

DS #: 4517

APN: 125-29-601-021

PROJECT: TROPICAL DURANGO PARK - PHASE II

SUBMITTAL: 2ND

SCANNED BY/DATE: _____

CHECKED BY/DATE: _____





CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM			DATE: March 16, 2011	
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: Tropical Durango Park – Phase II			COPIES TO: Stanley Consultants	
Cross Streets:		NWC of Tropical Pkwy. & Durango Drive		Architectural Services, Patrick Batte City of Las Vegas
File Number:		F:\Depot\DSMemos\DS4517B.doc		Bart Anderson, P.E., DevCo
Parcel Number:		125-29-601-021		CCPW
Zoning Action:		SDR-39771		
FEMA Flood Zone		YES	NO	X
Proposed Storm Drain		YES	X	NO

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Transaction #
1 st Submittal	2/1/2011	2/15/2011	Not Approved	\$400.00	161812: \$400
2 nd Submittal	3/8/2011	3/16/2011	See Comments Below	\$400.00	164081: \$400
TOTAL FEES (LDDRS):				\$800.00	----

REMARKS:

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

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

1. The site is adjacent to the jurisdiction of *Clark County* to the west and south. The engineer must coordinate with *Clark County Department of Public Works (CCPW)* and obtain their concurrence prior to the final acceptance of the study.
2. Revise all proposed drop inlets to be constructed per USDCCA Drawing No. 412A. Label the 5'-length of the proposed inlets. Revise the grading plan and all pertinent sheets accordingly.

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

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T/R/S: T19S/R60E/29
AREA G-29

TRANSACTION REPORT

P. 01

MAR-16-2011 WED 03:55 PM

FOR: CITY OF LAS VEGAS

7023828551

SEND

DATE	START	RECEIVER	TX TIME	PAGES	TYPE	NOTE	M#	DP
MAR-16	03:54 PM	3699793	22"	1	FAX TX	OK	672	

TOTAL : 22S PAGES: 1

**CITY OF LAS VEGAS
INTER-OFFICE MEMORANDUM**

DATE:

March 16, 2011

AYS

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:

Tropical Durango Park - Phase II

COPIES TO:

Stanley Consultants

Cross Streets:

NWC of Tropical Pkwy. & Durango Drive

Architectural Services, Patrick Batte
City of Las Vegas

File Number:

F:\Depot\DSMemos\DS4517B.doc

Bart Anderson, P.E., DevCo

Parcel Number:

125-29-601-021

CCPW

Zoning Action:

SDR-39771

FEMA Flood Zone

YES

NO

X

Proposed Storm Drain

YES

X

NO

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	must be resubmitted or supplemented including the following:

TECHNICAL DRAINAGE STUDY UPDATE, ADDENDUM 1 for TROPICAL DURANGO PARK: PHASE II

Date: February 2011

Prepared for:

City of Las Vegas

400 Stewart Avenue
Las Vegas, NV 89101

Phone: (702) 229-6276

SCI # 23248

Stanley Consultants, Inc.

5820 South Eastern Avenue, Suite 200

Las Vegas, Nevada 89119

Phone: (702) 369-9396



Technical Drainage Study Update
for
Tropical Durango Park: Phase II

February 2011

SCI Project # 23248

Prepared for:

City of Las Vegas
333 N. Rancho Drive
Las Vegas, NV 106

Prepared By:

Stanley Consultants, Inc.
5820 South Eastern Avenue, Suite 200
Las Vegas, Nevada 89119

HYDROLOGIC CRITERIA AND DRAINAGE MANUAL
DRAINAGE STUDY INFORMATION FORM

Name of Development: Tropical Durango Park, Phase II Date: February 2011

Location of Development: a) Descriptive (Cross Streets) North/South: Durango Drive
East/West: Tropical Parkway

b) Section: 29 Township: 19 South Range: 60 East

c) APN : 125-29-601-021

Name of Owner: USA - leased to City of Las Vegas, contact: Patrick Batte, AIA

Telephone No.: (702) 229-1046 Fax No.: (702) 464-5702 E-Mail Address: pbatte@LasVegasNevada.GOV

Address: 400 Stewart, LV NV

Contact Person-Name: Helena Murvosh, P.E. Telephone No.: (702)369-9396

* E-Mail Address: murvoshhelena@stanleygroup.com Fax No.: (702)369-9397

Firm: Stanley Consultants, Inc.

