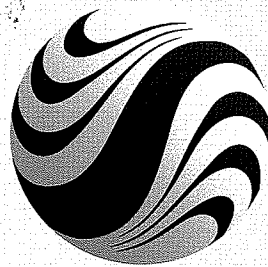


3/11/05
~~DS 2989~~
G-21
400
DS 2989



Stantec

**Technical Drainage Study
For
Addendum-1 to Update #1
Deer Springs Master Drainage Plan
March 3, 2005**

181200259

Prepared for

**The City of Las Vegas
400 Stewart Avenue
Las Vegas, Nevada 89101**

Prepared by

**Stantec Consulting
7251 West Charleston Boulevard
Las Vegas, Nevada 89117
Ph: (702) 258-0115
Fax: (702) 258-4956**



Stantec

Opinion of Probable Costs

Project: **Deer Springs Way Phase 2A-W/Adds**
Submittal Level: **100%**

Project Job Number: **181200259** Date: **3/4/2005**
Prepared By: **RWC**

Stantec Consulting Inc. does not guarantee the accuracy of this opinion of probable costs. The actual final cost of the project will be determined through the tendering and construction process.

SUMMARY

- | ITEM | DESCRIPTION | QUANTITY | UNIT | UNIT COST | EXTENSION |
|---------------|---------------------------------------|----------|------|-----------|-----------------------|
| 1 | RTC Roadway Funding | | | | \$1,042,348.79 |
| 2 | All other Improvements (City Funding) | | | | \$393,997.58 |
| Total: | | | | | \$1,436,346.37 |

Transmittal**Stantec**

Stantec Consulting Inc.
7251 West Charleston Boulevard
Las Vegas NV 89117
Tel: (702) 258-0115 Fax: (702) 258-4956

To: Peter Jackson
Company: City of Las Vegas
Address: 731 S Fourth St
Phone:
Date: March 8, 2005
File: 181200259
Delivery: Messenger

From: Jo Pinther
☐ For Your Information
☒ For Your Approval
☒ For Your Review
☐ As Requested

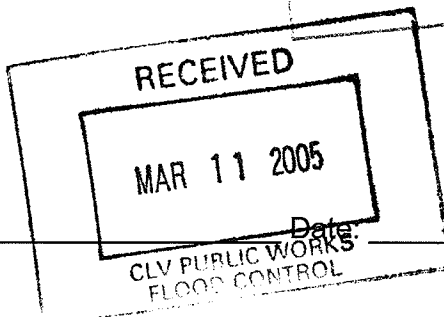
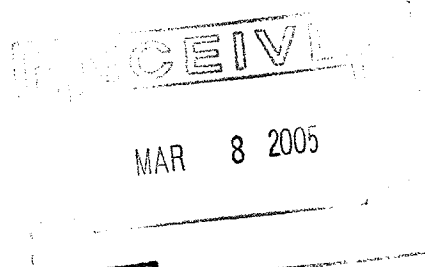
Reference: Deer Springs TDS Addendum #1 to Update #1, March 3, 2005

1 – copy of Opinion of Probable Cost
1 – Copies of TDS Addendum #1 to Update #1

STANTEC CONSULTING INC.

Jo Pinther
Senior Engineering Coordinator
Tel: 702-258-0115
Fax: 702-258-4956
jpinther@stantec.com

c. Cary Baird – Stantec Consulting
Dick Cummock – Stantec Consulting
File



Received by: _____



Stantec

March 3, 2005

Albert Sung, P.E.
City of Las Vegas
Department of Public Works
731 S. Fourth Street
Las Vegas, NV 89101

Re: Addendum-1 to Update #1 to the Deer Springs Master Drainage Plan (CLV # DS3651)

Dear Mr. Sung:

Stantec Consulting Ltd. is please to respond to your comments dated March 2, 2005 and to our conversations. The following is in response to those comments.

Comment 1: The provided storm drain hydraulic analysis shows that the pipe HGL is about 0.6-feet above the Rim elevation of manhole #9. This is not acceptable. Adjust the storm drain alignment to reduce the systems losses. Revise the Standard Form 6 calculations accordingly and show the revised HGL on the storm drain profile.

