RESPONSE TO COMMENTS
ON THE
TECHNICAL DRAINAGE STUDY
FOR
SUMMERLIN VILLAGE 23B
FAR HILLS AVENUE IMPROVEMENTS
(FAR HILLS AVENUE RCB IMPROVEMENTS)

62023B-227

May 2013

Prepared for:

The Howard Hughes Companies, LLC
10801 W. Charleston Blvd., 3rd Floor
Las Vegas, Nevada 89135
Phone: (702) 791-4300
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G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS

62023B-227

HYDROLOGIC CRITERIA AND DRAINAGE MANUAL

DRAINAGE STUDY INFORMATION FORM

Name of Development: Summerlin Village 23B Far Hills Avenue Improvements (Far Hills Avenue RCB Improvements) Date: May 2013

Location of Development a) Descriptive (Cross Streets) North/South: Desert Foothills Drive/Sky Vista

East/West: Far Hills Avenue

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

c) APN: 137-22-000-015

Name of Owner: Howard Hughes Company LLC

Telephone No.: (702) 791-4300 Fax No. (702) 791-4450 E-Mail Address: Not available

Address: 10801 W. Charleston Blvd, 3rd Floor; Las Vegas, Nevada 89135

Contact Person-Name: James Monroe **Telephone No.:** (702) 804-2000

* **E-Mail Address:** jmonroe@gcwallace.com **Fax No.:** (702) 804-2299

Firm: G. C. WALLACE COMPANIES

Address: 1555 S. Rainbow Blvd; Las Vegas, NV 89146

Type of Land Development/Land Disturbance

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

1. Total Owned Land Area: At Site: +/- 2,700 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.): Storm infrastructure improvements only
5. Approximate upstream land area which drains to the subject site: +/- 160 acres
6. Has the site drainage been evaluated in the past? ☒ Yes ☐ No If yes, please identify documentation: Update to the *Technical Drainage Study for Summerlin Village 23B Rough Grading (GCW); Conceptual Drainage Study for Summerline Village 23B (GCW); Summerlin Village 23B Far Hills Avenue Improvements, (GCW).*
7. If known, please briefly identify the proposed discharge point(s) of runoff from the site: Existing Far Hills Storm Drain at Desert Foothills Drive.
8. Briefly describe your proposed schedule for the subject project: ASAP



Engineer's Seal

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

*New Required Field

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

Local Entity File No.

Revision	Date

REFERENCE:

STANDARD FORM 1

Updated 05/01/2008

CITY OF LAS VEGAS

MINIMUM DRAINAGE STUDY CRITERIA
STANDARD FORM 2 CHECKLIST SUPPLEMENT

(Revised 06/06/01)

The following checklist is intended as a supplemental **guide** for the engineer preparing a Technical Drainage Study submittal to the City of Las Vegas. This supplement focuses on requirements specific to the City of Las Vegas. The requirements presented are in addition to the Clark County Regional Flood Control District Manual Standard Form 2. The listed items are the minimum information required prior to the City performing a review. The engineer will remain responsible to ensure the Technical Drainage Study is prepared within the guidelines as set forth in the Clark County Regional Flood Control District (CCRFCD) Hydrologic Criteria and Drainage Design Manual (Design Manual).

If items are not applicable for the subject site, provide N/A.

I. GENERAL REQUIREMENT		
Yes	No	
	N/A	A notarized letter from the adjacent property owner(s) allowing off-site grading. (A copy of the letter must be received prior to final acceptance of the drainage study.)
x		Copies of all conditions of approval for development related to this property. (e.g. zoning, use permit, tentative map, etc.) Verify compliance with conditions.

II. GRADING PLAN INFORMATION		
Yes	No	
x		(1) 24" X 36" copy of the Grading Plan, (including all Detail Sheets) sealed by the engineer.
x		Proposed future and existing spot grades for top of curbs and street crowns at lot lines, grade breaks, and along curb returns on both sides of the street. Note: Proposed top of curb elevations must be provided for both sides of roadways even if only half street construction is required.
x		Label existing topography at a minimum 5 foot elevation interval including adjacent developments, finished floor elevations of existing buildings and top of existing curbs extending 100 feet* around the perimeter of the site. (*Measured from the centerline of the adjacent roadway.)
x		Proposed on-site and off-site storm drains and other flood control facilities with plan and profile sheets for public storm drains showing the class of pipe, (Class III, IV, V, etc.), design hydraulic grade line, (HGL) and 100 year storm flow. A public drainage easement must be provided over on-site storm drains conveying off-site flows. An overflow path must be provided over all storm drains.
	N/A	All existing and "to be constructed" walls with cross-sections showing wall type, (e.g. block wall, retaining wall, flood wall, etc.), with limits clearly defined, adjacent ground elevations. Wall heights must meet current ordinances and in no case exceed 14 feet above the adjacent property.
x		Street slopes for both interior and perimeter streets. Note: The minimum slope for a roadway is 0.4 percent, a minimum 18-inch storm drain must be provided where minimum slopes cannot be met.

II. GRADING PLAN INFORMATION		
Yes	No	
	N/A	Back of lot elevations and lot drainage pattern for all lots including common lots.
	N/A	Sites with a grade difference two feet above or below existing ground are required to have approval from City of Las Vegas Current Planning. Current Planning approval is required prior to final approval of the drainage study.
x		On-site facilities must perpetuate flows through or around the site without significantly impacting adjacent property owners. (The project must pass flows through the site every 600 feet where the project is blocking flow paths.)
	N/A	This project uses a solid grouted stem wall (or approved alternate) at the back of sidewalk to provide erosion protection for landscaped areas where the depth of flow in the roadway exceeds the back of walk elevation. A corresponding cross-section detail is included.
	N/A	Commercial and Common Lot Landscape areas are not allowed to drain over the sidewalk. The grading plans show flow lines with grades and sidewalk under drains for all landscape areas draining to the public ROW.

III. Local Entity Criteria - City of Las Vegas – Manual Section 1600		
Yes	No	
	N/A	Concrete valley gutters are required in parking lots with slopes less than 1 percent. Slopes through cul-de-sac must be at a 1 percent minimum where flow is drained through the cul-de-sac.
	N/A	Ten-foot wide public drainage easements to be privately maintained are allowed for flow less than 20 cfs. The depth of flow entering the easement must be checked using the submerged weir calculation.
	N/A	The limits of the flood zones and the base flood elevations (BFE) must be shown on all grading plans for all developments within a Special Flood Hazard Zone A, AO, AE, etc.
	N/A	Minimum finish floor elevation is 6 inches above highest adjacent top of curb. Finish floor calculations must include allowances for super elevations on curves and velocity head for tee intersections.
	N/A	Finished floor elevations for buildings adjacent to public drainage easements must be a minimum of 18 inches above the Q100 weir of submerged weir elevation, whichever is greater.
	N/A	Lots with "B and C Type Drainage" shall be required to install an underground nuisance drainage system or a 2-foot valley gutter through the lot. 16" x 24" minimum block wall openings are required for both options.
	N/A	Bubblers are required across 80 foot and greater ROW streets. When flows exceed 10 cfs, bubblers larger than 18 inches will be required up to a maximum of 36". Inlets must be sized to match the pipe size provided.

- An appointment must be made to preview this checklist in conjunction with Clark County Regional Flood Control District Manual Standard Form 2 prior to the City accepting a new Drainage Study for review. The engineer may contact the Flood Control Section at 229-6541.

- Following the acceptance of the Drainage Study (meeting the minimum acceptable information above), there will be a charge of $250 for each Drainage Study review submittal. These fees are payable at the time the Grading Permit is obtained.
- The Drainage Study must be accepted prior to submitting grading plans to the Land Development Section for review.

This document is intended as an **aid** in preparing Technical Drainage Studies for the City of Las Vegas. Each study submitted is reviewed for compliance with local and regional criteria. This form is not intended to be all-inclusive and does not limit the extent of the information, calculations or exhibits which may be necessary to properly evaluate the intended land use.

F:\Projects\600\62023B-227\Admin\Forms\130104-CHKLIST7-TDS_UP3-mmc.doc
20-May-13

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM				DATE: April 29, 2013
TO: **Land Development Services** Department of Public Works				FROM: Albert Sung, P.E. Flood Control Project Engineer Department of Public Works
SUBJECT:	Drainage Study for: **Summerlin Village 23B – Far Hills Avenue Improvements** **- Update for Far Hills Avenue RCB Improvements**			**COPIES TO:** G.C. Wallace, Inc.
Cross Streets:	Far Hills Ave from Desert Foothills to Sky Vista			Howard Hughes Corporation
File Number:	F:\Depot\DSMemos\DS4084D.doc			Bart Anderson, P.E., DevCo
Parcel Number:	137-22-000-015			CCRFCD
Zoning Action:	N/A			
FEMA Flood Zone	YES	NO	X	
Proposed Storm Drain	YES	NO	X	

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Transaction #
1st Submittal	10/5/2006	10/25/2006	Not Approved	$400.00	55426: $400
2nd Submittal	11/13/2006	12/1/2006	Conditional Approval	$400.00	57514: $400
CCRFCD	4/13/2007	4/23/2007	Concurrence	N/C	N/C
3rd Submittal	4/15/2013	4/29/2013	See Comments Below	$100.00	316351: $100
			TOTAL FEES (LDDRS):	**$900.00**	----

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 final approval of this Update is only for the "*Initial Phase*" which includes the main storm drain RCB and the associated stubs for interim flows collected from the side swales in *Far Hills Avenue* between *Desert Foothill Drive* and *Sky Vista Drive* and the rough grading of the roadway.

   The full street improvements such as paving, curb & gutter, sidewalk and drop inlets will be addressed in the "*Final Phase*" and a future drainage study update will be required.

2. All the interim facilities such as but not limited to the openings, berms/channels and stubs etc. are to be owned and privately maintained by *Howard Hughes Corporation*.

3. Per **FIG 6AU (Drainage Map – Ultimate Conditions)**, Concentration Point C14 (at the intersection of *Sky Vista Drive* and *Far Hills Drive*) anticipates a Q_{100}/Q_{10} of 872cfs/394cfs. However, **FIG 5AU (Drainage Map – Interim Conditions)** appears to intercept only 320cfs/137cfs at the same location during the interim condition. Address and explain such a big difference in the next submittal.

4. **Sheet 4 (Storm Drain Master Plan)**: Label sizes of all the stubs on the plan.

5. It appears that the stationing in *Far Hills Avenue* has been frozen on Grading Plans I, II and III. Provide as such in the next submittal.

6. Also on the Grading Plans, contractor cannot construct swales base on "proposed flowline" with arrows. Show proposed contours with flowline elevations labeled at regular intervals on all pertinent plans in the next submittal.

7. Provide riprap sizing calculation to armor the proposed swales against erosion and update the plans with riprap size information.

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

NOTE: Please be advised that all land surface area disturbances over 1 acre or any area adjacent to a water way must submit to the Nevada Division of Environmental Protection a "Notice of Intent" to discharge that certifies a stormwater pollution prevention plan has been developed and is maintained on site; for inclusion in the Stormwater General Permit No. NVR100000. A phased construction unit in a contiguous subdivision is considered under construction until all stripped or disturbed surface areas have been covered by paving, building construction or planting. For more information, including forms and applications see http://ndep.nv.gov/bwpc/storm01.htm or call (775) 687-9429.

END OF REMARKS
ays

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

RESPONSE TO COMMENTS
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G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS

G. C. WALLACE, INC.
G. C. WALLACE HOLDINGS, INC.

Writer's Contact Information:

804-2133

62023B-227

May 20, 2013

Albert Sung, PE
Flood Control Project Engineer
City of Las Vegas Department of Public Works
333 N. Rancho Drive
Las Vegas, NV 89106

Re: Response to Comments
Summerlin Village 23B – Far Hills Avenue Improvements
Update for Far Hills Avenue RCB Improvements
DS 4084D

Dear Mr. Sung:

The purpose of this letter is to address your comments dated April 29, 2013, regarding the above-referenced project. The comments are individually addressed as follows:

Comment: "1. The final approval of this Update is only for the "*Initial Phase*" which includes the main storm drain RCB and the associated stubs for interim flows collected from the side swales in *Far Hills* Avenue between *Desert Foothills* Drive and *Sky Vista* Drive and the rough grading of the roadway.

"The full street improvements such as paving, curb & gutter, sidewalk and drop inlets will be addressed in the "*Final Phase*" and a future drainage study will be required."

Response: Comment is noted.

Comment: "2. All the interim facilities such as but not limited to the openings, berms/channels and stubs etc. are to be owned and privately maintained by *Howard Hughes Corporation*.".

Response: Noted.

Comment: "3. Per **FIS 6AU (Drainage Map – Ultimate Conditions)**, Concentration Point C14 (at the intersection of *Sky Vista Drive* and *Far Hills Drive*) anticipates a Q_{100}/Q_{10} of 872cfs/394cfs. However, **FIG 5AU (Drainage Map – Interim Conditions)** appears to intercept only 320cfs/137cfs at the same location during the interim condition. Address and explain such a big difference in the next submittal."

Response: The difference in flow between interim and ultimate flow is due to the increase in tributary area reaching the intersection of Sky Vista Drive and Far Hill Avenue under

ultimate conditions. Under interim conditions, 320 cfs reaches the intersection (Figure 5AU). Under ultimate conditions, 872 cfs reaches the intersection (Figure 6AU) for a 2.7 time increase in flow in ultimate conditions. 310 acres in ultimate conditions (Figure 6AU basins 3-1A + 3-2A + 5-10AR) to 118 acres in interim conditions (Figure 5AU basins OFF5 + OFF1A) constitutes a 2.6 times increase in tributary area to the intersection under ultimate conditions. Please note that the ultimate conditions tributary area is consistent with the previously approved *Technical Drainage Study for Summerlin Village 23B Far Hills Avenue Improvements* (hereinafter, referred to as the Original TDS) and the *2006 Summerlin West Planning Area Flood Control Master Plan Update* (hereinafter, referred to as the SWPA Study).

Comment: "4. **Sheet 4 (Storm Drain Master Plan)**: Label sizes of all the stubs on the plan."

Response: Sheet 4 has been revised accordingly.

Comment: "5. It appears that the stationing in *Far Hills* Avenue has been frozen on Grading Plans I, II and III. Provide as such in the next submittal."

Response: Grading plan sheets have been revised accordingly.

Comment: "6. Also on the Grading Plans, contractor cannot construct swales based on "proposed flowline" with arrows. Show proposed contours with flowline elevations labeled at regular intervals on all pertinent plans in the next submittal"

Response: Proposed contours over the RCB have been added in the attached improvement plans.

Comment: "7. Provide riprap sizing calculation to armor the proposed swales against erosion and update the plans with riprap size information."

Response: A riprap sizing calculation has been provided for the proposed v-ditch west of Far Hills Avenue and adjacent to future Sky Vista Drive. The flow rate used in the calculation conservatively assumes 50 percent of the flow generated by interim conditions Subbasin OFF5 for a total of 98 cfs. The proposed v-ditch at this location will be riprap lined 3-feet in depth with a riprap d50 size equal to 6 inches.

A previously submitted calculation for the proposed swales along Far Hills Avenue between Sky Vista Drive and Fox Hill Drive, labeled "Cross Section for Far Hills-FHI1, shows that flow velocities at these locations are less than 5 feet per second. Therefore, riprap will not be required within the proposed swales between Sky Vista Drive and Fox Hill Drive.

A riprap sizing calculation for the proposed v-ditch east of Fox Hill Drive along the north side of Far Hills Avenue has been provided. See the additional comments

section of this letter for a description of the proposed flow rates. The proposed v-ditch at this location will be riprap lined 1-foot in depth with a riprap d50 size equal to 6 inches.

Additional Revisions

The stub for the future north side drop inlet previously shown at Station 237+98 has been relocated to Station 238+53. The manhole and stub for the future south side drop inlet previously shown at Station 230+23 has been relocated to Station 231+29. Additionally, the stub for the future north side drop inlet previously shown at Station 230+23 has been combined with proposed 36-inch RCP stub shown at 231+29.

The lateral shown previously extending north in Fox Hill Drive has been removed from the Improvement Plans. The storm drain will now be extended as part of the future drainage study update that addresses the Far Hills Roadway Improvements. A 42-inch RCP stub is provided at that location for the future connection and extension. A proposed v-ditch will convey the interim condition flows at this location east along the north side of Far Hills Avenue to the proposed storm drain lateral at Station 215+74. The total flow of 16 cfs conveyed east in the v-ditch includes flow from Subbasins N1 (8 cfs) and N2 (8 cfs) shown on Figure 5B referenced from the Original TDS. An additional courtesy copy of Figure 5B has been included in the Appendix. The revised interim conditions Standard Form 6 Calculation has been included in the Appendix. The design flow rate of 22 cfs for the lateral includes the flow from Subbasins N1 (8 cfs) and N2 (8 cfs) and the flow rate intercepted by the future drop inlet at that location (6 cfs).

As discussed in the recently submitted *Update #3 to the Technical Drainage Study for Summerlin Village 23B Desert Foothills Drive Improvements*, the previously shown 42-inch RCP stub shown within the Desert Foothills Improvement Plans at Station 202+35 has been relocated west to be within the limits of the Far Hills Avenue RCB Improvements. The proposed 42-inch RCP stub is now shown at Station 203+41 in the attached Improvement Plans. The junction structure previously located at 202+90 has been moved accordingly. Additionally, the junction structure will transition the storm drain mainline from 8-foot wide by 6-foot high RCB to 8-foot wide by 7-foot high RCB. A Standard Form 6 Calculation for the proposed stub has been included in the Appendix. The design flow rate for the stub includes 83 cfs from Subbasin 21-16 as shown in the SWPA Study and 6.5 cfs that will be intercepted by the future drop inlet at the location for a total of 89.5 cfs conveyed within the storm drain stub during ultimate conditions. For conceptual planning purposes, a normal depth calculation has been included to show that a 42-inch RCP at minimum slope of 1% will be adequate for the future extended portions of the storm drain. An inlet control calculation shows that a minimum ponding depth equal to 5.3 feet will be required within a future catch basin to collect the entire flow at a single location at the upstream end of the future extended storm drain. An analysis for the extended storm drain will be required as part of the future drainage study update that addresses the Far Hills Avenue Roadway Improvements. The ultimate conditions Standard Form 6 Calculations for the Far Hills Avenue RCB Storm Drain Mainline have been revised to reflect the new location for the proposed junction structure. Storm drain calculations are included in Appendix B.

Please note that there are additional minor invert elevation adjustments to lateral stubs being extended in the future to roadway drop inlets. Since revisions are minor in nature additional hydraulic calculation revisions for these storm drains are not included. These laterals will also be analyzed with the future Far Hills Avenue roadway improvements project that will extend these lateral stubs and construct the drop inlets.

If you have any questions or require additional information, please contact our office at 804-2133.

Cordially,

G. C. WALLACE, INC.

James A. Monroe Jr., PE LEED AP
Project Manager
Flood Control Division

GT/vlr

Enclosures

c: Calvin Black, GCW
Ryan Belsick, GCW
Josh Johnson, GCW
Grant Tokumi, GCW

RESPONSE TO COMMENTS ON THE SUMMERLIN VILLAGE 23B FAR HILLS AVENUE IMPROVEMENTS UPDATE FOR FAR HILLS AVENUE RCB IMPROVEMENTS APPENDIX LAYOUT

Appendix A. Hydraulic Calculations and Information

1. Normal Depth Calculations
2. Riprap Calculation
3. Standard Form 6 Calculations

Appendix B. Referenced Materials

1. Response to Comments on Technical drainage Study for Summerlin Village 23B Far Hills Avenue Improvements
    a) CLV Approval Letter
    b) CCRFCD Concurrence Letter
    c) Figure 5A – Interim Conditions Offsite Drainage Map
2. Technical drainage Study for Summerlin Village 23B Far Hills Avenue Improvements
    a) Figure 5B – Interim Conditions Prorated Flows Drainage Map
    b) Figure 6B – Onsite Drainage Map Ultimate Conditions
3. Update #3 to the Technical Drainage Study for Summerlin Village 23B Desert Foothills Drive Improvements (Alta Drive to Far Hills Avenue)
    a) Text Excerpt
    b) Figure 5BU3 – Ultimate Conditions Drainage Map

APPENDIX A

Hydraulic Calculations

Worksheet for Far Hills-FHI1

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	5.10000	%
Discharge	28.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	4.00
0+24.00	0.00
0+62.00	0.76
1+00.00	0.00
1+24.00	4.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 4.00)	(1+24.00, 4.00)	0.025

Options

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

Results

Normal Depth	0.35	ft
Elevation Range	0.00 to 4.00 ft	
Flow Area	6.73	ft²
Wetted Perimeter	38.88	ft
Hydraulic Radius	0.17	ft
Top Width	38.82	ft
Normal Depth	0.35	ft
Critical Depth	0.43	ft

Worksheet for Far Hills-FHI1

Results

Critical Slope		0.01518	ft/ft
Velocity		4.16	ft/s
Velocity Head		0.27	ft
Specific Energy		0.62	ft
Froude Number		1.76	
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		0.35	ft
Critical Depth		0.43	ft
Channel Slope		5.10000	%
Critical Slope		0.01518	ft/ft

Cross Section for Far Hills-FHI2

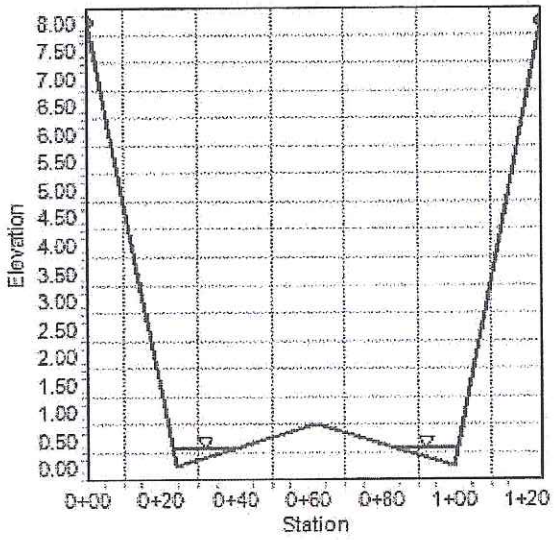
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	6.10000	%
Normal Depth	0.32	ft
Discharge	24.00	ft³/s

Cross Section Image



Cross Section for Far Hills-FHI1

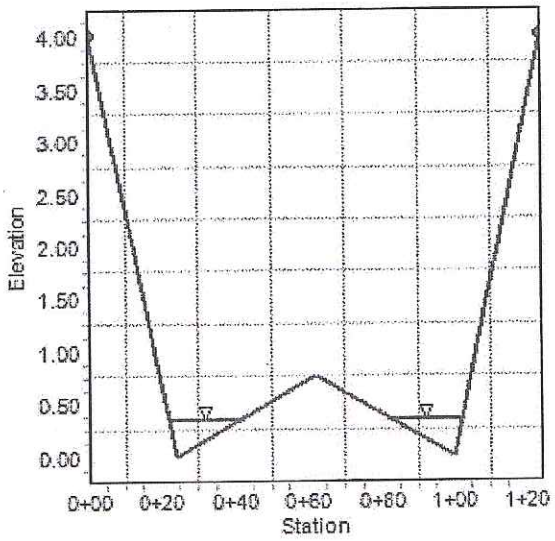
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	5.10000	%
Normal Depth	0.35	ft
Discharge	28.00	ft³/s

Cross Section Image



Worksheet for Far Hills-FHI2

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	6.10000	%
Discharge	24.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	8.00
0+24.00	0.00
0+62.00	0.76
1+00.00	0.00
1+24.00	8.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 8.00)	(1+24.00, 8.00)	0.025

Options

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

Results

Normal Depth	0.32	ft
Elevation Range	0.00 to 8.00 ft	
Flow Area	5.53	ft²
Wetted Perimeter	34.36	ft
Hydraulic Radius	0.16	ft
Top Width	34.25	ft
Normal Depth	0.32	ft
Critical Depth	0.42	ft

Worksheet for Far Hills-FHI2

Results

Critical Slope	0.01541	ft/ft
Velocity	4.34	ft/s
Velocity Head	0.29	ft
Specific Energy	0.62	ft
Froude Number	1.90	
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	0.32	ft
Critical Depth	0.42	ft
Channel Slope	6.10000	%
Critical Slope	0.01541	ft/ft

RIPRAP CHANNEL

V-Ditch adjacent to Future Sky Vista Drive

Flow "Q"	98	cfs
Manning's "n"	0.032	
Slope (%)	1.00	
Bottom Width	0.0	ft
Side Slope (Lt)	3.0	H:1V
Side Slope (Rt)	3.0	H:1V
Specific Gravity	2.5	

OUTPUT:

Velocity	5.21	ft/s
Depth	2.51	ft
Freeboard	1.00	ft
Total Depth	3.51	ft
Froude No.	0.82	
Riprap Size D50	3.4	in

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RIPRAP CHANNEL

V-Ditch north along Far Hills Avenue east of Fox Hill Drive

Flow "Q"	16	cfs
Manning's "n"	0.035	
Slope (%)	4.50	
Bottom Width	0.0	ft
Side Slope (Lt)	3.0	H:1V
Side Slope (Rt)	3.0	H:1V
Specific Gravity	2.50	

OUTPUT:

Velocity	5.44	ft/s
Depth	0.99	ft
Freeboard	1.14	ft
Total Depth	2.13	ft
Froude No.	1.36	
Riprap Size D50	6.0	in

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS

Storm Drain Hydraulics Calculations

G.C. Wallace, Inc. | Hydraulic Calculations for FAR HILLS AVENUE Ultimate Condition | DATE: 05/16/13 | FILE: SF6.xls

Storm Drain Manning's n (typ=0.013)= 0.013 | Inlet Structure Type or K_i= A | Headwall: Grooved Edge

	CONDUIT DATA											FLOW DATA									ENERGY LOSS DATA																								EGL & HGL				COMMENTS	
																							TRANSITION																											
	STATION			PIPE	BOX		IRREG		#	INVERT ELEV		L	S	A	Φ	Q	V	V2/2g	Sf	Ave.	PIPE Frict	Frict	Manhole			Junction			Contraction/ Inlet			Expansion/Outlet			Bend					Misc		CONDUIT		TRANSITION		FULL/	
	FROM	TO	T/R	D	SPAN	RISE	AREA	HYD RAD		D/S	U/S									S_f		H_f	H_f	Θ	K_{mh}	H_{mh}	Θ	K_j	H_j	Inlet/ Cont	K_j	H_c	Θ	K_o	H_o	R_{bend}	Θ	K_b	H_b	H_m	Total	U/S EGL	U/S HGL	U/S EGL	U/S HGL	PART FLOW	CRTL
	(ft)	(ft)		(in)	(ft)	(ft)	(ft^2)	(ft)		(ft)	(ft)	(ft)	(%)	(ft^2)		(cfs)	(ft/s)	(ft)	(ft/ft)	(ft/ft)		(ft)	(ft)	(deg)		(ft)	(deg)		(ft)			(ft)	(deg)		(ft)	(ft)	(deg)		(ft)	(ft)	(ft)	(ft)						
1		250.00			8	7					333.81																					Outlet K_o=		1.0															
2	250.00	298.75	R		8	7			1	333.81	336.43	48.8	5.37%	56.00	0.0049	1119	19.98	6.20	0.0133	0.0133	0.65																					0.00	349.63	343.43			PART	D/S
3	298.75	303.75	T		8	6			1	336.43	337.79	5.0	27.25%	48.00	0.0049	1088	22.67	7.98	0.0192	0.0162		0.08	0	0.02	0.12	45	0.50	2.21													2.42			352.04	344.06	FULL	U/S
4	303.75	1054.78	R		8	6			1	337.79	379.20	751.0	5.51%	48.00	0.0049	1088	22.67	7.98	0.0192	0.0192	14.41																			0.00	393.18	385.20			PART	D/S
5	1054.78	1268.64	R		8	6			1	379.20	390.90	213.9	5.47%	48.00	0.0049	1088	22.67	7.98	0.0192	0.0192	4.10																			0.00	404.88	396.90			PART	D/S
6	1268.64	1273.64	T		8	6			1	390.90	391.17	5.0	5.47%	48.00	0.0049	1014	21.13	6.93	0.0167	0.0179		0.09																	1.98	2.07			406.95	400.02	FULL	U/S
7	1273.64	1715.08	R		8	6			1	391.17	415.30	441.4	5.47%	48.00	0.0049	1014	21.13	6.93	0.0167	0.0167	7.36																			0.00	428.23	421.30			PART	D/S
8	1715.08	2085.36	R		8	6			1	415.30	428.19	370.3	3.48%	48.00	0.0049	1014	21.13	6.93	0.0167	0.0167	6.17																			0.00	441.12	434.19			PART	D/S
9	2085.36	2090.36	T		8	6			1	428.19	428.36	5.0	3.48%	48.00	0.0049	917	19.10	5.67	0.0136	0.0151		0.08																	2.53	2.61			443.72	438.05	FULL	U/S
10	2090.36	2468.68	R		8	6			1	428.36	441.50	378.3	3.47%	48.00	0.0049	917	19.10	5.67	0.0136	0.0136	5.16		1	0.02	0.11															0.11	453.17	447.50	453.17	447.50	PART	D/S
11	2468.68	3089.16	R		8	6			1	441.50	487.73	620.5	7.45%	48.00	0.0049	917	19.10	5.67	0.0136	0.0136	8.46																			0.00	499.39	493.73			PART	D/S
12	3089.16	3094.16	T		8	6			1	487.73	488.10	5.0	7.45%	48.00	0.0049	872	18.17	5.12	0.0123	0.0130		0.06																	1.09	1.15			500.55	495.42	FULL	U/S
13	3094.16	3128.98	R		8	6			1	488.10	490.70	34.8	7.47%	48.00	0.0049	872	18.17	5.12	0.0123	0.0123	0.43		1	0.02	0.10															0.10	501.82	496.70	501.82	496.70	FULL	D/S
14	3128.98	3599.06	R		8	6			1	490.70	525.80	470.1	7.47%	48.00	0.0049	872	18.17	5.12	0.0123	0.0123	5.79																	1130	10	0.08	0.43		0.43	536.92	531.80	536.92	531.80	PART	D/S
15	3599.06	3805.26	R		8	6			1	525.80	535.70	206.2	4.80%	48.00	0.0049	872	18.17	5.12	0.0123	0.0123	2.54																			0.00	546.82	541.70			PART	D/S
16	3805.26	4141.62	R		8	6			1	535.70	545.96	336.4	3.05%	48.00	0.0049	872	18.17	5.12	0.0123	0.0123	4.14					45	0.50	2.56												2.56	557.08	551.96	557.08	551.96	PART	D/S
17	4141.62	4146.62	T		8	6			1	545.96	546.11	5.0	3.05%	48.00	0.0049	711	14.81	3.41	0.0082	0.0103		0.05	0	0.02	0.10														0.15			557.24	553.83	FULL	U/S
18	4146.62	4218.33	R		8	6			1	546.11	548.30	71.7	3.05%	48.00	0.0049	711	14.81	3.41	0.0082	0.0082	0.59																			0.00	557.82	554.42			FULL	U/S
19	4218.33		R		8	6			1	548.30																																				

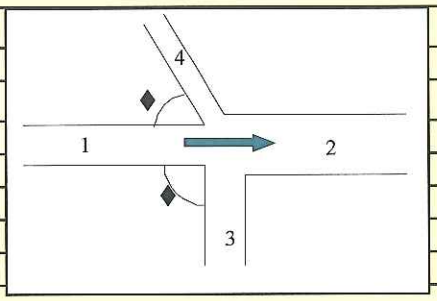
Junction Head Loss Calculation

Sta 231+28.97

Known

Diameter of Pipe 1 (in)	93.8
Diameter of Pipe 2 (in)	93.8
Diameter of Pipe 3 (in)	36.0
Diameter of Pipe 4 (in)*	
Flow in Pipe 1 (cfs)	872
Flow in Pipe 2 (cfs)	917
Flow in Pipe 3 (cfs)	45
Flow in Pipe 4 (cfs)*	
Angle of Pipe 3	90
Angle of Pipe 4*	

*Optional



Headloss is applied at Entrance to Junction

Insert Loss in Misc. Loss Column and leave Junction Loss Column Blank

Solve For

Area of Pipe 1 (ft^2)	47.99
Area of Pipe 2 (ft^2)	47.99
Area of Pipe 3 (ft^2)	7.07
Area of Pipe 4 (ft^2)	

Head Loss at Junction (ft) **1.09**

Equation Used:

Incorporates Pressure plus Momentum Laws

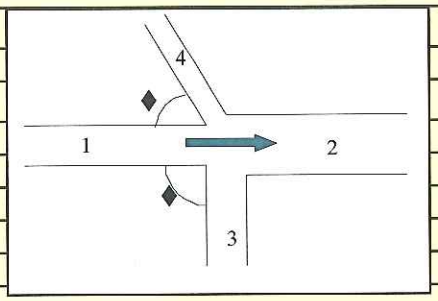
$$Hj=((Q_2^2/A_{2*g}-Q_1^2/A_{1*g}-Q_3^2*\cos(Ang3)/A_{3*g}-Q_4^2*\cos(Ang4)/A_{4*g})*2/(A_1+A_2)-D_1+D_2)$$

