DS #: 3656

APN: 125-17-702-002

PROJECT: VILLAGE OF CENTENNIAL SPRINGS

SUBMITTAL: 17TH

SCANNED BY/DATE:

CHECKED BY/DATE:

CITY OF LAS VEGAS
INTER-OFFICE MEMORANDUM

DATE: December 21, 2011

TO:
Land Development Services
Department of Public Works

FROM:
Albert Sung, P.E.
Flood Control Project Engineer
Department of Public Works

SUBJECT: Technical Drainage Study for:
Village of Centennial Springs – Update #11 (Unit 4)

COPIES TO:
Latitude Consulting, LLC.
Harmony Homes
Bart Anderson, P.E., DevCo
NDOT

Cross Streets:	SWC of Tule Springs & El Capitan (Farm)	
File Number:	F:\#Depot\DSMEMOS\DS3656S.doc	
Parcel Number:	125-17-702-002	
Zoning Action:	N/A	
FEMA Flood Zone	YES	NO X
Proposed Storm Drain	YES X	NO

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Trn. No.
1st Submittal	9/23/2004	10/06/2004	Not Approved	$400.00	9950: $400
2nd Submittal	11/24/2004	12/8/2004	Not Approved	$400.00	12699: $400
3rd Submittal	12/21/2004	1/4/2005	Conditional Approval	$400.00	13952: $400
4th Submittal	3/29/2005 & 5/2/2005	5/3/2005	Approved	$400.00	18998: $400
Revision	5/5/2005	5/6/2005	Approved	N/C	N/C
5th Submittal	6/1/2005	6/2/2005	Approved	$400.00	22960: $400
6th Submittal	8/15/2005	8/19/2005	Approved	$100.00	27750: $100
7th Submittal	9/16/2005	9/29/2005	Not Approved	$400.00	29833: $400
8th Submittal	10/24/2005	10/24/2005	Approved	N/C	N/C
Revision	11/9/2005	11/9/2005	Approved	N/C	N/C
9th Submittal	11/10/2005	11/21/2005	Approved	$100.00	33246: $100
10th Submittal	2/10/2006 & 3/1/2006	3/6/2006	Approved	$400.00	38542: $400
11th Submittal	3/9/2006	3/23/2006	Approved	$400.00	40223: $400
12th Submittal	6/28/2006	7/19/2006	Approved	$400.00	Paid: $400
13th Submittal	9/28/2006, 12/6/2006 & 12/22/2006	1/3/2007	Approved	$400.00	54968: $400
14th Submittal	12/6/2006 & 12/22/2006	1/3/2007	Approved	$100.00	58987: $100
15th Submittal	3/30/2007	4/13/2007	Approved	$100.00	66108: $100
16th Submittal	3/4/2009	3/13/2009	Approved	$100.00	116422: $100
17th Submittal	12/19/2011	12/21/2011	See Comments Below	$400.00	269273: $400
			TOTAL FEES (LDDRS):	**$4,900.00**	----

REMARKS:

17th Submittal: Revise F.F. Elevation of Lot 69 in Unit 4

16th Submittal: Update #10 to revise architectural elevations of houses in Unit 1 to Unit 5 and Re-Validate the drainage study

15th Submittal: Update #9 for Minor Parking-Lot Layout Revision in the Mixed-Use Portion of the Village of Centennial Springs

14th Submittal: Update #8 to revise Glider Ridge Street to a cross-fall section

13th Submittal: Update #7 to replace a 48" pipe at Bellfry & Tule Springs with a 38"x60" Elliptical

12th Submittal: Update to adjust the finish floor elevations for Buildings 10 & 14 to 16

11th Submittal: Update to Raise the F.F. and to Adjust the lot lines of Lots 126-131. Also to relocate SDMH #2, DI #3 and DI #4 approximately 15' to the east

10th Submittal: Update to revise F.F. / street grading in Unit 4, Unit 5 and the Brownstones