Response: The storm drain alignment has been revised and an updated Standard Form 6 has been included. Please refer to the updated plans and profiles for the new alignment and HGL's. Please note that the 18-inch laterals have been checked using inlet control (giving the highest depth possible within the drop box) demonstrating adequate depth. HGL's within the main storm drain are not higher than the invert out within the drop boxes.

Comment 2: Provide a detail for the locking type manhole cover and collar where the system HGL is less than 1.0-feet below finish grade.

Response: Due to the new design, all HGL's are greater than 1-foot below finish grade.

Comment 3: The CM Type inlets are designed in 2.5-foot increments. Adjust the lengths of inlets 1-7 from the proposed 4-feet to 5-feet.

Response: The inlets have been adjusted. Please refer to the updated plans and profiles.

Comment 4: This road project will be constructed in conjunction with the Centennial Hills Leisure Center project. Provide storm drain lateral stubs from the proposed street inlets to serve the on-site inlets located along the south side of Deer Springs Way. Coordinate the lateral locations with Lochsa Engineering.

Response: Laterals have been provided. Locations have been coordinated with Lochsa.

Comment 5: Coordinate the street and driveway entrance grades with the Centennial Hills Leisure Center improvements.

Response: Driveway locations have been coordinated.

Should you have any questions or require additional information please call me at 258-0115.

Thank You,



Matthew Haskin, P.E.
Stantec Consulting Group Inc.

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE STUDY INFORMATION FORM

Name of Development: Update #1 to Deer Springs Master D.P. Date: JAN 18, 2005Location of Development: a) Descriptive (Cross Streets) North/South Buffalo East/West Deer Springsb) Sect. 21 Twn. 19S Rng. 60EName of Owner: CITY OF LAS VEGAS

Assessors Parcel No: _____

Telephone No: 229-6535

Facsimile No: _____

Address: 400 STEWART AVE.LAS VEGAS, NV 89101Contact Person-Name: MATTHEW HASKIN, P.E.Telephone No: 258-0115Firm: STANTEC CONSULTING INC.Address: 7251 W. CHARLESTON BLVD. LAS VEGAS, NV 89117

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	☐	<u>Park</u>

1. Total Owned Land Area: At Site: 90 ± Being Developed/Disturbed: 10 ±2. Is a portion or all of the subject property located in a designated FEMA Flood Hazard Area? YES* ☒ NO3. Is the property bordered or crossed by an existing or proposed Clark County Regional Flood Control District Master Planned Facility? YES* ☒ NO4. Proposed type of development (Residential, Commercial, Etc.)? Park w/ infrastructure5. Approximate upstream land area which drains to the subject site? 10 SQUARE MILES6. Has the site drainage been evaluated in the past? ☒ YES NO If yes, please identify documentation:TDS for "Deer Springs Master Drainage Plan" Stantec Oct 2001
With Addendum.

7. If known, please briefly identify the proposed discharge point(s) of runoff from the site:

Deer Springs Way + John Herbert 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.

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

Local Entity File No. _____

Revision	Date
<u>Addm-1</u>	<u>3/3/05</u>

REFERENCE:

STANDARD FORM 1

laterals
Worksheet for Circular Channel

Project Description

Worksheet	laterals
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data

Mannings Coefficient	0.013	
Channel Slope	0.011000 ft/ft	<i>← Minimum Slope</i>
Diameter	18.0 in	
Discharge	11.00 cfs	<i>← Minimum Q per cul 1040' L</i>

Results

Depth	1.23 ft
Flow Area	1.5 ft ²
Wetted Perimeter	3.39 ft
Top Width	0.00 ft
Critical Depth	1.27 ft
Percent Full	81.8 %
Critical Slope	0.010387 ft/ft
Velocity	7.11 ft/s
Velocity Head	0.78 ft
Specific Energy	2.01 ft
Froude Number	1.08
Maximum Discharge	11.85 cfs
Discharge Full	11.02 cfs
Slope Full	0.010967 ft/ft
Flow Type	Supercritical