Junction Head Loss Calculation

Sta 221+25.16

Known

Diameter of Pipe 1 (in)	93.8
Diameter of Pipe 2 (in)	93.8
Diameter of Pipe 3 (in)	24.0
Diameter of Pipe 4 (in)*	42.0
Flow in Pipe 1 (cfs)	917
Flow in Pipe 2 (cfs)	1014
Flow in Pipe 3 (cfs)	17
Flow in Pipe 4 (cfs)*	80
Angle of Pipe 3	90
Angle of Pipe 4*	90



*Optional

Headloss is applied at Entrance to Junction

Insert Loss in Misc. Loss Column and leave Junction Loss Column Blank

Solve For

Area of Pipe 1 (ft^2)	47.99
Area of Pipe 2 (ft^2)	47.99
Area of Pipe 3 (ft^2)	3.14
Area of Pipe 4 (ft^2)	9.62

Head Loss at Junction (ft)	**2.53**

Equation Used:

Incorporates Pressure plus Momentum Laws

$$Hj=((Q_2^2/A_{2*g}-Q_1^2/A_{1*g}-Q_3^2*\cos(Ang3)/A_{3*g}-Q_4^2*\cos(Ang4)/A_{4*g})*2/(A_1+A_2)-D_1+D_2)$$

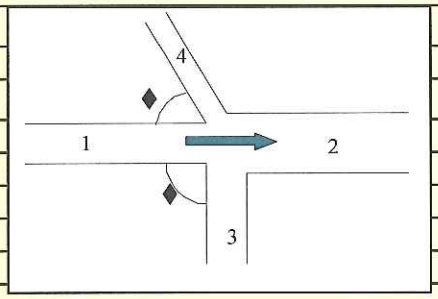
Junction Head Loss Calculation

Sta 213+44.08

Known

Diameter of Pipe 1 (in)	93.8
Diameter of Pipe 2 (in)	93.8
Diameter of Pipe 3 (in)	36.0
Diameter of Pipe 4 (in)*	42.0
Flow in Pipe 1 (cfs)	1014
Flow in Pipe 2 (cfs)	1088
Flow in Pipe 3 (cfs)	14
Flow in Pipe 4 (cfs)*	60
Angle of Pipe 3	90
Angle of Pipe 4*	60

*Optional



Headloss is applied at Entrance to Junction

Insert Loss in Misc. Loss Column and leave Junction Loss Column Blank

Solve For

Area of Pipe 1 (ft^2)	47.99
Area of Pipe 2 (ft^2)	47.99
Area of Pipe 3 (ft^2)	7.07
Area of Pipe 4 (ft^2)	9.62
Head Loss at Junction (ft)	**1.98**

Equation Used:

Incorporates Pressure plus Momentum Laws

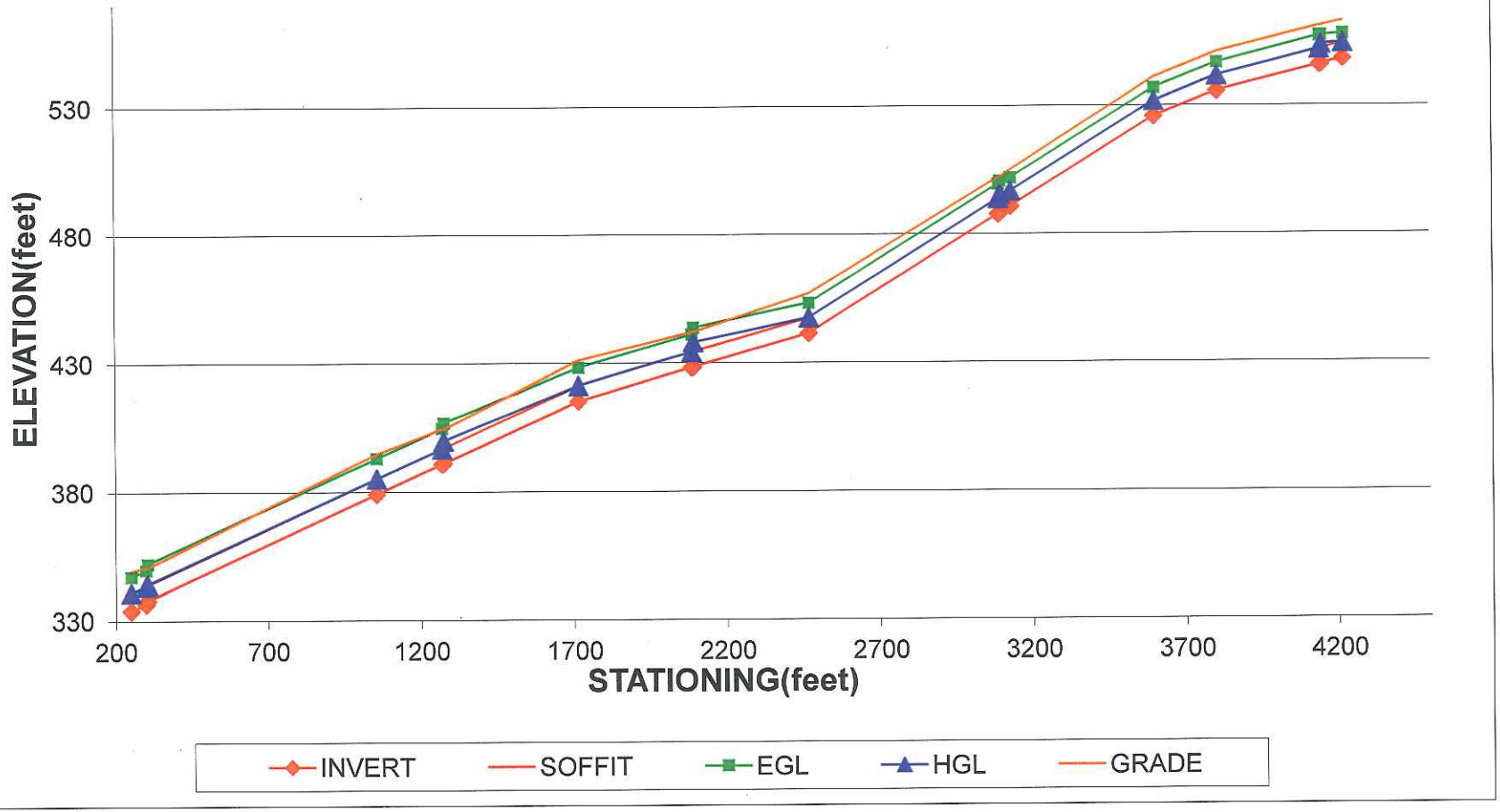
$$Hj=((Q_2^2/A_{2*g}-Q_1^2/A_{1*g}-Q_3^2*\cos(Ang3)/A_{3*g}-Q_4^2*\cos(Ang4)/A_{4*g})*2/(A_1+A_2)-D_1+D_2)$$

Summary of Results for FAR HILLS Ultimate Conditions

					(Optional)					HGL	Pressure Gasket
STATION	INVERT	SOFFIT	EGL	HGL	GRADE	LOCATION	DESCRIPTION	Freeboard	Cover	wrt FG	Required?
250.00	333.81	340.81	347.01	340.81	349.22		Connect to ex. RCB	8.41	8.41	OK	NO
298.75	336.43	343.43	349.63	343.43	350.50			7.07	7.07	OK	NO
303.75	337.79	343.79	352.04	344.06	350.50		Transition to ex. RCB	6.44	6.71	OK	NO
1054.78	379.20	385.20	393.18	385.20	394.86		Grade break	9.66	9.66	OK	NO
1268.64	390.90	396.90	404.88	396.90	404.55		36" lateral at Parcel T	7.65	7.65	OK	NO
1273.64	391.17	397.17	406.95	400.02	404.55		36" lateral at Parcel T	4.53	7.38	OK	NO
1715.08	415.30	421.30	428.23	421.30	431.00		Grade break	9.70	9.70	OK	NO
2085.36	428.19	434.19	441.12	434.19	442.00		36" pipe at Fox Hill	7.81	7.81	OK	NO
2090.36	428.36	434.36	443.72	438.05	442.00		36" pipe at Fox Hill	3.95	7.64	OK	NO
2468.68	441.50	447.50	453.17	447.50	456.90		Grade break	9.40	9.40	OK	NO
3089.16	487.73	493.73	499.39	493.73	502.00		36" to Village 25	8.27	8.27	OK	NO
3094.16	488.10	494.10	500.55	495.42	502.00		36" to Village 25	6.58	7.90	OK	NO
3128.98	490.70	496.70	501.82	496.70	505.00		Grade break	8.30	8.30	OK	NO
3599.06	525.80	531.80	536.92	531.80	541.00		Grade break	9.20	9.20	OK	NO
3805.26	535.70	541.70	546.82	541.70	551.00		Grade break	9.30	9.30	OK	NO
4141.62	545.96	551.96	557.08	551.96	560.90		66" at Sky Vista	8.94	8.94	OK	NO
4146.62	546.1115	552.11	557.24	553.83	560.90		66" at Sky Vista	7.07	8.79	OK	NO
4218.33	548.3	554.30	557.82	554.42	563.00		Inlet		8.70	OK	NO

HYDRAULIC ANALYSIS

FAR HILLS AVENUE

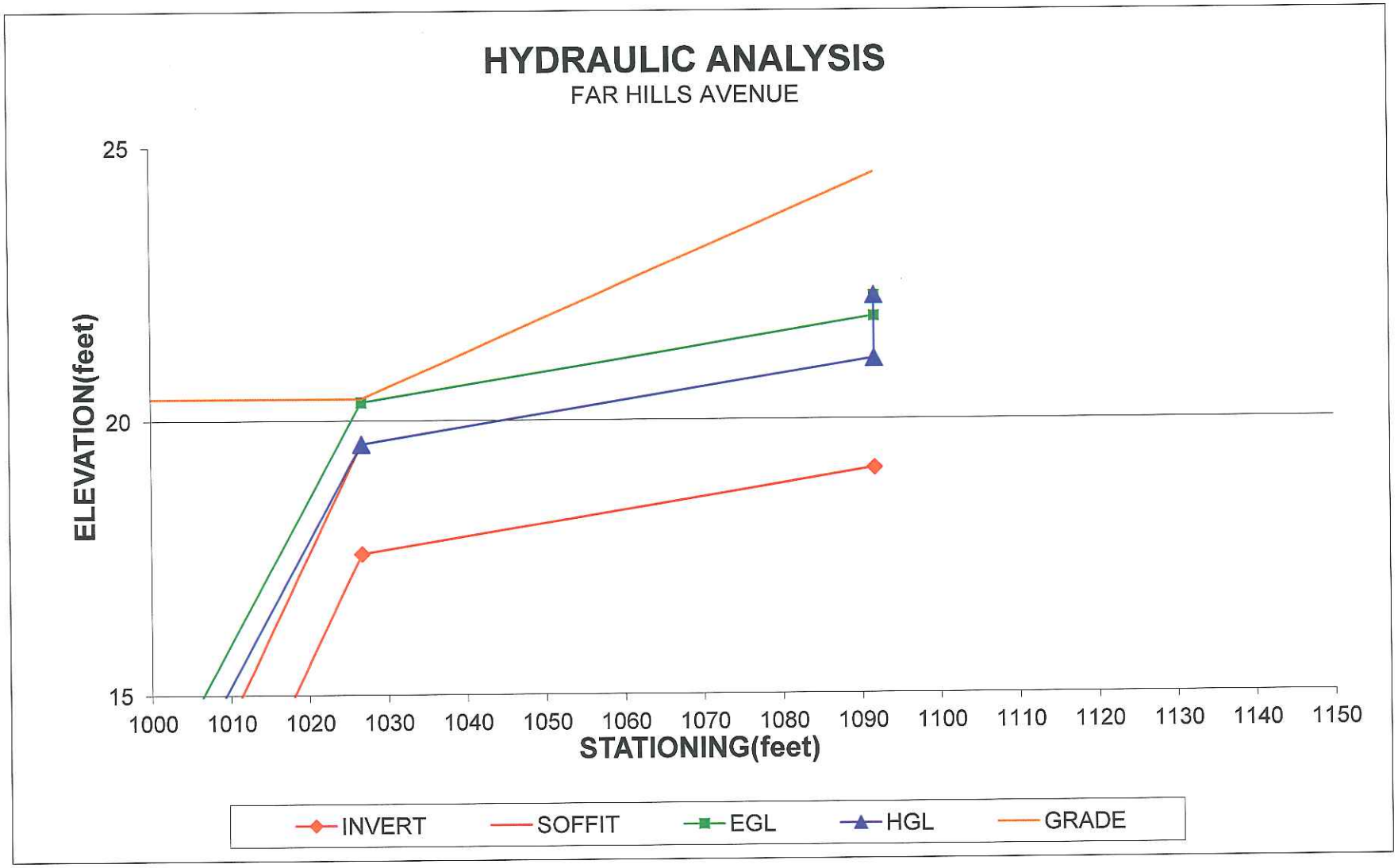


Storm Drain Hydraulics Calculations

G.C. Wallace, Inc. | Hydraulic Calculations for Station 215+74 North - FAR HILLS AVENUE Drop Inlet #6 Interim Condition | DATE: 05/17/13 | FILE: SF6.xls

Storm Drain Manning's n (typ=0.013)= 0.013 | Inlet Structure Type or K_i= K | Projecting Entrance:Square Edge (RCP)

	CONDUIT DATA										FLOW DATA									ENERGY LOSS DATA																					EGL & HGL				COMMENTS	
																				PIPE	TRANSITION																									
	STATION			PIPE	BOX		IRREG		#	INVERT ELEV	L	S	A	Φ	Q	V	V2/2g	Sf	Ave.	Frict	Frict	Manhole			Junction			Contraction/ Inlet			Expansion/Outlet			Bend					Misc			CONDUIT		TRANSITION		FULL/	
	FROM	TO	T/R	D	SPAN	RISE	AREA	HYD RAD		D/S	U/S									S_f	H_f	H_f	Θ	K_{mh}	H_{mh}	Θ	K_j	H_j	Inlet/	K_i	H_c	Θ	K_o	H_o	R_{bend}	Θ	K_b	H_b	H_m	Total		U/S	U/S	U/S	U/S	PART	CRTL
	(ft)	(ft)		(in)	(ft)	(ft)	(ft^2)	(ft)		(ft)	(ft)	(ft)	(%)	(ft^2)		(cfs)	(ft/s)	(ft)	(ft/ft)	(ft/ft)	(ft)	(ft)	(deg)		(ft)	(deg)		(ft)	Cont		(ft)	(deg)		(ft)	(ft)	(deg)		(ft)	(ft)	(ft)	(ft)	(ft)	EGL	HGL	EGL	HGL	FLOW	
1		1000.00		24							9.55																			Outlet K_o=		1.0												13.26	12.50		
2	1000.00	1026.75	R	24					1	9.55	17.58	26.8	30.02%	3.14	0.0049	22.0	7.00	0.76	0.0094	0.0094	0.25																		0.00	20.34	19.58			PART	D/S
3	1026.75	1091.75	R	24					1	17.58	19.11	65.0	2.35%	3.14	0.0049	22.0	7.00	0.76	0.0094	0.0094	0.61																		0.00	21.87	21.11			PART	D/S
4	1091.75	1091.75	R	24					1	19.11	19.11	0.0		3.14	0.0049	22.0	7.00	0.76	0.0094	0.0094	0.00									Ki=	0.5	0.38								0.38			22.25	22.25	FULL	U/S
5																																												
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HYDRAULIC ANALYSIS
FAR HILLS AVENUE
ELEVATION(feet)
25
20
15
1000
1010
1020
1030
1040
1050
1060
1070
1080
1090
1100
1110
1120
1130
1140
1150
STATIONING(feet)
INVERT
SOFFIT
EGL
HGL
GRADE

PIPE CAPACITY

42" at 203+41.25 - Pipe Capacity for Future Storm Drain Ext.

INPUT		
Pipe Diameter	42	in
Number of Pipes	1	
Slope	1.00	%
Manning's 'n'	0.013	

OUTPUT		
Flow "Q"	101	cfs
Velocity	10.50	ft/s

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS

PIPE CULVERT

42" at 203+41.25 - Inlet Control Calc for Future Catch Basin

INPUT		
Pipe Diameter	42	in
Number of Pipes	1	
Length	50.0	ft
Slope	1.00	%
Manning's 'n'	0.013	
Flow "Q"	83	cfs
Entrance Coef.	0.50	
Tail Water	0	ft

INLET		
Thin Edge	5.99	ft
Sq. Edge	5.29	ft
Beveled	4.81	ft
Tapered	4.59	ft.

OUTLET		
Head Water	4.74	ft
Critical	2.84	ft
Velocity	8.63	ft/s

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS

APPENDIX B

Reference Materials

RESPONSE TO COMMENTS
ON THE
TECHNICAL DRAINAGE STUDY
FOR
SUMMERLIN VILLAGE 23B
FAR HILLS AVENUE IMPROVEMENTS

62A.23.230

November 2006

Prepared For:

Howard Hughes Corporation, Inc.
a Delaware Corporation
10000 West Charleston Boulevard, Suite 200
Las Vegas, Nevada 89135
Phone: (702) 791-4300
Fax: (702) 791-4450

Prepared By:

G. C. Wallace, Inc.
1555 South Rainbow Boulevard
Las Vegas, Nevada 89146
Phone: (702) 804-2000
Fax: (702) 804-2297

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM				DATE: April 23, 2007
TO: **Land Development Services** Department of Public Works				FROM: Albert Sung, P.E. Flood Control Project Engineer Department of Public Works
SUBJECT:	Drainage Study for: **Summerlin Village 23B – Far Hills Avenue Improvements**			**COPIES TO:** G.C. Wallace, Inc.
Cross Streets:	Far Hills Ave from Desert Foothills to Sky Vista			Howard Hughes Corporation
File Number:	F:\Depot\DSMemos\DS4084C.doc			Bart Anderson, P.E., DevCo
Parcel Number:	137-22-000-015			CCRFCD
Zoning Action:	N/A			
FEMA Flood Zone	YES	NO	X	
Proposed Storm Drain	YES	NO	X	

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Transaction #
1st Submittal	10/5/2006	10/25/2006	Not Approved	$400.00	55426: $400
2nd Submittal	11/13/2006	12/1/2006	Conditional Approval	$400.00	57514: $400
CCRFCD	4/13/2007	4/23/2007	Concurrence	N/C	N/C
			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.

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

NOTE: Please be advised that all land surface area disturbances over 1 acre or any area adjacent to a water way must submit to the Nevada Division of Environmental Protection a "Notice of Intent" to discharge that certifies a stormwater pollution prevention plan has been developed and is maintained on site; for inclusion in the Stormwater General Permit No. NVR100000. A phased construction unit in a contiguous subdivision is considered under construction until all stripped or disturbed surface areas have been covered by paving, building construction or planting. For more information, including forms and applications see http://ndep.nv.gov/bwpc/storm01.htm or call (775) 687-9429.

END OF REMARKS

ays

T/R/S: T20S/R59E/22

AREA K-22

REGIONAL FLOOD CONTROL DISTRICT

Gale Wm. Fraser, II, P.E.
General Manager/Chief Engineer

BOARD OF DIRECTORS

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Clark County

January 2, 2007

Mr. Randy Fultz, P.E.
City of Las Vegas Public Works
731 S. 4th Street
Las Vegas, NV 89101

DISTRICT CONCURRENCE: SUMMERLIN VILLAGE 23B - FAR HILLS AVENUE IMPROVEMENTS (DS4084) (RFCD No. 06-7092)

Dear Mr. Fultz:

Clark County Regional Flood Control District (District) reviewed Technical Drainage Study dated December 6, 2006, and Addendum No. 1 dated December 6, 2006, for above-mentioned project as submitted by G. C. WALLACE, INC. In addition, District is in receipt of the Conditional Letter of Acceptance from City of Las Vegas Public Works dated December 5, 2006.

District concurs with acceptance of this Technical Drainage Study by City of Las Vegas Public Works.

District's review of this project was limited to issues of Regional Flood Control Significance as defined in *Uniform Regulations for the Control of Drainage*.

Please be aware that as additional information becomes available and/or restudies of Flood Insurance Studies are performed, information submitted by G. C. WALLACE, INC., may be superseded. Compliance with regulatory elements and design standards specified in *Uniform Regulations for the Control of Drainage* does not imply a guarantee that properties will be free from flooding or flood damage. The District, its officials, or employees assume no liability for information, data, or conclusions presented by consulting engineers. We, therefore, make no warranties, either expressed or implied, in conducting this review.

GALE WM. FRASER, II, P.E.
General Manager/Chief Engineer

BY: _____
Abigail Mayfena, P.E.
Associate Engineer

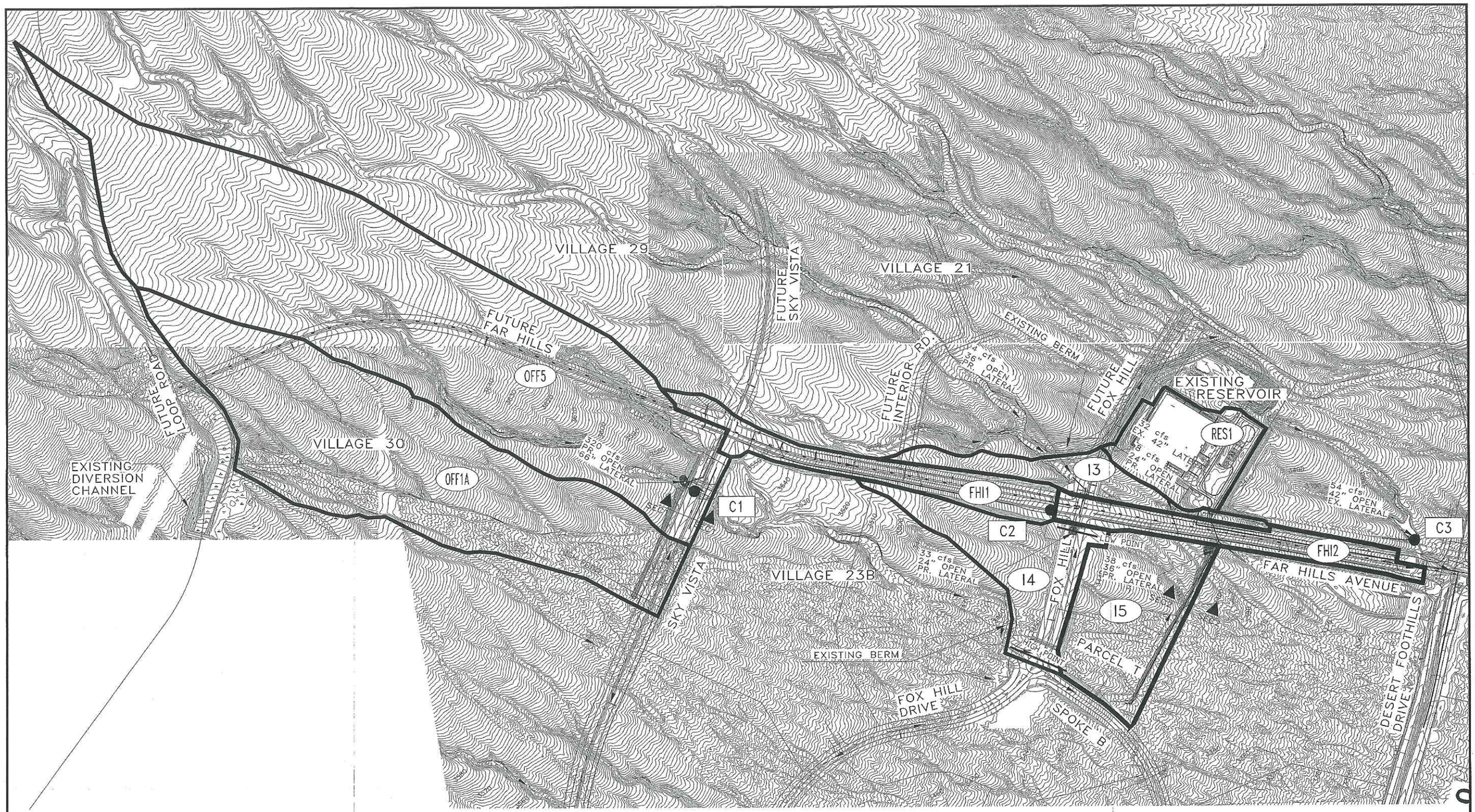
_____
Andrew R. Trelease, P.E., CFM
Principal Civil Engineer

AM:ART:jb

c: Randall K. Gremlich, P.E., G. C. WALLACE, INC.

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600 S. Grand Central Parkway, Suite 300 • Las Vegas, Nevada 89106-4511
(702) 455-3139 • FAX: (702) 455-3870
Website: *http://www.regionalflood.org*



INTERIM CONDITION			
Basin	Area (ac)	Q_{100} (cfs)	Q_{10} (cfs)
OFF1A	43.7	123	53
OFF5	74.2	196	84
C1	-	320	137
FHI1	8.2	26	14
C2	-	333	142
I3	5.7	18	8
FHI2	6.8	25	13
I4	10.7	33	15
RES1	8.5	32	16
I5	13.7	38	16
C3	-	453	195

LEGEND

- SUBBASIN BOUNDARY
- 14 — DRAINAGE SUBBASIN
- C2 — CONCENTRATION POINT
- FLOW DIRECTION

NORTH

SCALE 1" = 200 feet

200 0 200 400

SCALE FEET

SUMMERLIN VILLAGE 23B
FAR HILLS AVENUE IMPROVEMENT

FIGURE 5A
OFFSITE DRAINAGE MAP
PROPOSED/INTERIM CONDITIONS

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TECHNICAL DRAINAGE STUDY
FOR
SUMMERLIN VILLAGE 23B
FAR HILLS AVENUE
IMPROVEMENTS

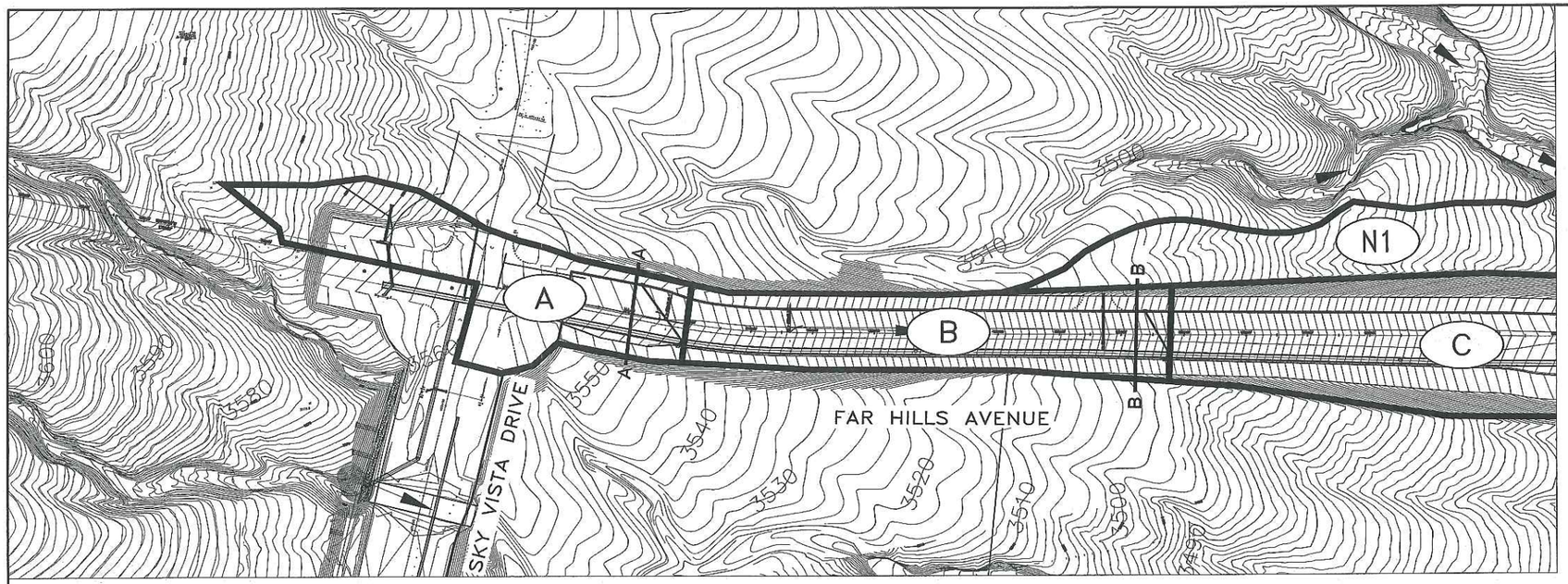
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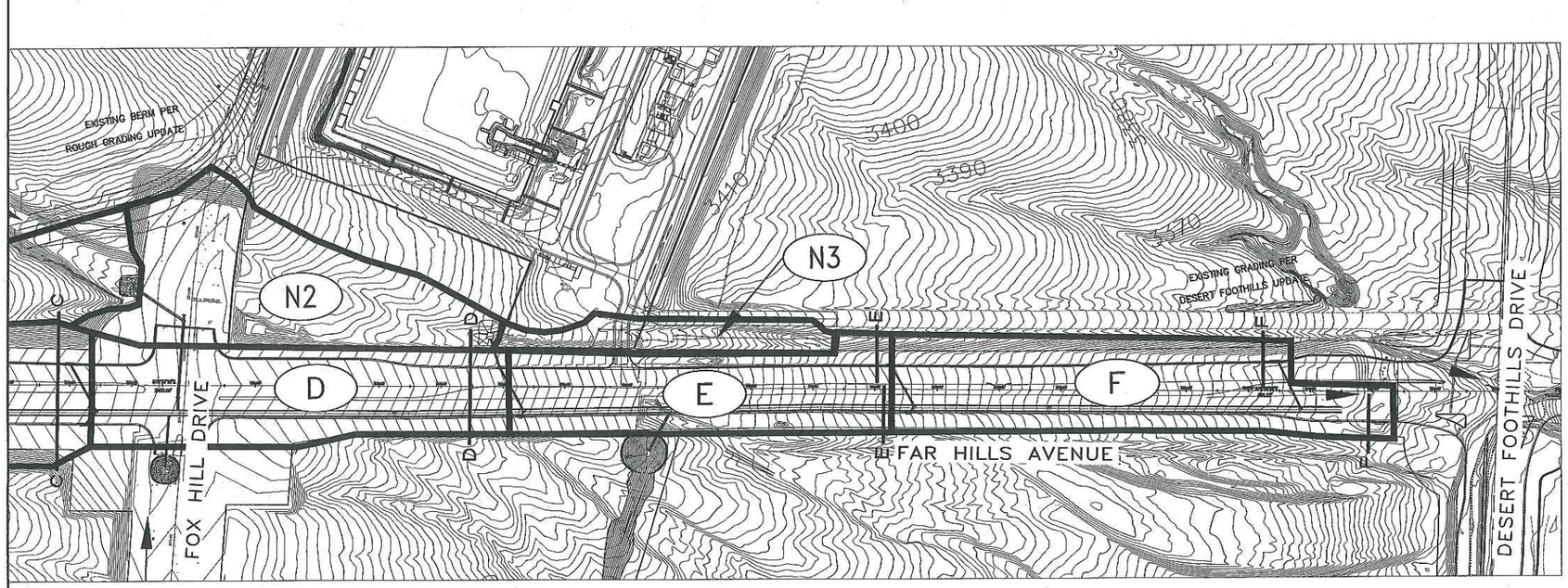
October 2006

Prepared for:

Howard Hughes Corporation, Inc.
a Delaware Corporation
10000 West Charleston Boulevard, Suite 200
Las Vegas, Nevada 89135
Phone: (702) 791-4300
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G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS





100 Year Runoff			
Basin	Area (ac)	Q_{100} (cfs)	Unit Flow (cfs/ac)
FHI1	8.2	28	3.43
FHI2	6.8	25	3.67
I3	5.7	18	3.15
Prorated Flows			
Basin	Area (ac)	Unit Flow (cfs/ac)	Q_{100} (cfs)
A	2.28	3.43	8
B	2.31	3.43	8
C	3.56	3.43	12
D	2.36	3.67	9
E	1.92	3.67	7
F	2.56	3.67	9
N1	2.58	3.15	8
N2	2.49	3.15	8
N3	0.64	3.15	2

10 Year Runoff			
Basin	Area (ac)	Q_{10} (cfs)	Unit Flow (cfs/ac)
FHI1	8.2	14	1.72
FHI2	6.8	13	1.91
I3	5.7	8	1.40
Prorated Flows			
Basin	Area (ac)	Unit Flow (cfs/ac)	Q_{10} (cfs)
A	2.28	1.72	4
B	2.31	1.72	4
C	3.56	1.72	6
D	2.36	1.91	5
E	1.92	1.91	4
F	2.56	1.91	5
N1	2.58	1.40	4
N2	2.49	1.40	3
N3	0.64	1.40	1

STREET FLOW (100 Year)					
Section	Q_{100} Total (cfs)	Slope (%)	Depth (ft)	Velocity (fps)	D*V
A-A	8	3.00	0.34	3.65	1.24
B-B	11	7.70	0.32	5.64	1.80
C-C	17	7.70	0.36	6.22	2.24
D-D	12	5.55	0.34	4.98	1.69
E-E North	8.5	5.55	0.38	5.49	2.09
E-E South	6.5	5.55	0.35	5.16	1.81
F-F North	6.5	5.55	0.35	5.16	1.81
F-F South	7	3.57	0.38	4.45	1.69

