

DS #: DS4710-1

APN: 125-17-601-007; 010; -013 & -015

PROJECT: DC Plaza - Update #2

SUBMITTAL: 5th

SCANNED BY/DATE: _____

CHECKED BY/DATE: _____



CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM		DATE: May 10, 2017
TO: Land Development Services Department of Building & Safety		FROM: Albert Sung, P.E. Flood Control Project Engineer Department of Public Works
SUBJECT:	Drainage Study for: DC Plaza – Update #2	COPIES TO: Collins Engineers, Inc.
Cross Streets:	South Corner of Farm Road & Durango Drive	Farm & Durango Investors LLC
File Number:	F:\Depot\DSMemos\DS4710E.doc	Bart Anderson, P.E., DevCo
Parcel Number:	125-17-601-007; -010; -013 & -015	NDOT
Zoning Action:	TMP-61075; VAC-61072; SUP-61071; SUP-61068; SUP-61067 & SDR-61074	
FEMA Flood Zone	YES	NO X
Proposed Storm Drain	YES	NO X

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1 st Submittal	11/17/2014	12/18/2014	Not Approved	\$400.00	376943: \$400
2 nd Submittal	12/30/2015	1/19/2016	Not Approved	\$400.00	427953: \$400
3 rd Submittal	2/9/2016	3/2/2016	Not Approved	\$400.00	432365: \$400
Supplement	5/2/2016	5/5/2016	Approved	N/C	N/C
4 th Submittal	11/17/2016	12/9/2016	Approved	\$100.00	465763: \$100
5 th Submittal	5/2/2017 & 5/9/2017	5/10/2017	See Comments Below	\$100.00	484461: \$100
TOTAL FEES (LDDRS):				\$1,400.00	----

REMARKS:

5th Submittal: Update #2 to revise slope of storm drain from SDMH #1 to SDMH #3 in Farm Road

4th Submittal: Update #1 to address onsite grade changes to accommodate a relocation of driveway entrance in Farm Road

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

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

1. A proposed 15'-wide storm drain easement behind the right-of-way line in *Durango Drive* must be dedicated as a **PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED BY THE PROPERTY OWNER OR THE HOA**. The storm drain system will be privately owned and to be privately maintained. The *City of Las Vegas* will not maintain this easement and the storm drain within. The subject easement must be recorded as such in the **Final Map** prior to the final approval of the improvement plans.

2. The project proposes to construct facilities and/or increase flows within *Nevada Department of Transportation* (NDOT) right-of-way (*Durango Drive*). The engineer must contact NDOT for encroachment and occupancy permits for the proposed project.
3. The engineer must provide a table on the grading plans that shows a quantity estimate of all drainage improvements within Public Drainage Easements. ***All drainage improvements within Public Drainage Easements must be bonded and inspected.***
4. Provide a note in the Final Map: **"ALL SUBDIVIDED PARCELS COMPRISING THIS COMMERCIAL SUBDIVISION SHALL PROVIDE PERPETUAL INTERSITE COMMON DRAINAGE RIGHTS ACROSS ALL EXISTING AND FUTURE PARCEL LIMITS".**

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 Update 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: T19S/R60E/17
AREA G-17

COLLINS ENGINEERS INC

April 27, 2017

Albert Sung
City of Las Vegas Flood Control
333 N Rancho Drive
Las Vegas, NV 89106

**Subject: Letter of Conformance to TDS for DC Plaza(DS #4710-1)
Collins Engineers Project No. 4136**

Dear Albert:

We are submitting this letter and grading plans per our conversation on April 26, 2017 in regards to the requirements placed on the project by SDR-69609 for a drainage study update.

The civil improvements plans currently being processed as Delta 1 to the approved plans (Application # 69493) are in conformance with approved drainage study update (DS#4710-1) on file with the City of Las Vegas and approved on December 9, 2016. The following minor modifications have been made as shown per the attachment:

- Fire riser room added to the Tide Building also referred to as Building D.
- A retaining wall has been added behind the 10' wide non-equestrian multi-use trail to accommodate NV Energy equipment.
- Fire riser room added to the Building E.
- The storm drain at approximate station 183+50 in Farm Road has been angled at a 45 degree angle to avoid utility conflicts with the Las Vegas Valley Water District from a 90 degree angle reducing the HGL elevation by 0.1 feet and approved by NDOT as part of the off-site permits.

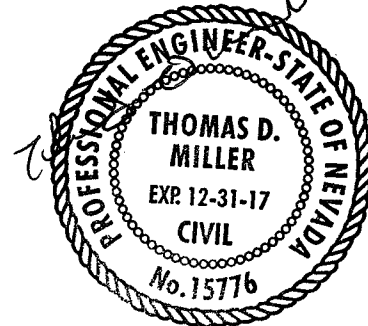
We look forward to your acceptance of this conformance letter to the approved Technical Drainage Study for DC Plaza Improvement, the delta revision is currently being routed for mylar signatures.

If you have any questions, or additional information is needed, please feel free to contact our office.

Respectfully,



Thomas D. Miller, and P.E.
Sr. Transportation Manager
Collins Engineers, Inc.



Key # 614304 4-27-17

COLLINS ENGINEERS INC

LETTER OF TRANSMITTAL

TO: City of Las Vegas
333 N Rancho Dr
Las Vegas, NV

DATE: April 28, 2017
PROJECT NO.: 4136
PROJECT: DC Plaza

ATTENTION: Flood Control
Albert Sung

Reply Requested: ☐ Yes ☒ No

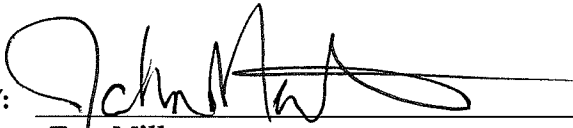
We are sending you:

☐ Draft Report(s) ☒ Final Report(s) ☐ Shop Drawings ☒ Plans
☐ Catalog Cuts ☐ Specifications ☐ Change Order(s) ☐ Proposal
☐ Forms 254 and/or 255 ☐ Request for Material Inspection ☐ Other:

COPIES	DATE	DWG NO.	DESCRIPTION
1			Set of updated plans
1			Letter of Explanation

☒ For Approval ☐ For Your Use ☐ As Requested ☒ For Review & Comment
☐ Approved as Submitted ☐ Approved as Noted ☐ Returned for Corrections
☐ Resubmit _____ Copies ☐ For Proposals Due:

Remarks:

BY: 
FOR: Tom Miller

Copies to:



Update 2 to the TDS for DC Plaza

APN: 125-17-613-001

May 2017

Prepared for:

Farm and Durango Investors, LLC
C/O Laurich Properties, Inc.
1770 North Buffalo Drive, Suite 101
Las Vegas, NV 89128:
702-220-4500

Prepared by:

COLLINS
ENGINEERS INC.

3130 S. Durango Drive, Suite 404
Las Vegas, Nevada 89117
702.248.8000 • www.collinsengr.com

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE STUDY INFORMATION FORM

Name of Development: **DC PLAZA** Date: **5/8/2017**

Location of Development: a) Descriptive (Cross Streets) Durango Dr. and Farm Road
 b) Section **17** Township **19 South** Range **60 East**

Name of Owner: **Farm and Durango Investors, LLC** Assessors Parcel Number: **125-17-613-001**

Telephone Number: **702-220-4500**

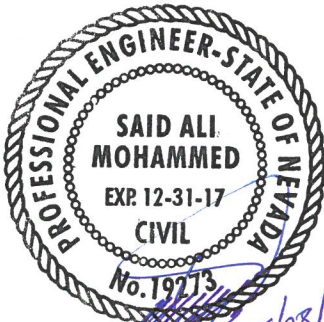
Address: **c/o Laurich Properties, Inc., 1770 North Buffalo Drive Suite 101
 Las Vegas, NV 89128**

Contact Person Name: **Thomas Miller, P.E.** Telephone Number: **(702) 248-8000**
 Firm: **Collins Engineers** Fax Number: **(702) 248-8070**
 Address: **3130 South Durango Drive, Suite 404** Email: **Tmiller@collinsengr.com**
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	☐	

- Total Owned Land Area: At Site: **±9.32 Ac** Being Developed: **± 9.32 Ac**
- Is a portion or all of the subject property located in a designated FEMA Flood Hazard Area? YES **NO**
- Is the property bordered or crossed by an existing or proposed Clark County Regional Flood Control District Master Planned Facility? YES **NO**
- Proposed type of development (Residential, Commercial, Etc.)? **Commercial**
- Approximate upstream land area which drains to the subject site? **1.7**
- Has the site drainage been evaluated in the past? **YES** NO
 If yes, please identify documentation:
DS 4710, DS# 3201 and DS# 4323
- If known, please briefly identify the proposed discharge point(s) of runoff from the site:
Flow which is generated by the site discharged in to proposed storm drain system and towards Farm Road ROW
- 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

REFERENCE: CSE Project No. 4136.1

STANDARD FORM 1



May 8, 2017

Albert Sung, P.E. CFM
City of Las Vegas Flood Control
333 N Rancho Drive
Las Vegas, NV 89106

**Subject: Update 2 to the TDS for DC Plaza(DS #4710)
Collins Engineers Project No. 4136**

Dear Mr. Sung:

We are submitting for your review, comment, and approval of an update 2 to the Technical Drainage Study for DC Plaza (DS #4710). The purpose of this update is to address Delta Revision which reflect the revision due to the invert elevation change at the connection of the proposed 30" RCP.

A copy of the latest (Update 1 to the TDS) Approval Letter from City of Las Vegas Flood Control section, and the hydrology-hydraulics information from the approved study have been included in Appendix B.

The as-built invert elevation at the connecton location (2538.85') is 2.07' higher than the approved referenced plan, and approved drainage study. To correct this change, starting from the existing drop inlet to SDMH #3, the invert elevatons and the pipe slope have been revised.

In addition to the invert and slope changes, due to the utility conflict, the angle of connection at the end of the storm drain (from SDMH #1 to the existing Drop inlet) has been changed from 90-degree to 45-degree.

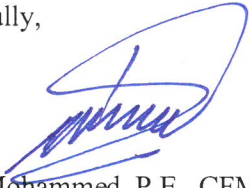
The WSPG model has been revised to reflect these changes. The input and output results are included in Appendix A. Please note that the HGL information is taken from the approved plan and profile sheet (PP-4) which is included in Appendix B.

The revised sheets have been included in Appendix C. Whereas, the approved plan and reference material are included in Appendix B. please note that the mistyped Q_{100} flow values in the approved plan has been revised per the WSPG model (flows that have not changed, remain the same as in approved study).

We look forward to your acceptance of this Update to the approved Technical Drainage Study for DC Plaza Improvement, as soon as possible so that the delta revision can be processed.

If you have any questions, or additional information is needed, please feel free to contact our office.

Respectfully,



Said A. Mohammed, P.E., CFM, Ph.D.
Sr. Project Engineer
Collins Engineers. Inc.



Thomas Miller, and P.E.
Sr. Transportation Manager
Collins Engineers, Inc.

TABLE OF APPENDICES

APPENDIX A (Updated Hydraulic Analysis)

- WSPGW Input and Output for Proposed Storm Drain System

APPENDIX B (Approved Study Materials)

Technical Drainage Study for DC Plaza (DS 4710)
Update to the TDS for Village of Centennial Springs (DS 3656R)

APPENDIX C (Revised Plans)

- Grading Plan
- Offsite Improvements Plan and Profile Sheet

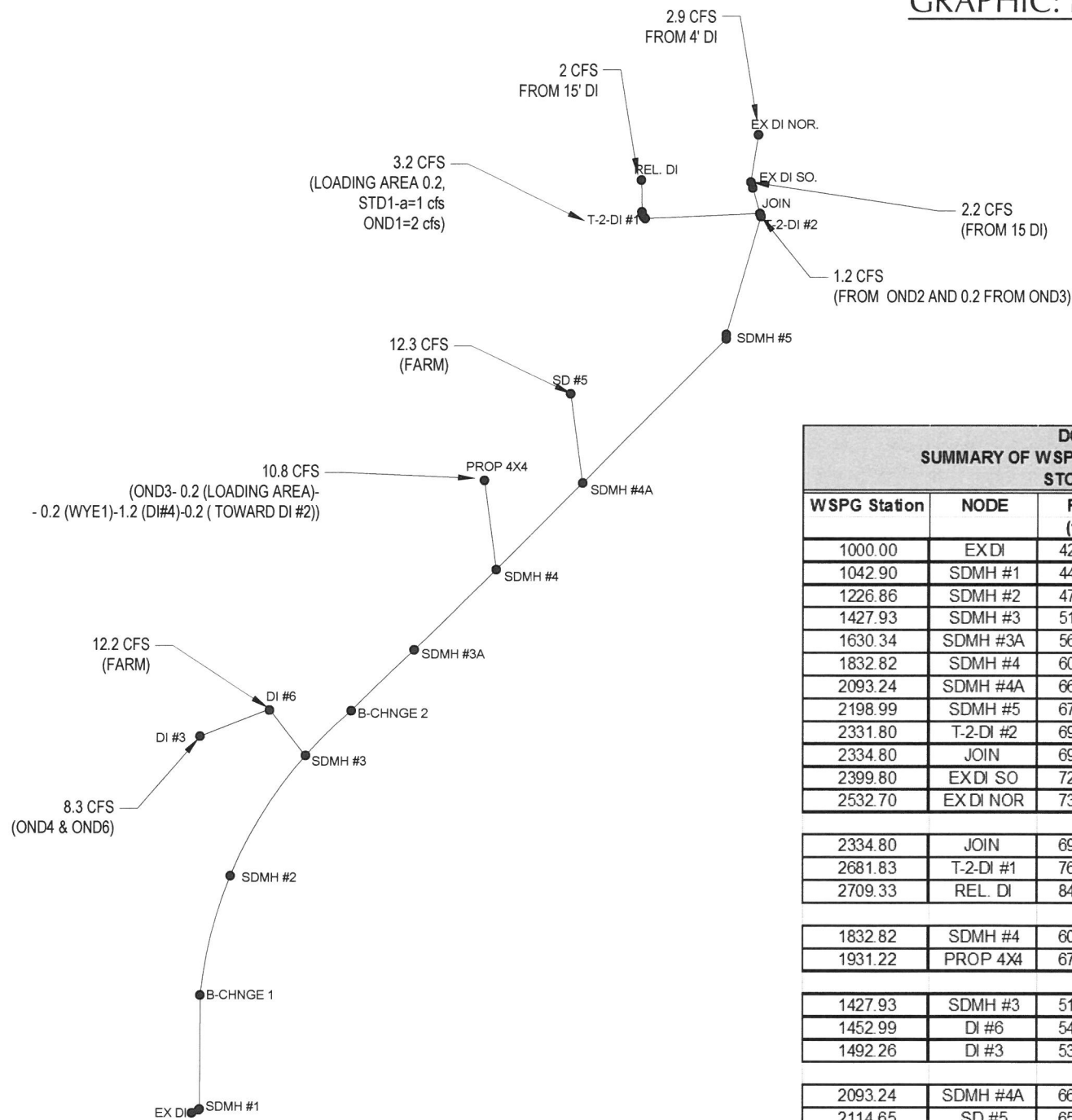
APPENDIX A
(Updated Hydraulic Analysis)

- WSPGW Input and Output for Proposed Storm Drain System

**DC PLAZA TDS
WSPG MODEL PLAN**

DATE: 05/08/17

GRAPHIC: NTS



DC PLAZA SUMMARY OF WSPG MODEL FOR PROPOSED STORM DRAIN				
WSPG Station	NODE	FG (ft.)	HGL (ft.)	FG with respect to HGL (ft.)
1000.00	EX DI	42.55	40.91	1.64
1042.90	SDMH #1	44.00	41.93	2.07
1226.86	SDMH #2	47.90	44.92	2.98
1427.93	SDMH #3	51.60	50.72	0.88
1630.34	SDMH #3A	56.50	51.79	4.71
1832.82	SDMH #4	60.30	57.40	2.90
2093.24	SDMH #4A	66.20	63.14	3.06
2198.99	SDMH #5	67.20	62.88	4.32
2331.80	T-2-DI #2	69.50	64.93	4.57
2334.80	JOIN	69.50	66.00	3.50
2399.80	EX DI SO	72.50	70.82	1.68
2532.70	EX DI NOR	73.47	71.11	2.36
2334.80	JOIN	69.50	65.70	3.80
2681.83	T-2-DI #1	76.70	70.83	5.87
2709.33	REL. DI	84.00	77.08	6.92
1832.82	SDMH #4	60.30	55.49	4.81
1931.22	PROP 4X4	67.00	62.26	4.74
1427.93	SDMH #3	51.60	49.65	1.95
1452.99	DI #6	54.50	50.95	3.55
1492.26	DI #3	53.00	51.01	1.99
2093.24	SDMH #4A	66.20	62.49	3.71
2114.65	SD #5	65.77	62.78	2.99

THE HGL AT SDMH #3 IS LESS TAN 18" , SO USED SCREWED MH

Revision Up To MH #3 with Q100

DC PLAZA SUMMARY OF WSPG MODEL FOR PROPOSED STORM DRAIN				
WSPG Station	NODE	FG (ft.)	HGL (ft.)	FG with respect to HGL (ft.)
1000.00	EX DI	42.55	40.91	1.64
1042.90	SDMH #1	44.00	41.93	2.07
1226.86	SDMH #2	47.90	44.92	2.98
1427.93	SDMH #3	51.60	50.72	0.88
1630.34	SDMH #3A	56.50	51.79	4.71
1832.82	SDMH #4	60.30	57.40	2.90
2093.24	SDMH #4A	66.20	63.14	3.06
2198.99	SDMH #5	67.20	62.88	4.32
2331.80	T-2-DI #2	69.50	64.93	4.57
2334.80	JOIN	69.50	66.00	3.50
2399.80	EX DI SO	72.50	70.82	1.68
2532.70	EX DI NOR	73.47	71.11	2.36

2334.80	JOIN	69.50	65.70	3.80
2681.83	T-2-DI #1	76.70	70.83	5.87
2709.33	REL. DI	84.00	77.08	6.92

1832.82	SDMH #4	60.30	55.49	4.81
1931.22	PROP 4X4	67.00	62.26	4.74

1427.93	SDMH #3	51.60	49.65	1.95
1452.99	DI #6	54.50	50.95	3.55
1492.26	DI #3	53.00	51.01	1.99

2093.24	SDMH #4A	66.20	62.49	3.71
2114.65	SD #5	65.77	62.78	2.99

THE HGL AT SDMH #3 IS LESS TAN 18" , SO USED SCREWED MH
SDMH#3 IS LOCKEC MANHOLE

[TITLE]
 ADDENDUM 1 TO THE TDS FOR DC PLAZA
 MAIN LINE STORM DRAIN MODLE
 CIVIL SQUARED ENGINEERING JOB # 4136

[REPORT]
 COMPOSITE_ONLY

[NETWORK]
 **TYPE NAME
 **----- -
 Outlet "EX DI"
 Reach "Link18"
 Reach "Link15"
 Reach "Link14"
 Reach "LINK 13"
 Reach "Link12"
 Join "SDMH #3"
 Reach "Link55"
 Reach "Link46"
 Reach "Link8"
 Join "SDMH #4"
 Reach "Link34"
 Join "SDMH #4A"
 Reach "Link33"
 Reach "Link6"
 Reach "Link5"
 Junction "T-2-DI #2"
 Reach "Link4"
 Join "JOIN"
 Reach "Link3"
 Reach "Link2"
 Junction "EX DI SO."
 Reach "Link1"
 Headwork "EX DI NOR."

