SERVICE LATERALS EXIT THE PUBLIC RIGHT-OF-WAY, SEWER AND STORM DRAIN MAIN ALIGNMENT, INCLUDING DEFLECTION POINTS.
22. CCTV VIDEO INSPECTION IS REQUIRED FOR ALL SEWER AND STORM DRAINS. THE CCTV VIDEO INSPECTIONS NEED TO BE PERFORMED PER THE DESIGN AND CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS LATEST EDITION.
23. A SEPARATE BORING PERMIT IS REQUIRED FOR ALL BORING ACTIVITIES.

REVISED 06/04/2018

CITY OF LAS VEGAS 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 THE TRAFFIC AND 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 NO. #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 COMPLIANCE WITH 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 POINTS SHALL BE COORDINATED WITH NV ENERGY, AND WHEREVER POSSIBLE, BE LOCATED NEAR THE CENTER OF THE CIRCUIT. SERVICEPOINTS SHALL BE SHOWN ON THE 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 THE PLANS.

REVISED JUNE 28, 2016 (LD VERSION)

DEPARTMENT OF PUBLIC WORKS NOTES

N/A

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT:---- FIRST APPROVED DATE:_____.

CITY OF LAS VEGAS FIRE DEPARTMENT NOTES

1. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH THE LAS VEGAS FIRE AND RESCUE ADOPTED FIRE CODE ORDINANCE #6631 FOR HYDRANT SPECIFICATIONS AND HYDRANT INSTALLATION SPECIFICATIONS.
2. ONLY FIRE HYDRANTS THAT ARE ON THE LAS VEGAS VALEY WATER DISTRICT'S - APPROVED PRODUCTS LIST ARE ALLOWED TO BE INSTALLED.
3. A PERMIT IS REQUIRED FROM LAS VEGAS FIRE AND RESCUE FOR THE INSTALLATION OF ON-SITE WATER LINES AND FIRE HYDRANTS. THE PERMIT AND CONTRACTORS MATERIAL TEST CERTIFICATE FOR UNDERGROUND PIPING FORM SHALL BE OBTAINED FROM THE FIRE PROTECTION ENGINEER BEFORE COMMENCEMENT OF WORK. [IFC § 105.6.15]
4. ON ANY RESIDENTIAL OR COMMERCIAL INSTALLATIONS, FIRE HYDRANTS SHALL BE INSTALLED AND FIRE APPARATUS ACCESS ROADS SHALL BE MAINTAINED BEFORE COMMENCEMENT OF ANY COMBUSTIBLE CONSTRUCTION. ALL FIRE HYDRANTS SHALL BE IN GOOD WORKING ORDER AND SHALL BE CAPABLE OF DELIVERING THE REQUIRED FIRE FLOW. [IFC § 3310, § 3312]
5. TO IDENTIFY THE FIRE HYDRANT LOCATIONS, THE CONTRACTOR SHALL PLACE A BLUE REFLECTIVE MARKER AT THE CENTERLINE OF THE STREET ADJACENT TO THE FIRE HYDRANTS. [IFC § 507.5.7.3]
6. ALL UNDERGROUND INSPECTIONS, PRESSURE AND FLUSH VERIFICATIONS OF ALL FIRE HYDRANTS AND FIRE LINES, SHALL BE CONDUCTED BEFORE COVERING THE LINES. CENTER LOADING IS ACCEPTABLE FOR THE HYDRO TESTS WITH PRIOR FIRE PREVENTION APPROVAL. [IFC § 106.3]
7. ALL ON-SITE UNDERGROUND WATER MAINS AND MATERIALS SHALL BE U.L. LISTED, A.W.W.A APPROVED AND SHALL BE RATED FOR THE APPROPRIATE WORKING PRESSURE. [IFC § 507.2.1, NFPA 24]
8. PAINTING OF CURBS, FIRE HYDRANTS, PADS, PROTECTION OF FIRE HYDRANTS FROM PHYSICAL DAMAGE, AND ALL OTHER WORK NECESSARY PER PLANS SHALL BE COMPLETED BEFORE APPROVAL BY LAS VEGAS FIRE AND RESCUE, FIRE PREVENTION DIVISION. [IFC § 507]
9. PRIVATE HYDRANTS SHALL BE PAINTED RED. [IFC § 507.5.7.1]
10. PRIOR TO THE FINAL OCCUPANCY, A FIRE FLOW TEST SHALL BE WITNESSED BY LAS VEGAS FIRE AND RESCUE, FIRE PREVENTION DIVISION TO VERIFY AVAILABILITY OF THE REQUIRED FIRE FLOW. [IFC § 507]
11. FIRE HYDRANT SPACING SHALL BE AS FOLLOWS: [IFC § C102]

    RESIDENTIAL - 500 FT UNSPRINKLERED; 600 FT SPRINKLERED.
    COMMERCIAL - 300 FT UNSPRINKLERED; 400 FT SPRINKLERED.
12. WHERE THE WATER MAINS ARE EXTENDED ALONG STREETS OR NEW STREETS ARE INSTALLED WHERE FIRE HYDRANTS ARE NOT NEEDED FOR PROTECTION OF THE STRUCTURES, FIRE HYDRANTS SHALL BE INSTALLED AT A MAXIMUM OF 1000 FT SPACING, TO PROVIDE FOR TRANSPORTATION HAZARDS. WHERE STREETS ARE PROVIDED WITH MEDIAN DIVIDERS OR HAVE FOUR (4) OR MORE TRAFFIC LANES AND HAVE A TRAFFIC COUNT OF MORE THAN 30,000 PER DAY, HYDRANTS ARE REQUIRED ON EACH SIDE OF THE STREET SPACED AT 500 FT ON AN ALTERNATING BASIS. [IFC § C102.8]
13. NO FIRE HYDRANTS SHALL BE LOCATED WITHIN THE RADIUS OF A CUL-DE-SAC OR WITHIN 20 FT OF THE PERIMETER OF THE RADIUS OF THE CUL-DE-SAC.
14. NO FIRE HYDRANTS SHALL BE LOCATED WITHIN 6 FT OF ANY CURB RETURN, DRIVEWAY, POWER POLE, STREETLIGHT OR ANY OTHER OBSTRUCTION. [IFC § C102.10]
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 3 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. THIS DISTANCE COULD BE INCREASED TO 250 FT IF THE BUILDING IS SPRINKLERED. [IFC § 503.1.1]
25. APPROVED SECONDARY FIRE APPARATUS ACCESS SHALL BE PROVIDED FOR 200 OR MORE DWELLING UNITS, ROAD(S) WITH DEAD-ENDS. COMMERCIAL AND INDUSTRIAL DEVELOPMENTS WHERE BUILDINGS EXCEED 2 STORIES OR 30 FEET IN HEIGHT, OR EXCEEDING 62,000 SQUARE FEET IN AREA. [IFC § 503.1.2]
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. [IFC § 503.2.5]
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

EFFECTIVE DATE: FEBRUARY 4th, 2019

CITY OF LAS VEGAS TRAFFIC NOTES

1. ALL CONSTRUCTION SIGNING, BARRICADING, AND TRAFFIC DELINEATION SHALL CONFORM TO THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", LATEST EDITION.
2. THE STREET SIGN CONTRACTOR SHALL OBTAIN STREET NAMES AND BLOCK NUMBERING FROM THE PLANNING DEPARTMENT PRIOR TO CONSTRUCTION.
3. BEFORE ANY WORK IS STARTED IN THE RIGHT-OF-WAY, THE CONTRACTOR SHALL INSTALL ALL ADVANCE WARNING SIGNS FOR THE CONSTRUCTION ZONE. THE CONTRACTOR SHALL INSTALL TEMPORARY STOP SIGNS AT ALL NEW STREET ENCROACHMENTS INTO EXISTING CITY STREETS WHERE WARRANTED IMMEDIATELY AFTER FIRST GRADING WORK IS ACCOMPLISHED, AND SHALL MAINTAIN SAID SIGNS UNTIL PERMANENT SIGNS ARE INSTALLED.
4. WHEN A DESIGNATED "SUGGESTED ROUTE TO SCHOOL" IS ENCROACHED UPON BY A CONSTRUCTION WORK ZONE AND PUBLIC WORKS STAFF IDENTIFIES A NEED FOR STUDENTS TO BE ASSISTED IN THE SAFE CROSSING THROUGH THAT WORK ZONE, THE CONTRACTOR SHALL BE REQUIRED TO PROVIDE A QUALIFIED "CROSSING GUARD". THE GUARD SHALL BE PRESENT FOR THE FULL DURATION OF TIME THAT CHILDREN ARE LIKELY TO BE PRESENT.
5. IF THE IMPROVEMENTS NECESSITATE THE OBLITERATION, TEMPORARY OBSTRUCTION, TEMPORARY REMOVAL OR RELOCATION OF ANY EXISTING TRAFFIC PAVEMENT MARKING, SUCH PAVEMENT MARKING SHALL BE RESTORED OR REPLACED WITH LIKE MATERIALS TO THE SATISFACTION OF THE CITY TRAFFIC ENGINEER.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING ALL PERMANENT SIGNS SHOWN ON THE PLANS. ALL NEW TRAFFIC SIGNS SHALL UTILIZE TYPE XI RETROREFLECTIVE SHEETING IN ACCORDANCE WITH CCAUSS 627 AND 716 AND SHALL HAVE AN ANTI-GRAFFITI PROTECTIVE OVERLAY FILM THAT IS A MATCHING COMPONENT TO, AND OF THE SAME MANUFACTURER AS THE RETROREFLECTIVE SHEETING TO WHICH IT IS APPLIED. STREET NAME SIGNS SHALL CONFORM IN THEIR ENTIRETY TO CURRENT CITY STANDARDS. ALL OTHER SIGNS SHALL BE STANDARD SIZE UNLESS OTHERWISE SPECIFIED ON THE PLANS. ALL SIGN POSTS SHALL BE INSTALLED IN ACCORDANCE WITH THE CURRENT CITY STANDARDS.
7. WHEN A PROPOSED STREET LIGHT STANDARD IS LOCATED WITHIN FIVE (5) FEET OF ANY PROPOSED SIGN SHOWN ON THE PLANS TO BE MOUNTED ON A SIGNPOST, THE SIGN SHALL BE MOUNTED ON THE STREET LIGHT STANDARD AND THE SIGNPOST SHALL BE ELIMINATED.
8. ALL PERMANENT TRAFFIC CONTROL DEVICES CALLED FOR HEREON SHALL BE IN PLACE AND IN FINAL POSITION PRIOR TO ALLOWING ANY PUBLIC TRAFFIC ONTO THE PORTIONS OF THE ROAD(S) BEING IMPROVED HERE UNDER, REGARDLESS OF THE STATUS OF COMPLETION OF PAVING OR OTHER OFF-SITE IMPROVEMENTS CALLED FOR BY THESE PLANS.
9. STREET SIGNS AND STOP SIGNS SHALL BE INSTALLED PER CITY STANDARD SPECIFICATIONS FOR PLACEMENT OF STREET NAME SIGNS.
10. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY TRAFFIC CONTROL DEVICES AND FLAGGERS TO INSURE THE SAFETY OF THE PUBLIC IN OR AROUND THE WORK 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 DIRECTED BY THE CITY OF LAS VEGAS TRAFFIC ENGINEER.
15. THE CONTRACTOR SHALL CONTACT THE TRAFFIC ENGINEERING DIVISION (TRANSPORTATION SECTION) THROUGH THE PROJECT'S OFFSITE INSPECTOR PRIOR TO INITIATING PAVING TO RECEIVE DIRECTION FOR ANY PERMANENT OR TEMPORARY MODIFICATIONS TO THE APPROVED DRAWINGS REGARDING FINAL PAVEMENT TRANSITIONS, MARKINGS AND SIGNING THAT ARE REQUIRED TO MATCH ADJACENT ROADWAY SEGMENTS. THE CONTRACTOR SHALL PROVIDE A DRAWING FOR APPROVAL BY THE TRAFFIC ENGINEERING DIVISION DEPICTING ANY ADJUSTMENTS TO THE FINAL PAVEMENT MARKINGS AND SIGNAGE, WHICH MAY INCLUDE OMITTING, ADDING OR MODIFYING PAVEMENT MARKINGS AND TRAFFIC CONTROL SIGNS SUCH THAT ADEQUATE TRANSITIONS AND LANE TERMINATIONS BETWEEN ADJACENT ROADWAY SEGMENTS ARE CONSTRUCTED.

REVISED 7/3/13

LAS VEGAS VALLEY WATER DISTRICT STANDARD NOTES

LVVWD PROJECT #----

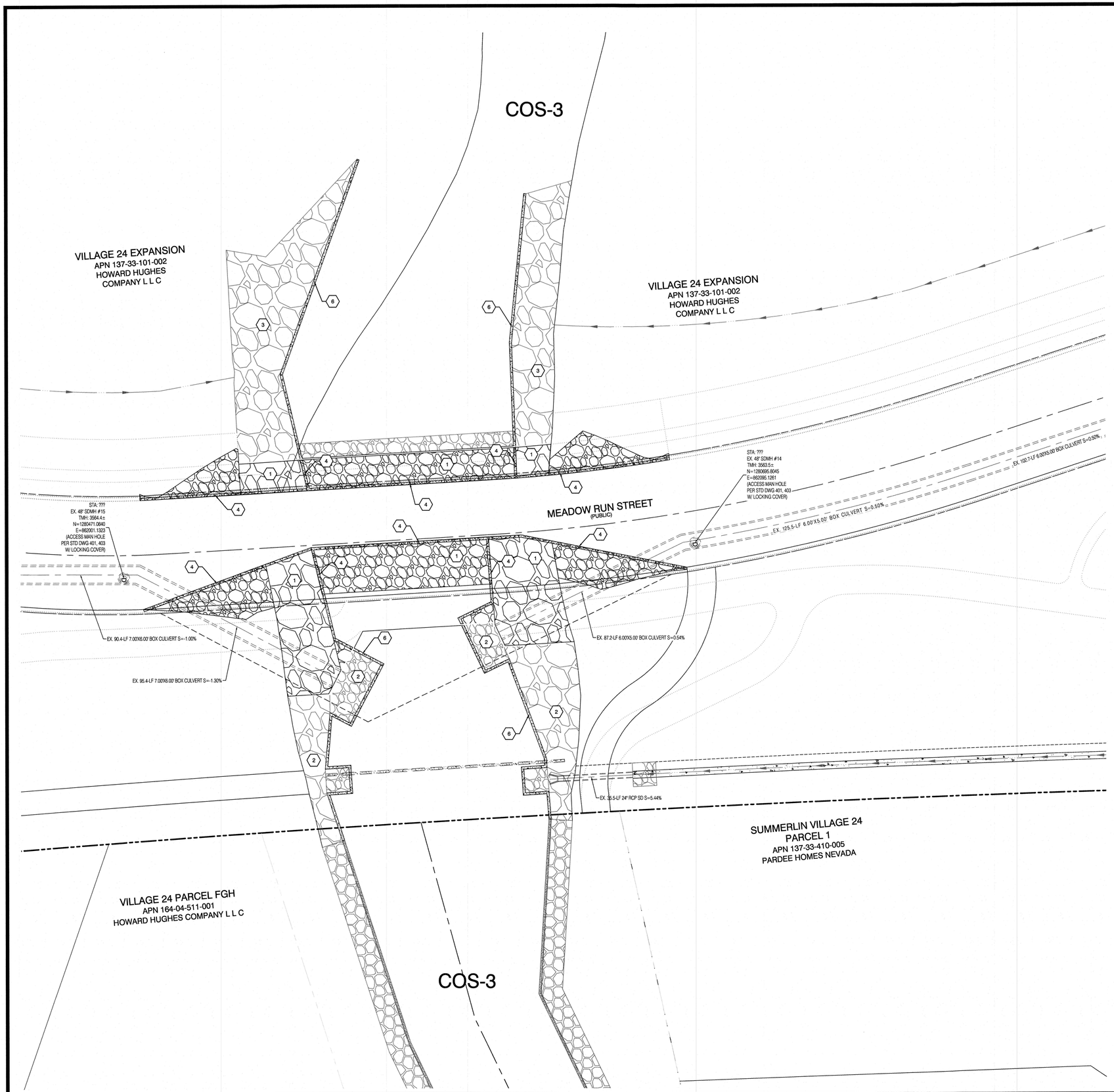
(REVISED 08/01/2017)

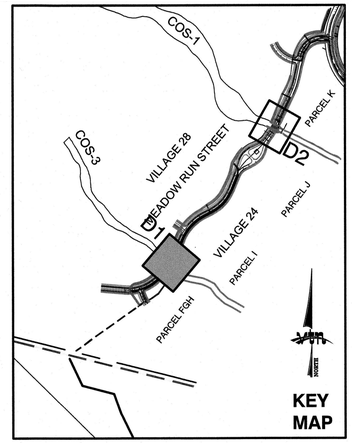
1. NO WORK SHALL BEGIN UNTIL THE WATER PLANS HAVE BEEN APPROVED FOR CONSTRUCTION BY THE LVVWD. FOLLOWING WATER PLAN APPROVAL, NOTICE SHALL BE GIVEN TO THE LVVWD COMMUNICATION SUPPORT CENTER (258-7171) TWO (2) WORKING DAYS PRIOR TO THE START OF CONSTRUCTION. FOR FUTURE INSPECTIONS, NOTICE MUST BE GIVEN 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 PLATES, DRAWINGS, AND SPECIFICATIONS, AND TO THE **2010** EDITION OF THE UNIFORM DESIGN AND CONSTRUCTION STANDARDS FOR POTABLE WATER SYSTEMS (UDACS). **THE LATEST EDITION OF 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 MOST 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, VALLEY 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 PASSING HEALTH 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 FACILITIES, LATEST REVISION, OR SPECIFICALLY APPROVED ON THESE PLANS BY SUBMITTING SHOP DRAWINGS.
13. TELEPHONE "CALL BEFORE YOU DIG" AT "811" OR 1-800-227-2600.
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 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 OWNERS ASSOCIATION IS IN EXISTENCE, OR THE AGENCY HAVING JURISDICTION. DECORATIVE SURFACE MATERIALS PLACED WITHIN THE TEN FOOT EASEMENT ABUTTING A PUBLIC OR PRIVATE STREET, IF DISTURBED BY THE LVVWD DURING THE REPAIR OR OPERATION OF ITS FACILITIES, 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.

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





NORTH

GRAPHIC SCALE

-20 0 10 20 40

1" = 20'

CONSTRUCTION NOTES

1. REMOVE EXISTING RIP-RAP
2. PROTECT EXISTING RIP-RAP IN PLACE
3. ADJUST EXISTING RIP-RAP TO GRADE
4. REMOVE EXISTING STEM WALL
5. ADJUST EXISTING STEM WALL TO GRADE
6. PROTECT EXISTING STEM WALL IN PLACE

BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

LINEAR UNIT: US SURVEY FOOT (FTUS)

DATUM (REFERENCE FRAME): NAD 83 (2011) EPOCH 2010.00

SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)

ZONE: LAS VEGAS HIGH ELEVATION ZONE

PROJECTION: TRANSVERSE MERCATOR
STANDARD PARALLEL (AND LATITUDE OF GRID ORGIN):36°15'00"N
LONGITUDE OF CENTRAL MERIDIAN:114°58'00"W
NORTHING AT GRID ORIGIN: 400,000.00 M (1,312,333.3333 FTUS)
EASTING AT CENTRAL MERIDIAN: 300,000 M (984,250.0000 FTUS)
SCALE FACTOR ON CENTRAL MERIDIAN: 1.000135 (EXACT)

NOTES:
1. ALL DISTANCES AND BEARINGS SHOWN HEREON ARE PROJECTED (GRID) VALUES BASED ON THE PRECEDING PROJECTION DEFINITION. THE PROJECTION WAS DEFINED SUCH THAT PROJECTED (GRID) DISTANCES ARE EQUIVALENT TO "GROUND" DISTANCES IN THE PROJECT AREA.

2. GRID BEARINGS SHOWN HEREON (OR IMPLIED BY GRID COORDINATES) DO NOT EQUAL GEODETIC BEARINGS DUE TO MERIDIAN CONVERGENCE.

BENCHMARK

PROJECT DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

CITY OF LAS VEGAS BENCHMARK: D368 (REVISED 2008)
NAVD88 ELEVATION: 989.574 METERS (3,246.63 FEET)

FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN.
T21S,R59E,S03

Call before you Underground
1-702-455-7511
CLARK COUNTY TRAFFIC OPERATIONS
1-702-229-6611
LAS VEGAS AREA COMPUTERIZED TRAFFIC SYSTEM

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

Call before you Dig
Avoid cutting underground utility lines. It's costly.
CALL 811
OR
1-800-227-2600
AND
1-702-455-6000
CLARK COUNTY TRAFFIC OPERATIONS

HOWARD HUGHES COMPANY, LLC
A DELEWARE LIMITED LIABILITY COMPANY
10801 W CHARLESTON BLVD SUITE 300
LAS VEGAS, NEVADA 89135
702-791-4000

CITY OF LAS VEGAS

2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5148
PH. (702) 873-7550 FAX (702) 382-2597 WEB WWW.VTNNV.COM
CONSULTING ENGINEERS ● PLANNERS ● LAND SURVEYORS

REV	DATE	BY	REVISION

DEMOLITION SHEET 1

SUMMERLIN WEST VILLAGE 24A
WESTERN BOUNDARY FIRE ACCESS, SEWER & SECOND SOURCE WATER

DRAWN BY: BCC	03/19/2019	SCALE:	1"=20'
DESIGNED BY: BCC	03/19/2019		HORIZ. N/A
CHECKED BY: WJM	04/05/2019		VERT.
PROJECT NO: 7891			

PROFESSIONAL ENGINEER STATE OF NEVADA
WILLIAM J. MEYER
EXP: 12/31/19
CIVIL
No. 15749
5/20/19

SHEET
D1
12 OF 52 SHEETS

DRAWING NO.

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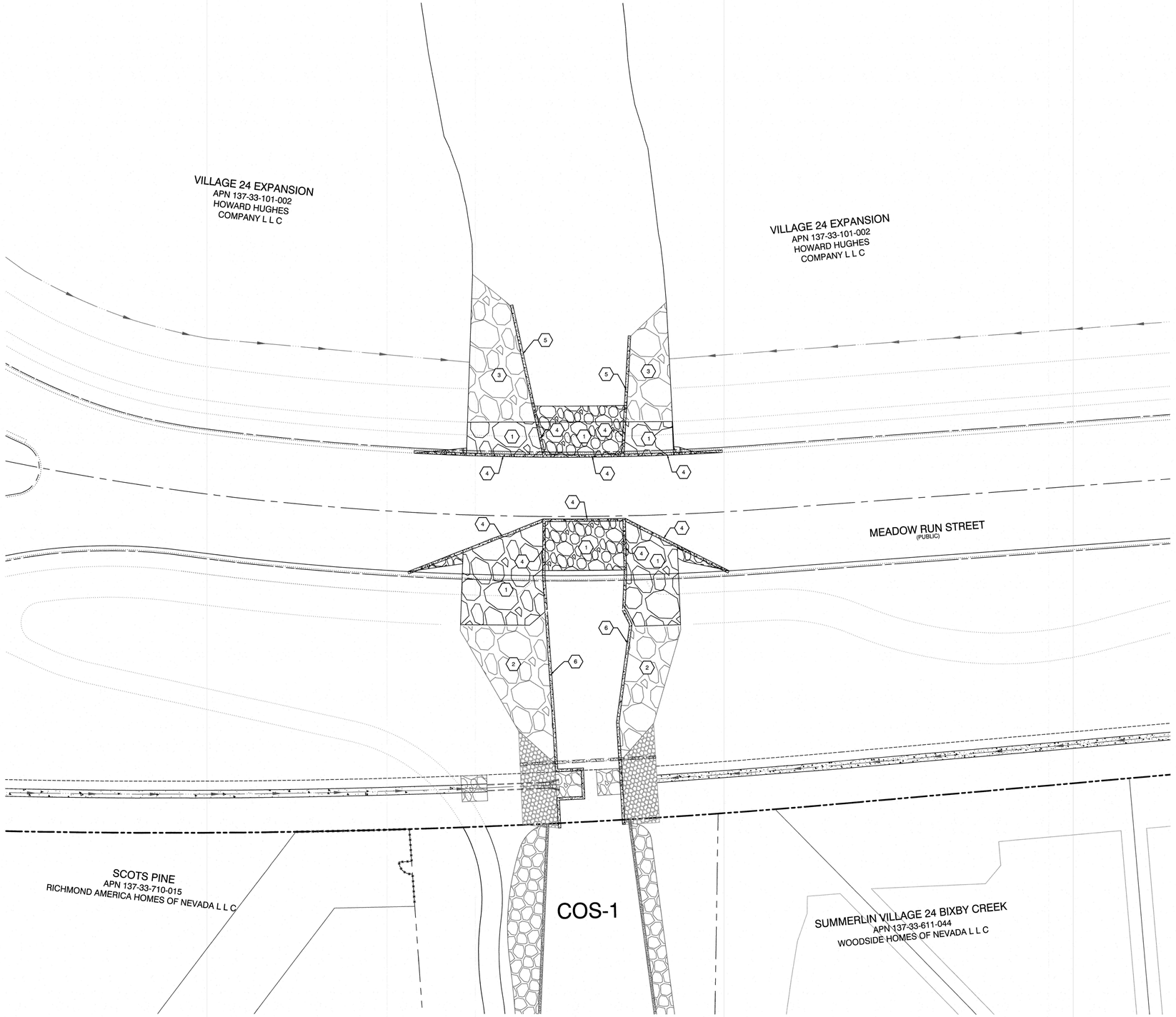

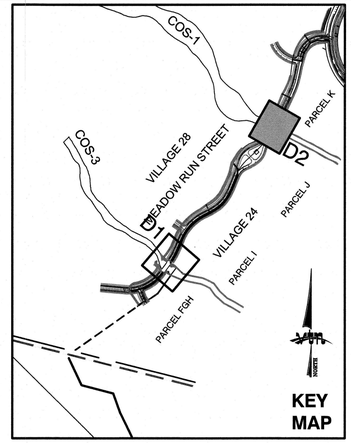

NORTH

GRAPHIC SCALE

-20 0 10 20 40

1" = 20'

BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

LINEAR UNIT: US SURVEY FOOT (FTUS)

DATUM (REFERENCE FRAME): NAD 83 (2011) EPOCH 2010.00

SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)

ZONE: LAS VEGAS HIGH ELEVATION ZONE

PROJECTION: TRANSVERSE MERCATOR
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NORTHING AT GRID ORIGIN: 400,000.00 M (1,312,333.3333 FTUS)
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SCALE FACTOR ON CENTRAL MERIDIAN: 1.000135 (EXACT)

NOTES:
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BENCHMARK

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REV	DATE	BY	REVISION

DEMOLITION SHEET 2

SUMMERLIN WEST VILLAGE 24A WESTERN BOUNDARY FIRE ACCESS, SEWER & SECOND SOURCE WATER

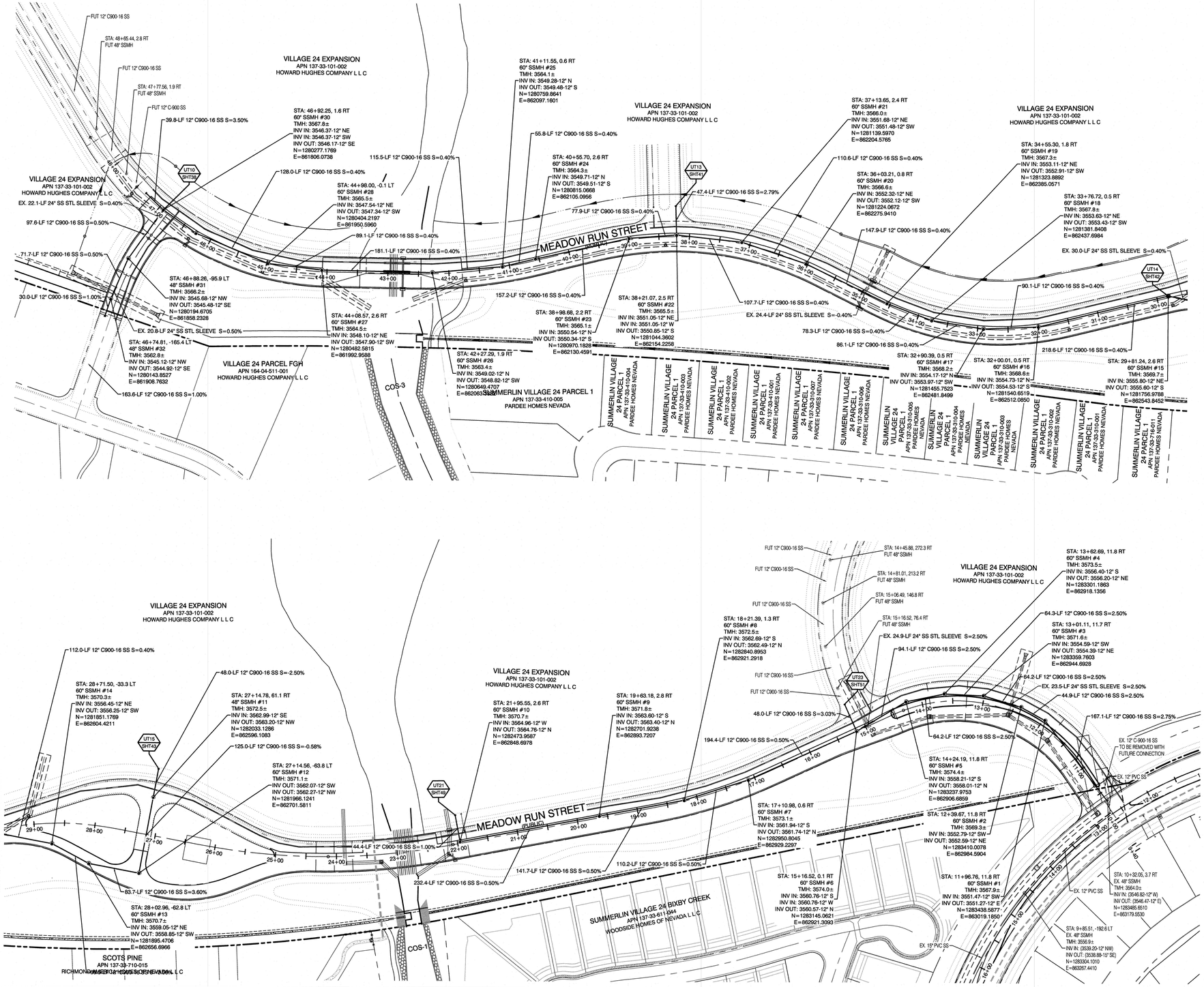
DRAWN BY: BCC	03/19/2019	SCALE:	1"=20' HORIZ.
DESIGNED BY: BCC	03/19/2019		N/A VERT.
CHECKED BY: WJM	04/05/2019	PROJECT NO:	7851

PROFESSIONAL ENGINEER STATE OF NEVADA
WILLIAM J. MEYER
EXP: 12/31/19
CIVIL
No. 13745
5/20/19

SHEET
D2
13 OF 52 SHEETS

DRAWING NO.

H:\7851\Village 24 Collector-WATER\Sheet Set\UNIT 2\7851-DEM.dwg, May 20, 2019



CONSTRUCTION NOTES

UT #= / SHT # = UTILITY PROFILE REFERENCE LABEL
UT #= SHEET INDEX
SHT#= SHEET NUMBER

BASIS OF BEARING

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WATER MAIN JOINT DEFLECTION

PVC PIPE SHALL BE DEFLECTED AT THE JOINT ONLY. THE MAXIMUM ALLOWABLE DEFLECTION SHALL BE ONE (1) DEGREE PER JOINT WITH A MINIMUM RADIUS OF CURVATURE OF 1,150 FEET, PER UDACS 2.07.01 AND 2.07.02.

FOR CHANGES IN DIRECTION EXCEEDING THE MAXIMUM ALLOWABLE JOINT DEFLECTION, FITTINGS SHALL BE USED.

WATER MAIN COVER NOTE:

ALL NEW WATER MAIN TO HAVE MINIMUM DEPTH OF COVER PER UDACS SECTION 2.08

UTILITY CROSSING NOTE:

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

WATERLINE TRENCH NOTE:

CONSTRUCT WATERLINE TRENCH SECTION AND BACKFILL PER UDACS PLATE NO. 17.

FIRE HYDRANT MARKER NOTES

BLUE COLORED REFLECTIVE RAISED PAVEMENT MARKERS ARE TO BE INSTALLED:

1. ON ROADWAYS WITH NO PARKING PERMITTED ON HYDRANT SIDE; LOCATE MAKER 8' FROM FACE OF CURB ON HYDRANT SIDE.
2. ON ROADWAYS WITH PARKING PERMITTED ON HYDRANT SIDE; LOCATE MARKER 16' FROM FACE OF CURB ON HYDRANT SIDE.

WATER PRESSURE ZONE:

WATER SERVICE LOCATED IN THE 3665 PRESSURE ZONE.

ENGINEER DISCLAIMER NOTE:

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

LAS VEGAS FIRE & RESCUE APPROVAL

BY: _____ DATE: _____

APPROVAL OF THESE PLANS SHALL NOT BE CONSTRUED TO BE A PERMIT FOR, OR AN APPROVAL OF, ANY VIOLATION OF ANY OF THE PROVISIONS OF THE STATE OR COUNTY LAWS. FIRE FLOW ---- GPM AT 20 P.S.I. RESIDUAL.

WATER LINE MARKER BALLS NOTE

INSTALL PIPELINE MARKER BALLS IN TRENCH ABOVE EACH HORIZONTAL ELBOW FITTING, PER UDACS PLATE No. 15

LAS VEGAS VALLEY WATER DISTRICT APPROVAL

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
DATE: PROJECT:----
LVVWD APPROVED FIRE FLOW ---- GPM AT 20 P.S.I. RESIDUAL

AVOID HITTING OVERHEAD AND UNDERGROUND TRAFFIC SIGNAL AND STREET LIGHT SYSTEM CONDUITS
TTI 239572
Call before you Underground
1-702-455-7511
CLARK COUNTY TRAFFIC OPERATIONS
AND
1-702-229-6611
LAS VEGAS AREA COMPUTERIZED TRAFFIC SYSTEM

Call before you Dig
Avoid cutting underground utility lines. It's costly.
CALL 811 OR
1-800-227-2600 AND
1-702-455-6000
CLARK COUNTY TRAFFIC OPERATIONS

HOWARD HUGHES COMPANY, LLC
A DELEWARE LIMITED LIABILITY COMPANY
2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5148
702-791-4000

CITY OF LAS VEGAS

2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5148
PH: (702) 873-7500 FAX: (702) 362-2897 WEB WWW.LVTNW.COM
CONSULTING ENGINEERS ● PLANNERS ● LAND SURVEYORS

REV	DATE	BY	REVISION

MASTER SANITARY SEWER UTILITY

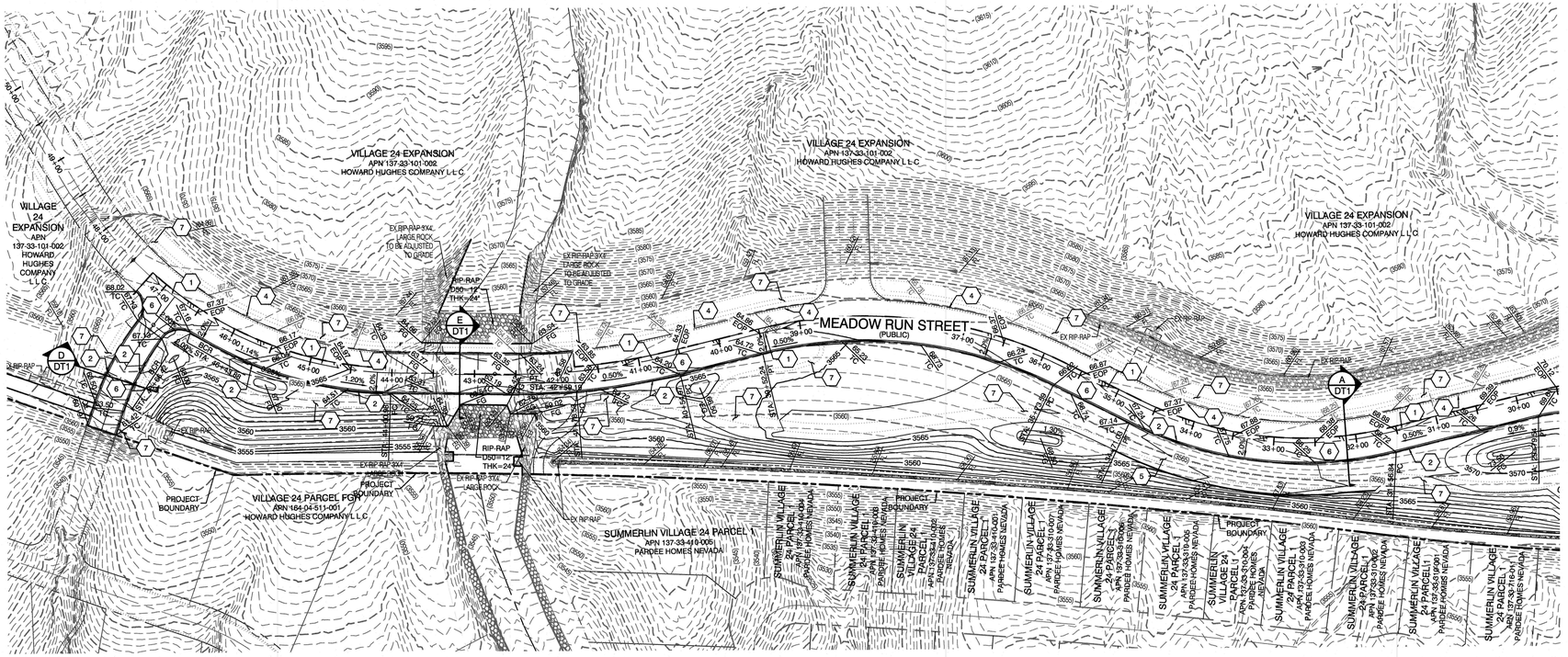
SUMMERLIN WEST VILLAGE 24A
WESTERN BOUNDARY FIRE ACCESS,
SEWER & SECOND SOURCE WATER

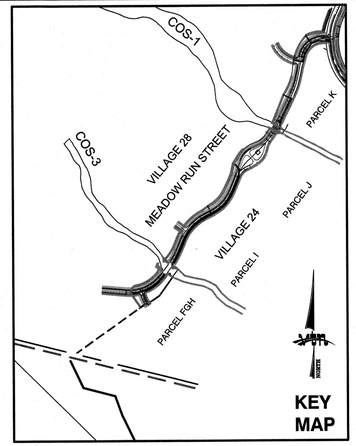
DRAWN BY: BCC — 12/27/2018
DESIGNED BY: BCC — 12/27/2018
CHECKED BY: WJM — 04/05/2019
PROJECT NO: 7851 — SCALE: HORIZ. 1"=80' VERT. N/A

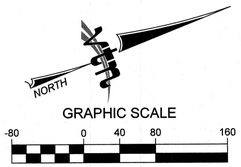
PROFESSIONAL ENGINEER — STATE OF NEVADA
WILLIAM J. MEYER
EXP: 12/31/19
CIVIL
No. 15745
5/20/19

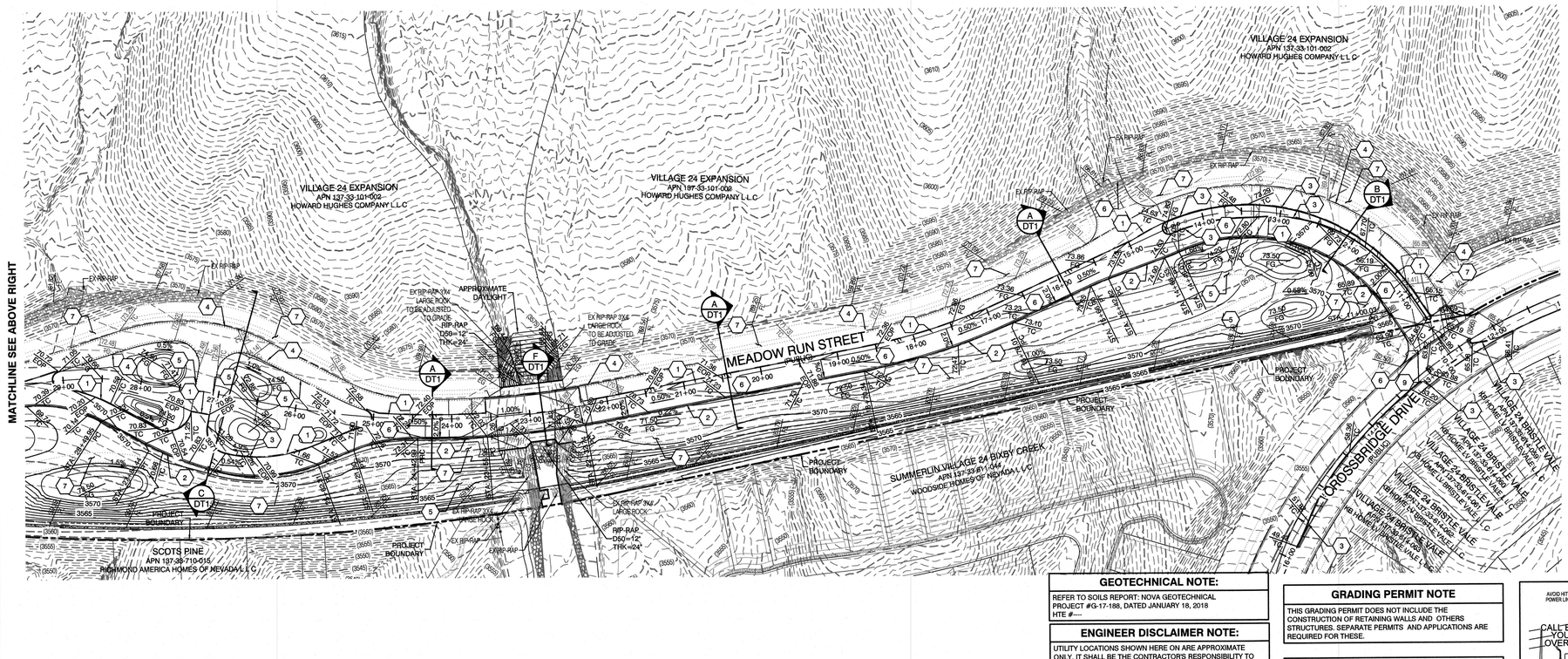
SHEET
MUTSS
14 OF 52 SHEETS
DRAWING NO.

H:\7851\Village 24 Collector-WATER\Sheet Set\UNIT 2\7851-MUTSS.dwg; May 20, 2019









CONSTRUCTION NOTES

1. EDGE OF PROPOSED PAVEMENT
2. PROPOSED 24" TYPE "L" CURB & GUTTER PER STD. DWG. 216.
3. PROPOSED TYPE "A" CURB PER STD. DWG. 219.
4. FUTURE 24" TYPE "L" CURB & GUTTER PER STD. DWG. 216.
5. FUTURE TYPE "A" CURB PER STD. DWG. 219.
6. INSTALL 4" TYPE II COMPACTED TO 95% AND 3" PAVEMENT
7. FUTURE SIDEWALK PER STD. DWG. 234.
8. FIELD VERIFY AND MATCH EXISTING
9. CONSTRUCT 8' VALLEY GUTTER PER CCAUSD # 228

EDGE OF HARDSCAPE CONSTRUCTION

BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

LINEAR UNIT: US SURVEY FOOT (FTUS)

DATUM (REFERENCE FRAME): NAD 83 (2011) EPOCH 2010.00

SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)

ZONE: LAS VEGAS HIGH ELEVATION ZONE

PROJECTION: TRANSVERSE MERCATOR
STANDARD PARALLEL (AND LATITUDE OF GRID ORIGIN):36°15'00"N
LONGITUDE OF CENTRAL MERIDIAN:114°58'00"W
NORTHING AT GRID ORIGIN: 400,000.00 M (1,312,333.3333 FTUS)
EASTING AT CENTRAL MERIDIAN: 300,000 M (984,250.0000 FTUS)
SCALE FACTOR ON CENTRAL MERIDIAN: 1.000135 (EXACT)

NOTES:
1. ALL DISTANCES AND BEARINGS SHOWN HEREON ARE PROJECTED (GRID) VALUES BASED ON THE PRECEDING PROJECTION DEFINITION. THE PROJECTION WAS DEFINED SUCH THAT PROJECTED (GRID) DISTANCES ARE EQUIVALENT TO "GROUND" DISTANCES IN THE PROJECT AREA.

2. GRID BEARINGS SHOWN HEREON (OR IMPLIED BY GRID COORDINATES) DO NOT EQUAL GEODETIC BEARINGS DUE TO MERIDIAN CONVERGENCE.

BENCHMARK

PROJECT DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

CITY OF LAS VEGAS BENCHMARK: D368 (REVISED 2008) NAVD88 ELEVATION: 989.574 METERS (3,246.63 FEET)

FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN.
T21S,R59E,S03

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

WILLIAM J MEYER , P.E. No. 15745 DATE

GEOTECHNICAL NOTE:

REFER TO SOILS REPORT: NOVA GEOTECHNICAL
PROJECT #G-17-188, DATED JANUARY 18, 2018
HTE #----

ENGINEER DISCLAIMER NOTE:

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

GRADING PERMIT NOTE

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

SIGHT VISIBILITY ZONES:

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

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY.