STREET FLOW (10 Year)					
Section	Q_{10} Total (cfs)	Slope (%)	Depth (ft)	Velocity (fps)	D*V
A-A	4	3.00	0.28	3.14	0.88
B-B	4	7.70	0.25	4.60	1.15
C-C	6	7.70	0.28	4.96	1.39
D-D	5	5.55	0.28	4.11	1.15
E-E North	3.5	5.55	0.30	4.49	1.35
E-E South	2.5	5.55	0.28	4.19	1.17
F-F North	2.5	5.55	0.28	4.19	1.17
F-F South	2.5	3.57	0.29	3.53	1.02

DROP INLET CALCULATIONS (100 Year)						
Section	Depth (ft)	Slope (%)	Q_{100} Total (cfs)	Q_{100} Intercept (cfs)	Q_{100} Bypass (cfs)	Description of DI
A-A	0.34	3.00	8	5	3	2 - 5' Type "CM"
B-B	0.32	7.70	11	6	5	2 - 5' Type "CM"
C-C	0.36	7.70	17	14	3	2 - 15' Type "CM"
D-D	0.34	5.55	12	6	6	2 - 5' Type "CM"
E-E North	0.38	5.55	8.5	6.5	2	1 - 12.5' Type "CM"
E-E South	0.35	5.55	6.5	4	2.5	1 - 7.5' Type "CM"
F-F North	0.35	5.55	6.5	6.5	0	1 - 15' Type "CM"
F-F South	0.38	3.57	7	7	0	1 - 15' Type "CM"

DROP INLET CALCULATIONS (10 Year)						
Section	Depth (ft)	Slope (%)	Q_{10} Total (cfs)	Q_{10} Intercept (cfs)	Q_{10} Bypass (cfs)	Description of DI
A-A	0.28	3.00	4	4	0	2 - 5' Type "CM"
B-B	0.25	7.70	4	4	0	2 - 5' Type "CM"
C-C	0.28	7.70	6	6	0	2 - 15' Type "CM"
D-D	0.28	5.55	5	4	1	2 - 5' Type "CM"
E-E North	0.30	5.55	3.5	3.5	0	1 - 12.5' Type "CM"
E-E South	0.28	5.55	2.5	2.5	0	1 - 7.5' Type "CM"
F-F North	0.28	5.55	2.5	2.5	0	1 - 15' Type "CM"
F-F South	0.29	3.57	2.5	2.5	0	1 - 15' Type "CM"

NORTH

100 0 100 200
SCALE FEET

LEGEND

- D — PRORATED SUBBASIN
- SUBBASIN BOUNDARY
- FLOW DIRECTION
- A — A STREET SECTION

DATE:
DESIGN: MM
DRAWN: MM
CHECK:
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE:10-05-06
PLOT TIME: 08:00:44

DATE	BY	DESCRIPTION

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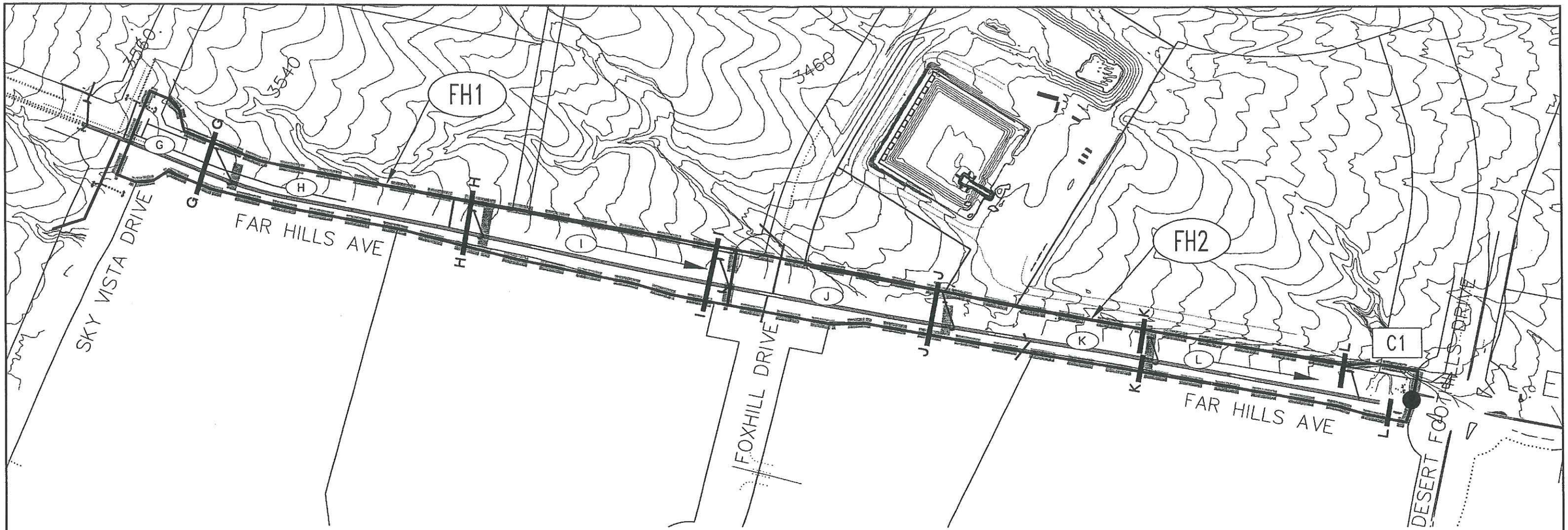
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FAR HILLS AVENUE IMPROVEMENTS
SUMMERLIN VILLAGE 23B

FIGURE 5B

INTERIM CONDITIONS
PRORATED FLOWS DRAINAGE MAP

DRAWING
FIG 5B
1 OF SHTS



SUMMARY OF ULTIMATE HEC-1 FLOWS

FH1	6.4	24	12
FH2	6.8	25	13
C1	-	47	24

PRORATED FLOW CALCULATIONS

BASIN	AREA (AC.)	Q100 (cfs)	UNIT FLOW (CFS/AC)
FH1	6.4	24	3.75
FH2	6.8	25	3.68

PRORATED SUBBASINS

BASIN	AREA (AC.)	UNIT FLOW (CFS/AC)	Q100 (cfs)
G	1.47	3.75	5
H	2.30	3.75	9
I	2.77	3.75	10
J	2.35	3.68	9
K	1.87	3.68	7
L	2.54	3.68	9

100-YEAR STREET FLOW CALCULATIONS

Section	Q100 (CFS)	SLOPE (%)	Depth (ft)	Velocity (fps)	DxV
G	5	3.0	0.30	3.3	0.99
H	10	7.7	0.32	5.5	1.76
I	14	7.7	0.34	6.0	2.04
J	10	5.6	0.33	4.9	1.62
K NORTH	5.5	5.6	0.34	5.0	1.70
K SOUTH	5.5	5.6	0.34	5.0	1.70
L NORTH	5.0	5.6	0.33	4.9	1.62
L SOUTH	6.5	3.6	0.37	4.4	1.63

100-YEAR DROP INLET CALCULATIONS

Section	Q100 TOTAL (CFS)	Q100 INTERCEPT (CFS)	Q100 BYPASS (CFS)	Description of Drop Inlets
G	5	4	1	2-5.0' TYPE CM
H	10	6	4	2-5.0' TYPE CM
I	14	13	1	2-15.0' TYPE CM
J	10	6	4	2-5.0' TYPE CM
K NORTH	5.5	5	0.5	1-12.5' TYPE CM
K SOUTH	5.5	3.5	2	1-7.5' TYPE CM
L NORTH	5.0	5	0	1-15.0' TYPE CM
L SOUTH	6.5	6.5	0	1-15.0' TYPE CM

LEGEND

- SUBBASIN BOUNDARY
- FH1 — SUBBASIN DESIGNATION
- PRORATED SUBBASIN BOUNDARY
- G — PRORATED SUBBASIN DESIGNATION
- FLOW DIRECTION
- J — J CROSS SECTION

NORTH

GRAPHIC SCALE

300 0 150 300

(IN FEET)

1 inch = 300 ft.

SUMMERLIN VILLAGE 23B

FAR HILLS AVENUE IMPROVMENTS

FIGURE 6B

ONSITE DRAINAGE MAP

ULTIMATE CONDITIONS

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UPDATE #3 TO THE TECHNICAL DRAINAGE STUDY FOR SUMMERLIN VILLAGE 23B DESERT FOOTHILLS DRIVE IMPROVEMENTS (ALTA DRIVE TO FAR HILLS AVENUE)

62023B-201

May 2013

Prepared for:

The Howard Hughes Company, LLC
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G. C. WALLACE, INC.

Writer's Contact Information:

702.804.2248

62023B-201

May 3, 2013

Albert Y. Sung, PE
Flood Control Project Manager
City of Las Vegas - Land Development Services
Department of Public Works
333 N. Rancho Drive
Las Vegas, Nevada 89106

Re: Technical Drainage Study for Summerlin Village 23B Desert Foothills Drive Improvements (Desert Foothills Drive to Far Hills Avenue)

Dear Mr. Sung:

The purpose of this letter is to serve as the third update to the Technical Drainage Study for the subject project. The *Technical Drainage Study for Desert Foothills Drive Improvements – Alta Drive to Far Hills* (hereinafter referred to as the Desert Foothills Study), was originally approved by the City of Las Vegas Public Works Department (CLV) on June 9, 2004, with concurrence from the Clark County Regional Flood Control District (CCRFCD) on July 7, 2004. The first update to the Desert Foothills Study was approved by the CLV on December 6, 2006 with concurrence from the CCRFCD on January 9, 2007. The second update to the Desert Foothills Study was approved by the CLV on October 17, 2012 with concurrence from the CCRFCD on October 30, 2012. A second update to the *Conceptual Drainage Study for Summerlin Village 23B* (hereinafter referred to as the Conceptual Study), was approved by the CLV on February 11, 2013. The Conceptual Study presented ultimate conditions onsite drainage patterns and major storm drain facilities within the exterior and interior roadways. Desert Foothills Drive lies on the eastern border of Village 23B and was included as part of the Conceptual Study. Changes to the storm drain, offsite grading and construction limits have occurred since approval of the Second Update to the Desert Foothills Study. However, the site plan and drainage design flow patterns for the roadway are consistent with the previously approved Desert Foothills and Conceptual Studies. The calculations and grading plans provided herewith serve to provide an interim and ultimate condition for Desert Foothills Drive and serve to update the previously approved study. Pertinent reference materials from the Desert Foothills Study have been included in Appendix C. The methodologies and calculations presented in this report are in compliance with the *CCRFCD Hydrologic Criteria and Drainage Design Manual* (Manual). Copies of the approval letters have been included in Appendix C. Descriptions of the changes are as follows:

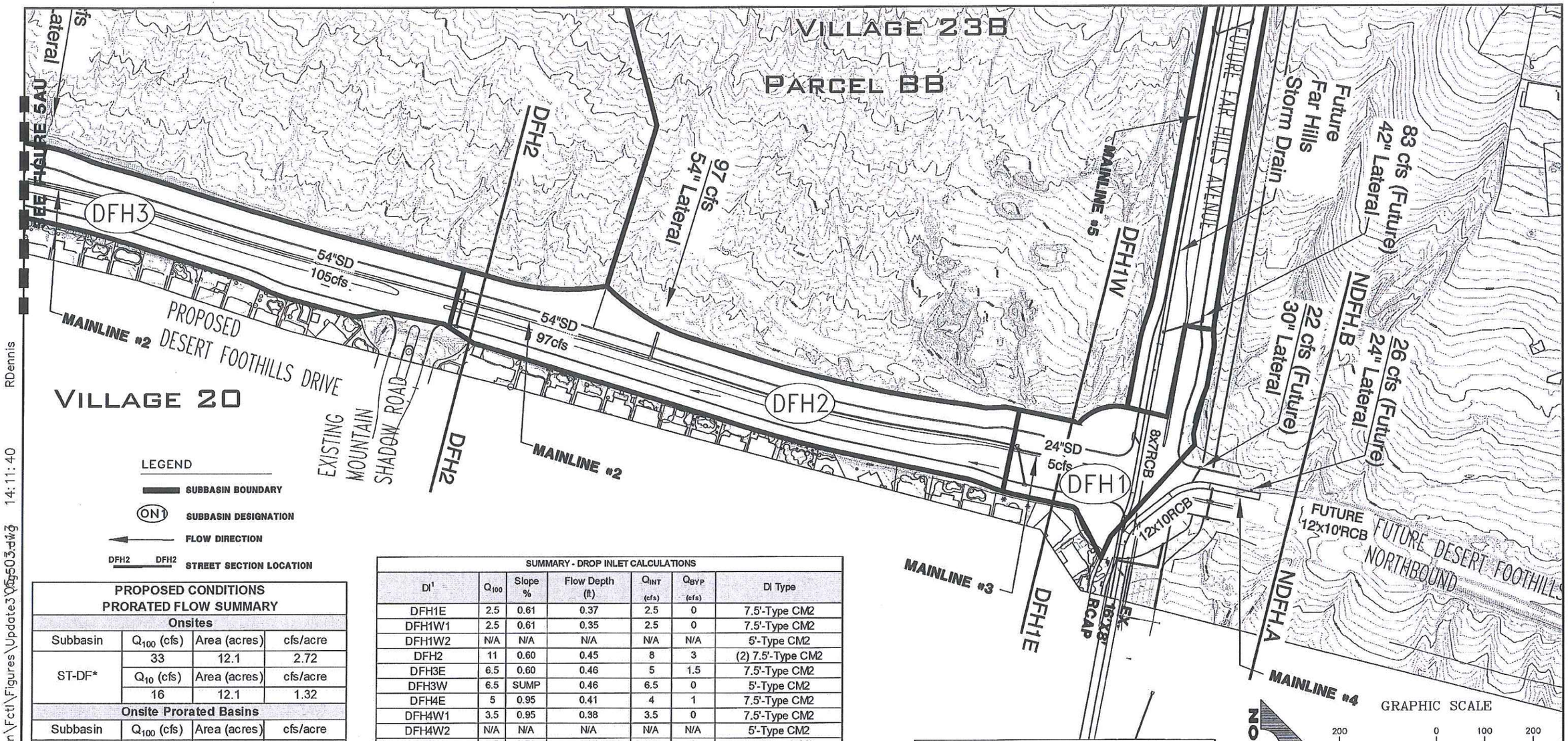
Per the *2006 Summerlin West Planning Area Flood Control Master Plan Update (*hereinafter referred to as the 2006 Summerlin West MP), the offsite area northwest of the intersection of Desert Foothills Drive and Far Hills Avenue will discharge into the Desert Foothills and Far Hills Strom drain systems during ultimate conditions. Future Developed Subbasins 21-16 (83 cfs) and 21-17 (22 cfs) as shown on the 2006 Summerlin West MP referenced Figure 11R, will discharge into the Desert Foothills and Far Hills Storm drain systems during ultimate conditions. Pertinent reference material

has been included in Appendix C. Previously, a 42-inch RCP extended north from Far Hills Avenue just west of the intersection with Desert Foothills Drive to collect interim and future offsite developed flows at Station 202+50. Due to existing utility conflicts and the 2006 Summerlin West MP, the 42-inch RCP has been removed with this package. The 42-inch RCP will be moved west to service the future 2006 Summerlin West MP Subbasin 21-16 and will be included with future Far Hills Avenue improvement packages. Since the 42-inch RCP has been moved, the offsite interim grading at this location was revised to direct flows east into the existing 12-foot wide by 10-foot high RCB. Since the interim conditions flows are less than the ultimate conditions flows at this location, the revised drainage pattern will not have an adverse impact on the proposed and existing downstream facilities or properties. Copies of the normal depth and inlet control calculations for the proposed ditch and sump have been provided in Appendix. Additional storm drain modeling has not been included since the impacts to the proposed 8-foot wide by 7-foot high RCB are minimal.

Additional changes have occurred at the intersection of Far Hills Avenue and Desert Foothills. The limits of pavement and curb have been reduced at the intersection. Since the pavement and back of curb has been reduced, the stubs servicing the future drop inlets will not be constructed with this package. The future drop inlets will be constructed with the future Far Hills Avenue roadway improvements. The stub located at Station 185+25 has been upsized from a 24-inch RCP to a 30-inch RCP to convey the referenced 2006 Summerlin West MP Subbasin 21-17 (22 cfs). Additional storm drain modeling has not been included since the impacts to the proposed 12-foot wide by 10-foot high RCB are minimal.

The 24-inch RCP Mainline #3 (5 cfs) has been revised to convey flows north into the Far Hills Avenue 8-foot wide by 7-foot high RCB storm drain system and reduce construction costs. The proposed flood control facilities for the Mainline #3 storm drain includes, storm drain laterals and drop inlets. Although the Mainline #3 has changed, the drop inlet sizes and locations remain unchanged. Additional storm drain modeling for the Far Hills Avenue Storm Drain has not been included since the impacts to the proposed 8-foot wide by 7-foot high RCB are minimal. The starting HGL of 36.00 feet for Mainline #3 has been referenced from the Desert Foothills Study Mainline #5. Pertinent reference material has been included in Appendix C. Additional storm drain modeling for the Desert Foothills Drive Mainline #1 has not been included since the impacts are minimal. The Standard Form 6 model for Mainline #2 has been updated due to the revised 54-inch RCP stub extension at Parcel BB. All proposed flood control facilities have been shown on Figures 5AU3 and 5BU3 and on the plans included herewith. Standard Form 6 models of the proposed Mainline #3 storm drain has been included in Appendix B. Please refer to Figures 5AU3 and 5BU3 for facility sizes, flowrates and drop inlet interception.

The offsite interim grading adjacent to Desert Foothills Drive has been revised and moved west of the roadway improvements to provide room for dry utility placement. The onsite storm drain and stub locations have been designed to convey the interim offsite flows generated west of the roadway. Facility names for the proposed berm/ditches in the calculations correspond with the tributary basin and the facility location. Flows tributary to the proposed ditches have been referenced and prorated from the Rough Grade Study and the Desert Foothills Study Interim Drainage Conditions Figure 6U3. Normal depth calculations for the ditches have been included in tables on Figure 6U3 and Appendix B. Pertinent reference materials have been included in Appendix C. The proposed ditches will have a minimum freeboard of 1 foot above the calculated water surface



PROPOSED CONDITIONS PRORATED FLOW SUMMARY			
Onsites			
Subbasin	Q_{100} (cfs)	Area (acres)	cfs/acre
ST-DF*	33	12.1	2.72
	Q_{10} (cfs)	Area (acres)	cfs/acre
	16	12.1	1.32
Onsite Prorated Basins			
Subbasin	Q_{100} (cfs)	Area (acres)	cfs/acre
DFH1	5	1.9	2.72
DFH2	11	4.0	2.72
DFH3	10	3.7	2.72
DFH4	7	2.7	2.72
DFH5	3	1.2	2.72
TOTAL**	**37**	**13.5**	**NA**
Subbasin	Q_{10} (cfs)	Area (acres)	cfs/acre
DFH1	2	1.9	1.32
DFH2	5	4.0	1.32
DFH3	5	3.7	1.32
DFH4	4	2.7	1.32
DFH5	2	1.2	1.32
TOTAL**	**18**	**13.5**	**NA**

*Referenced from Conceptual Study.
**Increase from add'l area at Far Hills and Antelope Ridge

SUMMARY - DROP INLET CALCULATIONS						
DI[1]	Q_{100}	Slope %	Flow Depth (ft)	Q_{INT} (cfs)	Q_{BYP} (cfs)	DI Type
DFH1E	2.5	0.61	0.37	2.5	0	7.5'-Type CM2
DFH1W1	2.5	0.61	0.35	2.5	0	7.5'-Type CM2
DFH1W2	N/A	N/A	N/A	N/A	N/A	5'-Type CM2
DFH2	11	0.60	0.45	8	3	(2) 7.5'-Type CM2
DFH3E	6.5	0.60	0.46	5	1.5	7.5'-Type CM2
DFH3W	6.5	SUMP	0.46	6.5	0	5'-Type CM2
DFH4E	5	0.95	0.41	4	1	7.5'-Type CM2
DFH4W1	3.5	0.95	0.38	3.5	0	7.5'-Type CM2
DFH4W2	N/A	N/A	N/A	N/A	N/A	5'-Type CM2
DFH5E	2.5	2.72	0.30	2.5	0	7.5'-Type CM2
DFH5W1	1.5	2.72	0.27	1.5	0	5'-Type CM2
DFH5W2	N/A	N/A	N/A	N/A	N/A	5'-Type CM2
ALTA8N[3]	1	2.50	0.24	1	0	5'-Type CM2
ALTA7S[3]	5	2.50	0.39	5	0	10'-Type CM2
FARHN	N/A	N/A	N/A	N/A	0	Future DI
FARHS[4]	7	N/A	N/A	7	0	15'-Type CM2
NDFHA[2]	3	1.70	0.35	3	0	10'-Type CM2
NDFHB2[2]	N/A	N/A	N/A	N/A	N/A	5'-Type CM2
NDFHB1[2]	3	1.70	0.35	3	0	10'-Type CM2
SB7[5]	9	3.00	N/A	9	0	(2) Future DIs

[1]See Figures 5AU & 5BU.
[2]Referenced from Desert Foothills Study.
[3]Assumed flows from future Alta Drive Study.
[4]Referenced flows and DI size from Far Hills Study.
[5]Assumed flows from future Antelope Ridge Drive Study.

ONSITE STREET FLOW CHARACTERISTICS ULTIMATE CONDITIONS					
Location[1]	Slope (%)	Q_{100} (cfs)	Depth (ft)	Velocity (ft/s)	D*V
DFH1W	0.61	2.5	0.35	1.67	0.6
DFH1E	0.61	2.5	0.37	1.77	0.7
DFH2	0.60	11	0.45	2.12	1.0
DFH3	0.60	13	0.48	2.21	1.1
DFH4W	0.95	3.5	0.38	2.27	0.9
DFH4E	0.95	5	0.41	2.47	1.0
DFH5E	2.72	2.5	0.30	3.16	0.9
DFH5W	2.72	1.5	0.27	2.99	0.8
ALTA8N	2.50	1	0.24	2.81	0.7
ALTA7S	2.50	5	0.39	3.92	1.5
NDFH.A[2]	1.70	3	0.35	3.00	1.1
NDFH.B[2]	1.70	3	0.35	3.00	1.1

[1] See Figures 5AU & 5BU.
[2] Referenced from the Desert Foothills Study.

SUMMERLIN VILLAGE 23B
DESERT FOOTHILLS AT FAR HILLS AVE

DRAINAGE MAP
FIGURE 5BU3
ULTIMATE CONDITIONS

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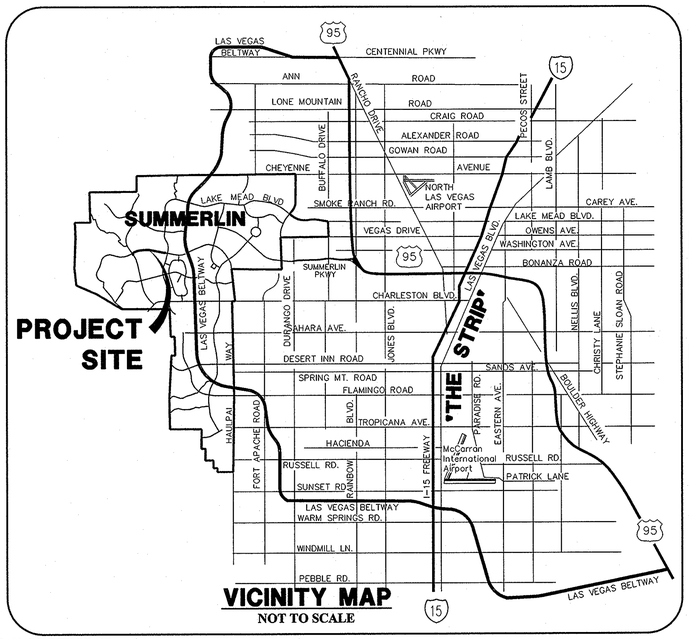
SUMMERLIN

SM

VILLAGE 23B
FAR HILLS AVENUE RCB IMPROVEMENTS
FROM SKY VISTA DRIVE TO DESERT FOOTHILLS DRIVE
2013

A.P.N. 137-22-000-015 (PORTION)

SID NO. 808 PROJECT 33



VICINITY MAP
NOT TO SCALE

OWNER/DEVELOPER

THE HOWARD HUGHES COMPANY, LLC
10801 W. CHARLESTON BLVD., 3RD FLOOR
LAS VEGAS, NEVADA 89146
OFFICE PHONE NO. (702) 791-4300
OFFICE FAX NO. (702) 791-4450

ENGINEER

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
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T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

THE HOWARD HUGHES COMPANY, LLC

KEVIN ORRICK — DATE
TITLE: VICE PRESIDENT

DRAINAGE CERTIFICATION

I CERTIFY THAT THE GRADING PLANS ARE IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY ON FILE AT THE CITY OF LAS VEGAS FOR THIS PROJECT.

JOSHUA V. JOHNSON P.E. 15789 — DATE 5/28/13

DAVID BOWERS, PE, PTOE, PE# 16736 — DATE
CITY ENGINEER
CITY OF LAS VEGAS, NEVADA

APPROVAL OF THESE PLANS IS LIMITED TO THOSE IMPROVEMENTS CONSTRUCTED IN THE DEDICATED RIGHTS-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 STANDARDS". 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.

CLV PLANNING DEPARTMENT

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

DOUG RANKIN, AICP, PLANNING MANAGER — DATE

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
PROJECT NO. 121802 DATE:
DRAWINGS

UTILITY/AGENCY APPROVALS

COX COMMUNICATIONS LAS VEGAS, INC. — DATE

CENTRAL TELEPHONE CO. DBA CENTURYLINK — DATE

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

NV ENERGY — DATE

NEVADA POWER COMPANY ACKNOWLEDGES THAT WE HAVE RECEIVED YOUR PLANS AND WILL PROVIDE SERVICE TO ALL ELECTRICAL NEEDS ASSOCIATED WITH THIS PROJECT. NEVADA POWER COMPANY RESERVES THE RIGHT TO ADDRESS ANY EXISTING OR FUTURE CONFLICTS ONCE THE FINAL DESIGN IS COMPLETED. THE NEW SERVICE AND THE RESOLUTION OF ANY CONFLICTS WILL BE ACCOMPLISHED PURSUANT TO THE NEVADA PUBLIC UTILITY COMMISSION'S RULES AND REGULATIONS.

NV ENERGY – TRANSMISSION ENGINEERING — DATE

SOUTHWEST GAS CORP. — DATE

ENGINEER – STATE OF NEVADA
JOSHUA V. JOHNSON
No. 15789
PROFESSIONAL
CIVIL
DATE: 5/28/13

REV	DATE	DESCRIPTION	DATE	AGEN. APP	DATE	CCW APP

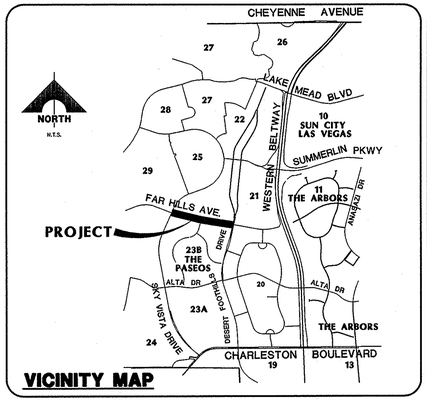
PROJECT NO. 62023B-227
DESIGN: DFK
DRAWN: DFK
CHECK: JLJ
PLOT DATE: 05-20-13
PLOT TIME: 14:07:50

G.C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
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LAS VEGAS · MESQUITE

F:\Projects\60\62023B-227\DWG\Production\J-227-C01.dwg
Humberto Franco-Rivas

THE HOWARD HUGHES COMPANY, LLC
VILLAGE 23B FAR HILLS AVE RCB IMPROVEMENTS
SKY VISTA DRIVE TO DESERT FOOTHILLS DRIVE
COVER SHEET

DRAWING
C1
1 OF 24 SHTS



VICINITY MAP

LEGEND

- PROPOSED UTILITIES
- EXISTING UTILITIES
- FUTURE UTILITIES
- SECTION LINE
- EASEMENT LINE
- RIGHT-OF-WAY LINE
- PROPERTY LINE
- CENTERLINE
- 100 YR HYDRAULIC GRADE LINE
- PROPOSED SEWER LINE W/MH
- 16" SS — EXISTING SEWER LINE W/MH
- 4" W — EXISTING WATER LINE & GATE VALVE
- 2" G — EXISTING GAS LINE
- 2-6" E — EXISTING UNDERGROUND ELECTRICAL
- CATV — EXISTING CABLE TV
- TEL — EXISTING TELEPHONE
- OHP — EXISTING OVERHEAD AND POWER POLES
- 6"x6" SD — EXISTING STORM DRAIN
- 8"x6" SD — FUTURE STORM DRAIN
- EXISTING SIDEWALK AND RAMP
- VIEW FENCE
- NEW ABANDONED PIPE
- EXISTING ABANDONMENT
- SAWCUT
- CONCRETE ENCASEMENT
- APPROXIMATE PAVEMENT RESTORATION
- TO BE ABANDONED PROFILE HATCH
- STUB & PLUG PIPE
- EDGE OF PAVEMENT

- 1 / CD1 — DRAWING NUMBER FOR DETAIL W/ REF. TO THE SHEET WHERE IT IS SHOWN
- BENCHMARK
- POTHOLE LOCATION
- BWV — SEWER BACK WATER VALVE
- EXISTING NPC RS-100
- EXISTING DROP INLET
- EXISTING GATE VALVE
- EXISTING WATER METER
- EXISTING TRAFFIC SIGNAL PULL BOX
- EXISTING TELEPHONE MANHOLE
- EXISTING POWER POLE
- EXISTING ELEC MARKER
- EXISTING TRAFFIC SIGNAL
- EXISTING FIRE HYDRANT
- EXISTING UTILITY BOX
- EXISTING METER BOX
- 3005 — PROPOSED CONTOUR
- (3005) — EXISTING CONTOUR
- 60.50 TC — SPOT ELEVATION
- (60.50) TC — EXISTING SPOT ELEVATION
- 1.00% — ROAD SLOPE
- EXISTING STREET LIGHT (STLT)
- TOP SLOPE
- 3:1 SLOPE UNLESS OTHERWISE NOTED ON PLAN
- TOE SLOPE
- RETAINING WALL
- EX. WATER VALVE