9th Submittal: Update to revise offsite channel geometry along the west property line

7th & 8th Submittals: Update #3 and Supplement to change the Finish Floor Elevation of Buildings 1 & 2 and Additional Building in Park Only

6th Submittal: Update #2 to revise the size of storm drain in Tule Springs Road

5th Submittal: Update #1 to adjust the finish floor elevations from Lot 126 through Lot 131

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

X	is approved subject to conformance to all City standards and the following conditions:
	must be resubmitted or supplemented including the following:
	is conditionally approved subject to Clark County Regional Flood Control District concurrence.
	is conditionally approved subject to Nevada Department of Transportation (NDOT) concurrence

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

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

END OF REMARKS
B&H/PBJ/ays

T/R/S: T19S/R60E/17
AREA G-17

TECHNICAL DRAINAGE STUDY UPDATE

Rec'd: 12/19/11
DS3656-11
G-17
$400

UPDATE #11
TO THE
TECHNICAL DRAINAGE STUDY FOR THE VILLAGE OF CENTENNIAL SPRINGS

City of Las Vegas
Nevada
Date: December 19, 2011

Prepared for:

Harmony Homes
8912 Spanish Ridge Avenue, Suite 200
Las Vegas, NV 89148
Phone: (702) 478-8375
Fax: (702) 586-3527

LATITUDE CONSULTING, LLC
Land Development Services
Asset & Program Management

HYDROLOGIC CRITERIA AND DRAINAGE MANUAL

DRAINAGE STUDY INFORMATION FORM

Name of Development: Village of Centennial Springs Date: 12/19/2011

Location of Development: a) Descriptive (Cross Streets) North/South: Tule Springs Road

East/West: Farm Road

b) Section: 17 Township: 19 S Range: 60 E

c) APN : 125-17-702-002

Name of Owner: Harmony Homes

Telephone No.: (702) 478-8375 Fax No.: (702) 586-3527 E-Mail Address: bwilson@harmonyhomes..com

Address: 8912 Spanish Ridge Avenue, Suite 200, Las Vegas, NV 89148

Contact Person-Name: Darryl Lattimore, P.E. **Telephone No.:** (702) 612-8891

*** E-Mail Address:** dlattimore@latitude-nv.com **Fax No.:** (866) 266-5582

Firm: Latitude Consulting, LLC

Address: 2677 African Violet Avenue, Henderson, NV 89074

Type of Land Development/Land Disturbance Process:

	Rezoning		Subdivision Map		Clearing and Grading Only
	Parcel Map		Planned Unit Development		Other (Please specify below)
	Large Parcel Map	X	Building Permit		Existing Condition Analysis for Use Permit

1. Total Owned Land Area: At Site: 41.02 AC Being Developed/Disturbed: 41.02 AC
2. Is a portion or all of the subject property located in a designated FEMA Flood Hazard Area? ☐ **Yes**** ☒ **No**
3. Is the property bordered or crossed by an existing or proposed Clark County Regional Flood Control District Master Planned Facility? ☐ **Yes**** ☒ **No**
4. Proposed type of development (Residential, Commercial, Etc.): Residential and Commercial
5. Approximate upstream land area which drains to the subject site: 500 AC
6. Has the site drainage been evaluated in the past? ☒ **YES** ☐ **NO** If yes, please identify documentation: Technical Drainage Study of Village of Centennial Springs and Addenda
7. If known, please briefly identify the proposed discharge point(s) of runoff from the site: Farm Road and existing culvert under Tule Springs Road
8. Briefly describe your proposed schedule for the subject project: ASAP

12/19/2011

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.**

DS: 3656

Local Entity File No.