Address: 5820 South Eastern Avenue Suite 200, Las Vegas, Nevada 89119

Type of Land Development/Land Disturbance Process:

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

1. Total Owned Land Area: At Site: 11.29 Being Developed/Disturbed: 8.32

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

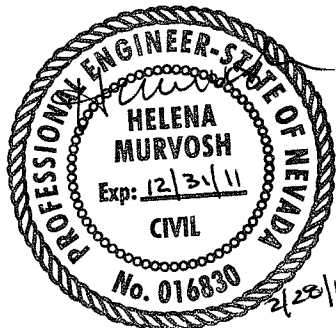
4. Proposed type of development (Residential, Commercial, Etc.): Park

5. Approximate upstream land area which drains to the subject site: 2.66 sq. mi.

6. Has the site drainage been evaluated in the past? ☒ YES ☐ NO If yes, please identify documentation: Tropical Durango Park Phase 1 and 2 by Stanley Consultants, Inc.

7. If known, please briefly identify the proposed discharge point(s) of runoff from the site: Northern Portion to Durango Drive
Southern Portion to the intersection of Tropical Parkway and Durango 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



Stanley Consultants INC.

A Stanley Group Company
Engineering, Environmental and Construction Services - Worldwide

February 25, 2011

Albert Sung, PE
City of Las Vegas
Flood Control
Department of Public Works
333 N. Rancho Drive
Las Vegas, NV 89101

Dear Mr. Sung:

Subject: Technical Drainage Study Update, Addendum 1, for Tropical / Durango Park Phase II, City of Las Vegas File Number DS4517A.

Please accept this letter and attachments as the Technical Drainage Study Update, Addendum 1, for Tropical / Durango Park Phase II. Calculations described and revised figures and plansheets are attached. Your comments on City of Las Vegas Inter-Office Memorandum, dated February 15, 2011, are restated and addressed below:

1. *The site is adjacent to the jurisdiction of Clark County to the west and south. The engineer must coordinate with Clark County Department of Public Works (CCPW) and obtain their concurrence prior to the final acceptance of the study.*

The study and addendum will be submitted to CCPW for concurrence after approval is received from the City of Las Vegas.

2. *Figure 2:*

a) It appears that the "100-year and the "10-year" Storm Event Summary annotation in the table are in the wrong order. Review and revise accordingly;

The annotation was corrected.

b) The 100-year normal depth in Section W (B) in the existing condition is shown to be 1.74' which is hugely different from the other two sections. Correct in the next submittal.

The section was copied from the approved study; however, it appears that the section had incorrectly included a 75.5 ft elevation point on the north side of the road. The section was revised and the new calculation is included. The normal depth decreased to 0.7 ft. Because the error affected only a very small part of the overall cross sectional area, the water surface

elevation, 77.3 ft, did not change, and thus, the proposed improvements to Tropical will, as shown in original submittal, decrease the water surface elevation at this location.

3. *Grading Plan (C-2):*

a) Extend the proposed 18" storm drain in Tropical Pathway to the centerline of Bonita Vista Street. Revise the grading plan and all pertinent plan & profiles accordingly;

The storm drain was extended to the centerline, and the plans were revised.

b) Identify the type and size of the proposed drop inlet on the grading plan;

The requested note was added to the grading plan.

c) Consult with Land Development Section regarding the extent of the overpaving requirement in Tropical Parkway;

Overpaving south of the centerline on Tropical will not be performed because the centerline is the boundary line separating the City of Las Vegas from the County and there is no agreement between the two entities for improvements on the County side of the road.

d) Address what the straight line running from "87.OFG/HP" to "74.4OFG" is? According to the contour lines, this line appears to be a flow line in the upper half but turns to a ridge line in the lower half. A culvert is required if this line indeed discharges at the sidewalk confluence. Address and resolve in the next submittal.

The line was removed from the plan. It was included in Phase 1 to describe to the contractor how the grass area should be sloped. The grading for this area was completed with Phase 1 construction, and the slopes of the grass area are now shown as existing contours. The grass area is basically flat and stormwater from minor events is expected to infiltrate into the soil.

During the 100-year storm event, flow will weir over the sidewalk. The flow from the 100-year event is 6 cfs (referenced from the Ultimate Condition of the approved study for Phase 1, sub-basin C-PARK). The sidewalk is essentially a v-notch weir with an angle less than 175 degrees. The depth of flow is less than 0.5 ft; velocity is less than 2 ft/sec; thus, depth times velocity is well below the 6 ft²/s minimum allowed. Therefore, neither a culvert nor sidewalk underdrain is required.