CALL BEFORE YOU DO OVERHEAD

1-702-227-2929

Call before you Dig
Avoid cutting underground utility lines. It's costly.
CALL 811
OR
1-800-227-2600
AND
1-702-455-6000
CLARK COUNTY TRAFFIC OPERATIONS

AVOID HITTING UNDERGROUND TRAFFIC SIGNAL AND STREET LIGHT SYSTEM CONDUITS IT'S COSTLY

Call before you Underground
1-702-455-7511
CLARK COUNTY TRAFFIC OPERATIONS
AND
1-702-229-6811
LAS VEGAS AREA COMPUTERIZED TRAFFIC SYSTEM

HOWARD HUGHES COMPANY, LLC
A DELEWARE LIMITED LIABILITY COMPANY
10801 W CHARLESTON BLVD SUITE 300
LAS VEGAS, NEVADA 89135
(702) 371-4000

CITY OF LAS VEGAS

2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5148
PH. (702) 873-7550 FAX: (702) 362-2597 WEB WWW.VTNNV.COM
CONSULTING ENGINEERS ● PLANNERS ● LAND SURVEYORS

REV	DATE	BY	REVISION

MASTER GRADING SHEET

SUMMERLIN WEST VILLAGE 24A WESTERN BOUNDARY FIRE ACCESS, SEWER & SECOND SOURCE WATER

DRAWN BY: BCC	03/21/2019		SCALE:	HORIZ.
DESIGNED BY: BCC	03/21/2019		1"=80'	VERT.
CHECKED BY: WJM	04/26/2019		PROJECT NO: 7851	N/A

PROFESSIONAL ENGINEER - STATE OF NEVADA
WILLIAM J. MEYER
EXP. 12/31/19
CIVIL
No. 15745
5/20/19

SHEET
MGRD
15 OF 52 SHEETS
DRAWING NO.

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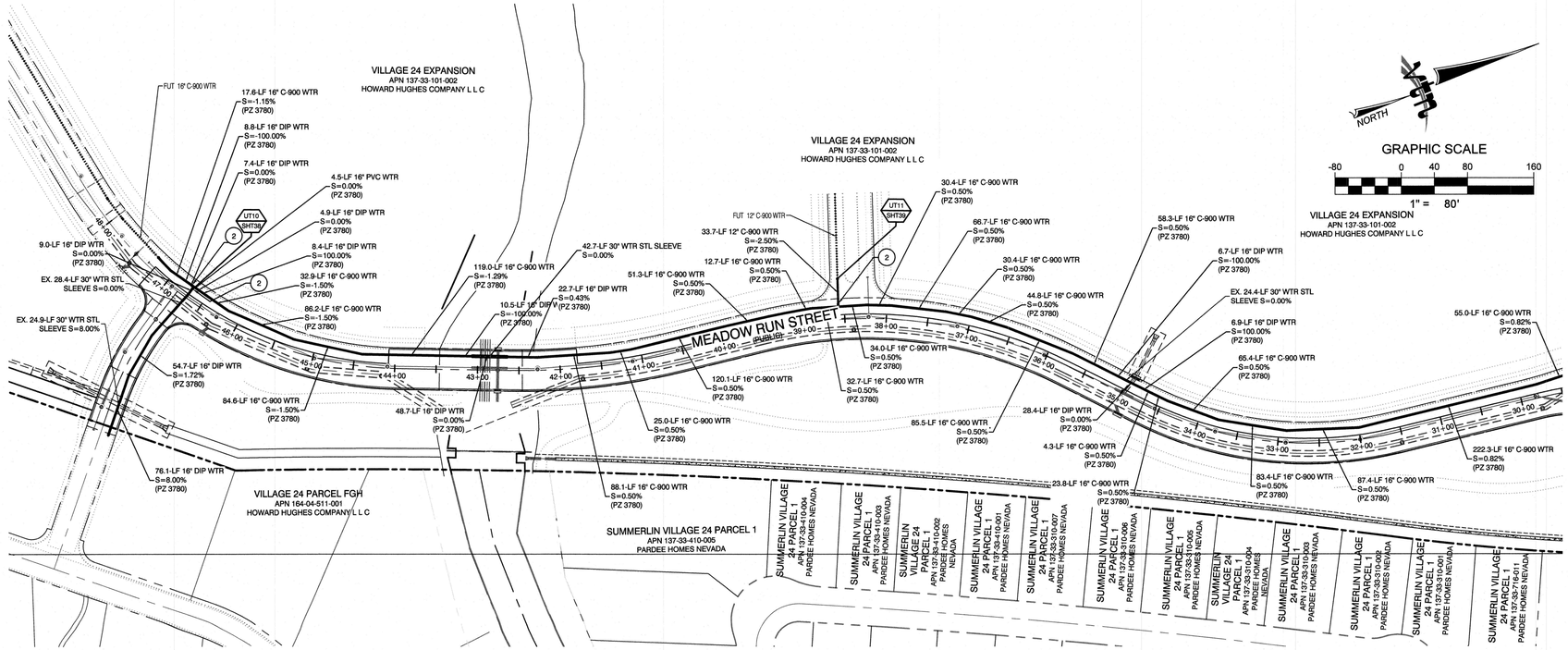
VILLAGE 24 EXPANSION
APN 137-33-101-002
HOWARD HUGHES COMPANY L L C
MEADOW RUN STREET
(PUBLIC)
SUMMERLIN VILLAGE 24 PARCEL 1
APN 137-33-410-005
PARDEE HOMES NEVADA
VILLAGE 24 PARCEL FGH
APN 164-04-511-001
HOWARD HUGHES COMPANY L L C
FUT 18" C-900 WTR
17.6-LF 16" C-900 WTR S=-1.15% (PZ 3780)
8.8-LF 16" DIP WTR S=-100.00% (PZ 3780)
7.4-LF 16" DIP WTR S=0.00% (PZ 3780)
4.5-LF 16" PVC WTR S=0.00% (PZ 3780)
4.9-LF 16" DIP WTR S=0.00% (PZ 3780)
8.4-LF 16" DIP WTR S=-100.00% (PZ 3780)
32.9-LF 16" C-900 WTR S=-1.50% (PZ 3780)
86.2-LF 16" C-900 WTR S=-1.50% (PZ 3780)
9.0-LF 16" DIP WTR S=0.00% (PZ 3780)
EX. 28.4-LF 30" WTR STL SLEEVE S=0.00%
EX. 24.9-LF 30" WTR STL SLEEVE S=0.00%
54.7-LF 16" DIP WTR S=1.72% (PZ 3780)
84.6-LF 16" C-900 WTR S=-1.50% (PZ 3780)
76.1-LF 16" DIP WTR S=8.00% (PZ 3780)
119.0-LF 16" C-900 WTR S=-1.29% (PZ 3780)
10.5-LF 16" DIP WTR S=-100.00% (PZ 3780)
22.7-LF 16" DIP WTR S=0.43% (PZ 3780)
42.7-LF 30" WTR STL SLEEVE S=0.00%
48.7-LF 16" DIP WTR S=0.00% (PZ 3780)
25.0-LF 16" C-900 WTR S=0.50% (PZ 3780)
88.1-LF 16" C-900 WTR S=0.50% (PZ 3780)
120.1-LF 16" C-900 WTR S=0.50% (PZ 3780)
51.3-LF 16" C-900 WTR S=0.50% (PZ 3780)
33.7-LF 12" C-900 WTR S=-2.50% (PZ 3780)
12.7-LF 16" C-900 WTR S=0.50% (PZ 3780)
32.7-LF 16" C-900 WTR S=0.50% (PZ 3780)
34.0-LF 16" C-900 WTR S=0.50% (PZ 3780)
30.4-LF 16" C-900 WTR S=0.50% (PZ 3780)
66.7-LF 16" C-900 WTR S=0.50% (PZ 3780)
30.4-LF 16" C-900 WTR S=0.50% (PZ 3780)
44.8-LF 16" C-900 WTR S=0.50% (PZ 3780)
85.5-LF 16" C-900 WTR S=0.50% (PZ 3780)
28.4-LF 16" DIP WTR S=0.00% (PZ 3780)
4.3-LF 16" C-900 WTR S=0.50% (PZ 3780)
58.3-LF 16" C-900 WTR S=0.50% (PZ 3780)
6.7-LF 16" DIP WTR S=-100.00% (PZ 3780)
EX. 24.4-LF 30" WTR STL SLEEVE S=0.00%
6.9-LF 16" DIP WTR S=-100.00% (PZ 3780)
65.4-LF 16" C-900 WTR S=0.50% (PZ 3780)
55.0-LF 16" C-900 WTR S=0.82% (PZ 3780)
222.3-LF 16" C-900 WTR S=0.82% (PZ 3780)
83.4-LF 16" C-900 WTR S=0.50% (PZ 3780)
87.4-LF 16" C-900 WTR S=0.50% (PZ 3780)
23.8-LF 16" C-900 WTR S=0.50% (PZ 3780)
UT10 SHT39
UT11 SHT39
UT12 SHT39
UT13 SHT39
UT14 SHT39
UT15 SHT39
UT16 SHT39
UT17 SHT39
UT18 SHT39
UT19 SHT39
UT20 SHT45
UT21 SHT45
UT22 SHT50
UT23 SHT50
UT24 SHT50
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UT32 SHT50
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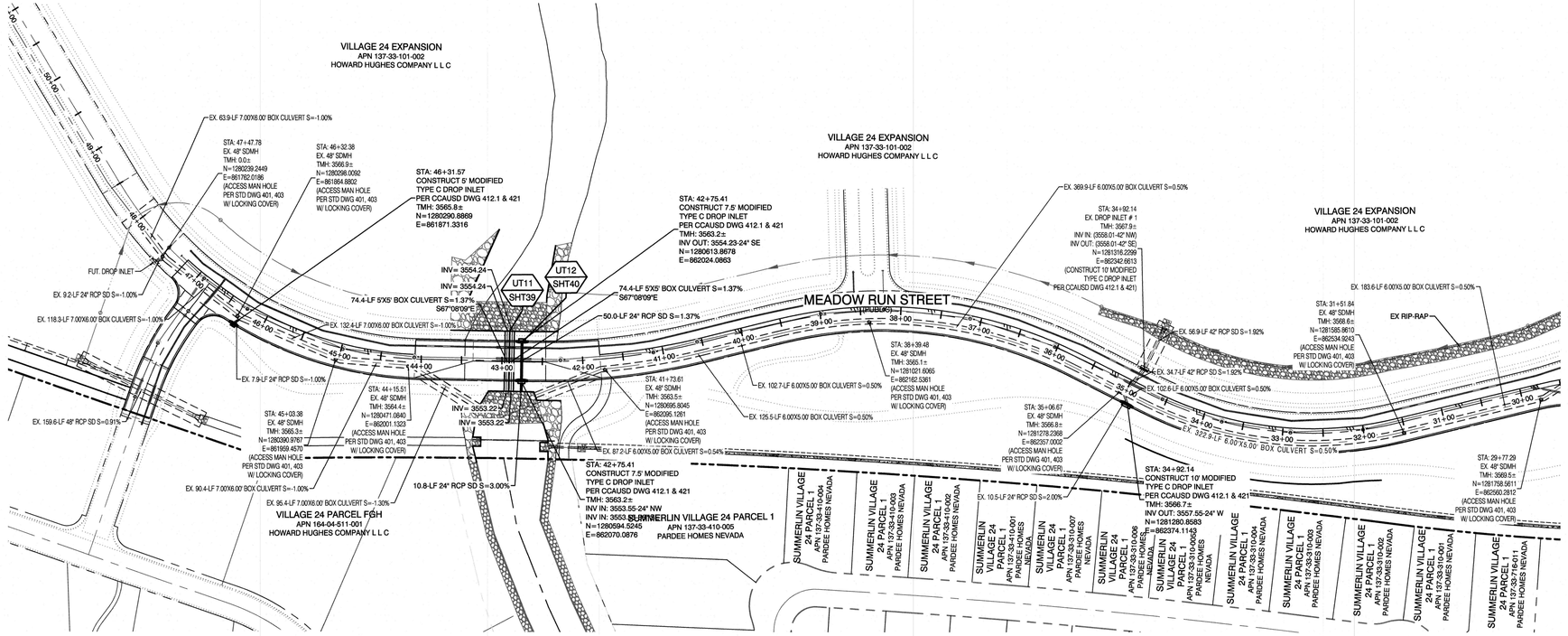
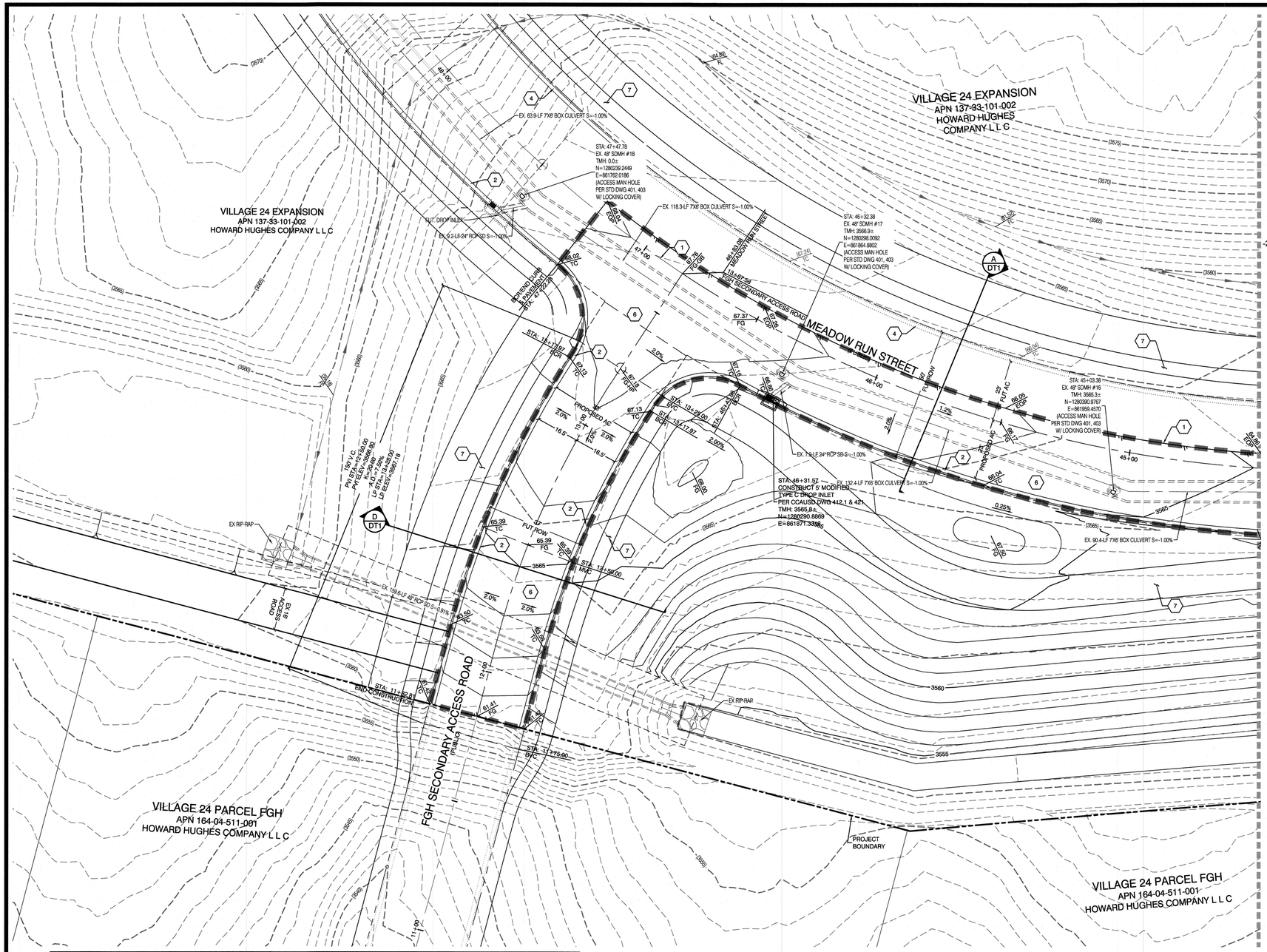
UT41 SHT50


VILLAGE 24 EXPANSION
APN 137-33-101-002
HOWARD HUGHES COMPANY L L C
EX. 63.9-LF 7.00'X6.00' BOX CULVERT S=-1.00%
STA: 47+47.78
EX. 48" SDMH
TMH: 0.0±
N=1280239.2449
E=861762.0186
(ACCESS MAN HOLE
PER STD DWG 401, 403
W/ LOCKING COVER)
STA: 46+32.38
EX. 48" SDMH
TMH: 3569.9±
N=1280298.0092
E=861854.6802
(ACCESS MAN HOLE
PER STD DWG 401, 403
W/ LOCKING COVER)
STA: 46+31.57
CONSTRUCT 5' MODIFIED
TYPE C DROP INLET
PER CCAUSD DWG 412.1 & 421
TMH: 3565.8±
N=1280290.8869
E=861871.3316
FUT. DROP INLET
EX. 9.2-LF 24" RCP SD S=-1.00%
EX. 118.3-LF 7.00'X6.00' BOX CULVERT S=-1.00%
EX. 132.4-LF 7.00'X6.00' BOX CULVERT S=-1.00%
EX. 7.9-LF 24" RCP SD S=-1.00%
EX. 159.6-LF 48" RCP SD S=0.91%
STA: 45+03.38
EX. 48" SDMH
TMH: 3565.3±
N=1280390.9767
E=861959.4570
(ACCESS MAN HOLE
PER STD DWG 401, 403
W/ LOCKING COVER)
EX. 90.4-LF 7.00'X6.00' BOX CULVERT S=-1.00%
EX. 95.4-LF 7.00'X6.00' BOX CULVERT S=-1.30%
STA: 44+15.51
EX. 48" SDMH
TMH: 3564.4±
N=1280471.0840
E=862001.1323
(ACCESS MAN HOLE
PER STD DWG 401, 403
W/ LOCKING COVER)
10.8-LF 24" RCP SD S=3.00%
INV= 3554.24
INV= 3554.24
UT11
SHT39
UT12
SHT40
74.4-LF 5'X5' BOX CULVERT S=1.37%
S67°08'09"E
74.4-LF 5'X5' BOX CULVERT S=1.37%
S67°08'09"E
50.0-LF 24" RCP SD S=1.37%
INV= 3553.22
INV= 3553.22
STA: 41+73.61
EX. 48" SDMH
TMH: 3563.5±
N=1280695.8045
E=862095.1261
(ACCESS MAN HOLE
PER STD DWG 401, 403
W/ LOCKING COVER)
EX. 87.2-LF 6.00'X5.00' BOX CULVERT S=0.54%
STA: 42+75.41
CONSTRUCT 7.5' MODIFIED
TYPE C DROP INLET
PER CCAUSD DWG 412.1 & 421
TMH: 3563.2±
INV IN: 3553.55-24" NW
INV IN: 3553.55-24" SE
N=1280594.5245
E=862070.0876
SUMMERLIN VILLAGE 24 PARCEL 1
APN 137-33-410-005
PARDEE HOMES NEVADA
VILLAGE 24 PARCEL FGH
APN 164-04-511-001
HOWARD HUGHES COMPANY L L C
MEADOW RUN STREET
PUBLIC
STA: 42+75.41
CONSTRUCT 7.5' MODIFIED
TYPE C DROP INLET
PER CCAUSD DWG 412.1 & 421
TMH: 3563.2±
INV OUT: 3554.23-24" SE
N=1280613.8678
E=862024.0863
EX. 102.7-LF 6.00'X5.00' BOX CULVERT S=0.50%
EX. 125.5-LF 6.00'X5.00' BOX CULVERT S=0.50%
STA: 39+39.48
EX. 48" SDMH
TMH: 3565.1±
N=1281021.6065
E=862162.5361
(ACCESS MAN HOLE
PER STD DWG 401, 403
W/ LOCKING COVER)
EX. 10.5-LF 24" RCP SD S=2.00%
STA: 35+06.67
EX. 48" SDMH
TMH: 3566.8±
N=1281278.2368
E=862357.0002
(ACCESS MAN HOLE
PER STD DWG 401, 403
W/ LOCKING COVER)
STA: 34+92.14
CONSTRUCT 10' MODIFIED
TYPE C DROP INLET
PER CCAUSD DWG 412.1 & 421
TMH: 3566.7±
INV OUT: 3557.55-24" W
N=1281290.8583
E=862374.1143
EX. 322.9-LF 6.00'X5.00' BOX CULVERT S=0.50%
EX. 369.9-LF 6.00'X5.00' BOX CULVERT S=0.50%
STA: 34+92.14
EX. DROP INLET # 1
TMH: 3567.9±
INV IN: (3558.01-42" NW)
INV OUT: (3558.01-42" SE)
N=1281316.2299
E=862342.6813
(CONSTRUCT 10' MODIFIED
TYPE C DROP INLET
PER CCAUSD DWG 412.1 & 421)
EX. 56.9-LF 42" RCP SD S=1.92%
EX. 34.7-LF 42" RCP SD S=1.92%
EX. 183.6-LF 6.00'X5.00' BOX CULVERT S=0.50%
EX RIP-RAP
STA: 31+51.84
EX. 48" SDMH
TMH: 3568.6±
N=1281585.8610
E=862534.9243
(ACCESS MAN HOLE
PER STD DWG 401, 403
W/ LOCKING COVER)
STA: 29+77.29
EX. 48" SDMH
TMH: 3569.5±
N=1281759.5611
E=862560.2812
(ACCESS MAN HOLE
PER STD DWG 401, 403
W/ LOCKING COVER)
MATCHLINE SEE BELOW LEFT
SUMMERLIN VILLAGE 24 PARCEL 1
APN 137-33-310-001
PARDEE HOMES NEVADA
SUMMERLIN VILLAGE 24 PARCEL 1
APN 137-33-310-002
PARDEE HOMES NEVADA
SUMMERLIN VILLAGE 24 PARCEL 1
APN 137-33-310-003
PARDEE HOMES NEVADA
SUMMERLIN VILLAGE 24 PARCEL 1
APN 137-33-310-004
PARDEE HOMES NEVADA
SUMMERLIN VILLAGE 24 PARCEL 1
APN



CONSTRUCTION NOTES

1. EDGE OF PROPOSED PAVEMENT
2. PROPOSED 24" TYPE "L" CURB & GUTTER PER STD. DWG. 216.
3. PROPOSED TYPE "A" CURB PER STD. DWG. 219.
4. FUTURE 24" TYPE "L" CURB & GUTTER PER STD. DWG. 216.
5. FUTURE TYPE "A" CURB PER STD. DWG. 219.
6. INSTALL 4" TYPE II COMPACTED TO 95% AND 3" PAVEMENT
7. FUTURE SIDEWALK PER STD. DWG. 234.
8. FIELD VERIFY AND MATCH EXISTING
9. CONSTRUCT 8' VALLEY GUTTER PER CCAUSD # 228

EDGE OF HARDSCAPE CONSTRUCTION

GRADING PERMIT NOTE

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

GEOTECHNICAL NOTE:

REFER TO SOILS REPORT: NOVA GEOTECHNICAL
PROJECT #G-17-188, DATED JANUARY 18, 2018
HTE #----

SIGHT VISIBILITY ZONES:

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

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

WILLIAM J MEYER , P.E. No. 15745 DATE

BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

LINEAR UNIT: US SURVEY FOOT (FTUS)

DATUM (REFERENCE FRAME): NAD 83 (2011) EPOCH 2010.00

SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)

ZONE: LAS VEGAS HIGH ELEVATION ZONE

PROJECTION: TRANSVERSE MERCATOR
STANDARD PARALLEL (AND LATITUDE OF GRID ORGIN):36°15'00"N
LONGITUDE OF CENTRAL MERIDIAN:114°58'00"W
NORTHING AT GRID ORIGIN: 400,000.00 M (1,312,333.3333 FTUS)
EASTING AT CENTRAL MERIDIAN: 300,000 M (984,250.0000 FTUS)
SCALE FACTOR ON CENTRAL MERIDIAN: 1.000135 (EXACT)

NOTES:
1. ALL DISTANCES AND BEARINGS SHOWN HEREON ARE PROJECTED (GRID) VALUES BASED ON THE PRECEDING PROJECTION DEFINITION. THE PROJECTION WAS DEFINED SUCH THAT PROJECTED (GRID) DISTANCES ARE EQUIVALENT TO "GROUND" DISTANCES IN THE PROJECT AREA.

2. GRID BEARINGS SHOWN HEREON (OR IMPLIED BY GRID COORDINATES) DO NOT EQUAL GEODETIC BEARINGS DUE TO MERIDIAN CONVERGENCE.

BENCHMARK

PROJECT DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

CITY OF LAS VEGAS BENCHMARK: D368 (REVISED 2008)
NAVD88 ELEVATION: 989.574 METERS (3,246.63 FEET)

FND USCG&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN.
T21S,R59E,S03

ENGINEER DISCLAIMER NOTE:

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

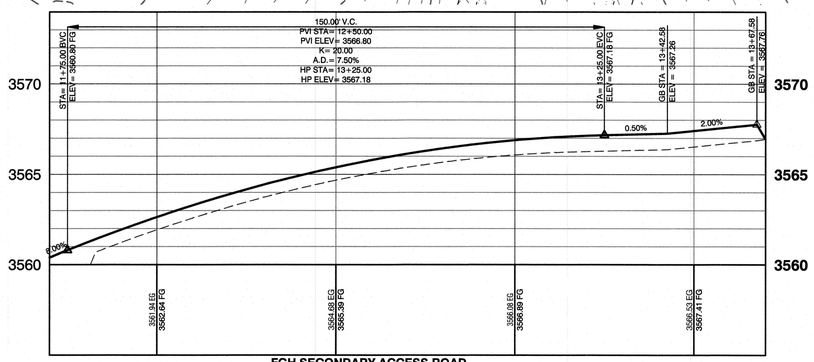
Call before you Underground
1-702-455-7511
CLARK COUNTY TRAFFIC OPERATIONS
AND
1-702-229-6611
LAS VEGAS AREA COMPUTERIZED TRAFFIC SYSTEM

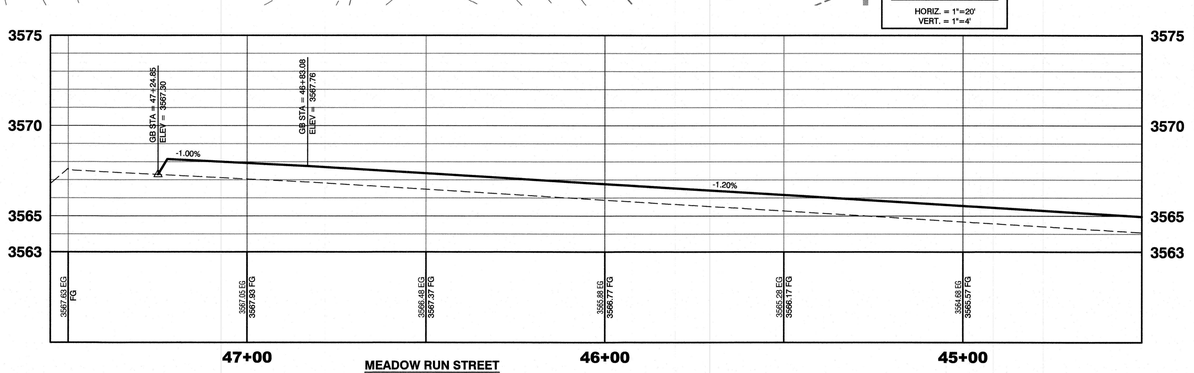
AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY.
CALL BEFORE YOU DO OVERHEAD
1-702-227-2929

Call before you Dig
Avoid cutting underground utility lines. It's costly.
CALL 811
OR
1-800-227-2600
AND
1-702-455-6000
CLARK COUNTY TRAFFIC OPERATIONS

PROFILE SCALES:

HORIZ. = 1"=20'
VERT. = 1"=4'





REV	DATE	BY	REVISION

HOWARD HUGHES COMPANY, LLC
A DELEWARE LIMITED LIABILITY COMPANY
10801 W CHARLESTON BLVE SUITE 300
LAS VEGAS, NEVADA 89135
702-214-4000

CITY OF LAS VEGAS

2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5148
PH. (702) 873-7550 FAX (702) 362-2897 WEB WWW.VTNNV.COM
CONSULTING ENGINEERS ● PLANNERS ● LAND SURVEYORS

GRADING PLAN 1
47+50 TO 44+50

SUMMERLIN WEST VILLAGE 24A
WESTERN BOUNDARY FIRE ACCESS,
SEWER & SECOND SOURCE WATER

DRAWN BY:	DATE: 12/07/2018
BCC	
DESIGNED BY:	DATE: 12/07/2018
BCC	
CHECKED BY:	DATE: 04/05/2019
WJM	
PROJECT NO:	SCALE: HORIZ. 1"=20' VERT. 1"=4'
7851	

PROFESSIONAL ENGINEER STATE OF NEVADA
WILLIAM J. MEYER
EXP: 12/31/19
CIVIL
No. 15745
5/22/19

SHEET
GR1
18 OF 52 SHEETS

DRAWING NO.

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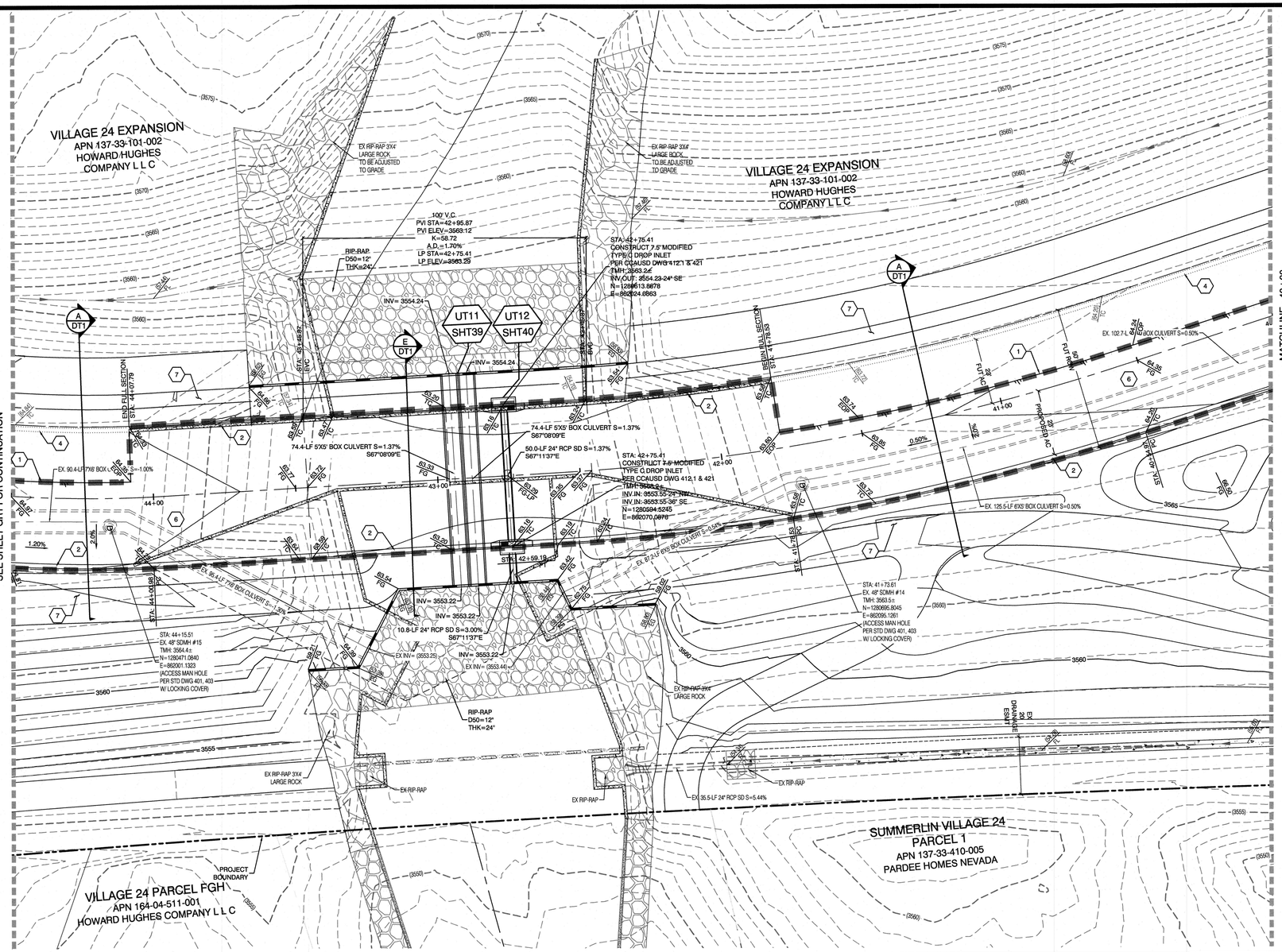

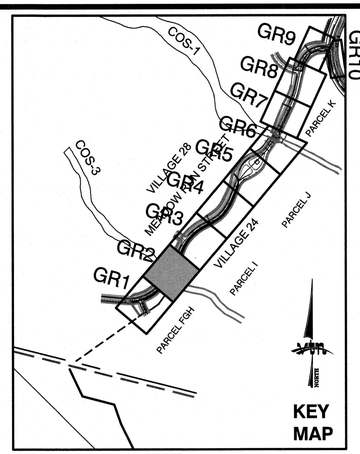



GRAPHIC SCALE

-20 0 10 20 40

1" = 20'

CONSTRUCTION NOTES

1. EDGE OF PROPOSED PAVEMENT
2. PROPOSED 24" TYPE "L" CURB & GUTTER PER STD. DWG. 216.
3. PROPOSED TYPE "A" CURB PER STD. DWG. 219.
4. FUTURE 24" TYPE "L" CURB & GUTTER PER STD. DWG. 216.
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6. INSTALL 4" TYPE II COMPACTED TO 95% AND 3" PAVEMENT
7. FUTURE SIDEWALK PER STD. DWG. 234.
8. FIELD VERIFY AND MATCH EXISTING
9. CONSTRUCT 8' VALLEY GUTTER PER CCAUSD # 228

EDGE OF HARDSCAPE CONSTRUCTION

GRADING PERMIT NOTE

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

GEOTECHNICAL NOTE:

REFER TO SOILS REPORT: NOVA GEOTECHNICAL
PROJECT #G-17-188, DATED JANUARY 18, 2018
HTE #----

SIGHT VISIBILITY ZONES:

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

PROFILE SCALES:

HORIZ. = 1"=20'
VERT. = 1"=4'





BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

LINEAR UNIT: US SURVEY FOOT (FTUS)

DATUM (REFERENCE FRAME): NAD 83 (2011) EPOCH 2010.00

SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)

ZONE: LAS VEGAS HIGH ELEVATION ZONE

PROJECTION: TRANSVERSE MERCATOR
STANDARD PARALLEL (AND LATITUDE OF GRID ORGIN):36°15'00"N
LONGITUDE OF CENTRAL MERIDIAN:114°58'00"W
NORTHING AT GRID ORIGIN: 400,000.00 M (1,312,333.3333 FTUS)
EASTING AT CENTRAL MERIDIAN: 300,000 M (984,250.0000 FTUS)
SCALE FACTOR ON CENTRAL MERIDIAN: 1.000135 (EXACT)

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BENCHMARK

PROJECT DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

CITY OF LAS VEGAS BENCHMARK: D368 (REVISED 2008)
NAVD88 ELEVATION: 989.574 METERS (3,246.63 FEET)

FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN.
T21S,R59E,S03

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

WILLIAM J MEYER , P.E. No. 15745 DATE

REV	DATE	BY	REVISION

HOWARD HUGHES COMPANY, LLC
A DELEWARE LIMITED LIABILITY COMPANY
10801 W CHARLESTON BLVD SUITE 300
LAS VEGAS, NEVADA 89135
702-791-4000

CITY OF LAS VEGAS

2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5148
PH. (702) 873-7550 FAX (702) 362-2597 WEB WWW.VTNNV.COM
CONSULTING ENGINEERS ● PLANNERS ● LAND SURVEYORS

GRADING PLAN 2
44+50 TO 40+00

SUMMERLIN WEST VILLAGE 24A
WESTERN BOUNDARY FIRE ACCESS, SEWER & SECOND SOURCE WATER

DRAWN BY:	DESIGNED BY:	CHECKED BY:	PROJECT NO:	SCALE:	HORIZ.
BCC	BCC	WJM	7851	1"=20'	VERT.
12/07/2018	12/07/2018	04/05/2019		1"=4'	

PROFESSIONAL ENGINEER STATE OF NEVADA
WILLIAM J. MEYER
No. 15745
EXP: 12/31/19
CIVIL
5/20/19

SHEET
GR2
19 OF 52 SHEETS

DRAWING NO.

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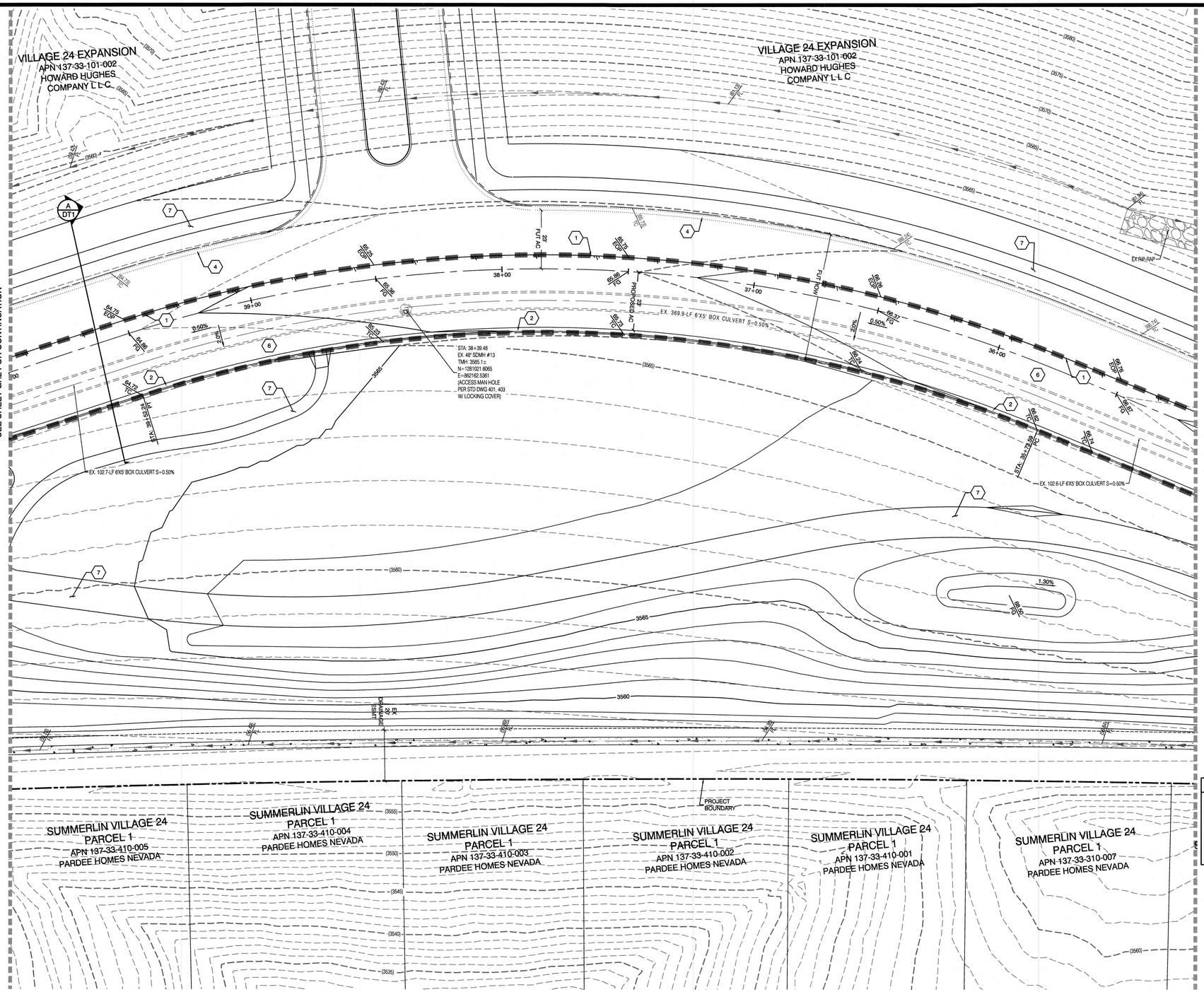

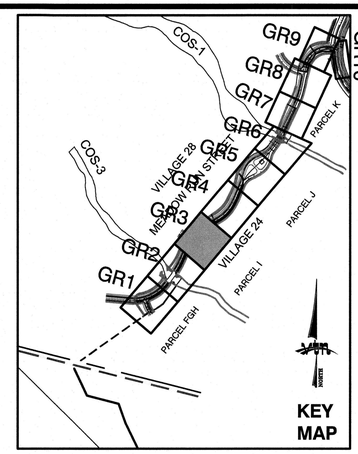

GRAPHIC SCALE

-20 0 10 20 40

1" = 20'

NORTH

Call before you Underground
1-702-455-7511
CLARK COUNTY TRAFFIC OPERATIONS
AND
1-702-229-6611
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GRADING PERMIT NOTE

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GEOTECHNICAL NOTE:

REFER TO SOILS REPORT: NOVA GEOTECHNICAL
PROJECT #G-17-188, DATED JANUARY 18, 2018
HTE #----

SIGHT VISIBILITY ZONES:

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

CONSTRUCTION NOTES

1. EDGE OF PROPOSED PAVEMENT
2. PROPOSED 24" TYPE "L" CURB & GUTTER PER STD. DWG. 216.
3. PROPOSED TYPE "A" CURB PER STD. DWG. 219.
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6. INSTALL 4" TYPE II COMPACTED TO 95% AND 3" PAVEMENT
7. FUTURE SIDEWALK PER STD. DWG. 234.
8. FIELD VERIFY AND MATCH EXISTING
9. CONSTRUCT 8' VALLEY GUTTER PER CCAUSD # 228

EDGE OF HARDSCAPE CONSTRUCTION

BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

LINEAR UNIT: US SURVEY FOOT (FTUS)

DATUM (REFERENCE FRAME): NAD 83 (2011) EPOCH 2010.00

SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)

ZONE: LAS VEGAS HIGH ELEVATION ZONE

PROJECTION: TRANSVERSE MERCATOR
STANDARD PARALLEL (AND LATITUDE OF GRID ORGIN):36°15'00"N
LONGITUDE OF CENTRAL MERIDIAN:114°58'00"W
NORTHING AT GRID ORIGIN: 400,000.00 M (1,312,333.3333 FTUS)
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SCALE FACTOR ON CENTRAL MERIDIAN: 1.000135 (EXACT)

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BENCHMARK

PROJECT DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

CITY OF LAS VEGAS BENCHMARK: D368 (REVISED 2008)
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FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN.
T21S,R56E,S03

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

WILLIAM J MEYER , P.E. No. 15745 DATE

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

REV	DATE	BY	REVISION

HOWARD HUGHES COMPANY, LLC
A DELEWARE LIMITED LIABILITY COMPANY
10801 W CHARLESTON BLVD SUITE 300
LAS VEGAS, NEVADA 89135
702) 214-4000

CITY OF LAS VEGAS

2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5148
PH. (702) 873-7550 FAX (702) 362-2597 WEB WWW.VTNNV.COM
CONSULTING ENGINEERS● PLANNERS● LAND SURVEYORS

GRADING PLAN 3
40+00 TO 35+15

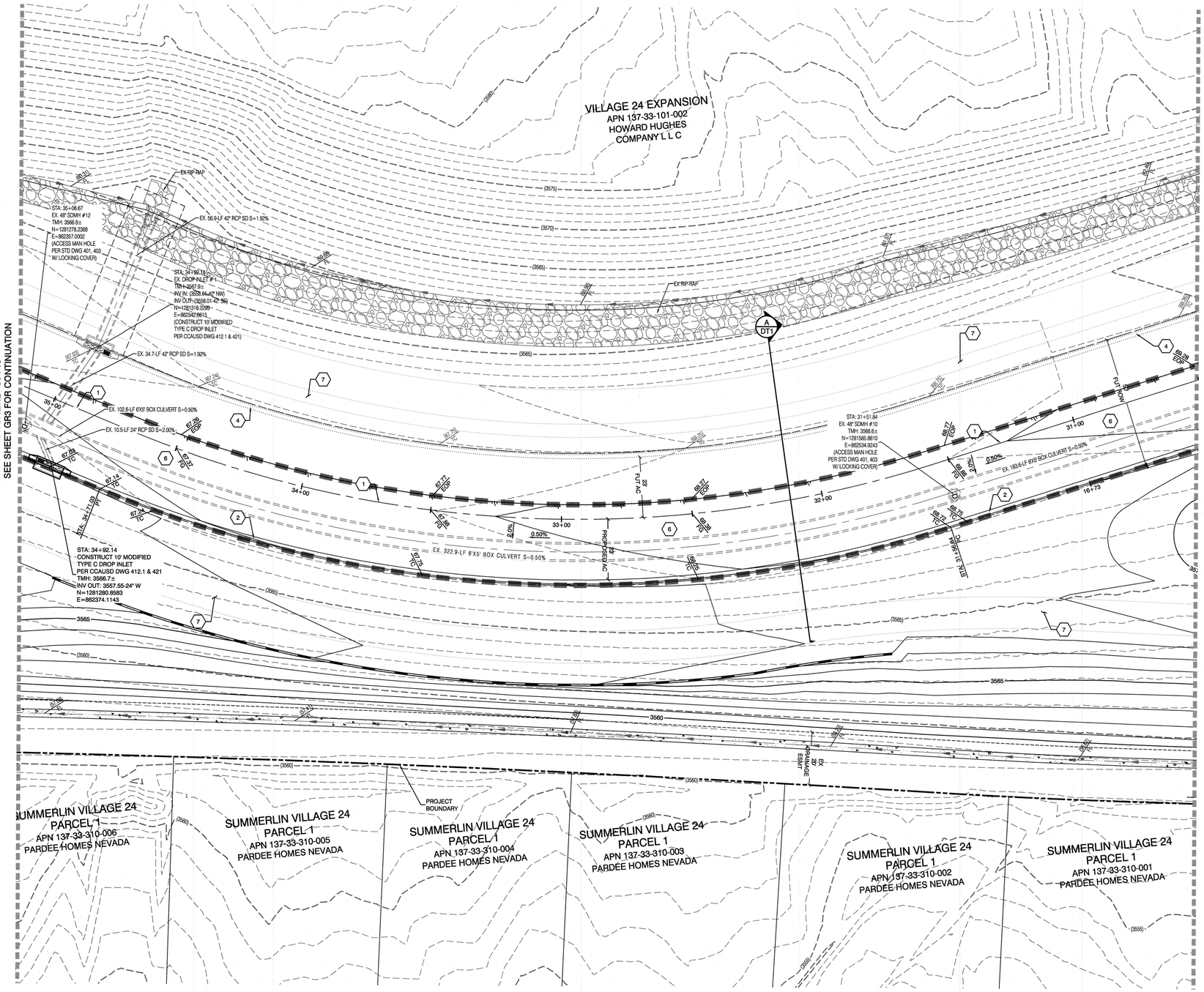
SUMMERLIN WEST VILLAGE 24A
WESTERN BOUNDARY FIRE ACCESS, SEWER & SECOND SOURCE WATER

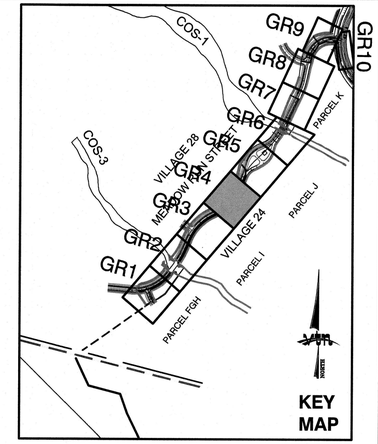
DRAWN BY: BCC	12/07/2018		
DESIGNED BY: BCC	12/07/2018		
CHECKED BY: WJM	04/05/2019	SCALE:	1"=20' HORIZ. 1"=4' VERT.
PROJECT NO: 78891			

PROFESSIONAL ENGINEER - STATE OF NEVADA
WILLIAM J. MEYER
EXP: 12/31/19
CIVIL
No. 15745
5/20/19

SHEET
GR3
20 OF 52 SHEETS
DRAWING NO.