**BRANCH DEFINITIONS

"JOIN_Lateral1"
 Join "JOIN"
 Reach "Link41"
 Junction "T-2-DI #1"
 Reach "L1"
 Reach "Link28"
 Reach "Link27"
 Reach "Link23"
 Headwork "RE1. DI"

"SDMH #4_Branch1"

Join "SDMH #4"
 Reach "Link19"
 Headwork "PROP 4X4"

"SDMH #3_Branch1"
 Join "SDMH #3"
 Reach "Link53"
 Junction "DI #6"
 Reach "L52"
 Reach "L49"
 Headwork "DI #3"

"SDMH #4A_Branch1"
 Join "SDMH #4A"
 Reach "Link40"
 Headwork "SD #5"

[OUTLET]					
**NAME	STATION	INVERT	GROUND	CHANNEL	WATER SURFACE
**		ELEV	ELEV	ID	ELEV (opt.)
**-----	-----	-----	-----	-----	-----
"EX DI"	1000	2538.85	2542.55	"30-INCH"	2540

[HEADWORK]					
**NAME	INVERT	GROUND	CHANNEL	FLOW	WATER SURFACE
**	ELEV	ELEV	ID		ELEV (opt.)
**-----	-----	-----	-----	-----	-----
"EX DI NOR."	2570.46	2573.47	"18-INCH"	2.9	0
"PROP 4X4"	2561	2567	"18-INCH"	10.8	0
"REL. DI"	2576.55	2584	"18-INCH"	2	0
"SD #5"	2560.69	2565.77	"18-INCH"	12.3	0
"DI #3"	2549	2553	"24-INCH"	8.3	0

[WALLENTANCE]				
**NAME	INVERT	GROUND	CHANNEL	LOSS
**	ELEV	ELEV	ID	COEFFICIENT(opt.)
**-----	-----	-----	-----	-----

[WALLEXIT]				
**NAME	INVERT	GROUND	CHANNEL	LOSS
**	ELEV	ELEV	ID	COEFFICIENT(opt.)
**-----	-----	-----	-----	-----

[BRIDGEENTRANCE]				
**NAME	INVERT	GROUND	CHANNEL	REDUCTION
**	ELEV	ELEV	ID	FACTOR(opt.)
**-----	-----	-----	-----	-----

[BRIDGEEXIT]

MAIN OFF-SITE.wsx

**NAME	INVERT ELEV	GROUND ELEV	CHANNEL ID	REDUCTION FACTOR(opt.)
**-----	-----	-----	-----	-----

[JOIN]

**NAME	INVERT ELEV	GROUND ELEV	CHANNEL ID	LENGTH	MANNINGS n	NUMBER OF BRANCHES	CONFLUENCE ANGLE
**-----	-----	-----	-----	-----	-----	-----	-----
"JOIN"	2564.25	2569.5	"18-INCH"	2	0.013	1	
"JOIN_Lateral1"	2564.25		"18-INCH"				-63
"SDMH #4"	2554.71	2560.3	"24-INCH"	5	0.013	1	
"SDMH #4_Branch1"	2554.81		"18-INCH"				-65
"SDMH #3"	2546.22	2551.6	"30-INCH"	5	0.013	1	
"SDMH #3_Branch1"	2546.32		"24-INCH"				-63
"SDMH #4A"	2560.12	2566.2	"24-INCH"	5	0.013	1	
"SDMH #4A_Branch1"	2560.22		"18-INCH"				-69

[JUNCTION]

**Name	INVERT ELEV	GROUND ELEV	CHANNEL ID	LENGTH	MANNINGS n	NUMBER OF LATERALS	CONFLUENCE ANGLE	FLOW
**-----	-----	-----	-----	-----	-----	-----	-----	-----
"EX DI SO."	2569.5	2572.5	"18-INCH"	3.7	0.013	1		
"EX DI SO_Lateral1"	2569.5		"18-INCH"				90	2.2
"T-2-DI #2"	2564.05	2569.5	"24-INCH"	2	0.013	1		
"T-2-DI #2_Lateral1"	2580		"24-INCH"				90	1
"T-2-DI #1"	2569.43	2576.7	"18-INCH"	2.5	0.013	1		
"T-2-DI #1_Lateral1"	2569.63		"18-INCH"				90	3.2
"DI #6"	2546.91	2554.5	"24-INCH"	4	0.013	1		
"DI #6_Lateral1"	2551.5		"24-INCH"				90	12.2

[TRANSITION]

**NAME	INVERT ELEV	GROUND ELEV	CHANNEL ID	LENGTH	MANNINGS n
**-----	-----	-----	-----	-----	-----

[REACH]

**NAME	INVERT ELEV	GROUND ELEV	CHANNEL ID	LENGTH	MANNINGS n	CURVE (opt)	ANGLE POINT(opt)	NUMBER MANHOLES(opt)
**-----	-----	-----	-----	-----	-----	-----	-----	-----
"Link1"	2570.46	2573.47	"18-INCH"	132.9	0.013	0	13	0
"Link2"	2569.5	2572.5	"18-INCH"	1	0.013	0	15	0
"Link3"	2569.48	2572.5	"18-INCH"	60.3	0.013	0	15	0
"Link4"	2564.25	2569.5	"24-INCH"	1	0.013	0	15	0

MAIN OFF-SITE.wsx								
"Link5"	2564.05	2569.5	"24-INCH"	130.81	0.013	0	14	1
"Link6"	2562	2567.2	"24-INCH"	1	0.013	0	15	0
"Link8"	2554.71	2560.3	"30-INCH"	197.48	0.013	0	0	1
"Link12"	2546.22	2551.6	"30-INCH"	196.07	0.013	21.98	0	1
"LINK 13"	2542.83	2547.9	"30-INCH"	85.41	0.013	9.45	0	0
"Link14"	2541.32	2546.5	"30-INCH"	98.55	0.013	0	15	1
"Link15"	2539.75	2544	"30-INCH"	1	0.013	0	15	0
"Link18"	2539.53	2544	"30-INCH"	41.9	0.013	0	0	0
"Link19"	2561	2567	"18-INCH"	98.4	0.013	0	0	0
"Link23"	2576.55	2584	"18-INCH"	24.5	0.013	0	15	0
"L1"	2570.98	2576.3	"18-INCH"	1	0.013	0	15	0
"Link27"	2573.7	2576.7	"18-INCH"	1	0.013	0	15	0
"Link28"	2572.35	2576.7	"18-INCH"	1	0.013	0	15	0
"Link33"	2561.8	2567.2	"24-INCH"	104.75	0.013	0	0	0
"Link34"	2560.12	2566.2	"24-INCH"	255.42	0.013	0	0	0
"Link40"	2560.69	2565.77	"18-INCH"	21.41	0.013	0	0	0
"Link41"	2569.43	2576.7	"18-INCH"	344.53	0.013	0	0	0
"Link46"	2550.51	2556.5	"30-INCH"	94.72	0.013	0	0	0
"L49"	2549	2553	"24-INCH"	38.27	0.013	0	15	0
"L52"	2546.93	2554.5	"24-INCH"	1	0.013	0	15	0
"Link53"	2546.91	2554.5	"24-INCH"	21.06	0.013	0	0	0
"Link55"	2548.46	2554.5	"30-INCH"	107.69	0.013	12.31	0	0

[DROP]

**Name	INVERT ELEV	GROUND ELEV	CHANNEL ID	LOSS COEFFICIENT
**-----	-----	-----	-----	-----

[CHANNEL]

**REGULAR TYPES 1-4 7-8

**ID	TYPE	HEIGHT	WIDTH	LEFT SLOPE	RIGHT SLOPE	NUMBER PIERS	AVG PIER WIDTH	INVERT CROSS FALL	NUM OF BARRELS
**-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
"30-INCH"	4	2.5							1
"18-INCH"	4	1.5							1
"24-INCH"	4	2							1

**IRREGULAR TYPES 5-6

**ID	TYPE	NUMBER	AVG PIER	PIER1	PIER2	PIER3	PIER4	PIER5	PIER6	PIER7	PIER8	PIER9	PIER10
**-----	-----	PIERS	WIDTH	ELEV	ELEV	ELEV	ELEV	ELEV	ELEV	ELEV	ELEV	ELEV	ELEV
**-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

[POINT]

**ID	XCOORD	YCOORD
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Water Surface Profile Gradient (WSPG)
XP WSPG
Engine Version 3.0 30/09/2011
XP Solutions www.xpsolutions.com

INPUT FILE

H:\Cad\Land\4136-Delta\ADMIN\Drainage\RFI-63 FROM 4136-Update 2\Hydraulic\RFI WITH INVERT CHANGE TO MH #3\MAIN OFF-SITE.wsx
Computed 05/08/17 11:53:41

TITLE INFORMATION

ADDENDUM 1 TO THE TDS FOR DC PLAZA
MAIN LINE STORM DRAIN MODLE
CIVIL SQUARED ENGINEERING JOB # 4136

WARNING SUMMARY

WARNING 47: Junction JOIN has a different channel than its direct downstream element.
WARNING 47: Junction SDMH #4 has a different channel than its direct downstream element.
WARNING 36: D/S processing stopped in junction EX DI SO. because critical momentum is greater than maximum momentum.
WARNING 36: D/S processing stopped in junction JOIN because critical momentum is greater than maximum momentum.
WARNING 36: D/S processing stopped in junction T-2-DI #2 because critical momentum is greater than maximum momentum.
WARNING 36: D/S processing stopped in junction SDMH #4A because critical momentum is greater than maximum momentum.
WARNING 36: D/S processing stopped in junction SDMH #4 because critical momentum is greater than maximum momentum.
WARNING 36: D/S processing stopped in junction SDMH #3 because critical momentum is greater than maximum momentum.
WARNING 36: D/S processing stopped in junction T-2-DI #1 because critical momentum is greater than maximum momentum.
WARNING 36: D/S processing stopped in junction DI #6 because critical momentum is greater than maximum momentum.

RESULTS

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Main Line
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Composite Profile:

ELEMENT NAME	TYPE	STATION	INVERT ELEV	GROUND ELEV	W.S. ELEV	DEPTH	Q	BARREL VELOC.	VELOC. HEAD	ENERGY GRADE LN	SUPER ELEV	CRITICAL DEPTH	FROUDE NUMBER	SLOPE	NORMAL DEPTH	CROSS SECTION
###																
"EX DI"	Outlet	1000.00	2538.85	2542.55	2540.908	2.058	54.90	1 12.70	2.50	2543.41	0.000	2.353	0.000	0.00000	0.000	Circular Pipe
"Link18"	Reach	1041.90	2539.53	2544.00	2541.524	1.994	54.90	1 13.08	2.66	2544.18	0.000	2.353	1.595	0.01623	2.187	Circular Pipe
	"i.p."	1042.37	2539.63	2544.00	2541.696	2.063	54.90	1 12.67	2.49	2544.19	0.000	2.353	1.478	0.22000	0.914	Circular Pipe
"Link15"	Reach	1042.90	2539.75	2544.00	2541.931	2.181	54.90	1 12.08	2.27	2544.20	0.000	2.353	1.289	0.22000	0.914	Circular Pipe
"Link14"	Reach	1141.45	2541.32	2546.50	2543.392	2.072	54.90	1 12.62	2.47	2545.87	0.000	2.353	1.463	0.01593	2.225	Circular Pipe
"LINK 13"	Reach	1226.86	2542.83	2547.90	2544.922	2.092	54.90	1 12.51	2.43	2547.35	0.000	2.353	1.431	0.01768	2.064	Circular Pipe
	"i.p."	1240.26	2543.06	2548.15	2545.154	2.092	54.90	1 12.51	2.43	2547.59	0.000	2.353	1.431	0.01729	2.092	Circular Pipe

	"i.p."	1390.62	2545.66	2550.99	2547.857	2.196	54.90	1	12.02	2.24	2550.10	0.000	2.353	1.267	0.01729	2.092	Circular Pipe
"Link12"	Reach	1422.93	2546.22	2551.60	2548.572	2.352	54.90	1	11.46	2.04	2550.61	0.000	2.353	1.002	0.01729	2.092	Circular Pipe
"SDMH #3"	Join	1427.93	2546.22	2551.60	2550.724	4.504	34.40	1	7.01	0.76	2551.49	0.000	1.993	0.000	0.00000	0.000	Circular Pipe
"Link55"	Reach	1535.62	2548.46	2554.50	2551.538	3.078	34.40	1	7.01	0.76	2552.30	0.000	1.993	0.000	0.02080	1.369	Circular Pipe
HYDRAULIC JUMP at 1554.92 of length 0.07																	
	"i.p."	1554.92	2548.88	2554.91	2551.674	2.796	34.40	1	7.01	0.76	2552.44	0.000	1.993	0.000	0.02164	1.352	Circular Pipe
	"i.p."	1554.92	2548.88	2554.91	2550.236	1.358	34.40	1	12.63	2.48	2552.71	0.000	1.993	2.129	0.02164	1.352	Circular Pipe
"Link46"	Reach	1630.34	2550.51	2556.50	2551.878	1.368	34.40	1	12.51	2.43	2554.31	0.000	1.993	2.098	0.02164	1.352	Circular Pipe
	"i.p."	1728.20	2552.59	2558.38	2554.006	1.415	34.40	1	12.01	2.24	2556.24	0.000	1.993	1.968	0.02127	1.360	Circular Pipe
	"i.p."	1768.56	2553.45	2559.16	2554.921	1.471	34.40	1	11.45	2.04	2556.96	0.000	1.993	1.826	0.02127	1.360	Circular Pipe
	"i.p."	1790.61	2553.92	2559.58	2555.450	1.531	34.40	1	10.92	1.85	2557.30	0.000	1.993	1.691	0.02127	1.360	Circular Pipe
	"i.p."	1804.64	2554.22	2559.85	2555.812	1.595	34.40	1	10.41	1.68	2557.49	0.000	1.993	1.564	0.02127	1.360	Circular Pipe
	"i.p."	1814.09	2554.42	2560.04	2556.080	1.662	34.40	1	9.92	1.53	2557.61	0.000	1.993	1.443	0.02127	1.360	Circular Pipe
	"i.p."	1820.50	2554.55	2560.16	2556.289	1.735	34.40	1	9.46	1.39	2557.68	0.000	1.993	1.328	0.02127	1.360	Circular Pipe
	"i.p."	1824.68	2554.64	2560.24	2556.456	1.813	34.40	1	9.02	1.26	2557.72	0.000	1.993	1.216	0.02127	1.360	Circular Pipe
	"i.p."	1827.04	2554.69	2560.29	2556.592	1.898	34.40	1	8.60	1.15	2557.74	0.000	1.993	1.108	0.02127	1.360	Circular Pipe
"Link8"	Reach	1827.82	2554.71	2560.30	2556.702	1.992	34.40	1	8.20	1.04	2557.75	0.000	1.993	1.001	0.02127	1.360	Circular Pipe
"SDMH #4"	Join	1832.82	2554.71	2560.30	2557.399	2.689	23.60	1	7.51	0.88	2558.28	0.000	1.724	0.000	0.00000	0.000	Circular Pipe
HYDRAULIC JUMP at 1874.02 of length 0.05																	
	"i.p."	1874.02	2555.58	2561.25	2557.848	2.265	23.60	1	7.51	0.88	2558.72	0.000	1.724	0.000	0.02118	1.253	Circular Pipe
	"i.p."	1874.02	2555.58	2561.25	2556.836	1.253	23.60	1	11.40	2.02	2558.85	0.000	1.724	1.941	0.02118	1.253	Circular Pipe
	"i.p."	1903.63	2556.21	2561.94	2557.463	1.253	23.60	1	11.40	2.02	2559.48	0.000	1.724	1.941	0.02118	1.253	Circular Pipe
	"i.p."	2013.41	2558.54	2564.47	2559.835	1.300	23.60	1	10.91	1.85	2561.68	0.000	1.724	1.806	0.02118	1.253	Circular Pipe
	"i.p."	2048.16	2559.27	2565.27	2560.627	1.356	23.60	1	10.41	1.68	2562.31	0.000	1.724	1.665	0.02118	1.253	Circular Pipe
	"i.p."	2066.02	2559.65	2565.69	2561.066	1.416	23.60	1	9.92	1.53	2562.59	0.000	1.724	1.529	0.02118	1.253	Circular Pipe
	"i.p."	2076.72	2559.88	2565.93	2561.357	1.481	23.60	1	9.46	1.39	2562.75	0.000	1.724	1.397	0.02118	1.253	Circular Pipe
	"i.p."	2083.30	2560.02	2566.09	2561.568	1.552	23.60	1	9.02	1.26	2562.83	0.000	1.724	1.269	0.02118	1.253	Circular Pipe
	"i.p."	2087.00	2560.09	2566.17	2561.725	1.632	23.60	1	8.60	1.15	2562.87	0.000	1.724	1.139	0.02118	1.253	Circular Pipe
"Link34"	Reach	2088.24	2560.12	2566.20	2561.843	1.723	23.60	1	8.20	1.04	2562.89	0.000	1.724	1.001	0.02118	1.253	Circular Pipe
"SDMH #4A"	Join	2093.24	2560.12	2566.20	2563.135	3.015	11.30	1	3.60	0.20	2563.34	0.000	1.206	0.000	0.00000	0.000	Circular Pipe
HYDRAULIC JUMP at 2186.16 of length 0.04																	
	"i.p."	2168.16	2561.32	2566.92	2563.321	2.000	11.30	1	3.60	0.20	2563.52	0.000	1.206	0.060	0.01604	0.873	Circular Pipe
	"i.p."	2180.20	2561.51	2567.03	2563.329	1.815	11.30	1	3.77	0.22	2563.55	0.000	1.206	0.414	0.01604	0.873	Circular Pipe
	"i.p."	2186.16	2561.61	2567.09	2563.322	1.712	11.30	1	3.95	0.24	2563.56	0.000	1.206	0.487	0.01604	0.873	Circular Pipe
	"i.p."	2186.16	2561.61	2567.09	2562.438	0.828	11.30	1	9.20	1.31	2563.75	0.000	1.206	2.053	0.01604	0.873	Circular Pipe
"Link33"	Reach	2197.99	2561.80	2567.20	2562.617	0.817	11.30	1	9.37	1.36	2563.98	0.000	1.206	2.107	0.01604	0.873	Circular Pipe
	"i.p."	2198.04	2561.81	2567.20	2562.629	0.819	11.30	1	9.33	1.35	2563.98	0.000	1.206	2.094	0.20000	0.451	Circular Pipe
	"i.p."	2198.55	2561.91	2567.20	2562.762	0.849	11.30	1	8.89	1.23	2563.99	0.000	1.206	1.955	0.20000	0.451	Circular Pipe
"Link6"	Reach	2198.99	2562.00	2567.20	2562.881	0.881	11.30	1	8.48	1.12	2564.00	0.000	1.206	1.824	0.20000	0.451	Circular Pipe
	"i.p."	2248.96	2562.78	2568.08	2563.673	0.890	11.30	1	8.36	1.09	2564.76	0.000	1.206	1.788	0.01567	0.878	Circular Pipe
	"i.p."	2289.88	2563.42	2568.80	2564.347	0.923	11.30	1	7.98	0.99	2565.34	0.000	1.206	1.667	0.01567	0.878	Circular Pipe
	"i.p."	2306.57	2563.69	2569.09	2564.644	0.958	11.30	1	7.60	0.90	2565.54	0.000	1.206	1.554	0.01567	0.878	Circular Pipe
	"i.p."	2316.05	2563.83	2569.26	2564.828	0.994	11.30	1	7.25	0.82	2565.64	0.000	1.206	1.447	0.01567	0.878	Circular Pipe
	"i.p."	2321.99	2563.93	2569.36	2564.960	1.032	11.30	1	6.91	0.74	2565.70	0.000	1.206	1.347	0.01567	0.878	Circular Pipe
	"i.p."	2325.80	2563.99	2569.43	2565.059	1.072	11.30	1	6.59	0.67	2565.73	0.000	1.206	1.253	0.01567	0.878	Circular Pipe
	"i.p."	2328.15	2564.02	2569.47	2565.138	1.114	11.30	1	6.28	0.61	2565.75	0.000	1.206	1.164	0.01567	0.878	Circular Pipe
	"i.p."	2329.41	2564.04	2569.49	2565.202	1.158	11.30	1	5.99	0.56	2565.76	0.000	1.206	1.081	0.01567	0.878	Circular Pipe
"Link5"	Reach	2329.80	2564.05	2569.50	2565.255	1.205	11.30	1	5.71	0.51	2565.76	0.000	1.206	1.002	0.01567	0.878	Circular Pipe
HYDRAULIC JUMP in the middle: of length -0.00																	
"T-2-DI #"	Junction	2331.80	2564.05	2569.50	2564.929	0.879	10.30	1	7.75	0.93	2565.86	0.000	1.149	0.000	0.00000	0.000	Circular Pipe
	"i.p."	2331.84	2564.06	2569.50	2564.940	0.883	10.30	1	7.71	0.92	2565.86	0.000	1.149	1.655	0.20000	0.431	Circular Pipe
	"i.p."	2332.11	2564.11	2569.50	2565.027	0.915	10.30	1	7.35	0.84	2565.87	0.000	1.149	1.544	0.20000	0.431	Circular Pipe