4. *The City of Las Vegas does not allow Type A drop inlet anymore. Revise the call out for all drop inlets to Modified Type C or equivalent.*

The drop inlet was revised from a 5-ft long Type A to a Type C inlet. The standard Type C is 4-ft long. Because inlet is provided to capture nuisance flow only, the decrease in inlet length is acceptable.

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

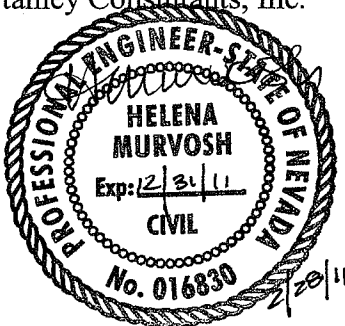
Notes calling out this detail were added to the plans.

If you have any questions regarding this submittal, please contact me at 765-6303 or by email at murvoshhelena@stanleygroup.com.

Thank you.

Sincerely,

Stanley Consultants, Inc.



Helena Murvosh, P.E.
Civil Engineer

Enclosure(s): Standard form 1
Copy of comment letter
Revised normal depth calculation for section "W"
V-notch weir calculation
HC&DDM reference for weir coefficient
Ultimate condition map for flow rate discharged from sub-basin C-PARK
Figure 2AD1
Revised plansheets: C-2 and C-3

hm:hm

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM			DATE: February 15, 2011
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: Tropical Durango Park – Phase II			COPIES TO: Stanley Consultants
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File Number:	F:\Depot\DSMemos\DS4517A.doc		Bart Anderson, P.E., DevCo
Parcel Number:	125-29-601-021		CCPW
Zoning Action:	SDR-39771		
FEMA Flood Zone	YES	NO X	
Proposed Storm Drain	YES X	NO	

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Transaction #
1 st Submittal	2/1/2011	2/15/2011	See Comments Below	\$400.00	161812: \$400
			TOTAL FEES (LDDRS):	\$400.00	----

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1. The site is adjacent to the jurisdiction of *Clark County* to the west and south. The engineer must coordinate with *Clark County Department of Public Works (CCPW)* and obtain their concurrence prior to the final acceptance of the study.
2. **Figure 2:** a) It appears that the "100-year" and the "10-year" Storm Event Summary annotation in the table are in the wrong order. Review and revise accordingly; b) The 100-year normal depth in Section W (B) in the existing condition is shown to be 1.74' which is hugely different from the other two sections. Correct in the next submittal.
3. **Grading Plan (C-2):** a) Extend the proposed 18" storm drain in *Tropical Parkway* to the centerline of *Bonita Vista Street*. Revise the grading plan and all pertinent plan & profiles accordingly; b) Identify the type and size of the proposed drop inlet on the grading plan; c) Consult with *Land Development Section* regarding the extent of the overpaving requirement in *Tropical Parkway*; d) Address what the straight line running from "87.0FG/HP" to "74.40FG" is? According to the contour lines, this line appears to be a flow line in the upper half but turns to a ridge line in the lower half. A culvert is required if this line indeed discharges at the sidewalk confluence. Address and resolve in the next submittal.

4. The *City of Las Vegas* does not allow Type A drop inlet anymore. Revise the call out for all drop inlets to Modified Type C or equivalent.
5. Add in all pertinent sheets for the construction of all storm drain drop inlets per a newly adopted USDCCA Drawing No. 421 (Stormwater Quality Management Stamp and Sign Detail).

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

END OF REMARKS
ays

T/R/S: T19S/R60E/29
AREA G-29

Post-It® Fax Note 7671		Date 2/15/11	# of pages 2
To Dan Bender	From Albert SUNG		
Co./Dept. Stanley Consult	Co. CLU		
Phone #	Phone # 729-2001		
Fax # 369-9793	Fax #		

Worksheet for Update-Sect W (B) Tropical - pre-berm

Project Description

Friction Method Manning Formula
Solve For Normal Depth

Input Data

Channel Slope 0.02210 ft/ft
Discharge 131.00 ft³/s

Section Definitions

Station (ft)	Elevation (ft)
-0+40.0	77.64
-0+25.0	76.71
-0+15.0	76.91
0+02.0	77.10
0+17.5	76.77
0+24.0	76.60
0+32.5	78.74
0+50.0	79.00
0+50.5	79.13
0+61.0	77.73
0+66.0	79.37

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+40.0, 77.64)	(-0+15.0, 76.91)	0.025
(-0+15.0, 76.91)	(0+17.5, 76.77)	0.016
(0+17.5, 76.77)	(0+66.0, 79.37)	0.025