Revision	Date

REFERENCE:

HUN1101

STANDARD FORM 1

Updated 05/01/2008

LATITUDE CONSULTING, LLC
Land Development Services
Asset & Program Management

December 19, 2011

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

RE: Update #11 to the Technical Drainage Study for the Village at Centennial Springs (DS#: 3656)

Dear Mr. Sung,

Latitude Consulting is pleased to provide two copies an update to the technical drainage study and improvement plans for the above-mentioned Village of Centennial Springs project. The purpose of this study is to adjust the finished floor elevation of Lot 69 within Unit 4 of the overall project. Lot 69 fronts Orly Avenue and is bounded to the west by Crooked Branch Street within the project site. Table 1 summates the minimum FF elevations for Lot 69 based on the estimated 100-year flow depths within said streets.

Table 1

Lot #	TC Elevation (feet)	FF ON PLANS (feet)	REVISED FF (feet)	DEPTH OF FLOW (feet)	MIN FF BASED ON 2 X D (feet)
69	2560.88 (On Crooked Branch Street)	2563.5	2561.4	0.52	2561.42
69	2558.78 (On Orly Avenue)	2563.5	2561.4	0.62	2559.52

The minimum FF elevation without flood control protection is estimated to be at 2561.42 feet. The bottom course of the proposed 9 LF of screen wall adjacent to Crooked Branch Street will be solid grouted in order to flood protect the FF from additional 0.02 feet of freeboard in the adjacent street. The hydraulic calculations and plan redlines are located in Appendix. The developer would like to start construction of the home on this lot ASAP and will appreciate anything you can do to expedite this matter. Please call us at (702) 612-8891 if you have any questions or concerns.

Sincerely,

LATITUDE CONSULTING, LLC

Darryl C. Lattimore, PE
Principal

APPENDIX

LATITUDE CONSULTING, LLC
Land Development Services
Asset & Program Management

Lot 69 at Crooked Branch
Worksheet for Irregular Channel

Project Description	
Worksheet	Springs Street Sec
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Channel Sl	1.18	%
Discharge	35.00	cfs

Options	
Current Roughness Metho	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.015	
Water Surface Elev	0.52	ft
Elevation Range	0.00 to 0.70	
Flow Area	8.8	ft²
Wetted Perimeter	40.02	ft
Top Width	39.00	ft
Actual Depth	0.52	ft
Critical Elevation	0.60	ft
Critical Slope	0.52	%
Velocity	3.96	ft/s
Velocity Head	0.24	ft
Specific Energy	0.76	ft
Froude Number	1.47	
Flow Type	Supercritical	

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00.00	0+05.00	0.013
0+05.00	0+10.00	0.035
0+10.00	0+12.00	0.013
0+12.00	0+45.00	0.016
0+45.00	0+47.00	0.013
0+47.00	0+57.00	0.035

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00.00	0.70
0+05.00	0.60
0+10.00	0.50
0+10.50	0.50
0+10.50	0.00
0+12.00	0.13
0+28.50	0.46
0+45.00	0.13
0+46.50	0.00
0+46.50	0.50

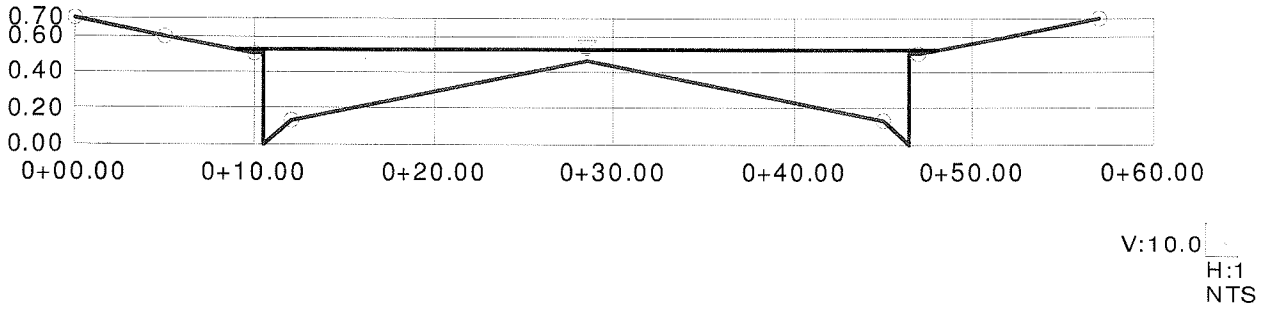
Lot 69 at Crooked Branch
Worksheet for Irregular Channel