"Link4"	"i.p."	2332.33	2564.16	2569.50	2565.105	0.950	10.30	1	7.01	0.76	2565.87	0.000	1.149	1.439	0.20000	0.431	Circular Pipe
	"i.p."	2332.50	2564.19	2569.50	2565.176	0.986	10.30	1	6.68	0.69	2565.87	0.000	1.149	1.341	0.20000	0.431	Circular Pipe
	"i.p."	2332.64	2564.22	2569.50	2565.240	1.023	10.30	1	6.37	0.63	2565.87	0.000	1.149	1.248	0.20000	0.431	Circular Pipe
	"i.p."	2332.73	2564.24	2569.50	2565.298	1.063	10.30	1	6.07	0.57	2565.87	0.000	1.149	1.161	0.20000	0.431	Circular Pipe
	"i.p."	2332.78	2564.25	2569.50	2565.351	1.104	10.30	1	5.79	0.52	2565.87	0.000	1.149	1.079	0.20000	0.431	Circular Pipe
	Reach	2332.80	2564.25	2569.50	2565.398	1.148	10.30	1	5.52	0.47	2565.87	0.000	1.149	1.002	0.20000	0.431	Circular Pipe
"JOIN"	Join	2334.80	2564.25	2569.50	2566.007	1.757	5.10	1	2.89	0.13	2566.14	0.000	0.869	0.000	0.00000	0.000	Circular Pipe
HYDRAULIC JUMP at 2335.90 of length 0.06																	
"Link3"	"i.p."	2335.90	2564.35	2569.55	2566.012	1.666	5.10	1	2.89	0.13	2566.14	0.000	0.869	0.000	0.08673	0.412	Circular Pipe
	"i.p."	2335.90	2564.35	2569.55	2564.764	0.418	5.10	1	12.67	2.49	2567.26	0.000	0.869	4.084	0.08673	0.412	Circular Pipe
	"i.p."	2341.10	2564.80	2569.81	2565.216	0.420	5.10	1	12.60	2.46	2567.68	0.000	0.869	4.048	0.08673	0.412	Circular Pipe
	"i.p."	2359.64	2566.40	2570.74	2566.839	0.435	5.10	1	12.01	2.24	2569.08	0.000	0.869	3.788	0.08673	0.412	Circular Pipe
	"i.p."	2368.75	2567.19	2571.19	2567.644	0.450	5.10	1	11.45	2.04	2569.68	0.000	0.869	3.545	0.08673	0.412	Circular Pipe
	"i.p."	2374.60	2567.70	2571.48	2568.168	0.465	5.10	1	10.92	1.85	2570.02	0.000	0.869	3.316	0.08673	0.412	Circular Pipe
	"i.p."	2378.81	2568.07	2571.69	2568.549	0.482	5.10	1	10.41	1.68	2570.23	0.000	0.869	3.102	0.08673	0.412	Circular Pipe
	"i.p."	2382.02	2568.35	2571.85	2568.844	0.499	5.10	1	9.92	1.53	2570.37	0.000	0.869	2.901	0.08673	0.412	Circular Pipe
	"i.p."	2384.56	2568.57	2571.98	2569.082	0.516	5.10	1	9.46	1.39	2570.47	0.000	0.869	2.712	0.08673	0.412	Circular Pipe
	"i.p."	2386.60	2568.74	2572.08	2569.278	0.535	5.10	1	9.02	1.26	2570.54	0.000	0.869	2.535	0.08673	0.412	Circular Pipe
	"i.p."	2388.29	2568.89	2572.16	2569.443	0.554	5.10	1	8.60	1.15	2570.59	0.000	0.869	2.369	0.08673	0.412	Circular Pipe
	"i.p."	2389.69	2569.01	2572.23	2569.584	0.574	5.10	1	8.20	1.04	2570.63	0.000	0.869	2.214	0.08673	0.412	Circular Pipe
	"i.p."	2390.85	2569.11	2572.29	2569.706	0.595	5.10	1	7.82	0.95	2570.66	0.000	0.869	2.067	0.08673	0.412	Circular Pipe
	"i.p."	2391.82	2569.20	2572.34	2569.812	0.616	5.10	1	7.46	0.86	2570.68	0.000	0.869	1.930	0.08673	0.412	Circular Pipe
	"i.p."	2392.63	2569.27	2572.38	2569.905	0.639	5.10	1	7.11	0.78	2570.69	0.000	0.869	1.802	0.08673	0.412	Circular Pipe
	"i.p."	2393.30	2569.32	2572.41	2569.986	0.662	5.10	1	6.78	0.71	2570.70	0.000	0.869	1.681	0.08673	0.412	Circular Pipe
	"i.p."	2393.85	2569.37	2572.44	2570.059	0.687	5.10	1	6.46	0.65	2570.71	0.000	0.869	1.568	0.08673	0.412	Circular Pipe
	"i.p."	2394.30	2569.41	2572.46	2570.123	0.713	5.10	1	6.16	0.59	2570.71	0.000	0.869	1.461	0.08673	0.412	Circular Pipe
	"i.p."	2394.65	2569.44	2572.48	2570.180	0.740	5.10	1	5.88	0.54	2570.72	0.000	0.869	1.361	0.08673	0.412	Circular Pipe
	"i.p."	2394.91	2569.46	2572.49	2570.232	0.768	5.10	1	5.60	0.49	2570.72	0.000	0.869	1.267	0.08673	0.412	Circular Pipe
	Reach	2395.10	2569.48	2572.50	2570.277	0.797	5.10	1	5.34	0.44	2570.72	0.000	0.869	1.179	0.08673	0.412	Circular Pipe
	"i.p."	2395.28	2569.48	2572.50	2570.287	0.803	5.10	1	5.29	0.43	2570.72	0.000	0.869	1.162	0.02000	0.606	Circular Pipe
	"i.p."	2395.90	2569.50	2572.50	2570.331	0.835	5.10	1	5.05	0.40	2570.73	0.000	0.869	1.080	0.02000	0.606	Circular Pipe
"Link2"	Reach	2396.10	2569.50	2572.50	2570.368	0.868	5.10	1	4.81	0.36	2570.73	0.000	0.869	1.002	0.02000	0.606	Circular Pipe
"EX DI SO"	Junction	2399.80	2569.50	2572.50	2570.825	1.325	2.90	1	1.76	0.05	2570.87	0.000	0.647	0.000	0.00000	0.000	Circular Pipe
HYDRAULIC JUMP at 2480.61 of length 0.01																	
	"i.p."	2410.39	2569.58	2572.58	2570.828	1.251	2.90	1	1.84	0.05	2570.88	0.000	0.647	0.273	0.00722	0.588	Circular Pipe
	"i.p."	2419.30	2569.64	2572.64	2570.830	1.189	2.90	1	1.93	0.06	2570.89	0.000	0.647	0.306	0.00722	0.588	Circular Pipe
	"i.p."	2427.15	2569.70	2572.70	2570.830	1.133	2.90	1	2.03	0.06	2570.89	0.000	0.647	0.339	0.00722	0.588	Circular Pipe
	"i.p."	2434.20	2569.75	2572.75	2570.831	1.082	2.90	1	2.12	0.07	2570.90	0.000	0.647	0.371	0.00722	0.588	Circular Pipe
	"i.p."	2440.61	2569.79	2572.80	2570.831	1.036	2.90	1	2.23	0.08	2570.91	0.000	0.647	0.405	0.00722	0.588	Circular Pipe
	"i.p."	2446.49	2569.84	2572.84	2570.830	0.993	2.90	1	2.34	0.08	2570.91	0.000	0.647	0.440	0.00722	0.588	Circular Pipe
	"i.p."	2451.92	2569.88	2572.88	2570.829	0.952	2.90	1	2.45	0.09	2570.92	0.000	0.647	0.477	0.00722	0.588	Circular Pipe
	"i.p."	2456.91	2569.91	2572.92	2570.827	0.915	2.90	1	2.57	0.10	2570.93	0.000	0.647	0.516	0.00722	0.588	Circular Pipe
	"i.p."	2461.53	2569.95	2572.95	2570.825	0.879	2.90	1	2.70	0.11	2570.94	0.000	0.647	0.557	0.00722	0.588	Circular Pipe
	"i.p."	2465.78	2569.98	2572.98	2570.822	0.845	2.90	1	2.83	0.12	2570.95	0.000	0.647	0.600	0.00722	0.588	Circular Pipe
	"i.p."	2469.69	2570.00	2573.01	2570.818	0.813	2.90	1	2.97	0.14	2570.95	0.000	0.647	0.646	0.00722	0.588	Circular Pipe
	"i.p."	2473.22	2570.03	2573.04	2570.813	0.783	2.90	1	3.11	0.15	2570.96	0.000	0.647	0.695	0.00722	0.588	Circular Pipe
	"i.p."	2476.38	2570.05	2573.06	2570.807	0.754	2.90	1	3.26	0.17	2570.97	0.000	0.647	0.747	0.00722	0.588	Circular Pipe
	"i.p."	2479.12	2570.07	2573.08	2570.799	0.726	2.90	1	3.42	0.18	2570.98	0.000	0.647	0.802	0.00722	0.588	Circular Pipe
	"i.p."	2480.61	2570.08	2573.09	2570.793	0.710	2.90	1	3.52	0.19	2570.99	0.000	0.647	0.838	0.00722	0.588	Circular Pipe
	"i.p."	2480.61	2570.08	2573.09	2570.672	0.588	2.90	1	4.51	0.32	2570.99	0.000	0.647	1.201	0.00722	0.588	Circular Pipe
	"i.p."	2508.42	2570.28	2573.29	2570.873	0.588	2.90	1	4.51	0.32	2571.19	0.000	0.647	1.201	0.00722	0.588	Circular Pipe
	"i.p."	2526.31	2570.41	2573.42	2571.015	0.601	2.90	1	4.38	0.30	2571.31	0.000	0.647	1.151	0.00722	0.588	Circular Pipe

"i.p."	2531.63	2570.45	2573.46	2571.075	0.623	2.90	1	4.18	0.27	2571.35	0.000	0.647	1.075	0.00722	0.588	Circular Pipe
"Link1" Reach	2532.70	2570.46	2573.47	2571.106	0.646	2.90	1	3.98	0.25	2571.35	0.000	0.647	1.003	0.00722	0.588	Circular Pipe
"EX DI NO" Headwrk	2532.70	2570.46	2573.47	2571.107	0.647	2.90	1	3.98	0.25	2571.35	0.000	0.647	0.000	0.00000	0.000	Circular Pipe

*) in the W.S.ELEV column indicates flooding, it is set whenever W.S.ELEV > GROUND ELEV
i.p. = intermediate point processing results for reaches

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JOIN_Lateral1

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Composite Profile:

ELEMENT NAME	TYPE	STATION	INVERT ELEV	GROUND ELEV	W.S. ELEV	DEPTH	Q	BARREL	VELOC.	VELOC. HEAD	ENERGY GRADE LN	SUPER ELEV	CRITICAL DEPTH	FROUDE NUMBER	SLOPE	NORMAL DEPTH	CROSS SECTION

###																	
"Outlet/J"	Outlet	2334.80	2564.25	2569.50	2565.703	1.453	5.20	1	2.97	0.14	2565.84	0.000	0.878	0.000	0.00000	0.000	Circular Pipe
HYDRAULIC JUMP at 2354.06 of length 0.02																	
"i.p."		2342.25	2564.36	2569.66	2565.705	1.343	5.20	1	3.12	0.15	2565.86	0.000	0.878	0.407	0.01503	0.663	Circular Pipe
"i.p."		2347.10	2564.43	2569.76	2565.701	1.266	5.20	1	3.27	0.17	2565.87	0.000	0.878	0.476	0.01503	0.663	Circular Pipe
"i.p."		2350.93	2564.49	2569.84	2565.694	1.202	5.20	1	3.43	0.18	2565.88	0.000	0.878	0.536	0.01503	0.663	Circular Pipe
"i.p."		2354.06	2564.54	2569.90	2565.684	1.145	5.20	1	3.59	0.20	2565.88	0.000	0.878	0.595	0.01503	0.663	Circular Pipe
"i.p."		2354.06	2564.54	2569.90	2565.203	0.663	5.20	1	6.90	0.74	2565.94	0.000	0.878	1.710	0.01503	0.663	Circular Pipe
"i.p."		2586.01	2568.03	2574.75	2568.690	0.663	5.20	1	6.90	0.74	2569.43	0.000	0.878	1.710	0.01503	0.663	Circular Pipe
"i.p."		2633.32	2568.74	2575.74	2569.412	0.673	5.20	1	6.76	0.71	2570.12	0.000	0.878	1.660	0.01503	0.663	Circular Pipe
"i.p."		2657.23	2569.10	2576.24	2569.796	0.699	5.20	1	6.45	0.65	2570.44	0.000	0.878	1.548	0.01503	0.663	Circular Pipe
"i.p."		2667.19	2569.25	2576.45	2569.972	0.725	5.20	1	6.15	0.59	2570.56	0.000	0.878	1.442	0.01503	0.663	Circular Pipe
"i.p."		2672.69	2569.33	2576.56	2570.082	0.752	5.20	1	5.86	0.53	2570.62	0.000	0.878	1.343	0.01503	0.663	Circular Pipe
"i.p."		2676.01	2569.38	2576.63	2570.161	0.781	5.20	1	5.59	0.49	2570.65	0.000	0.878	1.250	0.01503	0.663	Circular Pipe
"i.p."		2677.99	2569.41	2576.67	2570.221	0.812	5.20	1	5.33	0.44	2570.66	0.000	0.878	1.162	0.01503	0.663	Circular Pipe
"i.p."		2679.01	2569.43	2576.69	2570.269	0.843	5.20	1	5.08	0.40	2570.67	0.000	0.878	1.080	0.01503	0.663	Circular Pipe
"Link41"	Reach	2679.33	2569.43	2576.70	2570.307	0.877	5.20	1	4.84	0.36	2570.67	0.000	0.878	1.002	0.01503	0.663	Circular Pipe
"T-2-DI #"	Junction	2681.83	2569.43	2576.70	2570.824	1.394	2.00	1	1.17	0.02	2570.84	0.000	0.533	0.000	0.00000	0.000	Circular Pipe
HYDRAULIC JUMP at 2681.86 of length 0.06																	
"i.p."		2681.86	2569.48	2576.69	2570.823	1.348	2.00	1	1.20	0.02	2570.85	0.000	0.533	0.155	1.55000	0.129	Circular Pipe
"i.p."		2681.86	2569.48	2576.69	2569.645	0.170	2.00	1	18.17	5.12	2574.77	0.000	0.533	9.405	1.55000	0.129	Circular Pipe
"i.p."		2682.10	2569.85	2576.59	2570.026	0.173	2.00	1	17.69	4.86	2574.88	0.000	0.533	9.071	1.55000	0.129	Circular Pipe
"i.p."		2682.49	2570.46	2576.43	2570.636	0.178	2.00	1	16.87	4.42	2575.05	0.000	0.533	8.505	1.55000	0.129	Circular Pipe
"L1"	Reach	2682.83	2570.98	2576.30	2571.164	0.184	2.00	1	16.08	4.02	2575.18	0.000	0.533	7.975	1.55000	0.129	Circular Pipe
"i.p."		2682.96	2571.16	2576.35	2571.350	0.187	2.00	1	15.81	3.88	2575.23	0.000	0.533	7.794	1.37000	0.133	Circular Pipe
"i.p."		2683.29	2571.61	2576.48	2571.805	0.193	2.00	1	15.07	3.53	2575.33	0.000	0.533	7.306	1.37000	0.133	Circular Pipe
"i.p."		2683.58	2572.01	2576.60	2572.204	0.199	2.00	1	14.37	3.21	2575.41	0.000	0.533	6.849	1.37000	0.133	Circular Pipe
"Link28"	Reach	2683.83	2572.35	2576.70	2572.556	0.206	2.00	1	13.70	2.92	2575.47	0.000	0.533	6.422	1.37000	0.133	Circular Pipe
"i.p."		2684.00	2572.58	2576.70	2572.795	0.211	2.00	1	13.22	2.71	2575.51	0.000	0.533	6.117	1.35000	0.134	Circular Pipe
"i.p."		2684.21	2572.86	2576.70	2573.081	0.218	2.00	1	12.61	2.47	2575.55	0.000	0.533	5.734	1.35000	0.134	Circular Pipe
"i.p."		2684.39	2573.11	2576.70	2573.335	0.225	2.00	1	12.02	2.24	2575.58	0.000	0.533	5.375	1.35000	0.134	Circular Pipe
"i.p."		2684.56	2573.33	2576.70	2573.562	0.233	2.00	1	11.46	2.04	2575.60	0.000	0.533	5.038	1.35000	0.134	Circular Pipe
"i.p."		2684.70	2573.53	2576.70	2573.766	0.240	2.00	1	10.93	1.85	2575.62	0.000	0.533	4.721	1.35000	0.134	Circular Pipe
"Link27"	Reach	2684.83	2573.70	2576.70	2573.949	0.249	2.00	1	10.42	1.69	2575.63	0.000	0.533	4.425	1.35000	0.134	Circular Pipe
"i.p."		2689.20	2574.21	2578.00	2574.462	0.253	2.00	1	10.16	1.60	2576.07	0.000	0.533	4.279	0.11633	0.241	Circular Pipe

	"i.p."	2694.21	2574.79	2579.50	2575.053	0.261	2.00	1	9.69	1.46	2576.51	0.000	0.533	4.009	0.11633	0.241	Circular Pipe
	"i.p."	2697.41	2575.16	2580.45	2575.433	0.270	2.00	1	9.24	1.33	2576.76	0.000	0.533	3.757	0.11633	0.241	Circular Pipe
	"i.p."	2699.70	2575.43	2581.13	2575.709	0.279	2.00	1	8.81	1.20	2576.91	0.000	0.533	3.521	0.11633	0.241	Circular Pipe
	"i.p."	2701.46	2575.63	2581.65	2575.923	0.289	2.00	1	8.40	1.10	2577.02	0.000	0.533	3.299	0.11633	0.241	Circular Pipe
	"i.p."	2702.85	2575.80	2582.07	2576.094	0.298	2.00	1	8.01	1.00	2577.09	0.000	0.533	3.091	0.11633	0.241	Circular Pipe
	"i.p."	2703.98	2575.93	2582.41	2576.236	0.309	2.00	1	7.64	0.91	2577.14	0.000	0.533	2.895	0.11633	0.241	Circular Pipe
	"i.p."	2704.92	2576.04	2582.68	2576.355	0.319	2.00	1	7.28	0.82	2577.18	0.000	0.533	2.712	0.11633	0.241	Circular Pipe
	"i.p."	2705.70	2576.13	2582.92	2576.457	0.330	2.00	1	6.94	0.75	2577.21	0.000	0.533	2.540	0.11633	0.241	Circular Pipe
	"i.p."	2706.36	2576.20	2583.11	2576.545	0.341	2.00	1	6.62	0.68	2577.23	0.000	0.533	2.379	0.11633	0.241	Circular Pipe
	"i.p."	2706.91	2576.27	2583.28	2576.622	0.353	2.00	1	6.31	0.62	2577.24	0.000	0.533	2.228	0.11633	0.241	Circular Pipe
	"i.p."	2707.39	2576.32	2583.42	2576.689	0.365	2.00	1	6.02	0.56	2577.25	0.000	0.533	2.086	0.11633	0.241	Circular Pipe
	"i.p."	2707.79	2576.37	2583.54	2576.748	0.377	2.00	1	5.74	0.51	2577.26	0.000	0.533	1.954	0.11633	0.241	Circular Pipe
	"i.p."	2708.13	2576.41	2583.64	2576.801	0.390	2.00	1	5.47	0.46	2577.27	0.000	0.533	1.829	0.11633	0.241	Circular Pipe
	"i.p."	2708.41	2576.44	2583.73	2576.847	0.404	2.00	1	5.22	0.42	2577.27	0.000	0.533	1.712	0.11633	0.241	Circular Pipe
	"i.p."	2708.65	2576.47	2583.80	2576.889	0.418	2.00	1	4.97	0.38	2577.27	0.000	0.533	1.602	0.11633	0.241	Circular Pipe
	"i.p."	2708.84	2576.49	2583.86	2576.926	0.432	2.00	1	4.74	0.35	2577.27	0.000	0.533	1.500	0.11633	0.241	Circular Pipe
	"i.p."	2709.00	2576.51	2583.90	2576.959	0.448	2.00	1	4.52	0.32	2577.28	0.000	0.533	1.403	0.11633	0.241	Circular Pipe
	"i.p."	2709.12	2576.53	2583.94	2576.989	0.463	2.00	1	4.31	0.29	2577.28	0.000	0.533	1.313	0.11633	0.241	Circular Pipe
	"i.p."	2709.22	2576.54	2583.97	2577.016	0.479	2.00	1	4.11	0.26	2577.28	0.000	0.533	1.228	0.11633	0.241	Circular Pipe
	"i.p."	2709.28	2576.54	2583.99	2577.040	0.496	2.00	1	3.92	0.24	2577.28	0.000	0.533	1.148	0.11633	0.241	Circular Pipe
	"i.p."	2709.32	2576.55	2584.00	2577.062	0.514	2.00	1	3.74	0.22	2577.28	0.000	0.533	1.074	0.11633	0.241	Circular Pipe
"Link23"	Reach	2709.33	2576.55	2584.00	2577.082	0.532	2.00	1	3.56	0.20	2577.28	0.000	0.533	1.004	0.11633	0.241	Circular Pipe
"REL. DI"	Headwrk	2709.33	2576.55	2584.00	2577.083	0.533	2.00	1	3.55	0.20	2577.28	0.000	0.533	0.000	0.00000	0.000	Circular Pipe

*) in the W.S.ELEV column indicates flooding, it is set whenever W.S.ELEV > GROUND ELEV
i.p. = intermediate point processing results for reaches

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SDMH #4_Branch1

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Composite Profile:

ELEMENT NAME	TYPE	STATION	INVERT ELEV	GROUND ELEV	W.S. ELEV	DEPTH	Q	BARREL	VELOC.	VELOC. HEAD	ENERGY GRADE LN	SUPER ELEV	CRITICAL DEPTH	FROUDE NUMBER	SLOPE	NORMAL DEPTH	CROSS SECTION
###																	
"Outlet/S"	Outlet	1832.82	2554.81	2560.30	2555.487	0.677	10.80	1	13.95	3.02	2558.51	0.000	1.260	0.000	0.00000	0.000	Circular Pipe
	"i.p."	1834.75	2554.93	2560.43	2555.609	0.677	10.80	1	13.94	3.02	2558.62	0.000	1.260	3.409	0.06291	0.669	Circular Pipe
	"i.p."	1873.63	2557.38	2563.08	2558.080	0.703	10.80	1	13.29	2.74	2560.82	0.000	1.260	3.178	0.06291	0.669	Circular Pipe
	"i.p."	1890.49	2558.44	2564.23	2559.167	0.729	10.80	1	12.67	2.49	2561.66	0.000	1.260	2.961	0.06291	0.669	Circular Pipe
	"i.p."	1900.87	2559.09	2564.93	2559.848	0.757	10.80	1	12.08	2.27	2562.11	0.000	1.260	2.757	0.06291	0.669	Circular Pipe
	"i.p."	1908.13	2559.55	2565.43	2560.334	0.786	10.80	1	11.52	2.06	2562.39	0.000	1.260	2.565	0.06291	0.669	Circular Pipe
	"i.p."	1913.54	2559.89	2565.80	2560.705	0.817	10.80	1	10.98	1.87	2562.58	0.000	1.260	2.385	0.06291	0.669	Circular Pipe
	"i.p."	1917.74	2560.15	2566.08	2561.001	0.849	10.80	1	10.47	1.70	2562.70	0.000	1.260	2.215	0.06291	0.669	Circular Pipe
	"i.p."	1921.05	2560.36	2566.31	2561.243	0.883	10.80	1	9.98	1.55	2562.79	0.000	1.260	2.055	0.06291	0.669	Circular Pipe
	"i.p."	1923.70	2560.53	2566.49	2561.446	0.919	10.80	1	9.52	1.41	2562.85	0.000	1.260	1.904	0.06291	0.669	Circular Pipe
	"i.p."	1925.83	2560.66	2566.63	2561.618	0.957	10.80	1	9.08	1.28	2562.90	0.000	1.260	1.760	0.06291	0.669	Circular Pipe
	"i.p."	1927.53	2560.77	2566.75	2561.765	0.998	10.80	1	8.65	1.16	2562.93	0.000	1.260	1.624	0.06291	0.669	Circular Pipe
	"i.p."	1928.87	2560.85	2566.84	2561.893	1.041	10.80	1	8.25	1.06	2562.95	0.000	1.260	1.494	0.06291	0.669	Circular Pipe
	"i.p."	1929.88	2560.92	2566.91	2562.004	1.088	10.80	1	7.87	0.96	2562.96	0.000	1.260	1.369	0.06291	0.669	Circular Pipe

H:\Cad\Land\4136-Delta\ADMIN\Drainage\RFI-63 FROM 4136-Update 2\Hydraulic\RFI WITH INVERT CHANGE TO MH #3\MAIN OFF-SITE.out

	"i.p."	1930.61	2560.96	2566.96	2562.101	1.139	10.80	1	7.50	0.87	2562.97	0.000	1.260	1.247	0.06291	0.669	Circular Pipe
	"i.p."	1931.06	2560.99	2566.99	2562.185	1.196	10.80	1	7.15	0.79	2562.98	0.000	1.260	1.126	0.06291	0.669	Circular Pipe
"Link19"	Reach	1931.22	2561.00	2567.00	2562.259	1.259	10.80	1	6.82	0.72	2562.98	0.000	1.260	1.002	0.06291	0.669	Circular Pipe
"PROP 4X4"	Headwrk	1931.22	2561.00	2567.00	2562.260	1.260	10.80	1	6.81	0.72	2562.98	0.000	1.260	0.000	0.00000	0.000	Circular Pipe