Options

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

Worksheet for Update-Sect W (B) Tropical - pre-berm

Results

Normal Depth	0.70	ft
Elevation Range	76.60 to 79.37	ft
Flow Area	23.39	ft ²
Wetted Perimeter	61.42	ft
Hydraulic Radius	0.38	ft
Top Width	61.31	ft
Normal Depth	0.70	ft
Critical Depth	0.85	ft
Critical Slope	0.00788	ft/ft
Velocity	5.60	ft/s
Velocity Head	0.49	ft
Specific Energy	1.19	ft
Froude Number	1.60	
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	0.70	ft
Critical Depth	0.85	ft
Channel Slope	0.02210	ft/ft
Critical Slope	0.00788	ft/ft

Cross Section for Update-Sect W (B) Tropical - pre-berm

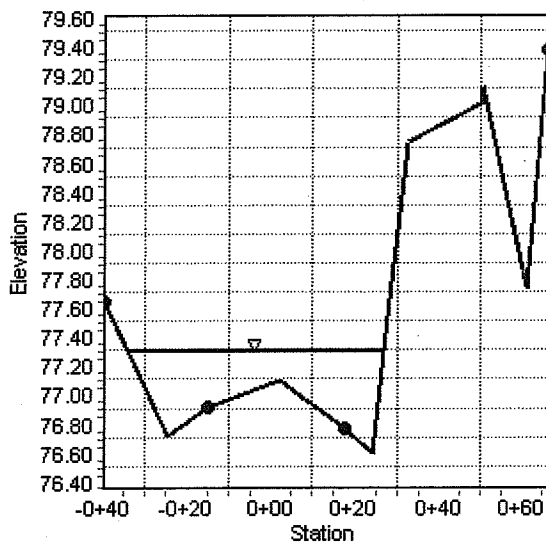
Project Description

Friction Method Manning Formula
Solve For Normal Depth

Input Data

Channel Slope 0.02210 ft/ft
Normal Depth 0.70 ft
Discharge 131.00 ft³/s

Cross Section Image



Worksheet for V-Notch Weir - Sidewalk @ SW corner of Park

Project Description

Solve For Headwater Elevation

Input Data

Discharge	6.00	ft ³ /s
Crest Elevation	1.00	ft
Tailwater Elevation	1.00	ft
Coefficient of Discharge	0.58	
Angle	175.00	degrees

Results

Headwater Elevation	1.41	ft
Headwater Height Above Crest	0.41	ft
Tailwater Height Above Crest	0.00	ft
Flow Area	3.79	ft ²
Velocity	1.58	ft/s
Wetted Perimeter	18.64	ft
Top Width	18.62	ft

Cross Section for V-Notch Weir - Sidewalk @ SW corner of Park

Project Description

Solve For Headwater Elevation

Input Data

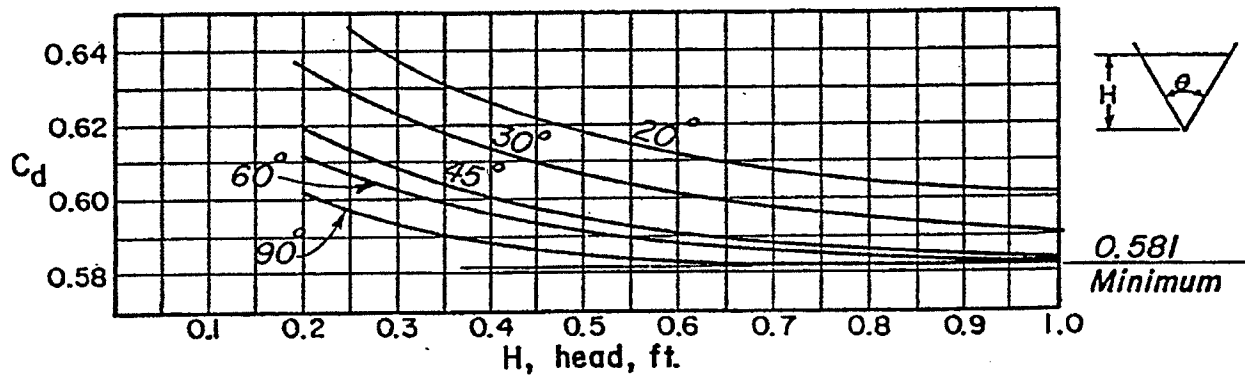
Discharge	6.00	ft ³ /s
Headwater Elevation	1.41	ft
Crest Elevation	1.00	ft
Tailwater Elevation	1.00	ft
Coefficient of Discharge	0.58	
Angle	175.00	degrees

Cross Section Image



V: 1
H: 1

V-NOTCH WEIR COEFFICIENTS



Revision	Date

**WRC
ENGINEERING**

REFERENCE: Onsite Stormwater Detention
Manual, City of North Las Vegas, 1984

FIGURE 1202



LAND DEVELOPMENT TRANSFER MEMORANDUM

DATE: 3-2-11

TO: Robert Welch (Drainage Studies) Abert Sung

FROM: Patrick Batte

CC: , Billie Jo Berlin, File

RE: Review Fee Funds Transfer

Please pay the Land Development Fees for this project using the following information:

Project Name: Tropical Durango Park Phase II

Project Name from the Project Initiator Box #1.