ABBREVIATIONS

A	AIR
AC	ASPHALT CONCRETE, ACRE
ACP	ASBESTOS CEMENT PIPE
ADD'L	ADDITIONAL
AP	ANGLE POINT
APN	ASSESSOR'S PARCEL NUMBER
APPROX	APPROXIMATELY
AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AVE	AVENUE
AVAR	AIR VALVE, AIR RELEASE ASSEMBLY
AWWA	AMERICAN WATER WORKS ASSOCIATION
BC	BACK OF CURB
BCR	BEGIN CURB RETURN
BLM	BUREAU OF LAND MANAGEMENT
BLVD	BOULEVARD
BM	BENCHMARK
BO	BLOW-OFF
BVCE	BEGIN VERTICAL CURVE ELEVATION
BVCS	BEGIN VERTICAL CURVE STATION
BW	BACK OF SIDEWALK
C, ℄	CENTERLINE
C&G	CURB AND GUTTER
CATV	UNDERGROUND CABLE TV
CCBM	CLARK COUNTY BENCH MARK
CCPW	CLARK COUNTY PUBLIC WORKS
CCTV	CLOSED-CIRCUIT TELEVISION
CCWRD	CLARK COUNTY WATER RECLAMATION DISTRICT
CFS	CUBIC FEET PER SECOND
CIP	CAPITAL IMPROVEMENTS PROJECT, CORRUGATED IRON PIPE
CIPM	CURED-IN-PLACE MANHOLE
CIPP	CURED-IN-PLACE PIPE
CIR	CIRCLE
CLR	CLEAR OR CLEARANCE
CLSM	CONTROLLED LOW STRENGTH MATERIAL
CLV	CITY OF LAS VEGAS
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNIT
CNLV	CITY OF NORTH LAS VEGAS
CO	CLEANOUT
CONC	CONCRETE
COND	CONDUIT
CONST	CONSTRUCT OR CONSTRUCTION
COORD	COORDINATE
COR	CORNER
CPEP	CORRUGATED POLYETHELYNE PIPE
CT	COURT
CY	CUBIC YARD(S)
Δ	DELTA
DBL	DOUBLE
DCS	DESIGN AND CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEM (LATEST EDITION)
DIA, ø	DIAMETER
DIP	DUCTILE IRON PIPE
DIST	DISTANCE
DR	DRIVE
DS	DOWNSPOUT
DTL	DETAIL
DW	DRIVEWAY
DWG	DRAWING
E	EAST
ECR	END CURB RETURN
ELE,ELEC	ELECTRICAL
ELEV	ELEVATION
EP, EOP	EDGE OF PAVEMENT
ESMT	EASEMENT
EVC	END VERTICAL CURVE
EXIST,EX	EXISTING
EXP	EXPANSION JOINT
FC	FACE OF CURB
FF, FFE	FINISH FLOOR ELEVATION
FG	FINISH GRADE
FH	FIRE HYDRANT
FL	FLOW LINE
FO	FIBER OPTIC
FRP	FIBERGLASS REINFORCED PLASTIC
FS	FINISH SURFACE
FT	FOOT/FEET
FTG	FOOTING
FUT	FUTURE
G	GAS
GA	GAGE, GUY ANCHOR
GB	GRADE BREAK
GND	GROUND
GRD	GRADE, GROUND
H, HGT	HEIGHT
HDWL	HEADWALL
HGL	HYDRAULIC GRADE LINE
HORIZ	HORIZONTAL
HP	HIGH POINT, HIGH PRESSURE
HPS	HIGH PRESSURE SODIUM
IBC	INTERNATIONAL BUILDING CODE
INV	INVERT
JT	JOINT
L	LENGTH
L, LT	LEFT
LF	LINEAR FEET
LIP	LIP OF GUTTER
LN	LANE
LP	LIGHT POLE
LSCP	LANDSCAPE
LVVWD	LAS VEGAS VALLEY WATER DISTRICT
MAX	MAXIMUM
MH	MANHOLE
MIN	MINIMUM
MLCP	MORTAR LINED AND COATED PIPE
MOD	MODIFY/MODIFIED
MON	MONUMENT
MPH	MILES PER HOUR
N	NORTH
NDOT	NEVADA DEPARTMENT OF TRANSPORTATION
NO	NUMBER
NOSHA	STATE OF NEVADA OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
NPC	NEVADA POWER COMPANY
NTS	NOT TO SCALE
OC	ON CENTER
OHC	OVERHEAD COX COMMUNICATION
OHP	OVERHEAD POWER LINE
P	POWER LINE
PB	PULL BOX
PBS	PLANTMIX BITUMINOUS SURFACE
PC	POINT OF CURVE, PRESSURE CLASS
PCC	POINT OF COMPOUND CURVE
PE	PROJECT ENGINEER OR POLYETHYLENE
PED	PEDESTRIAN
PGL	PROFILE GRADE LINE
PH	POTHOLE
PI	POINT OF INTERSECTION
PIV	POST INDICATOR VALVE
PL	PROPERTY LINE
PLCP	POLYURETHANE LINED AND COATED STEEL PIPE
PMF	PAVEMENT MARKING FILM
POB	POINT OF BEGINNING
POC	POINT ON CURVE
P.O.C.	POINT OF CONNECTION
POT	POINT ON TANGENT
PP	POWER POLE
PROP	PROPOSED
PRC	POINT OF REVERSE CURVE
PRVC	POINT OF REVERSE VERTICAL CURVE
PSI	POUNDS PER SQUARE INCH
PT	POINT OF TANGENCY
PVC	POLYVINYL CHLORIDE
PVI	POINT OF VERTICAL INTERSECTION
PVMT	PAVEMENT
PZ	PRESSURE ZONE
R, RAD	RADIAL, RADIUS
R, RT	RIGHT
RCB	REINFORCED CONCRETE BOX
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
RDWY	ROADWAY
REC	RECTANGULAR
REF	REFERENCE
REINF	REINFORCED
REQD	REQUIRED
RIM	TOP OF RIM ELEVATION
RND	ROUND
ROW,R/W	RIGHT OF WAY
RP	RADIUS POINT
RPM	RAISED PAVEMENT MARKERS
RSGV	RESILIENT SEAT GATE VALVE
S	SEWER, SOUTH
SCH	SCHEDULE
SD	STORM DRAIN
SDMH	STORM DRAIN MANHOLE
SECT	SECTION
SF	SQUARE FOOT/FEET
SHLDR	SHOULDER
SHT	SHEET
SL	STREET LIGHT
SP	SERVICE POINT
SQ	SQUARE
SR	SEWER RECLAIM MAIN
SS	SANITARY SEWER
SSMH	SANITARY SEWER MANHOLE
STA	STATION
ST	STREET
STD	STANDARD
STL	STEEL
STRUCT	STRUCTURE
SVZ	SIGHT VISIBILITY ZONE
SW	SIDEWALK
SWG	SOUTHWEST GAS
T	TELEPHONE OR TOP
TAN	TANGENT
TB	TOP OF BERM
TC	TOP OF CURB
TCE	TEMPORARY CONSTRUCTION ESMT
TEL,TELE	TELEPHONE
TEMP	TEMPORARY
TF	TOP OF FOOTING
TG	TOP OF GRATE
TMH	TOP OF MANHOLE
TOP	TOP OF PIPE
TP	TELEPHONE POLE
TRANS	TRANSITION
TRW	TOP OF RETAINING WALL
TS	TRAFFIC SIGNAL
TW	TOP OF WALL
TYP,(TYP)	TYPICAL
UDACS	UNIFORM DESIGN AND CONSTRUCTION STANDARDS FOR WATER DISTRIBUTION SYSTEMS (LATEST EDITION)
UG	UNDERGROUND
USD	UNIFORM STD. DRAWINGS FOR PUBLIC WORKS' CONSTRUCTION OFF-SITE IMPROVEMENTS CLARK COUNTY AREA, NEVADA (LATEST EDITION)
UT	UNDERGROUND TELEPHONE
VAR	VARIABLE/VARIES
VC	VERTICAL CURVE
VCP	VITRIFIED CLAY PIPE
VERT	VERTICAL
VG	VALLEY GUTTER
VOL	VOLUME
W	WATER, WEST
W/	WITH
WS	WATER SUPPLY
WT	WEIGHT
WTR	WATER
XING	CROSSING
YD	YARD, YARD DRAIN

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6	R2	REMOVAL SHEET 2
7	R3	REMOVAL SHEET 3
8	G1	GRADING PLAN 1
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11	P1	PLAN AND PROFILE 1
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15	P5	PLAN AND PROFILE 5
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17	P7	PLAN AND PROFILE 7
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LOCATION

LYING WITHIN SECTIONS 34 TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA.

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

BENCHMARK

DESCRIPTION	NAVD 88 DATUM	NAVD 88 DATUM
RIVET AND PLATE IN TOP OF CURB @ SOUTHEAST CORNER OF FAR HILLS AVENUE AND DESERT FOOTHILLS DRIVE	3335.36 (FEET)	1016.620 (METERS)
CLV BM No. 7LV09 27E4		

ENGINEER - STATE OF NEVADA
No. 15557
PROFESSIONAL
JOSHUA M. HANSON
Exp. 06/30/2015
CIVIL
DATE: 5/28/13

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	CCW APP

PROJECT NO. 62023B-227
DESIGN: DFK
DRAWN: DFK
CHECK: JLJ
PLOT DATE: 05-20-13
PLOT TIME: 14:07:59

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LAS VEGAS
F:\Projects\600\62023B-227\DWG\Production\2-227-C02.dwg
Humberto Fronco-Rivas

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 23B FAR HILLS AVE RCB IMPROVEMENTS
SKY VISTA DRIVE TO DESERT FOOTHILLS DRIVE

PROJECT DATA SHEET

DRAWING
C2
2 OF 24 SHTS

CITY OF LAS VEGAS SEWER NOTES

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

REVISED 04/15/10

FLOOD ZONE NOTE

NO PORTION OF THE SITE FALLS WITHIN A FEMA DESIGNATED SPECIAL FLOOD HAZARD AREA. SITE LOCATED ON PANEL 32003C2150E, DATED SEPTEMBER 27, 2002, TO REFLECT A LOMR. THIS PANEL SHOWS THAT THE PROJECT IS LOCATED WITHIN A ZONE X AND NOT LOCATED WITHIN A FEMA DESIGNATED 100-YEAR ZONE A OR SPECIAL FLOOD HAZARD AREA.

DEVIATION FROM STANDARD

NONE

LAS VEGAS VALLEY WATER DISTRICT (LVVWD) STANDARD NOTES

LVVWD PROJECT # _____

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).
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 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 SHALL BE FILLED, DISINFECTED, PRESSURE TESTED, FLUSHED, FILLED, AND AN ACCEPTABLE WATER SAMPLE OBTAINED, PRIOR TO CONNECTION TO THE LVVWD DISTRIBUTION SYSTEM.
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 LISTED ON THE LVVWD PRE-APPROVED MATERIALS AND MANUFACTURER'S LISTING FOR NEW FACILITIES, LATEST REVISION, OR SPECIFICALLY APPROVED ON THESE PLANS.
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 OWNER'S 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 IT'S 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.

CITY OF LAS VEGAS GRADING NOTES

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

	HORIZONTAL	VERTICAL	COMPACTION
A. PAVEMENT AREA SUBGRADE	0.1'±	+0.0' TO -0.1'	SEE SOILS REPORT
B. ENGINEERED FILL	0.5'±	+0.1' TO -0.1'	SEE SOILS REPORT

    COMPACTION TESTING WILL BE PERFORMED BY THE OWNER OR HIS REPRESENTATIVE. COMPACTION SHALL COMPLY WITH THE REQUIREMENTS OF THE ENGINEER.
7. ALL CUT AND FILL SLOPES SHALL BE PROTECTED UNTIL EFFECTIVE EROSION CONTROL HAS BEEN ESTABLISHED.
8. THE USE OF POTABLE WATER WITHOUT A SPECIAL PERMIT FOR BUILDING OR CONSTRUCTION PURPOSES INCLUDING CONSOLIDATION OF BACKFILL OR DUST CONTROL IS PROHIBITED. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS FOR CONSTRUCTION WATER.
9. THE CONTRACTOR SHALL MAINTAIN THE STREETS, SIDEWALKS AND ALL OTHER PUBLIC RIGHT- OF-WAY IN A CLEAN, SAFE AND USABLE CONDITION. ALL SPILLS OF SOIL, ROCK OR CONSTRUCTION DEBRIS SHALL BE PROMPTLY REMOVED FROM THE PUBLICLY OWNED PROPERTY DURING CONSTRUCTION AND UPON COMPLETION OF THE PROJECT. ALL ADJACENT PROPERTY, PRIVATE OR PUBLIC SHALL BE MAINTAINED IN A CLEAN, SAFE AND USABLE CONDITION.
10. IN THE EVENT THAT ANY TEMPORARY CONSTRUCTION ITEM IS REQUIRED THAT IS NOT SHOWN ON THESE DRAWINGS, SUCH ITEM SHALL BE PROVIDED, AS DIRECTED BY THE CITY ENGINEER, AT NO EXPENSE TO THE CITY OF LAS VEGAS. TEMPORARY CONSTRUCTION INCLUDES DITCHES, BERMS, ROAD SIGNS AND BARRICADES, ETC.

REVISED 4/15/10

STORMWATER RUNOFF MANAGEMENT

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

CITY OF LAS VEGAS STREETLIGHT NOTES

1. ALL STREET LIGHTING INSTALLATIONS SHALL BE IN ACCORDANCE WITH THE STREET LIGHTING PLANS, THE "UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA", LATEST REVISION, AND THE "UNIFORM STANDARD DRAWINGS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA", LATEST REVISION, AND ANY ADOPTED SPECIAL AREA STANDARDS.
2. NO DEVIATION OF STREET LIGHT, PULL BOX, CONDUITS (ETC.) LOCATIONS SHALL BE PERMITTED WITHOUT WRITTEN APPROVAL OF THE TRAFFIC ENGINEER AND THE CITY ENGINEER.
3. ALL EXISTING STREET LIGHTING SHALL REMAIN OPERATIONAL DURING CONSTRUCTION.
4. ALL STREET LIGHTING CONDUITS STUB SHALL HAVE AT LEAST ONE GREEN #8 THW WIRE INSTALLED, AS TRACER WIRE. WHEN "EMPTY" CONDUIT IS COMPLETELY INSTALLED FROM PB TO PB, IT SHALL HAVE MINIMUM OF 2 #4 AND 1 #8 THW WIRE WITH THE ENDS TAPED OR "SAFE OFF" PRIOR TO FINAL INSPECTION.
5. ANY STRUCTURE SUCH AS BLOCK WALLS, CHAIN LINK FENCES, RETAINING WALLS, ETC., SHALL LEAVE A MINIMUM CLEARANCE IN ACCORDANCE WITH THE USD NO. 320A.
6. AS-BUILT DRAWINGS SHALL BE SUPPLIED TO THE TEFO PRIOR TO ANY PRE-FINAL INSPECTION. THE AS-BUILT DRAWING NEEDS TO BE STAMPED AS-BUILT AND SIGNED BY THE PREPARER.
7. SERVICE POINT SHALL BE COORDINATED WITH NV ENERGY COMPANY, AND WHEREVER POSSIBLE, BE LOCATED NEAR THE CENTER OF THE CIRCUIT. SERVICE POINTS SHALL BE SHOWN ON THE PLANS.
8. IT SHALL BE ASSUMED THAT IN THE ABSENCE OF AN EXISTING, WORKABLE CIRCUIT TO ATTACH TO, ALL INSTALLATIONS SHALL REQUIRE A NEW SERVICE FOR OPERATION OF THE CIRCUIT.
9. WHEREVER THERE IS AN OVERHEAD UTILITY THAT MAY CONFLICT WITH THE INSTALLATION OF STREET LIGHTING CIRCUITS AND/OR POLES, THESE CONFLICTS MUST BE RESOLVED BETWEEN THE DEVELOPER AND THE UTILITIES INVOLVED, AT NO EXPENSE TO THE CITY OF LAS VEGAS, BEFORE STREETLIGHT BASES ARE INSTALLED.
10. THE CONTRACTOR SHALL FURNISH COMPLETE SERVICE TO TRANSFORMERS AND CONTROL SYSTEMS IF REQUIRED ON PLANS.
11. THE DEVELOPER/OWNER WILL BE REQUIRED TO SUPPLY POWER TO ALL NEW PUBLIC STREET LIGHTS INSTALLED UNDER THIS DESIGN PRIOR TO BOND RELEASE OR PROJECT COMPLETION. THE DEVELOPER/OWNER WILL BE RESPONSIBLE FOR ALL ITEMS ASSOCIATED WITH THE INSTALLATION, CONSTRUCTION, ENERGIZING, MAINTENANCE AND OPERATIONAL COST OF SAID STREET LIGHTS PRIOR TO PROJECT COMPLETION. REFER TO THE PLAN FOR ANY NEW SERVICE REQUIREMENTS. THE TRANSFER OF OWNERSHIP FROM THE DEVELOPER/OWNER TO THE CITY OF LAS VEGAS FOR ALL NEW PUBLIC STREET LIGHT/S AND/OR SERVICE/S INSTALLED UNDER THIS PLAN WILL BE IN CONJUNCTION WITH THIS PROJECT COMPLETION. COORDINATE ALL MAINTENANCE AND OPERATIONAL TRANSFERS WITH THE CITY OF LAS VEGAS TRAFFIC ENGINEERING DEPARTMENT (TEFO) AT (702) 229-6331.

REVISED 04/15/10

CITY OF LAS VEGAS TRAFFIC NOTES

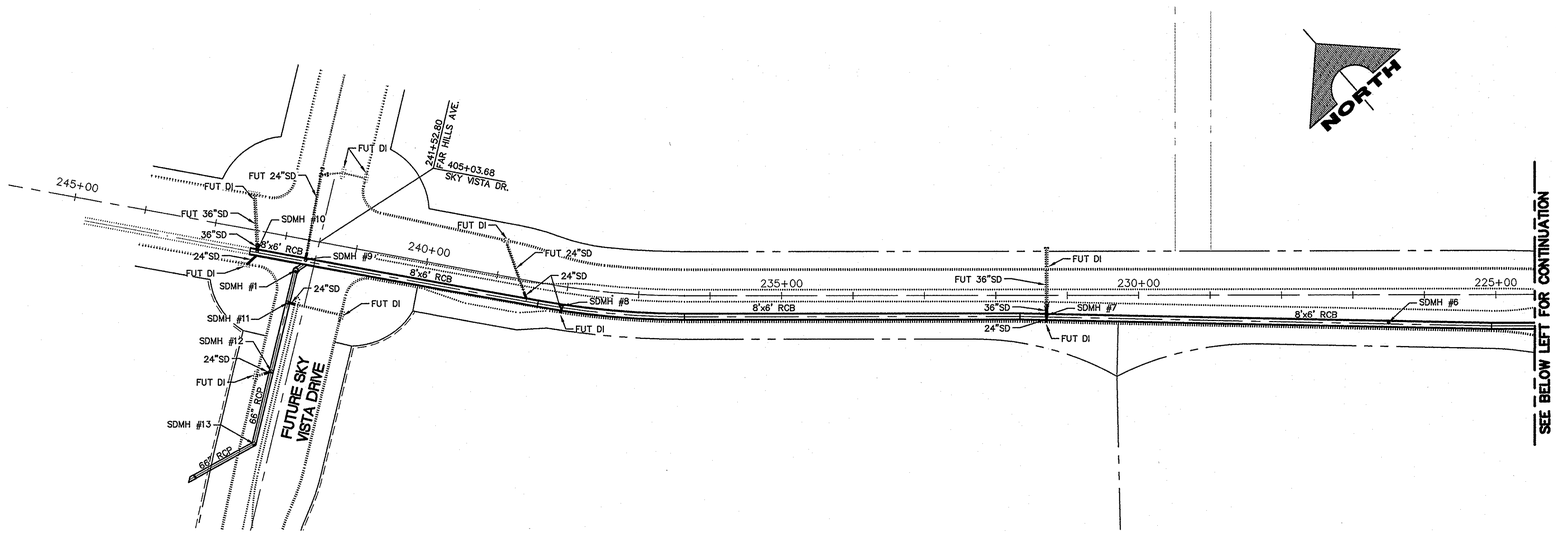
1. ALL CONSTRUCTION SIGNING, BARRICADING, AND TRAFFIC DELINEATION SHALL CONFORM TO THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", LATEST EDITION.
2. THE STREET SIGN CONTRACTOR SHALL OBTAIN STREET NAMES AND BLOCK NUMBERING FROM THE PLANNING DEPARTMENT PRIOR TO CONSTRUCTION.
3. BEFORE ANY WORK IS STARTED IN THE RIGHT-OF-WAY, THE CONTRACTOR SHALL INSTALL ALL ADVANCED WARNING SIGNS FOR THE CONSTRUCTION ZONE. THE CONTRACTOR SHALL INSTALL TEMPORARY STOP SIGNS AT ALL NEW STREET ENCROACHMENTS AND EXISTING CITY STREETS WHERE WARRANTED IMMEDIATELY AFTER FIRST GRADING WORK IS ACCOMPLISHED, AND SHALL MAINTAIN SAID SIGNS UNTIL PERMANENT SIGNS ARE INSTALLED.
4. WHEN A DESIGNATED "SAFE ROUTE TO SCHOOL" IS ENCROACHED UPON BY A CONSTRUCTION WORK ZONE AND PUBLIC WORKS STAFF IDENTIFIES A NEED FOR STUDENTS TO BE ASSISTED IN THE SAFE CROSSING THROUGH THAT WORK ZONE, THE CONTRACTOR SHALL BE REQUIRED TO PROVIDE A QUALIFIED "CROSSING GUARD". THE GUARD SHALL BE PRESENT FOR THE FULL DURATION OF TIME THAT CHILDREN ARE LIKELY TO BE PRESENT.
5. IF THE IMPROVEMENTS NECESSITATE THE OBLITERATION, TEMPORARY OBSTRUCTION, TEMPORARY REMOVAL OR RELOCATION OF ANY EXISTING TRAFFIC PAVEMENT MARKING, SUCH PAVEMENT MARKING SHALL BE RESTORED OR REPLACED WITH LIKE MATERIALS TO THE SATISFACTION OF THE CITY TRAFFIC ENGINEER.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING ALL PERMANENT SIGNS SHOWN ON THE PLANS. ALL NEW SIGNS SHALL BE FABRICATED WITH DIAMOND GRADE VIP CLASS 6 REFLECTIVE SHEETING OR APPROVED EQUAL. ALL NEW TRAFFIC SIGNS, EXCEPT STREET NAME AND SCHOOL SPEED LIMIT SIGNS, SHALL HAVE 3M SERIES 1160 OR APPROVED EQUIVALENT ANTI-GRAFFITI PROTECTIVE OVERLAY FILM; SCHOOL ZONE SIGNS SHALL HAVE 3M SERIES 1150 ANTI-GRAFFITI PROTECTIVE OVERLAY FILM. STREET NAME SIGNS SHALL CONFORM IN THEIR ENTIRETY TO CURRENT CITY STANDARDS. ALL OTHER SIGNS SHALL BE STANDARD SIZE UNLESS OTHERWISE SPECIFIED ON THE PLANS. ALL SIGN POSTS SHALL BE INSTALLED IN ACCORDANCE WITH THE CURRENT CITY STANDARDS.
7. WHEN A PROPOSED STREET LIGHT STANDARD IS LOCATED WITHIN FIVE (5') FEET OF ANY PROPOSED SIGN SHOWN ON THE PLANS TO BE MOUNTED ON A SIGNPOST, THE SIGN SHALL BE MOUNTED ON THE STREET LIGHT STANDARD AND THE SIGNPOST SHALL BE ELIMINATED.
8. ALL PERMANENT TRAFFIC CONTROL DEVICES CALLED FOR HEREON SHALL BE IN PLACE AND IN FINAL POSITION PRIOR TO ALLOWING ANY PUBLIC TRAFFIC ONTO THE PORTIONS OF THE ROAD(S) BEING IMPROVED HERE UNDER, REGARDLESS OF THE STATUS OF COMPLETION OF PAVING OR OTHER OFF-SITE IMPROVEMENTS CALLED FOR BY THESE PLANS.
9. STREET SIGNS AND 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 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. 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.

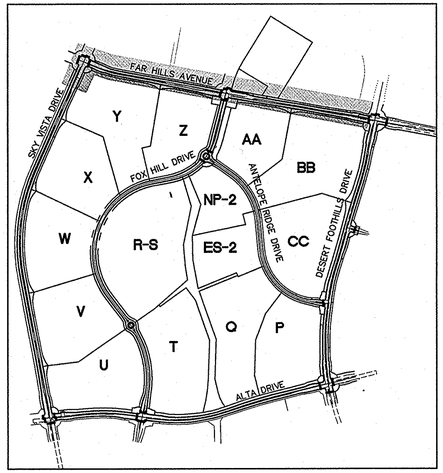
REVISED 4/15/10

LAS VEGAS FIRE AND RESCUE GENERAL NOTES

1. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH THE THE LAS VEGAS FIRE AND RESCUE ADOPTED FIRE CODE ORDINANCE #6124 FOR HYDRANT SPECIFICATIONS AND HYDRANT INSTALLATION SPECIFICATIONS.
2. AUTHORIZED FIRE HYDRANTS ARE AS FOLLOWS:

    KENNEDY - GUARDIAN MODELS K81A AND K81D
    MUELLER - SUPER CENTURION 250 MODEL A-423
    CLOW - MEDALLION MODEL F-2546LVD
    TROY VALVE - PATRIOT MODEL PT810ON NEVADA HYDRANT
    U.S. PIPE - METROFLOW/M-03
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.
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.
5. TO IDENTIFY THE FIRE HYDRANT LOCATIONS, THE CONTRACTOR SHALL PLACE A BLUE REFLECTIVE MARKER AT THE CENTER LINE OF STREET ADJACENT TO THE FIRE HYDRANTS.
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.
7. ALL ON-SITE UNDERGROUND WATER MAINS AND MATERIALS SHALL BE U.L. LISTED, AWWA APPROVED AND SHALL BE RATED FOR THE APPROPRIATE WORKING PRESSURE.
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 THE LAS VEGAS FIRE AND RESCUE, FIRE PREVENTION DIVISION.
9. PRIVATE FIRE HYDRANTS SHALL BE PAINTED RED.
10. PREVENTION DIVISION TO VERIFY AVAILABILITY OF THE REQUIRED FIRE FLOW..
11. FIRE HYDRANTS SPACING SHALL BE AS FOLLOWS:
    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 1,000 FT SPACING TO PROVIDE FOR TRANSPORTATION HAZARDS. WHERE STREETS ARE PROVIDED WITH MEDIAN DIVIDERS OR HAVE FOUR 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 FEET ON AN ALTERNATING BASIS.
13. NO FIRE HYDRANTS SHALL BE LOCATED WITHIN THE RADIUS OF A CUL-DE-SAC OR WITHIN 20 FEET OF THE PERIMETER OF THE RADIUS OF THE CUL-DE-SAC.
14. NO FIRE HYDRANTS SHALL BE LOCATED WITHIN 6 FEET OF ANY CURB RETURN, DRIVEWAY, POWER POLE, STREETLIGHT OR ANY OTHER OBSTRUCTION.
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.
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.
17. THE MAXIMUM DISTANCE FROM A FIRE HYDRANT TO THE END OF A DEAD-END STREET SHALL NOT EXCEED 200 FT.
18. TWO SOURCES OF SUPPLY ARE REQUIRED WHENEVER THERE ARE 4 OR MORE FIRE HYDRANTS/SPRINKLER LEAD-INS INSTALLED ON A SINGLE SYSTEM. SECTIONAL CONTROL VALVES SHALL BE INSTALLED SO THAT NO MORE THAN 2 FIRE HYDRANTS CAN BE OUT OF SERVICE DUE TO A BREAK IN A WATER MAIN.
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.
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%
21. THE TURNING RADIUS OF THE FIRE APPARATUS ACCESS ROADS SHALL BE NO LESS THAN 52 FT OUTSIDE AND 28 FT INSIDE TURNING RADIUS.
22. VERTICAL CLEARANCE OF ALL FIRE APPARATUS ACCESS ROADS SHALL BE NOT LESS THAN 13 FT 6 INS.
23. FIRE DEPARTMENT ACCESS ROADS IN ALL RESIDENTIAL DEVELOPMENTS (EXCEPT APARTMENT BUILDINGS) SHALL HAVE A MINIMUM UNOBSTRUCTED WIDTH OF NOT LESS THAN 36 FT FLOW LINE TO THE FLOW LINE (THIS WIDTH MAY BE REDUCED TO 24 FT IF ALL BUILDINGS FRONTING THE STREET ARE SPRINKLERED) FOR MAIN RESIDENTIAL STREETS, WITH PARKING PERMITTED ON BOTH SIDES OF THE STREET. PRIVATE DRIVE AISLES, DRIVEWAYS, ETC. SHALL BE ALLOWED TO BE REDUCED TO A MINIMUM WIDTH OF 24 FT WIDE FLOW LINE TO THE FLOW LINE WHEN SERVING NO MORE THAN 6 RESIDENCES, AND WHEN ON STREET PARKING IS DISALLOWED.
24. ALL FIRE APPARATUS ACCESS ROADS IN COMMERCIAL DEVELOPMENTS AND APARTMENT COMPLEXES SHALL HAVE A MINIMUM UNOBSTRUCTED WIDTH OF NOT LESS THAN 24 FT (FLOW LINE TO THE FLOW LINE), PROVIDED NO PARKING IS ALLOWED ON EITHER SIDE; 32 FT (FLOW LINE TO THE FLOW LINE), WITH PARALLEL PARKING ON ONE SIDE; AND 36 FT (FLOW LINE TO THE FLOW LINE), IF PARALLEL PARKING IS ALLOWED ON BOTH SIDES. THESE WIDTHS MAY BE REDUCED TO 24 FT IF SPRINKLERED.
25. 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 INCREASE TO 250 FT IF THE BUILDING IS SPRINKLERED.
26. APPROVED SECONDARY FIRE APPARATUS ACCESS SHALL BE PROVIDED FOR 100 OR MORE DWELLING UNITS, ROAD(S) WITH DEAD-ENDS OR WITH A SINGLE POINT OF ACCESS IN EXCESS OF 600 FT, AND FOR ALL COMMERCIAL, INDUSTRIAL, AND MULTI-FAMILY RESIDENTIAL DEVELOPMENTS.
27. ALL DEAD-END FIRE APPARATUS ACCESS ROADS AND/OR FIRE LANES, PUBLIC OR PRIVATE, IN EXCESS OF 150 FT IN LENGTH SHALL BE PROVIDED WITH AN APPROVED TUR





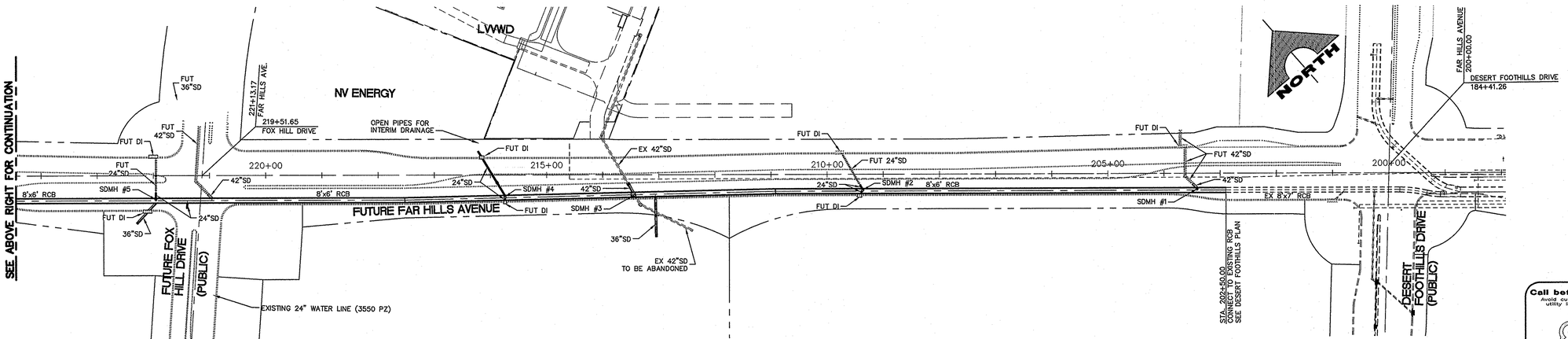
KEY MAP

NOT TO SCALE

100 0 100 200

SCALE FEET

SCALE: 1"=100'



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BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

BENCHMARK

DESCRIPTION	NAVD 88 DATUM	NAVD 88 DATUM
RIVET AND PLATE IN TOP OF CURB @ SOUTHEAST CORNER OF FAR HILLS AVENUE AND DESERT FOOTHILLS DRIVE CLV BM No. 7LV09 27E4	3335.36 (FEET)	1016.620 (METERS)

H #–

CLV #

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ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD - LAS VEGAS, NV 89146
T: 702.804.2000 - FAX: 702.804.2001 - GCWALLACE.COM
LAS VEGAS - MESQUITE

PROJECT NO. 62023B-227

DESIGN: DFK
DRAWN: DFK
CHECK: JLJ
PLOT DATE: 08-09-13
PLOT TIME: 13:57:42

LAS VEGAS

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Daniel Kelley

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP	DATE

ENGINEER - STATE OF NEVADA
JOSHUA L. JOHNSON
No. 15787
PROFESSIONAL
DATE: 8/9/13

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 23B FAR HILLS AVE RCB IMPROVEMENTS
SKY VISTA DRIVE TO DESERT FOOTHILLS DRIVE

MASTER STORM DRAIN PLAN

DRAWING
MU1
4 OF 24 SHTS

FUTURE VILLAGE 25

NORTH

FUT ℄

FAR HILLS AVE ℄

244+92.80 FAR HILLS AVE.

405+03.68 SKY VISTA DR.