*) in the W.S.ELEV column indicates flooding, it is set whenever W.S.ELEV > GROUND ELEV
i.p. = intermediate point processing results for reaches

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SDMH #3_Branch1
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Composite Profile:

ELEMENT NAME	TYPE	STATION	INVERT ELEV	GROUND ELEV	W.S. ELEV	DEPTH	Q	BARREL	VELOC.	VELOC. HEAD	ENERGY GRADE LN	SUPER ELEV	CRITICAL DEPTH	FROUDE NUMBER	SLOPE	NORMAL DEPTH	CROSS SECTION
###																	
"Outlet/S"	Outlet	1427.93	2546.32	2551.60	2549.649	3.329	20.50	1	6.53	0.66	2550.31	0.000	1.624	0.000	0.00000	0.000	Circular Pipe
"Link53"	Reach	1448.99	2546.91	2554.50	2549.822	2.912	20.50	1	6.53	0.66	2550.48	0.000	1.624	0.000	0.02802	1.048	Circular Pipe
"DI #6"	Junction	1452.99	2546.91	2554.50	2550.946	4.036	8.30	1	2.64	0.11	2551.05	0.000	1.026	0.000	0.00000	0.000	Circular Pipe
"L52"	Reach	1453.99	2546.93	2554.50	2550.953	4.023	8.30	1	2.64	0.11	2551.06	0.000	1.026	0.000	0.02000	0.695	Circular Pipe
"L49"	Reach	1492.26	2549.00	2553.00	2551.010	2.010	8.30	1	2.64	0.11	2551.12	0.000	1.026	0.000	0.05409	0.537	Circular Pipe
"DI #3"	Headwrk	1492.26	2549.00	2553.00	2551.010	2.010	8.30	1	2.64	0.11	2551.12	0.000	1.026	0.000	0.00000	0.000	Circular Pipe

*) in the W.S.ELEV column indicates flooding, it is set whenever W.S.ELEV > GROUND ELEV
i.p. = intermediate point processing results for reaches

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SDMH #4A_Branch1
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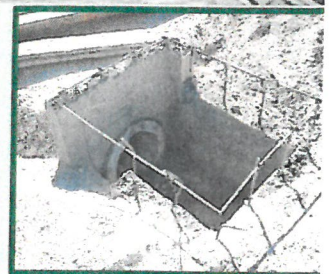
Composite Profile:

ELEMENT NAME	TYPE	STATION	INVERT ELEV	GROUND ELEV	W.S. ELEV	DEPTH	Q	BARREL	VELOC.	VELOC. HEAD	ENERGY GRADE LN	SUPER ELEV	CRITICAL DEPTH	FROUDE NUMBER	SLOPE	NORMAL DEPTH	CROSS SECTION
###																	
"Outlet/S"	Outlet	2093.24	2560.22	2566.20	2562.489	2.269	12.30	1	6.96	0.75	2563.24	0.000	1.326	0.000	0.00000	0.000	Circular Pipe
"Link40"	Reach	2114.65	2560.69	2565.77	2562.783	2.093	12.30	1	6.96	0.75	2563.54	0.000	1.326	0.000	0.02195	1.006	Circular Pipe
"SD #5"	Headwrk	2114.65	2560.69	2565.77	2562.783	2.093	12.30	1	6.96	0.75	2563.54	0.000	1.326	0.000	0.00000	0.000	Circular Pipe

*) in the W.S.ELEV column indicates flooding, it is set whenever W.S.ELEV > GROUND ELEV
i.p. = intermediate point processing results for reaches

APPENDIX B
Approved Study Materials)

Technical Drainage Study for DC Plaza (DS 4710)



Update 1 to the TDS for DC Plaza

APN: 112-17-601-007, 010, 013, 020
And 021

November 2016

Prepared for:

Farm and Durango Investors, LLC
C/O Laurich Properties, Inc.
1770 North Buffalo Drive, Suite 101
Las Vegas, NV 89128:
702-220-4500

Prepared by:

COLLINS
ENGINEERS INC

3130 S. Durango Drive, Suite 404
Las Vegas, Nevada 89117
702.248.8000 • www.collinsengr.com

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE STUDY INFORMATION FORM

Name of Development: **DC PLAZA** Date: **11/16/2016**

Location of Development: a) Descriptive (Cross Streets) **Durango Dr. and Farm Road**
 b) Section **17** Township **19 South** Range **60 East**

Name of Owner: **Farm and Durango Investors, LLC** Assessors Parcel Number: **125-17-601-007, 010,**
Telephone Number: 702-220-4500, 007, 013, 020 and 021

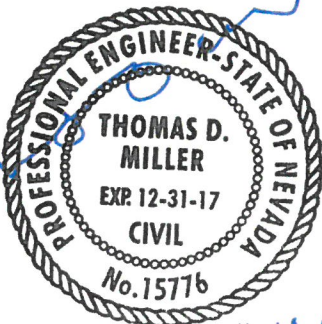
Address: **c/o Laurich Properties, Inc., 1770 North Buffalo Drive Suite 101**
Las Vegas, NV 89128

Contact Person Name: **Thomas Miller, P.E.** Telephone Number: **(702) 248-8000**
 Firm: **Collins Engineers** Fax Number: **(702) 248-8070**
 Address: **3130 South Durango Drive, Suite 404** Email: **Tmiller@collinsengr.com**
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	☐	

- Total Owned Land Area: At Site: **±9.32 Ac** Being Developed: **± 9.32 Ac**
- Is a portion or all of the subject property located in a designated FEMA Flood Hazard Area? YES NO
- Is the property bordered or crossed by an existing or proposed Clark County Regional Flood Control District Master Planned Facility? YES NO
- Proposed type of development (Residential, Commercial, Etc.)? **Commercial**
- Approximate upstream land area which drains to the subject site? **1.7**
- Has the site drainage been evaluated in the past? YES NO
 If yes, please identify documentation:
DS 4710, DS# 3201 and DS# 4323
- If known, please briefly identify the proposed discharge point(s) of runoff from the site:
Flow which is generated by the site discharged in to proposed storm drain system and towards Farm Road ROW
- 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

REFERENCE: CSE Project No. 4136.1

STANDARD FORM 1

CITY OF LAS VEGAS		DATE:
INTER-OFFICE MEMORANDUM		December 9, 2016
TO: Land Development Services Department of Building & Safety		FROM: Albert Sung, P.E. Flood Control Project Engineer Department of Public Works
SUBJECT:	COPIES TO:	
Drainage Study for:	Collins Engineers, Inc.	
DC Plaza – Update #1	Farm & Durango Investors LLC	
Cross Streets:	South Corner of Farm Road & Durango Drive	Bart Anderson, P.E., DevCo
File Number:	F:\Depot\DSMemos\DS4710D.doc	NDOT
Parcel Number:	125-17-601-007; -010; -013 & -015	
Zoning Action:	TMP-61075; VAC-61072; SUP-61071; SUP-61068; SUP-61067 & SDR-61074	
FEMA Flood Zone	YES	NO X
Proposed Storm Drain	YES	NO X

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1 st Submittal	11/17/2014	12/18/2014	Not Approved	\$400.00	376943: \$400
2 nd Submittal	12/30/2015	1/19/2016	Not Approved	\$400.00	427953: \$400
3 rd Submittal	2/9/2016	3/2/2016	Not Approved	\$400.00	432365: \$400
Supplement	5/2/2016	5/5/2016	Approved	N/C	N/C
4 th Submittal	11/17/2016	12/9/2016	See Comments Below	\$100.00	465763: \$100
TOTAL FEES (LDDRS):				\$1,300.00	----

REMARKS:

4th Submittal: Update #1 to address onsite grade changes to accommodate a relocation of driveway entrance in Farm Road

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

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

1. The project proposes to construct facilities and/or increase flows within *Nevada Department of Transportation* (NDOT) right-of-way (*Durango Drive*). The engineer must contact NDOT for encroachment and occupancy permits for the proposed project.
2. A proposed 15'-wide storm drain easement behind the right-of-way line in *Durango Drive* must be dedicated as a **PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED BY THE PROPERTY OWNER OR THE HOA**. The storm drain system will be privately owned and to be privately maintained. The *City of Las Vegas* will not maintain this easement and the storm drain within. The subject easement must be recorded as such in the **Final Map** prior to the final approval of the improvement plans.

3. The engineer must provide a table on the grading plans that shows a quantity estimate of all drainage improvements within Public Drainage Easements. ***All drainage improvements within Public Drainage Easements must be bonded and inspected.***
4. Provide a note in the Final Map: **"ALL SUBDIVIDED PARCELS COMPRISING THIS COMMERCIAL SUBDIVISION SHALL PROVIDE PERPETUAL INTERSITE COMMON DRAINAGE RIGHTS ACROSS ALL EXISTING AND FUTURE PARCEL LIMITS".**
5. **Sheet C4.04:** Label the size of an existing storm drain downstream of SDMH #1 with *City of Las Vegas* recorded drawing number.

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 Update 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

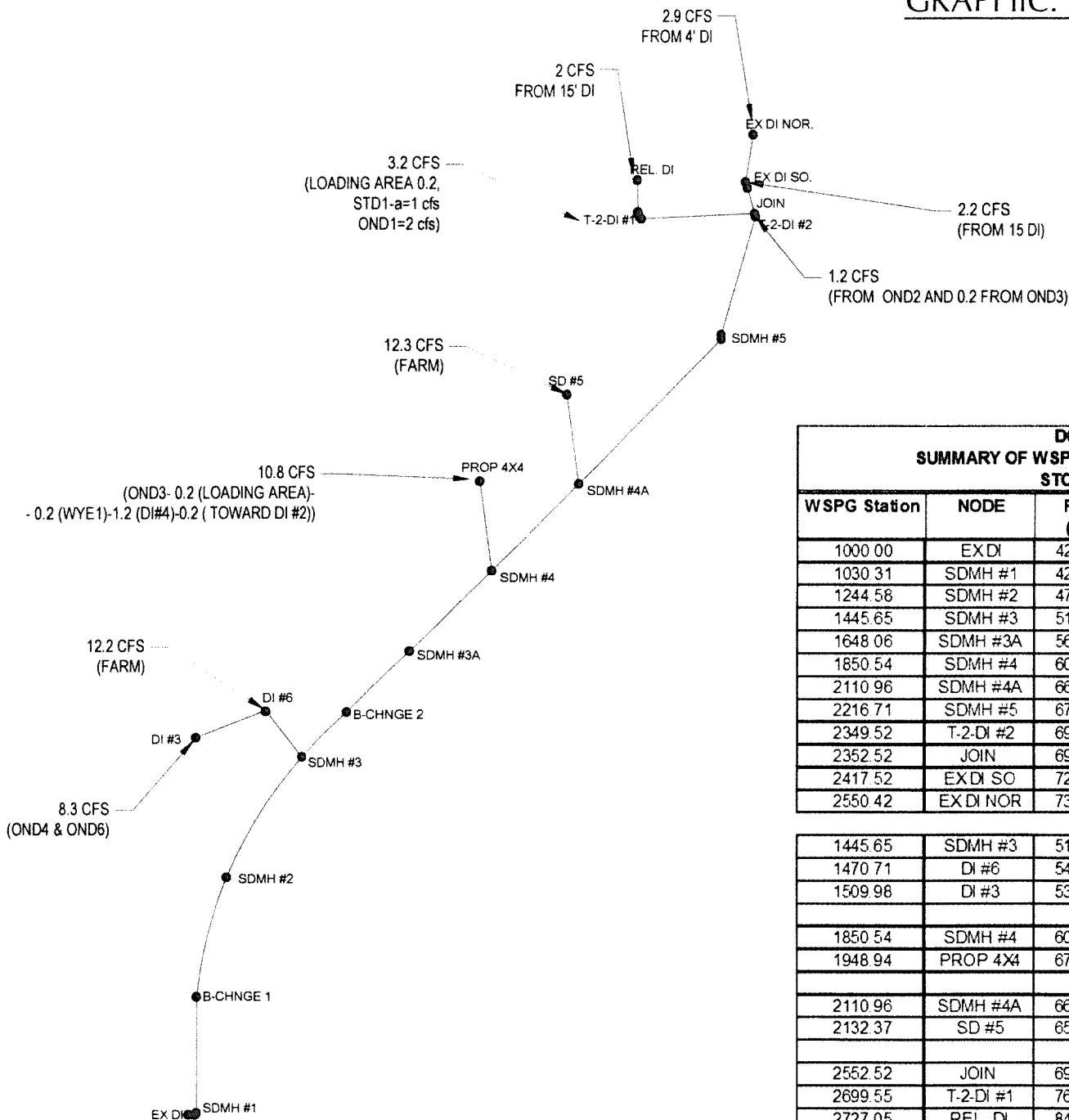
ays

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

**DC PLAZA TDS
WSPG MODEL PLAN**

DATE: 07/30/16

GRAPHIC: NTS



DC PLAZA SUMMARY OF WSPG MODEL FOR PROPOSED STORM DRAIN				
WSPG Station	NODE	FG (ft)	HGL (ft)	FG with respect to HGL (ft)
1000.00	EX DI	42.10	40.00	2.10
1030.31	SDMH #1	42.90	40.83	2.07
1244.58	SDMH #2	47.90	45.00	2.90
1445.65	SDMH #3	51.60	50.83	0.77
1648.06	SDMH #3A	56.50	51.87	4.63
1850.54	SDMH #4	60.30	57.40	2.90
2110.96	SDMH #4A	66.20	63.13	3.07
2216.71	SDMH #5	67.20	62.88	4.32
2349.52	T-2-DI #2	69.50	64.93	4.57
2352.52	JOIN	69.50	66.00	3.50
2417.52	EX DI SO	72.50	70.83	1.67
2550.42	EX DI NOR	73.47	71.11	2.36
1445.65	SDMH #3	51.60	49.81	1.79
1470.71	DI #6	54.50	51.21	3.29
1509.98	DI #3	53.00	51.49	1.51
				0.00
1850.54	SDMH #4	60.30	55.49	4.81
1948.94	PROP 4X4	67.00	62.26	4.74
2110.96	SDMH #4A	66.20	62.49	3.71
2132.37	SD #5	65.77	62.78	2.99
				0.00
2552.52	JOIN	69.50	65.70	3.80
2699.55	T-2-DI #1	76.70	70.82	5.88
2727.05	REL. DI	84.00	77.08	6.92

[TITLE]

Update 1 TO THE TDS FOR DC PLAZA
 MAIN LINE STORM DRAIN MODLE
 CIVIL SQUARED ENGINEERING JOB # 4136

[REPORT]

COMPOSITE_ONLY

{NETWORK}

**TYPE	NAME
Outlet	"EX DI"
Reach	"Link18"
Reach	"Link17"
Reach	"Link16"
Reach	"Link15"
Reach	"Link14"
Reach	"LINK 13"
Reach	"Link12"
Join	"SDMH #3"
Reach	"Link55"
Reach	"Link46"
Reach	"Link8"
Join	"SDMH #4"
Reach	"Link34"
Join	"SDMH #4A"
Reach	"Link33"
Reach	"Link6"
Reach	"Link5"
Junction	"T-2-DI #2"
Reach	"Link4"
Join	"JOIN"
Reach	"Link3"
Reach	"Link2"
Junction	"EX DI SO."
Reach	"Link1"
Headwork	"EX DI NOR."

**BRANCH DEFINITIONS

"JOIN_Lateral1"

Join	"JOIN"
Reach	"Link41"
Junction	"T-2-DI #1"
Reach	"L1"
Reach	"Link28"
Reach	"Link27"
Reach	"Link23"
Headwork	"REL. DI"

"SDMH #4_Branch1"
 Join "SDMH #4"
 Reach "Link19"
 Headwork "PROP 4X4"

"SDMH #3_Branch1"
 Join "SDMH #3"
 Reach "Link53"
 Junction "DI #6"
 Reach "LS2"
 Reach "L49"
 Headwork "DI #3"

"SDMH #4A_Branch1"
 Join "SDMH #4A"
 Reach "Link40"
 Headwork "SD #5"

[OUTLET]

**NAME	STATION	INVERT ELEV	GROUND ELEV	CHANNEL ID	WATER SURFACE ELEV (opt.)
**-----	-----	-----	-----	-----	-----
"EX DI"	1000	2536.78	2542.1	"30-INCH"	2540

[HEADWORK]

**NAME	INVERT ELEV	GROUND ELEV	CHANNEL ID	FLOW	WATER SURFACE ELEV (opt.)
**-----	-----	-----	-----	-----	-----
"EX DI NOR."	2570.46	2573.47	"18-INCH"	2.9	0
"PROP 4X4"	2561	2567	"18-INCH"	10.8	0
"REL. DI"	2576.55	2584	"18-INCH"	2	0
"SD #5"	2560.69	2565.77	"18-INCH"	12.3	0
"DI #3"	2549	2553	"18-INCH"	8.3	0

[WALLENTANCE]

**NAME	INVERT ELEV	GROUND ELEV	CHANNEL ID	LOSS COEFFICIENT(opt.)
**-----	-----	-----	-----	-----

[WALLEXIT]

**NAME	INVERT ELEV	GROUND ELEV	CHANNEL ID	LOSS COEFFICIENT(opt.)
**-----	-----	-----	-----	-----

[BRIDGEENTRANCE]

**NAME	INVERT ELEV	GROUND ELEV	CHANNEL ID	REDUCTION FACTOR(opt.)
**-----	-----	-----	-----	-----

MAIN OFF-SITE.wsx

[BRIDGEEXIT]

**NAME	INVERT ELEV	GROUND ELEV	CHANNEL ID	REDUCTION FACTOR(opt.)
**-----	-----	-----	-----	-----

[JOIN]

**NAME	INVERT ELEV	GROUND ELEV	CHANNEL ID	LENGTH	MANNINGS n	NUMBER OF BRANCHES	CONFLUENCE ANGLE
**-----	-----	-----	-----	-----	-----	-----	-----
"JOIN"	2564.25	2569.5	"18-INCH"	2	0.013	1	
"JOIN_Lateral1"	2564.25		"18-INCH"				-63
"SDMH #4"	2554.71	2560.3	"24-INCH"	5	0.013	1	
"SDMH #4_Branch1"	2554.81		"18-INCH"				-65
"SDMH #3"	2546.22	2551.6	"30-INCH"	5	0.013	1	
"SDMH #3_Branch1"	2546.32		"24-INCH"				-63
"SDMH #4A"	2560.12	2566.2	"24-INCH"	5	0.013	1	
"SDMH #4A_Branch1"	2560.22		"18-INCH"				-69

[JUNCTION]

**Name	INVERT ELEV	GROUND ELEV	CHANNEL ID	LENGTH	MANNINGS n	NUMBER OF LATERALS	CONFLUENCE ANGLE	FLOW
**-----	-----	-----	-----	-----	-----	-----	-----	-----
"EX DI SO."	2569.5	2572.5	"18-INCH"	3.7	0.013	1		
"EX DI SO._Lateral1"	2569.5		"18-INCH"				90	2.2
"T-2-DI #2"	2564.05	2569.5	"24-INCH"	2	0.013	1		
"T-2-DI #2_Lateral1"	2580		"24-INCH"				90	1
"T-2-DI #1"	2569.43	2576.7	"18-INCH"	2.5	0.013	1		
"T-2-DI #1_Lateral1"	2569.63		"18-INCH"				90	3.2
"DI #6"	2546.91	2554.5	"18-INCH"	4	0.013	1		
"DI #6_Lateral1"	2551.5		"24-INCH"				90	12.2

[TRANSITION]

**NAME	INVERT ELEV	GROUND ELEV	CHANNEL ID	LENGTH	MANNINGS n
**-----	-----	-----	-----	-----	-----

[REACH]

**NAME	INVERT ELEV	GROUND ELEV	CHANNEL ID	LENGTH	MANNINGS n	CURVE (opt)	ANGLE POINT(opt)	NUMBER MANHOLES(opt)
**-----	-----	-----	-----	-----	-----	-----	-----	-----
"Link1"	2570.46	2573.47	"18-INCH"	132.9	0.013	0	13	0
"Link2"	2569.5	2572.5	"18-INCH"	1	0.013	0	15	0

MAIN OFF-SITE.wsx

"Link3"	2569.48	2572.5	"18-INCH"	60.3	0.013	0	15	0
"Link4"	2564.25	2569.5	"24-INCH"	1	0.013	0	15	0
"Link5"	2564.05	2569.5	"24-INCH"	130.81	0.013	0	14	1
"Link6"	2562	2567.2	"24-INCH"	1	0.013	0	15	0
"Link8"	2554.71	2560.3	"30-INCH"	197.48	0.013	0	0	1
"Link12"	2546.22	2551.6	"30-INCH"	196.07	0.013	21.98	0	1
"LINK 13"	2542.02	2547.9	"30-INCH"	85.41	0.013	9.45	0	0
"Link14"	2540.2	2546.5	"30-INCH"	128.86	0.013	0	15	1
"Link15"	2537.63	2542.9	"30-INCH"	1	0.013	0	15	0
"Link16"	2537.56	2542.9	"30-INCH"	1	0.013	0	15	0
"Link17"	2537.5	2542.9	"30-INCH"	1	0.013	0	15	0
"Link18"	2537.43	2542.9	"30-INCH"	27.31	0.013	0	0	0
"Link19"	2561	2567	"18-INCH"	98.4	0.013	0	0	0
"Link23"	2576.55	2584	"18-INCH"	24.5	0.013	0	15	0
"L1"	2570.98	2576.3	"18-INCH"	1	0.013	0	15	0
"Link27"	2573.7	2576.7	"18-INCH"	1	0.013	0	15	0
"Link28"	2572.35	2576.7	"18-INCH"	1	0.013	0	15	0
"Link33"	2561.8	2567.2	"24-INCH"	104.75	0.013	0	0	0
"Link34"	2560.12	2566.2	"24-INCH"	255.42	0.013	0	0	0
"Link40"	2560.69	2565.77	"18-INCH"	21.41	0.013	0	0	0
"Link41"	2569.43	2576.7	"18-INCH"	344.53	0.013	0	0	0
"Link46"	2550.51	2556.5	"30-INCH"	94.72	0.013	0	0	0
"L49"	2549	2553	"18-INCH"	38.27	0.013	0	15	0
"L52"	2546.93	2554.5	"18-INCH"	1	0.013	0	15	0
"Link53"	2546.91	2554.5	"24-INCH"	21.06	0.013	0	0	0
"Link55"	2548.46	2554.5	"30-INCH"	107.69	0.013	12.31	0	0

[DROP]

**Name	INVERT ELEV	GROUND ELEV	CHANNEL ID	LOSS COEFFICIENT
**-----	-----	-----	-----	-----

[CHANNEL]

**REGULAR TYPES 1-4 7-8

**ID	TYPE	HEIGHT	WIDTH	LEFT SLOPE	RIGHT SLOPE	NUMBER PIERS	AVG PIER WIDTH	INVERT CROSS FALL	NUM OF BARRELS
**-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
"30-INCH"	4	2.5							1
"18-INCH"	4	1.5							1
"24-INCH"	4	2							1

**IRREGULAR TYPES 5-6

**ID	TYPE	NUMBER PIERS	AVG PIER WIDTH	PIER1 ELEV	PIER2 ELEV	PIER3 ELEV	PIER4 ELEV	PIER5 ELEV	PIER6 ELEV	PIER7 ELEV	PIER8 ELEV	PIER9 ELEV	PIER10 ELEV
**-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

[POINT]

**ID	XCOORD	YCOORD
**-----	-----	-----

Water Surface Profile Gradient (WSPG)
XP WSPG
Engine Version 3.0 30/09/2011
XP Solutions www.xpsolutions.com

INPUT FILE

H:\Cad\Land\4136-Delta\ADMIN\Drainage\4136-Update 1\Hydraulic\NDOT-ADD 2WSPG\For Final City Submittal\MAIN OFF-SITE.wsx
Computed 11/10/16 13:47:03

TITLE INFORMATION

UPDATE 1 TO THE TDS FOR DC PLAZA
MAIN LINE STORM DRAIN MODLE
CIVIL SQUARED ENGINEERING JOB # 4136

WARNING SUMMARY

WARNING 47: Junction DI #6 has a different channel than its direct downstream element.
WARNING 47: Junction JOIN has a different channel than its direct downstream element.
WARNING 47: Junction SDMH #4 has a different channel than its direct downstream element.
WARNING 36: D/S processing stopped in junction EX DI SO. because critical momentum is greater than maximum momentum.
WARNING 36: D/S processing stopped in junction JOIN because critical momentum is greater than maximum momentum.
WARNING 36: D/S processing stopped in junction T-2-DI #2 because critical momentum is greater than maximum momentum.
WARNING 36: D/S processing stopped in junction SDMH #4A because critical momentum is greater than maximum momentum.
WARNING 36: D/S processing stopped in junction SDMH #4 because critical momentum is greater than maximum momentum.
WARNING 36: D/S processing stopped in junction SDMH #3 because critical momentum is greater than maximum momentum.
WARNING 36: D/S processing stopped in junction T-2-DI #1 because critical momentum is greater than maximum momentum.
WARNING 36: D/S processing stopped in junction DI #6 because critical momentum is greater than maximum momentum.