H:\78891\Village 24 Collector\WATER\Sheet Set\UNIT 2\7891-GRD.dwg, May 20, 2019





CONSTRUCTION NOTES

1. EDGE OF PROPOSED PAVEMENT
2. PROPOSED 24" TYPE "L" CURB & GUTTER PER STD. DWG. 216.
3. PROPOSED TYPE "A" CURB PER STD. DWG. 219.
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6. INSTALL 4" TYPE II COMPACTED TO 95% AND 3" PAVEMENT
7. FUTURE SIDEWALK PER STD. DWG. 234.
8. FIELD VERIFY AND MATCH EXISTING
9. CONSTRUCT 8' VALLEY GUTTER PER CCAUSD # 228

EDGE OF HARDSCAPE CONSTRUCTION

GRADING PERMIT NOTE

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GEOTECHNICAL NOTE:

REFER TO SOILS REPORT: NOVA GEOTECHNICAL
PROJECT #G-17-188, DATED JANUARY 18, 2018
HTE #----

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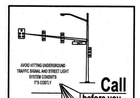







BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

LINEAR UNIT: US SURVEY FOOT (FTUS)

DATUM (REFERENCE FRAME): NAD 83 (2011) EPOCH 2010.00

SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)

ZONE: LAS VEGAS HIGH ELEVATION ZONE

PROJECTION: TRANSVERSE MERCATOR
STANDARD PARALLEL (AND LATITUDE OF GRID ORGIN):36°15'00"N
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SCALE FACTOR ON CENTRAL MERIDIAN: 1.000135 (EXACT)

NOTES:
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BENCHMARK

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CITY OF LAS VEGAS BENCHMARK: D368 (REVISED 2008)
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T21S,R59E,S03

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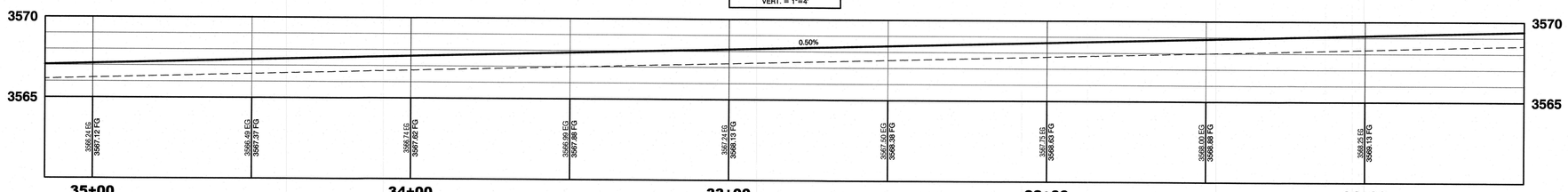
I CERTIFY THAT THIS GRADING PLAN CONFORMS TO THE APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE WITH CITY OF LAS VEGAS, #----

WILLIAM J MEYER , P.E. No. 15745 DATE

PROFILE SCALES:

HORIZ. = 1"=20'
VERT. = 1"=4'



REV	DATE	BY	REVISION

HOWARD HUGHES COMPANY, LLC
A DELEWARE LIMITED LIABILITY COMPANY
10801 W CHARLESTON BLVE SUITE 300
LAS VEGAS, NEVADA 89135
702-791-4000

CITY OF LAS VEGAS

2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5148
PH. (702) 873-7550 FAX (702) 362-2597 WEB WWW.VTNNV.COM
CONSULTING ENGINEERS ● PLANNERS ● LAND SURVEYORS

GRADING PLAN 4
35+15 TO 30+50

SUMMERLIN WEST VILLAGE 24A
WESTERN BOUNDARY FIRE ACCESS, SEWER & SECOND SOURCE WATER

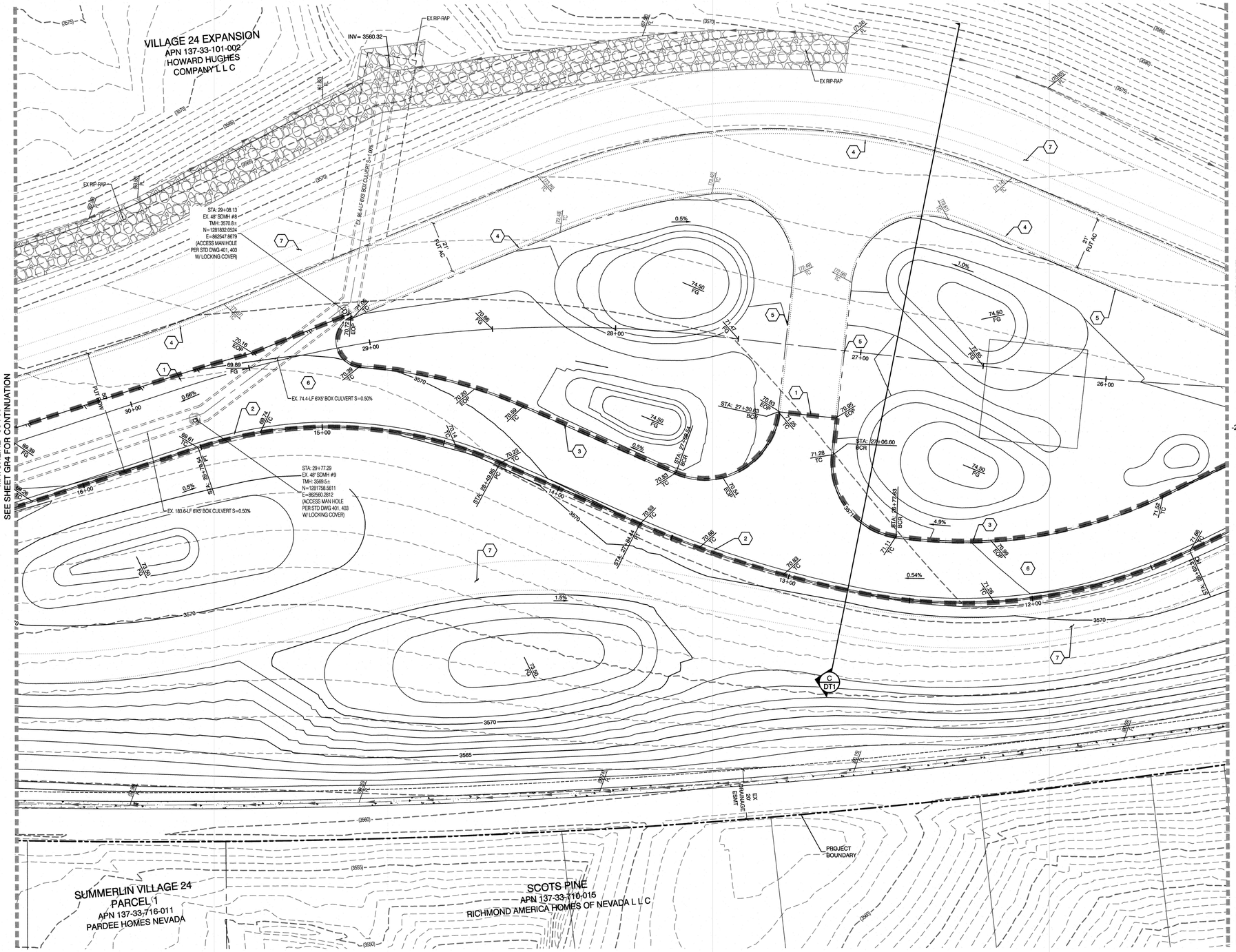
DRAWN BY:	DESIGNED BY:	CHECKED BY:	PROJECT NO:
BCC	BCC	WJM	7851

12/07/2018	12/07/2018	04/05/2019	
			SCALE:
			HORIZ: 1"=20'
			VERT: 1"=4'

PROFESSIONAL ENGINEER STATE OF NEVADA
WILLIAM J. MEYER
EXP: 12/31/19
CIVIL
No. 15745
5/20/19

SHEET
GR4
21 OF 52 SHEETS
DRAWING NO.

H:\7851\Village 24 Collector-WATER\Sheet Set\UNIT 2\7851-GRD-2.dwg May 20, 2019



CONSTRUCTION NOTES

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2. PROPOSED 24" TYPE "L" CURB & GUTTER PER STD. DWG. 216.
3. PROPOSED TYPE "A" CURB PER STD. DWG. 219.
4. FUTURE 24" TYPE "L" CURB & GUTTER PER STD. DWG. 216.
5. FUTURE TYPE "A" CURB PER STD. DWG. 219.
6. INSTALL 4" TYPE II COMPACTED TO 95% AND 3" PAVEMENT
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EDGE OF HARDSCAPE CONSTRUCTION

GRADING PERMIT NOTE

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GEOTECHNICAL NOTE:

REFER TO SOILS REPORT: NOVA GEOTECHNICAL
PROJECT #G-17-188, DATED JANUARY 18, 2018
HTE #----

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

BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

LINEAR UNIT: US SURVEY FOOT (FTUS)

DATUM (REFERENCE FRAME): NAD 83 (2011) EPOCH 2010.00

SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)

ZONE: LAS VEGAS HIGH ELEVATION ZONE

PROJECTION: TRANSVERSE MERCATOR
STANDARD PARALLEL (AND LATITUDE OF GRID ORGIN):38°15'00"N
LONGITUDE OF CENTRAL MERIDIAN:114°58'00"W
NORTHING AT GRID ORIGIN: 400,000.00 M (1,312,333.3333 FTUS)
EASTING AT CENTRAL MERIDIAN: 300,000 M (984,250.0000 FTUS)
SCALE FACTOR ON CENTRAL MERIDIAN: 1.000135 (EXACT)

NOTES:
1. ALL DISTANCES AND BEARINGS SHOWN HEREON ARE PROJECTED (GRID) VALUES BASED ON THE PRECEDING PROJECTION DEFINITION. THE PROJECTION WAS DEFINED SUCH THAT PROJECTED (GRID) DISTANCES ARE EQUIVALENT TO "GROUND" DISTANCES IN THE PROJECT AREA.

2. GRID BEARINGS SHOWN HEREON (OR IMPLIED BY GRID COORDINATES) DO NOT EQUAL GEODETIC BEARINGS DUE TO MERIDIAN CONVERGENCE.

BENCHMARK

PROJECT DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

CITY OF LAS VEGAS BENCHMARK: D368 (REVISED 2008)
NAVD88 ELEVATION: 969.574 METERS (3,246.63 FEET)

FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN.
T21S,R59E,S03

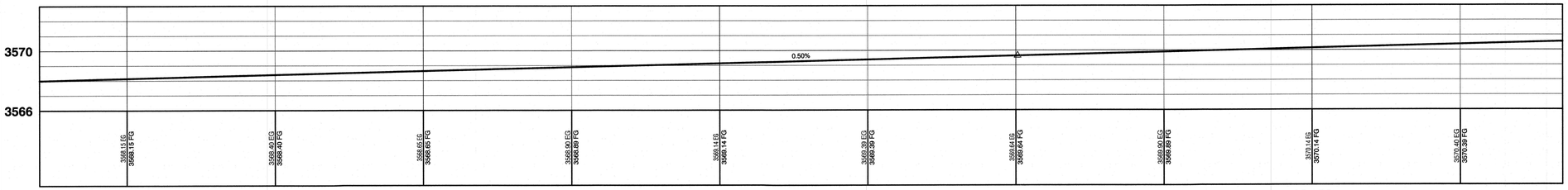
ENGINEER DISCLAIMER NOTE:

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

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

WILLIAM J MEYER , P.E. No. 15745 DATE

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



REV	DATE	BY	REVISION

HOWARD HUGHES COMPANY, LLC
A DELEWARE LIMITED LIABILITY COMPANY
10801 W CHARLESTON BLVD SUITE 300
LAS VEGAS, NEVADA 89135
702-791-4000

CITY OF LAS VEGAS

2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5148
PH. (702) 873-7550 FAX (702) 362-2597 WEB WWW.VTNNV.COM
CONSULTING ENGINEERS ● PLANNERS ● LAND SURVEYORS

GRADING PLAN 5
30+50 TO 25+50

SUMMERLIN WEST VILLAGE 24A
WESTERN BOUNDARY FIRE ACCESS, SEWER & SECOND SOURCE WATER

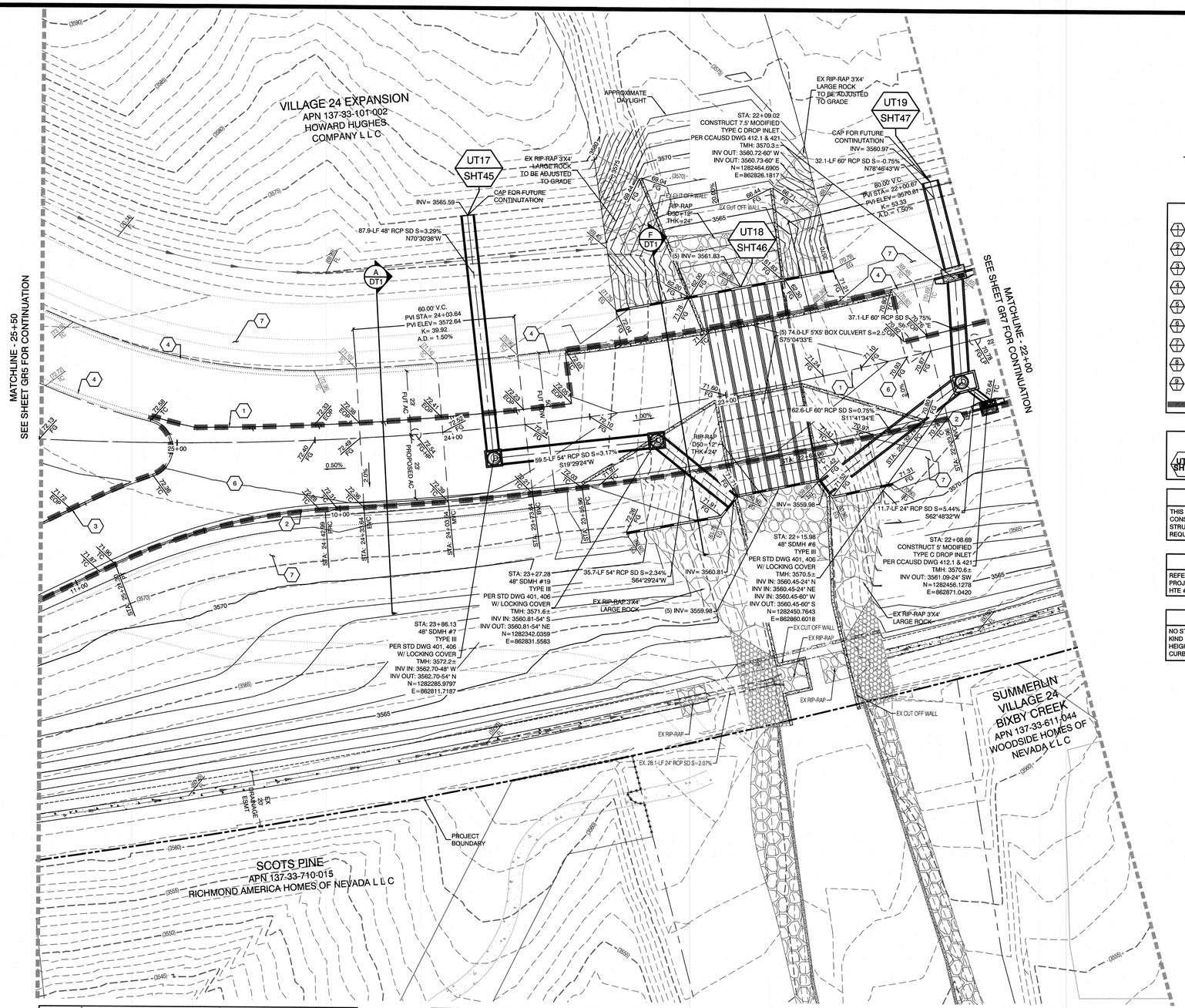
DRAWN BY: BCC — 12/07/2018
DESIGNED BY: BCC — 12/07/2018
CHECKED BY: WJM — 04/05/2019
PROJECT NO: 7851
SCALE: HORIZ. 1"=20' VERT. 1"=4'

PROFESSIONAL ENGINEER STATE OF NEVADA
WILLIAM J. MEYER
EXP: 12/31/19
CIVIL
No. 15745
5/20/19

SHEET
GR5
22 OF 52 SHEETS

DRAWING NO.

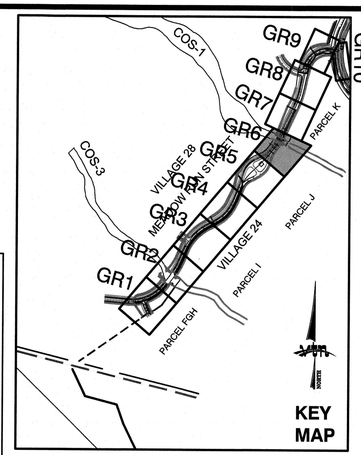
H:\7851\Village 24 Collector-WATER\Sheet Set\UNIT 2\7851-GRD-2.dwg, May 20, 2019



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



GRAPHIC SCALE
-20 0 10 20 40
1" = 20



CONSTRUCTION NOTES

1. EDGE OF PROPOSED PAVEMENT
2. PROPOSED 24" TYPE "L" CURB & GUTTER PER STD. DWG. 216.
3. PROPOSED TYPE "A" CURB PER STD. DWG. 219.
4. FUTURE 24" TYPE "L" CURB & GUTTER PER STD. DWG. 216.
5. FUTURE TYPE "A" CURB PER STD. DWG. 219.
6. INSTALL 4" TYPE II COMPACTED TO 95% AND 3' PAVEMENT
7. FUTURE SIDEWALK PER STD. DWG. 234.
8. FIELD VERIFY AND MATCH EXISTING
9. CONSTRUCT 8' VALLEY GUTTER PER CCAUSD # 228

EDGE OF HARDSCAPE CONSTRUCTION

CONSTRUCTION NOTES

UT # / SHT # — UTILITY PROFILE REFERENCE LABEL
UT #= SHEET INDEX
SHT#= SHEET NUMBER

GRADING PERMIT NOTE

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

GEOTECHNICAL NOTE:

REFER TO SOILS REPORT: NOVA GEOTECHNICAL
PROJECT #G-17-188, DATED JANUARY 18, 2018
HTE #----

SIGHT VISIBILITY ZONES:

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

BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

LINEAR UNIT: US SURVEY FOOT (FTUS)

DATUM (REFERENCE FRAME): NAD 83 (2011) EPOCH 2010.00

SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)

ZONE: LAS VEGAS HIGH ELEVATION ZONE

PROJECTION: TRANSVERSE MERCATOR
STANDARD PARALLEL (AND LATITUDE OF GRID ORGIN):36°15'00"N
LONGITUDE OF CENTRAL MERIDIAN:114°58'00"W
NORTHING AT GRID ORIGIN: 400,000.00 M (1,312,333.3333 FTUS)
EASTING AT CENTRAL MERIDIAN: 300,000 M (984,250.0000 FTUS)
SCALE FACTOR ON CENTRAL MERIDIAN: 1.000135 (EXACT)

NOTES:
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2. GRID BEARINGS SHOWN HEREON (OR IMPLIED BY GRID COORDINATES) DO NOT EQUAL GEODETIC BEARINGS DUE TO MERIDIAN CONVERGENCE.

BENCHMARK

PROJECT DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

CITY OF LAS VEGAS BENCHMARK: D368 (REVISED 2008)
NAVD88 ELEVATION: 989.574 METERS (3,246.63 FEET)

FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN.
T21S,R59E,S03

ENGINEER DISCLAIMER NOTE:

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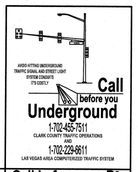




I CERTIFY THAT THIS GRADING PLAN CONFORMS TO THE APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE WITH CITY OF LAS VEGAS, #----

WILLIAM J MEYER , P.E. No. 15745 DATE

HOWARD HUGHES COMPANY, LLC
A DELEWARE LIMITED LIABILITY COMPANY
1980 FESTIVAL PLAZA DRIVE SUITE 300
LAS VEGAS, NEVADA 89135
702-791-4000

2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5148
PH. (702) 873-7550 FAX (702) 382-2897 WEB WWW.VTNNV.COM
CONSULTING ENGINEERS ● PLANNERS ● LAND SURVEYORS

REV	DATE	BY	REVISION

CITY OF LAS VEGAS

GRADING PLAN 6
25+50 TO 22+00

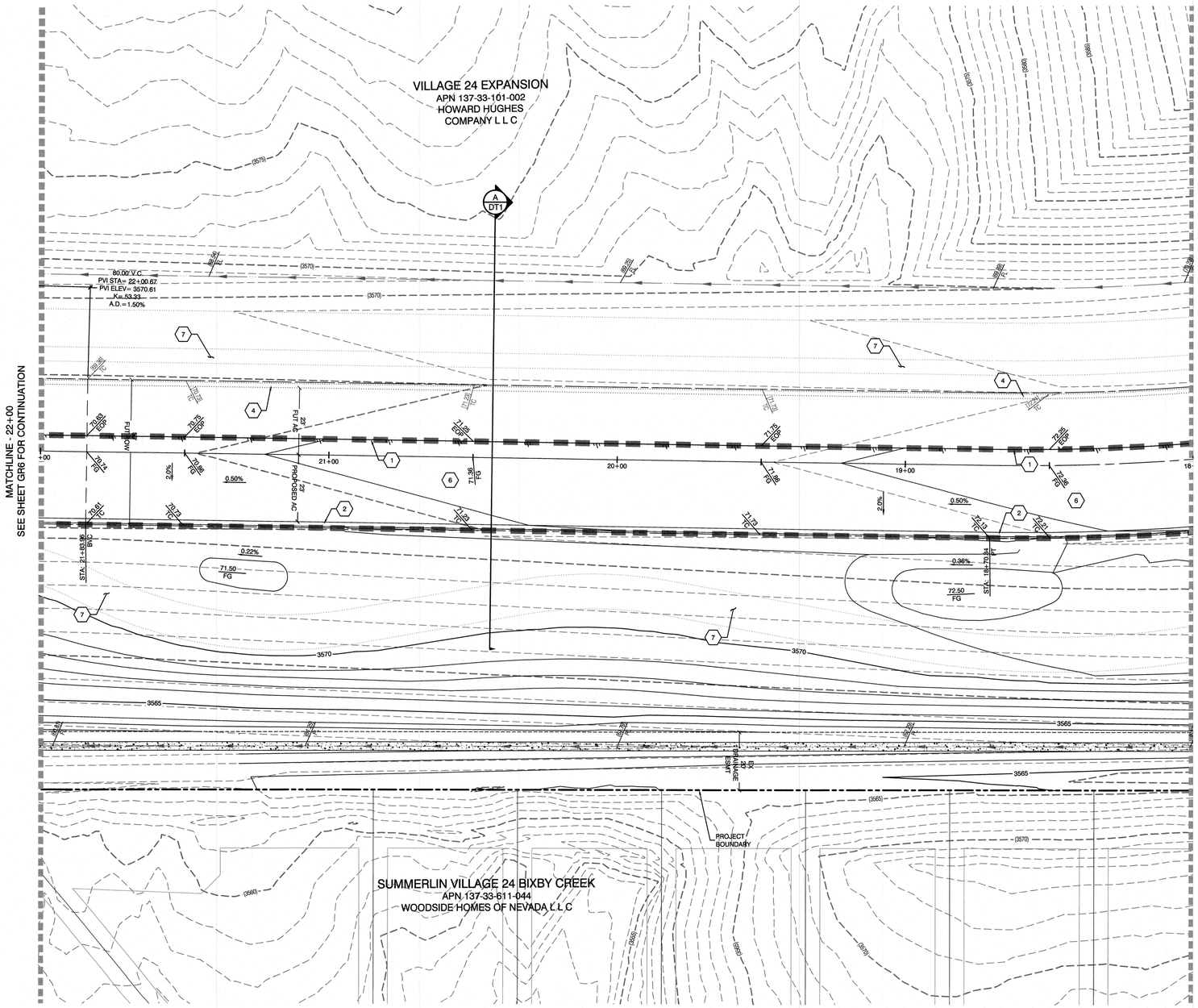
SUMMERLIN WEST VILLAGE 24A
WESTERN BOUNDARY FIRE ACCESS,
SEWER & SECOND SOURCE WATER

DRAWN BY: BCC 12/07/2018
DESIGNED BY: BCC 12/07/2018
CHECKED BY: WJM 04/05/2019
PROJECT NO: 7851
SCALE: HORIZ. 1"=20' VERT. 1"=4'

PROFESSIONAL ENGINEER - STATE OF NEVADA
WILLIAM J. MEYER
EXP: 12/31/19
CIVIL
No. 15745
5/20/19

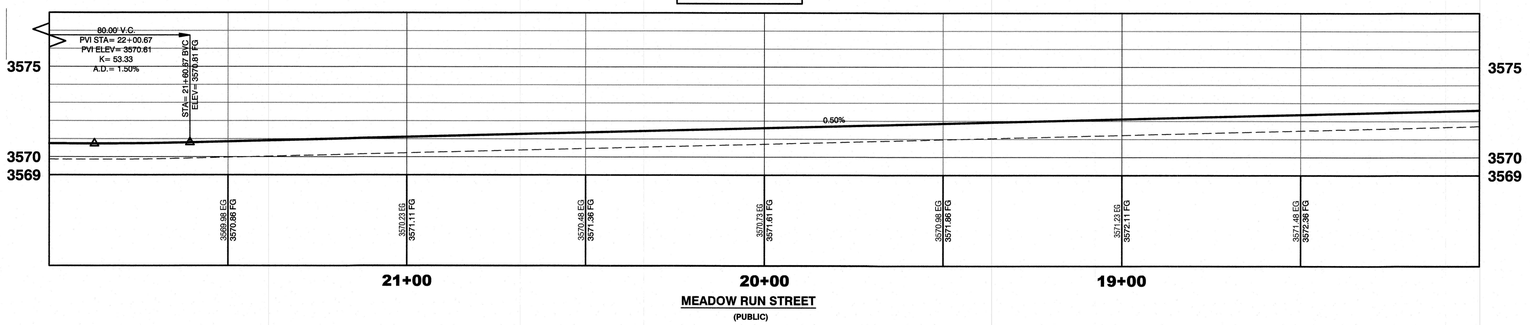
SHEET
GR6
23 OF 52 SHEETS
DRAWING NO.

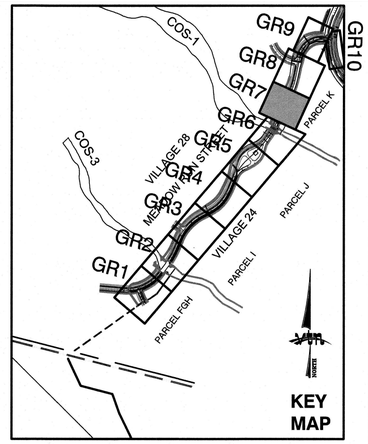
H:\7851\Village 24 Collector-WATER\Sheet Set\UNIT 2\7851-GRD-2.dwg; May 20, 2019



PROFILE SCALES:

HORIZ. = 1"=20'
VERT. = 1"=4'







GRAPHIC SCALE

-20 0 10 20 40

1" = 20

CONSTRUCTION NOTES

1. EDGE OF PROPOSED PAVEMENT
2. PROPOSED 24" TYPE "L" CURB & GUTTER PER STD. DWG. 216.
3. PROPOSED TYPE "A" CURB PER STD. DWG. 219.
4. FUTURE 24" TYPE "L" CURB & GUTTER PER STD. DWG. 216.
5. FUTURE TYPE "A" CURB PER STD. DWG. 219.
6. INSTALL 4" TYPE II COMPACTED TO 95% AND 3" PAVEMENT
7. FUTURE SIDEWALK PER STD. DWG. 234.
8. FIELD VERIFY AND MATCH EXISTING
9. CONSTRUCT 8' VALLEY GUTTER PER CCAUSD # 228

EDGE OF HARDSCAPE CONSTRUCTION

GRADING PERMIT NOTE

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

GEOTECHNICAL NOTE:

REFER TO SOILS REPORT: NOVA GEOTECHNICAL
PROJECT #G-17-188, DATED JANUARY 18, 2018
HTE #----

SIGHT VISIBILITY ZONES:

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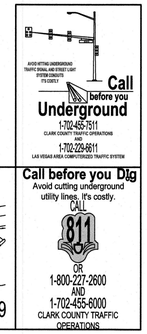

BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

LINEAR UNIT: US SURVEY FOOT (FTUS)

DATUM (REFERENCE FRAME): NAD 83 (2011) EPOCH 2010.00

SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)

ZONE: LAS VEGAS HIGH ELEVATION ZONE

PROJECTION: TRANSVERSE MERCATOR
STANDARD PARALLEL (AND LATITUDE OF GRID ORGIN):36°15'00"N
LONGITUDE OF CENTRAL MERIDIAN:114°58'00"W
NORTHING AT GRID ORIGIN: 400,000.00 M (1,312,333.3333 FTUS)
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SCALE FACTOR ON CENTRAL MERIDIAN: 1.000135 (EXACT)

NOTES:
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BENCHMARK

PROJECT DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

CITY OF LAS VEGAS BENCHMARK: D368 (REVISED 2008)
NAVD88 ELEVATION: 989.574 METERS (3,246.63 FEET)

FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN.
T21S,R59E,S03

ENGINEER DISCLAIMER NOTE:

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

WILLIAM J MEYER , P.E. No. 15745 DATE

REV	DATE	BY	REVISION

CITY OF LAS VEGAS

HOWARD HUGHES COMPANY, LLC
A DELAWARE LIMITED LIABILITY COMPANY
10801 W CHARLESTON BLVD SUITE 300
LAS VEGAS, NEVADA 89135
702-791-4000

2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5148
PH. (702) 873-7500 FAX (702) 362-2597 WEB WWW.VTNNV.COM
CONSULTING ENGINEERS ● PLANNERS ● LAND SURVEYORS

GRADING PLAN 7
22+00 TO 18+00

SUMMERLIN WEST VILLAGE 24A
WESTERN BOUNDARY FIRE ACCESS, SEWER & SECOND SOURCE WATER

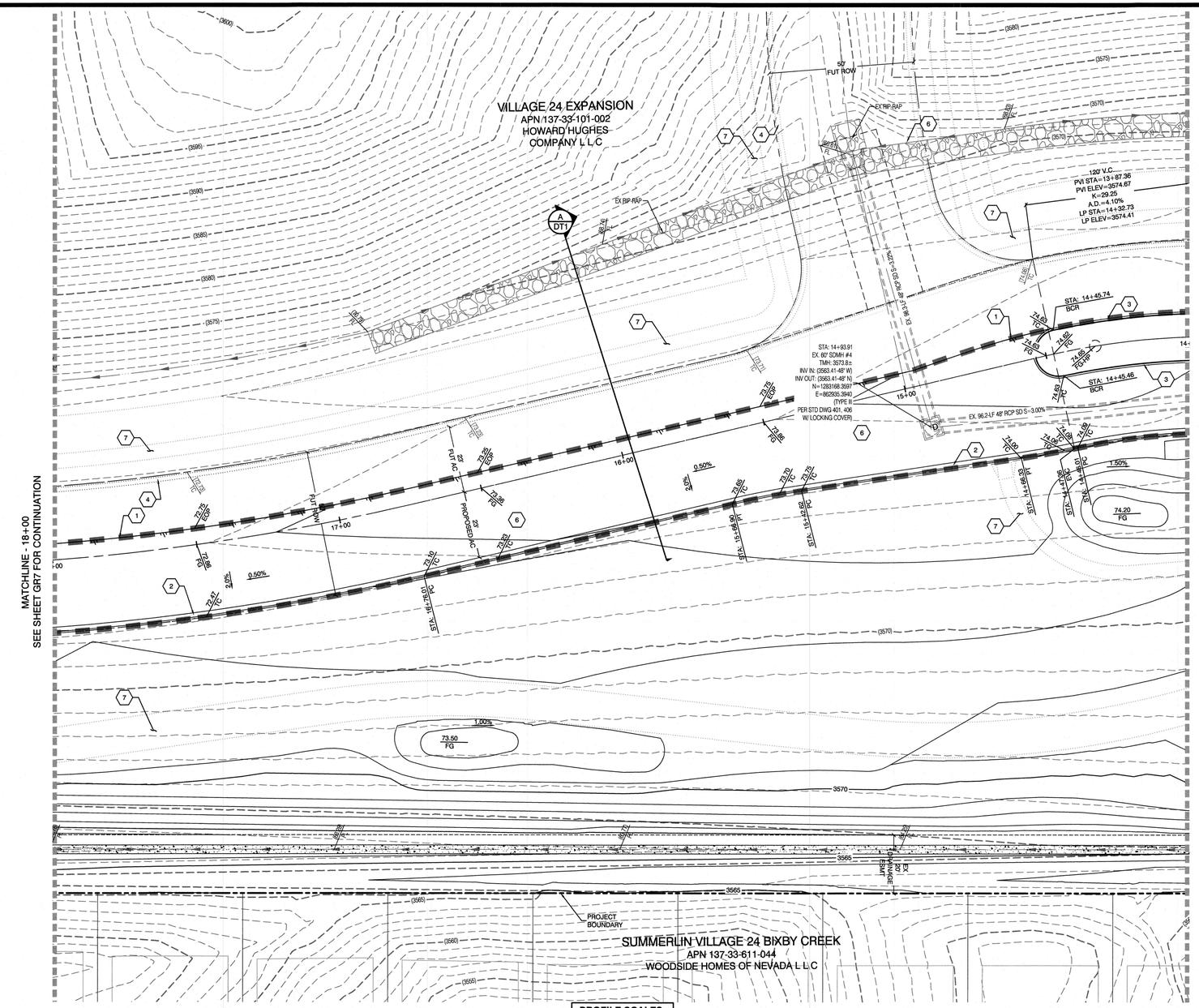
DRAWN BY: BCC — 12/07/2018
DESIGNED BY: BCC — 12/07/2018
CHECKED BY: WJM — 04/05/2019
PROJECT NO: 7851
SCALE: HORIZ. 1"=20' VERT. 1"=4'

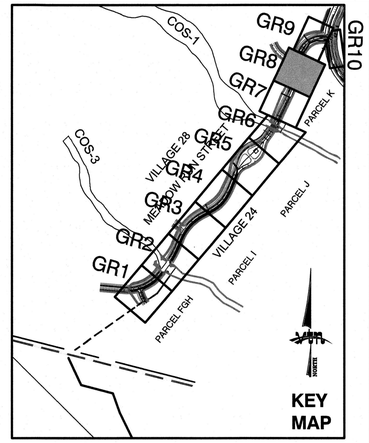
PROFESSIONAL ENGINEER STATE OF NEVADA
WILLIAM J. MEYER
EXP: 12/31/19
CIVIL
NO. 15745
5/22/19

SHEET
GR7
24 OF 52 SHEETS

DRAWING NO.

H:\7851\Village 24 Collector\WATER\Sheet Set\UNIT 2\7851-GR2-2.dwg, May 20, 2019





NORTH

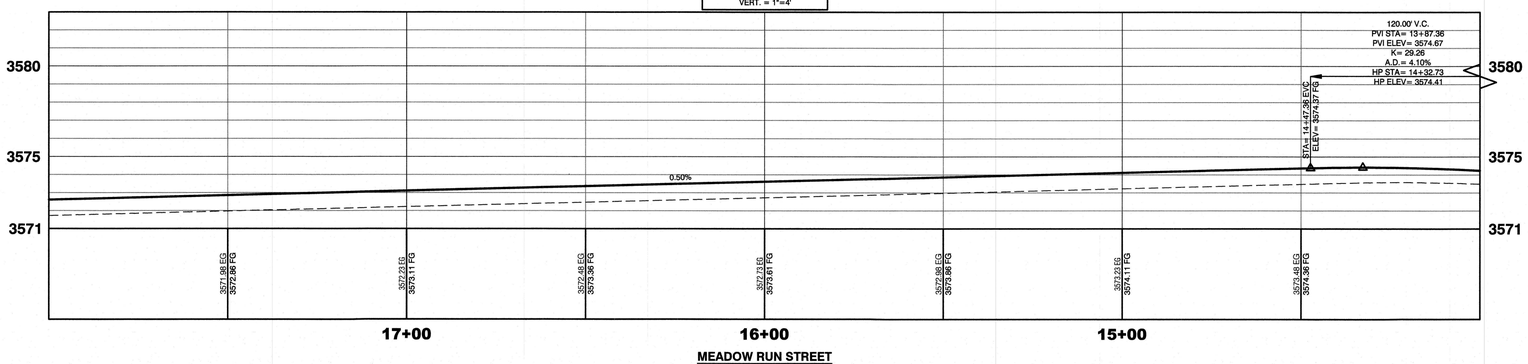
GRAPHIC SCALE

-20 0 10 20 40

1" = 20

PROFILE SCALES:

HORIZ. = 1"=20'
VERT. = 1"=4'



MEADOW RUN STREET
(PUBLIC)

CONSTRUCTION NOTES

1. EDGE OF PROPOSED PAVEMENT
2. PROPOSED 24" TYPE "L" CURB & GUTTER PER STD. DWG. 216.
3. PROPOSED TYPE "A" CURB PER STD. DWG. 219.
4. FUTURE 24" TYPE "L" CURB & GUTTER PER STD. DWG. 216.
5. FUTURE TYPE "A" CURB PER STD. DWG. 219.
6. INSTALL 4" TYPE II COMPACTED TO 95% AND 3" PAVEMENT
7. FUTURE SIDEWALK PER STD. DWG. 234.
8. FIELD VERIFY AND MATCH EXISTING
9. CONSTRUCT 8' VALLEY GUTTER PER CCAUSD # 228

EDGE OF HARDSCAPE CONSTRUCTION

GRADING PERMIT NOTE

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

GEOTECHNICAL NOTE:

REFER TO SOILS REPORT: NOVA GEOTECHNICAL
PROJECT #G-17-188, DATED JANUARY 18, 2018
HTE #----

SIGHT VISIBILITY ZONES:

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BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

LINEAR UNIT: US SURVEY FOOT (FTUS)

DATUM (REFERENCE FRAME): NAD 83 (2011) EPOCH 2010.00

SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)

ZONE: LAS VEGAS HIGH ELEVATION ZONE

PROJECTION: TRANSVERSE MERCATOR
STANDARD PARALLEL (AND LATITUDE OF GRID ORIGIN):36°15'00"N
LONGITUDE OF CENTRAL MERIDIAN:114°58'00"W
NORTHING AT GRID ORIGIN: 400,000.00 M (1,312,333.3333 FTUS)
EASTING AT CENTRAL MERIDIAN: 300,000 M (984,250.0000 FTUS)
SCALE FACTOR ON CENTRAL MERIDIAN: 1.000135 (EXACT)

NOTES:
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BENCHMARK

PROJECT DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

CITY OF LAS VEGAS BENCHMARK: D368 (REVISED 2008) NAVD88 ELEVATION: 989.574 METERS (3,246.63 FEET)

FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN.
T21S,R56E,S03

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

WILLIAM J MEYER , P.E. No. 15745 DATE

REV	DATE	BY	REVISION

HOWARD HUGHES COMPANY, LLC
A DELEWARE LIMITED LIABILITY COMPANY
10801 W CHARLESTON BLVE SUITE 300
LAS VEGAS, NEVADA 89135
702-214-5000

CITY OF LAS VEGAS

2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5148
PH. (702) 873-7500 FAX (702) 362-2597 WEB WWW.VTNNV.COM
CONSULTING ENGINEERS ● PLANNERS ● LAND SURVEYORS

GRADING PLAN 8
18+00 TO 14+00

SUMMERLIN WEST VILLAGE 24A
WESTERN BOUNDARY FIRE ACCESS, SEWER & SECOND SOURCE WATER

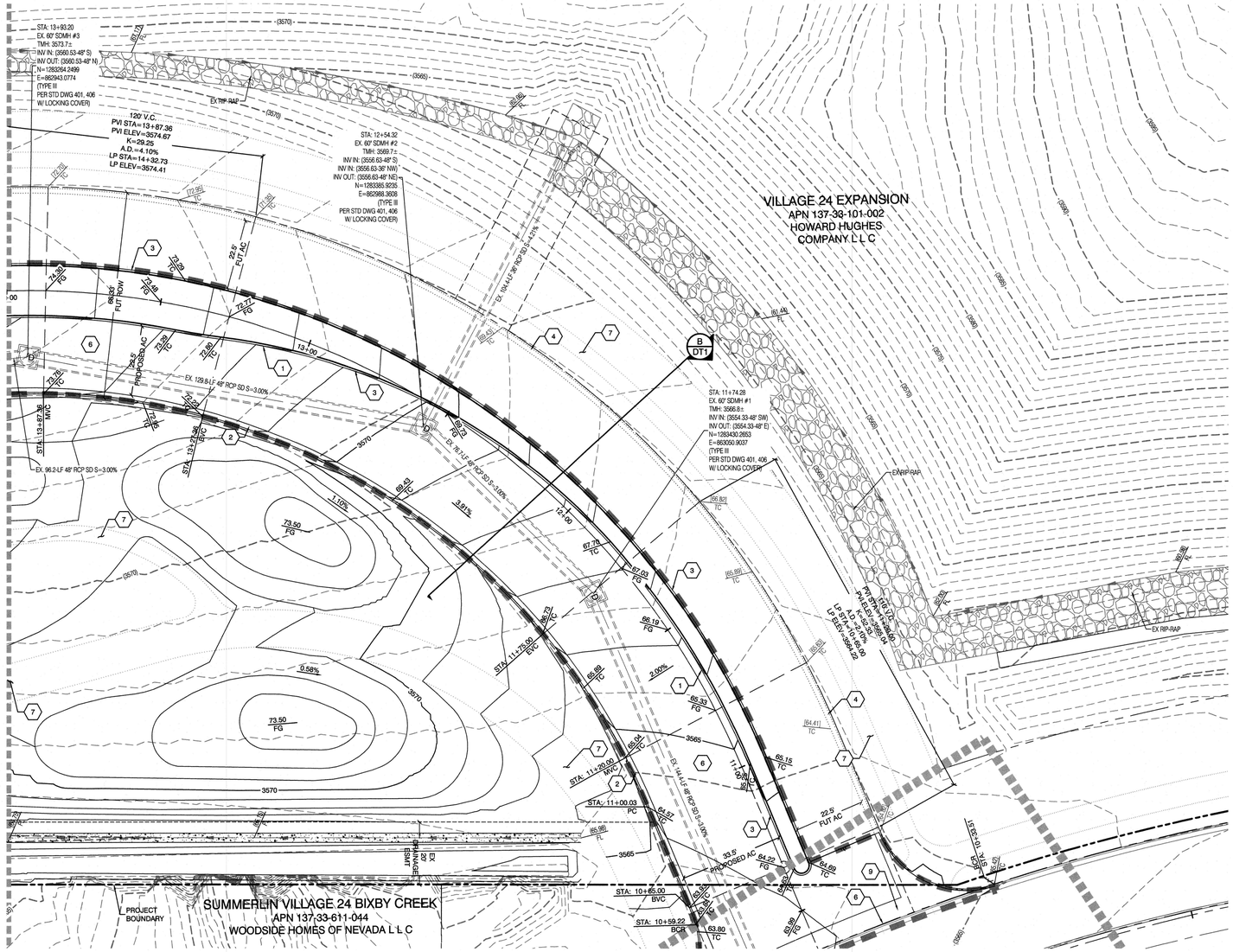
DRAWN BY: BCC	12/07/2018	SCALE:	1"=20' HORIZ.
DESIGNED BY: BCC	12/07/2018		1"=4' VERT.
CHECKED BY: WJM	04/05/2019		
PROJECT NO: 7851			

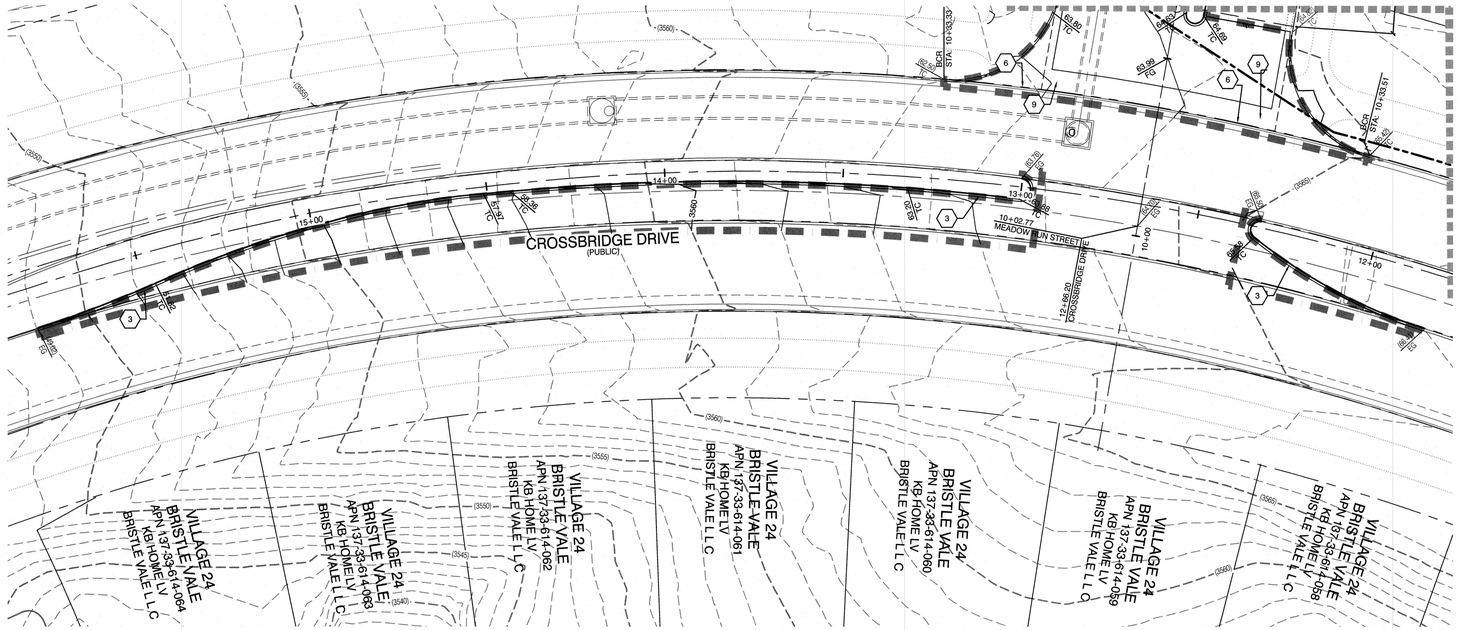
PROFESSIONAL ENGINEER STATE OF NEVADA
WILLIAM J. MEYER
EXP: 12/31/19
CIVIL
No. 15745
5/20/19

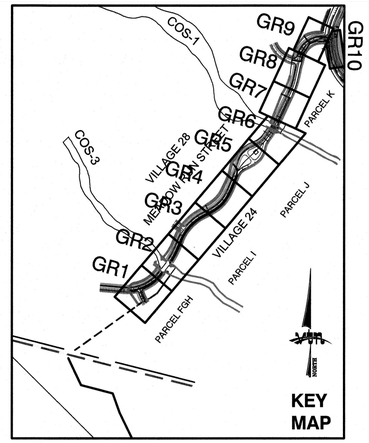
SHEET
GR8
25 OF **52** SHEETS

DRAWING NO.