245+00

405+00

FUTURE FAR HILLS AVENUE

FUTURE SKY VISTA DRIVE

EX 60' WIDE RIPRAP CHANNEL
REMOVE RIPRAP AND RESTORE
GRADE TO ORIGINAL CONDITIONS

VILLAGE 23B
PARCEL Y

FOR CONTINUATION
SEE DWG R2

END REMOVAL OF RIPRAP
AND RESTORATION TO
ORIGINAL CONDITION. REFER
TO GRADING PLANS

SKY VISTA DR ℄

400+00

FOR EX GRADING, SEE: "VILLAGE 23B
DESERT FOOTHILLS DRIVE IMPROVEMENTS"
CLV #107V5921

EX 10' WIDE RIPRAP CHANNEL
PROTECT IN PLACE

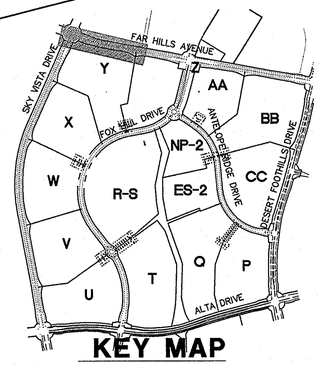
SCALE 50 0 50 100 FEET

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KEY MAP
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STATE OF NEVADA
PROFESSIONAL ENGINEER
JOSHUA J. HOUSTON
No. 15808
DATE: 5-15-13

REV	DATE	DESCRIPTION	DATE	ARCH APP	DATE	CIVIL APP

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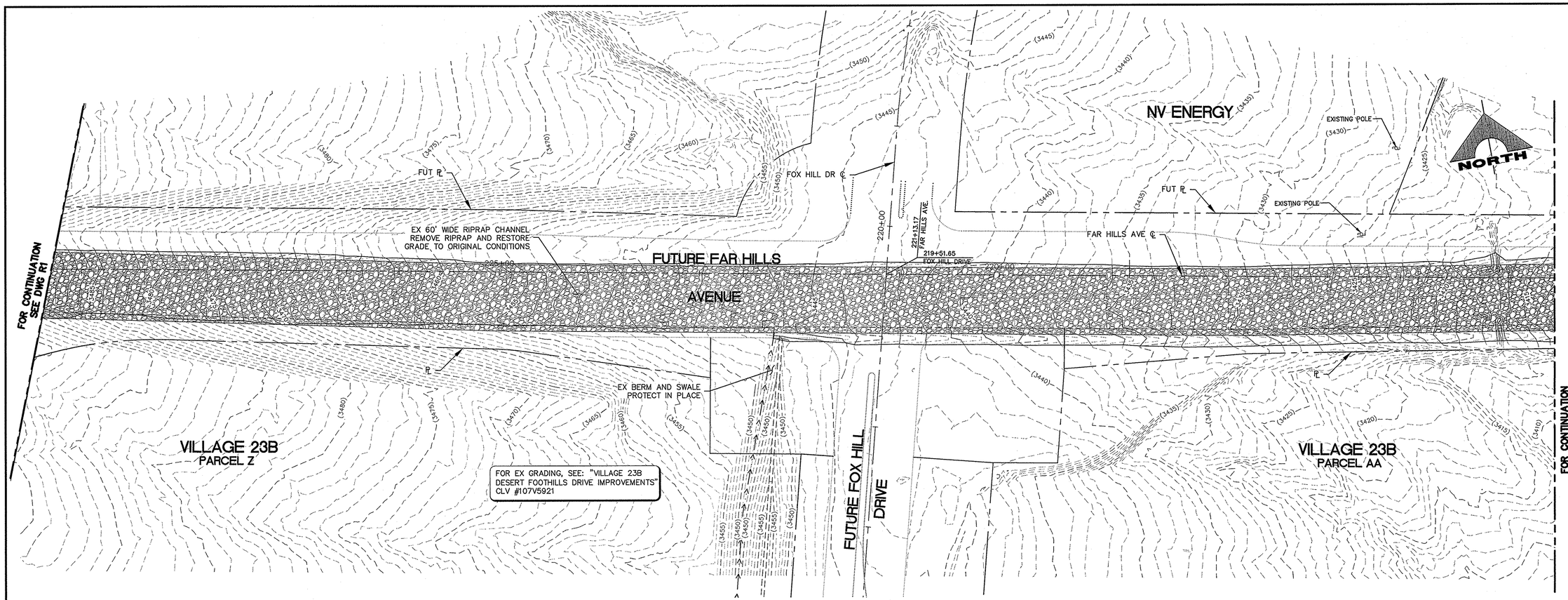
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Humberto Franco-Rivas

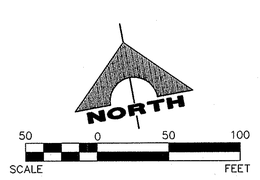
THE HOWARD HUGHES COMPANY, LLC

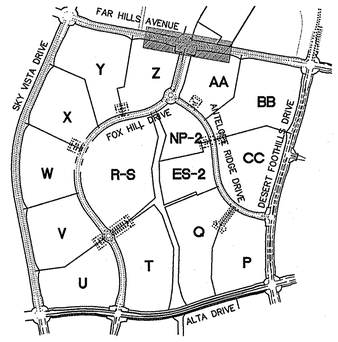
VILLAGE 23B FAR HILLS AVE RCB IMPROVEMENTS
SKY VISTA DRIVE TO DESERT FOOTHILLS DRIVE

REMOVAL SHEET 1

DRAWING
R1
5 OF 24 SHTS







KEY MAP

NOT TO SCALE

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

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ENGINEER - STATE OF NEVADA
No. 15681
PROFESSIONAL
DANIEL F. KOSICH
Vol. 46
DATE: 5/20/13

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

PROJECT NO. 62023B-227
DESIGN: DFK
DRAWN: DFK
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PLOT DATE: 05-20-13
PLOT TIME: 14:08:38

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F:\Projects\600\62023B-227\DWG\Production\4A-227-REMOVAL.dwg
Humberto Franco-Rivas

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 23B FAR HILLS AVE RCB IMPROVEMENTS
SKY VISTA DRIVE TO DESERT FOOTHILLS DRIVE

REMOVAL SHEET 2

DRAWING
R2
6 OF 24 SHTS

FOR CONTINUATION SEE DWG R2

FUTURE VILLAGE 21

EXISTING AC PAVEMENT ACCESS ROAD PROTECT IN PLACE

EX BERM AND SWALE PROTECT IN PLACE

EX RIPRAP SUMP PROTECT IN PLACE

EXISTING SUMP PER DESERT FOOTHILLS DRIVE IMPROVEMENT PLANS

FOR EX GRADING, SEE: "VILLAGE 23B DESERT FOOTHILLS DRIVE IMPROVEMENTS" CLV #107V5921

EXISTING POLE

FUT P/L

EX 60' WIDE RIPRAP CHANNEL REMOVE RIPRAP AND RESTORE GRADE TO ORIGINAL CONDITIONS

FUTURE FAR HILLS AVENUE

185+00

200+00

DESERT FOOTHILLS DRIVE
1844+41.26

FAR HILLS AVENUE
200+00.00

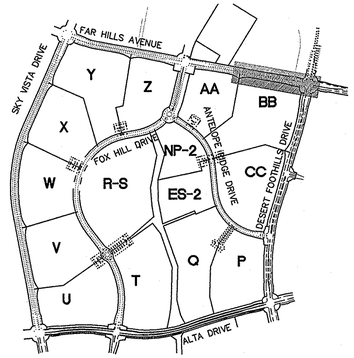
EX RIPRAP SUMP REMOVE RIPRAP AND RESTORE GRADE TO ORIGINAL CONDITIONS

VILLAGE 23B
PARCEL BB

DESERT FOOTHILLS DRIVE

EXISTING BERM/SWALE PER DESERT FOOTHILLS DRIVE IMPROVEMENT PLANS

NORTH



KEY MAP
NOT TO SCALE

NORTH
50 0 50 100
SCALE FEET

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BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

BENCHMARK

DESCRIPTION	NAVD 88 DATUM	NAVD 88 DATUM
RIVET AND PLATE IN TOP OF CURB @ SOUTHEAST CORNER OF FAR HILLS AVENUE AND DESERT FOOTHILLS DRIVE	3335.36 (FEET)	1016.620 (METERS)
CLV BM No. 7LV09 27E4		

ENGINEER – STATE OF NEVADA – JOSHUA L. JOHNSON – 7040 – PROFESSIONAL ENGINEER – 12/31/13 – DATE:

DESCRIPTION	DATE	AGEN APP	DATE	CCW APP

REV	DATE	DESCRIPTION

PROJECT NO. 62023B-227
DESIGN: DFK
DRAWN: DFK
CHECK: JLJ
PLOT DATE: 05-20-13
PLOT TIME: 14:08:50

G.C. WALLACE COMPANIES
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THE HOWARD HUGHES COMPANY, LLC

VILLAGE 23B FAR HILLS AVE RCB IMPROVEMENTS
SKY VISTA DRIVE TO DESERT FOOTHILLS DRIVE

REMOVAL SHEET 3

DRAWING
R3
7 OF 24 SHTS

FUTURE VILLAGE 23B

FUTURE FAR HILLS AVENUE

FUTURE SKY VISTA DRIVE

VILLAGE 23B
PARCEL Y

241+52.80 FAR HILLS AVE
405+03.68 SKY VISTA DR.

245+00 244+00 243+00 242+00 241+00 240+00 239+00 238+00 237+00 236+00 235+00 234+00 233+00 232+00 231+00 230+00

24" RCP SD
36" RCP SD
8'x6' RCB
66" RCP SD
84" RCP SD

FILL
60.00 FL
58.46 FL
48.00 INV

PROPOSED V-DITCH
3:1 SIDE SLOPES

TEMPORARY RIPRAP SUMP
TEMPORARY BERM

EXISTING 10' WIDE RIPRAP CHANNEL TO REMAIN

FOR CONTINUATION SEE DWG G2

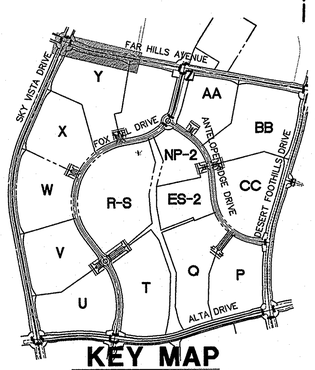
NORTH
50 0 50 100
SCALE FEET

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

BENCHMARK

DESCRIPTION	NAVD 88 DATUM	NAVD 88 DATUM
RIVET AND PLATE IN TOP OF CURB @ SOUTHEAST CORNER OF FAR HILLS AVENUE AND DESERT FOOTHILLS DRIVE CLV BM No. 7LV09 27E4	3335.36 (FEET)	1016.620 (METERS)



KEY MAP
NOT TO SCALE

H #-
CLV #

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ENGINEER - STATE OF NEVADA - JOSHUA L. JOHNSON - No. 15789 - PROFESSIONAL - Exp. 06/30/13 - CIVIL

REV	DATE	DESCRIPTION	DRAWN APP	DATE	CGW APP	DATE

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CHECK: JLJ
PLOT DATE: 06-05-13
PLOT TIME: 13:58:11

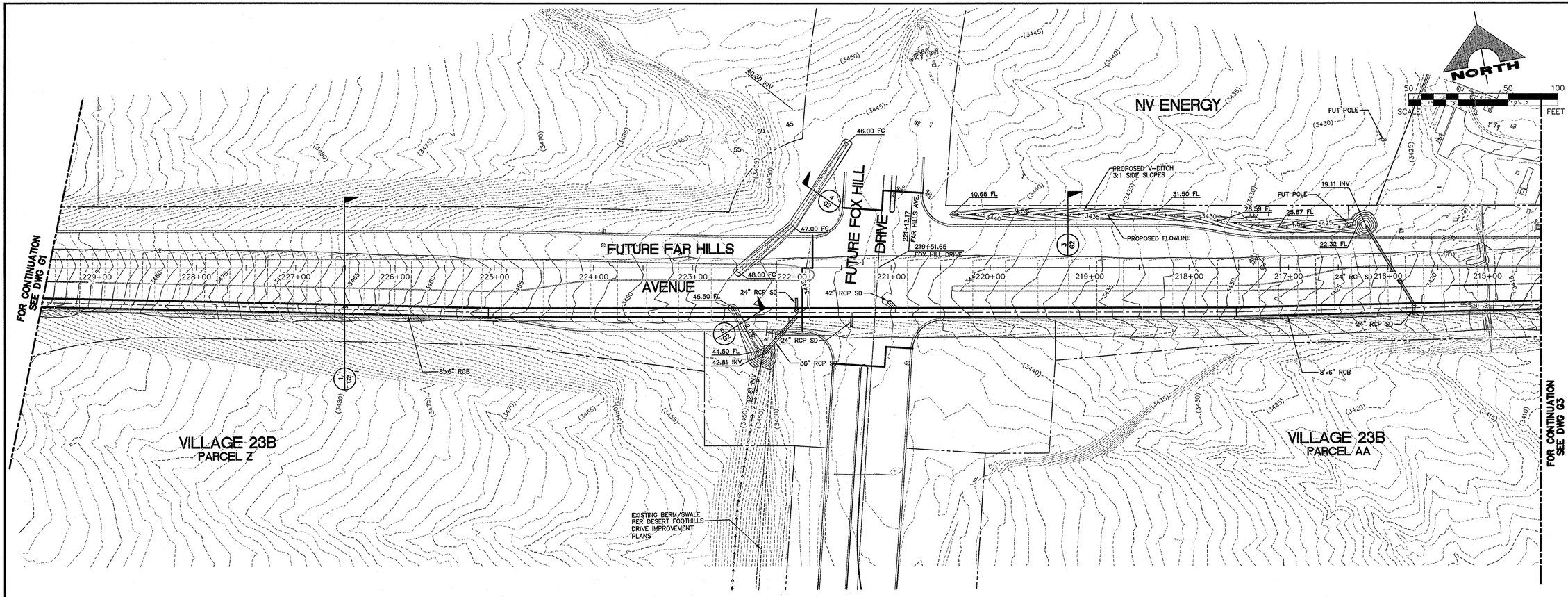
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Daniel Kelley

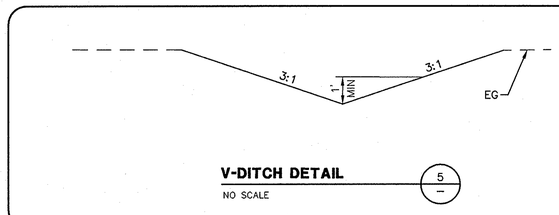
THE HOWARD HUGHES COMPANY, LLC

VILLAGE 23B FAR HILLS AVE RCB IMPROVEMENTS
SKY VISTA DRIVE TO DESERT FOOTHILLS DRIVE

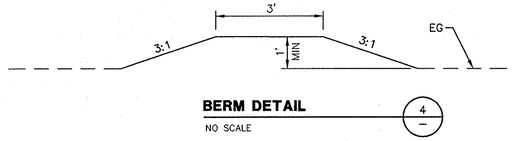
GRADING PLAN 1

DRAWING G1
8 OF 24 SHTS

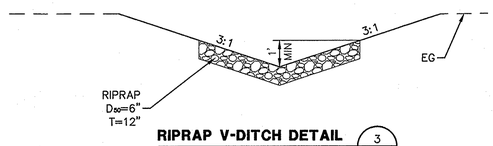




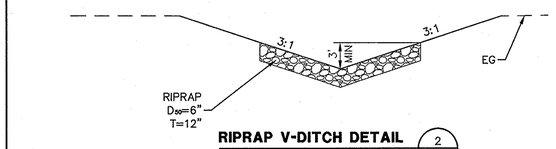
V-DITCH DETAIL (5)
NO SCALE



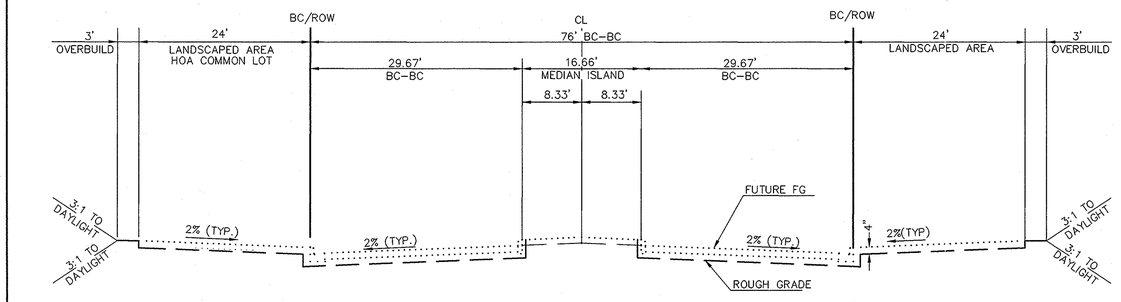
BERM DETAIL (4)
NO SCALE



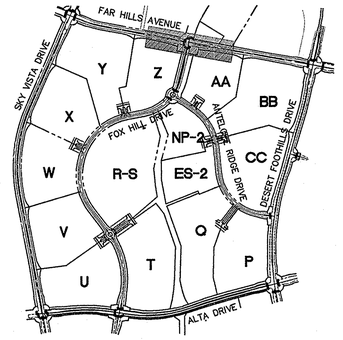
RIPRAP V-DITCH DETAIL (3)
NO SCALE



RIPRAP V-DITCH DETAIL (2)
NO SCALE



FAR HILLS AVENUE (1)
STA 200+00 TO STA 242+48
NOT TO SCALE



KEY MAP
NOT TO SCALE

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

BENCHMARK

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RIVET AND PLATE IN TOP OF CURB @ SOUTHEAST CORNER OF FAR HILLS AVENUE AND DESERT FOOTHILLS DRIVE	3335.36 (FEET)	1016.620 (METERS)
CLV BM No. 7LV09 27E4		

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H #–
CLV #

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Daniel Kelley

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 23B FAR HILLS AVE RCB IMPROVEMENTS
SKY VISTA DRIVE TO DESERT FOOTHILLS DRIVE

GRADING PLAN 2

PROJECT NO. 620238-227
DESIGN: DFK
DRAWN: DFK
CHECK: JLJ
PLOT DATE: 06-05-13
PLOT TIME: 14:06:14

REV	DATE	DESCRIPTION	DATE	ASSN APP	DATE	GCW APP	DATE

DRAWING
G2
9 OF 24 SHTS

FOR CONTINUATION SEE DWG G2

FUTURE VILLAGE 21

EXISTING AC PAVEMENT ACCESS ROAD TO REMAIN

EXISTING SUMP PER DESERT FOOTHILLS DRIVE IMPROVEMENT PLANS

FUT POLE

FUT POLE

EX 42" RCP SD

42" RCP SD

214+00 213+00 212+00 211+00 210+00 209+00 208+00 207+00 206+00 205+00 204+00 203+00 202+00 201+00 200+00

24" RCP SD

FUTURE FAR HILLS AVENUE

42" RCP SD

FAR HILLS AVENUE 200+00.00 = DESERT FOOTHILLS 184+41.26

36" RCP SD

TEMPORARY BERM

ABANDON EXISTING PIPE

TEMPORARY RIPRAP SUMP

99.80 FL

PROPOSED V-DITCH 3:1 SIDE SLOPES

99.41 INV

99.00 FL

8'x6' RCB

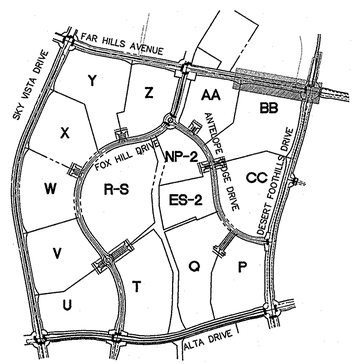
POINT OF CONNECTION

EXISTING 8'x7' RCB PER DESERT FOOTHILLS DRIVE IMPROVEMENT PLANS

VILLAGE 23B
PARCEL BB

EXISTING BERM/SWALE PER DESERT FOOTHILLS DRIVE IMPROVEMENT PLANS

DESERT FOOTHILLS DRIVE (PUBLIC)



KEY MAP

NOT TO SCALE

NORTH

50 0 50 100

SCALE FEET

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BASIS OF BEARINGS

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BENCHMARK

DESCRIPTION	NAVD 88 DATUM	NAVD 88 DATUM
RIVET AND PLATE IN TOP OF CURB @ SOUTHEAST CORNER OF FAR HILLS AVENUE AND DESERT FOOTHILLS DRIVE	3335.36 (FEET)	1016.620 (METERS)
CLV BM No. 7LV09 27E4		

H #-

CLV #

ENGINEER - STATE OF NEVADA JOSHUA L. MEHRTENS No. 15768 EXPIRES 06/30/2013 CIVIL

DATE: 6/14/13

DESCRIPTION	DATE	AGEN APP	DATE	CONV APP

PROJECT NO. 62023B-227

DESIGN: DFK
DRAWN: DFK
CHECK: JLJ
PLOT DATE: 06-05-13
PLOT TIME: 13:58:45

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Daniel Kelley

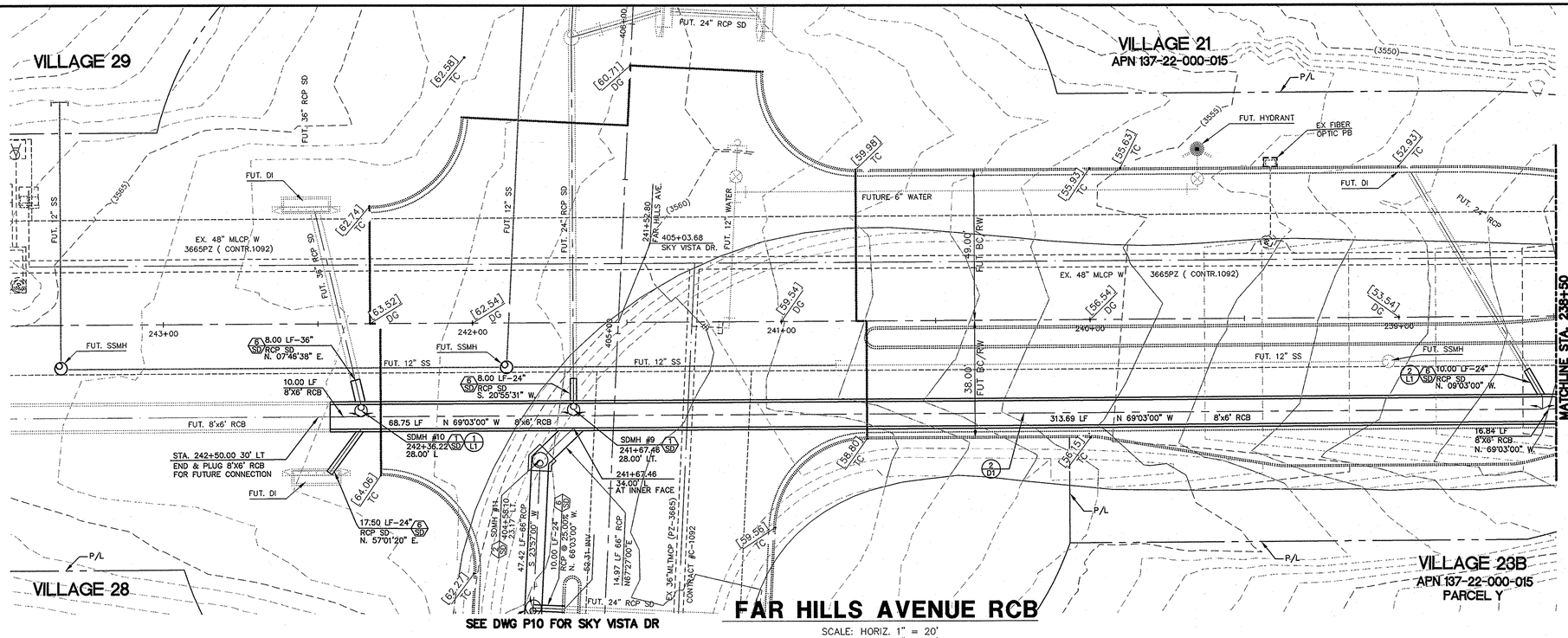
THE HOWARD HUGHES COMPANY, LLC

VILLAGE 23B FAR HILLS AVE RCB IMPROVEMENTS
SKY VISTA DRIVE TO DESERT FOOTHILLS DRIVE

GRADING PLAN 3

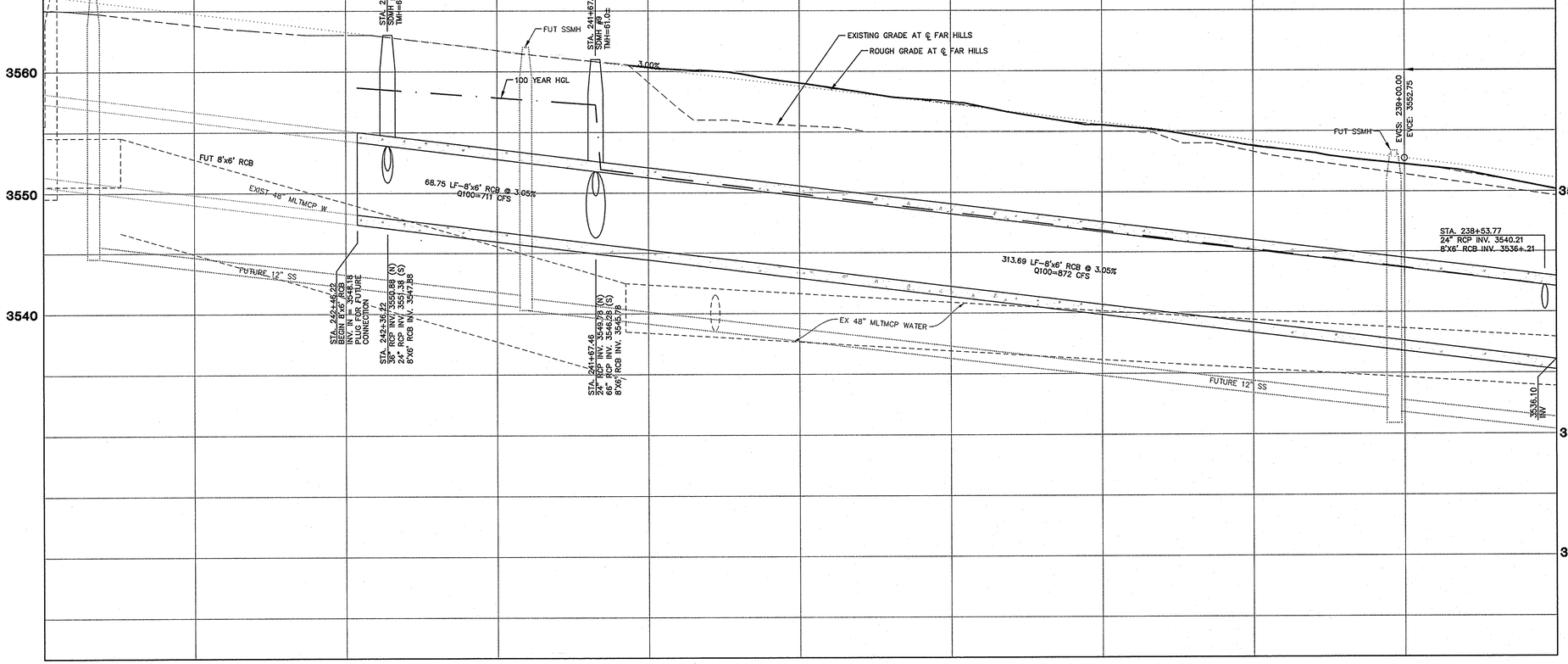
DRAWING G3

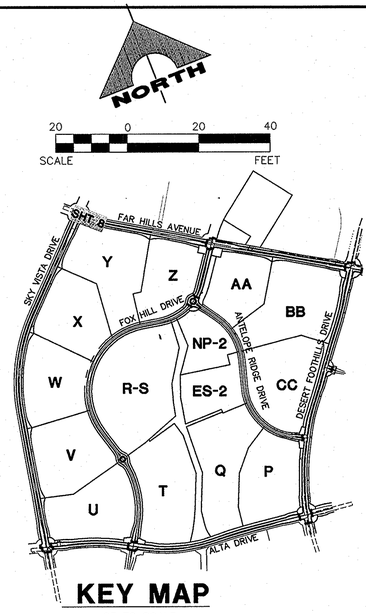
10 OF 24 SHTS



FAR HILLS AVENUE RCB

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'





KEY MAP

NOT TO SCALE

STORM DRAIN CONSTRUCTION NOTES:

1. (SD) INSTALL 48" TYPE IA STORM DRAIN MANHOLE PER DTL 1, DWG D1
2. (SD) INSTALL NDOT TYPE 4 MANHOLE PER "NDOT STANDARD PLANS FOR ROAD AND BRIDGE CONSTRUCTION" (LATEST EDITION) R-4.3.2
3. (SD) ABANDON EXISTING STORM DRAIN
4. (SD) INSTALL PRECAST CONCRETE JUNCTION BOX
5. (SD) CONNECT TO EXISTING STORM DRAIN (CONTRACTOR TO VERIFY SIZE, INVERT AND LOCATION OF EXISTING STORM DRAIN)
6. (SD) INSTALL TEMPORARY PLUG AND CAP

BENCHMARK

BM #	DESCRIPTION	NAVD 88 DATUM	NAVD 88 DATUM
5LV09-34NE6	RIVET AND PLATE IN TOP OF CURB @ NORTHEAST CORNER OF DESERT FOOTHILLS AND ALTA DRIVE	3304.45 (FEET)	1007.197 (METERS)

NOTE

THIS SET OF DRAWNGS IS BASED UPON NAVD 88 DATUM. PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUM. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS.

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

CONTRACTOR NOTE:

ALL EXISTING UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION AND RELOCATE THESE UTILITIES AS NECESSARY. NO REPRESENTATION IS MADE THAT ALL UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO LIABILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATIONS.

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
PROJECT NO._____ DATE: _____

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LAS VEGAS
F:\Projects\60\20238-227\DWG\Production\6-227-PP.dwg
Humberto Fronco-Rivas

PROJECT NO. 62023B-227
DESIGN: DFK
DRAWN: DFK
CHECK: JLJ
PLOT DATE: 05-20-13
PLOT TIME: 14:10:30

REV	DATE	DESCRIPTION	DATE	ASEN APP	DATE	GCW APP	DATE

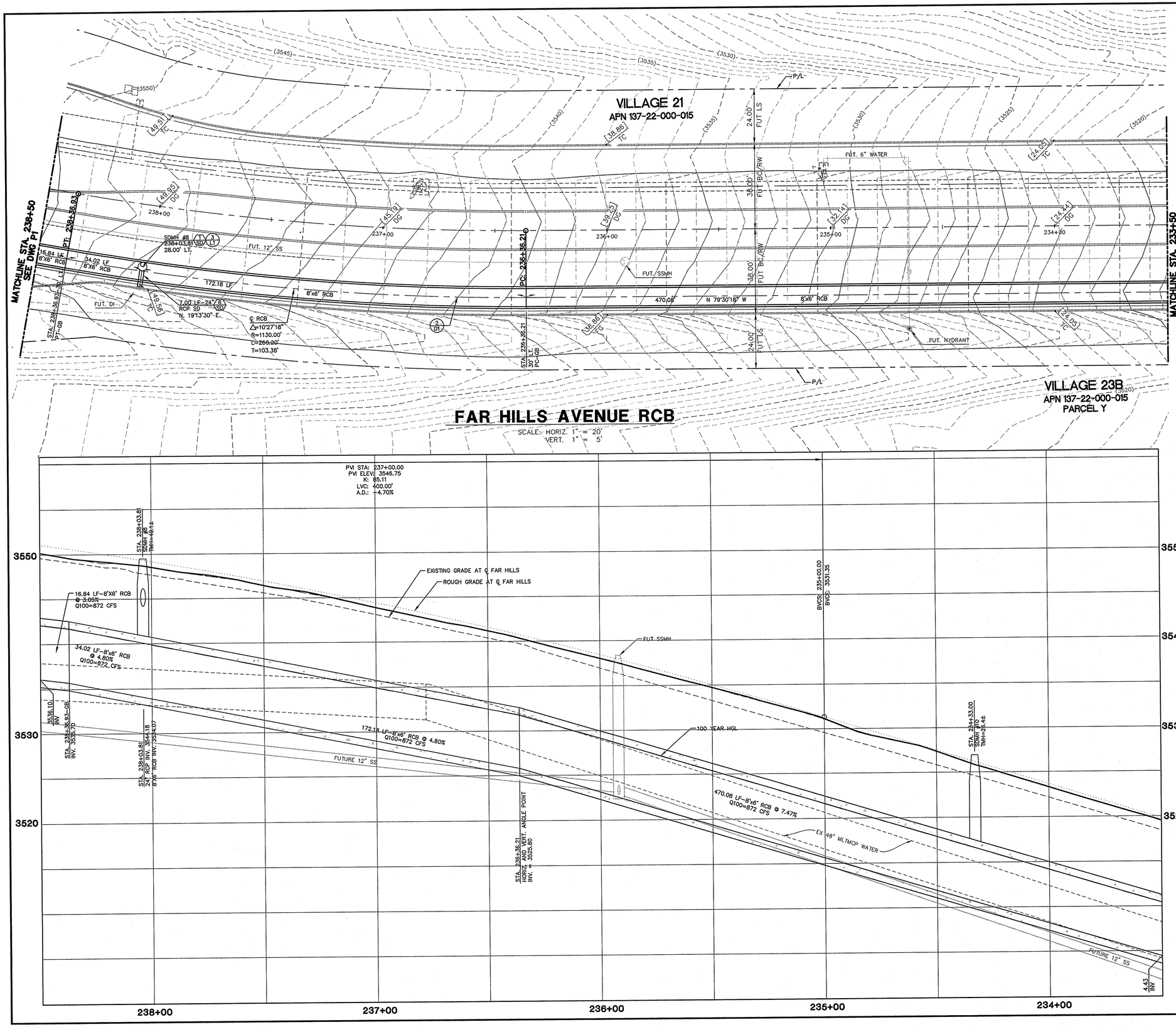
NEVADA - PROFESSIONAL ENGINEER - No. 15787 - JOSEPH L. JOHNSON - 06/30/13
DATE: 6/30/13

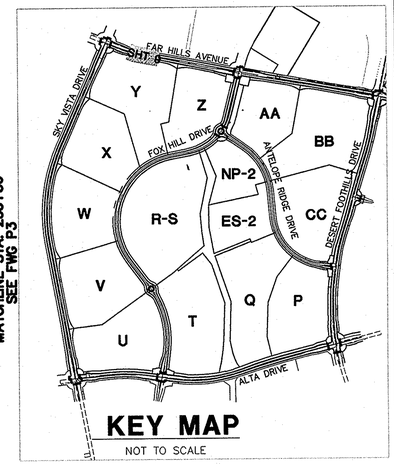
THE HOWARD HUGHES COMPANY, LLC

VILLAGE 23B FAR HILLS AVE RCB IMPROVEMENTS
SKY VISTA DRIVE TO DESERT FOOTHILLS DRIVE

PLAN AND PROFILE 1

DRAWING
P1
11 OF 24 SHTS





KEY MAP

NOT TO SCALE

NORTH

SCALE 20 0 20 40 FEET

STORM DRAIN CONSTRUCTION NOTES:

1. INSTALL 48" TYPE IA STORM DRAIN MANHOLE PER NDOT DTL 1, DWG D1
2. INSTALL NDOT TYPE 4 MANHOLE PER "NDOT STANDARD PLANS FOR ROAD AND BRIDGE CONSTRUCTION" (LATEST EDITION) R-4.3.2
3. ABANDON EXISTING STORM DRAIN
4. INSTALL PRECAST CONCRETE JUNCTION BOX
5. CONNECT TO EXISTING STORM DRAIN (CONTRACTOR TO VERIFY SIZE, INVERT AND LOCATION OF EXISTING STORM DRAIN)
6. INSTALL TEMPORARY PLUG AND CAP

BENCHMARK

BM #	DESCRIPTION	NAVD 88 DATUM (FEET)	NAVD 88 DATUM (METERS)
5LV09-34NE6	RIVET AND PLATE IN TOP OF CURB @ NORTHEAST CORNER OF DESERT FOOTHILLS AND ALTA DRIVE	3304.45	1007.197

NOTE

THIS SET OF DRAWINGS IS BASED UPON NAVD 88 DATUM. PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUM. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS.