RESULTS

=====
Main Line
=====

Composite Profile:

ELEMENT NAME	TYPE	STATION	INVERT ELEV	GROUND ELEV	W.S. ELEV	DEPTH	Q	BARREL VELOC.	VELOC. HEAD	ENERGY GRADE LN	SUPER ELEV	CRITICAL DEPTH	FROUDE NUMBER	SLOPE	NORMAL DEPTH	CROSS SECTION	
###																	
EX DI"	Outlet	1000.00	2536.78	2542.10	2540.000	3.220	54.90	1	11.18	1.94	2541.94	0.000	2.353	0.000	0.00000	0.000	Circular Pipe
Link18"	Reach	1027.31	2537.43	2542.90	2540.489	3.059	54.90	1	11.18	1.94	2542.43	0.000	2.353	0.000	0.02380	1.799	Circular Pipe
Link17"	Reach	1028.31	2537.50	2542.90	2540.603	3.103	54.90	1	11.18	1.94	2542.55	0.000	2.353	0.000	0.07000	1.259	Circular Pipe
Link16"	Reach	1029.31	2537.56	2542.90	2540.717	3.157	54.90	1	11.18	1.94	2542.66	0.000	2.353	0.000	0.06000	1.318	Circular Pipe
Link15"	Reach	1030.31	2537.63	2542.90	2540.831	3.201	54.90	1	11.18	1.94	2542.77	0.000	2.353	0.000	0.07000	1.259	Circular Pipe
Link14"	Reach	1159.17	2540.20	2546.50	2543.333	3.133	54.90	1	11.18	1.94	2545.28	0.000	2.353	0.000	0.01994	1.941	Circular Pipe

"LINK 13"	Reach	1244.58	2542.02	2547.90	2544.989	2.969	54.90	1	11.18	1.94	2546.93	0.000	2.353	0.000	0.02131	1.884	Circular Pipe
"Link12"	Reach	1440.65	2546.22	2551.60	2548.791	2.571	54.90	1	11.18	1.94	2550.73	0.000	2.353	0.000	0.02142	1.880	Circular Pipe
"SDMH #3"	Join	1445.65	2546.22	2551.60	2550.828	4.608	34.40	1	7.01	0.76	2551.59	0.000	1.993	0.000	0.00000	0.000	Circular Pipe
"Link55"	Reach	1553.34	2548.46	2554.50	2551.642	3.182	34.40	1	7.01	0.76	2552.40	0.000	1.993	0.000	0.02080	1.369	Circular Pipe
HYDRAULIC JUMP at 1579.93 of length 0.07																	
	"i.p."	1579.93	2549.04	2555.06	2551.829	2.794	34.40	1	7.01	0.76	2552.59	0.000	1.993	0.000	0.02164	1.352	Circular Pipe
	"i.p."	1579.93	2549.04	2555.06	2550.394	1.359	34.40	1	12.62	2.47	2552.87	0.000	1.993	2.126	0.02164	1.352	Circular Pipe
"Link46"	Reach	1648.06	2550.51	2556.50	2551.878	1.368	34.40	1	12.51	2.43	2554.31	0.000	1.993	2.098	0.02164	1.352	Circular Pipe
	"i.p."	1745.92	2552.59	2558.38	2554.006	1.415	34.40	1	12.01	2.24	2556.24	0.000	1.993	1.968	0.02127	1.360	Circular Pipe
	"i.p."	1786.28	2553.45	2559.16	2554.921	1.471	34.40	1	11.45	2.04	2556.96	0.000	1.993	1.826	0.02127	1.360	Circular Pipe
	"i.p."	1808.33	2553.92	2559.58	2555.450	1.531	34.40	1	10.92	1.85	2557.30	0.000	1.993	1.691	0.02127	1.360	Circular Pipe
	"i.p."	1822.36	2554.22	2559.85	2555.812	1.595	34.40	1	10.41	1.68	2557.49	0.000	1.993	1.564	0.02127	1.360	Circular Pipe
	"i.p."	1831.81	2554.42	2560.04	2556.080	1.662	34.40	1	9.92	1.53	2557.61	0.000	1.993	1.443	0.02127	1.360	Circular Pipe
	"i.p."	1838.22	2554.55	2560.16	2556.289	1.735	34.40	1	9.46	1.39	2557.68	0.000	1.993	1.328	0.02127	1.360	Circular Pipe
	"i.p."	1842.40	2554.64	2560.24	2556.456	1.813	34.40	1	9.02	1.26	2557.72	0.000	1.993	1.216	0.02127	1.360	Circular Pipe
	"i.p."	1844.76	2554.69	2560.29	2556.592	1.898	34.40	1	8.60	1.15	2557.74	0.000	1.993	1.108	0.02127	1.360	Circular Pipe
"Link8"	Reach	1845.54	2554.71	2560.30	2556.702	1.992	34.40	1	8.20	1.04	2557.75	0.000	1.993	1.001	0.02127	1.360	Circular Pipe
"SDMH #4"	Join	1850.54	2554.71	2560.30	2557.399	2.689	23.60	1	7.51	0.88	2558.28	0.000	1.724	0.000	0.00000	0.000	Circular Pipe
HYDRAULIC JUMP at 1891.74 of length 0.05																	
	"i.p."	1891.74	2555.58	2561.25	2557.848	2.265	23.60	1	7.51	0.88	2558.72	0.000	1.724	0.000	0.02118	1.253	Circular Pipe
	"i.p."	1891.74	2555.58	2561.25	2556.836	1.253	23.60	1	11.40	2.02	2558.85	0.000	1.724	1.941	0.02118	1.253	Circular Pipe
	"i.p."	1921.35	2556.21	2561.94	2557.463	1.253	23.60	1	11.40	2.02	2559.48	0.000	1.724	1.941	0.02118	1.253	Circular Pipe
	"i.p."	2031.13	2558.54	2564.47	2559.835	1.300	23.60	1	10.91	1.85	2561.68	0.000	1.724	1.806	0.02118	1.253	Circular Pipe
	"i.p."	2065.88	2559.27	2565.27	2560.627	1.356	23.60	1	10.41	1.68	2562.31	0.000	1.724	1.665	0.02118	1.253	Circular Pipe
	"i.p."	2083.74	2559.65	2565.69	2561.066	1.416	23.60	1	9.92	1.53	2562.59	0.000	1.724	1.529	0.02118	1.253	Circular Pipe
	"i.p."	2094.44	2559.88	2565.93	2561.357	1.481	23.60	1	9.46	1.39	2562.75	0.000	1.724	1.397	0.02118	1.253	Circular Pipe
	"i.p."	2101.02	2560.02	2566.09	2561.568	1.552	23.60	1	9.02	1.26	2562.83	0.000	1.724	1.269	0.02118	1.253	Circular Pipe
	"i.p."	2104.72	2560.09	2566.17	2561.725	1.632	23.60	1	8.60	1.15	2562.87	0.000	1.724	1.139	0.02118	1.253	Circular Pipe
"Link34"	Reach	2105.96	2560.12	2566.20	2561.843	1.723	23.60	1	8.20	1.04	2562.89	0.000	1.724	1.001	0.02118	1.253	Circular Pipe
"SDMH #4A"	Join	2110.96	2560.12	2566.20	2563.135	3.015	11.30	1	3.60	0.20	2563.34	0.000	1.206	0.000	0.00000	0.000	Circular Pipe
HYDRAULIC JUMP at 2203.88 of length 0.04																	
	"i.p."	2185.88	2561.32	2566.92	2563.321	2.000	11.30	1	3.60	0.20	2563.52	0.000	1.206	0.060	0.01604	0.873	Circular Pipe
	"i.p."	2197.92	2561.51	2567.03	2563.329	1.815	11.30	1	3.77	0.22	2563.55	0.000	1.206	0.414	0.01604	0.873	Circular Pipe
	"i.p."	2203.88	2561.61	2567.09	2563.322	1.712	11.30	1	3.95	0.24	2563.56	0.000	1.206	0.487	0.01604	0.873	Circular Pipe
	"i.p."	2203.88	2561.61	2567.09	2562.438	0.828	11.30	1	9.20	1.31	2563.75	0.000	1.206	2.053	0.01604	0.873	Circular Pipe
"Link33"	Reach	2215.71	2561.80	2567.20	2562.617	0.817	11.30	1	9.37	1.36	2563.98	0.000	1.206	2.107	0.01604	0.873	Circular Pipe
	"i.p."	2215.76	2561.81	2567.20	2562.629	0.819	11.30	1	9.33	1.35	2563.98	0.000	1.206	2.094	0.20000	0.451	Circular Pipe
	"i.p."	2216.27	2561.91	2567.20	2562.762	0.849	11.30	1	8.89	1.23	2563.99	0.000	1.206	1.955	0.20000	0.451	Circular Pipe
"Link6"	Reach	2216.71	2562.00	2567.20	2562.881	0.881	11.30	1	8.48	1.12	2564.00	0.000	1.206	1.824	0.20000	0.451	Circular Pipe
	"i.p."	2266.68	2562.78	2568.08	2563.673	0.890	11.30	1	8.36	1.09	2564.76	0.000	1.206	1.788	0.01567	0.878	Circular Pipe
	"i.p."	2307.60	2563.42	2568.80	2564.347	0.923	11.30	1	7.98	0.99	2565.34	0.000	1.206	1.667	0.01567	0.878	Circular Pipe
	"i.p."	2324.29	2563.69	2569.09	2564.644	0.958	11.30	1	7.60	0.90	2565.54	0.000	1.206	1.554	0.01567	0.878	Circular Pipe
	"i.p."	2333.77	2563.83	2569.26	2564.828	0.994	11.30	1	7.25	0.82	2565.64	0.000	1.206	1.447	0.01567	0.878	Circular Pipe
	"i.p."	2339.71	2563.93	2569.36	2564.960	1.032	11.30	1	6.91	0.74	2565.70	0.000	1.206	1.347	0.01567	0.878	Circular Pipe
	"i.p."	2343.52	2563.99	2569.43	2565.059	1.072	11.30	1	6.59	0.67	2565.73	0.000	1.206	1.253	0.01567	0.878	Circular Pipe
	"i.p."	2345.87	2564.02	2569.47	2565.138	1.114	11.30	1	6.28	0.61	2565.75	0.000	1.206	1.164	0.01567	0.878	Circular Pipe
	"i.p."	2347.13	2564.04	2569.49	2565.202	1.158	11.30	1	5.99	0.56	2565.76	0.000	1.206	1.081	0.01567	0.878	Circular Pipe
"Link5"	Reach	2347.52	2564.05	2569.50	2565.255	1.205	11.30	1	5.71	0.51	2565.76	0.000	1.206	1.002	0.01567	0.878	Circular Pipe
HYDRAULIC JUMP in the middle: of length -0.00																	
"T-2-DI #"	Junction	2349.52	2564.05	2569.50	2564.929	0.879	10.30	1	7.75	0.93	2565.86	0.000	1.149	0.000	0.00000	0.000	Circular Pipe
	"i.p."	2349.56	2564.06	2569.50	2564.940	0.883	10.30	1	7.71	0.92	2565.86	0.000	1.149	1.655	0.20000	0.431	Circular Pipe
	"i.p."	2349.83	2564.11	2569.50	2565.027	0.915	10.30	1	7.35	0.84	2565.87	0.000	1.149	1.544	0.20000	0.431	Circular Pipe

	"i.p."	2350.05	2564.16	2569.50	2565.105	0.950	10.30	1	7.01	0.76	2565.87	0.000	1.149	1.439	0.20000	0.431	Circular Pipe
	"i.p."	2350.22	2564.19	2569.50	2565.176	0.986	10.30	1	6.68	0.69	2565.87	0.000	1.149	1.341	0.20000	0.431	Circular Pipe
	"i.p."	2350.36	2564.22	2569.50	2565.240	1.023	10.30	1	6.37	0.63	2565.87	0.000	1.149	1.248	0.20000	0.431	Circular Pipe
	"i.p."	2350.45	2564.24	2569.50	2565.298	1.063	10.30	1	6.07	0.57	2565.87	0.000	1.149	1.161	0.20000	0.431	Circular Pipe
	"i.p."	2350.50	2564.25	2569.50	2565.351	1.104	10.30	1	5.79	0.52	2565.87	0.000	1.149	1.079	0.20000	0.431	Circular Pipe
"Link4"	Reach	2350.52	2564.25	2569.50	2565.398	1.148	10.30	1	5.52	0.47	2565.87	0.000	1.149	1.002	0.20000	0.431	Circular Pipe
"JOIN"	Join	2352.52	2564.25	2569.50	2566.007	1.757	5.10	1	2.89	0.13	2566.14	0.000	0.869	0.000	0.00000	0.000	Circular Pipe
HYDRAULIC JUMP at 2353.62 of length 0.06																	
	"i.p."	2353.62	2564.35	2569.55	2566.012	1.666	5.10	1	2.89	0.13	2566.14	0.000	0.869	0.000	0.08673	0.412	Circular Pipe
	"i.p."	2353.62	2564.35	2569.55	2564.764	0.418	5.10	1	12.67	2.49	2567.26	0.000	0.869	4.084	0.08673	0.412	Circular Pipe
	"i.p."	2358.82	2564.80	2569.81	2565.216	0.420	5.10	1	12.60	2.46	2567.68	0.000	0.869	4.048	0.08673	0.412	Circular Pipe
	"i.p."	2377.36	2566.40	2570.74	2566.839	0.435	5.10	1	12.01	2.24	2569.08	0.000	0.869	3.788	0.08673	0.412	Circular Pipe
	"i.p."	2386.47	2567.19	2571.19	2567.644	0.450	5.10	1	11.45	2.04	2569.68	0.000	0.869	3.545	0.08673	0.412	Circular Pipe
	"i.p."	2392.32	2567.70	2571.48	2568.168	0.465	5.10	1	10.92	1.85	2570.02	0.000	0.869	3.316	0.08673	0.412	Circular Pipe
	"i.p."	2396.53	2568.07	2571.69	2568.549	0.482	5.10	1	10.41	1.68	2570.23	0.000	0.869	3.102	0.08673	0.412	Circular Pipe
	"i.p."	2399.74	2568.35	2571.85	2568.844	0.499	5.10	1	9.92	1.53	2570.37	0.000	0.869	2.901	0.08673	0.412	Circular Pipe
	"i.p."	2402.28	2568.57	2571.98	2569.082	0.516	5.10	1	9.46	1.39	2570.47	0.000	0.869	2.712	0.08673	0.412	Circular Pipe
	"i.p."	2404.32	2568.74	2572.08	2569.278	0.535	5.10	1	9.02	1.26	2570.54	0.000	0.869	2.535	0.08673	0.412	Circular Pipe
	"i.p."	2406.01	2568.89	2572.16	2569.443	0.554	5.10	1	8.60	1.15	2570.59	0.000	0.869	2.369	0.08673	0.412	Circular Pipe
	"i.p."	2407.41	2569.01	2572.23	2569.584	0.574	5.10	1	8.20	1.04	2570.63	0.000	0.869	2.214	0.08673	0.412	Circular Pipe
	"i.p."	2408.57	2569.11	2572.29	2569.706	0.595	5.10	1	7.82	0.95	2570.66	0.000	0.869	2.067	0.08673	0.412	Circular Pipe
	"i.p."	2409.54	2569.20	2572.34	2569.812	0.616	5.10	1	7.46	0.86	2570.68	0.000	0.869	1.930	0.08673	0.412	Circular Pipe
	"i.p."	2410.35	2569.27	2572.38	2569.905	0.639	5.10	1	7.11	0.78	2570.69	0.000	0.869	1.802	0.08673	0.412	Circular Pipe
	"i.p."	2411.02	2569.32	2572.41	2569.986	0.662	5.10	1	6.78	0.71	2570.70	0.000	0.869	1.681	0.08673	0.412	Circular Pipe
	"i.p."	2411.57	2569.37	2572.44	2570.059	0.687	5.10	1	6.46	0.65	2570.71	0.000	0.869	1.568	0.08673	0.412	Circular Pipe
	"i.p."	2412.02	2569.41	2572.46	2570.123	0.713	5.10	1	6.16	0.59	2570.71	0.000	0.869	1.461	0.08673	0.412	Circular Pipe
	"i.p."	2412.37	2569.44	2572.48	2570.180	0.740	5.10	1	5.88	0.54	2570.72	0.000	0.869	1.361	0.08673	0.412	Circular Pipe
	"i.p."	2412.63	2569.46	2572.49	2570.232	0.768	5.10	1	5.60	0.49	2570.72	0.000	0.869	1.267	0.08673	0.412	Circular Pipe
"Link3"	Reach	2412.82	2569.48	2572.50	2570.277	0.797	5.10	1	5.34	0.44	2570.72	0.000	0.869	1.179	0.08673	0.412	Circular Pipe
	"i.p."	2413.00	2569.48	2572.50	2570.287	0.803	5.10	1	5.29	0.43	2570.72	0.000	0.869	1.162	0.02000	0.606	Circular Pipe
	"i.p."	2413.62	2569.50	2572.50	2570.331	0.835	5.10	1	5.05	0.40	2570.73	0.000	0.869	1.080	0.02000	0.606	Circular Pipe
"Link2"	Reach	2413.82	2569.50	2572.50	2570.368	0.868	5.10	1	4.81	0.36	2570.73	0.000	0.869	1.002	0.02000	0.606	Circular Pipe
"EX DI SO"	Junction	2417.52	2569.50	2572.50	2570.825	1.325	2.90	1	1.76	0.05	2570.87	0.000	0.647	0.000	0.00000	0.000	Circular Pipe
HYDRAULIC JUMP at 2498.33 of length 0.01																	
	"i.p."	2428.11	2569.58	2572.58	2570.828	1.251	2.90	1	1.84	0.05	2570.88	0.000	0.647	0.273	0.00722	0.588	Circular Pipe
	"i.p."	2437.02	2569.64	2572.64	2570.830	1.189	2.90	1	1.93	0.06	2570.89	0.000	0.647	0.306	0.00722	0.588	Circular Pipe
	"i.p."	2444.87	2569.70	2572.70	2570.830	1.133	2.90	1	2.03	0.06	2570.89	0.000	0.647	0.339	0.00722	0.588	Circular Pipe
	"i.p."	2451.92	2569.75	2572.75	2570.831	1.082	2.90	1	2.12	0.07	2570.90	0.000	0.647	0.371	0.00722	0.588	Circular Pipe
	"i.p."	2458.33	2569.79	2572.80	2570.831	1.036	2.90	1	2.23	0.08	2570.91	0.000	0.647	0.405	0.00722	0.588	Circular Pipe
	"i.p."	2464.21	2569.84	2572.84	2570.830	0.993	2.90	1	2.34	0.08	2570.91	0.000	0.647	0.440	0.00722	0.588	Circular Pipe
	"i.p."	2469.64	2569.88	2572.88	2570.829	0.952	2.90	1	2.45	0.09	2570.92	0.000	0.647	0.477	0.00722	0.588	Circular Pipe
	"i.p."	2474.63	2569.91	2572.92	2570.827	0.915	2.90	1	2.57	0.10	2570.93	0.000	0.647	0.516	0.00722	0.588	Circular Pipe
	"i.p."	2479.25	2569.95	2572.95	2570.825	0.879	2.90	1	2.70	0.11	2570.94	0.000	0.647	0.557	0.00722	0.588	Circular Pipe
	"i.p."	2483.50	2569.98	2572.98	2570.822	0.845	2.90	1	2.83	0.12	2570.95	0.000	0.647	0.600	0.00722	0.588	Circular Pipe
	"i.p."	2487.41	2570.00	2573.01	2570.818	0.813	2.90	1	2.97	0.14	2570.95	0.000	0.647	0.646	0.00722	0.588	Circular Pipe
	"i.p."	2490.94	2570.03	2573.04	2570.813	0.783	2.90	1	3.11	0.15	2570.96	0.000	0.647	0.695	0.00722	0.588	Circular Pipe
	"i.p."	2494.10	2570.05	2573.06	2570.807	0.754	2.90	1	3.26	0.17	2570.97	0.000	0.647	0.747	0.00722	0.588	Circular Pipe
	"i.p."	2496.84	2570.07	2573.08	2570.799	0.726	2.90	1	3.42	0.18	2570.98	0.000	0.647	0.802	0.00722	0.588	Circular Pipe
	"i.p."	2498.33	2570.08	2573.09	2570.793	0.710	2.90	1	3.52	0.19	2570.99	0.000	0.647	0.838	0.00722	0.588	Circular Pipe
	"i.p."	2498.33	2570.08	2573.09	2570.672	0.588	2.90	1	4.51	0.32	2570.99	0.000	0.647	1.201	0.00722	0.588	Circular Pipe
	"i.p."	2526.14	2570.28	2573.29	2570.873	0.588	2.90	1	4.51	0.32	2571.19	0.000	0.647	1.201	0.00722	0.588	Circular Pipe
	"i.p."	2544.03	2570.41	2573.42	2571.015	0.601	2.90	1	4.38	0.30	2571.31	0.000	0.647	1.151	0.00722	0.588	Circular Pipe