Natural Channel Points	
Station (ft)	Elevation (ft)
0+47.00	0.50
0+52.00	0.60
0+57.00	0.70

Lot 69 at Crooked Branch
Cross Section for Irregular Channel

Project Description	
Worksheet	Springs Street Sec
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficie	0.015	
Channel Slope	1.18	%
Water Surface Elev	0.52	ft
Elevation Range	.00 to 0.70	
Discharge	35.00	cfs



Lot 69 at Orly
Worksheet for Irregular Channel

Project Description	
Worksheet	Springs Street Sec
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Channel Sl	1.76	%
Discharge	76.00	cfs

Options	
Current Roughness Metho	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.014	
Water Surface Elev	0.62	ft
Elevation Range	0.00 to 0.70	
Flow Area	13.1	ft²
Wetted Perimeter	49.83	ft
Top Width	48.81	ft
Actual Depth	0.62	ft
Critical Elevation	0.77	ft
Critical Slope	0.41	%
Velocity	5.79	ft/s
Velocity Head	0.52	ft
Specific Energy	1.14	ft
Froude Number	1.97	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00.00	0+05.00	0.013
0+05.00	0+10.00	0.035
0+10.00	0+12.00	0.013
0+12.00	0+45.00	0.016
0+45.00	0+47.00	0.013
0+47.00	0+57.00	0.035

Natural Channel Points

Station (ft)	Elevation (ft)
0+00.00	0.70
0+05.00	0.60
0+10.00	0.50
0+10.50	0.50
0+10.50	0.00
0+12.00	0.13
0+28.50	0.46
0+45.00	0.13
0+46.50	0.00
0+46.50	0.50

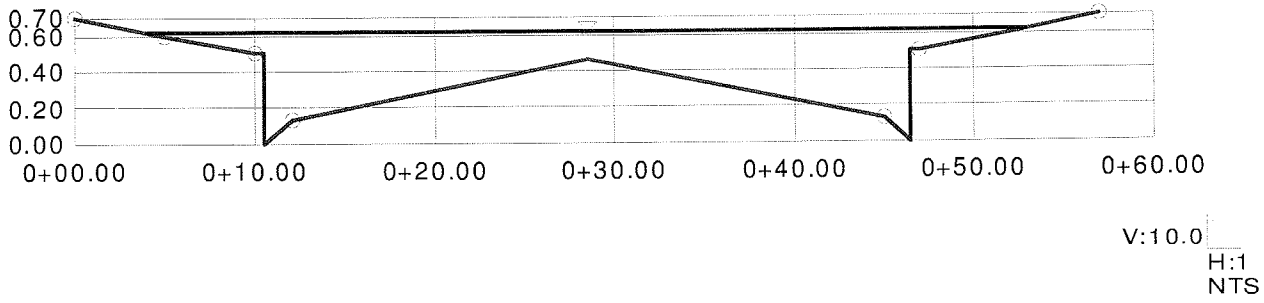
Lot 69 at Orly
Worksheet for Irregular Channel