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APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
PROJECT NO._____ DATE: _____

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FAST
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1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

ENGINEER - STATE OF NEVADA
No. 13555
PROFESSIONAL
Exp. 06/30/2013
DATE: 5/23/13

REV	DATE	DESCRIPTION	DATE	AGEN. APP	DATE	GCW APP

PROJECT NO. 62023B-227

DESIGN: DFK
DRAWN: DFK
CHECK: JLJ
PLOT DATE: 05-20-13
PLOT TIME: 14:10:37

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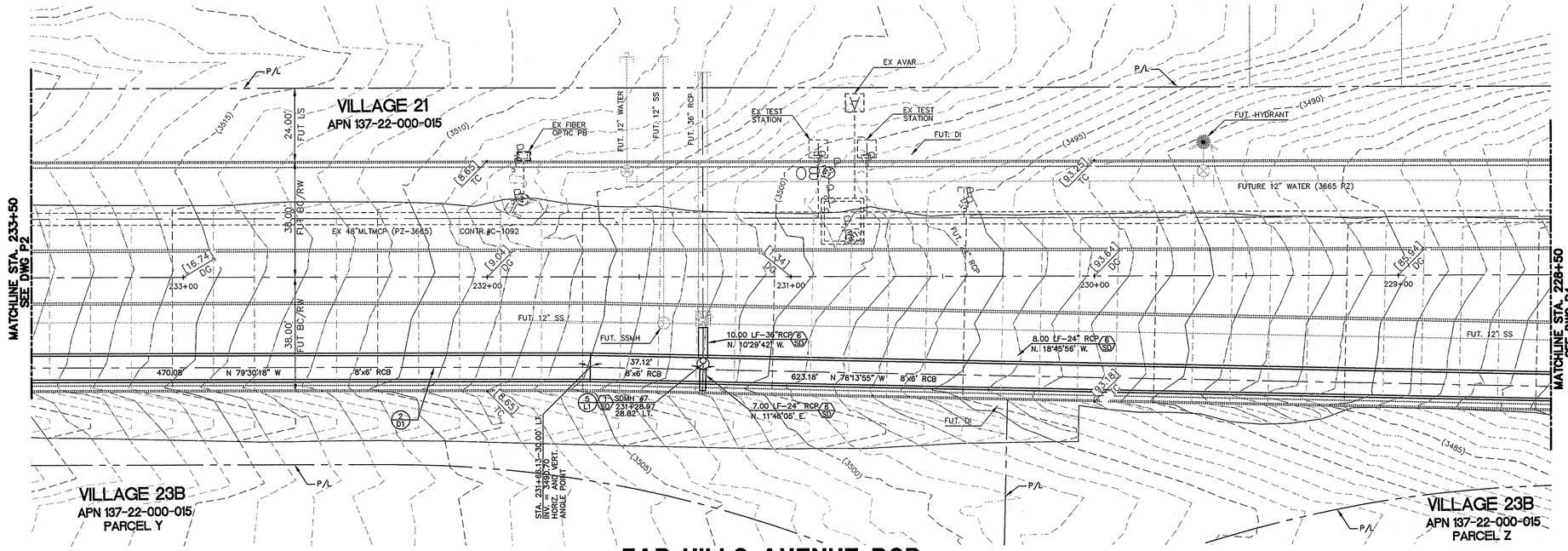
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Humberto Franco-Rivas

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 23B FAR HILLS AVE RCB IMPROVEMENTS
SKY VISTA DRIVE TO DESERT FOOTHILLS DRIVE

PLAN AND PROFILE 2

DRAWING
P2
12 OF 24 SHTS

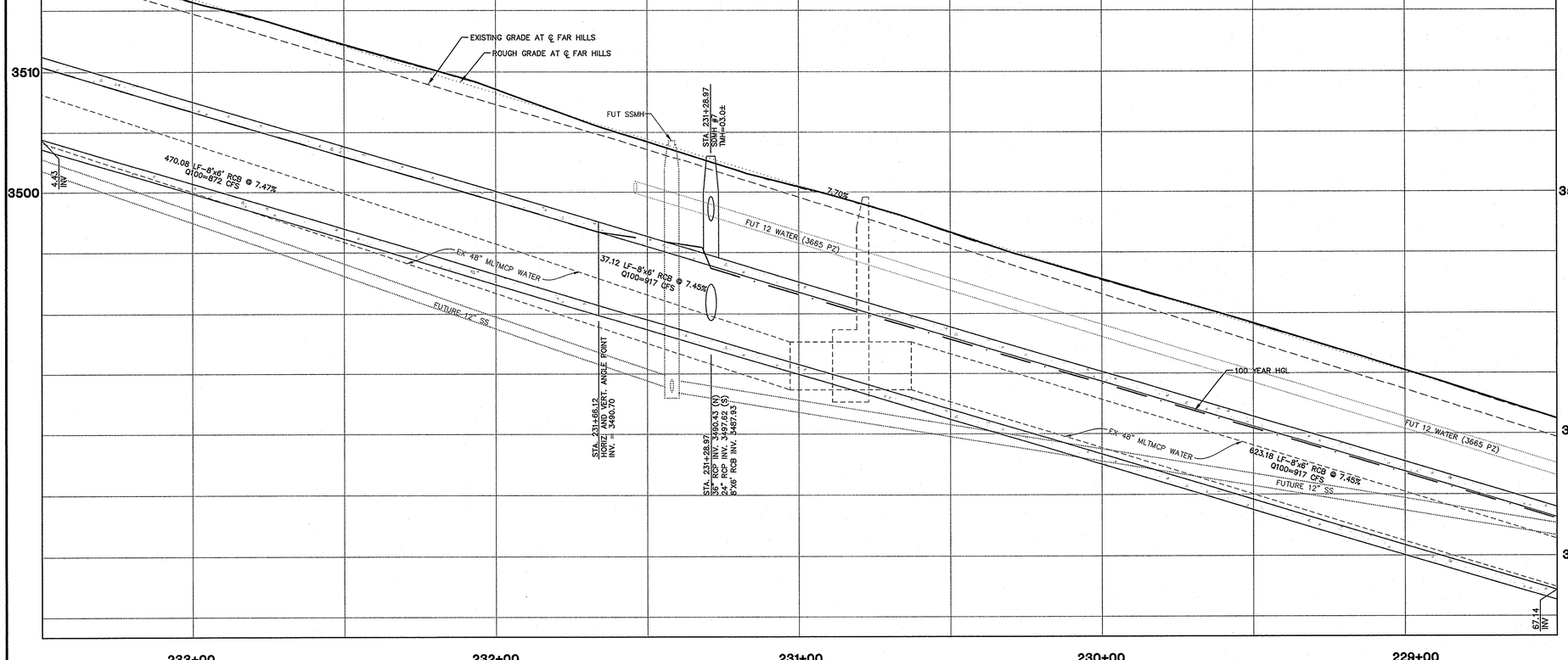


KEY MAP

NOT TO SCALE

FAR HILLS AVENUE RCB

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'



STORM DRAIN CONSTRUCTION NOTES:

1. INSTALL 48" TYPE IA STORM DRAIN MANHOLE PER DTL 1, DWG D1
2. INSTALL NDOT TYPE 4 MANHOLE PER "NDOT STANDARD PLANS FOR ROAD AND BRIDGE CONSTRUCTION" (LATEST EDITION) R-4.3.2
3. ABANDON EXISTING STORM DRAIN
4. INSTALL PRECAST CONCRETE JUNCTION BOX
5. CONNECT TO EXISTING STORM DRAIN (CONTRACTOR TO VERIFY SIZE, INVERT AND LOCATION OF EXISTING STORM DRAIN)
6. INSTALL TEMPORARY PLUG AND CAP

BENCHMARK

BM #	DESCRIPTION	NAVD 88 DATUM	NAVD 88 DATUM
5LV09--34NE6	RIVET AND PLATE IN TOP OF CURB @ NORTHEAST CORNER OF DESERT FOOTHILLS AND ALTA DRIVE	3304.45 (FEET)	1007.197 (METERS)

NOTE

THIS SET OF DRAWNGS IS BASED UPON NAVD 88 DATUM. PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUM. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS.

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

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APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
PROJECT NO._____ DATE: _____

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Avoid cutting underground utility lines. It's costly.
Call 811
OR
1-800-227-2600

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

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

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3555 S. RAINBOW BOULEVARD, LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM
LAS VEGAS · MESQUITE

PROJECT NO. 62023B-227
DESIGN: DFK
DRAWN: DFK
CHECK: JLJ
PLOT DATE: 05-20-13
PLOT TIME: 14:10:47
F:\Projects\600\62023B-227\DWG\Production\B-227-PP.dwg
Humberto Franco-Rivas

REV	DATE	DESCRIPTION	AGEN APP	DATE	CCW APP	DATE

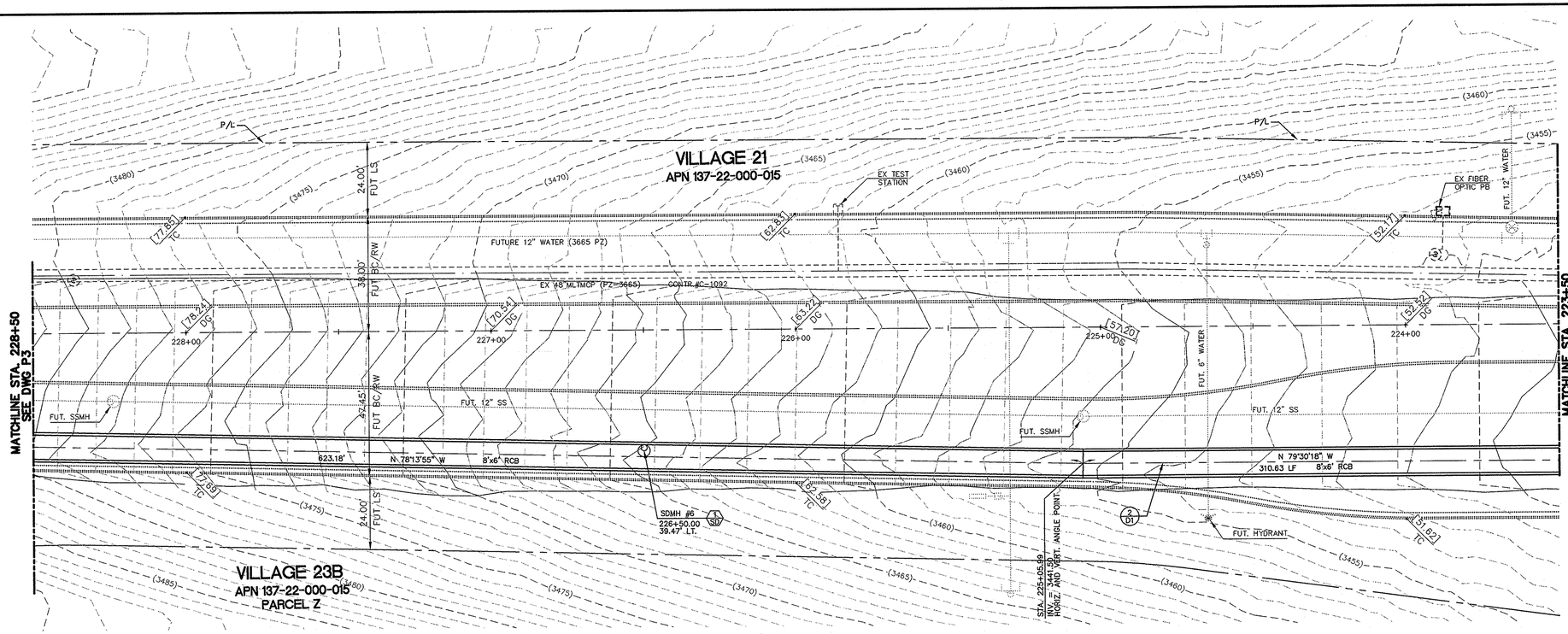
ENGINEER - STATE OF NEVADA
JOSEPH L. JAMES
No. 9214
PROFESSIONAL
DATE: 5/21/13

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 23B FAR HILLS AVE RCB IMPROVEMENTS
SKY VISTA DRIVE TO DESERT FOOTHILLS DRIVE

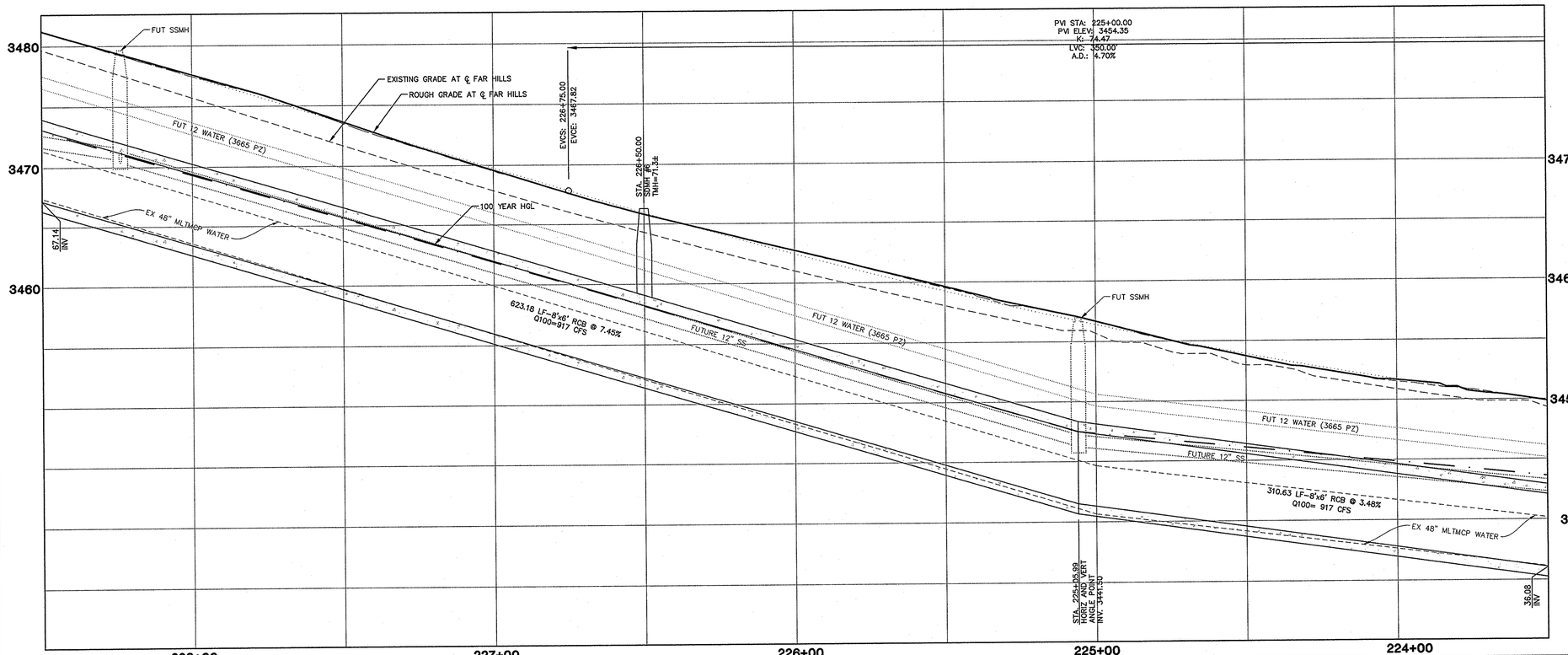
PLAN AND PROFILE 3

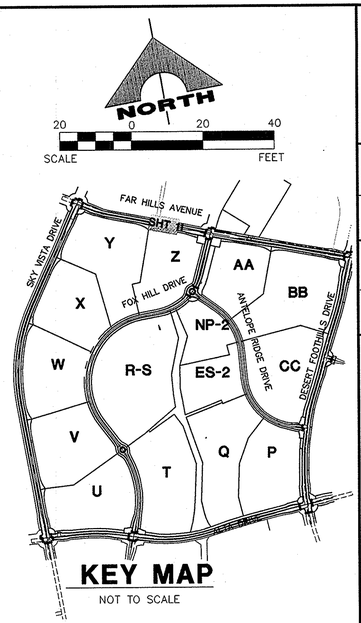
DRAWING
P3
13 OF 24 SHTS



FAR HILLS AVENUE RCB

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'





KEY MAP

NOT TO SCALE

STORM DRAIN CONSTRUCTION NOTES:

1. INSTALL 48" TYPE IA STORM DRAIN MANHOLE PER DTL 1, DWG D1
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3. ABANDON EXISTING STORM DRAIN
4. INSTALL PRECAST CONCRETE JUNCTION BOX
5. CONNECT TO EXISTING STORM DRAIN (CONTRACTOR TO VERIFY SIZE, INVERT AND LOCATION OF EXISTING STORM DRAIN)
6. INSTALL TEMPORARY PLUG AND CAP

BENCHMARK

BM #	DESCRIPTION	NAVD 88 DATUM	NAVD 88 DATUM
5LV09-34NE6	RIVET AND PLATE IN TOP OF CURB @ NORTHEAST CORNER OF DESERT FOOTHILLS AND ALTA DRIVE	3304.45 (FEET)	1007.197 (METERS)

NOTE

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BASIS OF BEARINGS

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APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
PROJECT NO._____ DATE: _____

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OR
1-800-227-2600

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

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

G.C. WALLACE COMPANIES
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LAS VEGAS

F:\Projects\000\620238-227\DWG\Production\6-227-PP.dwg
Humberto Franco-Rios

PROJECT NO. 62023B-227
DESIGN: DFK
DRAWN: DFK
CHECK: JLJ
PLOT DATE: 05-20-13
PLOT TIME: 14:10:57

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP	DATE

DATE:

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 23B FAR HILLS AVE RCB IMPROVEMENTS
SKY VISTA DRIVE TO DESERT FOOTHILLS DRIVE

PLAN AND PROFILE 4

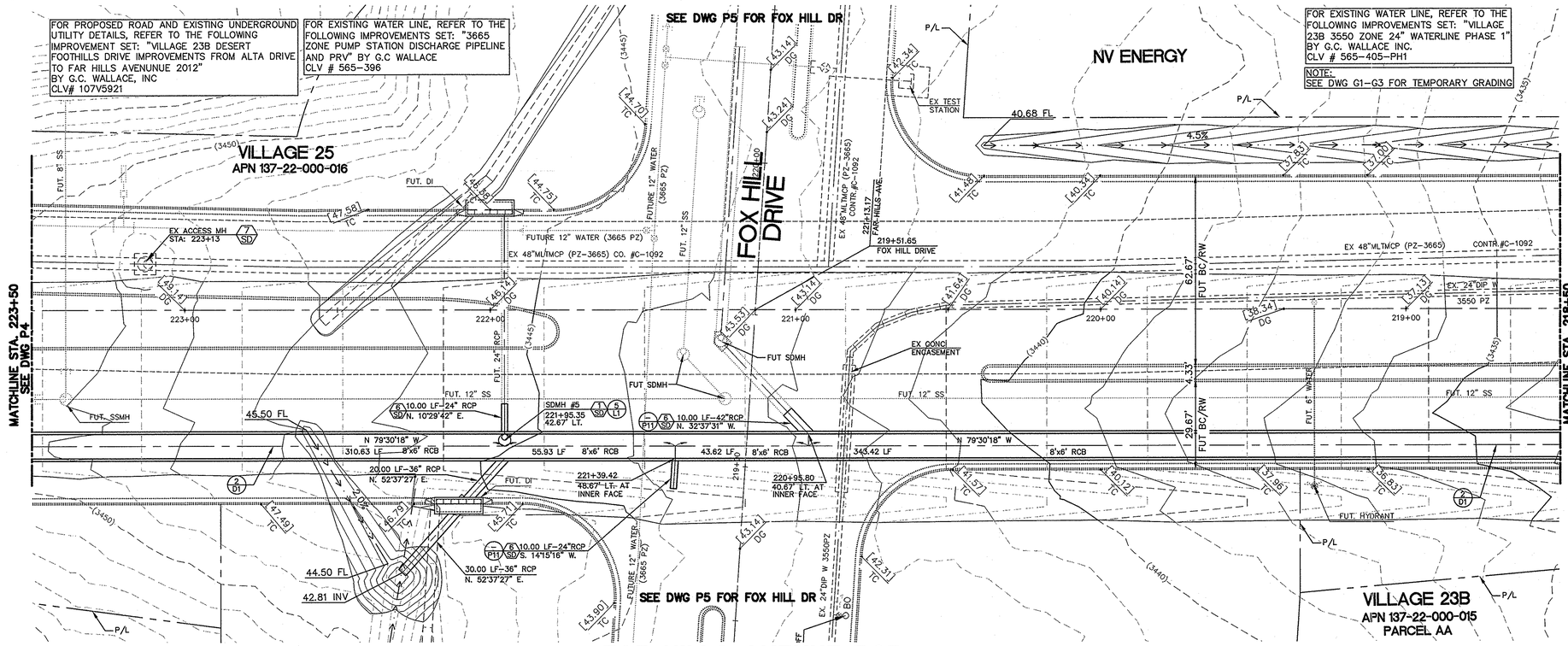
DRAWING
P4
14 OF 24 SHTS

FOR PROPOSED ROAD AND EXISTING UNDERGROUND UTILITY DETAILS, REFER TO THE FOLLOWING IMPROVEMENT SET: "VILLAGE 23B DESERT FOOTHILLS DRIVE IMPROVEMENTS FROM ALTA DRIVE TO FAR HILLS AVENUNUE 2012" BY G.C. WALLACE, INC CLV# 107V5921

FOR EXISTING WATER LINE, REFER TO THE FOLLOWING IMPROVEMENTS SET: "3665 ZONE PUMP STATION DISCHARGE PIPELINE AND PRV" BY G.C WALLACE CLV # 565-396

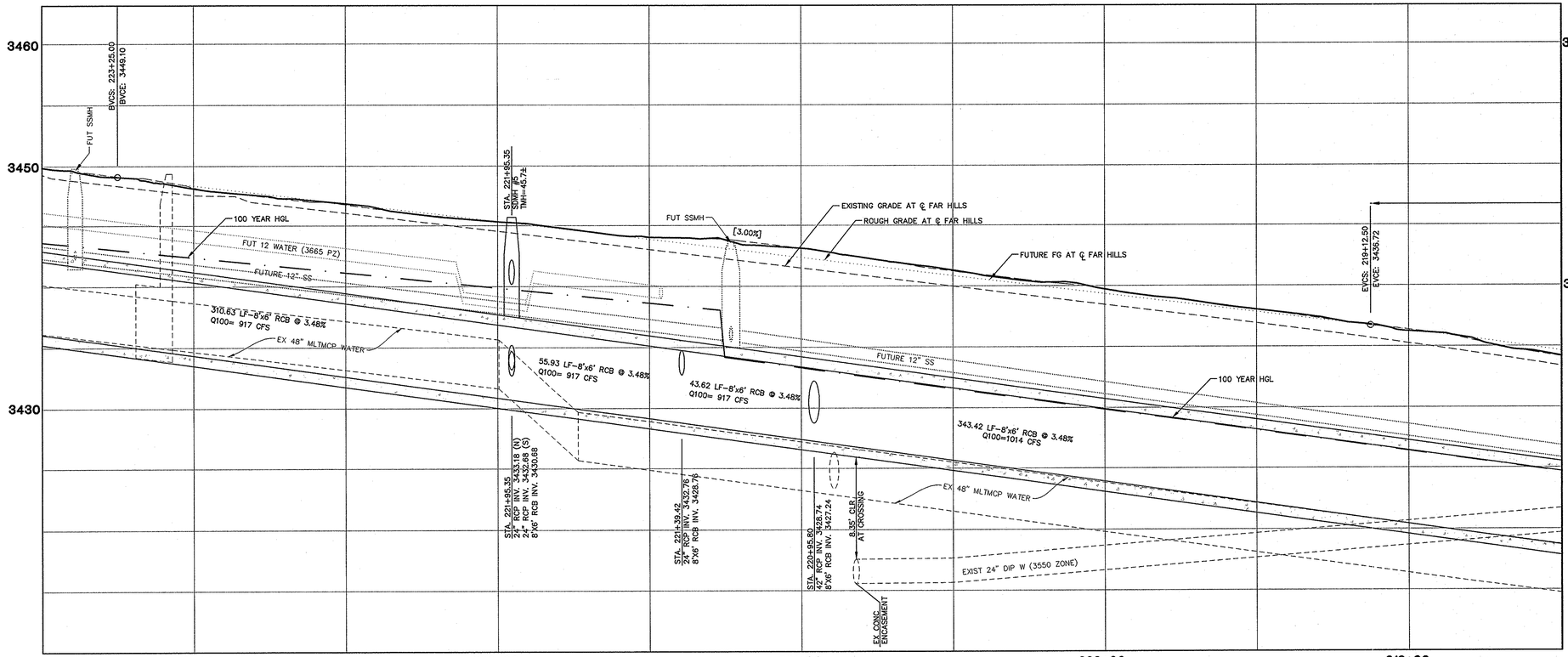
FOR EXISTING WATER LINE, REFER TO THE FOLLOWING IMPROVEMENTS SET: "VILLAGE 23B 3550 ZONE 24" WATERLINE PHASE 1" BY G.C. WALLACE INC. CLV # 565-405-PH1

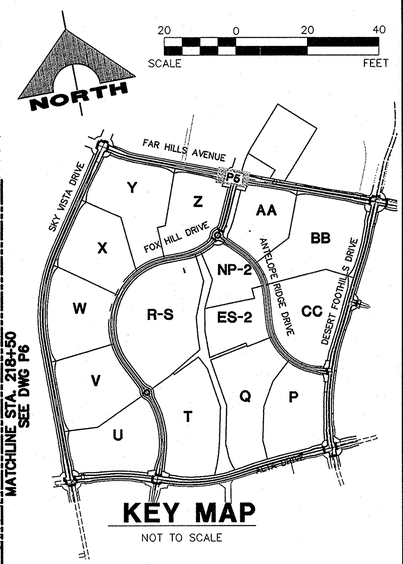
NOTE: SEE DWG G1-G3 FOR TEMPORARY GRADING



FAR HILLS AVENUE RCB

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'





KEY MAP

NOT TO SCALE

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8. INSTALL STORM DRAIN WITH WATERTIGHT JOINTS USING LVVWD APPROVED INTERNAL ELASTOMERIC JOINT SEALANT PER UDACS SECTION 2.22.02 D.2, LVVWD TO SUPERVISE APPLICATION OF SEALANT.
9. ENCASE STORM DRAIN IN A MINIMUM OF (4) INCHES OF CEMENT SLURRY (CLSM II) PER UDACS SEC 2.22.02

BENCHMARK

BM #	DESCRIPTION	NAVD 88 DATUM	NAVD 88 DATUM
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APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
PROJECT NO._____ DATE: _____

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Avoid cutting underground utility lines. It's costly.
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FAST
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FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

H #-
CLV #

ENGINEER - STATE OF NEVADA
No. 6157
PROFESSIONAL
DANIEL J. KELLEY
DATE: 6/13/13

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	CCW APP

PROJECT NO. 62023B-227
DESIGN: DFK
DRAWN: DFK
CHECK: JLJ
PLOT DATE: 06-05-13
PLOT TIME: 13:59:24

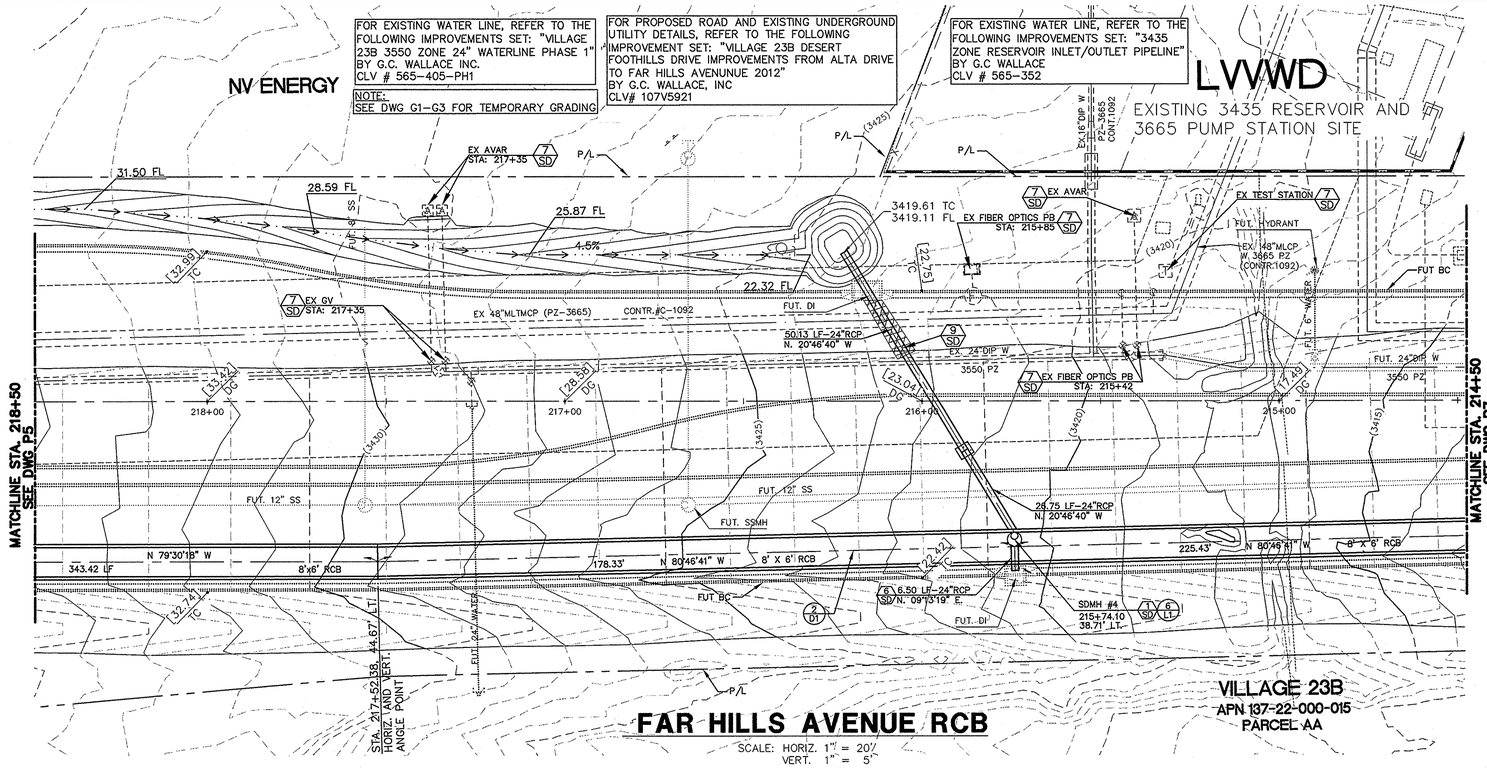
G.C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD - LAS VEGAS, NV 89146
T: 702.804.2000 F: 702.804.2001 GCWALLACE.COM
LAS VEGAS - MESQUITE
LAS VEGAS
F:\A-Projects\650\62023B-227\DWG\Production\6-227-PP.dwg
Daniel Kelley