H:\7851\Village 24 Collector-WATER\Sheet Set\UNIT 2\7851-GRD-2.dwg, May 20, 2019


MATCHLINE - 14+00
SEE SHEET GR8 FOR CONTINUATION
VILLAGE 24 EXPANSION
APN 137-33-101-002
HOWARD HUGHES
COMPANY, L L C
SUMMERLIN VILLAGE 24 BIXBY CREEK
APN 137-33-611-044
WOODSIDE HOMES OF NEVADA L L C
PROJECT BOUNDARY
STA: 13+93.20
EX. 60" SDMH #3
TMH: 3573.7±
INV IN: (3560.53-48° S)
INV OUT: (3560.53-48° N)
N=1283264.2499
E=862943.0774
(TYPE III
PER STD DWG 401, 406
W/ LOCKING COVER)
120' V.C.
PVI STA= 13+87.36
PVI ELEV= 3574.67
K= 29.25
A.D.= 4.10%
LP STA= 14+32.73
LP ELEV= 3574.41
STA: 12+54.32
EX. 60" SDMH #2
TMH: 3569.7±
INV IN: (3556.63-48° S)
INV IN: (3556.63-90° NW)
INV OUT: (3556.63-48° NE)
N=1283385.9235
E=862988.3938
(TYPE III
PER STD DWG 401, 406
W/ LOCKING COVER)
STA: 11+74.28
EX. 60" SDMH #1
TMH: 3566.8±
INV IN: (3554.33-48° SW)
INV OUT: (3554.33-48° E)
N=1283430.2853
E=863050.9037
(TYPE III
PER STD DWG 401, 406
W/ LOCKING COVER)
EX. 104.4-LF 36" RCP SD S=4.00%
EX. 128.8-LF 48" RCP SD S=-3.00%
EX. 96.2-LF 48" RCP SD S=3.00%
EX. 70.1-LF 48" RCP SD S=-3.00%
EX. 144.5-LF 48" RCP SD S=-3.00%
EX. 129.8-LF 48" RCP SD S=-3.00%
EX RIP-RAP
PROPOSED AC
EX. 12" WATER
EX. 8" SEWER
EX. 8" GAS
EX. 12" GAS
EX. 8" WATER
EX. 6" WATER
EX. 6" SEW







GRAPHIC SCALE

-20 0 10 20 40

1" = 20 '

CONSTRUCTION NOTES

1. EDGE OF PROPOSED PAVEMENT
2. PROPOSED 24" TYPE "L" CURB & GUTTER PER STD. DWG. 216.
3. PROPOSED TYPE "A" CURB PER STD. DWG. 219.
4. FUTURE 24" TYPE "L" CURB & GUTTER PER STD. DWG. 216.
5. FUTURE TYPE "A" CURB PER STD. DWG. 219.
6. INSTALL 4" TYPE II COMPACTED TO 95% AND 3" PAVEMENT
7. FUTURE SIDEWALK PER STD. DWG. 234.
8. FIELD VERIFY AND MATCH EXISTING
9. CONSTRUCT 8' VALLEY GUTTER PER CCAUSD # 228

EDGE OF HARDSCAPE CONSTRUCTION

GRADING PERMIT NOTE

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

GEOTECHNICAL NOTE:

REFER TO SOILS REPORT: NOVA GEOTECHNICAL
PROJECT #G-17-188, DATED JANUARY 18, 2018
HTE #----

SIGHT VISIBILITY ZONES:

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





BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

LINEAR UNIT: US SURVEY FOOT (FTUS)

DATUM (REFERENCE FRAME): NAD 83 (2011) EPOCH 2010.00

SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)

ZONE: LAS VEGAS HIGH ELEVATION ZONE

PROJECTION: TRANSVERSE MERCATOR
STANDARD PARALLEL (AND LATITUDE OF GRID ORGIN):36°15'00"N
LONGITUDE OF CENTRAL MERIDIAN:114°58'00"W
NORTHING AT GRID ORIGIN: 400,000.00 M (1,312,333.3333 FTUS)
EASTING AT CENTRAL MERIDIAN: 300,000 M (984,250.0000 FTUS)
SCALE FACTOR ON CENTRAL MERIDIAN: 1.000135 (EXACT)

NOTES:
1. ALL DISTANCES AND BEARINGS SHOWN HEREON ARE PROJECTED (GRID) VALUES BASED ON THE PRECEDING PROJECTION DEFINITION. THE PROJECTION WAS DEFINED SUCH THAT PROJECTED (GRID) DISTANCES ARE EQUIVALENT TO "GROUND" DISTANCES IN THE PROJECT AREA.

2. GRID BEARINGS SHOWN HEREON (OR IMPLIED BY GRID COORDINATES) DO NOT EQUAL GEODETIC BEARINGS DUE TO MERIDIAN CONVERGENCE.

BENCHMARK

PROJECT DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

CITY OF LAS VEGAS BENCHMARK: D368 (REVISED 2008)
NAVD88 ELEVATION: 989.574 METERS (3,246.63 FEET)

FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN.
T21S,R59E,S03

ENGINEER DISCLAIMER NOTE:

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

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

WILLIAM J MEYER , P.E. No. 15745 DATE

REV	DATE	BY	REVISION

HOWARD HUGHES COMPANY, LLC
A DELEWARE LIMITED LIABILITY COMPANY
10801 W CHARLESTON BLVE SUITE 300
LAS VEGAS, NEVADA 89135
702-791-4600

CITY OF LAS VEGAS

2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5148
PH: (702) 873-7550 FAX (702) 362-2997 WEB WWW.VTNNV.COM
CONSULTING ENGINEERS ● PLANNERS ● LAND SURVEYORS

GRADING PLAN 10
END STATION - 10+00

SUMMERLIN WEST VILLAGE 24A
WESTERN BOUNDARY FIRE ACCESS, SEWER & SECOND SOURCE WATER

DRAWN BY:	DESIGNED BY:	CHECKED BY:	SCALE:	
BCC	BCC	WJM	1"=20'	HORIZ.
12/07/2018	12/07/2018	04/05/2019	1"=4'	VERT.

PROJECT NO: 7851

PROFESSIONAL ENGINEER - STATE OF NEVADA
WILLIAM J. MEYER
EXP: 12/31/19
CIVIL
No. 15745
5/20/19

SHEET
GR10
27 OF **52** SHEETS

DRAWING NO.

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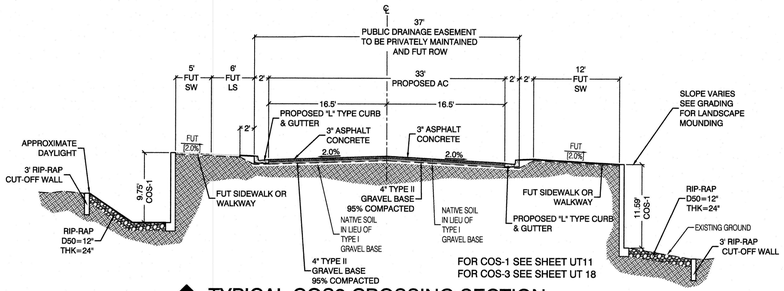

E
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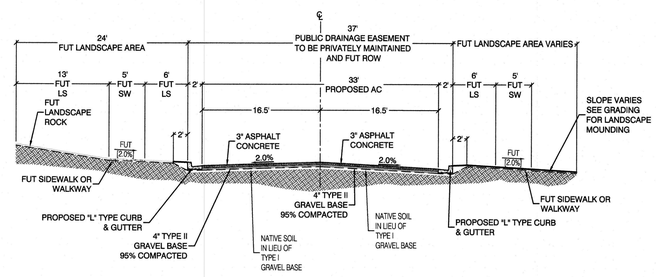
TYPICAL COS3 CROSSING SECTION
NTS



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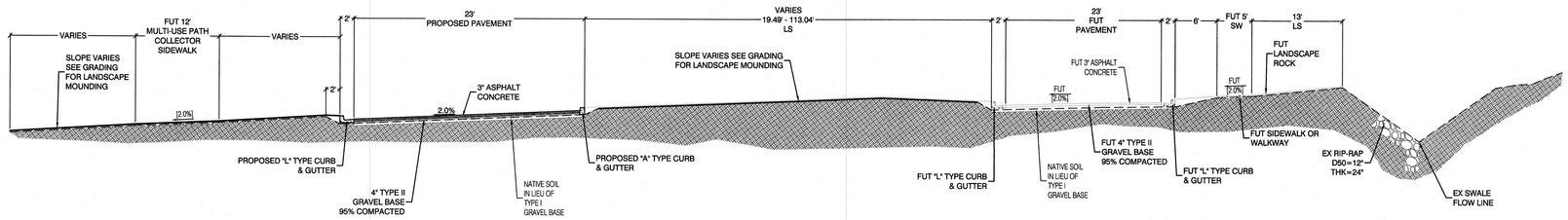
TYPICAL FGH ACCESS ROAD SECTION
NTS



C
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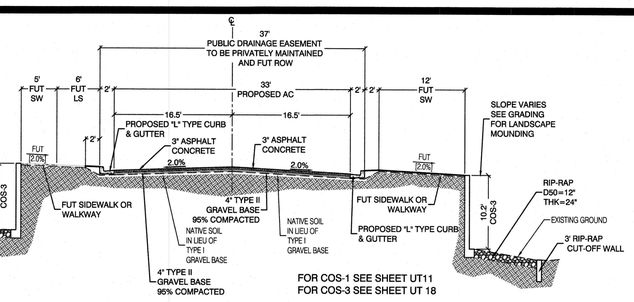
TYPICAL MEADOW RUN STREET SECTION
NTS



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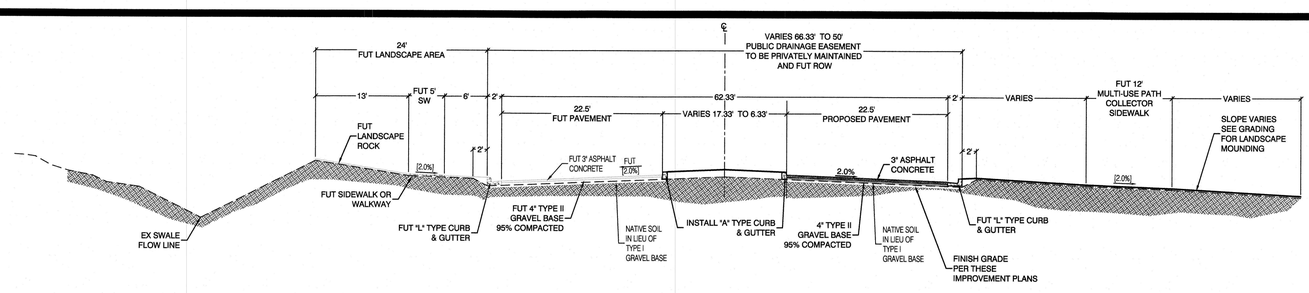

B
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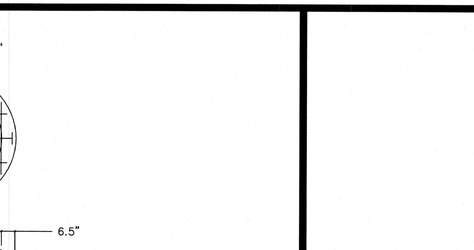
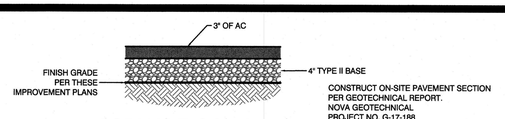
TYPICAL MEADOW RUN STREET SECTION
NTS

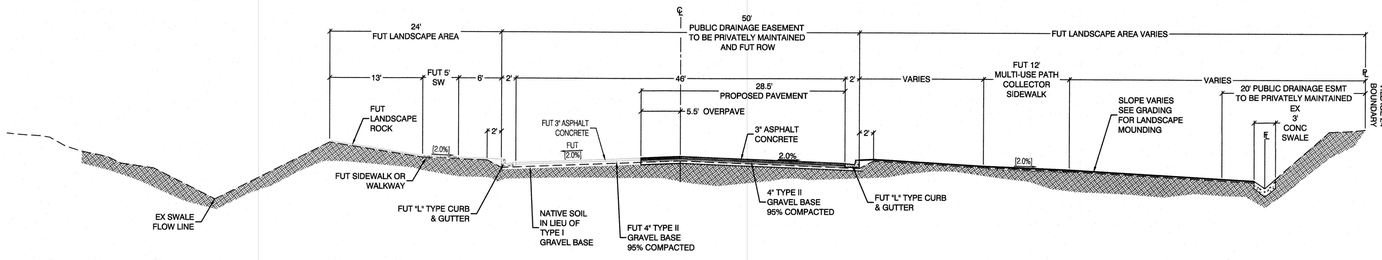


RCP CAP
NTS



ASPHALT CONCRETE
PAVEMENT SECTION FOR
RESIDENTIAL COLLECTOR

CONSTRUCT ON-SITE PAVEMENT SECTION
PER GEOTECHNICAL REPORT.
NOVA GEOTECHNICAL
PROJECT NO. G-17-188
DATED JANUARY 18, 2018
MUST BE APPROVED BY CITY OF LAS VEGAS.



A
-
TYPICAL MEADOW RUN STREET SECTION
NTS

REV | DATE | BY | REVISION

HOWARD HUGHES COMPANY, LLC
A DELAWARE LIMITED LIABILITY COMPANY

2300 W. SAHARA AVENUE, SUITE 300
LAS VEGAS, NEVADA 89135
702-791-4000

CITY OF LAS VEGAS

2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5148
PH. (702) 873-7550 FAX (702) 362-2597 WEB WWW.VTNNV.COM
CONSULTING ENGINEERS ● PLANNERS ● LAND SURVEYORS

DETAIL SHEET

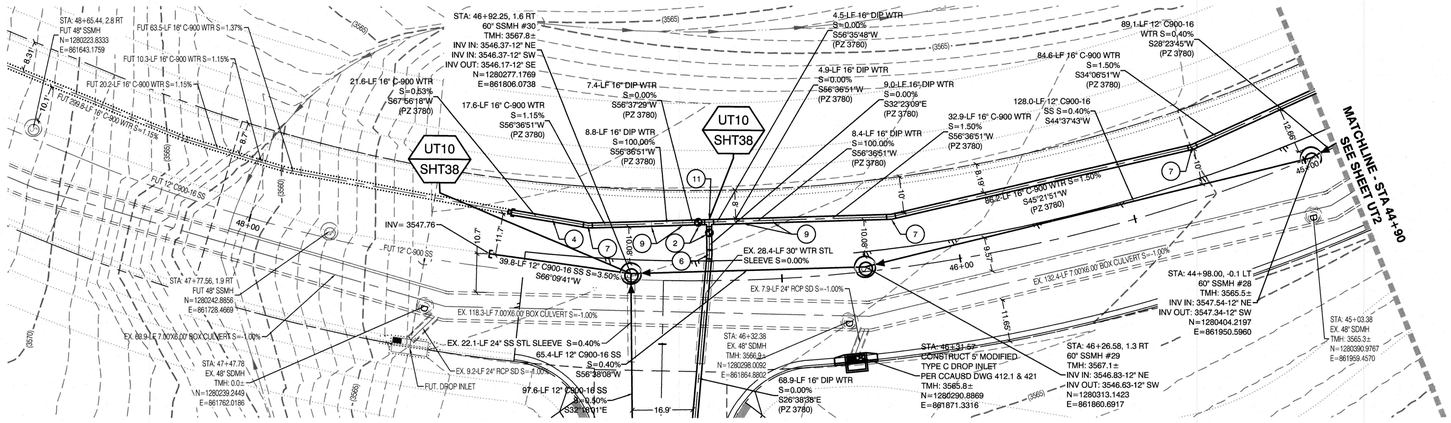
SUMMERLIN WEST VILLAGE 24A
WESTERN BOUNDARY FIRE ACCESS,
SEWER & SECOND SOURCE WATER

DRAWN BY:	DESIGNED BY:	CHECKED BY:	PROJECT NO:	SCALE:	HORIZ.
DEH 12/07/2018	DEH 12/07/2018	WJM 04/05/2019	7851	N/A	VERT. N/A

PROFESSIONAL ENGINEER STATE OF NEVADA
WILLIAM J. MEYER
No. 15745
EXP. 12/31/19
CIVIL
5/20/19

SHEET
DT
28 OF **52** SHEETS
DRAWING NO.

H:\7851\Village 24 Collector-WATER\Sheet Set\UNIT 2\7851-DT.dwg; May 20, 2019







GRAPHIC SCALE

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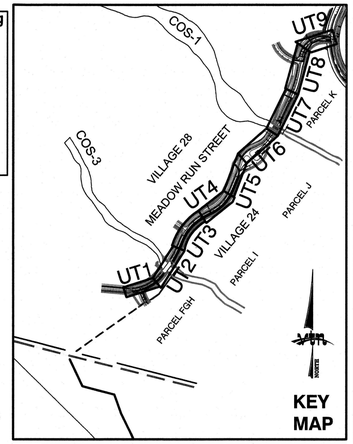
1" = 20'



CONSTRUCTION NOTES

WATER		PUBLIC	PRIVATE
12" GATE VALVE (PER UDACS PLATE 39)		2 EA.	0 EA.
16" GATE VALVE (PER UDACS PLATE 39)		2 EA.	0 EA.
12" CAP & BLOW OFF (PER UDACS PLATE 36)		4 EA.	0 EA.
16" CAP & BLOW OFF (PER UDACS PLATE 36)		1 EA.	0 EA.
16" 1° VERTICAL BEND (PER UDACS PLATE 31)		1 EA.	0 EA.
16" 5° BEND (PER UDACS PLATE 31)		21 EA.	0 EA.
16" 11° BEND (PER UDACS PLATE 31)		20 EA.	0 EA.
16" 22° BEND (PER UDACS PLATE 31)		2 EA.	0 EA.
16" 45° VERTICAL BEND (PER UDACS PLATE 31)		24 EA.	0 EA.
16" x 12" TEE (PER UDACS PLATE 31)		3 EA.	0 EA.
16" x 16" TEE (PER UDACS PLATE 31)		1 EA.	0 EA.
12" C-900 WATER MAIN PER UDACS 2.06.01 & PLATE 17		100 LF.	0 LF.
16" C-900 WATER MAIN PER UDACS 2.06.01 & PLATE 17		3,948 LF.	0 LF.
WATER POINT OF CONNECTION			

SEWER	PUBLIC
STANDARD MANHOLE PER SD-1A & 1B	32 EA.
12" SDR-35 C-900-16 SANITARY SEWER MAIN	3,703 LF.
SEWER POINT OF CONNECTION	

WATER PRESSURE ZONE:
WATER SERVICE LOCATED IN THE 3665 PRESSURE ZONE.

WATER MAIN COVER NOTE:
ALL NEW WATER MAIN TO HAVE MINIMUM DEPTH OF COVER PER UDACS SECTION 2.08

WATERLINE TRENCH NOTE:
CONSTRUCT WATERLINE TRENCH SECTION AND BACKFILL PER UDACS PLATE NO. 17.

WATER LINE MARKER BALLS NOTE
INSTALL PIPELINE MARKER BALLS IN TRENCH ABOVE EACH HORIZONTAL ELBOW FITTING, PER UDACS PLATE No. 15

FIRE HYDRANT MARKER NOTES
BLUE COLORED REFLECTIVE RAISED PAVEMENT MARKERS ARE TO BE INSTALLED:

1. ON ROADWAYS WITH NO PARKING PERMITTED ON HYDRANT SIDE: LOCATE MAKER 8" FROM FACE OF CURB ON HYDRANT SIDE.
2. ON ROADWAYS WITH PARKING PERMITTED ON HYDRANT SIDE: LOCATE MARKER 16" FROM FACE OF CURB ON HYDRANT SIDE.

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

WATER MAIN JOINT DEFLECTION
PVC PIPE SHALL BE DEFLECTED AT THE JOINT ONLY. THE MAXIMUM ALLOWABLE DEFLECTION SHALL BE ONE (1) DEGREE PER JOINT WITH A MINIMUM RADIUS OF CURVATURE OF 1,150 FEET, PER UDACS 2.07.01 AND 2.07.02.

FOR CHANGES IN DIRECTION EXCEEDING THE MAXIMUM ALLOWABLE JOINT DEFLECTION, FITTINGS SHALL BE USED.

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

LAS VEGAS FIRE & RESCUE APPROVAL
BY: _____ DATE: _____

APPROVAL OF THESE PLANS SHALL NOT BE CONSTRUED TO BE A PERMIT FOR, OR AN APPROVAL OF, ANY VIOLATION OF ANY OF THE PROVISIONS OF THE STATE OR COUNTY LAWS. FIRE FLOW — GPM AT 20 P.S.I. RESIDUAL.

CONSTRUCTION NOTES

UT # / SHT # — UTILITY PROFILE REFERENCE LABEL
UT # = SHEET INDEX
SHT # = SHEET NUMBER

BASIS OF BEARING
GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

LINEAR UNIT: US SURVEY FOOT (FTUS)

DATUM (REFERENCE FRAME): NAD 83 (2011) EPOCH 2010.00

SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)

ZONE: LAS VEGAS HIGH ELEVATION ZONE

PROJECTION: TRANSVERSE MERCATOR
STANDARD PARALLEL (AND LATITUDE OF GRID ORGIN):36°10'00"N
LONGITUDE OF CENTRAL MERIDIAN:114°58'00"W
NORTHING AT GRID ORIGIN: 400,000.00 M (1,312,333.3333 FTUS)
EASTING AT CENTRAL MERIDIAN: 300,000 M (984,250.0000 FTUS)
SCALE FACTOR ON CENTRAL MERIDIAN: 1.000135 (EXACT)

NOTES:
1. ALL DISTANCES AND BEARINGS SHOWN HEREON ARE PROJECTED (GRID) VALUES BASED ON THE PRECEDING PROJECTION DEFINITION. THE PROJECTION WAS DEFINED SUCH THAT PROJECTED (GRID) DISTANCES ARE EQUIVALENT TO "GROUND" DISTANCES IN THE PROJECT AREA.

2. GRID BEARINGS SHOWN HEREON (OR IMPLIED BY GRID COORDINATES) DO NOT EQUAL GEODETIC BEARINGS DUE TO MERIDIAN CONVERGENCE.

BENCHMARK
PROJECT DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

CITY OF LAS VEGAS BENCHMARK: D368 (REVISED 2008) NAVD88 ELEVATION: 989.574 METERS (3,246.63 FEET)

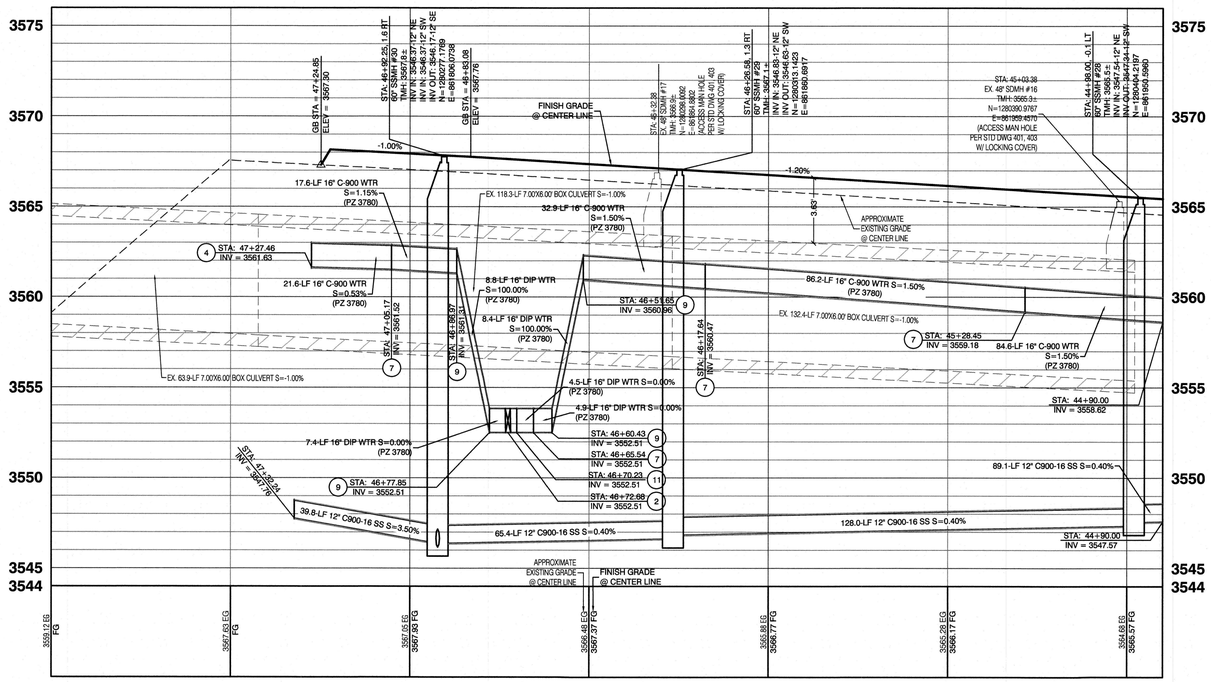
FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN. T21S,R59E,S03

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT:---- FIRST APPROVED DATE: _____

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



REV	DATE	BY	REVISION

HOWARD HUGHES COMPANY, LLC
A DELEWARE LIMITED LIABILITY COMPANY
10801 W CHARLESTON BLVD SUITE 300
LAS VEGAS, NEVADA 89135
702-791-4000

CITY OF LAS VEGAS

2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5148
PH.: (702) 873-7500 FAX (702) 362-2597 WEB WWW.VTNNV.COM
CONSULTING ENGINEERS ● PLANNERS ● LAND SURVEYORS

UTILITY PLAN & PROFILE 1
48+00 TO 44+90

SUMMERLIN WEST VILLAGE 24A
WESTERN BOUNDARY FIRE ACCESS, SEWER & SECOND SOURCE WATER

DRAWN BY: BCC	12/07/2018
DESIGNED BY: BCC	12/07/2018
CHECKED BY: WJM	04/05/2019
PROJECT NO: 7851	SCALE: 1"=20' HORIZ. 1"=4' VERT.

WILLIAM J. MEYER
EXP: 12/31/19
CIVIL
No. 15745
STATE OF NEVADA
PROFESSIONAL ENGINEER
3/28/19

SHEET
UT1
29 OF 52 SHEETS

DRAWING NO.

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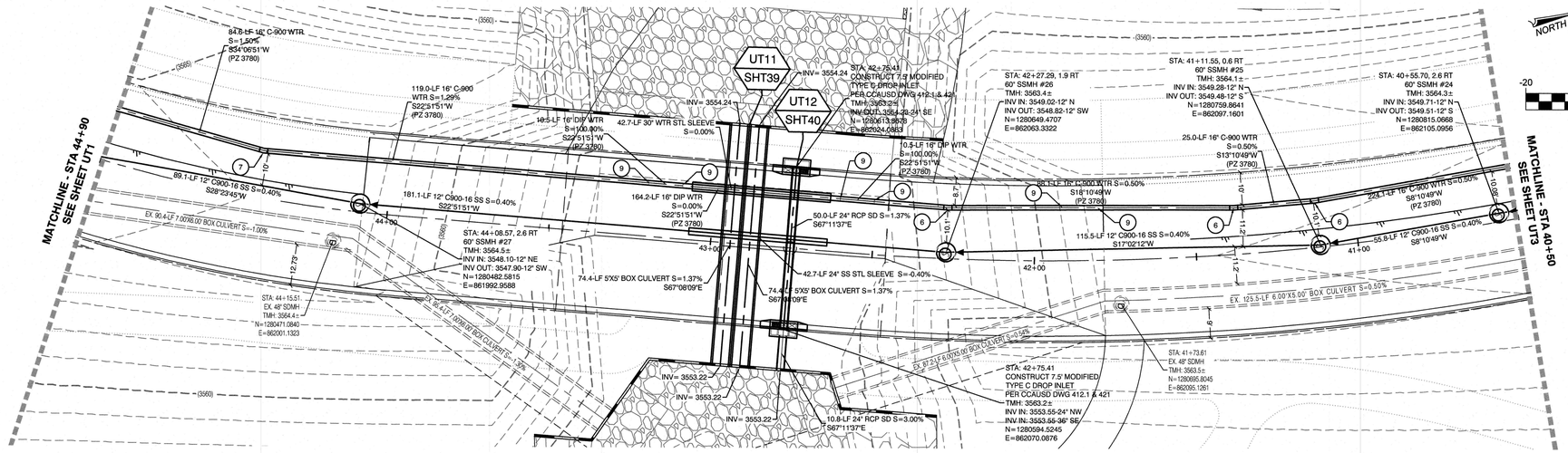

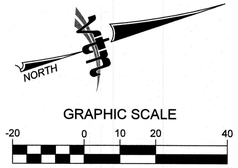

GRAPHIC SCALE

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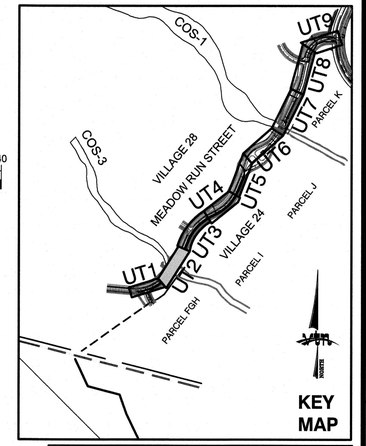
1" = 20'



CONSTRUCTION NOTES

	WATER	PUBLIC	PRIVATE
	12" GATE VALVE (PER UDACS PLATE 39)	2 EA.	0 EA.
	16" GATE VALVE (PER UDACS PLATE 39)	2 EA.	0 EA.
	12" CAP & BLOW OFF (PER UDACS PLATE 36)	4 EA.	0 EA.
	16" CAP & BLOW OFF (PER UDACS PLATE 36)	1 EA.	0 EA.
	16" 1° VERTICAL BEND (PER UDACS PLATE 31)	1 EA.	0 EA.
	16" 5° BEND (PER UDACS PLATE 31)	21 EA.	0 EA.
	16" 11° BEND (PER UDACS PLATE 31)	20 EA.	0 EA.
	16" 22° BEND (PER UDACS PLATE 31)	2 EA.	0 EA.
	16" 45° VERTICAL BEND (PER UDACS PLATE 31)	24 EA.	0 EA.
	16" x 12" TEE (PER UDACS PLATE 31)	3 EA.	0 EA.
	16" x 16" TEE (PER UDACS PLATE 31)	1 EA.	0 EA.
	12" C-900 WATER MAIN PER UDACS 2.06.01 & PLATE 17	100 LF.	0 LF.
	16" C-900 WATER MAIN PER UDACS 2.06.01 & PLATE 17	3,948 LF.	0 LF.
POC	WATER POINT OF CONNECTION		

	SEWER	PUBLIC
S	STANDARD MANHOLE PER SD-1A & 1B	32 EA.
	12" SDR-35 C-900-16 SANITARY SEWER MAIN	3,703 LF.
POC	SEWER POINT OF CONNECTION	

WATERLINE TRENCH NOTE:
CONSTRUCT WATERLINE TRENCH SECTION AND BACKFILL PER UDACS PLATE NO. 17.

WATER MAIN COVER NOTE:
ALL NEW WATER MAIN TO HAVE MINIMUM DEPTH OF COVER PER UDACS SECTION 2.08

WATER LINE MARKER BALLS NOTE
INSTALL PIPELINE MARKER BALLS IN TRENCH ABOVE EACH HORIZONTAL ELBOW FITTING, PER UDACS PLATE No. 15

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

FIRE HYDRANT MARKER NOTES
BLUE COLORED REFLECTIVE RAISED PAVEMENT MARKERS ARE TO BE INSTALLED:

1. ON ROADWAYS WITH NO PARKING PERMITTED ON HYDRANT SIDE; LOCATE MAKER 8' FROM FACE OF CURB ON HYDRANT SIDE.
2. ON ROADWAYS WITH PARKING PERMITTED ON HYDRANT SIDE; LOCATE MARKER 16' FROM FACE OF CURB ON HYDRANT SIDE.

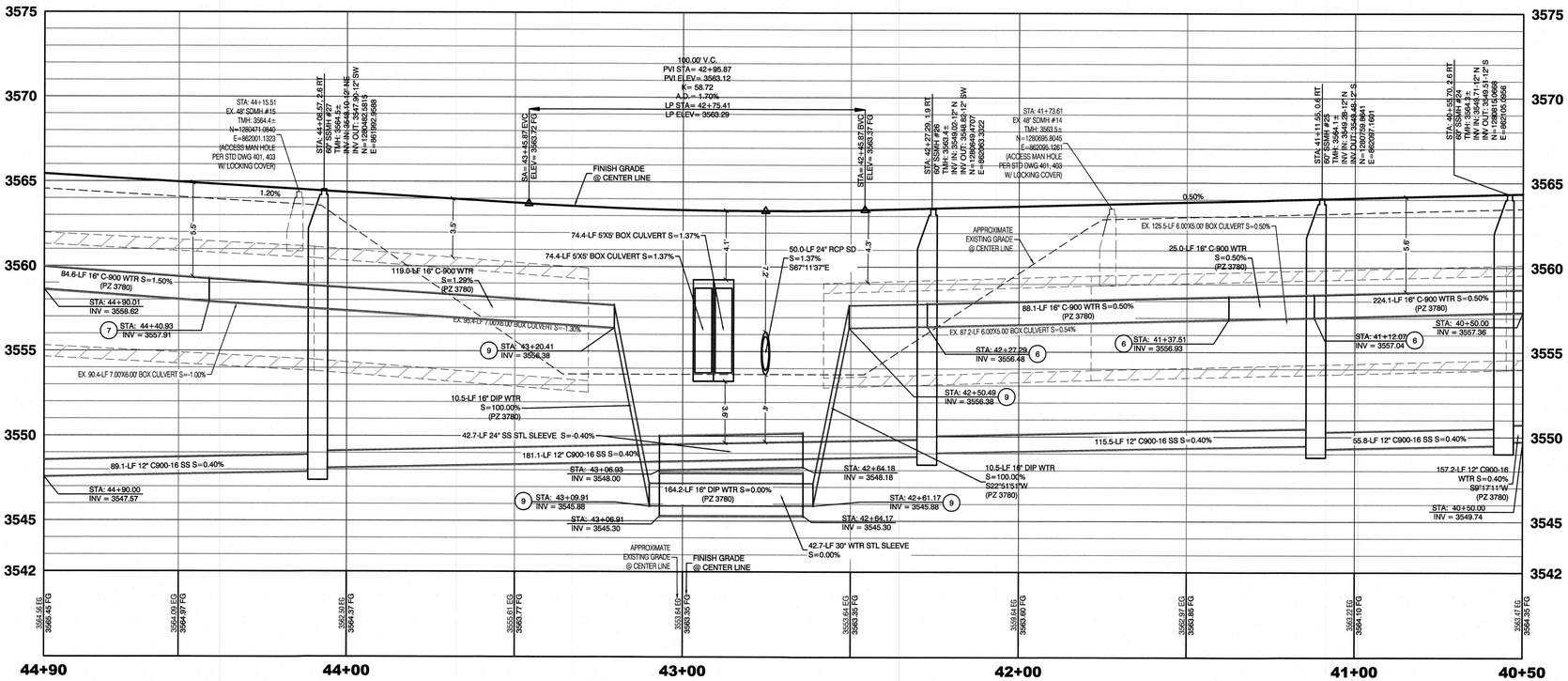
WATER MAIN JOINT DEFLECTION
PVC PIPE SHALL BE DEFLECTED AT THE JOINT ONLY. THE MAXIMUM ALLOWABLE DEFLECTION SHALL BE ONE (1) DEGREE PER JOINT WITH A MINIMUM RADIUS OF CURVATURE OF 1,150 FEET, PER UDACS 2.07.01 AND 2.07.02.

FOR CHANGES IN DIRECTION EXCEEDING THE MAXIMUM ALLOWABLE JOINT DEFLECTION, FITTINGS SHALL BE USED.

WATER PRESSURE ZONE:
WATER SERVICE LOCATED IN THE 3665 PRESSURE ZONE.

PROFILE SCALES:

HORIZ. = 1"=20'
VERT. = 1"=4'





ENGINEER DISCLAIMER NOTE:
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LAS VEGAS FIRE & RESCUE APPROVAL
BY: _____ DATE: _____

APPROVAL OF THESE PLANS SHALL NOT BE CONSTRUED TO BE A PERMIT FOR, OR AN APPROVAL OF, ANY VIOLATION OF ANY OF THE PROVISIONS OF THE STATE OR COUNTY LAWS. FIRE FLOW ---- GPM AT 20 P.S.I. RESIDUAL.

BASIS OF BEARING
GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

LINEAR UNIT: US SURVEY FOOT (FTUS)

DATUM (REFERENCE FRAME): NAD 83 (2011) EPOCH 2010.00

SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)

ZONE: LAS VEGAS HIGH ELEVATION ZONE

PROJECTION: TRANSVERSE MERCATOR
STANDARD PARALLEL (AND LATITUDE OF GRID ORGIN):36°15'00"N
LONGITUDE OF CENTRAL MERIDIAN:114°58'00"W
NORTHING AT GRID ORIGIN: 400,000.00 M (1,312,333.3333 FTUS)
EASTING AT CENTRAL MERIDIAN: 300,000 M (984,250.0000 FTUS)
SCALE FACTOR ON CENTRAL MERIDIAN: 1.000135 (EXACT)

NOTES:
1. ALL DISTANCES AND BEARINGS SHOWN HEREON ARE PROJECTED (GRID) VALUES BASED ON THE PRECEDING PROJECTION DEFINITION. THE PROJECTION WAS DEFINED SUCH THAT PROJECTED (GRID) DISTANCES ARE EQUIVALENT TO "GROUND" DISTANCES IN THE PROJECT AREA.

2. GRID BEARINGS SHOWN HEREON (OR IMPLIED BY GRID COORDINATES) DO NOT EQUAL GEODETIC BEARINGS DUE TO MERIDIAN CONVERGENCE.

BENCHMARK
PROJECT DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

CITY OF LAS VEGAS BENCHMARK: D368 (REVISED 2008) NAVD88 ELEVATION: 989.574 METERS (3,246.63 FEET)

FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN. T21S,R59E,S03

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT:---- FIRST APPROVED DATE: _____

REV	DATE	BY	REVISION

HOWARD HUGHES COMPANY, LLC
A DELEWARE LIMITED LIABILITY COMPANY
10801 W CHARLESTON BLVD SUITE 300
LAS VEGAS, NEVADA 89135
702-791-4000

CITY OF LAS VEGAS

2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5148
PH. (702) 873-7550 FAX (702) 362-2997 WEB WWW.VTNNV.COM
CONSULTING ENGINEERS ● PLANNERS ● LAND SURVEYORS

UTILITY PLAN & PROFILE 2
44+90 TO 40+50

SUMMERLIN WEST VILLAGE 24A
WESTERN BOUNDARY FIRE ACCESS, SEWER & SECOND SOURCE WATER

DRAWN BY: BCC	12/07/2018
DESIGNED BY: BCC	12/07/2018
CHECKED BY: WJM	04/05/2019
PROJECT NO: 7351	SCALE: HORIZ. 1"=20' VERT. 1"=4'

PROFESSIONAL ENGINEER - STATE OF NEVADA
WILLIAM J. MEYER
EXP: 12/31/19
CIVIL
No. 15745
5/20/19

SHEET
UT2
30 OF 52 SHEETS
DRAWING NO.