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"i.p."		2711.93	2574.79	2579.50	2575.053	0.261	2.00	1	9.69	1.46	2576.51	0.000	0.533	4.009	0.11633	0.241	Circular Pipe
"i.p."		2715.13	2575.16	2580.45	2575.433	0.270	2.00	1	9.24	1.33	2576.76	0.000	0.533	3.757	0.11633	0.241	Circular Pipe
"i.p."		2717.42	2575.43	2581.13	2575.709	0.279	2.00	1	8.81	1.20	2576.91	0.000	0.533	3.521	0.11633	0.241	Circular Pipe
"i.p."		2719.18	2575.63	2581.65	2575.923	0.289	2.00	1	8.40	1.10	2577.02	0.000	0.533	3.299	0.11633	0.241	Circular Pipe
"i.p."		2720.57	2575.80	2582.07	2576.094	0.298	2.00	1	8.01	1.00	2577.09	0.000	0.533	3.091	0.11633	0.241	Circular Pipe
"i.p."		2721.70	2575.93	2582.41	2576.236	0.309	2.00	1	7.64	0.91	2577.14	0.000	0.533	2.895	0.11633	0.241	Circular Pipe
"i.p."		2722.64	2576.04	2582.68	2576.355	0.319	2.00	1	7.28	0.82	2577.18	0.000	0.533	2.712	0.11633	0.241	Circular Pipe
"i.p."		2723.42	2576.13	2582.92	2576.457	0.330	2.00	1	6.94	0.75	2577.21	0.000	0.533	2.540	0.11633	0.241	Circular Pipe
"i.p."		2724.08	2576.20	2583.11	2576.545	0.341	2.00	1	6.62	0.68	2577.23	0.000	0.533	2.379	0.11633	0.241	Circular Pipe
"i.p."		2724.63	2576.27	2583.28	2576.622	0.353	2.00	1	6.31	0.62	2577.24	0.000	0.533	2.228	0.11633	0.241	Circular Pipe
"i.p."		2725.11	2576.32	2583.42	2576.689	0.365	2.00	1	6.02	0.56	2577.25	0.000	0.533	2.086	0.11633	0.241	Circular Pipe
"i.p."		2725.51	2576.37	2583.54	2576.748	0.377	2.00	1	5.74	0.51	2577.26	0.000	0.533	1.954	0.11633	0.241	Circular Pipe
"i.p."		2725.85	2576.41	2583.64	2576.801	0.390	2.00	1	5.47	0.46	2577.27	0.000	0.533	1.829	0.11633	0.241	Circular Pipe
"i.p."		2726.13	2576.44	2583.73	2576.847	0.404	2.00	1	5.22	0.42	2577.27	0.000	0.533	1.712	0.11633	0.241	Circular Pipe
"i.p."		2726.37	2576.47	2583.80	2576.889	0.418	2.00	1	4.97	0.38	2577.27	0.000	0.533	1.602	0.11633	0.241	Circular Pipe
"i.p."		2726.56	2576.49	2583.86	2576.926	0.432	2.00	1	4.74	0.35	2577.27	0.000	0.533	1.500	0.11633	0.241	Circular Pipe
"i.p."		2726.72	2576.51	2583.90	2576.959	0.448	2.00	1	4.52	0.32	2577.28	0.000	0.533	1.403	0.11633	0.241	Circular Pipe
"i.p."		2726.84	2576.53	2583.94	2576.989	0.463	2.00	1	4.31	0.29	2577.28	0.000	0.533	1.313	0.11633	0.241	Circular Pipe
"i.p."		2726.94	2576.54	2583.97	2577.016	0.479	2.00	1	4.11	0.26	2577.28	0.000	0.533	1.228	0.11633	0.241	Circular Pipe
"i.p."		2727.00	2576.54	2583.99	2577.040	0.496	2.00	1	3.92	0.24	2577.28	0.000	0.533	1.148	0.11633	0.241	Circular Pipe
"i.p."		2727.04	2576.55	2584.00	2577.062	0.514	2.00	1	3.74	0.22	2577.28	0.000	0.533	1.074	0.11633	0.241	Circular Pipe
"Link23"	Reach	2727.05	2576.55	2584.00	2577.082	0.532	2.00	1	3.56	0.20	2577.28	0.000	0.533	1.004	0.11633	0.241	Circular Pipe
"REL. DI"	Headwrk	2727.05	2576.55	2584.00	2577.083	0.533	2.00	1	3.55	0.20	2577.28	0.000	0.533	0.000	0.00000	0.000	Circular Pipe

*) in the W.S.ELEV column indicates flooding, it is set whenever W.S.ELEV > GROUND ELEV
i.p. = intermediate point processing results for reaches

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SDMH #4_Branch1

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Composite Profile:

ELEMENT NAME	TYPE	STATION	INVERT ELEV	GROUND ELEV	W.S. ELEV	DEPTH	Q	BARREL VELOC.	VELOC. HEAD	ENERGY GRADE LN	SUPER ELEV	CRITICAL DEPTH	FROUDE NUMBER	SLOPE	NORMAL DEPTH	CROSS SECTION	
###																	
"Outlet/S"	Outlet	1850.54	2554.81	2560.30	2555.487	0.677	10.80	1	13.95	3.02	2558.51	0.000	1.260	0.000	0.00000	0.000	Circular Pipe
	"i.p."	1852.47	2554.93	2560.43	2555.609	0.677	10.80	1	13.94	3.02	2558.62	0.000	1.260	3.409	0.06291	0.669	Circular Pipe
	"i.p."	1891.35	2557.38	2563.08	2558.080	0.703	10.80	1	13.29	2.74	2560.82	0.000	1.260	3.178	0.06291	0.669	Circular Pipe
	"i.p."	1908.21	2558.44	2564.23	2559.167	0.729	10.80	1	12.67	2.49	2561.66	0.000	1.260	2.961	0.06291	0.669	Circular Pipe
	"i.p."	1918.59	2559.09	2564.93	2559.848	0.757	10.80	1	12.08	2.27	2562.11	0.000	1.260	2.757	0.06291	0.669	Circular Pipe
	"i.p."	1925.85	2559.55	2565.43	2560.334	0.786	10.80	1	11.52	2.06	2562.39	0.000	1.260	2.565	0.06291	0.669	Circular Pipe
	"i.p."	1931.26	2559.89	2565.80	2560.705	0.817	10.80	1	10.98	1.87	2562.58	0.000	1.260	2.385	0.06291	0.669	Circular Pipe
	"i.p."	1935.46	2560.15	2566.08	2561.001	0.849	10.80	1	10.47	1.70	2562.70	0.000	1.260	2.215	0.06291	0.669	Circular Pipe
	"i.p."	1938.77	2560.36	2566.31	2561.243	0.883	10.80	1	9.98	1.55	2562.79	0.000	1.260	2.055	0.06291	0.669	Circular Pipe
	"i.p."	1941.42	2560.53	2566.49	2561.446	0.919	10.80	1	9.52	1.41	2562.85	0.000	1.260	1.904	0.06291	0.669	Circular Pipe
	"i.p."	1943.55	2560.66	2566.63	2561.618	0.957	10.80	1	9.08	1.28	2562.90	0.000	1.260	1.760	0.06291	0.669	Circular Pipe
	"i.p."	1945.25	2560.77	2566.75	2561.765	0.998	10.80	1	8.65	1.16	2562.93	0.000	1.260	1.624	0.06291	0.669	Circular Pipe
	"i.p."	1946.59	2560.85	2566.84	2561.893	1.041	10.80	1	8.25	1.06	2562.95	0.000	1.260	1.494	0.06291	0.669	Circular Pipe
	"i.p."	1947.60	2560.92	2566.91	2562.004	1.088	10.80	1	7.87	0.96	2562.96	0.000	1.260	1.369	0.06291	0.669	Circular Pipe

"i.p."	1948.33	2560.96	2566.96	2562.101	1.139	10.80	1	7.50	0.87	2562.97	0.000	1.260	1.247	0.06291	0.669	Circular Pipe
"i.p."	1948.78	2560.99	2566.99	2562.185	1.196	10.80	1	7.15	0.79	2562.98	0.000	1.260	1.126	0.06291	0.669	Circular Pipe
"Link19" Reach	1948.94	2561.00	2567.00	2562.259	1.259	10.80	1	6.82	0.72	2562.98	0.000	1.260	1.002	0.06291	0.669	Circular Pipe
"PROP 4X4" Headwrk	1948.94	2561.00	2567.00	2562.260	1.260	10.80	1	6.81	0.72	2562.98	0.000	1.260	0.000	0.00000	0.000	Circular Pipe

*) in the W.S.ELEV column indicates flooding, it is set whenever W.S.ELEV > GROUND ELEV
i.p. = intermediate point processing results for reaches

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SDMH #3_Branch1

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Composite Profile:

ELEMENT NAME	TYPE	STATION	INVERT ELEV	GROUND ELEV	W.S. ELEV	DEPTH	Q	BARREL VELOC.	VELOC. HEAD	ENERGY GRADE LN	SUPER ELEV	CRITICAL DEPTH	FROUDE NUMBER	SLOPE	NORMAL DEPTH	CROSS SECTION
###																
"Outlet/S"	Outlet	1445.65	2546.32	2551.60	2549.810	3.490	20.50	1 6.53	0.66	2550.47	0.000	1.624	0.000	0.00000	0.000	Circular Pipe
"Link53"	Reach	1466.71	2546.91	2554.50	2549.983	3.073	20.50	1 6.53	0.66	2550.64	0.000	1.624	0.000	0.02802	1.048	Circular Pipe
"DI #6"	Junction	1470.71	2546.91	2554.50	2551.211	4.301	8.30	1 4.70	0.34	2551.55	0.000	1.116	0.000	0.00000	0.000	Circular Pipe
"L52"	Reach	1471.71	2546.93	2554.50	2551.234	4.304	8.30	1 4.70	0.34	2551.58	0.000	1.116	0.000	0.02000	0.801	Circular Pipe
"L49"	Reach	1509.98	2549.00	2553.00	2551.490	2.490	8.30	1 4.70	0.34	2551.83	0.000	1.116	0.000	0.05409	0.603	Circular Pipe
"DI #3"	Headwrk	1509.98	2549.00	2553.00	2551.490	2.490	8.30	1 4.70	0.34	2551.83	0.000	1.116	0.000	0.00000	0.000	Circular Pipe

*) in the W.S.ELEV column indicates flooding, it is set whenever W.S.ELEV > GROUND ELEV
i.p. = intermediate point processing results for reaches

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SDMH #4A_Branch1

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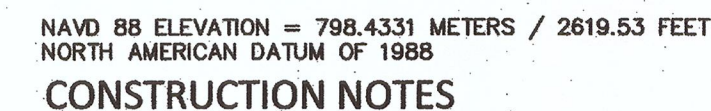
Composite Profile:

ELEMENT NAME	TYPE	STATION	INVERT ELEV	GROUND ELEV	W.S. ELEV	DEPTH	Q	BARREL VELOC.	VELOC. HEAD	ENERGY GRADE LN	SUPER ELEV	CRITICAL DEPTH	FROUDE NUMBER	SLOPE	NORMAL DEPTH	CROSS SECTION
###																
"Outlet/S"	Outlet	2110.96	2560.22	2566.20	2562.489	2.269	12.30	1 6.96	0.75	2563.24	0.000	1.326	0.000	0.00000	0.000	Circular Pipe
"Link40"	Reach	2132.37	2560.69	2565.77	2562.783	2.093	12.30	1 6.96	0.75	2563.54	0.000	1.326	0.000	0.02195	1.006	Circular Pipe
"SD #5"	Headwrk	2132.37	2560.69	2565.77	2562.783	2.093	12.30	1 6.96	0.75	2563.54	0.000	1.326	0.000	0.00000	0.000	Circular Pipe

*) in the W.S.ELEV column indicates flooding, it is set whenever W.S.ELEV > GROUND ELEV
i.p. = intermediate point processing results for reaches

Site plan for Farm Road Retail LLC. The plan shows a large building footprint labeled 'SHOPS 1F' with a floor area of 2566.40. To the right of the building is a 'PATIO' area with a floor area of 2565.40. Further right is a 'PAD 1E' area with a floor area of 2570.50. The plan also shows a 'FARM ROAD EX. BLDG' with a floor area of 2555. The plan includes various annotations such as 'RIPRAP', 'ROTARY MILL AREA', and 'END 6" TALL SCREEN WALL'. The plan is for 'SHEET C4.02' and includes a 'KEY MAP' in the top right corner.

FOR CONTINUATION SEE SHEET C4.04



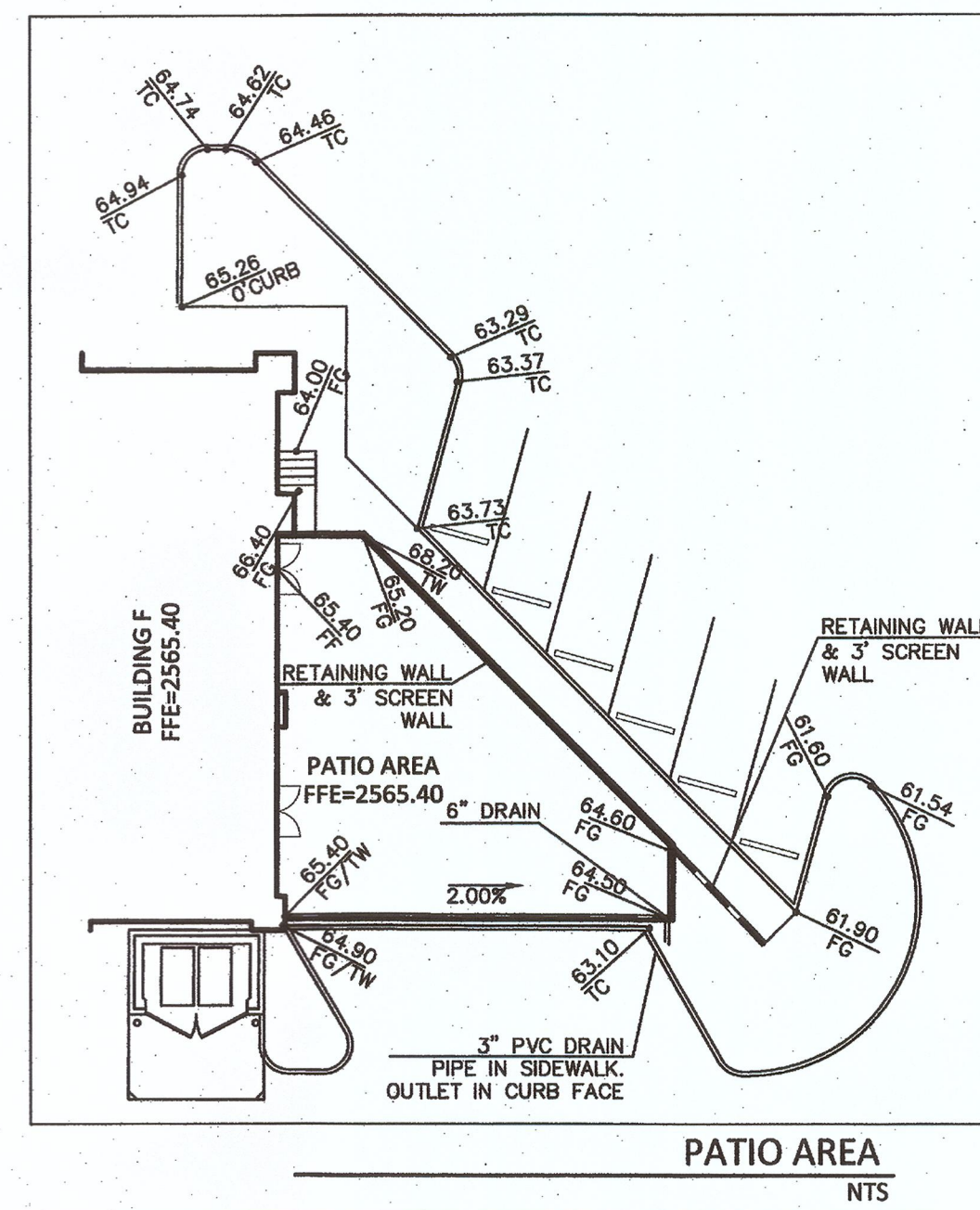
NO.	ITEM	USDCCA: UNIFORM STANDARD DRAWINGS CLARK COUNTY AREA
(1)	CONSTRUCT TYPE 'A' CURB PER DETAIL 'A' SHEET C8.01.	
(2)	CONSTRUCT TYPE 'L' CURB PER USDCCA NO. 219.	
(3)	CONSTRUCT SIDEWALK PER USDCCA NO. 234.	
(4)	CONSTRUCT 3" CONCRETE VALLEY GUTTER PER DETAIL 'B' SHEET C8.01.	
(5)	CONSTRUCT 2" AC PAVEMENT OVER 6" TYPE II AGGREGATE BASE (CAR).	
(6)	CONSTRUCT 3" AC PAVEMENT OVER 6" TYPE II AGGREGATE BASE (TRUCK).	
(7)	CONSTRUCT 0" TALL TYPE 'A' CURB PER DETAIL 'C' SHEET C8.01.	
(8)	LOADING DOCK AREA. SEE STRUCTURAL PLANS.	
(9)	LANDSCAPE AREA. SEE LANDSCAPE PLANS FOR DETAILS.	
(10)	LANDSCAPE SWALE: FINE, CLOSE GROWING, WATER RESISTANT GRASSES OR APPROVED EQUIVALENT.	
(11)	CONSTRUCT CURB OPENING (SIZE PER PLAN) PER DETAIL 'D' SHEET C8.01.	
(12)	INSTALL 60" TYPE 1 STORM DRAIN MANHOLE PER USDCCA NO. 403.	
(13)	NOT USED	
(14)	INSTALL NODOT TYPE III INLET WITH 2.5' GRATE.	
(15)	INSTALL STORM DRAIN PIPE (SIZE PER PLAN) PER USDCCA NO. 503.	
(16)	NOT USED	
(17)	CONSTRUCT CURB TRANSITION FROM 6" TALL CURB TO 0" TALL CURB.	
(18)	CONSTRUCT BLOCK RETAINING WALL PER STRUCTURAL PLANS.	
(19)	"DO NOT POLLUTE DRAINS TO LAKE MEAD" STAMP PER USDCCA DWG. 421	
(20)	RIP RAP AS SHOULDER PER PLAN.	
(21)	INSTALL ADA COMPLIANT RAMP AND TACTILE SENSORS PER USDCCA NO. 235	
(22)	INSTALL 6" TALL STANDARD SCREENWALL WITH 'L' TYPE FOOTINGS PER DETAIL 'E', SHEET C8.01. SEE ARCHITECTURAL PLANS FOR COLOR AND BLOCK TYPE.	
(23)	CONSTRUCT 4" CONCRETE VALLEY GUTTER PER DETAIL 'B' SHEET C8.01.	
(24)	NODOT TYPE "III" DROP INLET - SEE SHEET C8.03, ADD STORM WATER QUALITY MANAGEMENT STAMP PER USDCCA DRAWING NO. 491.	
(25)	INSTALL JERSEY BARRIER PER NODOT STANDARD DRAWING NO. R.8&B.1 SEE DETAIL "J" C8.01	
(26)	INSTALL 3" TALL MODIFIED SCREENWALL ON 4" RETAINING WALL PER DETAIL "D" SHEET C8.04. SEE ARCHITECTURAL PLANS FOR COLOR AND BLOCK TYPE.	
(27)	SEE ARCHITECTURAL PLANS FOR TRASH ENCLOSURE DETAILS.	
(28)	CONSTRUCT CURB OPENING FOR NODOT MAINTENANCE VEHICLES PER DETAIL "G" C8.01.	