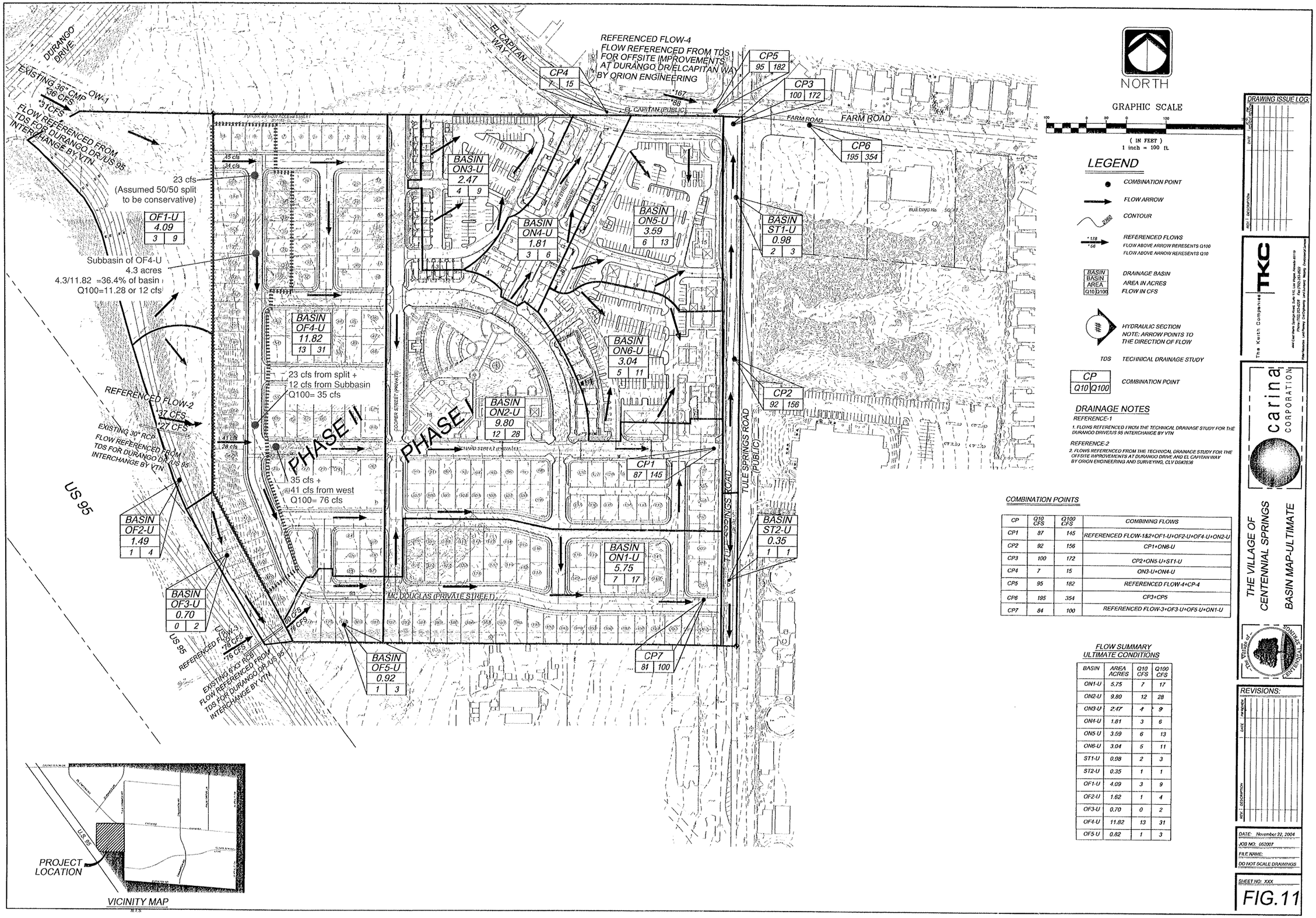
Natural Channel Points	
Station (ft)	Elevation (ft)
0+47.00	0.50
0+52.00	0.60
0+57.00	0.70

Lot 69 at Orly
Cross Section for Irregular Channel

Project Description	
Worksheet	Springs Street Sec
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficie	0.014	
Channel Slope	1.76	%
Water Surface Elev	0.62	ft
Elevation Range	.00 to 0.70	
Discharge	76.00	cfs