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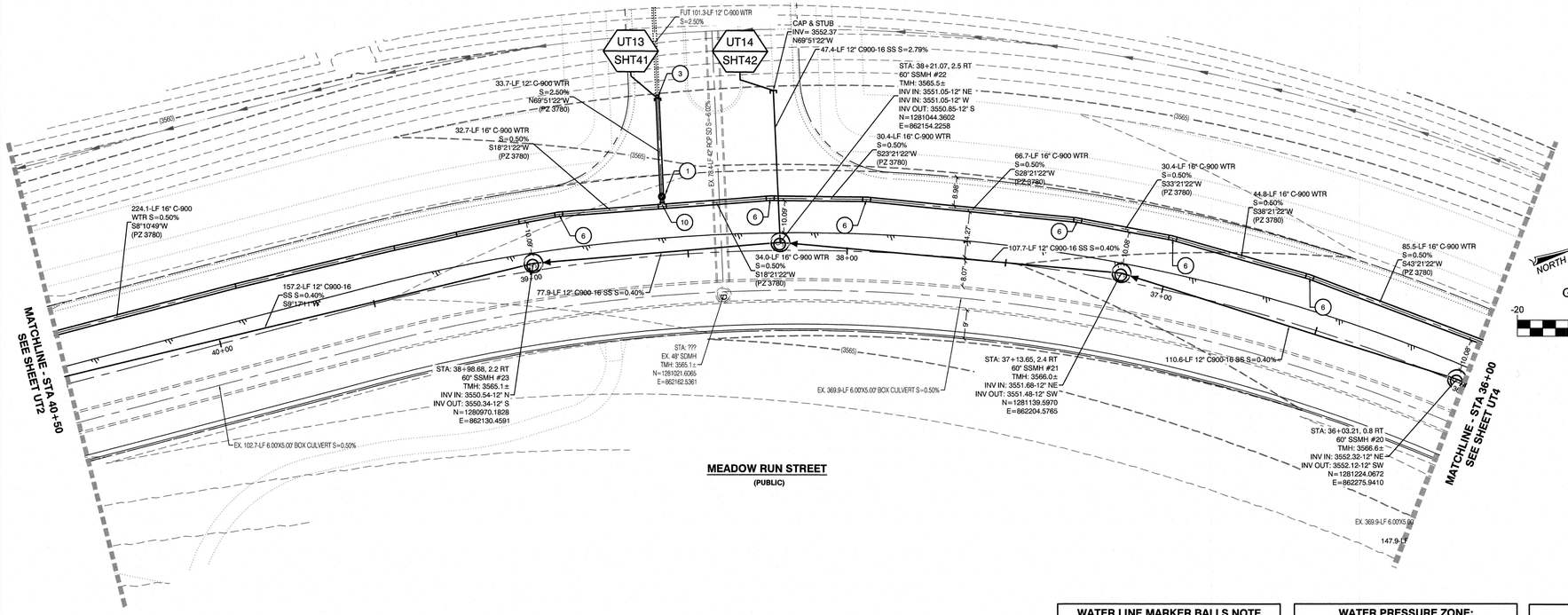

WATER LINE MARKER BALLS NOTE

INSTALL PIPELINE MARKER BALLS IN TRENCH ABOVE EACH HORIZONTAL ELBOW FITTING, PER UDACS PLATE No. 15

FIRE HYDRANT MARKER NOTES

BLUE COLORED REFLECTIVE RAISED PAVEMENT MARKERS ARE TO BE INSTALLED:

1. ON ROADWAYS WITH NO PARKING PERMITTED ON HYDRANT SIDE; LOCATE MAKER 8' FROM FACE OF CURB ON HYDRANT SIDE.
2. ON ROADWAYS WITH PARKING PERMITTED ON HYDRANT SIDE; LOCATE MARKER 16' FROM FACE OF CURB ON HYDRANT SIDE.

WATER MAIN JOINT DEFLECTION

PVC PIPE SHALL BE DEFLECTED AT THE JOINT ONLY. THE MAXIMUM ALLOWABLE DEFLECTION SHALL BE ONE (1) DEGREE PER JOINT WITH A MINIMUM RADIUS OF CURVATURE OF 1,150 FEET, PER UDACS 2.07.01 AND 2.07.02.

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WATER PRESSURE ZONE:

WATER SERVICE LOCATED IN THE 3665 PRESSURE ZONE.

WATER MAIN COVER NOTE:

ALL NEW WATER MAIN TO HAVE MINIMUM DEPTH OF COVER PER UDACS SECTION 2.08

WATERLINE TRENCH NOTE:

CONSTRUCT WATERLINE TRENCH SECTION AND BACKFILL PER UDACS PLATE NO. 17.

LAS VEGAS FIRE & RESCUE APPROVAL

BY: _____ DATE: _____

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UTILITY CROSSING NOTE:

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

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CONSTRUCTION NOTES

UT # / SHT # — UTILITY PROFILE REFERENCE LABEL
UT #= SHEET INDEX
SHT#= SHEET NUMBER

CONSTRUCTION NOTES

WATER	PUBLIC	PRIVATE
12" GATE VALVE (PER UDACS PLATE 39)	2 EA.	0 EA.
16" GATE VALVE (PER UDACS PLATE 39)	2 EA.	0 EA.
12" CAP & BLOW OFF (PER UDACS PLATE 36)	4 EA.	0 EA.
16" CAP & BLOW OFF (PER UDACS PLATE 36)	1 EA.	0 EA.
16" 1° VERTICAL BEND (PER UDACS PLATE 31)	1 EA.	0 EA.
16" 5° BEND (PER UDACS PLATE 31)	21 EA.	0 EA.
16" 11° BEND (PER UDACS PLATE 31)	20 EA.	0 EA.
16" 22° BEND (PER UDACS PLATE 31)	2 EA.	0 EA.
16" 45° VERTICAL BEND (PER UDACS PLATE 31)	24 EA.	0 EA.
16" x 12" TEE (PER UDACS PLATE 31)	3 EA.	0 EA.
16" x 16" TEE (PER UDACS PLATE 31)	1 EA.	0 EA.
12" C-900 WATER MAIN PER UDACS 2.06.01 & PLATE 17	100 LF.	0 LF.
16" C-900 WATER MAIN PER UDACS 2.06.01 & PLATE 17	3,948 LF.	0 LF.
WATER POINT OF CONNECTION		

SEWER	PUBLIC
STANDARD MANHOLE PER SD-1A & 1B	32 EA.
12" SDR-35 C-900-16 SANITARY SEWER MAIN	3,703 LF.
SEWER POINT OF CONNECTION	

BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

LINEAR UNIT: US SURVEY FOOT (FTUS)

DATUM (REFERENCE FRAME): NAD 83 (2011) EPOCH 2010.00

SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)

ZONE: LAS VEGAS HIGH ELEVATION ZONE

PROJECTION: TRANSVERSE MERCATOR
STANDARD PARALLEL (AND LATITUDE OF GRID ORGIN):36°15'00"N
LONGITUDE OF CENTRAL MERIDIAN:114°58'00"W
NORTHING AT GRID ORIGIN: 400,000.00 M (1,312,333.3333 FTUS)
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SCALE FACTOR ON CENTRAL MERIDIAN: 1.000135 (EXACT)

NOTES:
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BENCHMARK

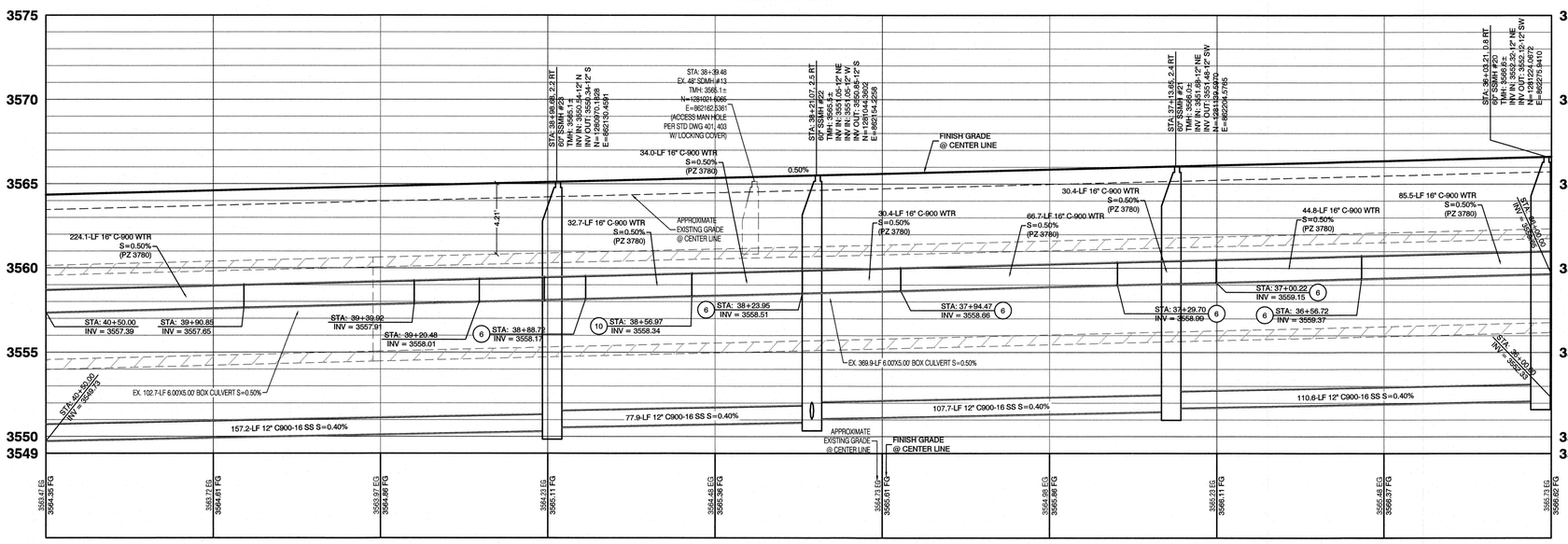
PROJECT DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

CITY OF LAS VEGAS BENCHMARK: D368 (REVISED 2008)
NAVD88 ELEVATION: 989.574 METERS (3,246.63 FEET)

FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN.
T21S,R59E,S03

PROFILE SCALES:

HORIZ. = 1"=20'
VERT. = 1"=4'







APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT:---- FIRST APPROVED DATE: _____

REV | DATE | BY | REVISION

HOWARD HUGHES COMPANY, LLC
A DELEWARE LIMITED LIABILITY COMPANY
10801 W CHARLESTON BLVD SUITE 300
LAS VEGAS, NEVADA 89135
702-791-4000

CITY OF LAS VEGAS

2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5148
PH. (702) 873-7590 FAX (702) 362-2597 WEB WWW.VTNNV.COM
CONSULTING ENGINEERS ● PLANNERS ● LAND SURVEYORS

UTILITY PLAN & PROFILE 3
40+50 TO 36+00

SUMMERLIN WEST VILLAGE 24A
WESTERN BOUNDARY FIRE ACCESS, SEWER & SECOND SOURCE WATER

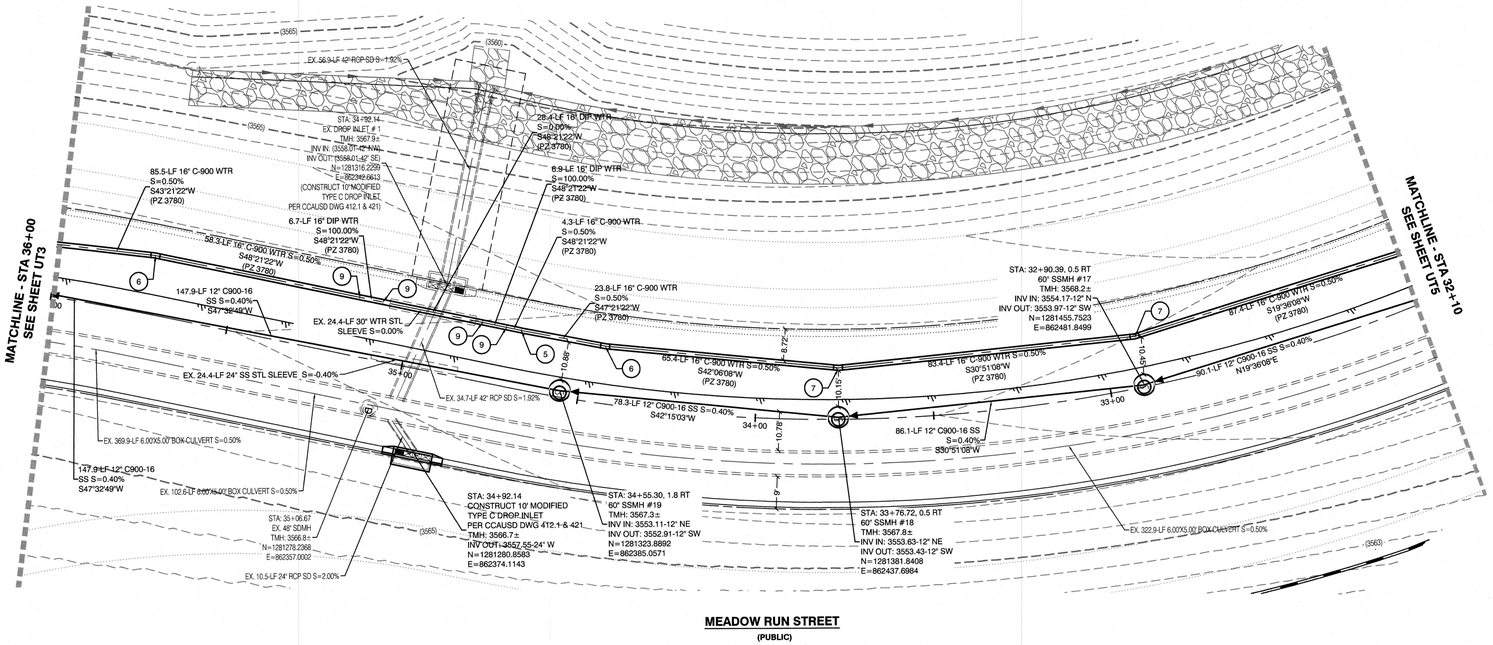
DRAWN BY: BCC 12/07/2018
DESIGNED BY: BCC 12/07/2018
CHECKED BY: WJM 04/05/2019
PROJECT NO: 7851
SCALE: HORZ. 1"=20' VERT. 1"=4'

WILLIAM J. MEYER
EXP: 12/31/19
CIVIL
No. 15745
PROFESSIONAL ENGINEER STATE OF NEVADA
5/20/19

SHEET
UT3
31 OF 52 SHEETS

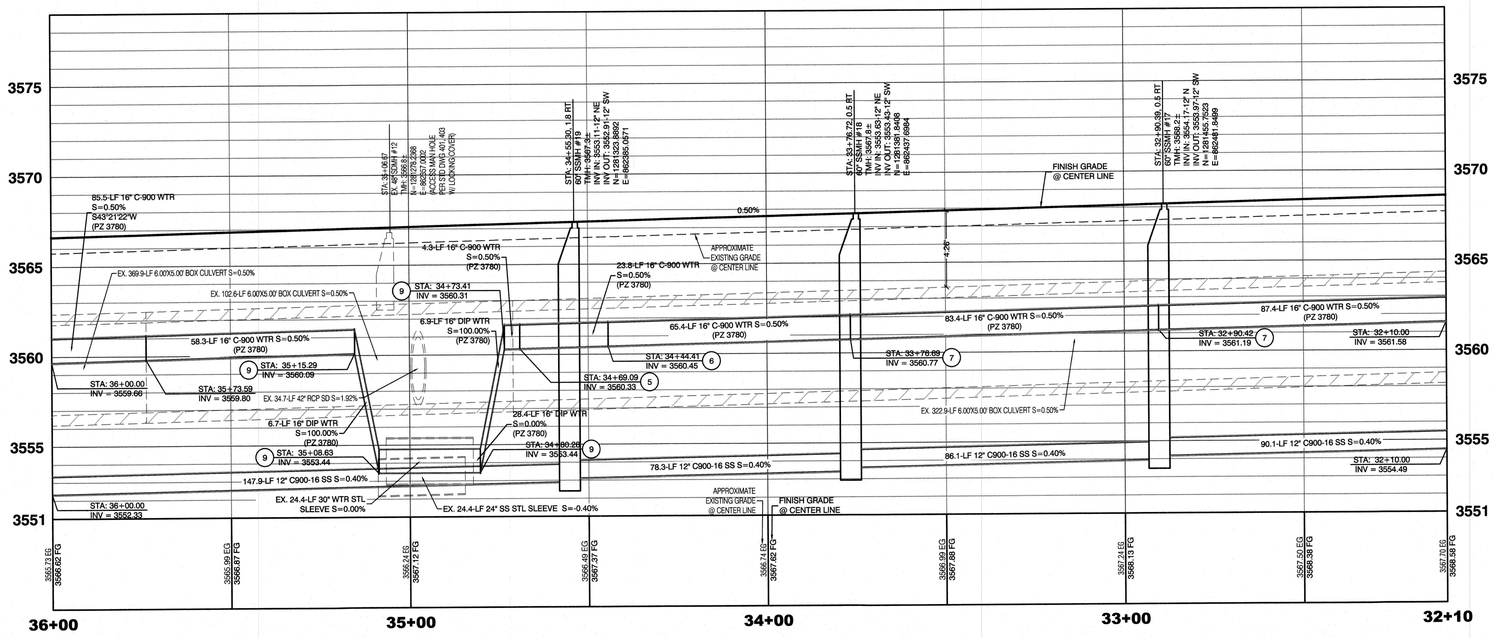
DRAWING NO.

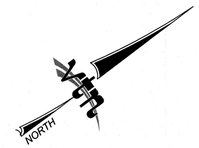
H:\7851\Village 24 Collector-WATER\Sheet Set\UNIT 2\7851-UT-1.dwg, May 20, 2019



PROFILE SCALES:

HORIZ. = 1"=20'
VERT. = 1"=4'

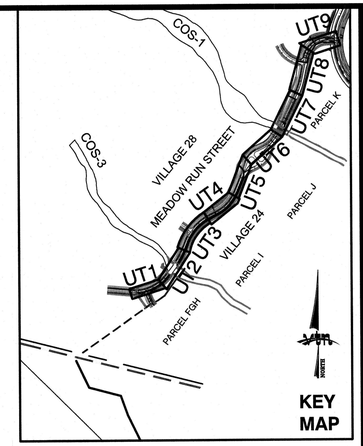




GRAPHIC SCALE

-20 0 10 20 40

1" = 20'



WATER PRESSURE ZONE:

WATER SERVICE LOCATED IN THE 3665 PRESSURE ZONE.

WATER MAIN COVER NOTE:

ALL NEW WATER MAIN TO HAVE MINIMUM DEPTH OF COVER PER UDACS SECTION 2.08

WATERLINE TRENCH NOTE:

CONSTRUCT WATERLINE TRENCH SECTION AND BACKFILL PER UDACS PLATE NO. 17.

WATER LINE MARKER BALLS NOTE

INSTALL PIPELINE MARKER BALLS IN TRENCH ABOVE EACH HORIZONTAL ELBOW FITTING, PER UDACS PLATE No. 15

FIRE HYDRANT MARKER NOTES

BLUE COLORED REFLECTIVE RAISED PAVEMENT MARKERS ARE TO BE INSTALLED:

1. ON ROADWAYS WITH NO PARKING PERMITTED ON HYDRANT SIDE; LOCATE MARKER 8' FROM FACE OF CURB ON HYDRANT SIDE.
2. ON ROADWAYS WITH PARKING PERMITTED ON HYDRANT SIDE; LOCATE MARKER 16' FROM FACE OF CURB ON HYDRANT SIDE.

WATER MAIN JOINT DEFLECTION

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UTILITY CROSSING NOTE:

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BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

LINEAR UNIT: US SURVEY FOOT (FTUS)

DATUM (REFERENCE FRAME): NAD 83 (2011) EPOCH 2010.00

SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)

ZONE: LAS VEGAS HIGH ELEVATION ZONE

PROJECTION: TRANSVERSE MERCATOR
STANDARD PARALLEL (AND LATITUDE OF GRID ORGIN):36°15'00"N
LONGITUDE OF CENTRAL MERIDIAN:114°58'00"W
NORTHING AT GRID ORIGIN: 400,000.00 M (1,312,333.3333 FTUS)
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NOTES:
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BENCHMARK

PROJECT DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

CITY OF LAS VEGAS BENCHMARK: D368 (REVISED 2008)
NAVD88 ELEVATION: 989.574 METERS (3,246.63 FEET)

FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN.
T21S,R59E,S03

CONSTRUCTION NOTES

	WATER	PUBLIC	PRIVATE
	12" GATE VALVE (PER UDACS PLATE 39)	2 EA.	0 EA.
	16" GATE VALVE (PER UDACS PLATE 39)	2 EA.	0 EA.
	12" CAP & BLOW OFF (PER UDACS PLATE 36)	4 EA.	0 EA.
	16" CAP & BLOW OFF (PER UDACS PLATE 36)	1 EA.	0 EA.
	16" 1° VERTICAL BEND (PER UDACS PLATE 31)	1 EA.	0 EA.
	16" 5° BEND (PER UDACS PLATE 31)	21 EA.	0 EA.
	16" 11° BEND (PER UDACS PLATE 31)	20 EA.	0 EA.
	16" 22° BEND (PER UDACS PLATE 31)	2 EA.	0 EA.
	16" 45° VERTICAL BEND (PER UDACS PLATE 31)	24 EA.	0 EA.
	16" x 12" TEE (PER UDACS PLATE 31)	3 EA.	0 EA.
	16" x 16" TEE (PER UDACS PLATE 31)	1 EA.	0 EA.
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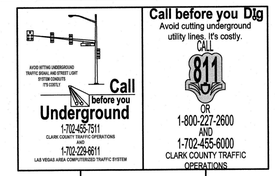
	16" C-900 WATER MAIN PER UDACS 2.06.01 & PLATE 17	3,948 LF.	0 LF.
	WATER POINT OF CONNECTION		

	SEWER	PUBLIC
	STANDARD MANHOLE PER SD-1A & 1B	32 EA.
	12" SDR-35 C-900-16 SANITARY SEWER MAIN	3,703 LF.
	SEWER POINT OF CONNECTION	





LAS VEGAS FIRE & RESCUE APPROVAL

BY: _____ DATE: _____

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APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT:---- FIRST APPROVED DATE: _____

REV	DATE	BY	REVISION

HOWARD HUGHES COMPANY, LLC
A DELEWARE LIMITED LIABILITY COMPANY
10801 W CHARLESTON BLVD SUITE 500
LAS VEGAS, NEVADA 89135
702-791-4000

CITY OF LAS VEGAS

2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5146
PH: (702) 873-7550 FAX (702) 362-2697 WEB WWW.VTNNV.COM
CONSULTING ENGINEERS ● PLANNERS ● LAND SURVEYORS

UTILITY PLAN & PROFILE 4
36+00 TO 32+10

SUMMERLIN WEST VILLAGE 24A
WESTERN BOUNDARY FIRE ACCESS, SEWER & SECOND SOURCE WATER

DRAWN BY:	DESIGNED BY:	CHECKED BY:	PROJECT NO:	SCALE:	
BCC	BCC	W.M	7851	1"=20' 1"=4'	HORIZ. VERT.
12/07/2018	12/07/2018	04/05/2019			

PROFESSIONAL ENGINEER STATE OF NEVADA
WILLIAM J. MEYER
EXP: 12/31/19
CIVIL
No. 15745
5/20/19

SHEET
UT4
32 OF 52 SHEETS

DRAWING NO.

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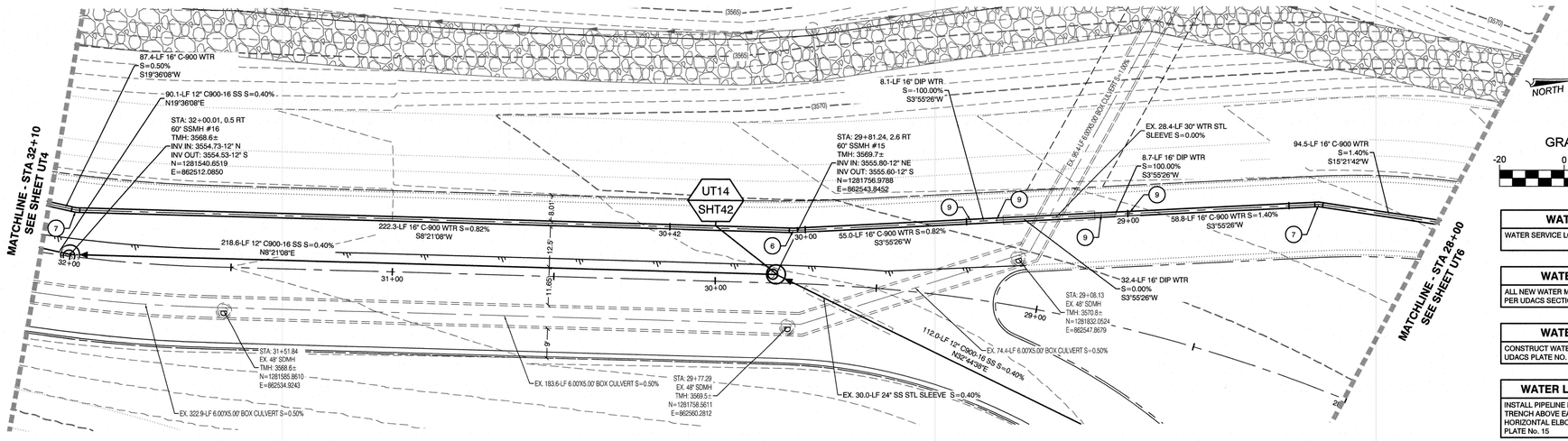

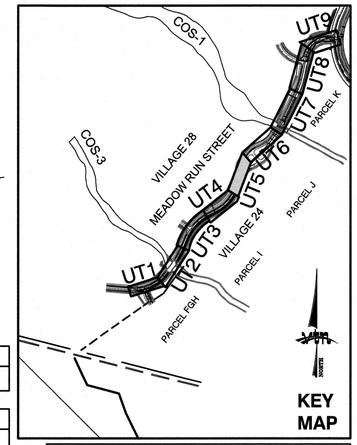

GRAPHIC SCALE

-20 0 10 20 40

1" = 20'

WATER PRESSURE ZONE:

WATER SERVICE LOCATED IN THE 3665 PRESSURE ZONE.

WATER MAIN COVER NOTE:

ALL NEW WATER MAIN TO HAVE MINIMUM DEPTH OF COVER PER UDACS SECTION 2.08

WATERLINE TRENCH NOTE:

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WATER LINE MARKER BALLS NOTE

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CONSTRUCTION NOTES

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SHT# = SHEET NUMBER

UTILITY PROFILE REFERENCE LABEL

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LAS VEGAS FIRE & RESCUE APPROVAL

BY: _____ DATE: _____

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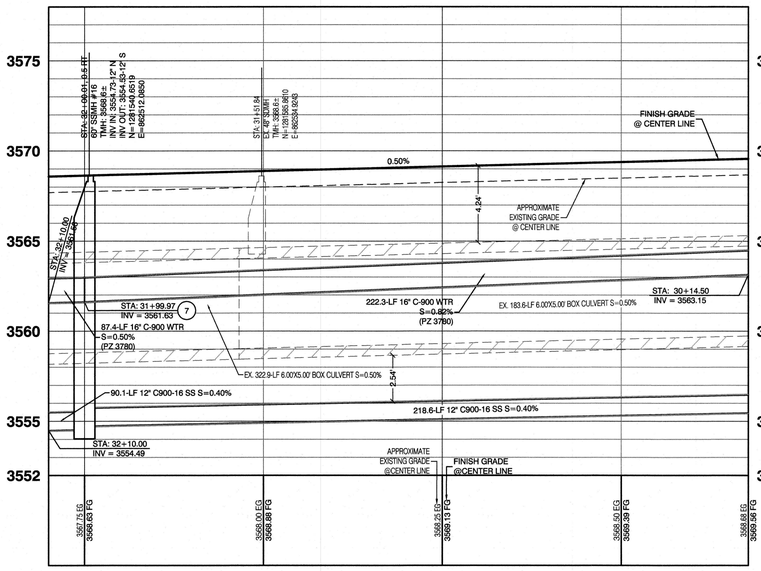
CONSTRUCTION NOTES

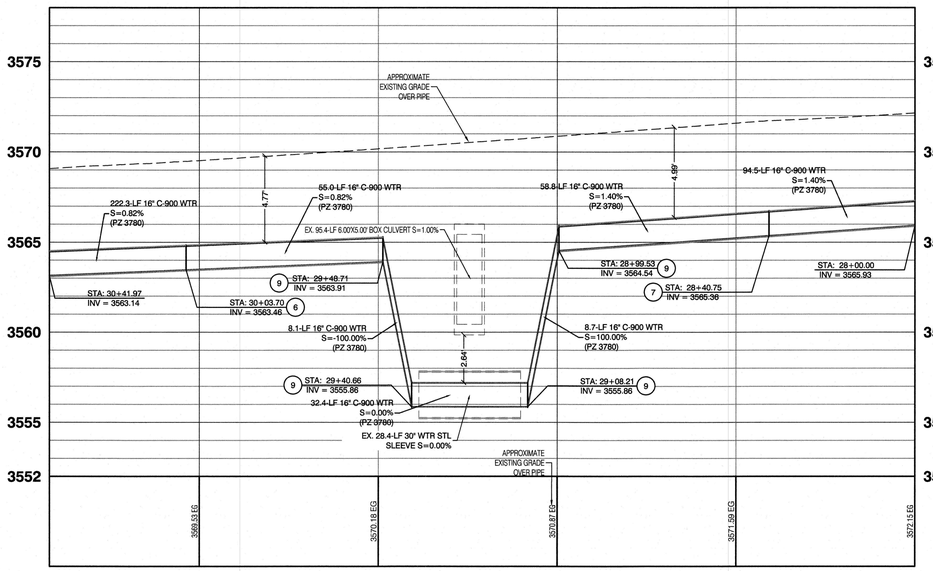
	WATER	PUBLIC	PRIVATE
	12" GATE VALVE (PER UDACS PLATE 39)	2 EA.	0 EA.
	16" GATE VALVE (PER UDACS PLATE 39)	2 EA.	0 EA.
	12" CAP & BLOW OFF (PER UDACS PLATE 36)	4 EA.	0 EA.
	16" CAP & BLOW OFF (PER UDACS PLATE 36)	1 EA.	0 EA.
	16" 1° VERTICAL BEND (PER UDACS PLATE 31)	1 EA.	0 EA.
	16" 5° BEND (PER UDACS PLATE 31)	21 EA.	0 EA.
	16" 11° BEND (PER UDACS PLATE 31)	20 EA.	0 EA.
	16" 22° BEND (PER UDACS PLATE 31)	2 EA.	0 EA.
	16" 45° VERTICAL BEND (PER UDACS PLATE 31)	24 EA.	0 EA.
	16" x 12" TEE (PER UDACS PLATE 31)	3 EA.	0 EA.
	16" x 16" TEE (PER UDACS PLATE 31)	1 EA.	0 EA.
	12" C-900 WATER MAIN PER UDACS 2.06.01 & PLATE 17	100 LF.	0 LF.
	16" C-900 WATER MAIN PER UDACS 2.06.01 & PLATE 17	3,948 LF.	0 LF.
WPOC	WATER POINT OF CONNECTION		

	SEWER	PUBLIC
S	STANDARD MANHOLE PER SD-1A & 1B	32 EA.
	12" SDR-35 C-900-16 SANITARY SEWER MAIN	3,703 LF.
SPOC	SEWER POINT OF CONNECTION	

PROFILE SCALES:

HORIZ. = 1"=20'
VERT. = 1"=4'





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Avoid cutting underground utility lines. It's costly.
CALL 811
OR
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AND
1-702-455-6000
CLARK COUNTY TRAFFIC OPERATIONS

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

AVOID HITTING UNDERGROUND TRAFFIC SIGNAL AND STREET LIGHT CONDUITS AND CABLES
Call before you Underground
1-702-455-7511
CLARK COUNTY TRAFFIC OPERATIONS
1-702-229-6611
LAS VEGAS AREA COMPUTERIZED TRAFFIC SYSTEM

BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

LINEAR UNIT: US SURVEY FOOT (FTUS)

DATUM (REFERENCE FRAME): NAD 83 (2011) EPOCH 2010.00

SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)

ZONE: LAS VEGAS HIGH ELEVATION ZONE

PROJECTION: TRANSVERSE MERCATOR
STANDARD PARALLEL (AND LATITUDE OF GRID ORGIN):36°15'00"N
LONGITUDE OF CENTRAL MERIDIAN:114°58'00"W
NORTHING AT GRID ORGIN: 400,000.00 M (1,312,333.3333 FTUS)
EASTING AT CENTRAL MERIDIAN: 300,000 M (984,250.0000 FTUS)
SCALE FACTOR ON CENTRAL MERIDIAN: 1.000135 (EXACT)

NOTES:
1. ALL DISTANCES AND BEARINGS SHOWN HEREON ARE PROJECTED (GRID) VALUES BASED ON THE PRECEDING PROJECTION DEFINITION. THE PROJECTION WAS DEFINED SUCH THAT PROJECTED (GRID) DISTANCES ARE EQUIVALENT TO "GROUND" DISTANCES IN THE PROJECT AREA.

2. GRID BEARINGS SHOWN HEREON (OR IMPLIED BY GRID COORDINATES) DO NOT EQUAL GEODETIC BEARINGS DUE TO MERIDIAN CONVERGENCE.

BENCHMARK

PROJECT DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

CITY OF LAS VEGAS BENCHMARK: D368 (REVISED 2008) NAVD88 ELEVATION: 989.574 METERS (3,246.63 FEET)

FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN.
T21S,R59E,S03

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT:---- FIRST APPROVED DATE: _____

REV	DATE	BY	REVISION

HOWARD HUGHES COMPANY, LLC
A DELEWARE LIMITED LIABILITY COMPANY
10801 W CHARLESTON BLVD SUITE 300
LAS VEGAS, NEVADA 89135
702-791-4000

CITY OF LAS VEGAS

2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5146
PH: (702) 873-7500 FAX: (702) 362-2597 WEB WWW.VTNNV.COM
CONSULTING ENGINEERS ● PLANNERS ● LAND SURVEYORS

UTILITY PLAN & PROFILE 5
28+00 TO 32+10

SUMMERLIN WEST VILLAGE 24A
WESTERN BOUNDARY FIRE ACCESS, SEWER & SECOND SOURCE WATER

DRAWN BY: BCC	12/24/2018
DESIGNED BY: BCC	12/24/2018
CHECKED BY: WJM	04/05/2019
PROJECT NO: 27851	SCALE: 1"=20' HORIZ. 1"=4' VERT.

PROFESSIONAL ENGINEER STATE OF NEVADA
WILLIAM J. MEYER
EXP: 12/31/19
CIVIL
No. 16745
5/20/19

SHEET
UT5
33 OF 52 SHEETS

DRAWING NO.

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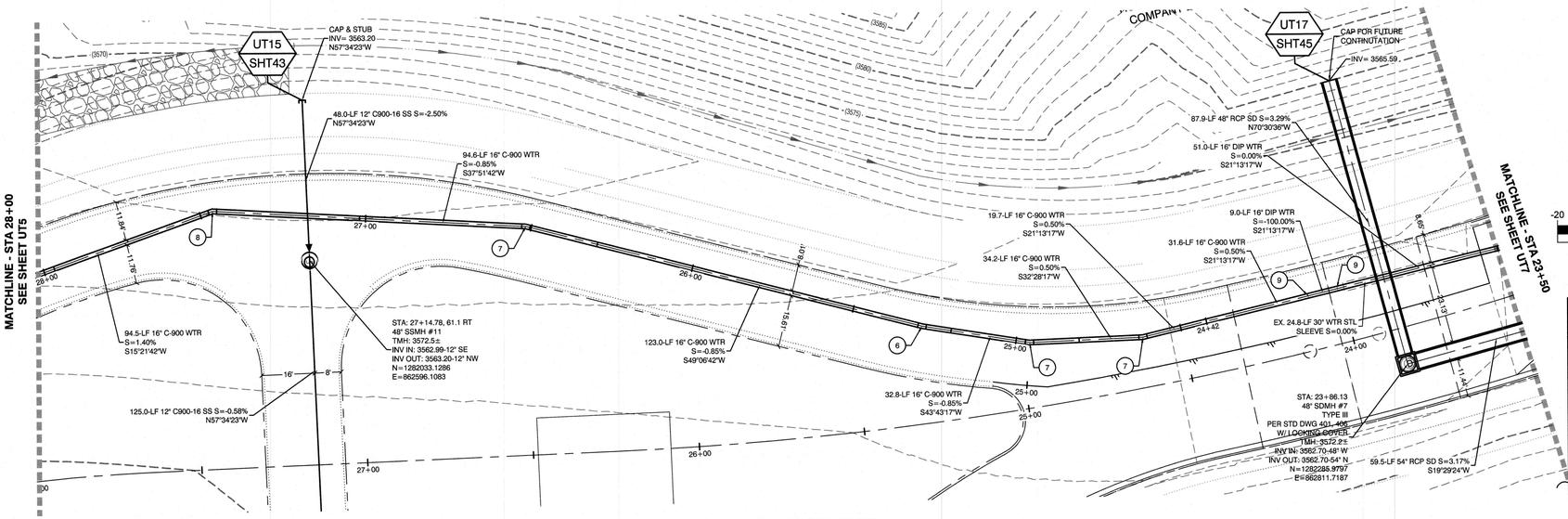

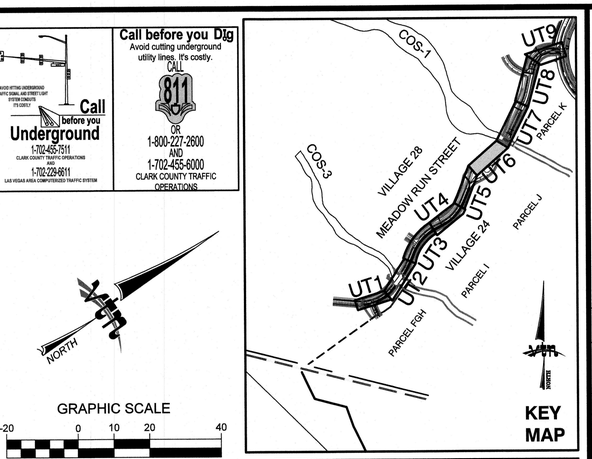

GRAPHIC SCALE

-20 0 10 20 40

1" = 20'

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY.

CALL BEFORE YOU DO OVERHEAD

1-702-227-2929

AVOID HITTING UNDERGROUND TRAFFIC SIGNAL AND STREET LIGHT SYSTEM CONDUITS. IT'S COSTLY.

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1-702-455-1511
CLARK COUNTY TRAFFIC OPERATIONS
AND
1-702-229-6811
LAS VEGAS AREA COMPUTERIZED TRAFFIC SYSTEM

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AND
1-702-455-6000
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BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

LINEAR UNIT: US SURVEY FOOT (FTUS)

DATUM (REFERENCE FRAME): NAD 83 (2011) EPOCH 2010.00

SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)

ZONE: LAS VEGAS HIGH ELEVATION ZONE

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LONGITUDE OF CENTRAL MERIDIAN:114°58'00"W
NORTHING AT GRID ORIGIN: 400,000.00 M (1,312,333.3333 FTUS)
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SCALE FACTOR ON CENTRAL MERIDIAN: 1.000135 (EXACT)

NOTES:
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BENCHMARK

PROJECT DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

CITY OF LAS VEGAS BENCHMARK: D368 (REVISED 2008) NAVD88 ELEVATION: 989.574 METERS (3,246.63 FEET)

FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN. T21S,R59E,S03

CONSTRUCTION NOTES

WATER	PUBLIC	PRIVATE
12" GATE VALVE (PER UDACS PLATE 39)	2 EA.	0 EA.
16" GATE VALVE (PER UDACS PLATE 39)	2 EA.	0 EA.
12" CAP & BLOW OFF (PER UDACS PLATE 36)	4 EA.	0 EA.
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16" x 16" TEE (PER UDACS PLATE 31)	1 EA.	0 EA.
12" C-900 WATER MAIN PER UDACS 2.06.01 & PLATE 17	100 LF.	0 LF.
16" C-900 WATER MAIN PER UDACS 2.06.01 & PLATE 17	3,948 LF.	0 LF.
WATER POINT OF CONNECTION		

SEWER	PUBLIC
STANDARD MANHOLE PER SD-1A & 1B	32 EA.
12" SDR-35 C-900-16 SANITARY SEWER MAIN	3,703 LF.
SEWER POINT OF CONNECTION	

WATER MAIN JOINT DEFLECTION

PVC PIPE SHALL BE DEFLECTED AT THE JOINT ONLY. THE MAXIMUM ALLOWABLE DEFLECTION SHALL BE ONE (1) DEGREE PER JOINT WITH A MINIMUM RADIUS OF CURVATURE OF 1,150 FEET, PER UDACS 2.07.01 AND 2.07.02.

FOR CHANGES IN DIRECTION EXCEEDING THE MAXIMUM ALLOWABLE JOINT DEFLECTION, FITTINGS SHALL BE USED.

UTILITY CROSSING NOTE:

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

FIRE HYDRANT MARKER NOTES

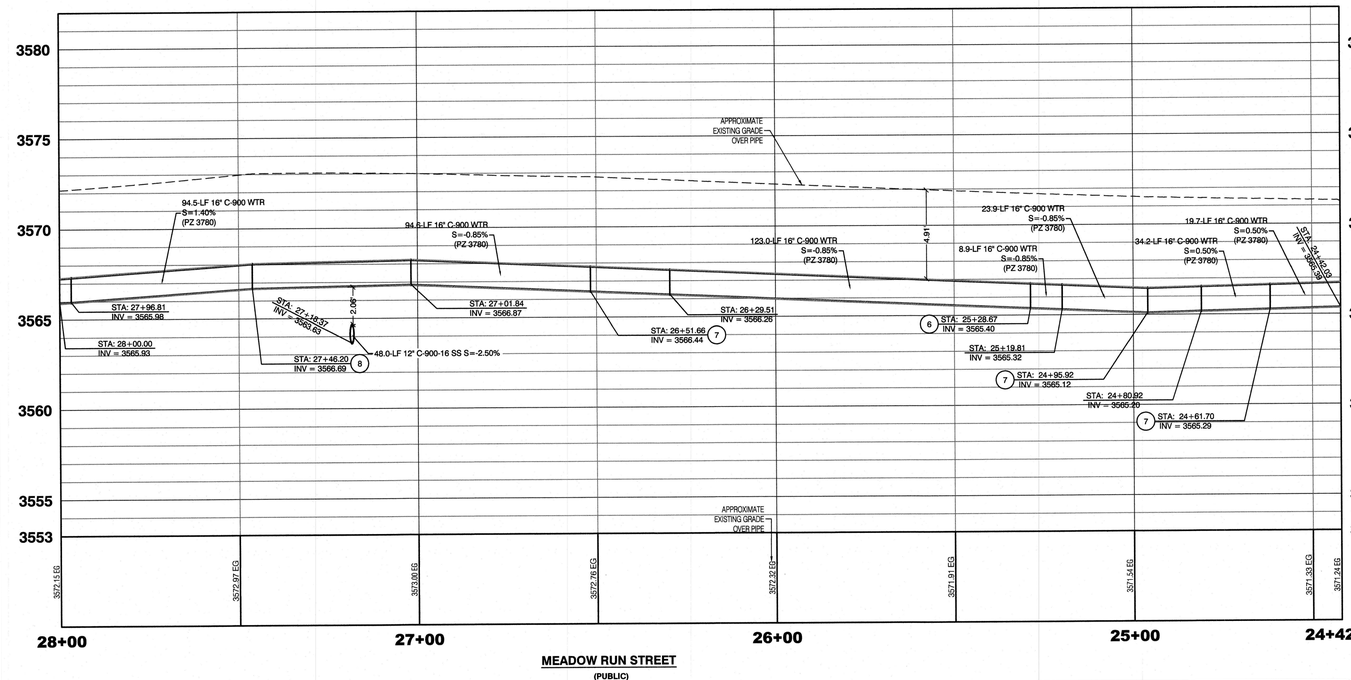
BLUE COLORED REFLECTIVE RAISED PAVEMENT MARKERS ARE TO BE INSTALLED:

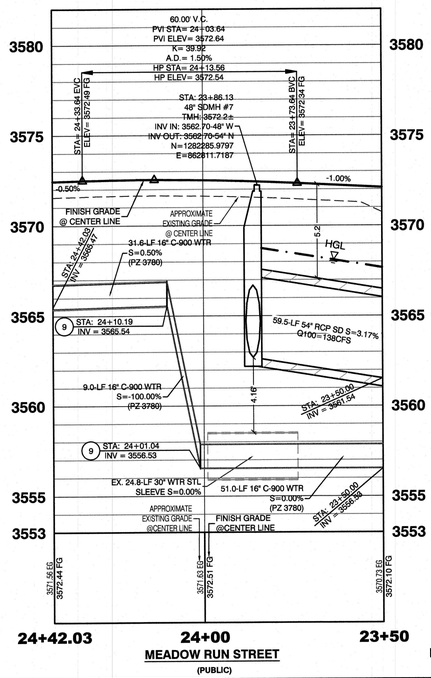
1. ON ROADWAYS WITH NO PARKING PERMITTED ON HYDRANT SIDE; LOCATE MAKER 8' FROM FACE OF CURB ON HYDRANT SIDE.
2. ON ROADWAYS WITH PARKING PERMITTED ON HYDRANT SIDE; LOCATE MARKER 16' FROM FACE OF CURB ON HYDRANT SIDE.

CONSTRUCTION NOTES

UT # / SHT # — UTILITY PROFILE REFERENCE LABEL
UT #= SHEET INDEX
SHT#= SHEET NUMBER

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





WATER PRESSURE ZONE:

WATER SERVICE LOCATED IN THE 3665 PRESSURE ZONE.

WATER MAIN COVER NOTE:

ALL NEW WATER MAIN TO HAVE MINIMUM DEPTH OF COVER PER UDACS SECTION 2.08

WATERLINE TRENCH NOTE:

CONSTRUCT WATERLINE TRENCH SECTION AND BACKFILL PER UDACS PLATE NO. 17.

WATER LINE MARKER BALLS NOTE

INSTALL PIPELINE MARKER BALLS IN TRENCH ABOVE EACH HORIZONTAL ELBOW FITTING, PER UDACS PLATE No. 15

ENGINEER DISCLAIMER NOTE:

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

LAS VEGAS FIRE & RESCUE APPROVAL

BY: _____ DATE: _____.