Cross Section

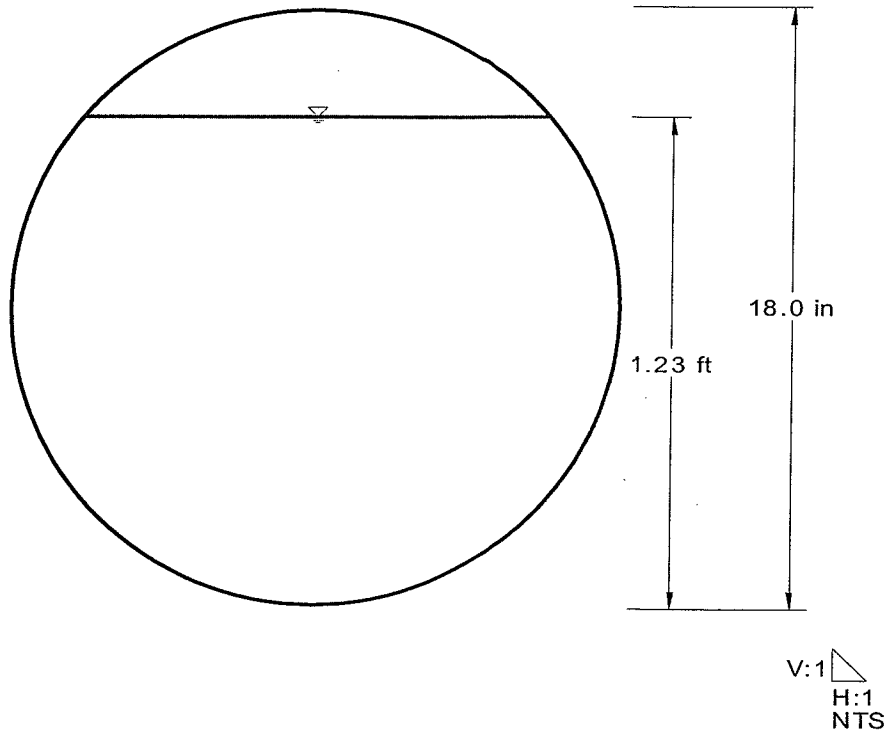
Cross Section for Circular Channel

Project Description

Worksheet	latterals
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

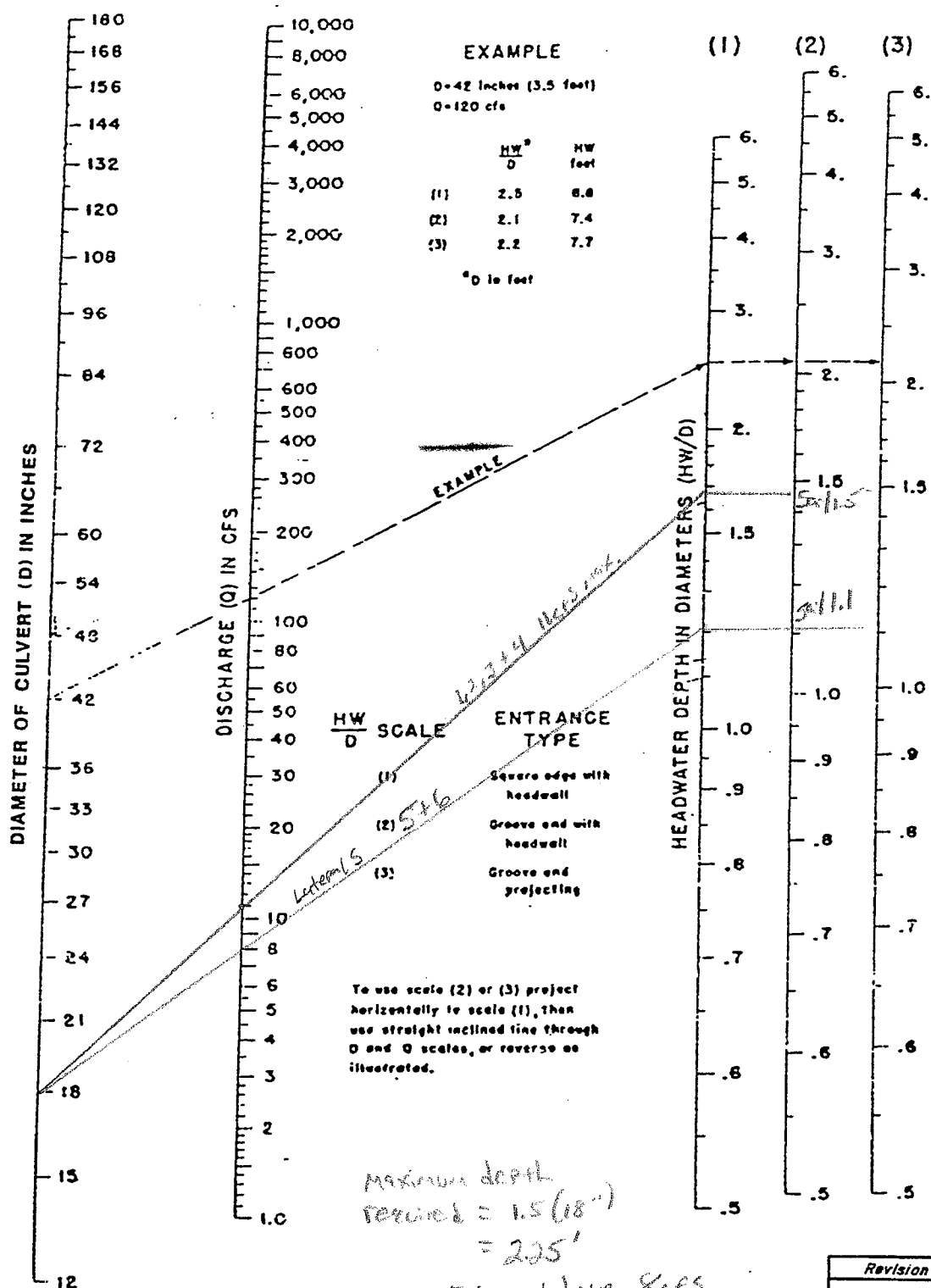
Section Data

Mannings Coefficient	0.013