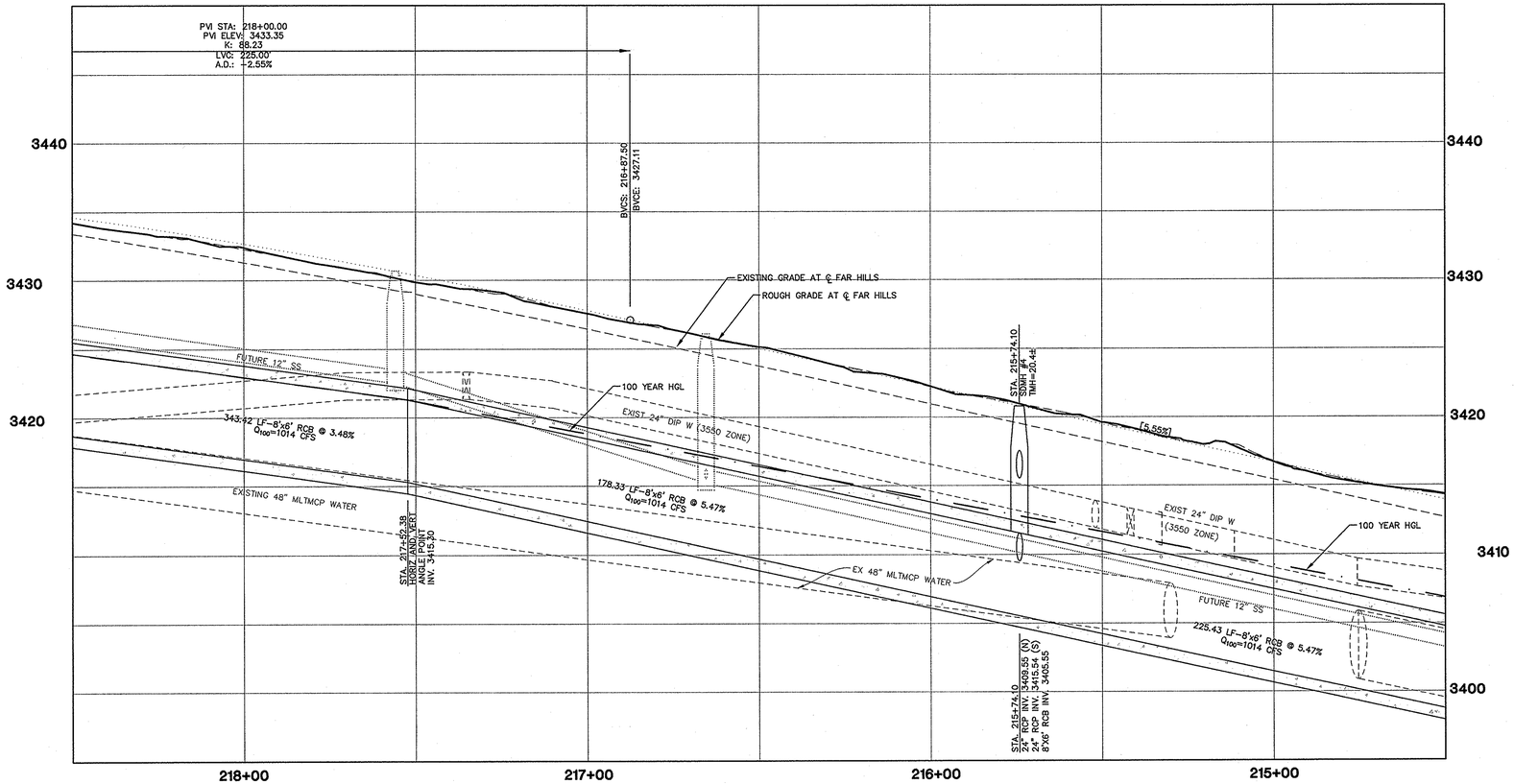
THE HOWARD HUGHES COMPANY, LLC

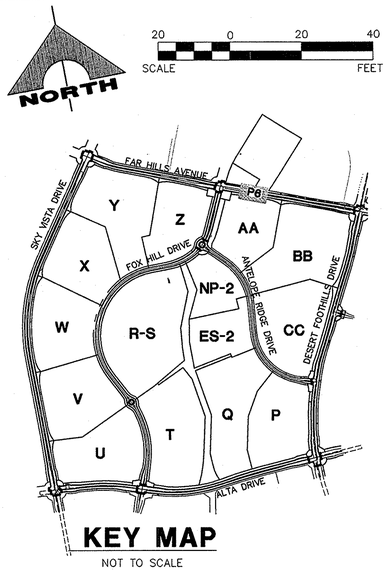
VILLAGE 23B FAR HILLS AVE RCB IMPROVEMENTS
SKY VISTA DRIVE TO DESERT FOOTHILLS DRIVE

PLAN AND PROFILE 5

DRAWING
P5
15 OF 24 SHTS







KEY MAP

NOT TO SCALE

NORTH

SCALE 20 0 20 40 FEET

STORM DRAIN CONSTRUCTION NOTES:

1. INSTALL 48" TYPE IA STORM DRAIN MANHOLE PER DTL 1, DWG D1
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BENCHMARK

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APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
PROJECT NO._____ DATE: _____

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CALL BEFORE YOU DO OVERHEAD
1-702-227-2929

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

H #-
CLV #

STATE OF NEVADA — PROFESSIONAL ENGINEER — JOSHUA L. LUNDSTROM — No. 15758 — DATE: 6/5/13

REV	DATE	DESCRIPTION	AGEN APP	DATE	CGW APP	DATE

PROJECT NO. 62023B-227
DESIGN: DFK
DRAWN: DFK
CHECK: JLJ
PLOT DATE: 06-05-13
PLOT TIME: 13:59:34

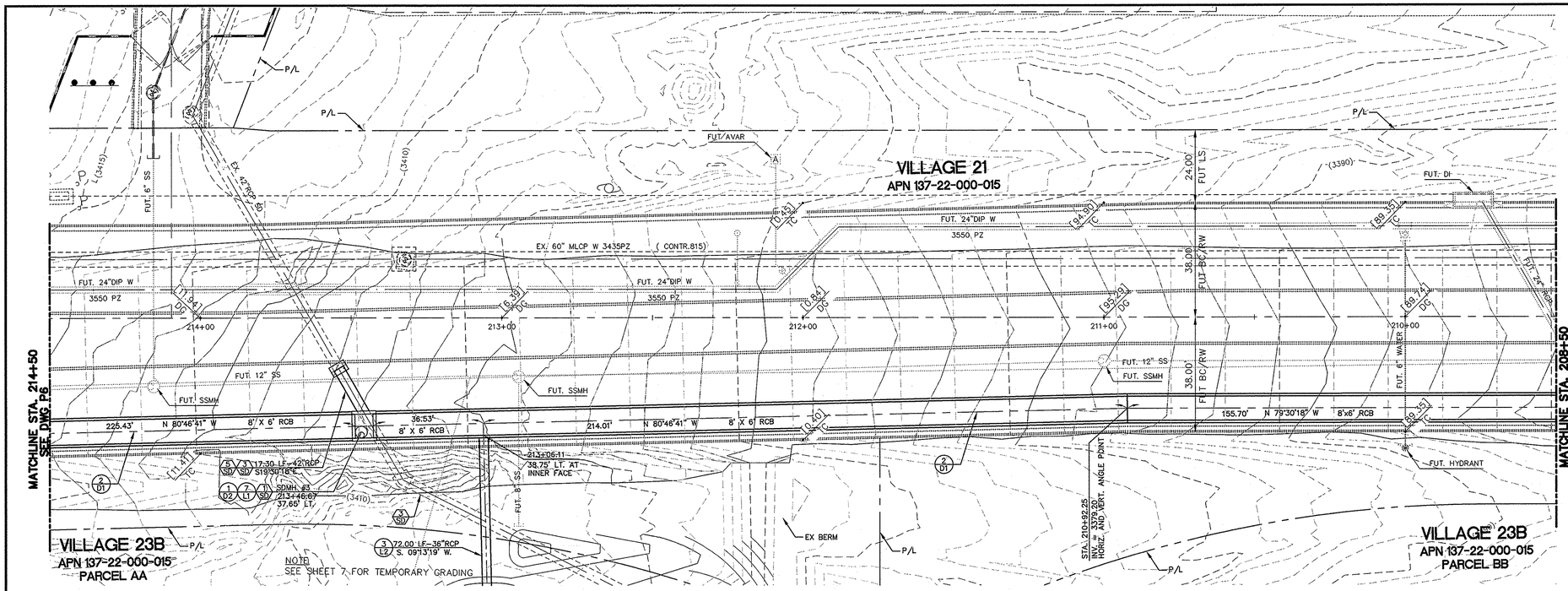
G.C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
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T: 702.804.2000 F: 702.804.2099 GCWALLACE.COM
LAS VEGAS | HENDERSON
F:\Projects\600\62023B-227\DWG\Production\6-227-PP.dwg
Daniel Kelley

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 23B FAR HILLS AVE RCB IMPROVEMENTS
SKY VISTA DRIVE TO DESERT FOOTHILLS DRIVE

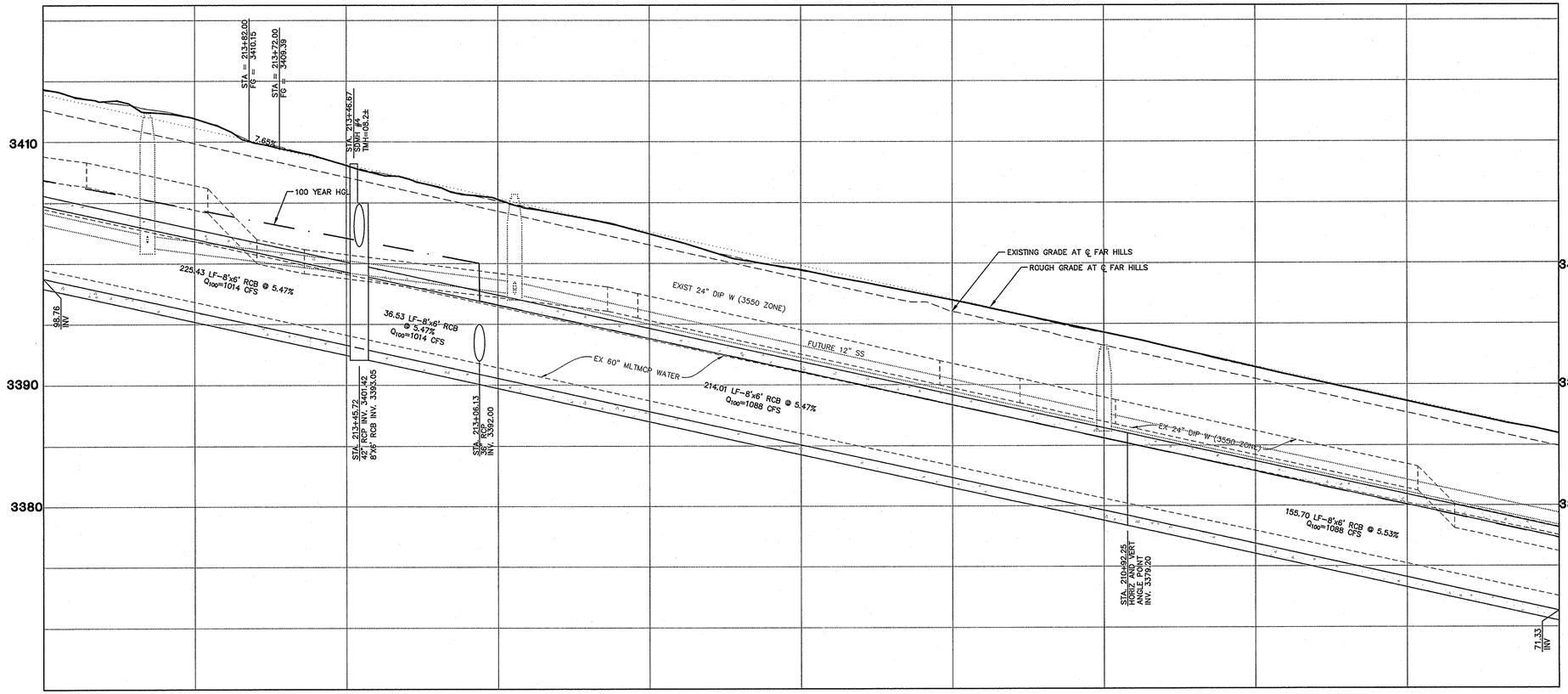
PLAN AND PROFILE 6

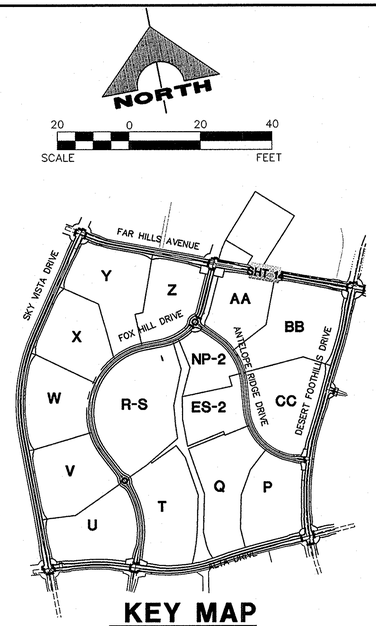
DRAWING
P6
16 OF 24 SHTS



FAR HILLS AVENUE RCB

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'





KEY MAP

NOT TO SCALE

STORM DRAIN CONSTRUCTION NOTES:

1. (SD1) INSTALL 48" TYPE IA STORM DRAIN MANHOLE PER DTL 1, DWG D1
2. (SD2) INSTALL NDOT TYPE 4 MANHOLE PER "NDOT STANDARD PLANS FOR ROAD AND BRIDGE CONSTRUCTION" (LATEST EDITION) R-4.3.2
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4. (SD1) INSTALL PRECAST CONCRETE JUNCTION BOX
5. (SD1) CONNECT TO EXISTING STORM DRAIN (CONTRACTOR TO VERIFY SIZE, INVERT AND LOCATION OF EXISTING STORM DRAIN)
6. (SD2) INSTALL TEMPORARY PLUG AND CAP

BENCHMARK

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APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
PROJECT NO._____ DATE: _____

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LAS VEGAS

F:\Projects\600\62023B-227\DWG\Production\G-227-PP.dwg
Humberto Franco-Rivas

PROJECT NO. 62023B-227
DESIGN: DFK
DRAWN: DFK
CHECK: JLJ
PLOT DATE: 05-20-13
PLOT TIME: 14:11:27

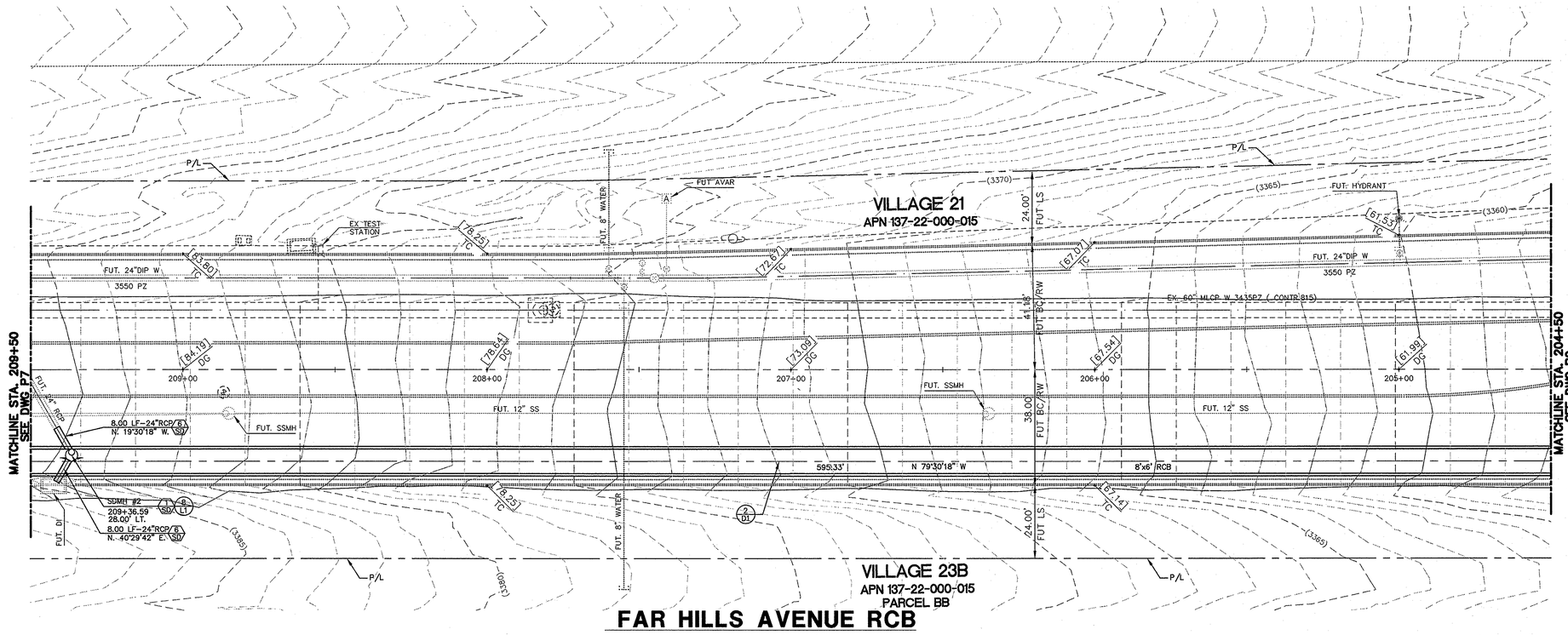
REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	CCW APP	DATE: 7/24/13

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 23B FAR HILLS AVE RCB IMPROVEMENTS
SKY VISTA DRIVE TO DESERT FOOTHILLS DRIVE

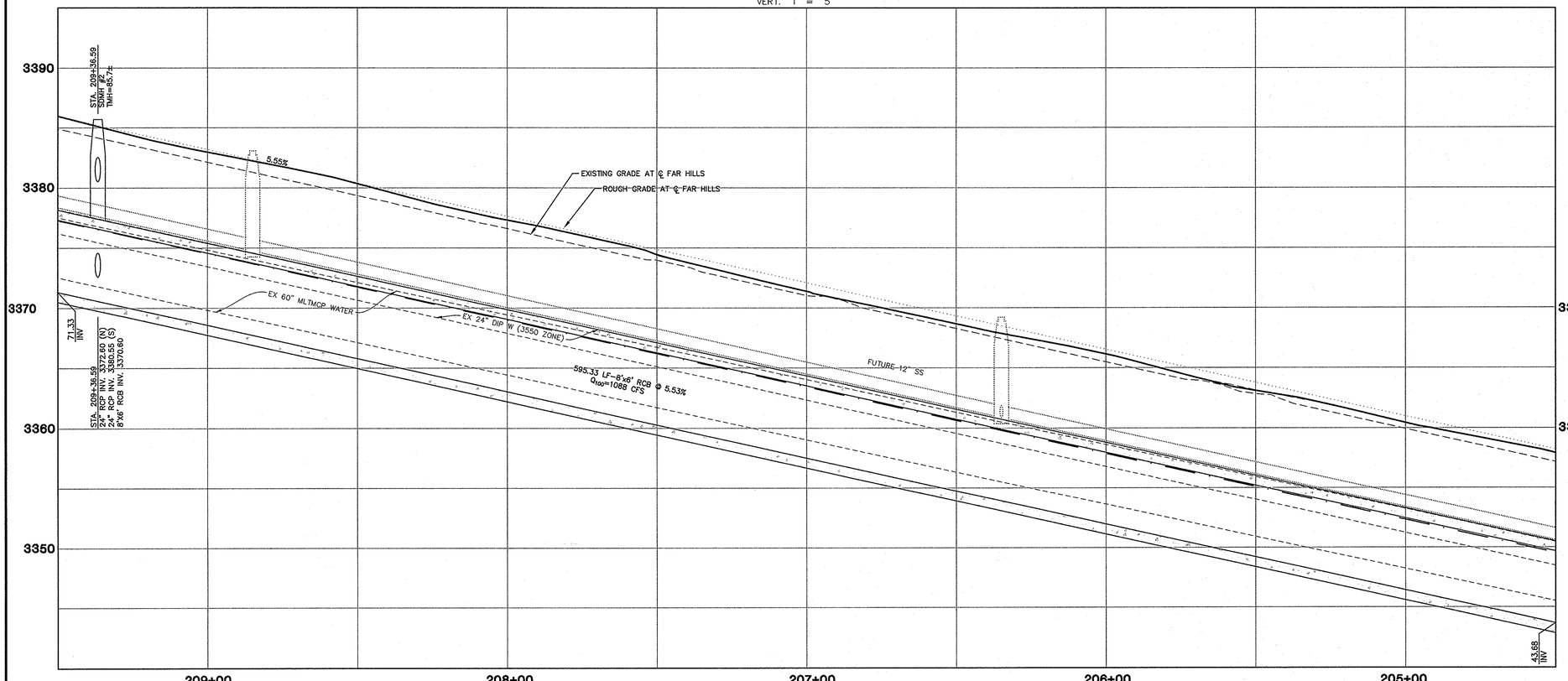
PLAN AND PROFILE 7

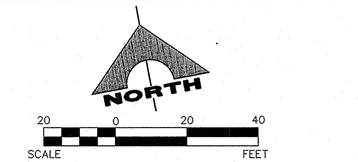
DRAWING
P7
17 OF 24 SHTS

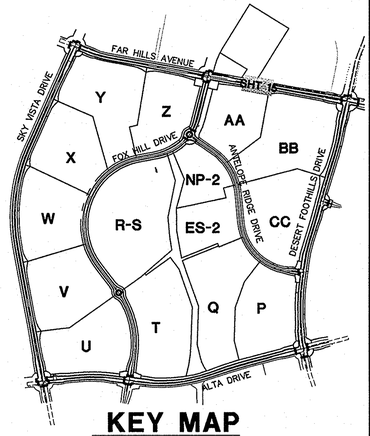


FAR HILLS AVENUE RCB

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'







KEY MAP

NOT TO SCALE

STORM DRAIN CONSTRUCTION NOTES:

1. INSTALL 48" TYPE IA STORM DRAIN MANHOLE PER DTL 1, DWG D1
2. INSTALL NDOT TYPE 4 MANHOLE PER "NDOT STANDARD PLANS FOR ROAD AND BRIDGE CONSTRUCTION" (LATEST EDITION) R-4.3.2
3. ABANDON EXISTING STORM DRAIN
4. INSTALL PRECAST CONCRETE JUNCTION BOX
5. CONNECT TO EXISTING STORM DRAIN (CONTRACTOR TO VERIFY SIZE, INVERT AND LOCATION OF EXISTING STORM DRAIN)
6. INSTALL TEMPORARY PLUG AND CAP

BENCHMARK

BM #	DESCRIPTION	NAVD 88 DATUM	NAVD 88 DATUM
5LV09-34NE6	RIVET AND PLATE IN TOP OF CURB @ NORTHEAST CORNER OF DESERT FOOTHILLS AND ALTA DRIVE	3304.45 (FEET)	1007.197 (METERS)

NOTE

THIS SET OF DRAWINGS IS BASED UPON NAVD 88 DATUM. PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUM. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS.

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

CONTRACTOR NOTE:

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APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
PROJECT NO._____ DATE: _____

Call before you Dig
Avoid cutting underground utility lines. It's easy.
Call 811
OR
1-800-227-2600

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

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

ENGINEER - STATE OF NEVADA
JOSHUA L. JOHNSON
No. 19846
PROFESSIONAL
DATE: 5/20/13

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	CCW APP

PROJECT NO. 62023B-227
DESIGN: DFK
DRAWN: DFK
CHECK: JLJ
PLOT DATE: 05-20-13
PLOT TIME: 14:11:37

G.C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BLVD., LAS VEGAS, NV 89146
T: 702.804.2000 F: 702.804.2299 - GCWALLACE.COM
LAS VEGAS - MESQUITE

LAS VEGAS

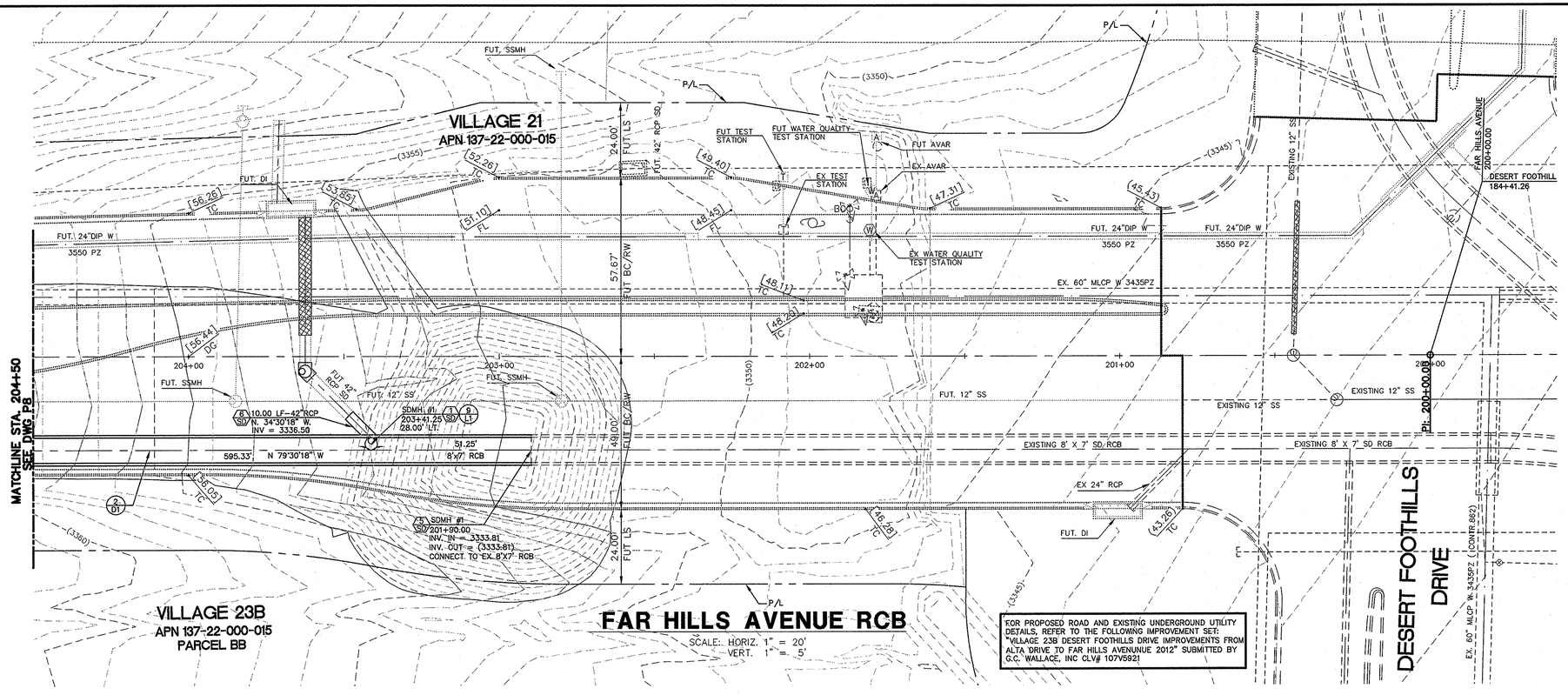
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Humberto Franco-Rivas

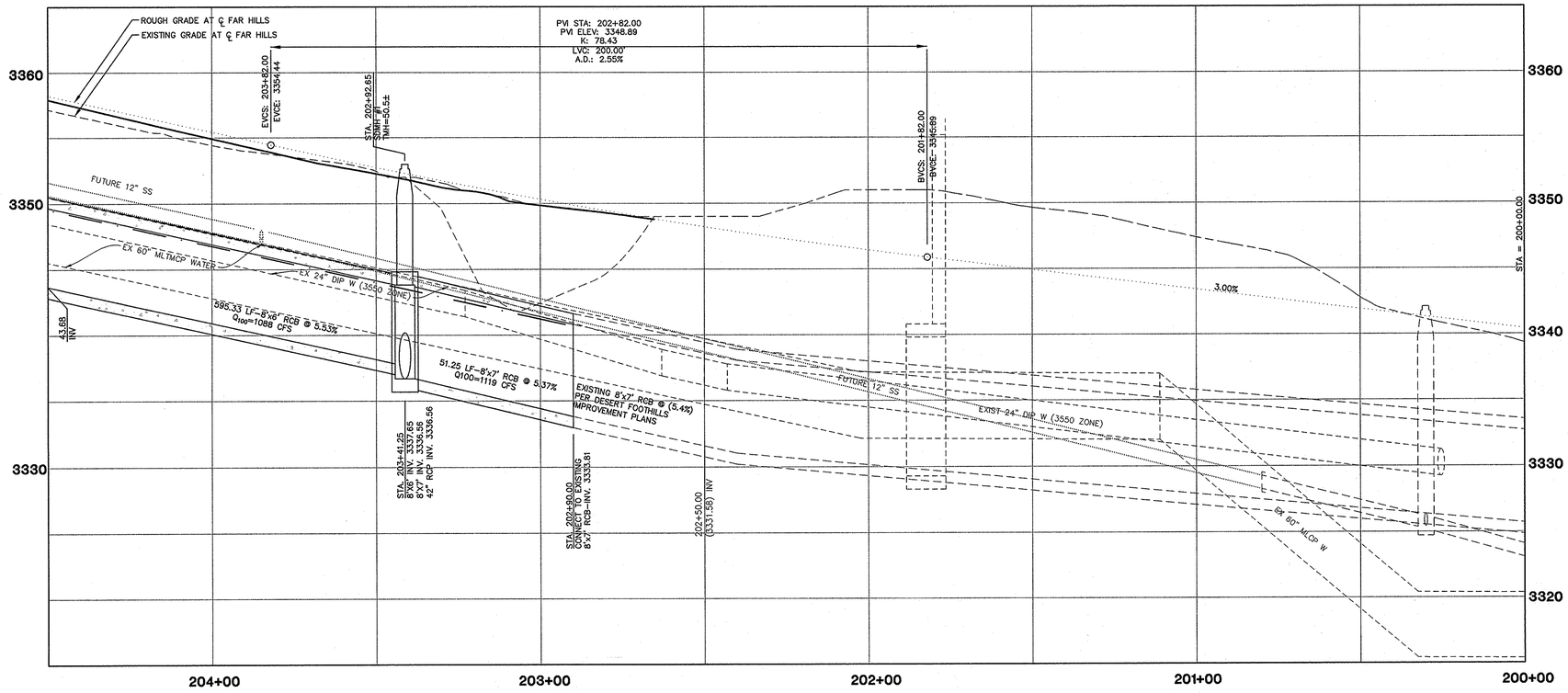
THE HOWARD HUGHES COMPANY, LLC

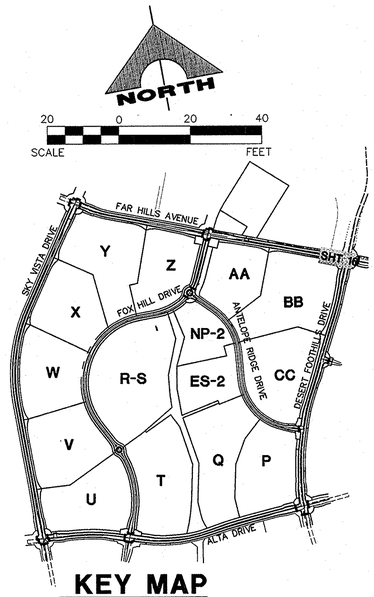
VILLAGE 23B FAR HILLS AVE RCB IMPROVEMENTS
SKY VISTA DRIVE TO DESERT FOOTHILLS DRIVE

PLAN AND PROFILE 8

DRAWING
P8
18 OF 24 SHTS







KEY MAP

NOT TO SCALE

STORM DRAIN CONSTRUCTION NOTES:

1. INSTALL 48" TYPE IA STORM DRAIN MANHOLE PER DTL 1, DWG D1
2. INSTALL NDOT TYPE 4 MANHOLE PER "NDOT STANDARD PLANS FOR ROAD AND BRIDGE CONSTRUCTION" (LATEST EDITION) R-4.3.2
3. ABANDON EXISTING STORM DRAIN
4. INSTALL PRECAST CONCRETE JUNCTION BOX
5. CONNECT TO EXISTING STORM DRAIN (CONTRACTOR TO VERIFY SIZE, INVERT AND LOCATION OF EXISTING STORM DRAIN)
6. INSTALL TEMPORARY PLUG AND CAP.

BENCHMARK

BM #	DESCRIPTION	NAVD 88 DATUM (FEET)	NAVD 88 DATUM (METERS)
5LV09-34NE6	RIVET AND PLATE IN TOP OF CURB @ NORTHEAST CORNER OF DESERT FOOTHILLS AND ALTA DRIVE	3304.45	1007.197

NOTE

THIS SET OF DRAWNGS IS BASED UPON NAVD 88 DATUM. PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUM. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS.