APPROVAL OF THESE PLANS SHALL NOT BE CONSTRUED TO BE A PERMIT FOR, OR AN APPROVAL OF, ANY VIOLATION OF ANY OF THE PROVISIONS OF THE STATE OR COUNTY LAWS. FIRE FLOW ---- GPM AT 20 P.S.I. RESIDUAL.

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT:---- FIRST APPROVED DATE: _____.

REV	DATE	BY	REVISION

HOWARD HUGHES COMPANY, LLC
A DELAWARE LIMITED LIABILITY COMPANY
10801 W CHARLESTON BLVD SUITE 300
LAS VEGAS, NEVADA 89135
702-791-4000

CITY OF LAS VEGAS

2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5148
PH. (702) 873-7500 FAX (702) 382-2597 WEB WWW.VTNNV.COM
CONSULTING ENGINEERS ● PLANNERS ● LAND SURVEYORS

UTILITY PLAN & PROFILE 6
28+00 TO 23+50

SUMMERLIN WEST VILLAGE 24A
WESTERN BOUNDARY FIRE ACCESS, SEWER & SECOND SOURCE WATER

DRAWN BY:	DESIGNED BY:	CHECKED BY:	PROJECT NO:	SCALE:	HORZ.
BCC 12/07/2018	BCC 12/07/2018	WJM 04/06/2019	7851	1"=20'	VERT. 1"=4'

PROFESSIONAL ENGINEER STATE OF NEVADA
WILLIAM J. MEYER
No. 15745
CIVIL
EXP: 12/31/19
5/20/19

SHEET
UT6
34 OF 52 SHEETS

DRAWING NO.

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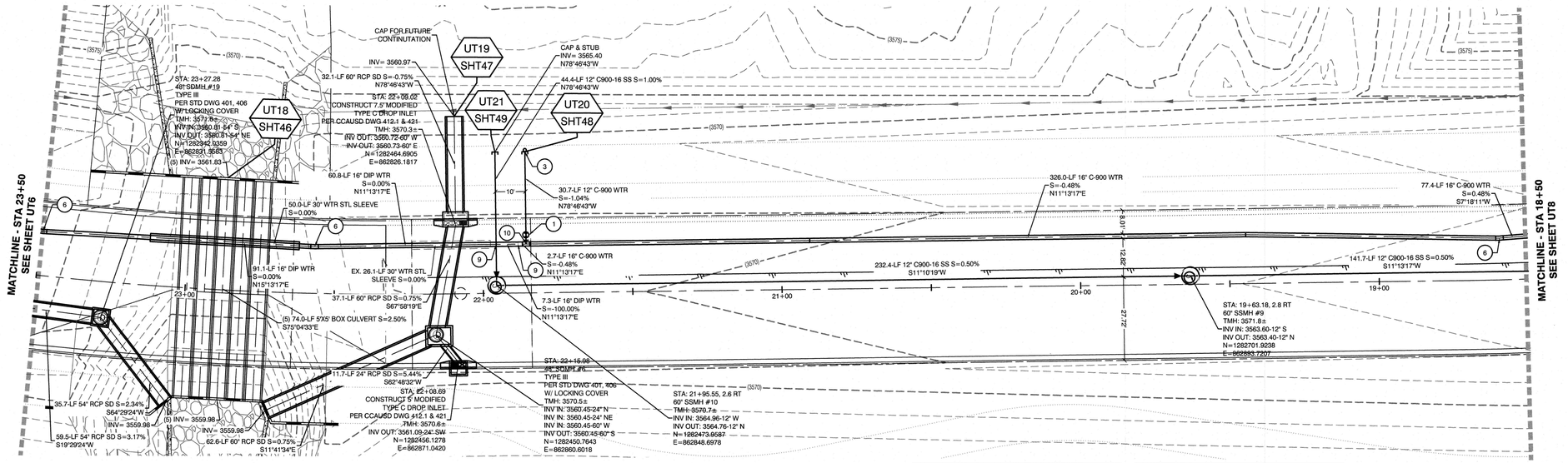

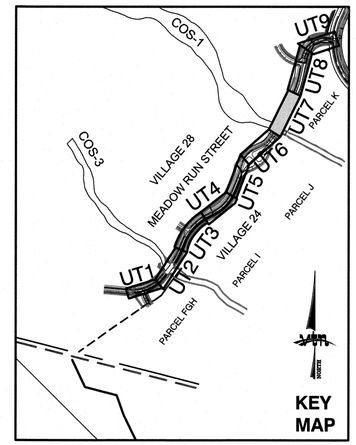

CONSTRUCTION NOTES

		WATER	PUBLIC	PRIVATE
⊕	🔵	12" GATE VALVE (PER UDACS PLATE 39)	2 EA.	0 EA.
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		16" C-900 WATER MAIN PER UDACS 2.06.01 & PLATE 17	3,948 LF.	0 LF.
	PWC	WATER POINT OF CONNECTION		

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	12" SDR-35 C-900-16 SANITARY SEWER MAIN	3,703 LF.
SPC	SEWER POINT OF CONNECTION	

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CLARK COUNTY TRAFFIC OPERATIONS AND
1-702-229-6611
LAS VEGAS AREA COMPUTERIZED TRAFFIC SYSTEM

WATER MAIN COVER NOTE:
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WATER PRESSURE ZONE:
WATER SERVICE LOCATED IN THE 3665 PRESSURE ZONE.

LAS VEGAS FIRE & RESCUE APPROVAL
BY:_____ DATE: _____

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WATER LINE MARKER BALLS NOTE
INSTALL PIPELINE MARKER BALLS IN TRENCH ABOVE EACH HORIZONTAL ELBOW FITTING, PER UDACS PLATE No. 15

MEADOW RUN STREET
(PUBLIC)

WATER MAIN JOINT DEFLECTION
PVC PIPE SHALL BE DEFLECTED AT THE JOINT ONLY. THE MAXIMUM ALLOWABLE DEFLECTION SHALL BE ONE (1) DEGREE PER JOINT WITH A MINIMUM RADIUS OF CURVATURE OF 1,150 FEET, PER UDACS 2.07.01 AND 2.07.02.

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WATERLINE TRENCH NOTE:
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CONSTRUCTION NOTES

UT # / SHT # — UTILITY PROFILE REFERENCE LABEL
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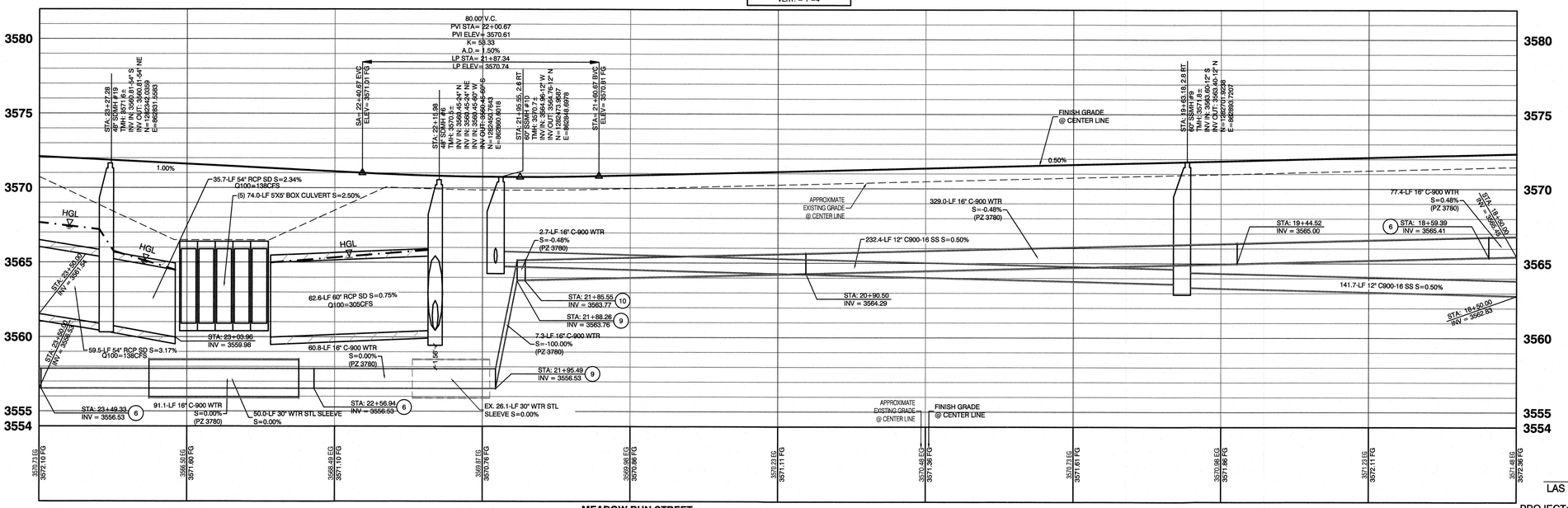

BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

LINEAR UNIT: US SURVEY FOOT (FTUS)

DATUM (REFERENCE FRAME): NAD 83 (2011) EPOCH 2010.00

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FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN. 121S,R59E,S03

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT:---- FIRST APPROVED DATE:_____

REV	DATE	BY	REVISION

CITY OF LAS VEGAS

HOWARD HUGHES COMPANY, LLC
A DELAWARE LIMITED LIABILITY COMPANY
1980 W CHARLESTON BLVD SUITE 300
LAS VEGAS, NEVADA 89135
702.914.4000

2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5148
PH. (702) 873-7550 FAX (702) 362-2997 WEB WWW.VTNNV.COM
CONSULTING ENGINEERS ● PLANNERS ● LAND SURVEYORS

UTILITY PLAN & PROFILE 7
18+50 TO 23+50

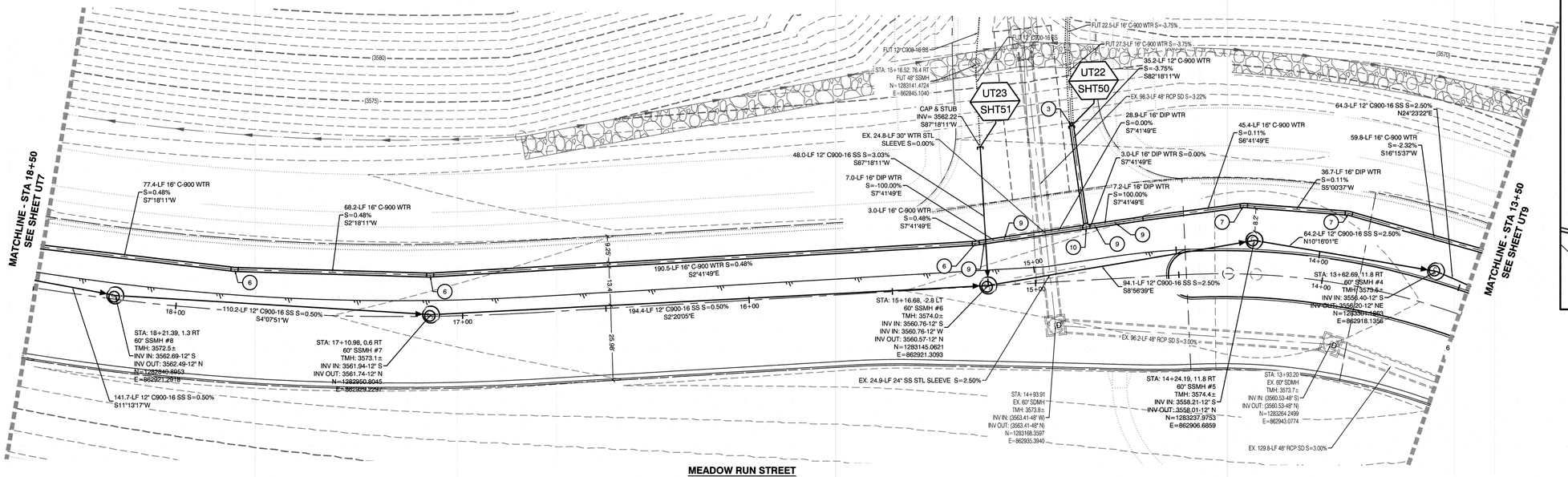
SUMMERLIN WEST VILLAGE 24A
WESTERN BOUNDARY FIRE ACCESS, SEWER & SECOND SOURCE WATER

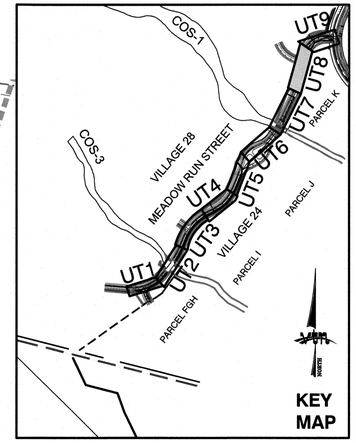
DRAWN BY: BCZ — 12/07/2018
DESIGNED BY: BCC — 12/07/2018
CHECKED BY: WJM — 04/05/2019
SCALE: 1"=20' HORIZ. 1"=4' VERT.
PROJECT NO: 7851

PROFESSIONAL ENGINEER STATE OF NEVADA
WILLIAM J. MEYER
EXP: 12/31/19
CIVIL
No. 15745
5/20/19

SHEET
UT7
35 OF 52 SHEETS
DRAWING NO.

H:\7851\Village 24 Collection\WATER\Sheet Set\UNIT 2\7851-UT-2.dwg, May 20, 2019







LAS VEGAS FIRE & RESCUE APPROVAL

BY: _____ DATE: _____

APPROVAL OF THESE PLANS SHALL NOT BE CONSTRUED TO BE A PERMIT FOR, OR AN APPROVAL OF, ANY VIOLATION OF ANY OF THE PROVISIONS OF THE STATE OR COUNTY LAWS. FIRE FLOW ---- GPM AT 20 P.S.I. RESIDUAL.

UTILITY CROSSING NOTE:

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

ENGINEER DISCLAIMER NOTE:

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

WATERLINE TRENCH NOTE:

CONSTRUCT WATERLINE TRENCH SECTION AND BACKFILL PER UDACS PLATE NO. 17.

WATER PRESSURE ZONE:

WATER SERVICE LOCATED IN THE 3665 PRESSURE ZONE.

WATER MAIN COVER NOTE:

ALL NEW WATER MAIN TO HAVE MINIMUM DEPTH OF COVER PER UDACS SECTION 2.08

WATER LINE MARKER BALLS NOTE

INSTALL PIPELINE MARKER BALLS IN TRENCH ABOVE EACH HORIZONTAL ELBOW FITTING, PER UDACS PLATE No. 15

CONSTRUCTION NOTES

UT # / SHT # — UTILITY PROFILE REFERENCE LABEL
UT # = SHEET INDEX
SHT # = SHEET NUMBER

FIRE HYDRANT MARKER NOTES

BLUE COLORED REFLECTIVE RAISED PAVEMENT MARKERS ARE TO BE INSTALLED:

1. ON ROADWAYS WITH NO PARKING PERMITTED ON HYDRANT SIDE; LOCATE MAKER 8' FROM FACE OF CURB ON HYDRANT SIDE.
2. ON ROADWAYS WITH PARKING PERMITTED ON HYDRANT SIDE; LOCATE MARKER 16' FROM FACE OF CURB ON HYDRANT SIDE.

WATER MAIN JOINT DEFLECTION

PVC PIPE SHALL BE DEFLECTED AT THE JOINT ONLY. THE MAXIMUM ALLOWABLE DEFLECTION SHALL BE ONE (1) DEGREE PER JOINT WITH A MINIMUM RADIUS OF CURVATURE OF 1,150 FEET, PER UDACS 2.07.01 AND 2.07.02.

FOR CHANGES IN DIRECTION EXCEEDING THE MAXIMUM ALLOWABLE JOINT DEFLECTION, FITTINGS SHALL BE USED.

PROFILE SCALES:

HORIZ. = 1"=20'
VERT. = 1"=4'

NORTH

GRAPHIC SCALE

-20 0 10 20 40

1" = 20'

CONSTRUCTION NOTES

	WATER	PUBLIC	PRIVATE
	12" GATE VALVE (PER UDACS PLATE 39)	2 EA.	0 EA.
	16" GATE VALVE (PER UDACS PLATE 39)	2 EA.	0 EA.
	12" CAP & BLOW OFF (PER UDACS PLATE 36)	4 EA.	0 EA.
	16" CAP & BLOW OFF (PER UDACS PLATE 36)	1 EA.	0 EA.
	16" 1° VERTICAL BEND (PER UDACS PLATE 31)	1 EA.	0 EA.
	16" 5° BEND (PER UDACS PLATE 31)	21 EA.	0 EA.
	16" 11° BEND (PER UDACS PLATE 31)	20 EA.	0 EA.
	16" 22° BEND (PER UDACS PLATE 31)	2 EA.	0 EA.
	16" 45° VERTICAL BEND (PER UDACS PLATE 31)	24 EA.	0 EA.
	16" x 12" TEE (PER UDACS PLATE 31)	3 EA.	0 EA.
	16" x 16" TEE (PER UDACS PLATE 31)	1 EA.	0 EA.
	12" C-900 WATER MAIN PER UDACS 2.06.01 & PLATE 17	100 LF.	0 LF.
	16" C-900 WATER MAIN PER UDACS 2.06.01 & PLATE 17	3,948 LF.	0 LF.
POC	WATER POINT OF CONNECTION		

	SEWER	PUBLIC
S	STANDARD MANHOLE PER SD-1A & 1B	32 EA.
	12" SDR-35 C-900-16 SANITARY SEWER MAIN	3,703 LF.
POC	SEWER POINT OF CONNECTION	

BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

LINEAR UNIT: US SURVEY FOOT (FTUS)

DATUM (REFERENCE FRAME): NAD 83 (2011) EPOCH 2010.00

SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)

ZONE: LAS VEGAS HIGH ELEVATION ZONE

PROJECTION: TRANSVERSE MERCATOR
STANDARD PARALLEL (AND LATITUDE OF GRID ORGIN):36°15'00"N
LONGITUDE OF CENTRAL MERIDIAN:114°58'00"W
NORTHING AT GRID ORIGIN: 400,000.00 M (1,312,333.3333 FTUS)
EASTING AT CENTRAL MERIDIAN: 300,000 M (984,250.0000 FTUS)
SCALE FACTOR ON CENTRAL MERIDIAN: 1.000135 (EXACT)

NOTES:
1. ALL DISTANCES AND BEARINGS SHOWN HEREON ARE PROJECTED (GRID) VALUES BASED ON THE PRECEDING PROJECTION DEFINITION. THE PROJECTION WAS DEFINED SUCH THAT PROJECTED (GRID) DISTANCES ARE EQUIVALENT TO "GROUND" DISTANCES IN THE PROJECT AREA.

2. GRID BEARINGS SHOWN HEREON (OR IMPLIED BY GRID COORDINATES) DO NOT EQUAL GEODETIC BEARINGS DUE TO MERIDIAN CONVERGENCE.

BENCHMARK

PROJECT DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

CITY OF LAS VEGAS BENCHMARK: D368 (REVISED 2008) NAVD88 ELEVATION: 989.574 METERS (3,246.63 FEET)

FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN.
T21S,R59E,S03

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT:---- FIRST APPROVED DATE: _____

REV	DATE	BY	REVISION

CITY OF LAS VEGAS

HOWARD HUGES COMPANY, LLC
A DELEWARE LIMITED LIABILITY COMPANY
10801 W CHARLESTON BLVE SUITE 300
LAS VEGAS, NEVADA 89135
702-214-5000

2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5148
PH. (702) 873-7550 FAX (702) 362-2597 WEB WWW.VTNNV.COM
CONSULTING ENGINEERS ● PLANNERS ● LAND SURVEYORS

UTILITY PLAN & PROFILE 8
18+50 TO 13+50

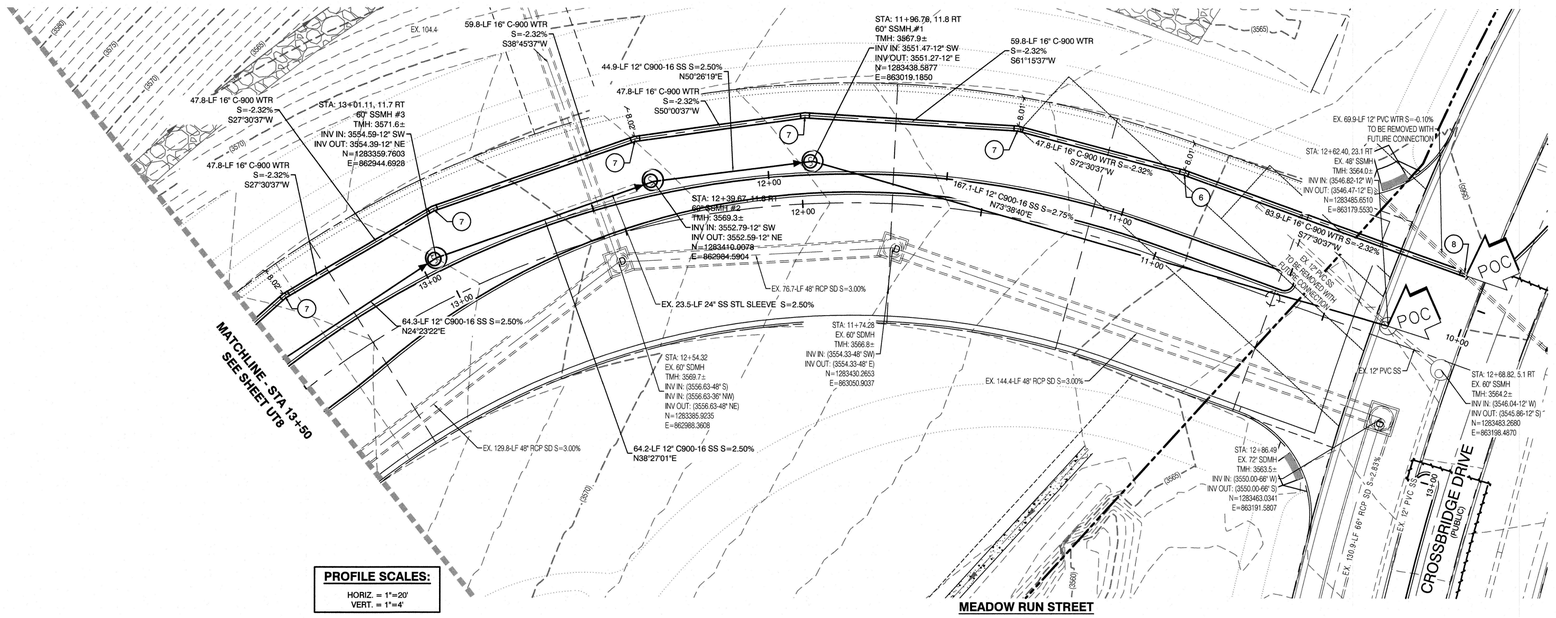
SUMMERLIN WEST VILLAGE 24A
WESTERN BOUNDARY FIRE ACCESS, SEWER & SECOND SOURCE WATER

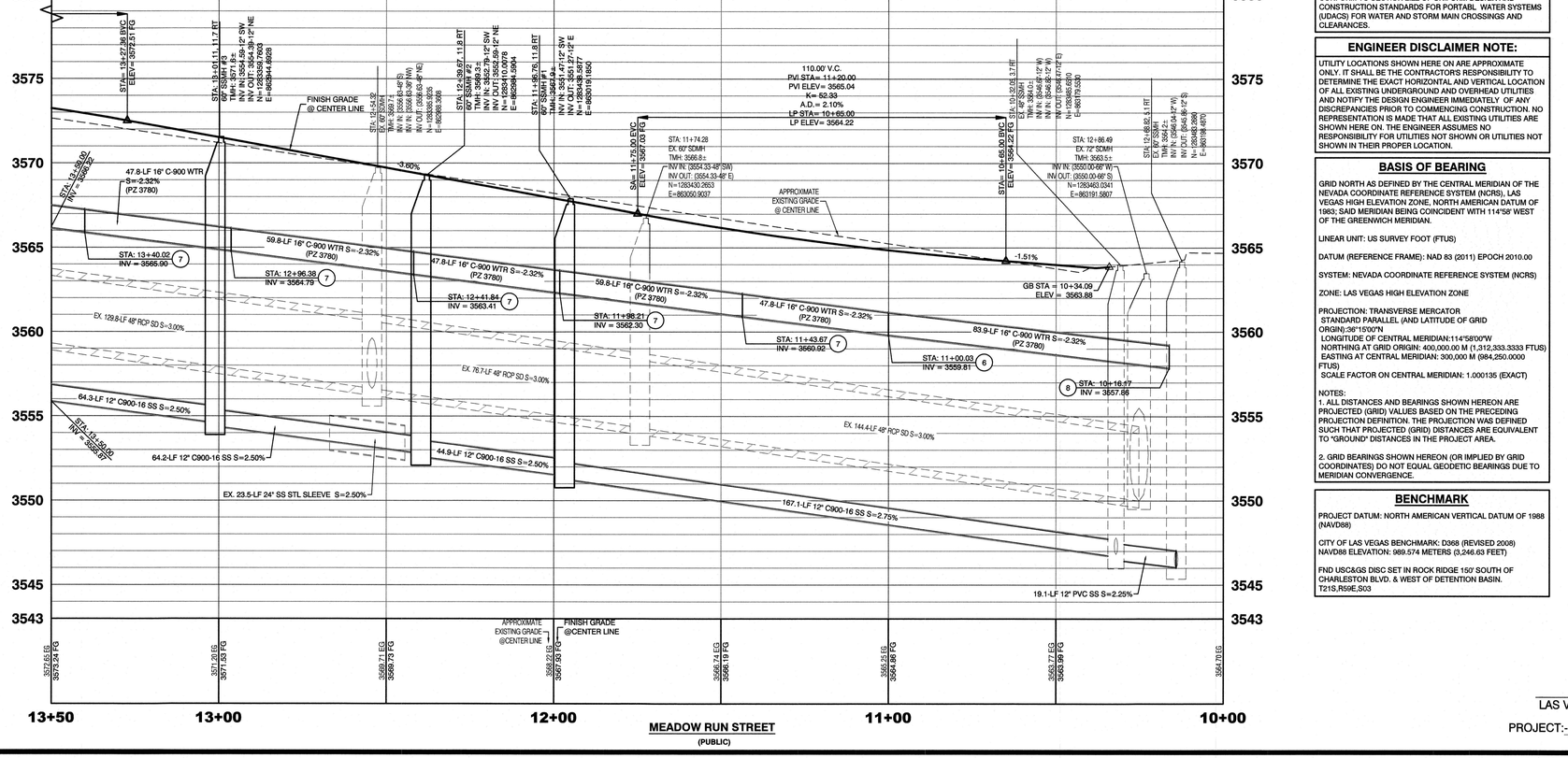
DRAWN BY: BCC
DESIGNED BY: BCC
CHECKED BY: WJM
PROJECT NO: 7851
SCALE: 1"=20' HORZ. 1"=4' VERT.
12/07/2018
12/07/2018
04/05/2019

PROFESSIONAL ENGINEER - STATE OF NEVADA
WILLIAM J. MEYER
EXP: 12/31/19
CIVIL
No. 17145
5/20/19

SHEET
UT8
36 OF 52 SHEETS
DRAWING NO.

H:\17851\Village 24 Collector-WATER\Sheet Set\UNIT 2\7851-UT-2.dwg, May 20, 2019



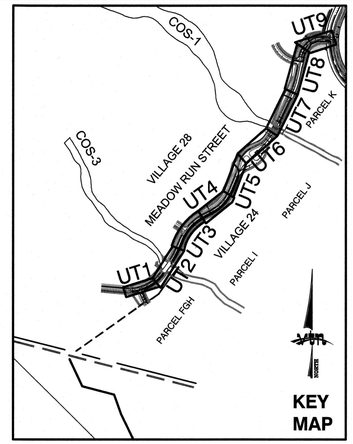




GRAPHIC SCALE

-20 0 10 20 40

1" = 20'



WATER PRESSURE ZONE:

WATER SERVICE LOCATED IN THE 3665 PRESSURE ZONE.

WATER MAIN COVER NOTE:

ALL NEW WATER MAIN TO HAVE MINIMUM DEPTH OF COVER PER UDACS SECTION 2.08

WATERLINE TRENCH NOTE:

CONSTRUCT WATERLINE TRENCH SECTION AND BACKFILL PER UDACS PLATE NO. 17.

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BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

LINEAR UNIT: US SURVEY FOOT (FTUS)

DATUM (REFERENCE FRAME): NAD 83 (2011) EPOCH 2010.00

SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)

ZONE: LAS VEGAS HIGH ELEVATION ZONE

PROJECTION: TRANSVERSE MERCATOR
STANDARD PARALLEL (AND LATITUDE OF GRID ORGIN):36°15'00"N
LONGITUDE OF CENTRAL MERIDIAN:114°58'00"W
NORTHING AT GRID ORIGIN: 400,000.00 M (1,312,333.3333 FTUS)
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SCALE FACTOR ON CENTRAL MERIDIAN: 1.000135 (EXACT)

NOTES:
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PROJECT DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

CITY OF LAS VEGAS BENCHMARK: D368 (REVISED 2008) NAVD88 ELEVATION: 989.574 METERS (3,246.63 FEET)

FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN. T21S,R59E,S03

CONSTRUCTION NOTES

		WATER	PUBLIC	PRIVATE
		12" GATE VALVE (PER UDACS PLATE 39)	2 EA.	0 EA.
		16" GATE VALVE (PER UDACS PLATE 39)	2 EA.	0 EA.
		12" CAP & BLOW OFF (PER UDACS PLATE 36)	4 EA.	0 EA.
		16" CAP & BLOW OFF (PER UDACS PLATE 36)	1 EA.	0 EA.
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		16" 5" BEND (PER UDACS PLATE 31)	21 EA.	0 EA.
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		16" x 16" TEE (PER UDACS PLATE 31)	1 EA.	0 EA.
		12" C-900 WATER MAIN PER UDACS 2.06.01 & PLATE 17	100 LF.	0 LF.
		16" C-900 WATER MAIN PER UDACS 2.06.01 & PLATE 17	3,948 LF.	0 LF.
	POC	WATER POINT OF CONNECTION		
		SEWER	PUBLIC	
	S	STANDARD MANHOLE PER SD-1A & 1B	32 EA.	
		12" SDR-35 C-900-16 SANITARY SEWER MAIN	3,703 LF.	
		SEWER POINT OF CONNECTION		



Call before you Dig
Avoid cutting underground utility lines. It's costly.
CALL 811 OR
1-800-227-2600
AND
1-702-455-6000
CLARK COUNTY TRAFFIC OPERATIONS



LAS VEGAS FIRE & RESCUE APPROVAL

BY: _____ DATE: _____

APPROVAL OF THESE PLANS SHALL NOT BE CONSTRUED TO BE A PERMIT FOR, OR AN APPROVAL OF, ANY VIOLATION OF ANY OF THE PROVISIONS OF THE STATE OR COUNTY LAWS. FIRE FLOW --- GPM AT 20 P.S.I. RESIDUAL.

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT:--- FIRST APPROVED DATE: _____

REV	DATE	BY	REVISION

HOWARD HUGES COMPANY, LLC
A DELEWARE LIMITED LIABILITY COMPANY
10801 W CHARLESTON BLVE SUITE 300
LAS VEGAS, NEVADA 89135
702-791-4000

CITY OF LAS VEGAS

2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5148
PH. (702) 873-7550 FAX (702) 362-2597 WEB WWW.VTNNV.COM
CONSULTING ENGINEERS ● PLANNERS ● LAND SURVEYORS

UTILITY PLAN & PROFILE 9
10+00 TO 13+50

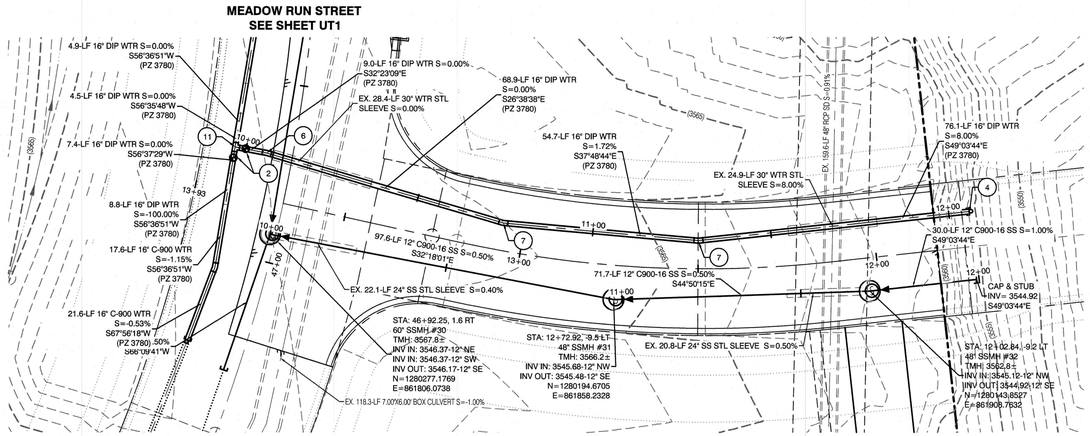
SUMMERLIN WEST VILLAGE 24A
WESTERN BOUNDARY FIRE ACCESS, SEWER & SECOND SOURCE WATER

DRAWN BY:	DESIGNED BY:	CHECKED BY:	PROJECT NO:	SCALE:	
BCC 12/07/2018	BCC 12/07/2018	MBM 04/05/2019	7851	HORIZ.	1"=20'
				VERT.	1"=4'

PROFESSIONAL ENGINEER - STATE OF NEVADA
WILLIAM J. MEYER
EXP: 12/31/19
CIVIL
No. 15745
5/20/19

SHEET
UT9
37 OF 52 SHEETS
DRAWING NO.

H:\7851\Village 24 Collection-WATER\Sheet Set\UNIT 2\7851-UT-2.dwg, May 20, 2019



FGH SECONDARY ACCESS ROAD
(PUBLIC)

PROFILE SCALES:

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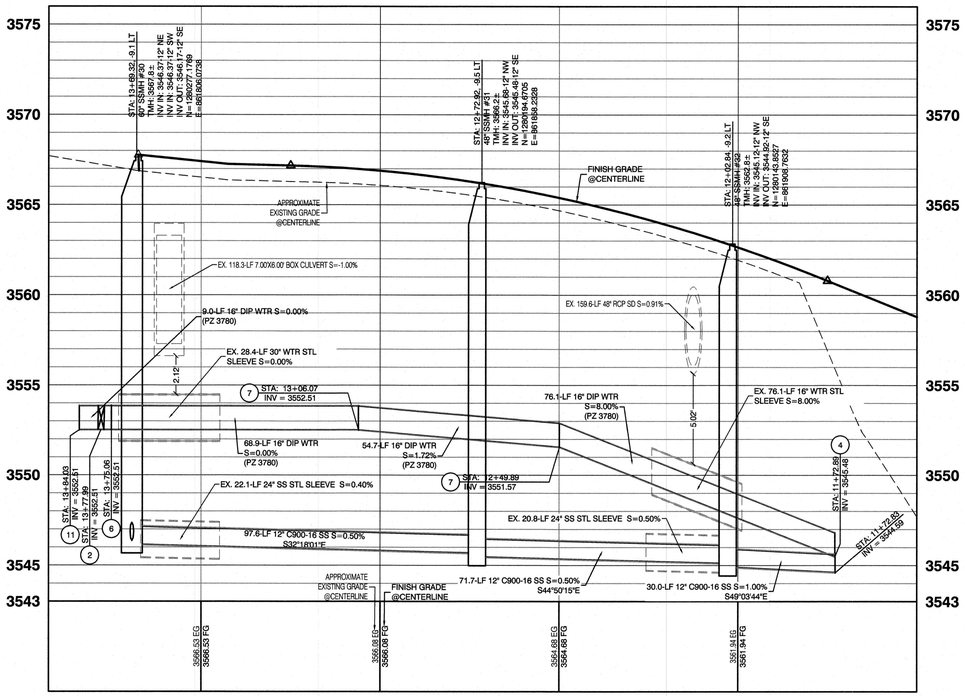
VERT. = 1"=4'



FGH SECONDARY ACCESS ROAD
(PUBLIC)

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

AVOID HITTING UNDERGROUND TRAFFIC SIGNAL AND STREET LIGHT SYSTEM CONDUITS. IT'S COSTLY.
Call before you Underground
1-702-455-7511
CLARK COUNTY TRAFFIC OPERATIONS
1-702-229-6811
LAS VEGAS AREA COMPUTERIZED TRAFFIC SYSTEM

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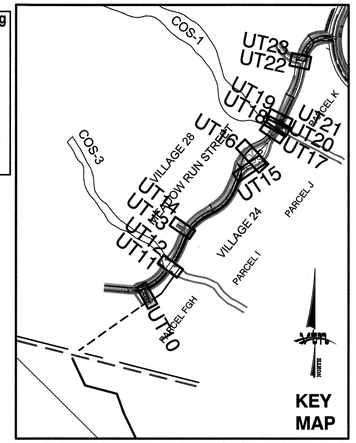



GRAPHIC SCALE
-20 0 10 20 40
1" = 20'

WATER PRESSURE ZONE:
WATER SERVICE LOCATED IN THE 3665 PRESSURE ZONE.

WATER MAIN COVER NOTE:
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LAS VEGAS FIRE & RESCUE APPROVAL
BY: _____ DATE: _____

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CONSTRUCTION NOTES

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GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

LINEAR UNIT: US SURVEY FOOT (FTUS)

DATUM (REFERENCE FRAME): NAD 83 (2011) EPOCH 2010.00

SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)

ZONE: LAS VEGAS HIGH ELEVATION ZONE

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APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT:---- FIRST APPROVED DATE: _____

REV	DATE	BY	REVISION

CITY OF LAS VEGAS

HOWARD HUGHES COMPANY, LLC
A DELEWARE LIMITED LIABILITY COMPANY
10801 W CHARLESTON BLVD SUITE 300
LAS VEGAS, NEVADA 89135
702.924.6000

2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5148
PH. (702) 873-7500 FAX (702) 362-2597 WEB WWW.VTNNV.COM
CONSULTING ENGINEERS ● PLANNERS ● LAND SURVEYORS

UTILITY PLAN & PROFILE 10
WATER & SEWER LATERAL

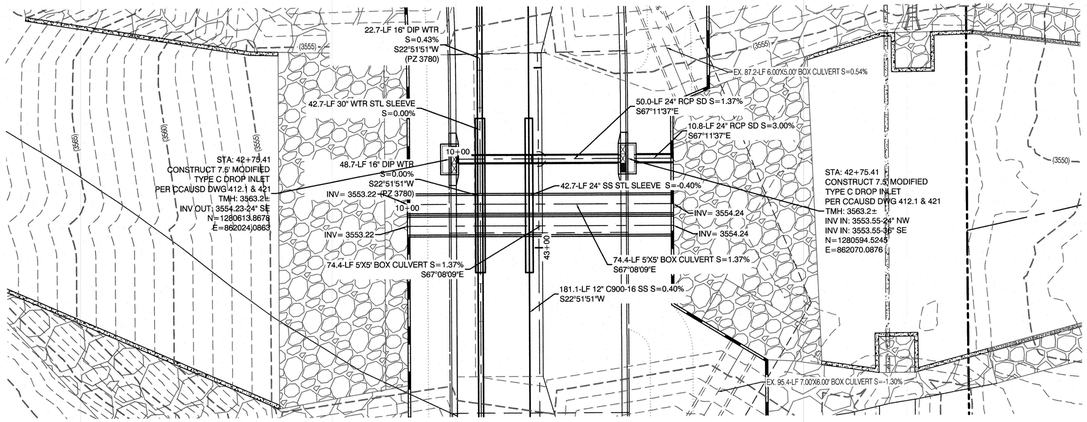
SUMMERLIN WEST VILLAGE 24A
WESTERN BOUNDARY FIRE ACCESS, SEWER & SECOND SOURCE WATER

DRAWN BY: BCC	12/07/2018	
DESIGNED BY: BCC	12/07/2018	
CHECKED BY: WJM	04/05/2019	SCALE: HORIZ. 1"=20' VERT. 1"=4'
PROJECT NO: 7851		

PROFESSIONAL ENGINEER STATE OF NEVADA
WILLIAM J. MEYER
EXP: 12/31/19
CIVIL
No. 15745
5/28/19

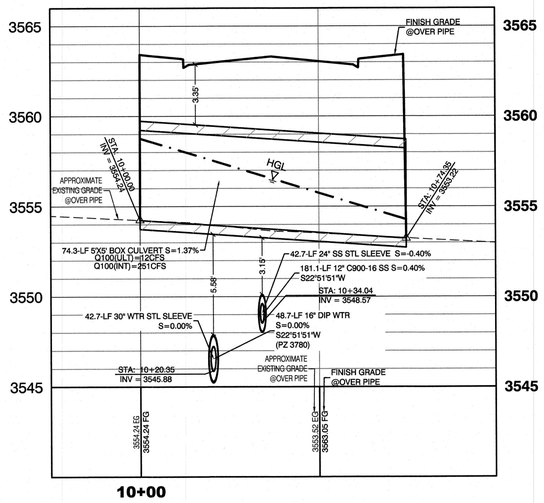
SHEET
UT10
38 OF **52** SHEETS
DRAWING NO.

H:\7851\Village 24 Collection\WATER\Sheet Set\UNIT 2\7851-UT-LAT.dwg, May 20, 2019



MEADOW RUN STREET
(PUBLIC)

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



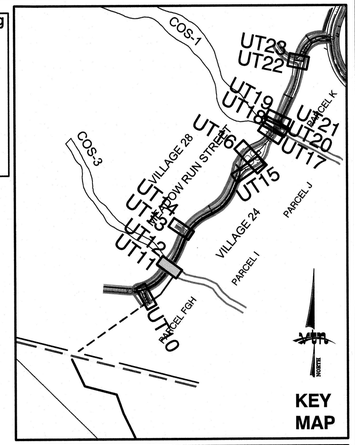
10+00

MEADOW RUN STREET
(PUBLIC)

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

AVOID HITTING UNDERGROUND TRAFFIC SIGNAL AND STREET LIGHT SYSTEM CONDUITS
IT'S COSTLY
Call before you Underground
1-702-455-7511
CLARK COUNTY TRAFFIC OPERATIONS
AND
1-702-229-6611
LAS VEGAS AREA COMPUTERIZED TRAFFIC SYSTEM

Call before you Dig
Avoid cutting underground utility lines. It's costly.
CALL
811
OR
1-800-227-2600
AND
1-702-455-8000
CLARK COUNTY TRAFFIC OPERATIONS





GRAPHIC SCALE
-20 0 10 20 40
1" = 20'

WATER PRESSURE ZONE:
WATER SERVICE LOCATED IN THE 3665 PRESSURE ZONE.

WATER MAIN COVER NOTE:
ALL NEW WATER MAIN TO HAVE MINIMUM DEPTH OF COVER PER UDACS SECTION 2.08

WATERLINE TRENCH NOTE:
CONSTRUCT WATERLINE TRENCH SECTION AND BACKFILL PER UDACS PLATE NO. 17.

WATER LINE MARKER BALLS NOTE
INSTALL PIPELINE MARKER BALLS IN TRENCH ABOVE EACH HORIZONTAL ELBOW FITTING, PER UDACS PLATE No. 15

FIRE HYDRANT MARKER NOTES
BLUE COLORED REFLECTIVE RAISED PAVEMENT MARKERS ARE TO BE INSTALLED:
1. ON ROADWAYS WITH NO PARKING PERMITTED ON HYDRANT SIDE; LOCATE MAKER 8' FROM FACE OF CURB ON HYDRANT SIDE.
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WATER MAIN JOINT DEFLECTION
PVC PIPE SHALL BE DEFLECTED AT THE JOINT ONLY. THE MAXIMUM ALLOWABLE DEFLECTION SHALL BE ONE (1) DEGREE PER JOINT WITH A MINIMUM RADIUS OF CURVATURE OF 1,150 FEET, PER UDACS 2.07.01 AND 2.07.02.

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

LAS VEGAS FIRE & RESCUE APPROVAL
BY: _____ DATE: _____.
APPROVAL OF THESE PLANS SHALL NOT BE CONSTRUED TO BE A PERMIT FOR, OR AN APPROVAL OF, ANY VIOLATION OF ANY OF THE PROVISIONS OF THE STATE OR COUNTY LAWS. FIRE FLOW ---- GPM AT 20 P.S.I. RESIDUAL.