Channel Slope	0.011000 ft/ft
Depth	1.23 ft
Diameter	18.0 in
Discharge	11.00 cfs



HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

NOMOGRAPH - INLET CONTROL RCP



Revision	Date

WRC
ENGINEERING

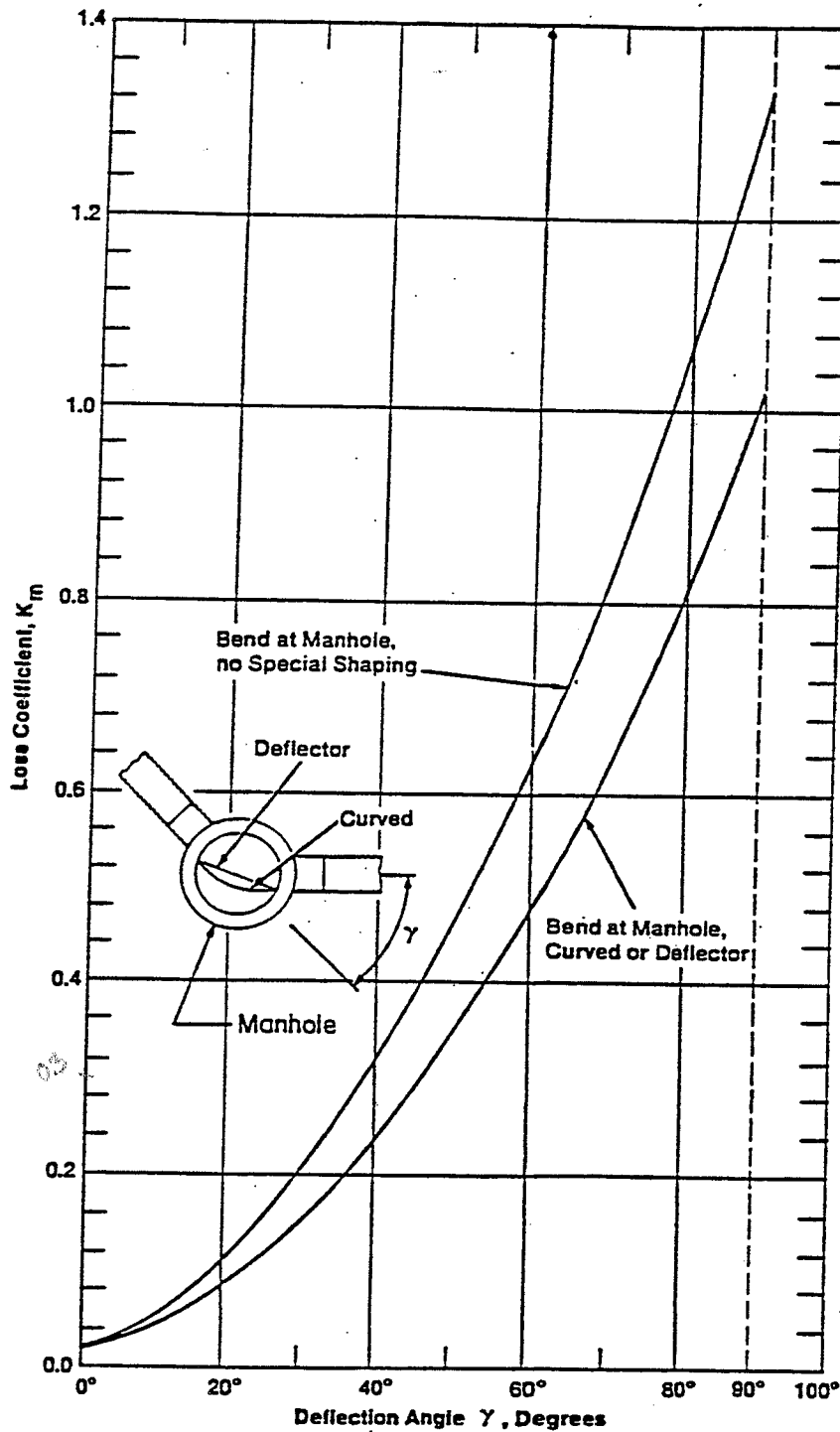
REFERENCE:

USDOT, FHWA, HDS, No. 5, 1985

We have APX 4 ft

FIGURE 1005

ENERGY LOSS COEFFICIENT IN STRAIGHT THROUGH MANHOLE



NOTE: Head loss applied at outlet of manhole.

Revision	Date

elliptical, 0.48%
Worksheet for Circular Channel

Project Description

Worksheet	elliptical, 48" equal
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

48" equal

Input Data

Mannings Coefficient	0.013
Channel Slope	0.004800 ft/ft ← least slope
Diameter	48.0 in
Discharge	92.00 cfs

Results

Depth	3.04 ft
Flow Area	10.2 ft²
Wetted Perimeter	8.46 ft
Top Width	0.00 ft
Critical Depth	2.91 ft
Percent Full	75.9 %
Critical Slope	0.005315 ft/ft
Velocity	8.99 ft/s
Velocity Head	1.26 ft
Specific Energy	4.29 ft
Froude Number	0.92
Maximum Discharge	107.05 cfs ← predicted max.
Discharge Full	99.51 cfs
Slope Full	0.004103 ft/ft
Flow Type	Subcritical

36" RCP
Worksheet for Circular Channel

Project Description

Worksheet	36" RCP
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data

Mannings Coefficient	0.013	
Channel Slope	0.024000 ft/ft	<i>min. slope</i>
Diameter	36.0 in	
Discharge	72.00 cfs	<i>historical</i>

Results

Depth	1.84 ft
Flow Area	4.6 ft ²
Wetted Perimeter	5.41 ft
Top Width	0.00 ft
Critical Depth	2.68 ft
Percent Full	61.5 %
Critical Slope	0.010313 ft/ft
Velocity	15.80 ft/s
Velocity Head	3.88 ft
Specific Energy	5.72 ft
Froude Number	2.23
Maximum Discharge	111.15 cfs
Discharge Full	103.32 cfs
Slope Full	0.011654 ft/ft
Flow Type	Supercritical

Worksheet for Circular Channel

Project Description

Worksheet	36" RCP
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data

Mannings Coefficient	0.013	
Channel Slope	0.007700 ft/ft	typical
Diameter	36.0 in	
Discharge	57.00 cfs	