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

CONTRACTOR NOTE:

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APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
PROJECT NO._____ DATE: _____

Call before you Dig
Avoid cutting underground utility lines. It's costly.
Call 811
OR
1-800-227-2600

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

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

ENGINEER - STATE OF NEVADA
JOSHUA L. WILSON
No. 15681
PROFESSIONAL
DATE: 5/13

REV'D	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

PROJECT NO. 62023B-227
DESIGN: DFK
DRAWN: DFK
CHECK: JLJ
PLOT DATE: 05-20-13
PLOT TIME: 14:11:47

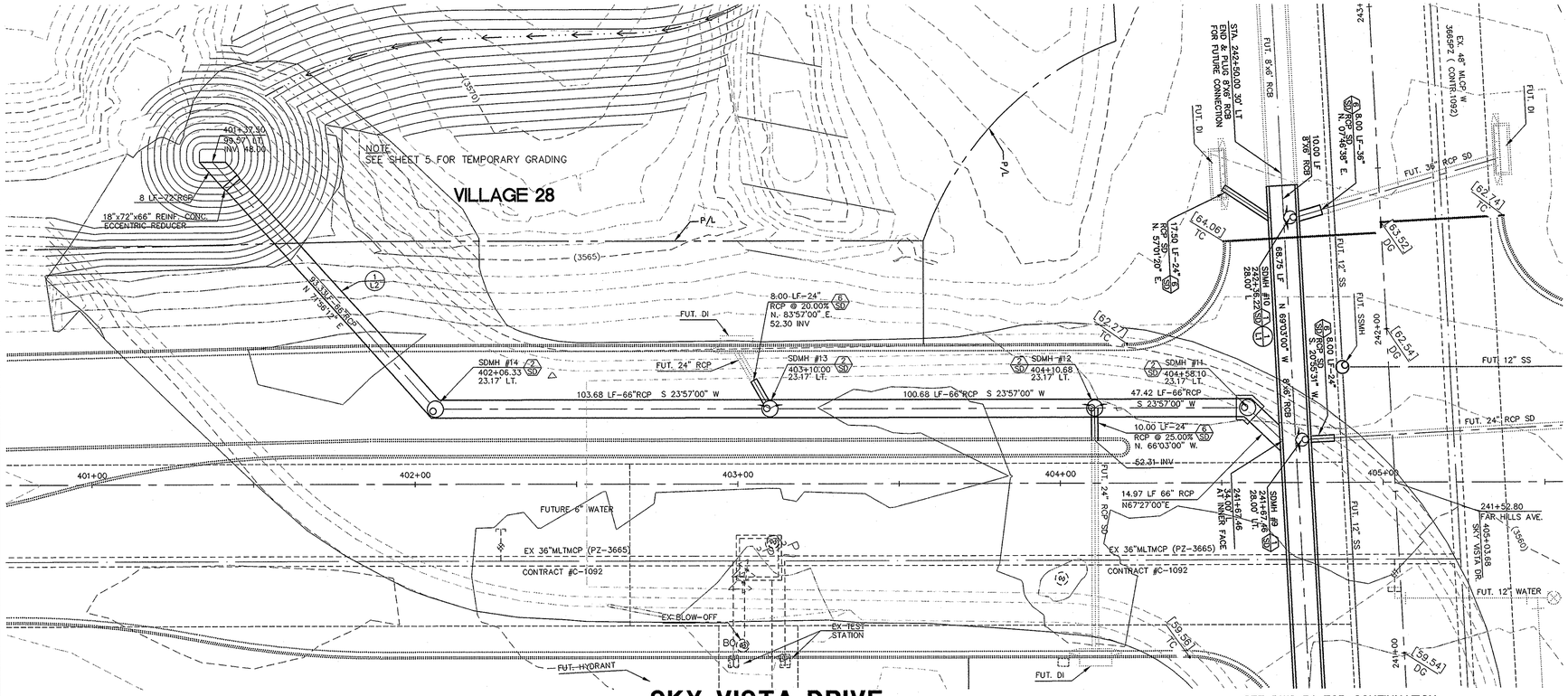
G.C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD, LAS VEGAS, NV 89146
T: 702.804.2000 | F: 702.804.2299 | GCWALLACE.COM
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LAS VEGAS
F:\Projects\600\620238-227\DWG\Production\8-227-PP.dwg
Humberto Franco-Rivas

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 23B FAR HILLS AVE RCB IMPROVEMENTS
SKY VISTA DRIVE TO DESERT FOOTHILLS DRIVE

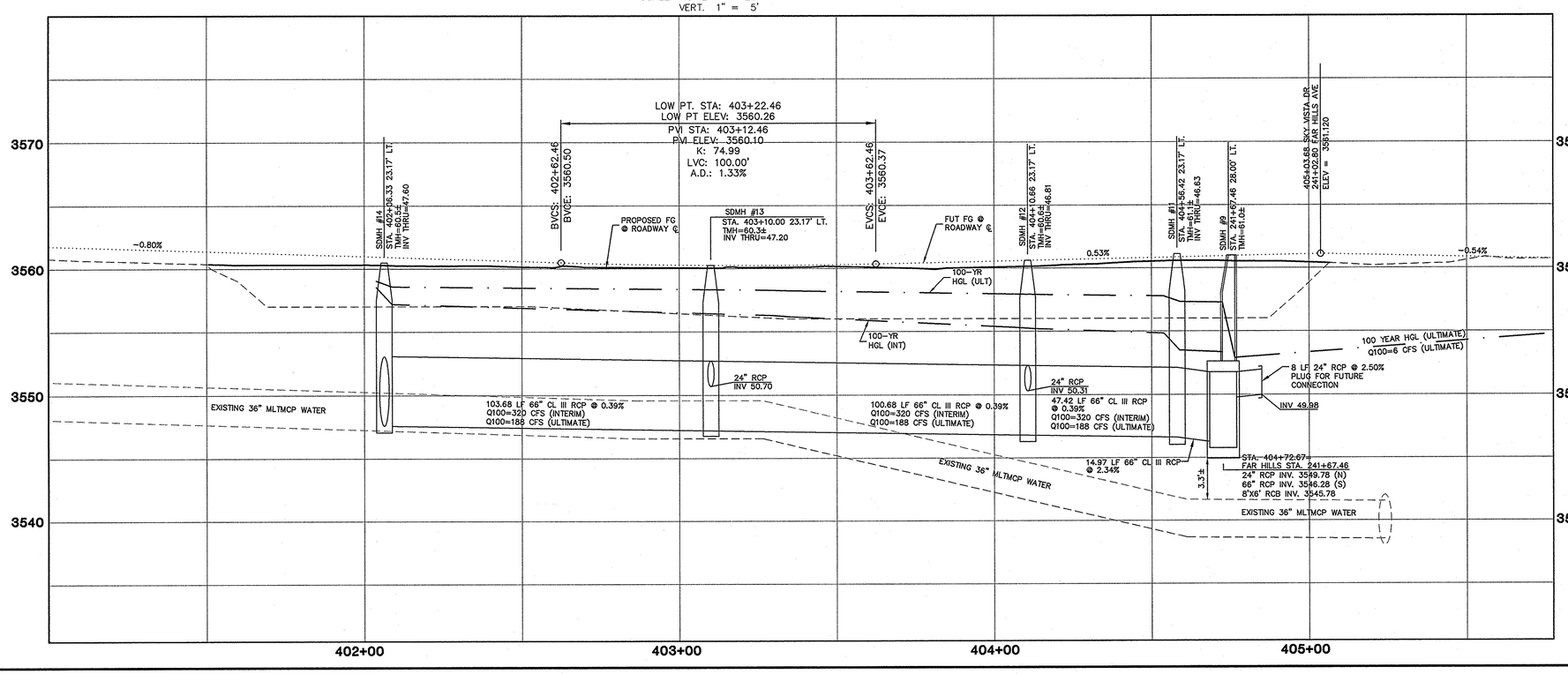
PLAN AND PROFILE 9

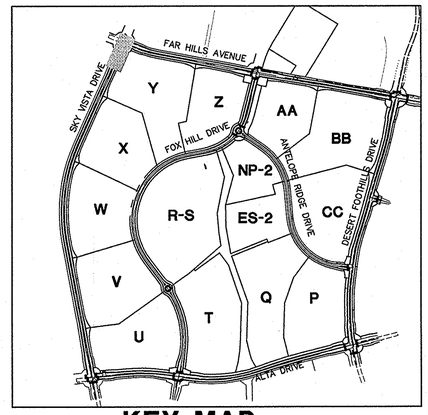
DRAWING
P9
19 OF 24 SHTS



SKY VISTA DRIVE

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'





KEY MAP

NOT TO SCALE

SCALE 20 0 20 40 FEET

NORTH

STORM DRAIN CONSTRUCTION NOTES:

1 SD — INSTALL 48" TYPE IA STORM DRAIN MANHOLE PER DTL 1, DWG D1
2 SD — INSTALL NDOT TYPE 4 MANHOLE PER "NDOT STANDARD PLANS FOR ROAD AND BRIDGE CONSTRUCTION" (LATEST EDITION) R-4.3.2
3 SD — ABANDON EXISTING STORM DRAIN
4 SD — INSTALL PRECAST CONCRETE JUNCTION BOX
5 SD — CONNECT TO EXISTING STORM DRAIN (CONTRACTOR TO VERIFY SIZE, INVERT AND LOCATION OF EXISTING STORM DRAIN)
6 SD — INSTALL TEMPORARY PLUG AND CAP

BENCHMARK

BM #	DESCRIPTION	NAVD 88 DATUM (FEET)	NAVD 88 DATUM (METERS)
9LV09-34NE6	RIVET AND PLATE IN TOP OF CURB @ NORTHEAST CORNER OF DESERT FOOTHILLS AND ALTA DRIVE	3304.45	1007.197

NOTE

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BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

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APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
PROJECT NO._____ DATE: _____

Call before you Dig
Avoid cutting underground utility lines. It's costly.
Call 811 or 1-800-227-2600

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

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

ENGINEER - STATE OF NEVADA
TOSHIO YOSHIOKA
No. 15132
PROFESSIONAL
Exp. 06/30/2013
DATE:

DESCRIPTION	DATE	AGEN APP	DATE	CCW APP

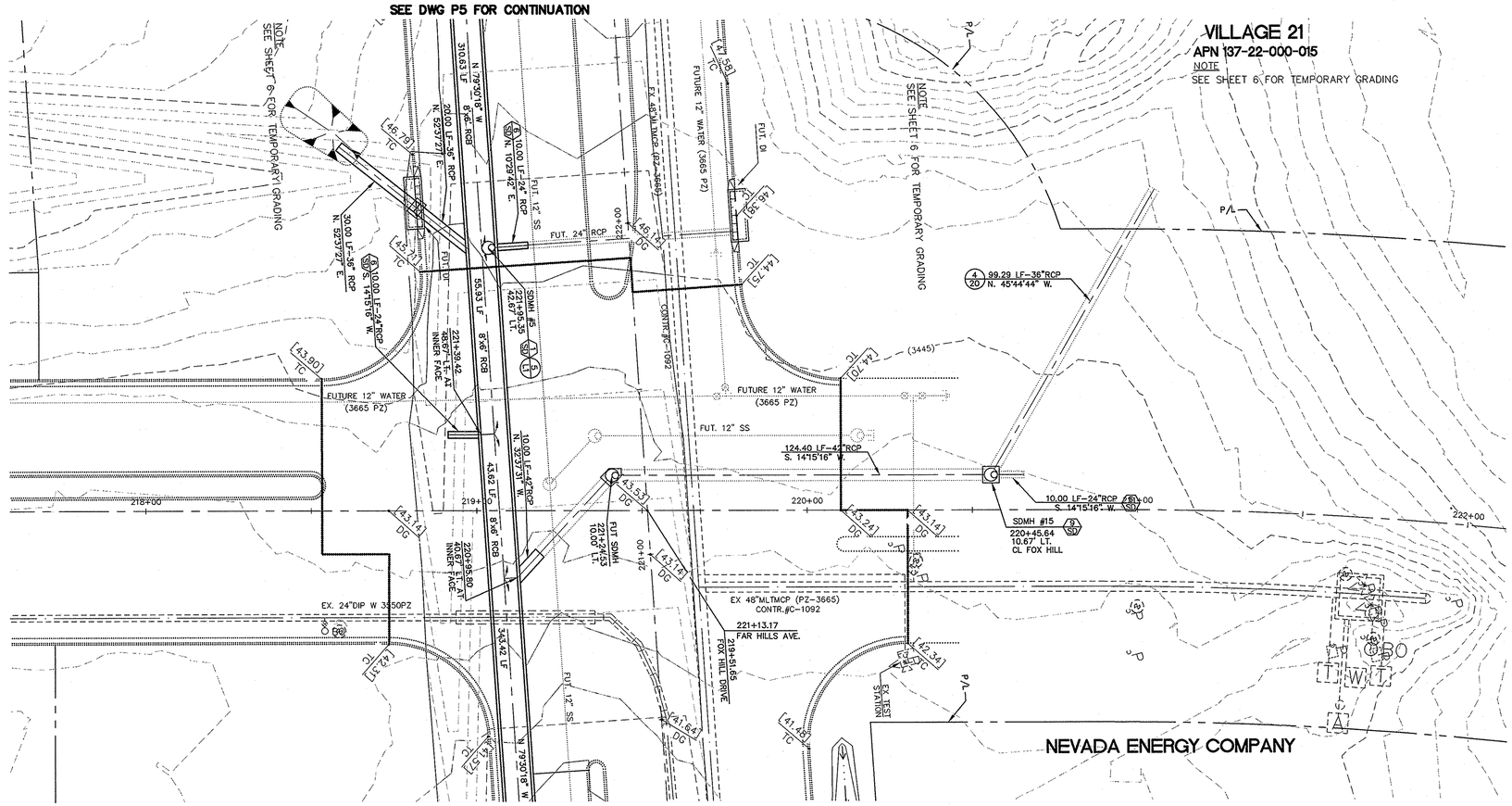
PROJECT NO. 62023B-227
DESIGN: DFK
DRAWN: DFK
CHECK: JLJ
PLOT DATE: 05-20-13
PLOT TIME: 14:11:57

G.C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
555 S. RAINBOW BOULEVARD, LAS VEGAS, NV 89145
T: 702.804.2000 F: 702.804.2299 GCWALLACE.COM
LAS VEGAS MESQUITE

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Humberto Fronco-Rivas

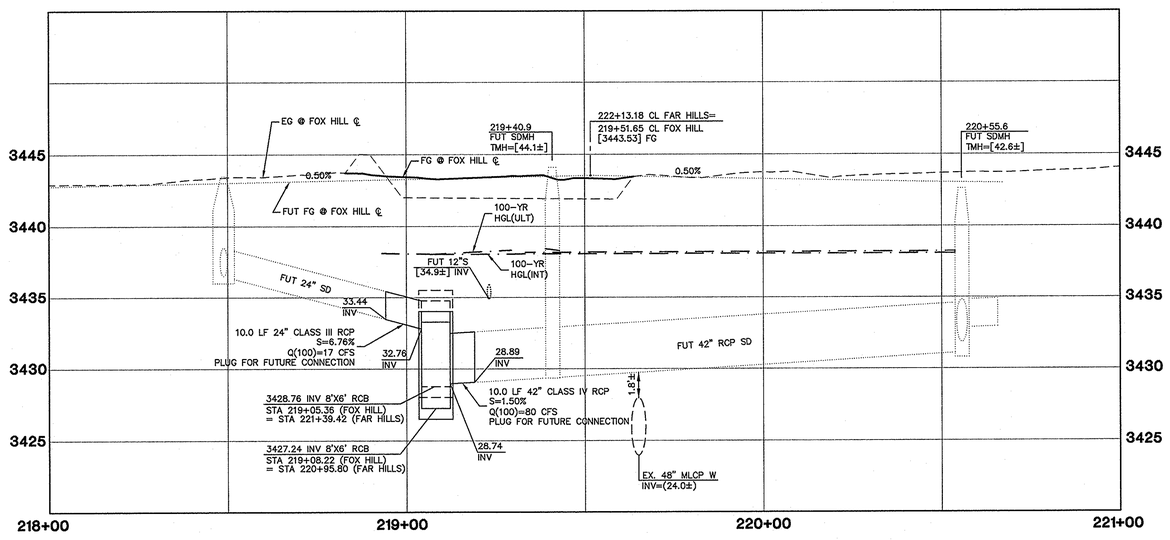
THE HOWARD HUGHES COMPANY, LLC
VILLAGE 23B FAR HILLS AVE RCB IMPROVEMENTS
SKY VISTA DRIVE TO DESERT FOOTHILLS DRIVE
PLAN AND PROFILE 10

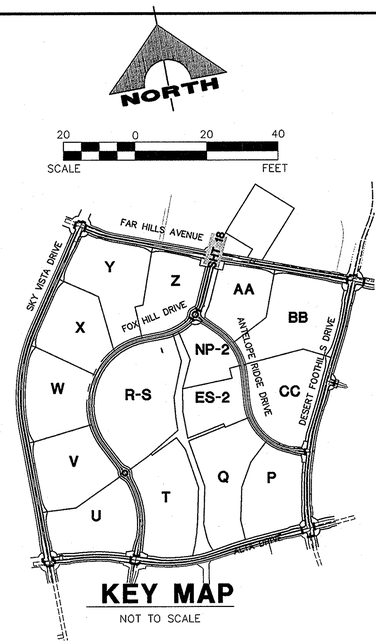
DRAWING P10
20 OF 24 SHTS



FOX HILL DRIVE

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'





KEY MAP

NOT TO SCALE

STORM DRAIN CONSTRUCTION NOTES:

1 SD INSTALL 48" TYPE IA STORM DRAIN MANHOLE PER DTL 1, DWG D1
2 SD INSTALL NDOT TYPE 4 MANHOLE PER "NDOT STANDARD PLANS FOR ROAD AND BRIDGE CONSTRUCTION" (LATEST EDITION) R-4.3.2
3 SD ABANDON EXISTING STORM DRAIN
4 SD INSTALL PRECAST CONCRETE JUNCTION BOX
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BENCHMARK

BM #	DESCRIPTION	NAVD 88 DATUM	NAVD 88 DATUM
5LV09-34NE6	RIVET AND PLATE IN TOP OF CURB @ NORTHEAST CORNER OF DESERT FOOTHILLS AND ALTA DRIVE	3304.45 (FEET)	1007.197 (METERS)

NOTE

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APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
PROJECT NO._____ DATE: _____

Call before you Dig
Avoid cutting underground utility lines. It's costly.
Call 811
OR
1-800-227-2600

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

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

ENGINEER - STATE OF NEVADA
JOSHUA L. JOHNSON
No. 15781
PROFESSIONAL
EXP. 06/30/2015
DATE: 5/13

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

PROJECT NO. 62023B-227
DESIGN: DFK
DRAWN: DFK
CHECK: JLJ
PLOT DATE: 05-20-13
PLOT TIME: 14:12:07

G.C. WALLACE COMPANIES
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T: 702.804.2000 - F: 702.804.2299 - GCWALLACE.COM
LAS VEGAS - MESQUITE
LAS VEGAS

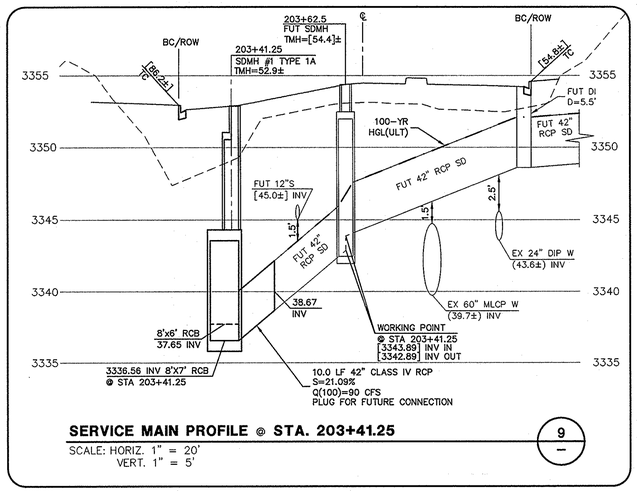
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Humberto Franco-Rivas

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 23B FAR HILLS AVE RCB IMPROVEMENTS
SKY VISTA DRIVE TO DESERT FOOTHILLS DRIVE

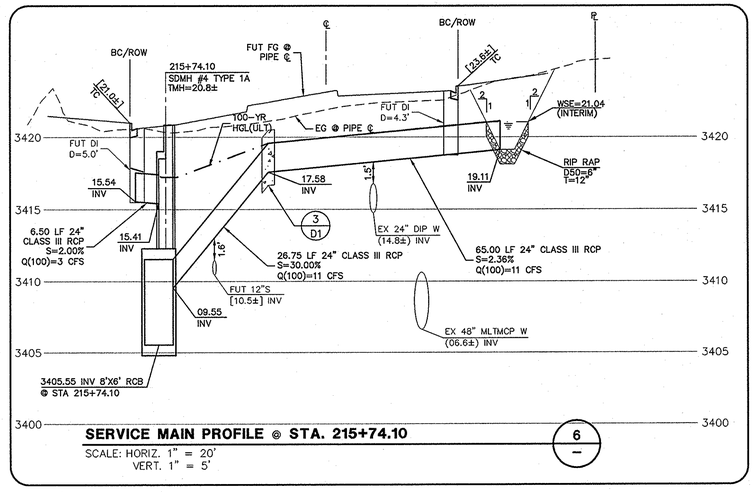
PLAN AND PROFILE 11

DRAWING
P11
21 OF 24 SHTS



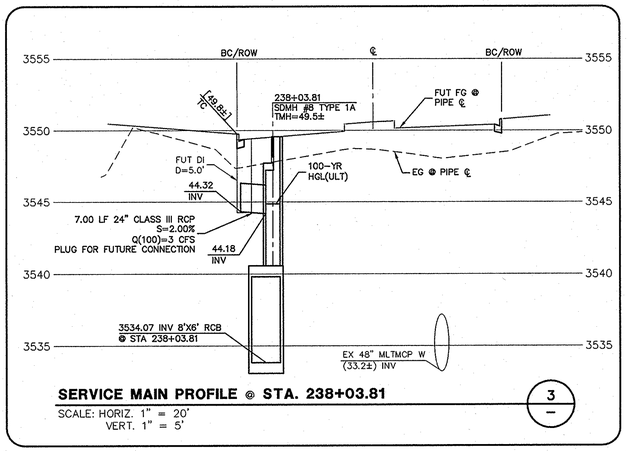
SERVICE MAIN PROFILE @ STA. 203+41.25 — 9

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'



SERVICE MAIN PROFILE @ STA. 215+74.10 — 6

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'



SERVICE MAIN PROFILE @ STA. 238+03.81 — 3

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'

SERVICE MAIN PROFILE @ STA. 209+36.59 — 8

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'

SERVICE MAIN PROFILE @ STA. 221+95.35 — 5

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'

SERVICE MAIN PROFILE @ STA. 238+53.77 — 2

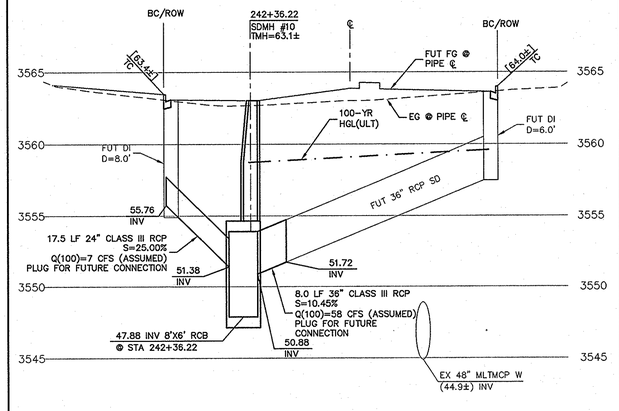
SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'

EXISTING 42" RCP PROFILE @ STA. 213+46.67 — 7

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'

SERVICE MAIN PROFILE @ STA. 231+28.97 — 4

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'



SERVICE MAIN PROFILE @ STA. 242+36.22 — 1

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
PROJECT NO. 121802 DATE:

ENGINEER - STATE OF NEVADA
JOSHUA L. PEDERSON
No. 15685
PROFESSIONAL
05/07/2013
DATE: 5/20/13

REV	DATE	DESCRIPTION	DATE	AGENCY APP	DATE	CCW APP

PROJECT NO. 62023B-227
DESIGN: DFK
DRAWN: DFK
CHECK: JLJ
PLOT DATE: 05-20-13
PLOT TIME: 14:12:16

G.C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
6671 S. LAS VEGAS BLVD., SUITE 210, LAS VEGAS, NV 89119
T: 702.382.2000 F: 702.824.2299 GCWALLACE.COM
LAS VEGAS · MESQUITE

LAS VEGAS

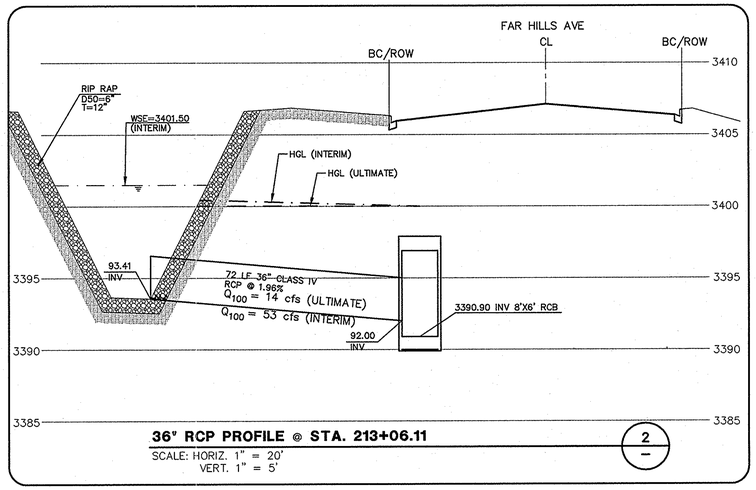
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Humberto Fonseca-Rivas

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 23B FAR HILLS AVE RCB IMPROVEMENTS
SKY VISTA DRIVE TO DESERT FOOTHILLS DRIVE

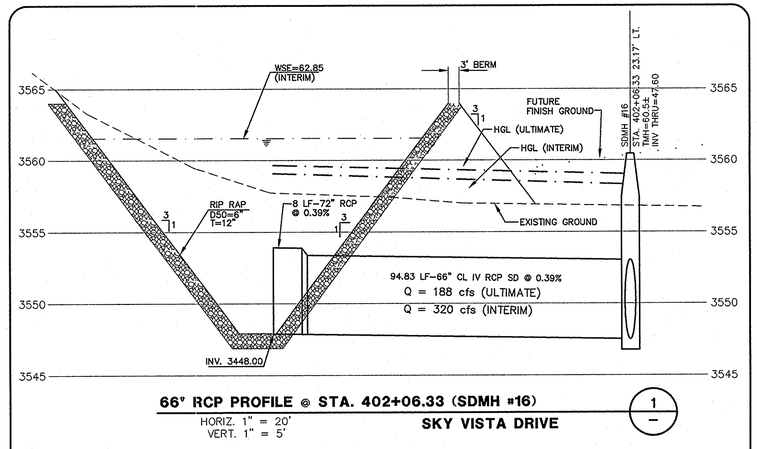
SERVICE PROFILES 1

DRAWING
L1
22 OF 24 SHTS



36" RCP PROFILE @ STA. 213+06.11 (2)

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'



66" RCP PROFILE @ STA. 402+06.33 (SDMH #16) (1)

HORIZ. 1" = 20'
VERT. 1" = 5'

SKY VISTA DRIVE

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

PROJECT NO._____ DATE: _____
SHEETS

H #-
CLV #

ENGINEER - STATE OF NEVADA
JOSHUA L. JOHNSON
No. 15789
PROFESSIONAL
DATE: 6/5/13

REV	DATE	DESCRIPTION	AGEN APP	DATE	CCW APP

PROJECT NO. 62023B-227
DESIGN: DFK
DRAWN: DFK
CHECK: JLJ
PLOT DATE: 05-05-13
PLOT TIME: 13:59:41

G.C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BLVD - LAS VEGAS, NV 89146
T: 702.804.2000 - F: 702.804.2299 - GCWALLACE.COM
LAS VEGAS MESQUITE

LAS VEGAS

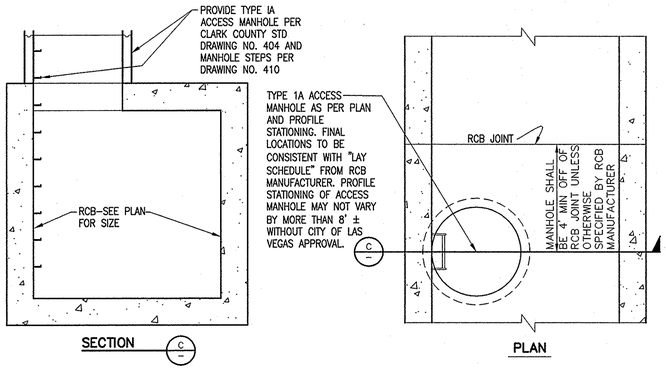
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Daniel Kelley

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 23B FAR HILLS AVE RCB IMPROVEMENTS
SKY VISTA DRIVE TO DESERT FOOTHILLS DRIVE

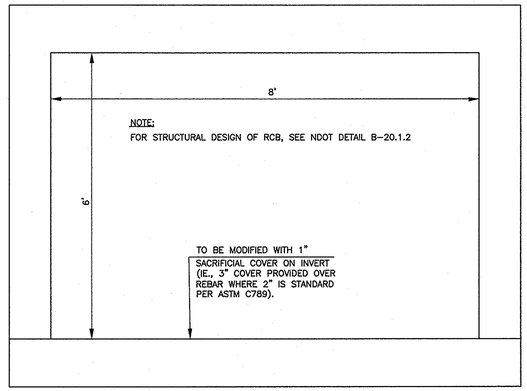
SERVICE PROFILES 2

DRAWING
L2
23 OF 24 SHTS



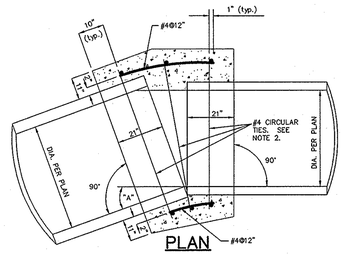
MANHOLE TO RCB DETAIL 1

SCALE: N.T.S.



TYPICAL SECTION 8'X6' RCB 2

SCALE: N.T.S.



NOTES:

1. WHERE THE SLOPE OF THE UPSTREAM PIPE IS GREATER THAN THE SLOPE OF THE DOWNSTREAM PIPE, JOIN SOFFITS. WHERE THE SLOPE OF THE UPSTREAM PIPE IS LESS THAN THE SLOPE OF THE DOWNSTREAM PIPE, JOIN INVERTS.

2. WHERE THE SPACE BETWEEN THE PIPE EXTREMITIES EXCEEDS 2 1/2 INCHES, THE NUMBER OF CIRCULAR TIES SHALL BE INCREASED TO MAINTAIN A MAXIMUM SPACING OF 6 INCHES CENTER TO CENTER. CIRCULAR TIES SHALL HAVE A DIAMETER 5 INCHES GREATER THAN THE OUTSIDE DIAMETER OF THE LARGER PIPE.

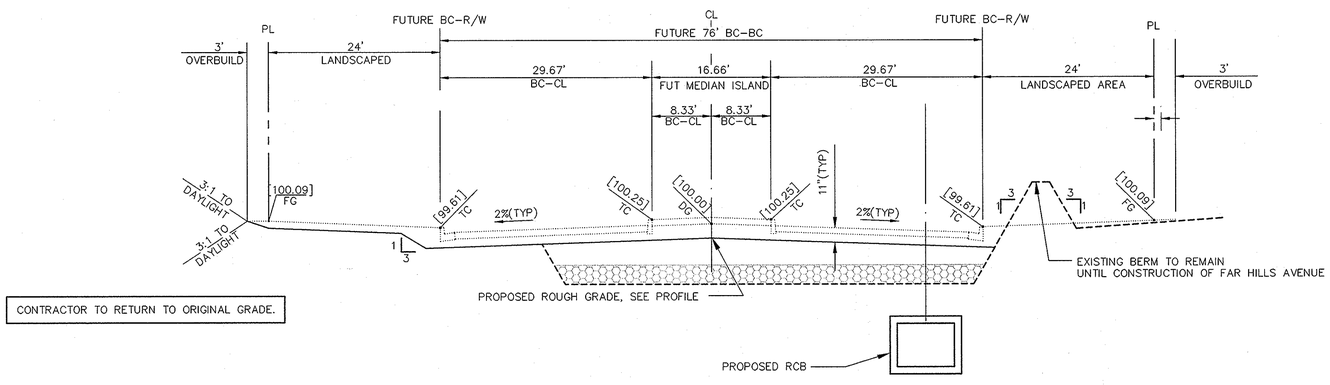
3. CONTRACTOR TO USE CONCRETE COLLAR WHEN CONNECTING TO AN EXISTING STUB WHERE A FIELD ADJUSTMENT IS NEEDED. ANGLE "A" SHALL NOT EXCEED 45°.

CIRCULAR TIES:

PIPE DIAMETER	SPACE BETWEEN PIPE EXTREMITIES	NO. OF CIRCULAR TIES
21" or less	2 1/2"	3
24" to 30"	2 1/2" or less	3
33" to 57"	2 1/2" or less	4
60" to 72"	2 1/2" or less	5

CONCRETE COLLAR DETAIL 3

SCALE: N.T.S.



FUTURE FAR HILLS AVENUE

(PUBLIC NEIGHBORHOOD ARTERIAL WITH BIKE LANES)

HORZ: 1"=10'
VERT: 1"=5'

A

STATE OF NEVADA — PROFESSIONAL ENGINEER — No. 15989 — CIVIL — Exp. 12/31/2015 — DATE:

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

PROJECT NO. **62023B-227**

DESIGN: DFK
DRAWN: DFK
CHECK: JLJ
PLOT DATE: 05-20-13
PLOT TIME: 14:12:25

G.C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 SOUTH RAINBOW BLVD. | LAS VEGAS, NV 89146
T: 702.804.2000 F: 702.804.2299 GCWALLACE.COM
LAS VEGAS | MESQUITE

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Humberto Fonseca-Rivas

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 23B FAR HILLS AVE RCB IMPROVEMENTS
SKY VISTA DRIVE TO DESERT FOOTHILLS DRIVE

DETAILS

DRAWING **D1**

24 OF 24 SHTS