DRAINAGE NOTES

REFERENCE-1

1. FLOWS REFERENCED FROM THE TECHNICAL DRAINAGE STUDY FOR THE DURANGO DRIVE/US 95 INTERCHANGE BY VTN

REFERENCE-2

2. FLOWS REFERENCED FROM THE TECHNICAL DRAINAGE STUDY FOR THE OFFSITE IMPROVEMENTS AT DURANGO DRIVE AND EL CAPITAN WAY BY ORION ENGINEERING AND SURVEYING, CLV DS#2636

COMBINATION POINTS

CP	Q10 CFS	Q100 CFS	COMBINING FLOWS
CP1	87	145	REFERENCED FLOW-1&2+OF1-U+OF2-U+OF4-U+ON2-U
CP2	92	156	CP1+ON6-U
CP3	100	172	CP2+ON5-U+ST1-U
CP4	7	15	ON3-U+ON4-U
CP5	95	182	REFERENCED FLOW-4+CP-4
CP6	195	354	CP3+CP5
CP7	84	100	REFERENCED FLOW-3+OF3-U+OF5-U+ON1-U

FLOW SUMMARY ULTIMATE CONDITIONS

BASIN	AREA ACRES	Q10 CFS	Q100 CFS
ON1-U	5.75	7	17
ON2-U	9.80	12	28
ON3-U	2.47	4	9
ON4-U	1.81	3	6
ON5-U	3.59	6	13
ON6-U	3.04	5	11
ST1-U	0.98	2	3
ST2-U	0.35	1	1
OF1-U	4.09	3	9
OF2-U	1.62	1	4
OF3-U	0.70	0	2
OF4-U	11.82	13	31
OF5-U	0.82	1	3

DRAWING ISSUE LOG

NO.	DESCRIPTION	DATE

The Keith Companies TKC

carina CORPORATION

THE VILLAGE OF CENTENNIAL SPRINGS

BASIN MAP-ULTIMATE

REVISIONS:

NO.	DESCRIPTION	DATE

DATE: November 22, 2004

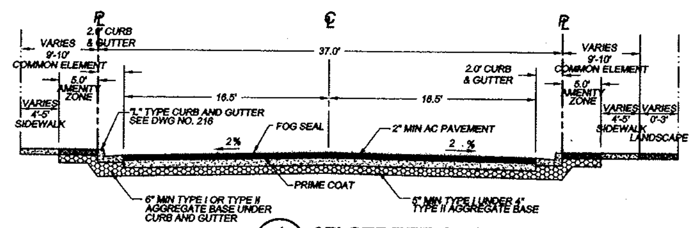
JOB NO: 052007

FILE NAME:

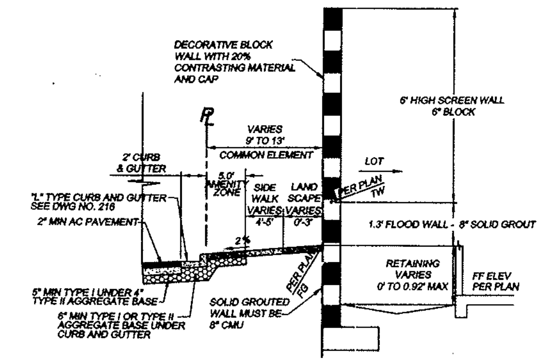
DO NOT SCALE DRAWINGS

SHEET NO: XXX

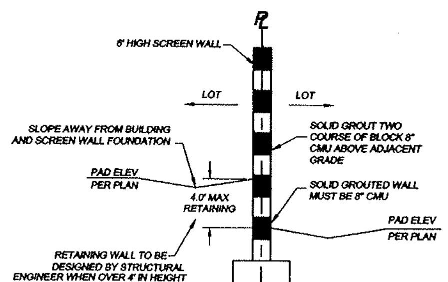
FIG.11



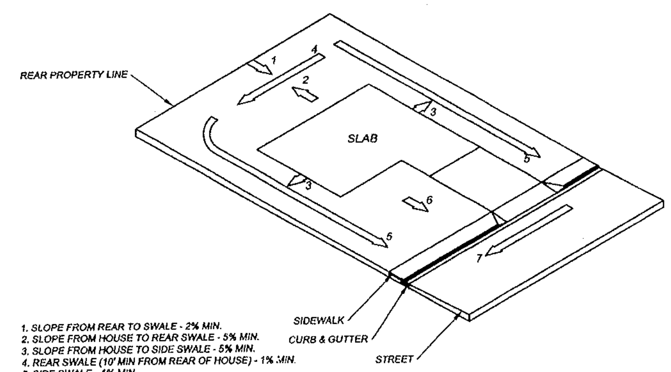
1 37' STREET SECTION (PRIVATE)
INTERIOR STREETS N.T.S.



4 SECTION
N.T.S.

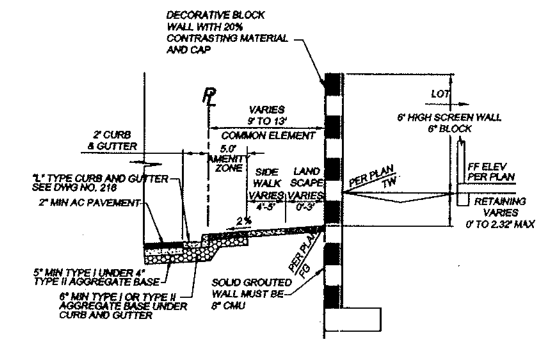


2 SECTION
BETWEEN LOTS

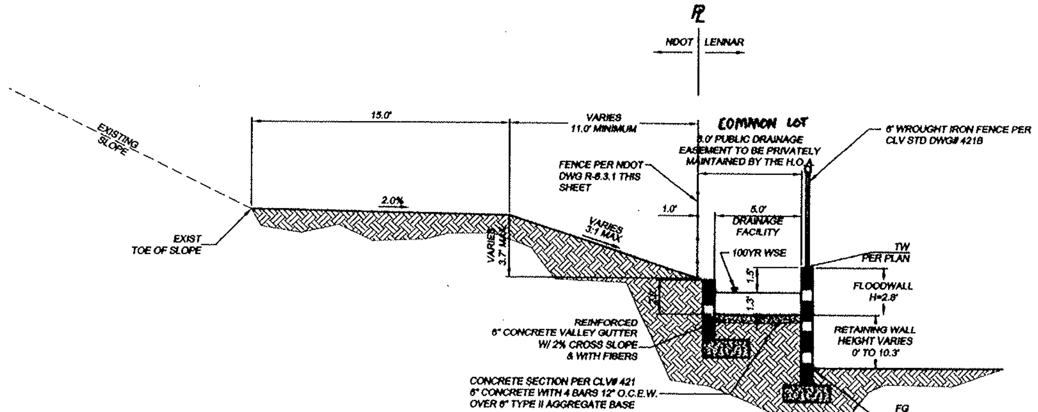


1. SLOPE FROM REAR TO SWALE - 2% MIN.
2. SLOPE FROM HOUSE TO REAR SWALE - 5% MIN.
3. SLOPE FROM HOUSE TO SIDE SWALE - 5% MIN.
4. REAR SWALE (10' MIN FROM REAR OF HOUSE) - 1% MIN.
5. SIDE SWALE - 1% MIN.
6. SLOPE FROM HOUSE TO SIDEWALK - 2% MIN.
7. SLOPE OF STREET