Project Address: 6075 N. durango Drive
or Parcel Number(s): 125-29-601-021

Servicer Org Number: 406000.40531

SERVICER ORG. from the upper portion of Box #10 on the Project Initiator.

This is the org number of your project's funding source, for example, 40521 is the Park S fund org number. Do not use the OAS section org number 15341, nor your client such as Neighborhood Services' org number, nor the Requestor org number from the P.I., nor the Servicer org number from the lower half of Box #10. (If Finance leaves the upper portion of Box #10 empty and provides the only Servicer Org of the P.I. on the "All Costs Other than Internal Labor" line at the bottom of Box #10, use that number.) Do not use a number that ends in 0.

Account Number: 810205 Parks

From the City's chart of accounts: 810205 for new or rehab Parks, 810605 for new Building construction, 810705 for Building remodels or additions.

Work Authorization Number: WU8123

The W/A NO. from the upper portion of Box #10 on the Project Initiator. (If Finance leaves the upper portion of Box #10 empty and provides the only W/A NO. of the P.I. on the "All Costs Other than Internal Labor" line at the bottom of Box #10, use that number.)

Land Development Fees: \$400

From the Land Development Plan Checker, Flood Control Inter-Office Memo to Land Development, or as otherwise provided.

Service Requested: Resubmittal Fee

Authorizing Individual: Patrick Batte

OAS Project Manager's name.

Funding Department: Leisure Services

Public Works, Neighborhood Services, Detention & Enforcement, Fire, etc. If multiple departments, list the department that controls the fund this transfer is drawn from.

Occupying/Programming/Operating Department: Field Operations

Leisure Services, Detention & Enforcement, Fire, etc. If multiple departments, list primary only.

Thank you.

PAID

MAR 08 2011

164081 ew
Development Services Center

DEPARTMENT OF
PUBLIC WORKS

OAS

OFFICE OF
ARCHITECTURAL
SERVICES

400 STEWART AVENUE
LAS VEGAS, NEVADA 89101

TELEPHONE: (702) 229-6535
FAX: (702) 382-3232
TDD: (702) 386-9108

www.lasvegasnevada.gov



TRANSMITTAL

TO: Albert Sung, CLV Flood Control
333 South Rancho Drive
Las Vegas, NV

DATE: March 2, 2011
PROJECT: Tropical Durango Park Phase II
LOCATION: 6075 N. Durango Drive
PROJECT NO.: 23248
CONTRACT NO.:

SUBJECT: Technical Drainage Study Update,
Addendum 1

WE ARE SENDING YOU THE FOLLOWING ITEM(S):

☐ ATTACHED ☐ UNDER SEPARATE COVER ☒ HAND DELIVERED ☐ VIA FAX ☐ VIA EMAIL

THESE ITEMS ARE SUBMITTED:

☐ AT YOUR REQUEST ☐ FOR YOUR REVIEW AND COMMENT
☐ FOR YOUR APPROVAL ☐ FOR YOUR SIGNATURE
☐ FOR YOUR FILES ☒ FOR YOUR USE
☒ FOR YOUR INFORMATION ☐ OTHER

Copies	Description
2	Technical Drainage Study Update, Addendum 1

**** Duplicate Receipt ****

City of Las Vegas
Development Services Center
731 South Fourth Street
Las Vegas, NV 89101

03/08/2011 14:33 Trn 164081
Cashier 970040

PRJ Permit # DS4517 \$400.00
Subtotal \$400.00
Tax \$0.00
Total \$400.00

Received MISC \$400.00
CITY 040531810205
Change \$0.00

For questions related to this receipt call

DIST 702-229-6251

SIGNED BY: DWB
Daniel W. Bender, P.E.

RECEIVED BY: [Signature]

5820 S. Eastern Avenue • Suite 200 • Las Vegas, NV 89119-3057 • phone 702.369.9396 • fax 702.369.9793
email: info@stanleygroup.com • Internet: www.stanleyconsultants.com