Results

Depth	2.39 ft
Flow Area	6.0 ft ²
Wetted Perimeter	6.62 ft
Top Width	0.00 ft
Critical Depth	2.45 ft
Percent Full	79.7 %
Critical Slope	0.007372 ft/ft
Velocity	9.44 ft/s
Velocity Head	1.38 ft
Specific Energy	3.77 ft
Froude Number	1.05
Maximum Discharge	62.96 cfs
Discharge Full	58.52 cfs
Slope Full	0.007304 ft/ft
Flow Type	Supercritical

STORM DRAIN HGL CALCULATIONS

DATE: January 14, 2005

PROJECT: Deer Springs Park

CONDUIT DATA										FLOW DATA				ENERGY LOSS DATA				ENERGY AND HYDRAULIC DATA				OTHER	
STATION		SIZE/ DEPTH	LENGTH A (FT)		I	Q (CFS)	V (FPS)	H _v	S _f (FT/FT)	PIPE	BEND	EXPANSION	MH LOSS	MH	PIPE		PRESSURE	LOCATION	RIM	RIM-HGL			
FROM	TO		DIS ELEV/US ELEV	INVERTS						H _f (FT)	H _b (FT)	H _e (FT)	K _m		H _m (FT)	TOTAL (FT)					US EGL ELEV	US HGL ELEV	FLOW
0.00	4.00	4.00	3.2	2393.44	2393.64	4.00	12.57	0.0057	92	7.32	0.83	0.005	0.02	0.25	0.27	2397.711	2396.879	NO	MH-9	2400.0	3.1		
4.00	182.00	3.17	3.5	2393.64	2394.50	178.00	12.57	0.0057	92	7.32	0.83	0.006	1.15	0.00	1.15	2398.864	2398.032	YES	48" EQUIV				
182.00	186.00	4.00	3.5	2394.50	2394.70	4.00	12.57	0.0057	92	7.32	0.83	0.005	0.02	0.20	0.17	0.19	2399.049	2398.217	NO	MH-8	2400.5	2.3	
186.00	348.00	3.17	3.3	2394.70	2395.92	162.00	12.57	0.0057	92	7.32	0.83	0.006	1.05	0.00	1.05	2400.099	2399.266	YES	48" EQUIV				
348.00	352.00	4.00	3.4	2395.92	2396.09	4.00	12.57	0.0057	92	7.32	0.83	0.005	0.02	0.17	0.19	2400.284	2399.452	NO	MH-7 (inlets 5&6)	2402.4	2.9		
352.00	533.00	3.00	3.0	2396.09	2400.43	181.00	7.07	0.0057	76	10.75	1.80	0.015	2.72	0.00	2.72	2403.225	2403.430	NO					
533.00	537.00	4.00	3.0	2400.43	2400.63	4.00	12.57	0.0057	76	6.05	0.57	0.003	0.01	0.30	0.17	0.18	2404.181	2403.613	NO	MH-6 (inlets 3&4)	2408.7	3.1	
537.00	715.00	3.00	3.0	2400.63	2406.50	178.00	7.07	0.0057	57	8.06	1.01	0.008	1.51	0.00	1.51	2410.510	2409.500	NO					
715.00	719.00	4.00	2.9	2406.50	2408.70	4.00	12.57	0.0057	57	4.54	0.32	0.002	0.01	0.20	0.06	0.07	2409.891	2409.571	NO	MH-5	2412.0	2.4	
719.00	885.00	3.00	3.0	2408.70	2410.64	166.00	7.07	0.0057	57	8.06	1.01	0.008	1.40	0.00	1.40	2414.550	2413.640	NO					
885.00	889.00	4.00	2.9	2410.64	2410.84	4.00	12.57	0.0057	57	4.54	0.32	0.002	0.01	0.06	0.07	2414.031	2413.711	NO	MH-4	2416.8	3.1		
889.00	1069.00	3.00	3.0	2410.84	2412.23	180.00	7.07	0.0057	57	8.06	1.01	0.008	1.52	0.00	1.52	2416.243	2415.233	YES					
1069.00	1073.00	4.00	2.9	2412.23	2412.43	4.00	12.57	0.0057	57	4.54	0.32	0.002	0.01	0.06	0.07	2415.624	2415.304	NO	MH-3	2418.4	3.1		
1073.00	1273.00	3.00	3.0	2412.43	2413.97	200.00	7.07	0.0057	57	8.06	1.01	0.008	1.89	0.00	1.69	2418.005	2416.995	YES					
1273.00	1277.00	4.00	2.9	2413.97	2414.17	4.00	12.57	0.0057	57	4.54	0.32	0.002	0.01	0.30	0.10	0.10	2417.418	2417.098	NO	MH-2	2420.2	3.1	
1277.00	1416.00	3.00	3.0	2414.17	2415.24	139.00	7.07	0.0057	57	8.06	1.01	0.008	1.18	0.00	1.18	2419.283	2418.274	YES					
1416.00	1420.00	4.00	2.1	2415.24	2416.24	4.00	12.57	0.0057	57	4.54	0.32	0.002	0.01	0.06	0.07	2418.664	2418.345	NO	MH-1 (inlets 1&2)	2421.6	3.3		
3.17' x 5' elliptical =		4.0	equivalent																				
NOTE: Bold number indicates the pipe was rescaled.																							
MANNINGS n = 0.014																							
I = $\frac{2600^3}{2.21}$																							
$S_f = 1.48 \frac{H_v}{R^{1.33}}$																							
$H_v = \frac{V^2}{2g}$																							
$H_f = L \cdot S_f$																							
$H_b = K_b (V^2/2g)$																							
$H_e = K_e (V^2/2g) \cdot (A_2/A_1)^{1/2}$																							
$H_m = K_m (V^2/2g)$																							