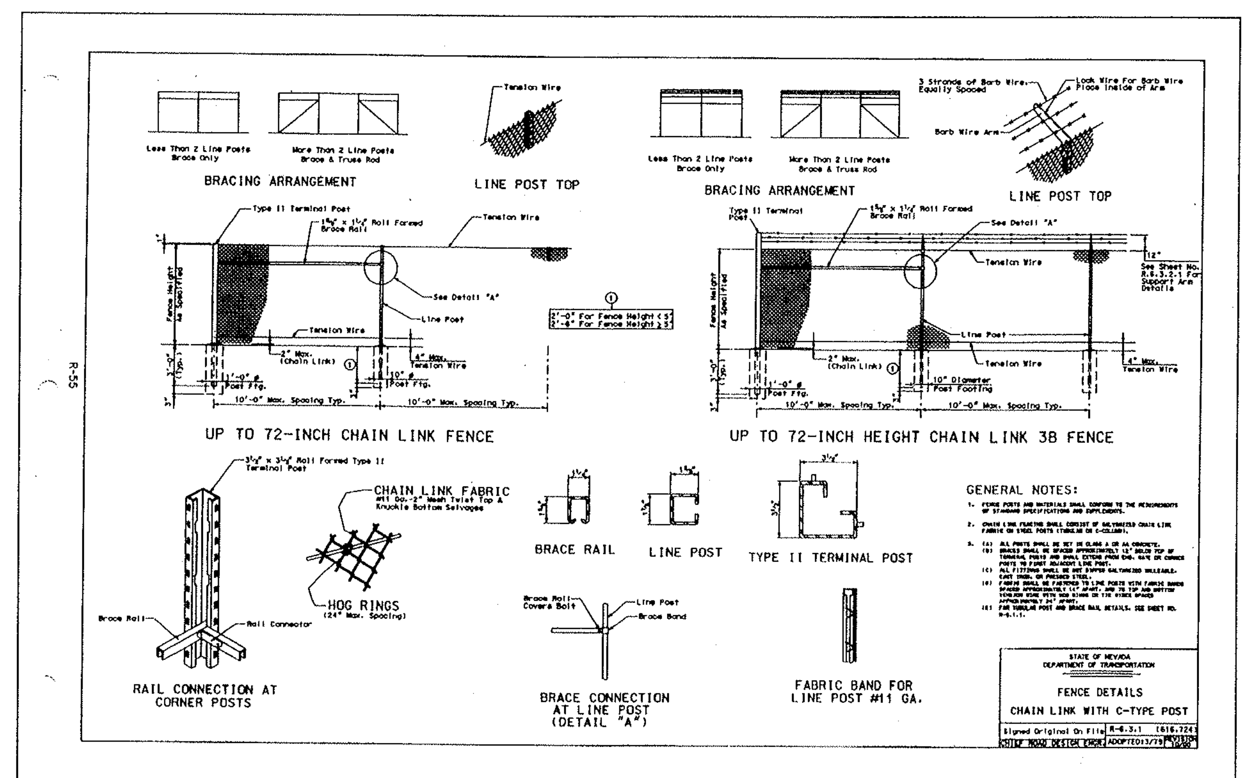
6 TYPICALTYPE "A" LOT GRADING DETAIL
(NOT TO SCALE)



5 SECTION
N.T.S.



3 TYPICAL SECTION
N.T.S.



PROFESSIONAL ENGINEER - STATE OF NEVADA
ALI A. SHAHABI
EXP. 6-30-06
CIVIL
No. 16238
2/22/2006
2/24/06

DRAWING ISSUE LOG:

REV.	DESCRIPTION	DATE	PM REVIEW

Stantec
7251 West Charleston Boulevard, Las Vegas, Nevada 89117

LENNAR
6750 Via Austi Parkway Suite 200
Las Vegas, NV 89119
Ph: 702-458-7700, Fax: 702-458-7706
www.lennar.com

THE VILLAGE OF CENTENNIAL SPRINGS
UNIT 4
DETAILS

REVISIONS:

REV.	DESCRIPTION	DATE	PM REVIEW

DATE: February 22, 2006
JOB NO: 1581219800
FILE NAME:
DO NOT SCALE DRAWINGS

SHEET NO: 3 OF 14
DE-1
CLV #
107 44 867-4