PROFESSIONAL ENGINEER - STATE OF NEVADA
 THOMAS D. MILLER
 EXP. 12-31-17
 CIVIL
 NO. 15776

IMPROVEMENT PLANS FOR DC PLAZA
APN:125-17-601-007,010,013,020 AND 021

GRADING PLAN

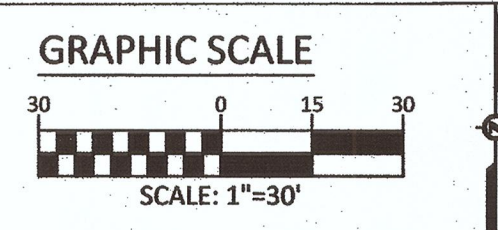
<u>EXISTING</u>	<u>PROPOSED</u>	
		AC PAVEMENT
		6" TYPE "A" CURB
		24" TYPE "L" CURB & GUTTER
		30" ROLL CURB
		CONCRETE



THOMAS D. MILLER - 15776

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BENCHMARK
CITY OF LAS VEGAS BENCHMARK # 5LV90 17S6
A RIVET AND PLATE IN THE TOP OF CURB AT THE NORTHWEST CORNER OF
OSO BLANCA ROAD AND DURANGO DRIVE.

NAVD 88 ELEVATION = 798.4331 METERS / 2619.53 FEET
NORTH AMERICAN DATUM OF 1988

CONSTRUCTION NOTES

NO.	ITEM	USDDCA: UNIFORM STANDARD DRAWINGS CLARK COUNTY AREA
1	CONSTRUCT TYPE 'A' CURB PER DETAIL 'A' SHEET C8.01.	
2	CONSTRUCT TYPE '1' CURB PER USDDCA NO. 219.	
3	CONSTRUCT SIDEWALK PER USDDCA NO. 234.	
4	CONSTRUCT 3" CONCRETE VALLEY GUTTER PER DETAIL 'B' SHEET C8.01.	
5	CONSTRUCT 2" AC PAVEMENT OVER 6" TYPE II AGGREGATE BASE (CAR).	
6	CONSTRUCT 3" AC PAVEMENT OVER 6" TYPE II AGGREGATE BASE (TRUCK).	
7	CONSTRUCT 0" TALL TYPE 'A' CURB PER DETAIL 'C' SHEET C8.01.	
8	LOADING DOCK AREA. SEE STRUCTURAL PLANS.	
9	LANDSCAPE AREA. SEE LANDSCAPE PLANS FOR DETAILS.	
10	LANDSCAPE SWALE. FINE, CLOSE GROWING, WATER RESISTANT GRASSES OR APPROVED EQUIVALENT.	
11	CONSTRUCT CURB OPENING (SIZE PER PLAN) PER DETAIL 'D' SHEET C8.01.	
12	INSTALL 60" TYPE 1 STORM DRAIN MANHOLE PER USDDCA NO. 403.	
13	NOT USED	
14	INSTALL NDOT TYPE III INLET WITH 2.5' GRATE.	
15	INSTALL STORM DRAIN PIPE (SIZE PER PLAN) PER USDDCA NO. 503.	
16	NOT USED	
17	CONSTRUCT CURB TRANSITION FROM 6" TALL CURB TO 0" TALL CURB.	
18	CONSTRUCT BLOCK RETAINING WALL PER STRUCTURAL PLANS.	
19	"DO NOT POLLUTE DRAINS TO LAKE MEAD" STAMP PER USDDCA DWG. 421	
20	RIP RAP AS SHOWN PER PLAN.	
21	INSTALL ADA COMPLIANT RAMP AND TACTILE SENSORS PER USDDCA NO. 235	
22	INSTALL 6" TALL STANDARD SCREENWALL WITH 1" TYPE FOOTINGS PER DETAIL "E", SHEET C8.01. SEE ARCHITECTURAL PLANS FOR COLOR AND BLOCK TYPE.	
23	CONSTRUCT 4" CONCRETE VALLEY GUTTER PER DETAIL "B" SHEET C8.01.	
24	NDOT TYPE "III" DROP INLET - SEE SHEET C8.03, ADD STORM WATER QUALITY MANAGEMENT STAMP PER USDDCA DRAWING NO. 421.	
25	INSTALL JERSEY BARRIER PER NDOT STANDARD DRAWING NO. R.8.6.1 SEE DETAIL "A" C8.01	
26	INSTALL 3" TALL MODIFIED SCREENWALL ON 4" RETAINING WALL PER DETAIL "D" SHEET C8.04. SEE ARCHITECTURAL PLANS FOR COLOR AND BLOCK TYPE.	
27	SEE ARCHITECTURAL PLANS FOR TRASH ENCLOSURE DETAILS.	
28	CONSTRUCT CURB OPENING FOR NDOT MAINTENANCE VEHICLES PER DETAIL "G" C8.01.	

NOTE:
ALL ONSITE STORM DRAIN SYSTEMS AND THE ASSOCIATED FACILITIES ARE PRIVATELY OWNED AND TO BE PRIVATELY MAINTAINED BY THE OWNERS/HOA.

FLOOD ZONE NOTE:

THE PROJECT SITE LIES WITHIN ZONE X AS PER FEMA FIRM PANEL 32003C1745E DATED NOVEMBER 16, 2011.

OFFSITE IMPROVEMENTS

SEE SHEETS C4.05-C4.08 FOR OFFSITE IMPROVEMENT PLANS.

ALL GRADING WORK SHALL BE IN STRICT ACCORDANCE WITH THE SOILS REPORT FOR THE SITE ENTITLED "PROPOSED COMMERCIAL DEVELOPMENT SOUTH CORNER OF DURANGO DR. AND FARM RD.

PROJECT NO.: 4125XD130, DATED DECEMBER 22, 2015

PREPARED BY: WESTERN TECHNOLOGIES INC.
6633 WEST POST ROAD
LAS VEGAS, NV 89118
PHONE NO. (702) 798-8050
FAX NO. (702) 798-7664

ALL WORK SHALL BE PERFORMED UNDER THE DIRECTION OF A REGISTERED PROFESSIONAL SOILS ENGINEER.

I CERTIFY THAT THIS GRADING PLAN CONFORMS TO THE THE APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE WITH THE CITY OF LAS VEGAS, DS# 4710A

THOMAS D. MILLER - 15776 11-16-16
DATE



GENERAL NOTE:
IT IS THE CONTRACTOR'S RESPONSIBILITY TO FILE A NOTICE OF INTENT/REQUEST TO BE INCLUDED IN THE STORM WATER GENERAL PERMIT, AND SUBMIT THE ASSOCIATED STORM WATER POLLUTION PREVENTION PLAN (SWPPP) AS REQUIRED BY FEDERAL, AND MONITORED BY THE NEVADA DIVISION OF ENVIRONMENTAL PROTECTION.

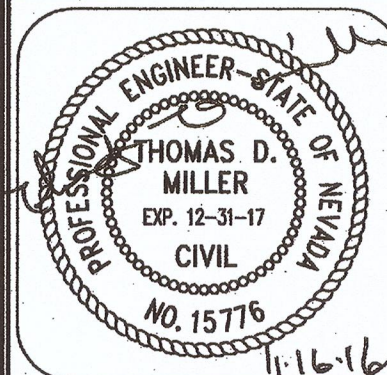
NOTE:
PROPERTY OWNER IS RESPONSIBLE TO MAINTAIN THE BEST MANAGEMENT PRACTICES SUCH AS BUT NOT LIMITED TO THE REMOVAL OF ACCUMULATED SEDIMENT AND DEBRIS AND CARE OF THE VEGETATION.

COLLINS ENGINEERS ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITY LOCATIONS AND ELEVATIONS. THE UTILITIES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. IT IS, HOWEVER, THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION AND ELEVATION OF ALL UTILITIES PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION. CONTRACTOR TO FIELD VERIFY ALL EXISTING SITE CONDITIONS PRIOR TO CONSTRUCTION. IF A CONFLICT EXISTS BETWEEN WHAT IS SHOWN ON THESE DRAWINGS AND WHAT EXISTS IN THE FIELD, THE CONTRACTOR IS TO NOTIFY THE ARCHITECT OR ENGINEER IMMEDIATELY.

[illegible]

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**COLLINS
ENGINEERS[®]**
33130 S. DURANGO DR., SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsengr.com



IMPROVEMENT PLANS FOR DC PLAZA
APN:125-17-601-007,010,013,020 AND 021

GRADING PLAN
8451 FARM ROAD
LAS VEGAS, NEVADA

NO.	DATE	DESIGN BY	DESCRIPTION
10			

CEI PROJECT: 4136

DESIGN BY: JDM SR

DRAWN BY: JDM SR

CHECKED BY: TDM P.E.

DATE:

11/16/16

SCALE:
1"=20'

SHEET NUMBER

SHEET NUMBER
C4.04

C4.04

SHEET 10 OF 37



BASIS OF BEARING

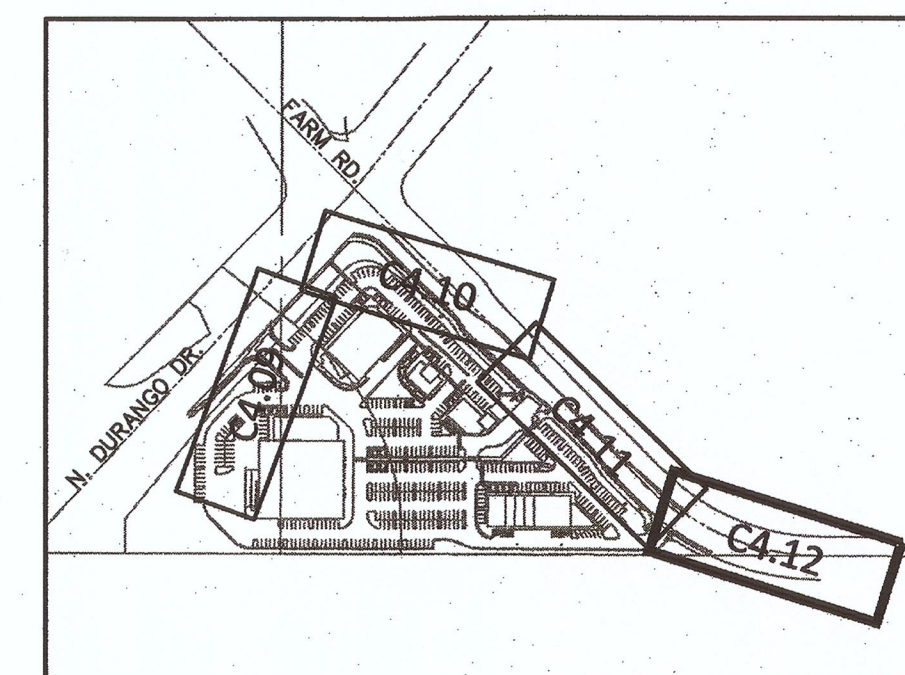
NORTH 00°00'50" WEST, BEING THE BEARING OF THE EAST LINE OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 17, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., AS SHOWN IN FILE 97, PAGE 01 OF PARCEL MAPS ON FILE AT THE CLARK COUNTY, NEVADA RECORDER'S OFFICE.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK # 5LV90 16NWWS

A RIVET AND PLATE IN THE TOP OF CURB EAST SIDE OF TULE SPRINGS ROAD
1/4 MILE SOUTH OF GRAND TETON DRIVE.

NAVD 88 ELEVATION = 774.403 METERS / 2540.69 FEET
NORTH AMERICAN DATUM OF 1988



KEY MAP
NTS

NOTE:

ALL ONSITE STORM DRAIN SYSTEMS AND THE ASSOCIATED FACILITIES ARE PRIVATELY OWNED AND TO BE PRIVATELY MAINTAINED BY THE OWNERS/HOA.

FLOOD ZONE NOTE:

THE PROJECT SITE LIES WITHIN ZONE X AS PER FEMA FIRM
PANEL 32003C1745E DATED NOVEMBER 16, 2011.

OFFSITE IMPROVEMENTS

SEE SHEETS C4.05-C4.08 FOR OFFSITE IMPROVEMENT PLANS.

ALL GRADING WORK SHALL BE IN STRICT ACCORDANCE WITH THE SOILS REPORT FOR THE SITE ENTITLED "PROPOSED COMMERCIAL DEVELOPMENT SOUTH CORNER OF DURANGO DR. AND FARM RD."

PROJECT NO.: 4125XD130, DATED DECEMBER 22, 2015

PREPARED BY:

WESTERN TECHNOLOGIES INC.
6633 WEST POST ROAD
LAS VEGAS, NV 89118
PHONE NO. (702) 798-8050
FAX NO. (702) 798-7664

ALL WORK SHALL BE PERFORMED UNDER THE DIRECTION OF A REGISTERED PROFESSIONAL SOILS ENGINEER.

I CERTIFY THAT THIS GRADING PLAN CONFORMS TO THE THE
APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE WITH TH
CITY OF LAS VEGAS. DS# 4710A

THOMAS D. MILLER - 15776 11-16-16
DATE

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
DATE: _____ PROJECT NO: 124663
LVVWD APPROVED FIRE FLOW 1875 GPM AT 20 PSI RESIDUAL
SHEETS: C1.01, C1.02, C5.01, C5.02 C5.03, C4.09, C410, C4.11 AND C4.12

CALL BEFORE YOU DIG
AVOID CUTTING UNDERGROUND
UTILITY LINES. IT'S COSTLY.

Call
811
or
1-800-227-2600

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

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY.

CALL BEFORE YOU DO OVERHEAD WORK

1-702-227-2929

COLLINS ENGINEERS ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITY LOCATIONS AND ELEVATIONS. THE UTILITIES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. IT IS, HOWEVER, THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION AND ELEVATION OF ALL UTILITIES PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION. CONTRACTOR TO FIELD VERIFY ALL EXISTING SITE CONDITIONS PRIOR TO CONSTRUCTION. IF A CONFLICT EXISTS BETWEEN WHAT IS SHOWN ON THESE DRAWINGS AND WHAT EXISTS IN THE FIELD, THE CONTRACTOR IS TO NOTIFY THE ARCHITECT OR ENGINEER IMMEDIATELY.

LEGEND

EXISTING	PROPOSED	
(0.00) xxx	0.00 xxx	ELEVATION TAG
		DRAIN INLET
		RETAINING WALL
		SCREEN WALL
		UTILITY POLE
		STREET LIGHT

EXISTING	PROPOSED	
—E—	—E—	POWER LINE/POLE
—T—	—T—	TELEPHONE LINE
—W—	—W—	WATER LINE
—SS—	—SS—	SANITARY SEWER LINE
—D—	—D—	STORM SEWER LINE
—G—	—G—	GAS LINE
Ⓢ	Ⓢ	STORM MANHOLE

EXISTING	PROPOSED	
		FIRE HYDRANT
		FIRE DEPARTMENT CONNECTION
		WATER VALVE
		REDUCER
		SEWER MANHOLE
		CLEANOUT
		GAS VALVE

EXISTING	PROPOSED	
		PL—RIGHT—OF—WAY
		PL—ADJACENT
		CENTERLINE
		EASEMENT LINE
		FLOW LINE
		SIGN W/POLE
		SAWCUT LINE
		AREA LIGHT
		WATER METER

EXISTING	PROPOSED	
		AC PAVEMENT 6" TYPE "A" CURB
		24" TYPE "L" CURB & GUTTER 30" ROLL CURB
		BACK WATER VALVE

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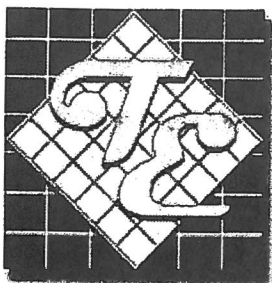
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Update to the TDS for Village of Centennial Springs (DS 3656R



TANEY ENGINEERING

Reid: 3/4/09

DS 3656-10

G-17

\$100

**UPDATE #10 TO THE
TECHNICAL DRAINAGE STUDY
FOR
VILLAGE OF CENTENNIAL SPRINGS**

**CITY OF LAS VEGAS
NEVADA**

March 3, 2009
Job No. HRM-09-001

Prepared by:

Taney Engineering
6030 South Jones Blvd #100
Las Vegas, Nevada 89118
Telephone: (702) 362-8844
Fax: (702) 362-5233

Prepared for:

Harmony Homes
5580 South Fort Apache Road
Las Vegas, NV 89148
Telephone: (702) 478-8375

**UPDATE #10 TO THE
TECHNICAL DRAINAGE STUDY
FOR
VILLAGE OF CENTENNIAL SPRINGS**

Prepared by:



Taney Engineering
6030 South Jones Blvd #100
Las Vegas, NV 89118

Prepared for:

Harmony Homes
5580 South Fort Apache Road
Las Vegas, Nevada 89148

HYDROLOGIC CRITERIA AND DRAINAGE MANUAL
DRAINAGE STUDY INFORMATION FORM

Name of Development: Village of Centennial Springs Date: 03-03-09

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.: _____ E-Mail Address: _____
Address: 5580 S Fort Apache Rd Las Vegas, NV 89148

Contact Person-Name: Michael Cunningham Telephone No.: 702-362-8844

* E-Mail Address: MichaelC2@taneycorp.com Fax No.: 702-362-5233

Firm: Taney Engineering

Address: 6030 S. Jones Blvd Suite #100 Las Vegas, NV 89118

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: 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

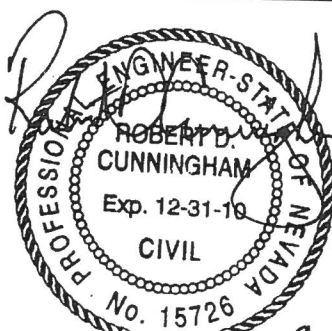
4. Proposed type of development (Residential, Commercial, Etc.): Residential and Commercial

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 for Village of Centennial Springs - Update #9.

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: A.S.A.P.



Engineer's Seal

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

*New Required Field

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

Revision	Date

Local Entity File No. _____

REFERENCE:

STANDARD FORM 1

CITY OF LAS VEGAS			DATE:	
INTER-OFFICE MEMORANDUM			March 13, 2009	
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 #10			COPIES TO: Taney Engineering	
Cross Streets:	SWC of Tule Springs & El Capitan (Farm)		Harmony Homes	
File Number:	F:\#Depot\DSMEMOS\DS3656R.doc		Bart Anderson, P.E., DevCo	
Parcel Number:	125-17-702-002		NDOT	
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 Trm. No.
1 st Submittal	9/23/2004	10/06/2004	Not Approved	\$400.00	9950: \$400
2 nd Submittal	11/24/2004	12/8/2004	Not Approved	\$400.00	12699: \$400
3 rd Submittal	12/21/2004	1/4/2005	Conditional Approval	\$400.00	13952: \$400
4 th 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
5 th Submittal	6/1/2005	6/2/2005	Approved	\$400.00	22960: \$400
6 th Submittal	8/15/2005	8/19/2005	Approved	\$100.00	27750: \$100
7 th Submittal	9/16/2005	9/29/2005	Not Approved	\$400.00	29833: \$400
8 th Submittal	10/24/2005	10/24/2005	Approved	N/C	N/C
Revision	11/9/2005	11/9/2005	Approved	N/C	N/C
9 th Submittal	11/10/2005	11/21/2005	Approved	\$100.00	33246: \$100
10 th Submittal	2/10/2006 & 3/1/2006	3/6/2006	Approved	\$400.00	38542: \$400
11 th Submittal	3/9/2006	3/23/2006	Approved	\$400.00	40223: \$400
12 th Submittal	6/28/2006	7/19/2006	Approved	\$400.00	Paid: \$400
13 th Submittal	9/28/2006, 12/6/2006 & 12/22/2006	1/3/2007	Approved	\$400.00	54968: \$400
14 th Submittal	12/6/2006 & 12/22/2006	1/3/2007	Approved	\$100.00	58987: \$100
15 th Submittal	3/30/2007	4/13/2007	Approved	\$100.00	66108: \$100
16 th Submittal	3/4/2009	3/13/2009	See Comments Below	\$100.00	116422: \$100
TOTAL FEES (LDDRS):				\$4,500.00	---

REMARKS:

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 Belfry & 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.