STANDARD FORM 6

STANDARD FORM 6

PROJECT: Deer Springs Park

DATE: March 8, 2005

STORM DRAIN HGL CALCULATIONS

CONDUIT DATA										FLOW DATA					ENERGY LOSS DATA					ENERGY AND HYDRAULIC DATA				OTHER	
STATION	SIZE / DEPTH	INVERTS	LENGTH A (ft³)	I	Q (CFS)	V (FPS)	H _v	S _f (ft/ft)	PIPE	BEND	EXPANSION	ENTRANCE													
FROM	TO	D/S ELEV/U/S ELEV							H _i (ft)	H _b (ft)	H _e (ft)	K _e	H ₉ (ft)	TOTAL (ft)	U/S EGL ELEV	U/S HGL ELEV	PIPE	PRESSURE	FLOW	LOCATION	RIM	RIM-HGL			
INLETS 5 & 6																						2399.452	MH-1 HGL		
0+00	56.00	1.50	1.9	2397.59	2398.20	56.00	1.77	0.0057	8	4.53	0.32	0.007	0.38		1.00	0.32	0.69	2400.464	2400.145	YES					
INLETS 3 & 4																									
0+00	56.00	1.50	2.1	2401.53	2402.54	56.00	1.77	0.0057	9.5	5.38	0.45	0.009	0.53		1.00	0.45	0.98	2405.040	2404.591	YES					
INLETS 1 & 2																									
0+00	57.00	1.50	2.3	2416.74	2417.35	57.00	1.77	0.0057	11	6.22	0.60	0.013	0.72		1.00	0.60	1.32	2420.270	2419.669	YES					

CITY OF LAS VEGAS		DATE:
INTER-OFFICE MEMORANDUM		March 25, 2005
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: Centennial Hills Leisure Center Deer Springs Way Improvements		COPIES TO: Stantec
Cross Streets:	Deer Springs and Buffalo	Michael Vlaovich, AIA, CLV
File Number:	F:\Depot\DSMemos\DS3651C.doc	Bart Anderson, P.E., DevCo
Parcel Number:	A portion of 12521701011	Lochsa
Zoning Action:	SDR-4749	
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	9/17/2004	9/30/2004	See Comments Below	\$400.00	9561: \$400
2nd Submittal	11/16/2004	12/03/2004	See Comments Below	\$400.00	12406: \$400
3rd Submittal	02/04/2005	3/01/2004	See Comments Below	\$400.00	15708: \$400
4th Submittal	03/11/2005	3/25/2004	See Comments Below	\$400.00	18928: \$400
			TOTAL FEES (LDDRS):	\$1200.00	----

REMARKS: A portion of the Deer Springs Park Master Plan area.

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.
	must have Clark County Department of Development Services concurrence

This Update is for the addition of Deer Springs Way roadway and storm drain improvements by Stantec Consultants adjacent to the Centennial Hills Leisure Center.