CONSTRUCTION NOTES

	WATER	PUBLIC	PRIVATE
	12" GATE VALVE (PER UDACS PLATE 39)	2 EA.	0 EA.
	16" GATE VALVE (PER UDACS PLATE 39)	2 EA.	0 EA.
	12" CAP & BLOW OFF (PER UDACS PLATE 36)	4 EA.	0 EA.
	16" CAP & BLOW OFF (PER UDACS PLATE 36)	1 EA.	0 EA.
	16" 1° VERTICAL BEND (PER UDACS PLATE 31)	1 EA.	0 EA.
	16" 5° BEND (PER UDACS PLATE 31)	21 EA.	0 EA.
	16" 11° BEND (PER UDACS PLATE 31)	20 EA.	0 EA.
	16" 22° BEND (PER UDACS PLATE 31)	2 EA.	0 EA.
	16" 45° VERTICAL BEND (PER UDACS PLATE 31)	24 EA.	0 EA.
	16" x 12" TEE (PER UDACS PLATE 31)	3 EA.	0 EA.
	16" x 16" TEE (PER UDACS PLATE 31)	1 EA.	0 EA.
	12" C-900 WATER MAIN PER UDACS 2.06.01 & PLATE 17	100 LF.	0 LF.
	16" C-900 WATER MAIN PER UDACS 2.06.01 & PLATE 17	3,948 LF.	0 LF.
POC	WATER POINT OF CONNECTION		

	SEWER	PUBLIC
S	STANDARD MANHOLE PER SD-1A & 1B	32 EA.
	12" SDR-35 C-900-16 SANITARY SEWER MAIN	3,703 LF.
POC	SEWER POINT OF CONNECTION	

BASIS OF BEARING
GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

LINEAR UNIT: US SURVEY FOOT (FTUS)

DATUM (REFERENCE FRAME): NAD 83 (2011) EPOCH 2010.00

SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)

ZONE: LAS VEGAS HIGH ELEVATION ZONE

PROJECTION: TRANSVERSE MERCATOR
STANDARD PARALLEL (AND LATITUDE OF GRID ORGIN):36°15'00"N
LONGITUDE OF CENTRAL MERIDIAN:114°58'00"W
NORTHING AT GRID ORIGIN: 400,000.00 M (1,312,333.3333 FTUS)
EASTING AT CENTRAL MERIDIAN: 300,000 M (984,250.0000 FTUS)
SCALE FACTOR ON CENTRAL MERIDIAN: 1.000135 (EXACT)

NOTES:
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BENCHMARK
PROJECT DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

CITY OF LAS VEGAS BENCHMARK: D368 (REVISED 2008) NAVD88 ELEVATION: 989.574 METERS (3,246.63 FEET)

FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN.
T21S,R59E,S03

APPROVED FOR CONSTRUCTION

_____
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT:---- FIRST APPROVED DATE:_____.

REV	DATE	BY	REVISION

HOWARD HUGHES COMPANY, LLC
A DELAWARE LIMITED LIABILITY COMPANY
10801 W CHARLESTON BLVD SUITE 300
LAS VEGAS, NEVADA 89135
702-791-4000

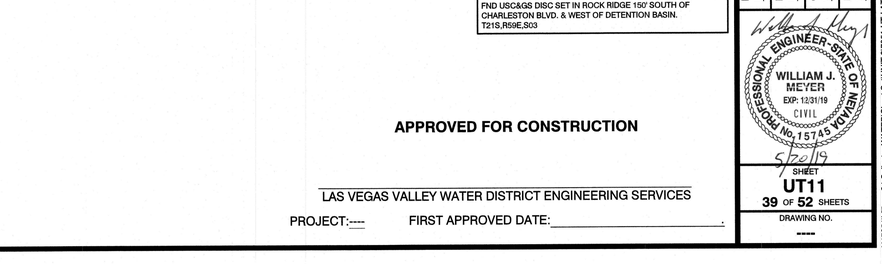
CITY OF LAS VEGAS

2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5146
PH. (702) 873-7550 FAX (702) 382-2597 WEB WWW.VTNNV.COM
CONSULTING ENGINEERS ● PLANNERS ● LAND SURVEYORS

UTILITY PLAN & PROFILE 11
STORM DRAIN LATERAL

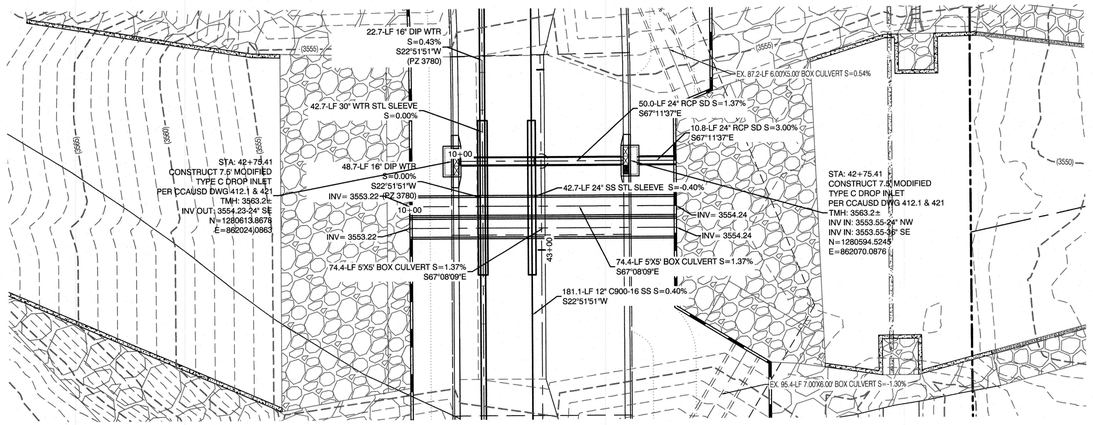
SUMMERLIN WEST VILLAGE 24A
WESTERN BOUNDARY FIRE ACCESS, SEWER & SECOND SOURCE WATER

DRAWN BY:	DESIGNED BY:	CHECKED BY:	PROJECT NO:	SCALE:	
BCC 12/07/2018	BCC 12/07/2018	WJM 04/05/2019	7851	1"=20'	HORIZ.
				1"=4'	VERT.



SHEET
UT11
39 OF **52** SHEETS
DRAWING NO.

H:\7851\Village 24 Collector-WATER\Sheet Set\UNIT 2\7851-UT-LAT.dwg May 20, 2019



MEADOW RUN STREET
(PUBLIC)

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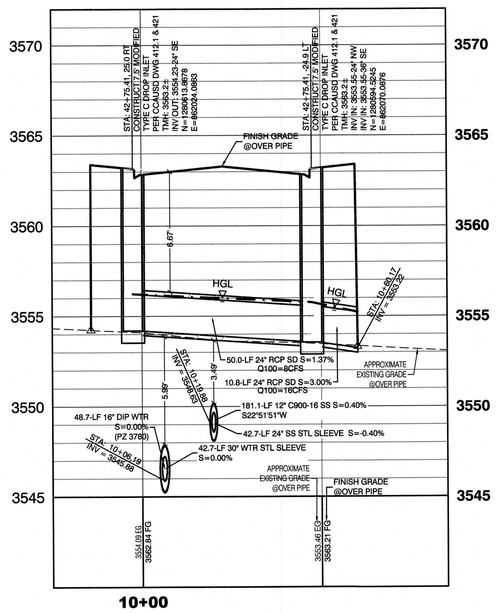

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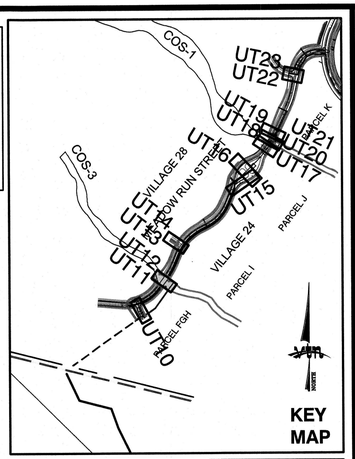



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LAS VEGAS FIRE & RESCUE APPROVAL
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WPC	WATER POINT OF CONNECTION		

	SEWER	PUBLIC
S	STANDARD MANHOLE PER SD-1A & 1B	32 EA.
	12" SDR-35 C-900-16 SANITARY SEWER MAIN	3,703 LF.
SPC	SEWER POINT OF CONNECTION	

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LINEAR UNIT: US SURVEY FOOT (FTUS)

DATUM (REFERENCE FRAME): NAD 83 (2011) EPOCH 2010.00

SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)

ZONE: LAS VEGAS HIGH ELEVATION ZONE

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CITY OF LAS VEGAS BENCHMARK: D368 (REVISED 2008) NAVD88 ELEVATION: 989.574 METERS (3,246.63 FEET)

FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN. T21S,R59E,S03

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT:---- FIRST APPROVED DATE: _____.

REV	DATE	BY	REVISION

HOWARD HUGHES COMPANY, LLC
A DELEWARE LIMITED LIABILITY COMPANY
1980 FESTIVAL PLAZA DRIVE SUITE 300
LAS VEGAS, NEVADA 89135
702-791-4000

CITY OF LAS VEGAS

2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5148
PH: (702) 873-7550 FAX: (702) 362-2597 WEB WWW.VTNNV.COM
CONSULTING ENGINEERS ● PLANNERS ● LAND SURVEYORS

UTILITY PLAN & PROFILE 12
STORM DRAIN LATERAL

SUMMERLIN WEST VILLAGE 24A
WESTERN BOUNDARY FIRE ACCESS, SEWER & SECOND SOURCE WATER

DRAWN BY:	DESIGNED BY:	CHECKED BY:	PROJECT NO:
BCC 04/01/2019	BCC 04/01/2019	WJM 04/05/2019	7851

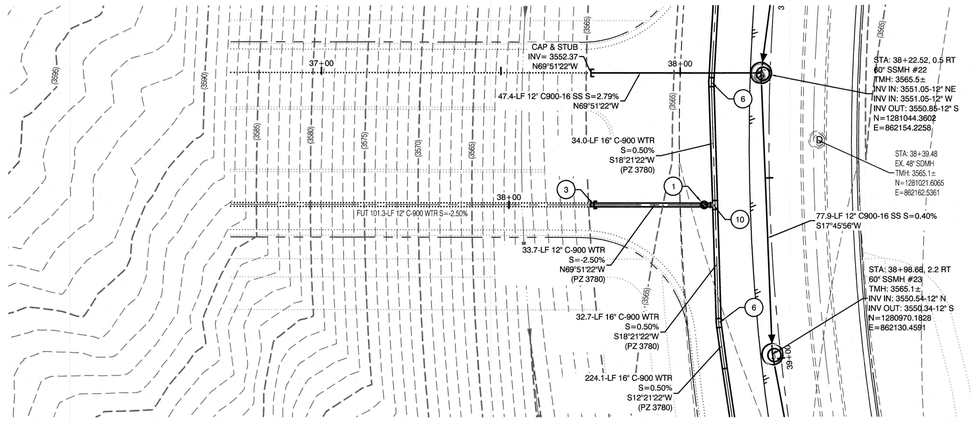
SCALE: HORIZ. 1"=20' VERT. 1"=4'

WILLIAM J. MEYER
EXP: 12/31/19
CIVIL
No. 15745
PROFESSIONAL ENGINEER-STATE OF NEVADA
5/20/19

SHEET
UT12
40 OF 52 SHEETS

DRAWING NO.

H:\7851\Village 24 Collector-WATER\Sheet Set\UNIT 2\7851-UT-LAT.dwg, May 20, 2019



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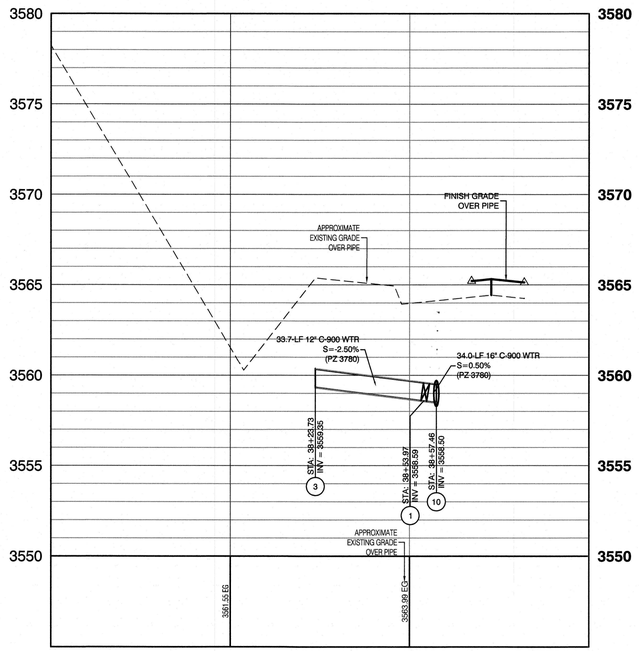

38+00

MEADOW RUN STREET
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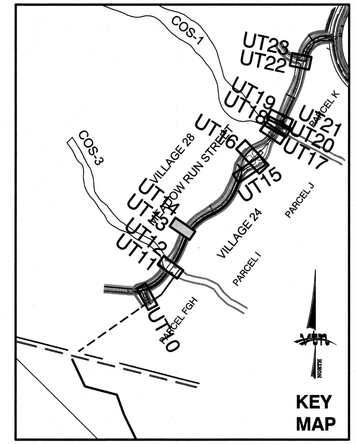



GRAPHIC SCALE

-20 0 10 20 40

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811
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BENCHMARK
PROJECT DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

CITY OF LAS VEGAS BENCHMARK: D368 (REVISED 2008) NAVD88 ELEVATION: 969.574 METERS (3,246.63 FEET)

FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN. T21S,R59E,S03

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT:---- FIRST APPROVED DATE: _____

REV	DATE	BY	REVISION

HOWARD HUGHES COMPANY, LLC
A DELEWARE LIMITED LIABILITY COMPANY
10801 W CHARLESTON BLVD SUITE 300
LAS VEGAS, NEVADA 89135
702-791-4000

CITY OF LAS VEGAS
2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5148
PH. (702) 873-7500 FAX (702) 362-2997 WEB WWW.LVTNNV.COM
CONSULTING ENGINEERS ● PLANNERS ● LAND SURVEYORS

UTILITY PLAN & PROFILE 13
WATER LATERAL

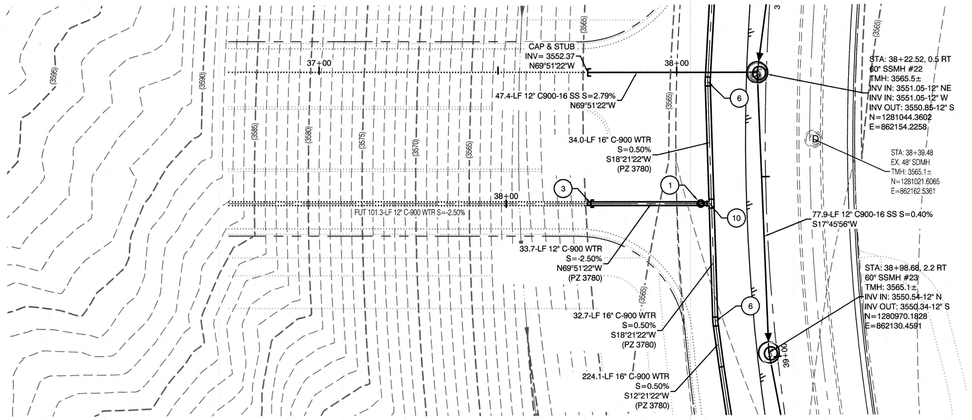
SUMMERLIN WEST VILLAGE 24A
WESTERN BOUNDARY FIRE ACCESS, SEWER & SECOND SOURCE WATER

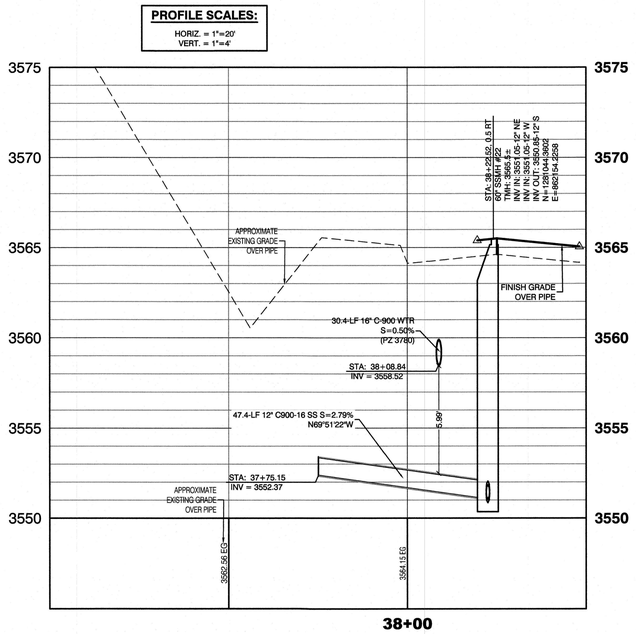
DRAWN BY:	12/07/2018
BCC	
DESIGNED BY:	12/07/2018
BCC	
CHECKED BY:	04/05/2019
WJM	
PROJECT NO:	SCALE: 1"=20' HORIZ. 1"=4' VERT.
7851	

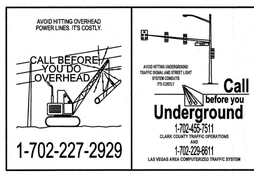
PROFESSIONAL ENGINEER - STATE OF NEVADA
No. 17875
WILLIAM J. MEYER
EXP: 12/31/19
CIVIL
5/20/19

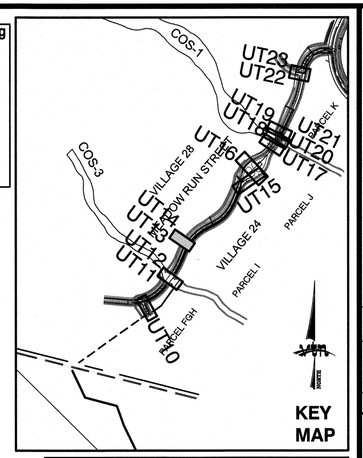
SHEET
UT13
41 OF **52** SHEETS
DRAWING NO.

H:\7851\Village 24 Collector-WATER\Sheet Set\UNIT 2\7851-UT-LAT.dwg, May 20, 2019











GRAPHIC SCALE

-20 0 10 20 40

1" = 20'

WATER PRESSURE ZONE:

WATER SERVICE LOCATED IN THE 3665 PRESSURE ZONE.

WATER MAIN COVER NOTE:

ALL NEW WATER MAIN TO HAVE MINIMUM DEPTH OF COVER PER UDACS SECTION 2.08

WATERLINE TRENCH NOTE:

CONSTRUCT WATERLINE TRENCH SECTION AND BACKFILL PER UDACS PLATE NO. 17.

WATER LINE MARKER BALLS NOTE

INSTALL PIPELINE MARKER BALLS IN TRENCH ABOVE EACH HORIZONTAL ELBOW FITTING, PER UDACS PLATE No. 15

FIRE HYDRANT MARKER NOTES

BLUE COLORED REFLECTIVE RAISED PAVEMENT MARKERS ARE TO BE INSTALLED:

1. ON ROADWAYS WITH NO PARKING PERMITTED ON HYDRANT SIDE; LOCATE MAKER 8' FROM FACE OF CURB ON HYDRANT SIDE.
2. ON ROADWAYS WITH PARKING PERMITTED ON HYDRANT SIDE; LOCATE MARKER 16' FROM FACE OF CURB ON HYDRANT SIDE.

WATER MAIN JOINT DEFLECTION

PVC PIPE SHALL BE DEFLECTED AT THE JOINT ONLY. THE MAXIMUM ALLOWABLE DEFLECTION SHALL BE ONE (1) DEGREE PER JOINT WITH A MINIMUM RADIUS OF CURVATURE OF 1,150 FEET, PER UDACS 2.07.01 AND 2.07.02.

FOR CHANGES IN DIRECTION EXCEEDING THE MAXIMUM ALLOWABLE JOINT DEFLECTION, FITTINGS SHALL BE USED.

UTILITY CROSSING NOTE:

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

ENGINEER DISCLAIMER NOTE:

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

LAS VEGAS FIRE & RESCUE APPROVAL

BY: _____ DATE: _____

APPROVAL OF THESE PLANS SHALL NOT BE CONSTRUED TO BE A PERMIT FOR, OR AN APPROVAL OF, ANY VIOLATION OF ANY OF THE PROVISIONS OF THE STATE OR COUNTY LAWS. FIRE FLOW ___ GPM AT 20 P.S.I. RESIDUAL.

CONSTRUCTION NOTES

	WATER	PUBLIC	PRIVATE
	12" GATE VALVE (PER UDACS PLATE 39)	2 EA.	0 EA.
	16" GATE VALVE (PER UDACS PLATE 39)	2 EA.	0 EA.
	12" CAP & BLOW OFF (PER UDACS PLATE 36)	4 EA.	0 EA.
	16" CAP & BLOW OFF (PER UDACS PLATE 36)	1 EA.	0 EA.
	16" 1° VERTICAL BEND (PER UDACS PLATE 31)	1 EA.	0 EA.
	16" 5° BEND (PER UDACS PLATE 31)	21 EA.	0 EA.
	16" 11° BEND (PER UDACS PLATE 31)	20 EA.	0 EA.
	16" 22° BEND (PER UDACS PLATE 31)	2 EA.	0 EA.
	16" 45° VERTICAL BEND (PER UDACS PLATE 31)	24 EA.	0 EA.
	16" x 12" TEE (PER UDACS PLATE 31)	3 EA.	0 EA.
	16" x 16" TEE (PER UDACS PLATE 31)	1 EA.	0 EA.
	12" C-900 WATER MAIN PER UDACS 2.06.01 & PLATE 17	100 LF.	0 LF.
	16" C-900 WATER MAIN PER UDACS 2.06.01 & PLATE 17	3,948 LF.	0 LF.
FWC	WATER POINT OF CONNECTION		

	SEWER	PUBLIC
S	STANDARD MANHOLE PER SD-1A & 1B	32 EA.
	12" SDR-35 C-900-16 SANITARY SEWER MAIN	3,703 LF.
SPC	SEWER POINT OF CONNECTION	

BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

LINEAR UNIT: US SURVEY FOOT (FTUS)

DATUM (REFERENCE FRAME): NAD 83 (2011) EPOCH 2010.00

SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)

ZONE: LAS VEGAS HIGH ELEVATION ZONE

PROJECTION: TRANSVERSE MERCATOR
STANDARD PARALLEL (AND LATITUDE OF GRID ORGIN):36°15'00"N
LONGITUDE OF CENTRAL MERIDIAN:114°58'00"W
NORTHING AT GRID ORIGIN: 400,000.00 M (1,312,333.3333 FTUS)
EASTING AT CENTRAL MERIDIAN: 300,000 M (984,250.0000 FTUS)
SCALE FACTOR ON CENTRAL MERIDIAN: 1.000135 (EXACT)

NOTES:
1. ALL DISTANCES AND BEARINGS SHOWN HEREON ARE PROJECTED (GRID) VALUES BASED ON THE PRECEDING PROJECTION DEFINITION. THE PROJECTION WAS DEFINED SUCH THAT PROJECTED (GRID) DISTANCES ARE EQUIVALENT TO "GROUND" DISTANCES IN THE PROJECT AREA.

2. GRID BEARINGS SHOWN HEREON (OR IMPLIED BY GRID COORDINATES) DO NOT EQUAL GEODETIC BEARINGS DUE TO MERIDIAN CONVERGENCE.

BENCHMARK

PROJECT DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

CITY OF LAS VEGAS BENCHMARK: D368 (REVISED 2008) NAVD88 ELEVATION: 989.574 METERS (3,246.63 FEET)

FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN.
T21S,R59E,S03

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT:--- FIRST APPROVED DATE: _____

REV	DATE	BY	REVISION

HOWARD HUGHES COMPANY, LLC
A DELEWARE LIMITED LIABILITY COMPANY
10801 W CHARLESTON BLVE SUITE 300
LAS VEGAS, NEVADA 89135
702-791-4000

CITY OF LAS VEGAS

2727 SOUTH RAINBOW BOULEVARD
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PH. (702) 873-7550 FAX (702) 362-2397 WEB WWW.VTNNV.COM
CONSULTING ENGINEERS ● PLANNERS ● LAND SURVEYORS

UTILITY PLAN & PROFILE 14
SANITARY SEWER LATERAL

SUMMERLIN WEST VILLAGE 24A
WESTERN BOUNDARY FIRE ACCESS,
SEWER & SECOND SOURCE WATER

DRAWN BY:	12/07/2016
BCC	
DESIGNED BY:	12/07/2016
BCC	
CHECKED BY:	04/05/2019
WJM	
PROJECT NO:	SCALE: 1"=20' HORIZ. 1"=4' VERT.
7851	

WILLIAM J. MEYER
EXP: 12/31/19
CIVIL
STATE OF NEVADA
No. 15745
PROFESSIONAL ENGINEER
5/20/19

SHEET
UT14
42 OF 52 SHEETS
DRAWING NO.

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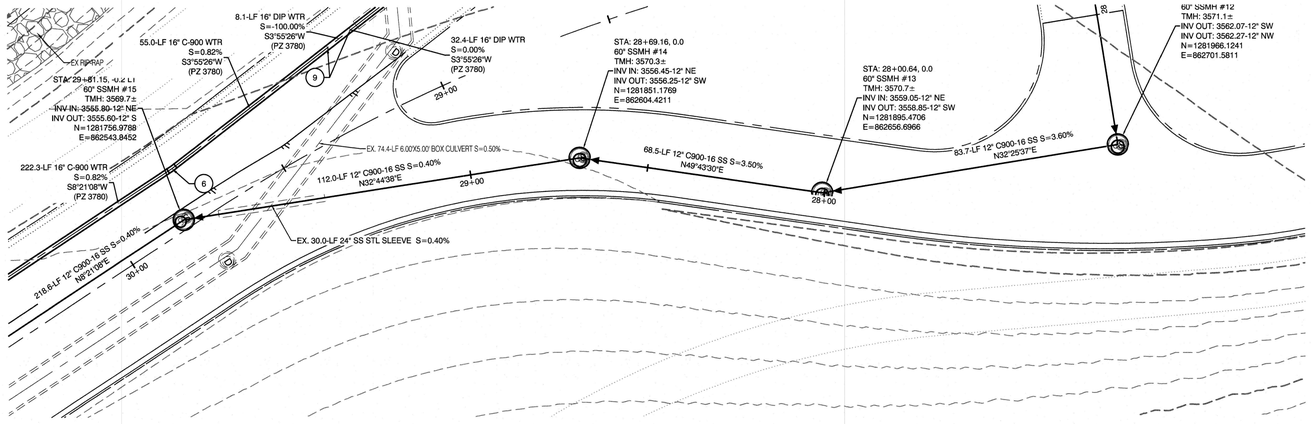
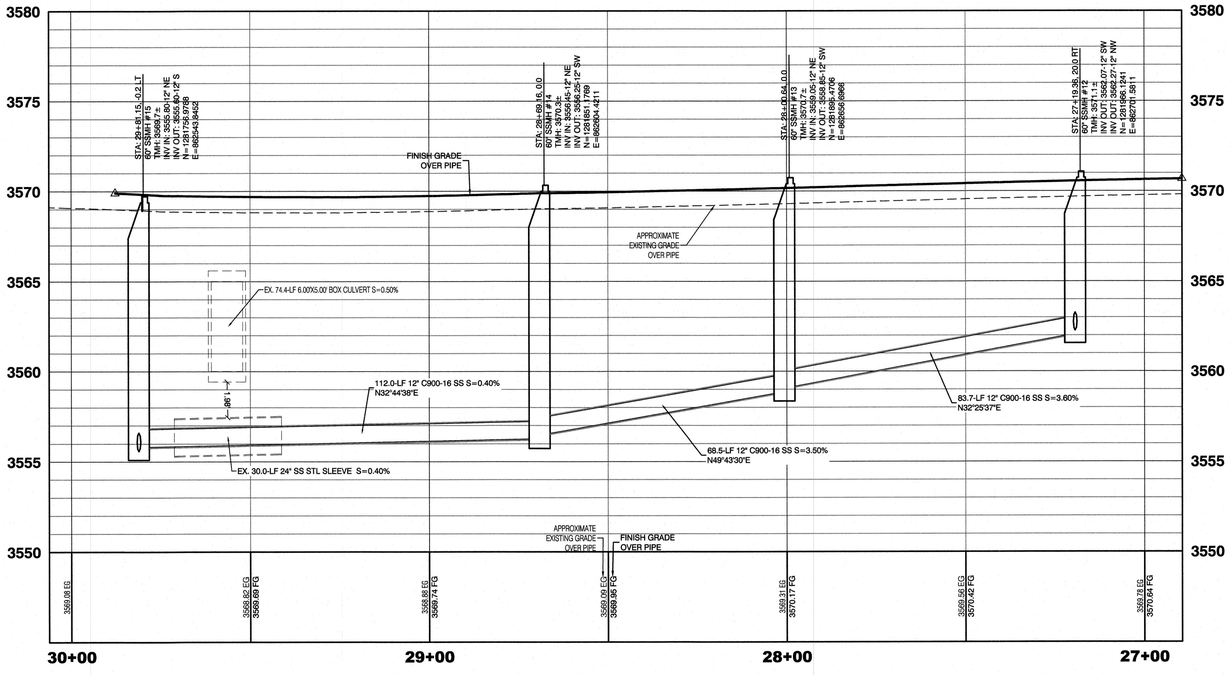
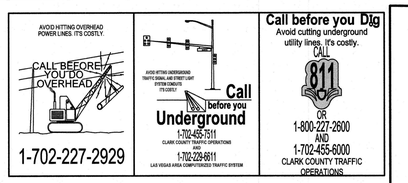


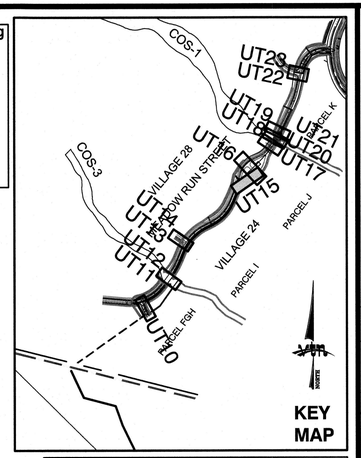
MEADOW RUN STREET
(PUBLIC)

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



MEADOW RUN STREET
(PUBLIC)







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1" = 20'

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LAS VEGAS FIRE & RESCUE APPROVAL
BY: _____ DATE: _____.
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CONSTRUCTION NOTES

		WATER	PUBLIC	PRIVATE
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⊕	⌐	16" 1° VERTICAL BEND (PER UDACS PLATE 31)	1 EA.	0 EA.
⊕	⌐	16" 5° BEND (PER UDACS PLATE 31)	21 EA.	0 EA.
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⊕	⌐	16" 45° VERTICAL BEND (PER UDACS PLATE 31)	24 EA.	0 EA.
⊕	⊃	16" x 12" TEE (PER UDACS PLATE 31)	3 EA.	0 EA.
⊕	⊃	16" x 16" TEE (PER UDACS PLATE 31)	1 EA.	0 EA.
		12" C-900 WATER MAIN PER UDACS 2.06.01 & PLATE 17	100 LF.	0 LF.
		16" C-900 WATER MAIN PER UDACS 2.06.01 & PLATE 17	3,948 LF.	0 LF.
	FOX	WATER POINT OF CONNECTION		

	SEWER	PUBLIC
Ⓢ	STANDARD MANHOLE PER SD-1A & 1B	32 EA.
	12" SDR-35 C-900-16 SANITARY SEWER MAIN	3,703 LF.
SMH	SEWER POINT OF CONNECTION	

BASIS OF BEARING
GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

LINEAR UNIT: US SURVEY FOOT (FTUS)

DATUM (REFERENCE FRAME): NAD 83 (2011) EPOCH 2010.00

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BENCHMARK
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FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN. T21S,R59E,S03

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT:---- FIRST APPROVED DATE:_____.

REV	DATE	BY	REVISION

HOWARD HUGHES COMPANY, LLC
A DELEWARE LIMITED LIABILITY COMPANY
10801 W CHARLESTON BLVD SUITE 300
LAS VEGAS, NEVADA 89135
(725) 301-4000

CITY OF LAS VEGAS

2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5148
PH. (702) 873-7550 FAX (702) 382-2597 WEB WWW.VTNNV.COM
CONSULTING ENGINEERS ● PLANNERS ● LAND SURVEYORS

UTILITY PLAN & PROFILE 15
SANITARY SEWER LATERAL

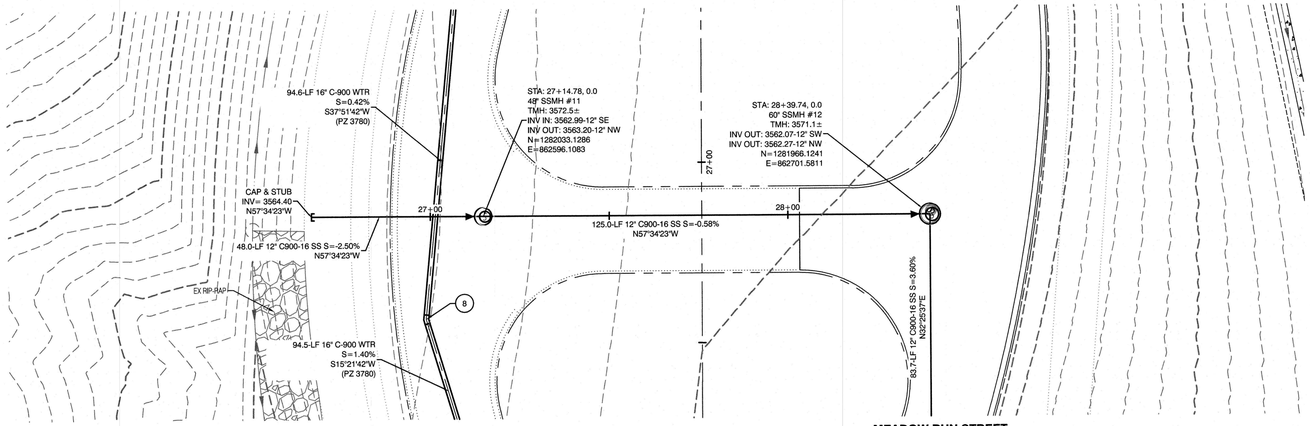
SUMMERLIN WEST VILLAGE 24A
WESTERN BOUNDARY FIRE ACCESS, SEWER & SECOND SOURCE WATER

DRAWN BY:	DESIGNED BY:	CHECKED BY:	PROJECT NO:	SCALE:
BCC	BCC	KAM	7851	HORIZ. 1"=20' VERT. 1"=4'
12/07/2018	12/07/2018	04/05/2019		

PROFESSIONAL ENGINEER STATE OF NEVADA
WILLIAM J. MEYER
EXP: 12/31/19
CIVIL
No. 15745
5/20/19

SHEET
UT15
43 OF 52 SHEETS
DRAWING NO.

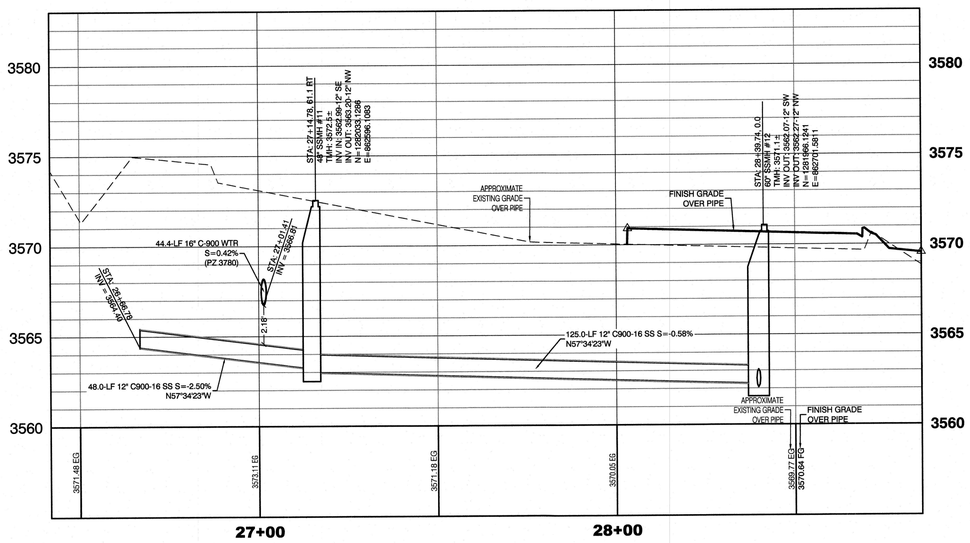
H:\7851\Village 24 Collector-WATER\Sheet Set\UNIT 2\7851-UT-LAT.dwg; May 20, 2019



MEADOW RUN STREET
(PUBLIC)

MEADOW RUN STREET
SEE SHEET UT5

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

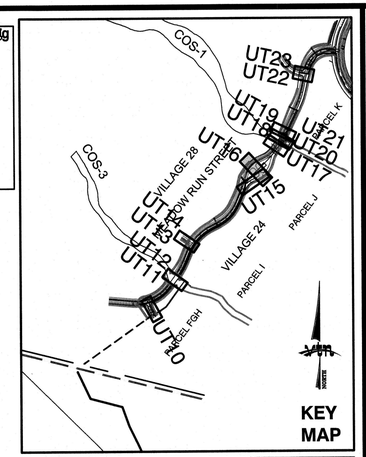


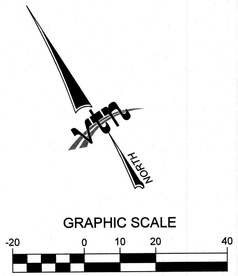
MEADOW RUN STREET
(PUBLIC)

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

AVOID HITTING UNDERGROUND TRAFFIC SIGNAL AND STREET LIGHT SYSTEM CONDUITS
Call before you
Underground
1-702-455-7511
CLARK COUNTY TRAFFIC OPERATIONS
AND
1-702-229-6811
LAS VEGAS AREA COMPUTERIZED TRAFFIC SYSTEM

Call before you Dig
Avoid cutting underground utility lines. It's costly.
CALL
811
OR
1-800-227-2600
AND
1-702-455-6000
CLARK COUNTY TRAFFIC OPERATIONS





CONSTRUCTION NOTES

	WATER	PUBLIC	PRIVATE
	12" GATE VALVE (PER UDACS PLATE 39)	2 EA.	0 EA.
	16" GATE VALVE (PER UDACS PLATE 39)	2 EA.	0 EA.
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	16" 11° BEND (PER UDACS PLATE 31)	20 EA.	0 EA.
	16" 22° BEND (PER UDACS PLATE 31)	2 EA.	0 EA.
	16" 45° VERTICAL BEND (PER UDACS PLATE 31)	24 EA.	0 EA.
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	16" C-900 WATER MAIN PER UDACS 2.06.01 & PLATE 17	3,948 LF.	0 LF.
POC	WATER POINT OF CONNECTION		

	SEWER	PUBLIC
S	STANDARD MANHOLE PER SD-1A & 1B	32 EA.
	12" SDR-35 C-900-16 SANITARY SEWER MAIN	3,703 LF.
POC	SEWER POINT OF CONNECTION	

WATER PRESSURE ZONE:
WATER SERVICE LOCATED IN THE 3665 PRESSURE ZONE.

WATER MAIN COVER NOTE:
ALL NEW WATER MAIN TO HAVE MINIMUM DEPTH OF COVER PER UDACS SECTION 2.08

WATERLINE TRENCH NOTE:
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WATER LINE MARKER BALLS NOTE
INSTALL PIPELINE MARKER BALLS IN TRENCH ABOVE EACH HORIZONTAL ELBOW FITTING, PER UDACS PLATE No. 15

FIRE HYDRANT MARKER NOTES
BLUE COLORED REFLECTIVE RAISED PAVEMENT MARKERS ARE TO BE INSTALLED:

1. ON ROADWAYS WITH NO PARKING PERMITTED ON HYDRANT SIDE; LOCATE MAKER 8' FROM FACE OF CURB ON HYDRANT SIDE.
2. ON ROADWAYS WITH PARKING PERMITTED ON HYDRANT SIDE; LOCATE MARKER 16' FROM FACE OF CURB ON HYDRANT SIDE.

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LAS VEGAS FIRE & RESCUE APPROVAL
BY: _____ DATE: _____

APPROVAL OF THESE PLANS SHALL NOT BE CONSTRUED TO BE A PERMIT FOR, OR AN APPROVAL OF, ANY VIOLATION OF ANY OF THE PROVISIONS OF THE STATE OR COUNTY LAWS. FIRE FLOW --- GPM AT 20 P.S.I. RESIDUAL.

BASIS OF BEARING
GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

LINEAR UNIT: US SURVEY FOOT (FTUS)

DATUM (REFERENCE FRAME): NAD 83 (2011) EPOCH 2010.00

SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)

ZONE: LAS VEGAS HIGH ELEVATION ZONE

PROJECTION: TRANSVERSE MERCATOR
STANDARD PARALLEL (AND LATITUDE OF GRID ORGIN):36°15'00"N
LONGITUDE OF CENTRAL MERIDIAN:114°58'00"W
NORTHING AT GRID ORIGIN: 400,000.00 M (1,312,333.3333 FTUS)
EASTING AT CENTRAL MERIDIAN: 300,000 M (984,250.0000 FTUS)
SCALE FACTOR ON CENTRAL MERIDIAN: 1.000135 (EXACT)

NOTES:
1. ALL DISTANCES AND BEARINGS SHOWN HEREON ARE PROJECTED (GRID) VALUES BASED ON THE PRECEDING PROJECTION DEFINITION. THE PROJECTION WAS DEFINED SUCH THAT PROJECTED (GRID) DISTANCES ARE EQUIVALENT TO "GROUND" DISTANCES IN THE PROJECT AREA.

2. GRID BEARINGS SHOWN HEREON (OR IMPLIED BY GRID COORDINATES) DO NOT EQUAL GEODETIC BEARINGS DUE TO MERIDIAN CONVERGENCE.

BENCHMARK
PROJECT DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

CITY OF LAS VEGAS BENCHMARK: D368 (REVISED 2008)
NAVD88 ELEVATION: 989.574 METERS (3,246.63 FEET)

FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN.
T21S,R59E,S03

APPROVED FOR CONSTRUCTION

_____
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT:---- FIRST APPROVED DATE: _____

REV	DATE	BY	REVISION

HOWARD HUGHES COMPANY, LLC
A DELEWARE LIMITED LIABILITY COMPANY
10801 W CHARLESTON BLVD SUITE 300
LAS VEGAS, NEVADA 89135
702-791-4000

CITY OF LAS VEGAS
2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5146
PH: (702) 873-7500 FAX (702) 382-2597 WEB WWW.VTNNV.COM
CONSULTING ENGINEERS ● PLANNERS ● LAND SURVEYORS

UTILITY PLAN & PROFILE 16
SANITARY SEWER LATERAL

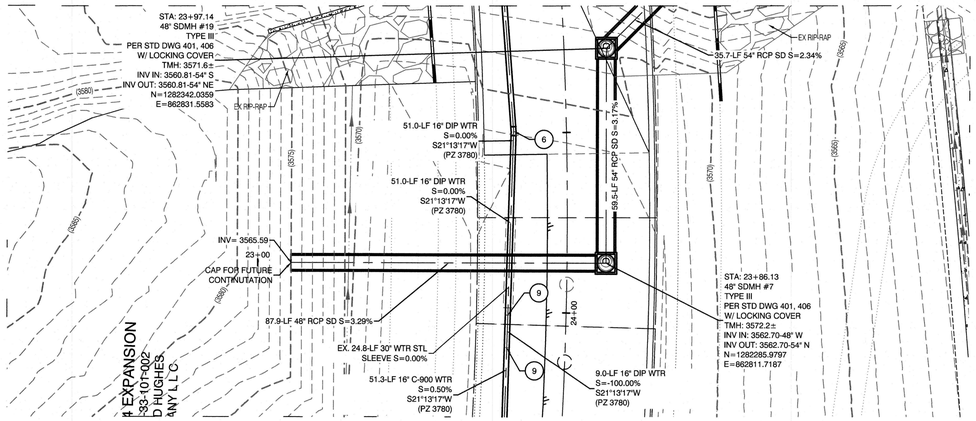
SUMMERLIN WEST VILLAGE 24A
WESTERN BOUNDARY FIRE ACCESS, SEWER & SECOND SOURCE WATER

DRAWN BY: BCC 03/20/2019
DESIGNED BY: BCC 03/20/2019
CHECKED BY: WJM 04/05/2019
PROJECT NO: 7851
SCALE: 1"=20' HORIZ. 1"=4' VERT.

WILLIAM J. MEYER
EXP: 12/31/19
CIVIL
No. 15745
PROFESSIONAL ENGINEER
STATE OF NEVADA
5/20/19

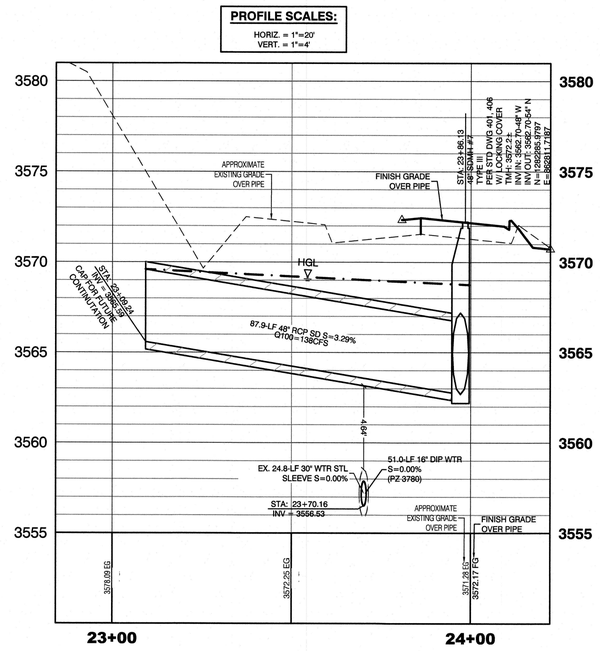
SHEET
UT16
44 OF 52 SHEETS
DRAWING NO.