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
PBj

T/R/S: T19S/R60E/21
AREA G-21

Facsimile Transmission Department of Public Works



Date: 3 / 28 / 15

Time: _____

Page 1 of _____

To: Matt Haskin Of: _____

Fax Number: 258-4956 Phone Number: _____

From: Peter Of: _____

		<u>FAX</u>	<u>PHONE</u>
☐	Administration	702-382-0848	702-229-6276
☐	City Engineer Division	868-6374	229-6272
☐	Architectural Services	382-3232	229-6535
☐	Construction Services	254-4541	229-6337
☐	Engineering Design	382-3232	229-6272
☐	Pavement Management	366-0032	229-2453
☐	Special Improvement Districts	366-0032	229-2136
☐	Survey	804-8582	229-6217
☐	Engineering Planning	382-8551	229-6541
☐	Flood Control	382-8551	229-6541
☐	Land Development	383-9767	229-6371
☐	Right-of-Way	382-8551	229-6483
☐	Roadway Planning	382-8551	229-6541
☐	Sanitary Sewer	382-8551	229-6541
☐	Streets, Sanitation and Parks	256-7817	229-6227
☐	Downtown Beautification Office	384-0220	229-6521
☐	Parks Maintenance	229-6144	229-6571
☐	Traffic Engineering	366-0032	229-6327
☐	LVACTS	229-6613	229-6611
☐	Traffic/Electrical Field Operations	382-0366	229-6331
☐	Traffic Signal Repair	382-5845	229-6075
☐	Transportation	474-7083	229-2452
☐	Environmental (Water Pollution Control Facility)	641-9738	229-6200
☐	Industrial Waste Pretreatment	641-9738	229-6200
☐	Lab	431-5133	229-6444
☐	Supply	431-7835	229-6414

Message: _____

TRANSACTION REPORT

P. 01

MAR-29-2005 TUE 01:04 PM

FOR: CITY OF LAS VEGAS

7023828551

SEND

DATE	START	RECEIVER	TX TIME	PAGES	TYPE	NOTE	M#	DP
MAR-29	01:03 PM	2584956	1'13"	2	FAX TX	OK	921	

TOTAL : 1M 13S PAGES: 2

Facsimile Transmission Department of Public Works



Date: 3 / 28 / 05

Time: _____

Page 1 of _____

To: Matt Haskin Of: _____

Fax Number: 258-4956 Phone Number: _____

From: Peter Of: _____

FAX

PHONE

- | | | |
|--|--------------|--------------|
| ☐ Administration | 702-382-0848 | 702-229-6276 |
| ☐ City Engineer Division | 868-6374 | 229-6272 |
| ☐ Architectural Services | 382-3232 | 229-6535 |
| ☐ Construction Services | 254-4541 | 229-6337 |
| ☐ Engineering Design | 382-3232 | 229-6272 |
| ☐ Pavement Management | 366-0032 | 229-2453 |
| ☐ Special Improvement Districts | 366-0032 | 229-2136 |
| ☐ Survey | 804-8582 | 229-6217 |
| ☐ Engineering Planning | 382-8551 | 229-6541 |
| ☐ Flood Control | 382-8551 | 229-6541 |
| ☐ Land Development | 383-9767 | 229-6371 |
| ☐ Right-of-Way | 382-8551 | 229-6483 |

**** Duplicate Receipt ****

City of Las Vegas

Development Services Center

731 South Fourth Street

Las Vegas, NV 89101

03/28/2005 13:35 Trn 18928
Cashier 970040

PRJ Permit # D53651-1 \$400.00

Subtotal \$400.00

Tax \$0.00

Total \$400.00

Received MISC \$400.00

CITY 040571810605

Change \$0.00

For questions related to this receipt call

702-229-6251

City of Las Vegas

Development Services Center

731 South Fourth Street

Las Vegas, NV 89101

03/28/2005 13:34 Trn 18928
Cashier 970040

PRJ Permit # D53651-1 \$400.00

Subtotal \$400.00

Tax \$0.00

Total \$400.00

Received MISC \$400.00

CITY 040571810605

Change \$0.00

For questions related to this receipt call

702-229-6251