H:\7851\Village 24 Collector-WATER\Sheet Set\UNT 20\7851-UT-LAT.dwg, May 20, 2019



MEADOW RUN STREET
(PUBLIC)

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



MEADOW RUN STREET
(PUBLIC)

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

AVOID HITTING UNDERGROUND TRAFFIC SIGNAL AND STREET LIGHT SYSTEM CONDUITS. IT'S COSTLY.
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1-702-455-7511
CLARK COUNTY TRAFFIC OPERATIONS
AND
1-702-229-6811
LAS VEGAS AREA COMPUTERIZED TRAFFIC SYSTEM

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Avoid cutting underground utility lines. It's costly.
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AND
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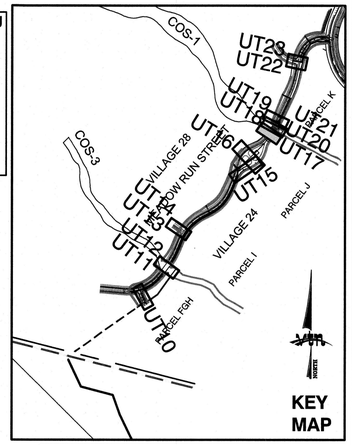



GRAPHIC SCALE
-20 0 10 20 40
1" = 20'

CONSTRUCTION NOTES

		PUBLIC	PRIVATE
WATER			
	12" GATE VALVE (PER UDACS PLATE 39)	2 EA.	0 EA.
	16" GATE VALVE (PER UDACS PLATE 39)	2 EA.	0 EA.
	12" CAP & BLOW OFF (PER UDACS PLATE 36)	4 EA.	0 EA.
	16" CAP & BLOW OFF (PER UDACS PLATE 36)	1 EA.	0 EA.
	16" 1° VERTICAL BEND (PER UDACS PLATE 31)	1 EA.	0 EA.
	16" 5° BEND (PER UDACS PLATE 31)	21 EA.	0 EA.
	16" 11° BEND (PER UDACS PLATE 31)	20 EA.	0 EA.
	16" 22° BEND (PER UDACS PLATE 31)	2 EA.	0 EA.
	16" 45° VERTICAL BEND (PER UDACS PLATE 31)	24 EA.	0 EA.
	16" x 12" TEE (PER UDACS PLATE 31)	3 EA.	0 EA.
	16" x 16" TEE (PER UDACS PLATE 31)	1 EA.	0 EA.
	12" C-900 WATER MAIN PER UDACS 2.06.01 & PLATE 17	100 LF.	0 LF.
	16" C-900 WATER MAIN PER UDACS 2.06.01 & PLATE 17	3,948 LF.	0 LF.
	WATER POINT OF CONNECTION		
SEWER		**PUBLIC**	
	STANDARD MANHOLE PER SD-1A & 1B	32 EA.	
	12" SDR-35 C-900-16 SANITARY SEWER MAIN	3,703 LF.	
	SEWER POINT OF CONNECTION		

WATER PRESSURE ZONE:
WATER SERVICE LOCATED IN THE 3665 PRESSURE ZONE.

WATER MAIN COVER NOTE:
ALL NEW WATER MAIN TO HAVE MINIMUM DEPTH OF COVER PER UDACS SECTION 2.08

WATERLINE TRENCH NOTE:
CONSTRUCT WATERLINE TRENCH SECTION AND BACKFILL PER UDACS PLATE NO. 17.

WATER LINE MARKER BALLS NOTE
INSTALL PIPELINE MARKER BALLS IN TRENCH ABOVE EACH HORIZONTAL ELBOW FITTING, PER UDACS PLATE No. 15

FIRE HYDRANT MARKER NOTES
BLUE COLORED REFLECTIVE RAISED PAVEMENT MARKERS ARE TO BE INSTALLED:

1. ON ROADWAYS WITH NO PARKING PERMITTED ON HYDRANT SIDE: LOCATE MAKER 8' FROM FACE OF CURB ON HYDRANT SIDE.
2. ON ROADWAYS WITH PARKING PERMITTED ON HYDRANT SIDE: LOCATE MARKER 16' FROM FACE OF CURB ON HYDRANT SIDE.

WATER MAIN JOINT DEFLECTION
PVC PIPE SHALL BE DEFLECTED AT THE JOINT ONLY. THE MAXIMUM ALLOWABLE DEFLECTION SHALL BE ONE (1) DEGREE PER JOINT WITH A MINIMUM RADIUS OF CURVATURE OF 1,150 FEET, PER UDACS 2.07.01 AND 2.07.02.

FOR CHANGES IN DIRECTION EXCEEDING THE MAXIMUM ALLOWABLE JOINT DEFLECTION, FITTINGS SHALL BE USED.

UTILITY CROSSING NOTE:
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LAS VEGAS FIRE & RESCUE APPROVAL
BY: _____ DATE: _____

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BASIS OF BEARING
GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

LINEAR UNIT: US SURVEY FOOT (FTUS)

DATUM (REFERENCE FRAME): NAD 83 (2011) EPOCH 2010.00

SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)

ZONE: LAS VEGAS HIGH ELEVATION ZONE

PROJECTION: TRANSVERSE MERCATOR
STANDARD PARALLEL (AND LATITUDE OF GRID ORIGIN):36°15'00"N
LONGITUDE OF CENTRAL MERIDIAN:114°58'00"W
NORTHING AT GRID ORIGIN: 400,000.00 M (1,312,333.3333 FTUS)
EASTING AT CENTRAL MERIDIAN: 300,000 M (984,250.0000 FTUS)
SCALE FACTOR ON CENTRAL MERIDIAN: 1.000135 (EXACT)

NOTES:
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2. GRID BEARINGS SHOWN HEREON (OR IMPLIED BY GRID COORDINATES) DO NOT EQUAL GEODETIC BEARINGS DUE TO MERIDIAN CONVERGENCE.

BENCHMARK
PROJECT DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

CITY OF LAS VEGAS BENCHMARK: D368 (REVISED 2008)
NAVD88 ELEVATION: 989.574 METERS (3,246.63 FEET)

FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN.
T21S,R59E,S03

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT:---- FIRST APPROVED DATE: _____

REV	DATE	BY	REVISION

HOWARD HUGHES COMPANY, LLC
A DELEWARE LIMITED LIABILITY COMPANY
10801 W CHARLESTON BLVD SUITE 300
LAS VEGAS, NEVADA 89135
702-791-4000

CITY OF LAS VEGAS

2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5148
PH: (702) 873-7500 FAX (702) 362-2597 WEB WWW.VTNNV.COM
CONSULTING ENGINEERS ● PLANNERS ● LAND SURVEYORS

UTILITY PLAN & PROFILE 17
STORM DRAIN LATERAL

SUMMERLIN WEST VILLAGE 24A
WESTERN BOUNDARY FIRE ACCESS, SEWER & SECOND SOURCE WATER

DRAWN BY:	BCC 01/09/2018
DESIGNED BY:	BCC 01/09/2019
CHECKED BY:	MJM 04/05/2019
PROJECT NO:	7851
SCALE:	HORIZ. 1"=20' VERT. 1"=4'

PROFESSIONAL ENGINEER STATE OF NEVADA
WILLIAM J. MEYER
EXP: 12/31/19
CIVIL
No. 15745
5/20/19

SHEET
UT17
45 OF **52** SHEETS
DRAWING NO.

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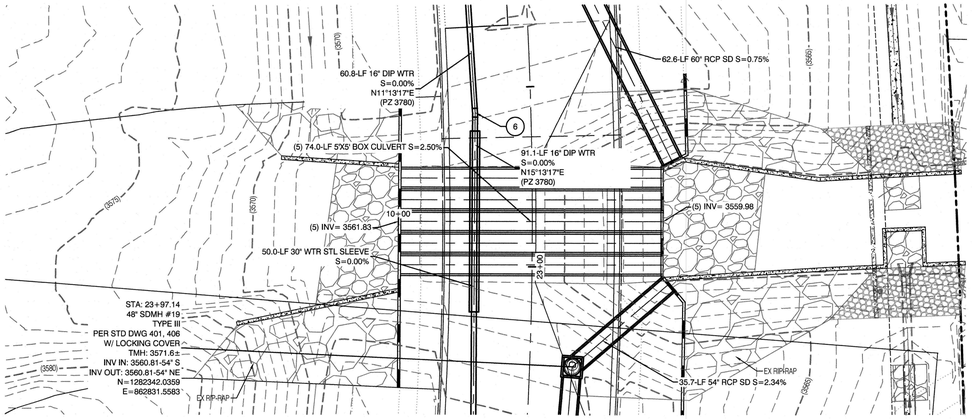
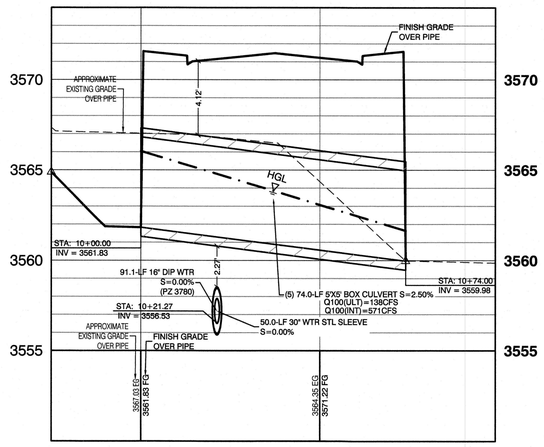


MEADOW RUN STREET
(PUBLIC)

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



10+00

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(PUBLIC)

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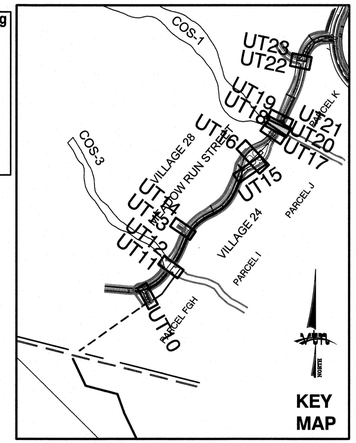



GRAPHIC SCALE
-20 0 10 20 40
1" = 20'

CONSTRUCTION NOTES

		WATER	PUBLIC	PRIVATE
⊕	🔵	12" GATE VALVE (PER UDACS PLATE 39)	2 EA.	0 EA.
⊕	🔵	16" GATE VALVE (PER UDACS PLATE 39)	2 EA.	0 EA.
⊕	◀	12" CAP & BLOW OFF (PER UDACS PLATE 36)	4 EA.	0 EA.
⊕	◀	16" CAP & BLOW OFF (PER UDACS PLATE 36)	1 EA.	0 EA.
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⊕	∣∣	16" 5° BEND (PER UDACS PLATE 31)	21 EA.	0 EA.
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⊕	⊐	16" x 12" TEE (PER UDACS PLATE 31)	3 EA.	0 EA.
⊕	⊐	16" x 16" TEE (PER UDACS PLATE 31)	1 EA.	0 EA.
	——	12" C-900 WATER MAIN PER UDACS 2.06.01 & PLATE 17	100 LF.	0 LF.
	——	16" C-900 WATER MAIN PER UDACS 2.06.01 & PLATE 17	3,948 LF.	0 LF.
	POC	WATER POINT OF CONNECTION		

	SEWER	PUBLIC
Ⓢ	STANDARD MANHOLE PER SD-1A & 1B	32 EA.
——	12" SDR-35 C-900-16 SANITARY SEWER MAIN	3,703 LF.
POC	SEWER POINT OF CONNECTION	

WATER PRESSURE ZONE:
WATER SERVICE LOCATED IN THE 3665 PRESSURE ZONE.

WATER MAIN COVER NOTE:
ALL NEW WATER MAIN TO HAVE MINIMUM DEPTH OF COVER PER UDACS SECTION 2.08

WATERLINE TRENCH NOTE:
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WATER LINE MARKER BALLS NOTE
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LAS VEGAS FIRE & RESCUE APPROVAL
BY: _____ DATE: _____

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BASIS OF BEARING
GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

LINEAR UNIT: US SURVEY FOOT (FTUS)

DATUM (REFERENCE FRAME): NAD 83 (2011) EPOCH 2010.00

SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)

ZONE: LAS VEGAS HIGH ELEVATION ZONE

PROJECTION: TRANSVERSE MERCATOR
STANDARD PARALLEL (AND LATITUDE OF GRID ORIGIN):36°15'00"N
LONGITUDE OF CENTRAL MERIDIAN:114°58'00"W
NORTHING AT GRID ORIGIN: 400,000.00 M (1,312,333.3333 FTUS)
EASTING AT CENTRAL MERIDIAN: 300,000 M (984,250.0000 FTUS)
SCALE FACTOR ON CENTRAL MERIDIAN: 1.000135 (EXACT)

NOTES:
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PROJECT DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

CITY OF LAS VEGAS BENCHMARK: D368 (REVISED 2008) NAVD88 ELEVATION: 989.574 METERS (3,246.63 FEET)

FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN.
T21S,R59E,S03

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT:--- FIRST APPROVED DATE: _____

REV	DATE	BY	REVISION

HOWARD HUGHES COMPANY, LLC
A DELEWARE LIMITED LIABILITY COMPANY
10801 W CHARLESTON BLVD SUITE 300
LAS VEGAS, NEVADA 89135
702-791-4000

CITY OF LAS VEGAS

2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5148
PH. (702) 873-7500 FAX (702) 362-2597 WEB WWW.VTNNV.COM
CONSULTING ENGINEERS ● PLANNERS ● LAND SURVEYORS

UTILITY PLAN & PROFILE 18
STORM DRAIN LATERAL

SUMMERLIN WEST VILLAGE 24A
WESTERN BOUNDARY FIRE ACCESS, SEWER & SECOND SOURCE WATER

DRAWN BY: BCC	03/20/2019
DESIGNED BY: BCC	03/20/2019
CHECKED BY: WJM	04/05/2019
PROJECT NO: 7851	SCALE: HORIZ. 1"=20' VERT. 1"=4'

PROFESSIONAL ENGINEER STATE OF NEVADA
WILLIAM J. MEYER
EXP: 12/31/19
CIVIL
No. 15745
5/20/19

SHEET
UT18
46 OF **52** SHEETS
DRAWING NO.

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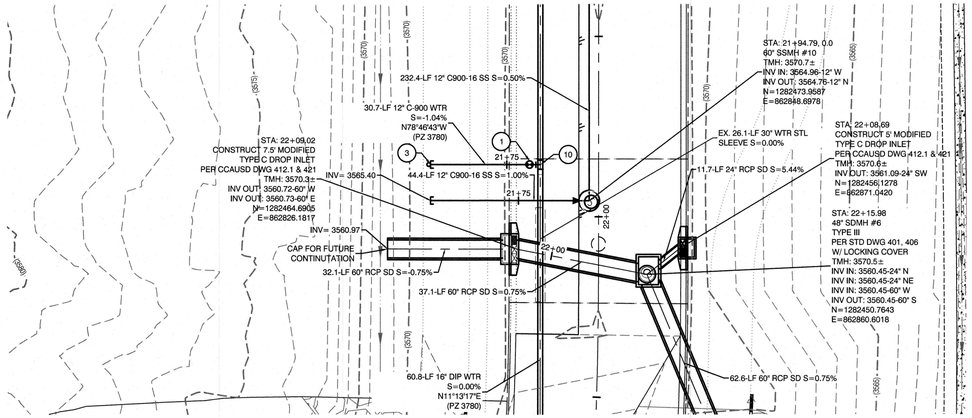

MEADOW RUN STREET
(PUBLIC)

PROFILE SCALES:
HORIZ. = 1"=20'
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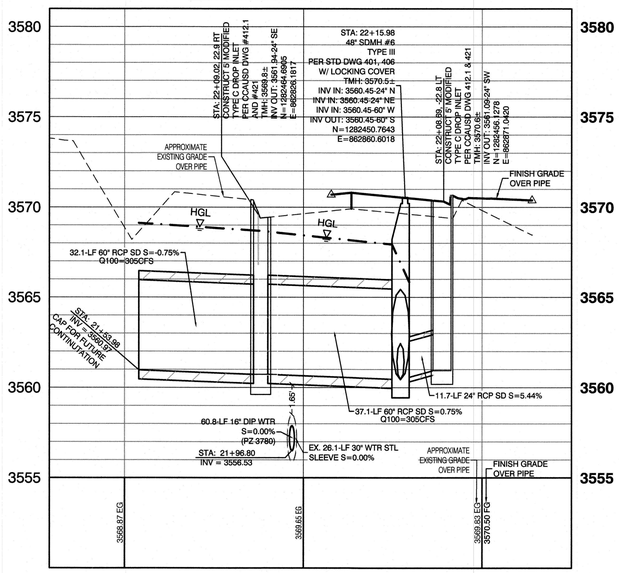

22+00

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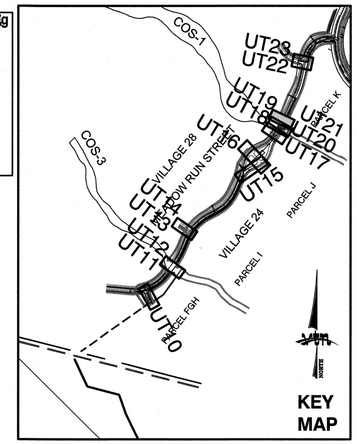



GRAPHIC SCALE
-20 0 10 20 40
1" = 20'

CONSTRUCTION NOTES

	WATER	PUBLIC	PRIVATE
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	16" 22° BEND (PER UDACS PLATE 31)	2 EA.	0 EA.
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	16" x 12" TEE (PER UDACS PLATE 31)	3 EA.	0 EA.
	16" x 16" TEE (PER UDACS PLATE 31)	1 EA.	0 EA.
	12" C-900 WATER MAIN PER UDACS 2.06.01 & PLATE 17	100 LF.	0 LF.
	16" C-900 WATER MAIN PER UDACS 2.06.01 & PLATE 17	3,948 LF.	0 LF.
	WATER POINT OF CONNECTION		

	SEWER	PUBLIC
	STANDARD MANHOLE PER SD-1A & 1B	32 EA.
	12" SDR-35 C-900-16 SANITARY SEWER MAIN	3,703 LF.
	SEWER POINT OF CONNECTION	

WATER PRESSURE ZONE:
WATER SERVICE LOCATED IN THE 3665 PRESSURE ZONE.

WATER MAIN COVER NOTE:
ALL NEW WATER MAIN TO HAVE MINIMUM DEPTH OF COVER PER UDACS SECTION 2.08

WATERLINE TRENCH NOTE:
CONSTRUCT WATERLINE TRENCH SECTION AND BACKFILL PER UDACS PLATE NO. 17.

WATER LINE MARKER BALLS NOTE
INSTALL PIPELINE MARKER BALLS IN TRENCH ABOVE EACH HORIZONTAL ELBOW FITTING, PER UDACS PLATE No. 15

FIRE HYDRANT MARKER NOTES
BLUE COLORED REFLECTIVE RAISED PAVEMENT MARKERS ARE TO BE INSTALLED:

1. ON ROADWAYS WITH NO PARKING PERMITTED ON HYDRANT SIDE; LOCATE MAKER 8' FROM FACE OF CURB ON HYDRANT SIDE.
2. ON ROADWAYS WITH PARKING PERMITTED ON HYDRANT SIDE; LOCATE MARKER 16' FROM FACE OF CURB ON HYDRANT SIDE.

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PVC PIPE SHALL BE DEFLECTED AT THE JOINT ONLY. THE MAXIMUM ALLOWABLE DEFLECTION SHALL BE ONE (1) DEGREE PER JOINT WITH A MINIMUM RADIUS OF CURVATURE OF 1,150 FEET, PER UDACS 2.07.01 AND 2.07.02.

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LAS VEGAS FIRE & RESCUE APPROVAL
BY: _____ DATE: _____.

APPROVAL OF THESE PLANS SHALL NOT BE CONSTRUED TO BE A PERMIT FOR, OR AN APPROVAL OF, ANY VIOLATION OF ANY OF THE PROVISIONS OF THE STATE OR COUNTY LAWS. FIRE FLOW ___ GPM AT 20 P.S.I. RESIDUAL.

BASIS OF BEARING
GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

LINEAR UNIT: US SURVEY FOOT (FTUS)

DATUM (REFERENCE FRAME): NAD 83 (2011) EPOCH 2010.00

SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)

ZONE: LAS VEGAS HIGH ELEVATION ZONE

PROJECTION: TRANSVERSE MERCATOR
STANDARD PARALLEL (AND LATITUDE OF GRID ORIGIN):36°15'00"N
LONGITUDE OF CENTRAL MERIDIAN:114°58'00"W
NORTHING AT GRID ORIGIN: 400,000.00 M (1,312,333.3333 FTUS)
EASTING AT CENTRAL MERIDIAN: 300,000 M (984,250.0000 FTUS)
SCALE FACTOR ON CENTRAL MERIDIAN: 1.000135 (EXACT)

NOTES:
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2. GRID BEARINGS SHOWN HEREON (OR IMPLIED BY GRID COORDINATES) DO NOT EQUAL GEODETIC BEARINGS DUE TO MERIDIAN CONVERGENCE.

BENCHMARK
PROJECT DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

CITY OF LAS VEGAS BENCHMARK: D368 (REVISED 2008) NAVD88 ELEVATION: 989.574 METERS (3,246.63 FEET)

FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN. T21S,R59E,S03

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT:---- FIRST APPROVED DATE: _____.

REV	DATE	BY	REVISION

HOWARD HUGHES COMPANY, LLC
A DELEWARE LIMITED LIABILITY COMPANY
10801 W CHARLESTON BLVD SUITE 300
LAS VEGAS, NEVADA 89135
702-791-4000

CITY OF LAS VEGAS

2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5146
PH: (702) 873-7550 FAX: (702) 362-2597 WEB WWW.VTNNV.COM
CONSULTING ENGINEERS ● PLANNERS ● LAND SURVEYORS

UTILITY PLAN & PROFILE 19
STORM DRAIN LATERAL

SUMMERLIN WEST VILLAGE 24A
WESTERN BOUNDARY FIRE ACCESS, SEWER & SECOND SOURCE WATER

DRAWN BY:	BCC 01/09/2019
DESIGNED BY:	BCC 01/09/2019
CHECKED BY:	WJM 04/05/2019
PROJECT NO:	7851
SCALE:	HORIZ. 1"=20' VERT. 1"=4'

PROFESSIONAL ENGINEER STATE OF NEVADA
WILLIAM J. MEYER
EXP: 12/31/19
CIVIL
No. 15745
5/20/19

SHEET
UT19
47 OF **52** SHEETS
DRAWING NO.

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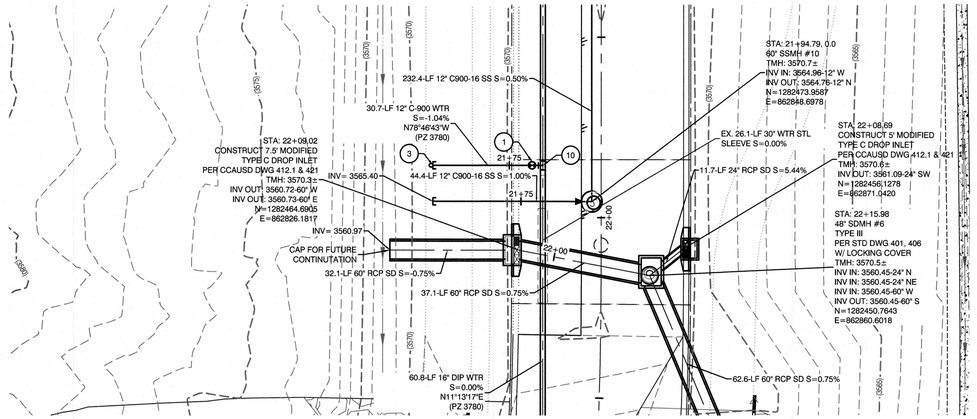
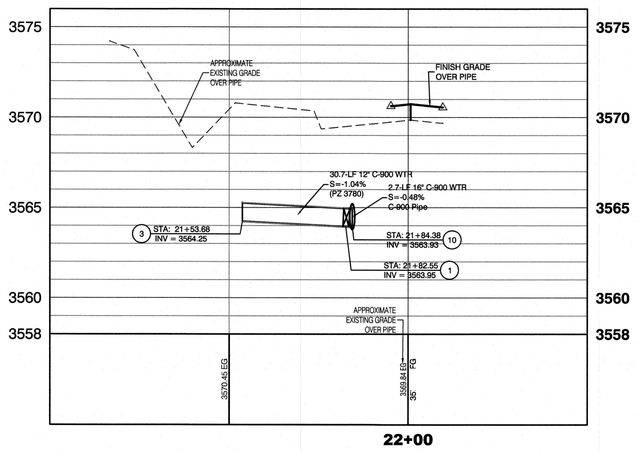


MEADOW RUN STREET
(PUBLIC)

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



MEADOW RUN STREET
(PUBLIC)

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

AVOID HITTING UNDERGROUND TRAFFIC SIGNAL AND STREET LIGHT SYSTEM CONDUITS IT'S COSTLY
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1-702-455-7511
CLARK COUNTY TRAFFIC OPERATIONS
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Avoid cutting underground utility lines. It's costly.
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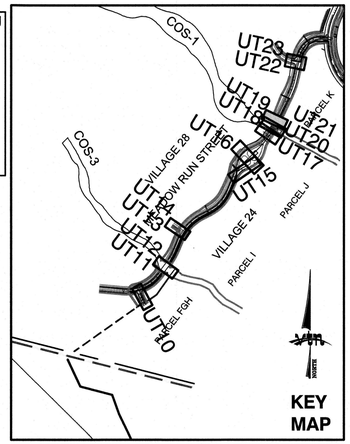
AND
1-702-455-6000
CLARK COUNTY TRAFFIC OPERATIONS



GRAPHIC SCALE
-20 0 10 20 40
1" = 20'



KEY MAP

CONSTRUCTION NOTES

	WATER	PUBLIC	PRIVATE
	12" GATE VALVE (PER UDACS PLATE 39)	2 EA.	0 EA.
	16" GATE VALVE (PER UDACS PLATE 39)	2 EA.	0 EA.
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POC	WATER POINT OF CONNECTION		

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WATER SERVICE LOCATED IN THE 3665 PRESSURE ZONE.

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LAS VEGAS FIRE & RESCUE APPROVAL
BY: _____ DATE: _____

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LINEAR UNIT: US SURVEY FOOT (FTUS)

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FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN.
T21S,R59E,S03

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT:--- FIRST APPROVED DATE: _____.

REV	DATE	BY	REVISION

HOWARD HUGHES COMPANY, LLC
A DELEWARE LIMITED LIABILITY COMPANY
10801 W CHARLESTON BLVD SUITE 300
LAS VEGAS, NEVADA 89135
702-791-4000

CITY OF LAS VEGAS

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CONSULTING ENGINEERS ● PLANNERS ● LAND SURVEYORS

UTILITY PLAN & PROFILE 20 WATER LATERAL

SUMMERLIN WEST VILLAGE 24A WESTERN BOUNDARY FIRE ACCESS, SEWER & SECOND SOURCE WATER

DRAWN BY:	DESIGNED BY:	CHECKED BY:	PROJECT NO:	SCALE:
BCC 12/07/2018	BCC 12/07/2018	JHM 04/05/2019	7651	HORIZ. 1"=20' VERT. 1"=4'

PROFESSIONAL ENGINEER - STATE OF NEVADA
WILLIAM J. MEYER
EXP: 12/31/19
CIVIL
No. 15745
5/20/18

SHEET
UT20
48 OF 52 SHEETS
DRAWING NO.

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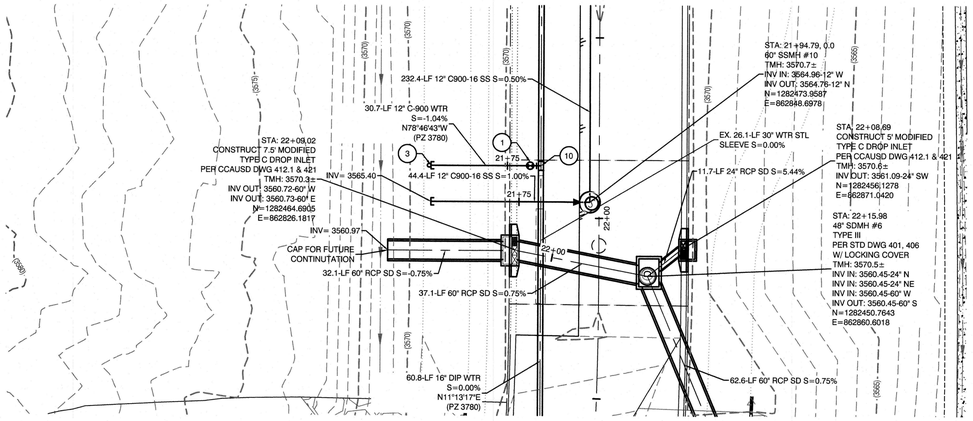
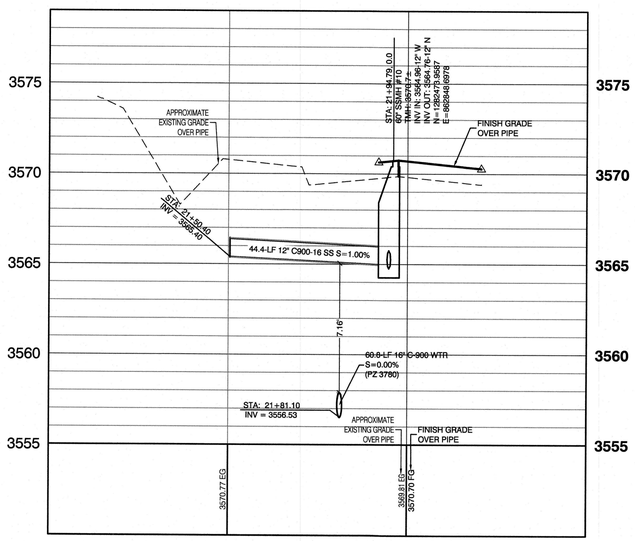


PROFILE SCALES:

HORIZ. = 1"=20'
VERT. = 1"=4'



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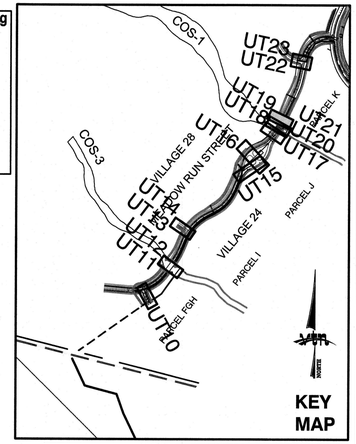

NORTH

GRAPHIC SCALE

-20 0 10 20 40

1" = 20'

CONSTRUCTION NOTES

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LAS VEGAS FIRE & RESCUE APPROVAL

BY: _____ DATE: _____

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FIRE FLOW ---- GPM AT 20 P.S.I. RESIDUAL.

BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE. NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

LINEAR UNIT: US SURVEY FOOT (FTUS)

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T21S,R59E,S03

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT:---- FIRST APPROVED DATE: _____

REV	DATE	BY	REVISION

HOWARD HUGHES COMPANY, LLC
A DELEWARE LIMITED LIABILITY COMPANY
10801 W CHARLESTON BLVE SUITE 300
LAS VEGAS, NEVADA 89135
702-791-4000

CITY OF LAS VEGAS

VTN NEVADA
2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5148
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CONSULTING ENGINEERS ● PLANNERS ● LAND SURVEYORS

UTILITY PLAN & PROFILE 21
SANITARY SEWER LATERAL

SUMMERLIN WEST VILLAGE 24A
WESTERN BOUNDARY FIRE ACCESS, SEWER & SECOND SOURCE WATER

DRAWN BY:	DESIGNED BY:	CHECKED BY:	PROJECT NO:	SCALE:
BCC	BCC	WJM	7951	HORIZ. 1"=20' VERT. 1"=4'
12/07/2018	12/07/2018	04/05/2019		

PROFESSIONAL ENGINEER - STATE OF NEVADA
WILLIAM J. MEYER
EXP: 12/31/19
CIVIL
No. 19745
5/20/19

SHEET
UT21
49 OF 52 SHEETS

DRAWING NO.

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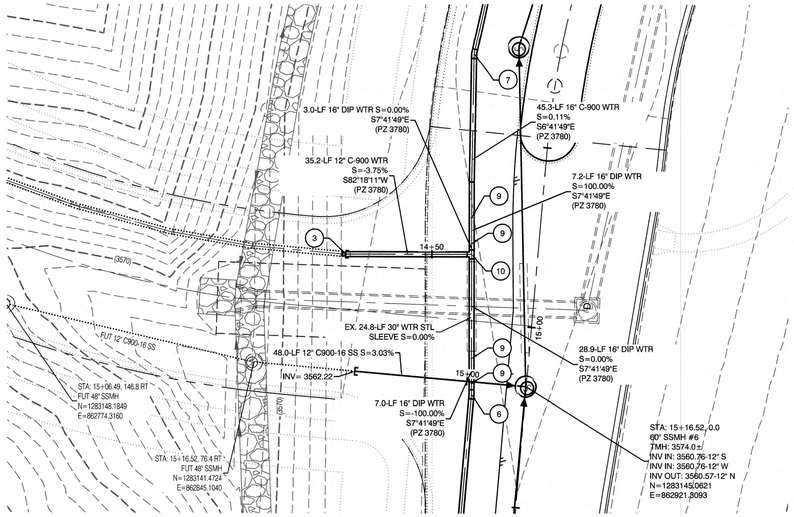

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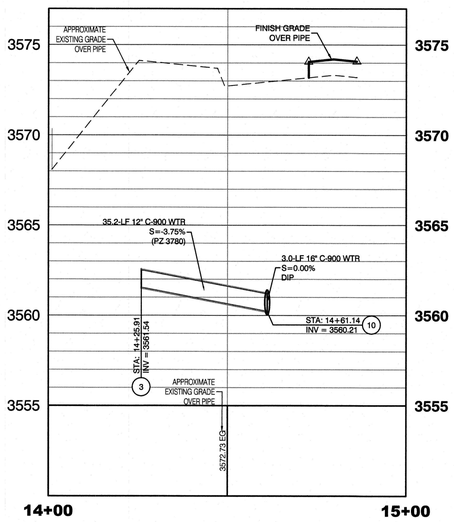

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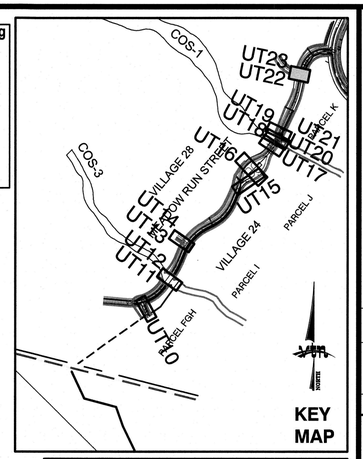
Call before you
Underground
1-702-455-7511
CLARK COUNTY TRAFFIC OPERATIONS
1-702-229-6811
LAS VEGAS AREA COMPUTERIZED TRAFFIC SYSTEM

Call before you Dig
Avoid cutting underground utility lines. It's costly.
CALL 811
OR
1-800-227-2600
AND
1-702-455-6000
CLARK COUNTY TRAFFIC OPERATIONS





GRAPHIC SCALE
-20 0 10 20 40
1" = 20'

CONSTRUCTION NOTES

	WATER	PUBLIC	PRIVATE
	12" GATE VALVE (PER UDACS PLATE 39)	2 EA.	0 EA.
	16" GATE VALVE (PER UDACS PLATE 39)	2 EA.	0 EA.
	12" CAP & BLOW OFF (PER UDACS PLATE 36)	4 EA.	0 EA.
	16" CAP & BLOW OFF (PER UDACS PLATE 36)	1 EA.	0 EA.
	16" 1° VERTICAL BEND (PER UDACS PLATE 31)	1 EA.	0 EA.
	16" 5° BEND (PER UDACS PLATE 31)	21 EA.	0 EA.
	16" 11° BEND (PER UDACS PLATE 31)	20 EA.	0 EA.
	16" 22° BEND (PER UDACS PLATE 31)	2 EA.	0 EA.
	16" 45° VERTICAL BEND (PER UDACS PLATE 31)	24 EA.	0 EA.
	16" x 12" TEE (PER UDACS PLATE 31)	3 EA.	0 EA.
	16" x 16" TEE (PER UDACS PLATE 31)	1 EA.	0 EA.
	12" C-900 WATER MAIN PER UDACS 2.06.01 & PLATE 17	100 LF.	0 LF.
	16" C-900 WATER MAIN PER UDACS 2.06.01 & PLATE 17	3,948 LF.	0 LF.
POC	WATER POINT OF CONNECTION		

	SEWER	PUBLIC
S	STANDARD MANHOLE PER SD-1A & 1B	32 EA.
	12" SDR-35 C-900-16 SANITARY SEWER MAIN	3,703 LF.
POC	SEWER POINT OF CONNECTION	

WATER PRESSURE ZONE:
WATER SERVICE LOCATED IN THE 3665 PRESSURE ZONE.

WATER MAIN COVER NOTE:
ALL NEW WATER MAIN TO HAVE MINIMUM DEPTH OF COVER PER UDACS SECTION 2.08

WATERLINE TRENCH NOTE:
CONSTRUCT WATERLINE TRENCH SECTION AND BACKFILL PER UDACS PLATE NO. 17.

WATER LINE MARKER BALLS NOTE
INSTALL PIPELINE MARKER BALLS IN TRENCH ABOVE EACH HORIZONTAL ELBOW FITTING, PER UDACS PLATE No. 15

FIRE HYDRANT MARKER NOTES
BLUE COLORED REFLECTIVE RAISED PAVEMENT MARKERS ARE TO BE INSTALLED:
1. ON ROADWAYS WITH NO PARKING PERMITTED ON HYDRANT SIDE; LOCATE MAKER 8' FROM FACE OF CURB ON HYDRANT SIDE.
2. ON ROADWAYS WITH PARKING PERMITTED ON HYDRANT SIDE; LOCATE MARKER 16' FROM FACE OF CURB ON HYDRANT SIDE.

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PVC PIPE SHALL BE DEFLECTED AT THE JOINT ONLY. THE MAXIMUM ALLOWABLE DEFLECTION SHALL BE ONE (1) DEGREE PER JOINT WITH A MINIMUM RADIUS OF CURVATURE OF 1,150 FEET, PER UDACS 2.07.01 AND 2.07.02.

FOR CHANGES IN DIRECTION EXCEEDING THE MAXIMUM ALLOWABLE JOINT DEFLECTION, FITTINGS SHALL BE USED.

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

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LAS VEGAS FIRE & RESCUE APPROVAL
BY: _____ DATE: _____.
APPROVAL OF THESE PLANS SHALL NOT BE CONSTRUED TO BE A PERMIT FOR, OR AN APPROVAL OF, ANY VIOLATION OF ANY OF THE PROVISIONS OF THE STATE OR COUNTY LAWS. FIRE FLOW ---- GPM AT 20 P.S.I. RESIDUAL.

BASIS OF BEARING
GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

LINEAR UNIT: US SURVEY FOOT (FTUS)

DATUM (REFERENCE FRAME): NAD 83 (2011) EPOCH 2010.00

SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)

ZONE: LAS VEGAS HIGH ELEVATION ZONE

PROJECTION: TRANSVERSE MERCATOR
STANDARD PARALLEL (AND LATITUDE OF GRID ORGIN):36°15'00"N
LONGITUDE OF CENTRAL MERIDIAN:114°58'00"W
NORTHING AT GRID ORIGIN: 400,000.00 M (1,312,333.3333 FTUS)
EASTING AT CENTRAL MERIDIAN: 300,000 M (984,250.0000 FTUS)
SCALE FACTOR ON CENTRAL MERIDIAN: 1.000135 (EXACT)

NOTES:
1. ALL DISTANCES AND BEARINGS SHOWN HEREON ARE PROJECTED (GRID) VALUES BASED ON THE PRECEDING PROJECTION DEFINITION. THE PROJECTION WAS DEFINED SUCH THAT PROJECTED (GRID) DISTANCES ARE EQUIVALENT TO "GROUND" DISTANCES IN THE PROJECT AREA.

2. GRID BEARINGS SHOWN HEREON (OR IMPLIED BY GRID COORDINATES) DO NOT EQUAL GEODETIC BEARINGS DUE TO MERIDIAN CONVERGENCE.

BENCHMARK
PROJECT DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

CITY OF LAS VEGAS BENCHMARK: D368 (REVISED 2008) NAVD88 ELEVATION: 989.574 METERS (3,246.63 FEET)

FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN. T21S,R59E,S03

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES
PROJECT:---- FIRST APPROVED DATE: _____.

REV	DATE	BY	REVISION

HOWARD HUGHES COMPANY, LLC
A DELEWARE LIMITED LIABILITY COMPANY
10801 W CHARLESTON BLVE SUITE 300
LAS VEGAS, NEVADA 89135
702-791-4300

CITY OF LAS VEGAS

2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5146
PH: (702) 873-7500 FAX (702) 362-2897 WEB WWW.VTNNV.COM
CONSULTING ENGINEERS ● PLANNERS ● LAND SURVEYORS

UTILITY PLAN & PROFILE 22 WATER LATERAL

SUMMERLIN WEST VILLAGE 24A WESTERN BOUNDARY FIRE ACCESS, SEWER & SECOND SOURCE WATER

DRAWN BY:	DESIGNED BY:	CHECKED BY:	PROJECT NO:
BCC	BCC	WJM	7921
12/07/2018	12/07/2018	04/05/2019	SCALE: HORIZ. 1"=20' VERT. 1"=4'



SHEET
UT22
50 OF 52 SHEETS
DRAWING NO.

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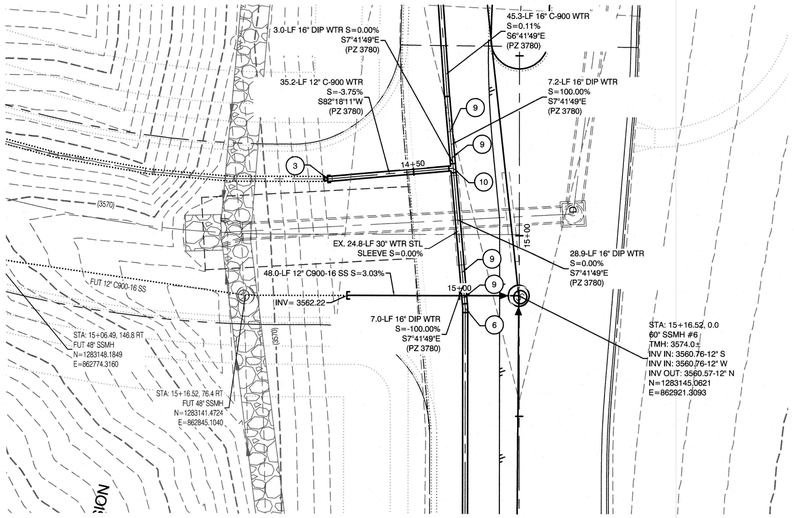
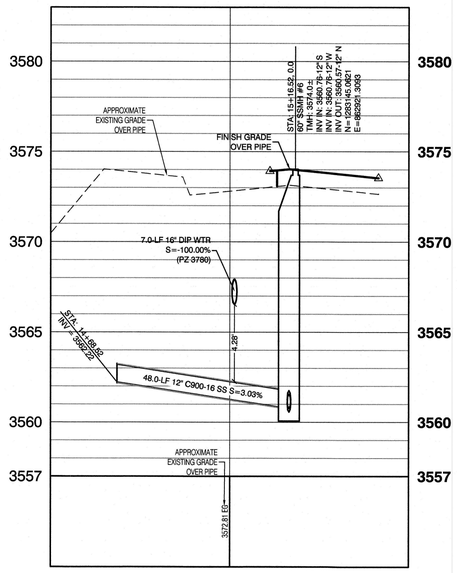


MEADOW RUN STREET
(PUBLIC)

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



15+00

MEADOW RUN STREET
(PUBLIC)

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

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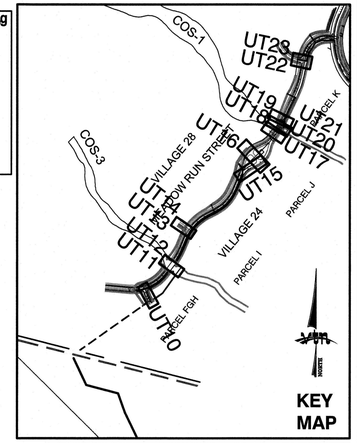



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FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN.
T21S,R59E,S03

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT:---- FIRST APPROVED DATE: _____

REV	DATE	BY	REVISION

HOWARD HUGHES COMPANY, LLC
A DELEWARE LIMITED LIABILITY COMPANY
10801 W CHARLESTON BLVE SUITE 300
LAS VEGAS, NEVADA 89135
702-791-4000

CITY OF LAS VEGAS

2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5148
PH. (702) 873-7550 FAX (702) 362-2597 WEB WWW.VTNNV.COM
CONSULTING ENGINEERS ● PLANNERS ● LAND SURVEYORS

UTILITY PLAN & PROFILE 23
SANITARY SEWER LATERAL

SUMMERLIN WEST VILLAGE 24A
WESTERN BOUNDARY FIRE ACCESS, SEWER & SECOND SOURCE WATER

DRAWN BY:	DESIGNED BY:	CHECKED BY:	SCALE:	PROJECT NO:
BCC 12/07/2018	BCC 12/07/2018	WAM 04/05/2019	HORIZ. 1"=20' VERT. 1"=4'	7851

PROFESSIONAL ENGINEER STATE OF NEVADA
WILLIAM J. MEYER
EXP: 12/31/19
CIVIL
No. 19749
5/20/19

SHEET
UT23
51 OF 52 SHEETS
DRAWING NO.

H:\7851\Village 24 Collection\WATER\Sheet Set\UNIT 23\7851-UT-LAT 2.dwg, May 20, 2019