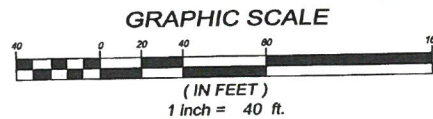
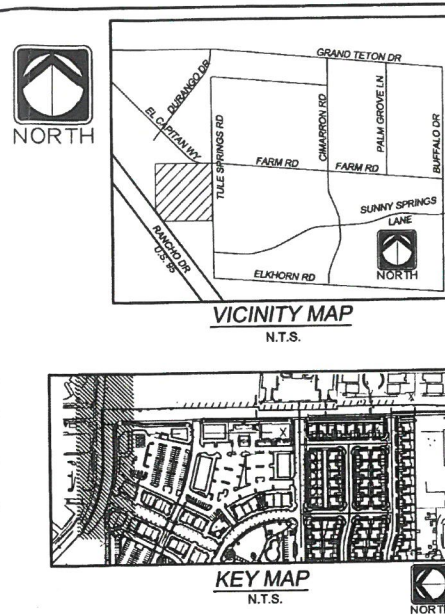
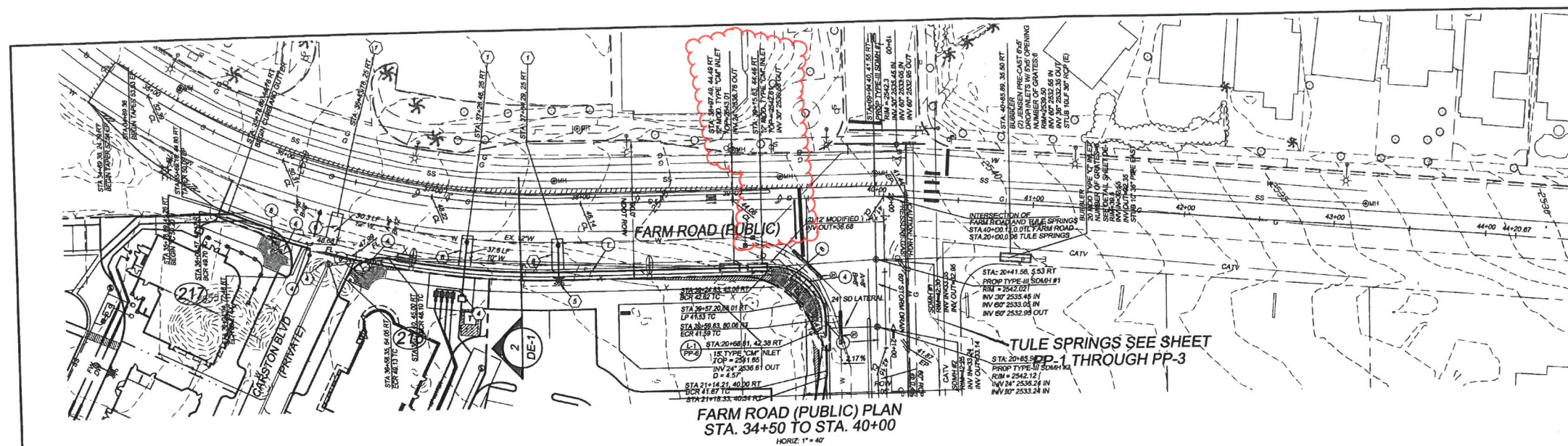
END OF REMARKS

B&H/PBJ/ays

T/R/S: T19S/R60E/17

AREA G-17

Post-it® Fax Note	7671	Date	6/3/13	# of pages	2
To	Michael Cunningham	From	ALBERT SUNG		
Co./Dept.	Taney Eng.	Co.	CLV		
Phone #		Phone #	229-2001		
Fax #	362-5233	Fax #			



LEGEND

- SIGHT VISIBILITY ZONE (SVZ)
- PROPOSED EDGE OF PAVEMENT
- SEWER NOTE
- WATER NOTE
- PROPOSED GRADE
- EXISTING GRADE
- GRADE BREAK
- PROPOSED SLOPE ARROW
- EXISTING SLOPE ARROW
- FINISHED FLOOR ELEVATION
- RETAINING WALL
- EXISTING GAS LINE
- EXISTING WATER LINE
- EXISTING CABLE LINE
- EXISTING TELEPHONE LINE

ENGINEER'S NOTES

- ALL PRIVATE STREETS ARE P.U.E.S. PUBLIC SEWER EASEMENTS & PUBLIC DRAINAGE EASEMENTS TO BE PRIVATELY MAINTAINED.
- ALL OFF-SITE IMPROVEMENT CONSTRUCTION SHALL CONFORM TO THE UNIFORM STANDARD SPECIFICATIONS AND STANDARD DRAWINGS CLARK COUNTY AREA, NEVADA AND CLARK COUNTY SUPPLEMENT TO UNIFORM STANDARD DRAWINGS AND SPECIFICATIONS, LATEST REVISION.
- FINAL ASPHALTIC CONCRETE (AC) PAVEMENT SURFACES SHALL BE ONE-HALF INCH ABOVE THE TOP OF CUTTER (INCLUDING OPEN GRADES).
- PRIVATE STREETS AND/OR DRIVEWAYS REFLECTED ON THESE PLANS ARE TO BE INSPECTED BY A CLV INSPECTOR.
- ADD 2200 TO ALL ELEVATIONS TO GET ACTUAL ELEVATIONS.
- THESE PLANS SHALL NOT, IN PART OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY THE GOVERNMENT AGENCIES.
- ENGINEER TO BE NOTIFIED OF ANY DISCREPANCIES IMMEDIATELY.
- GARAGE FINISHED FLOORS TO BE 4" BELOW HOUSE FINISHED FLOOR.

CONDITIONAL APPROVAL OF VALVED OUTLET (8" AND LARGER) THE WATER PLANS SHOW ONE OR MORE VALVED OUTLETS EXTENDING OUT OF PAVED AREAS. INSTALLATION OF THESE OUTLETS IS ACCEPTABLE; HOWEVER, IF THE OUTLETS ARE INCORRECTLY LOCATED OR NOT USED FOR ANY REASON WHEN THE PROPERTY IS ACTUALLY DEVELOPED, THE DEVELOPER SHALL ABANDON THE OUTLETS AT THE CONNECTION TO THE ACTIVE MAIN IN ACCORDANCE WITH THE DISTRICT'S STANDARDS, AND AT THE DEVELOPER'S EXPENSE. ADDITIONAL OF THE VALVED OUTLET DOES NOT PROVIDE OR IMPLY A PERMIT TO CONSTRUCT.

LEGAL DESCRIPTION

A PORTION OF GOVERNMENT LOT 9 LYING WITHIN THE NORTHEAST QUARTER (NE 1/4) OF SECTION 17, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA

BENCHMARK

0LV90 19W. CITY OF LAS VEGAS BENCHMARK, RIVET & PLATE IN TOP OF CURB @ THE NORTHEAST CORNER OF FARM ROAD AND TULE SPRINGS ROAD (FORMERLY DURANGO DRIVE) = 774.702m = 2541.69ft.

BASIS OF BEARINGS

NORTH 00°13'00" EAST, BEING THE EAST LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 17, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., SAID LINE ALSO BEING THE CENTERLINE OF TULE SPRINGS ROAD AS SHOWN BY PLAT THEREOF ON FILE IN BOOK 81, PAGE 85 IN THE CLARK COUNTY, NEVADA RECORDER'S OFFICE.

DISCLAIMER NOTE

EXISTING UTILITY LOCATIONS SHOWN HEREIN 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 COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION. ALL DISCREPANCIES MUST BE IMMEDIATELY REPORTED TO THE ENGINEER. CALL BEFORE YOU DIG: 1-800-227-2800.

NOTE

NDOT PERMIT REQUIRED FOR ALL WORK IN NDOT ROW

SOILS REPORT NOTE:

ALL WORK SHALL CONFORM TO THE GEOLOGICAL REPORT PREPARED BY:
FIRM NAME: OWENS GEOTECHNICAL, INC.
PROJECT NO.: E-03-291
DATED: NOVEMBER 21, 2003

FARM ROAD (PUBLIC) PROFILE STA. 34+50 TO STA. 40+00

HORIZ. 1" = 40'

VERT. 1" = 4'

WATER NOTES (PUBLIC STREET IMPROVEMENTS)

No.	ITEM
1	MECHANICAL JOINT TAPPING SLEEVE & TAPPING VALVE PER UDACS PLATE 22, SIZE AND STATION PER PLAN.
2	SERVICE SADDLE PER UDACS 10.
3	INSTALL 1" IRR. METER WITH 1" RPPA PER UDACS 10 AND 11A.
4	STUB AND CAP FOR FUTURE USE CONNECTION PER UDACS PLATE 4A.
5	INSTALL FIRE HYDRANT, 8" LATERAL, 6" GATE VALVE AND ANY APPURTENANCES NECESSARY FOR FUNCTIONAL FIRE HYDRANT PER UDACS PLATE #7.
6	TRENCH AND BACKFILL WATER INSTALL PER USDF 504.
7	FIELD LOCATE EX. GATE VALVE & ADJUST TO PROPOSED FINISH GRADE

CURVE TABLE (DRIVEWAYS)				
CURVE	LENGTH	RADIUS	TANGENT	DELTA
C26	37.12	24.50	23.74	88°12'18"
C27	38.36	24.50	19.02	75°39'13"
C28	38.04	35.00	35.06	90°06'08"

SEWER NOTES (PUBLIC STREET IMPROVEMENTS)

No.	ITEM
1	48" DIA. MANHOLE
2	12" PVC PIPE
3	STUB 6" SS AND CAP FOR FUTURE USE

CONSTRUCTION NOTES (PUBLIC STREET IMPROVEMENTS)

No.	ITEM
1	CONSTRUCT 4" TYPE CURB AND GUTTER, PER STD DWG No. 218
2	CONSTRUCT DRIVEWAY & 8" CROSS-GUTTER, PER STD DWG No. 220, 222A & 225
3	CONSTRUCT 10' SIDEWALK, PER CCALSD No. 234
4	CONSTRUCT SIDEWALK RAMP CASE IL PER CCALSD No. 235. CONCRETE OF RAMP SHALL BE COLORED TO MATCH PAVEMENT COLOR, SHADY RED 4821 OR CLV APPROVED COLOR & TC STDS
5	CONSTRUCT TYPE "A" ISLAND CURB, PER CCALSD No. 219
6	CONSTRUCT TWO (2) SIDEWALK UNDERDRAINS, PER CCALSD No. 236
7	CONSTRUCT 4" U-CHANNEL, PER DETAIL 3 / DB-1
8	INSTALL 1x1/2" CONCRETE PAVERS @45° SHADY RED 4821 OR CLV APPROVED COLOR

This grading plan is a part of drawing # 3656 which was approved on 4/14/05 and is page 8 of 10.

Call before you dig! Call before you dig! Call before you dig! Call before you dig!

1-800-227-2500
1-702-593-6111
1-702-455-1511
1-702-229-5611

CITY OF LAS VEGAS FIRE DEPARTMENT APPROVAL

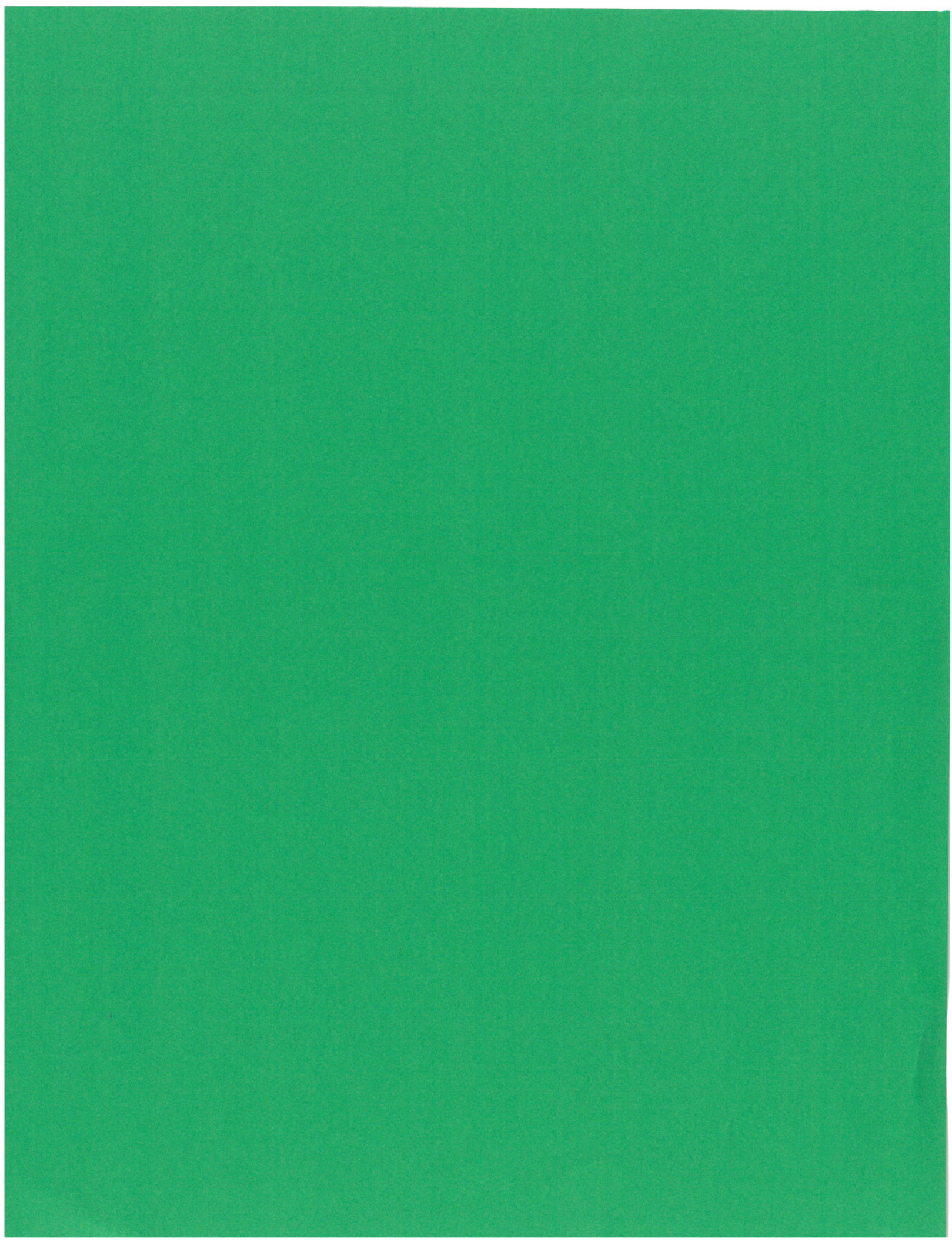
DEVELOPER
CARINA HOMES, INC.
2881 BUSINESS PARK COURT SUITE 228
LAS VEGAS, NV, 89128
TELEPHONE: (702) 228-6378
FAX: (702) 228-6002

APPROVED FOR CONSTRUCTION

DATE: April 28, 2005
JOB NO.: 052007.00
FILE NAME:
DO NOT SCALE DRAWINGS

SHEET NO. 14 OF 17

PP-4

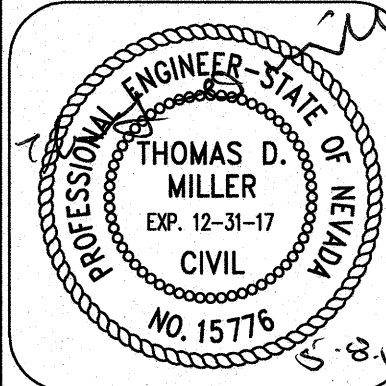


APPENDIX C
(Revised Plans)

- Grading Plan
- Offsite Improvements Plan and Profile Sheet

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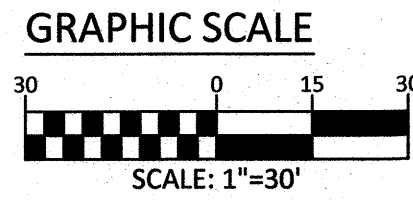
COLLINS ENGINEERS
 3130 S. DURANGO DR., SUITE 404
 LAS VEGAS, NV 89117
 PHONE: (702) 248-8000
 FAX: (702) 248-8070
 www.collinsengr.com



IMPROVEMENT PLANS FOR DC PLAZA
APN: 25-17-613-001
STORM DRAIN PLAN & PROFILE
 STA. 16+00.00 TO 20+54.95
 8451 FARM ROAD
 LAS VEGAS, NEVADA

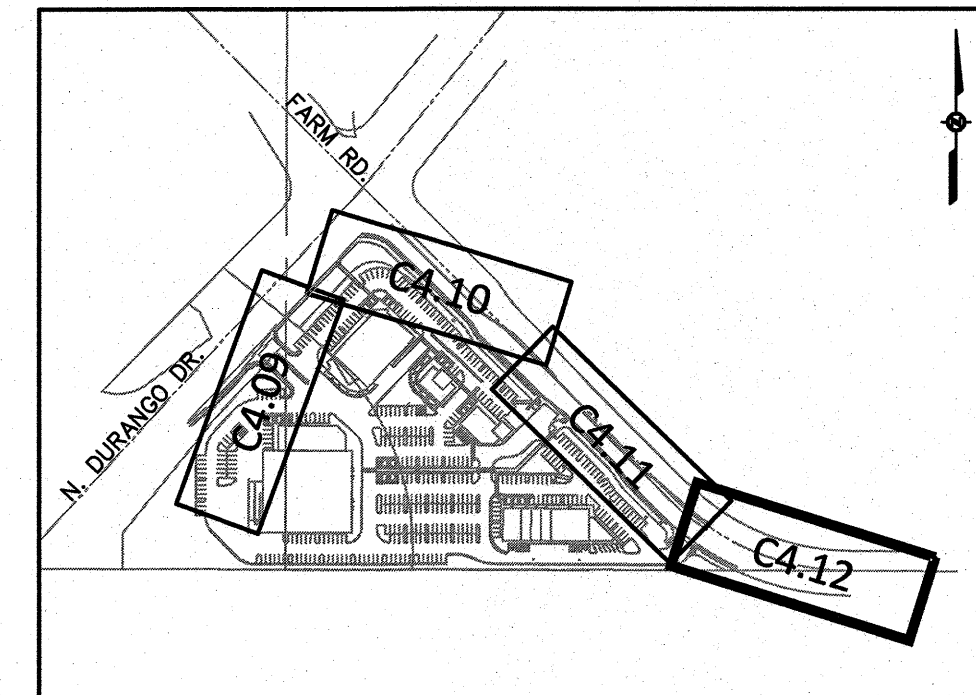
NO.	DATE	DESIGN BY	DESCRIPTION
1	03-13-17		REVISED STORM DRAIN MH#1 AND PIPES
2	05-08-17		ADDED SS CROSSING PROFILE
3			REVISED SLOPES BETWEEN SDMH#3 TO EXISTING DI PER EXISTING CONDITIONS

CEI PROJECT: 4136
 DESIGN BY: JDM SR
 DRAWN BY: JDM SR
 CHECKED BY: TDM P.E.
 DATE: 03/13/17
 SCALE: 1"=30'
 SHEET NUMBER
C4.12
 SHEET 18 OF 45
 H # 64486

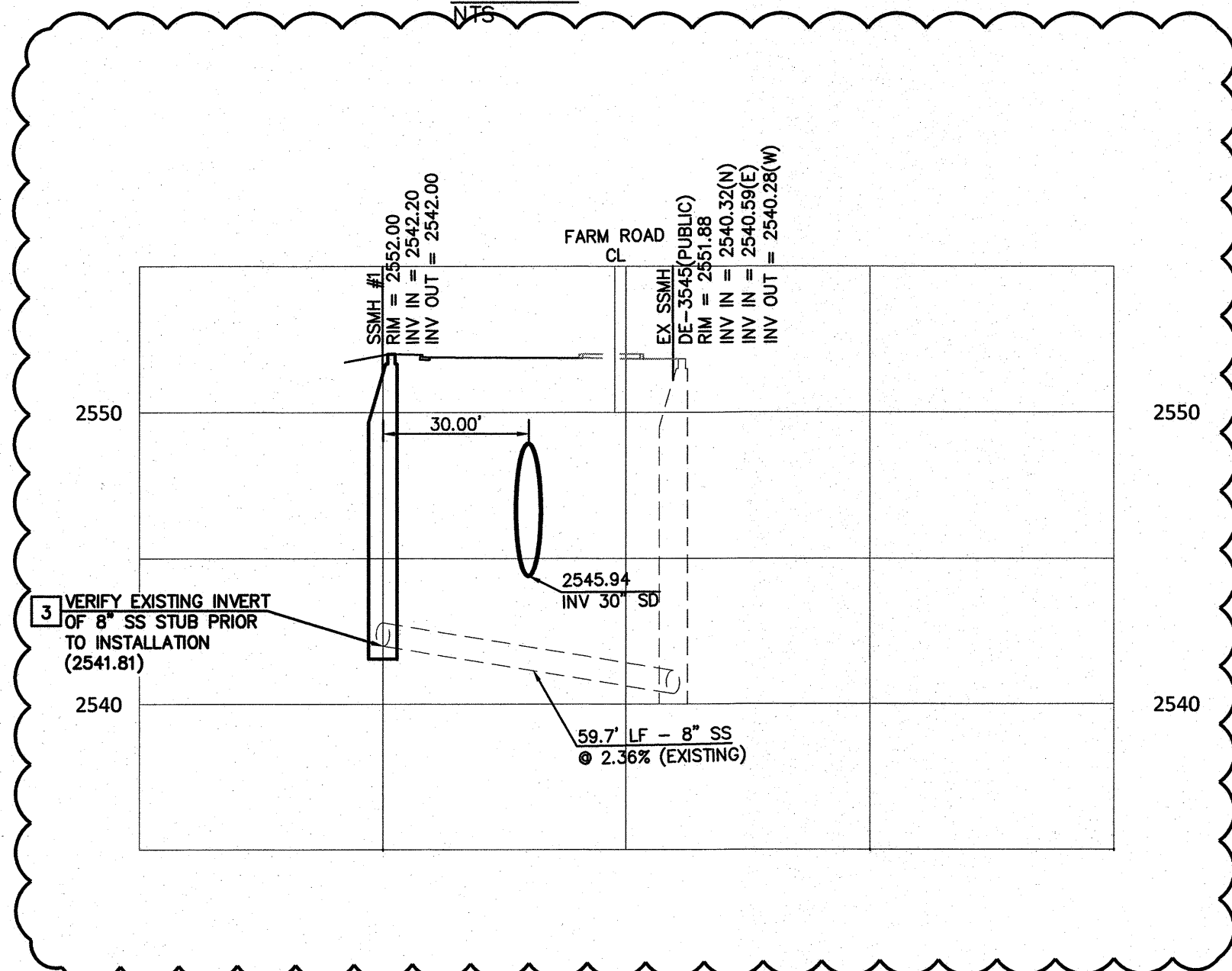


BASIS OF BEARING
 NORTH 00°00'50" WEST, BEING THE BEARING OF THE EAST LINE OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 17, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., AS SHOWN IN FILE 97, PAGE 01 OF PARCEL MAPS ON FILE AT THE CLARK COUNTY, NEVADA RECORDER'S OFFICE.

BENCHMARK
 CITY OF LAS VEGAS BENCHMARK # 5LV90 16NWN5
 A RIVET AND PLATE IN THE TOP OF CURB EAST SIDE OF TULE SPRINGS ROAD 1/4 MILE SOUTH OF GRAND TETON DRIVE
 NAVD 88 ELEVATION = 774.403 METERS / 2540.69 FEET
 NORTH AMERICAN DATUM OF 1988



KEY MAP



SS/SD CROSSING

H: 1"=30'
 1st Submittal 10/24/16 APPROVED FOR CONSTRUCTION
 LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
 DATE: 10/24/16 PROJECT NO: 124663
 LVWMD APPROVED FIRE FLOW: 1875 GPM AT 20 PSI RESIDUAL
 SHEETS: C1.01, C1.02, C4.05, C4.06, C4.07, C4.08, C4.10, C4.11, C4.12, C4.13, C5.01, C5.02, C5.03, C5.04, (C5.11, C5.12 NDOT).

NOTE:
 ALL ON-SITE STORM DRAIN SYSTEMS AND THE ASSOCIATED FACILITIES ARE PRIVATELY OWNED AND TO BE PRIVATELY MAINTAINED BY THE OWNERS/HOA.

FLOOD ZONE NOTE:
 THE PROJECT SITE LIES WITHIN ZONE X AS PER FEMA FIRM PANEL 32003C1745E DATED NOVEMBER 16, 2011.

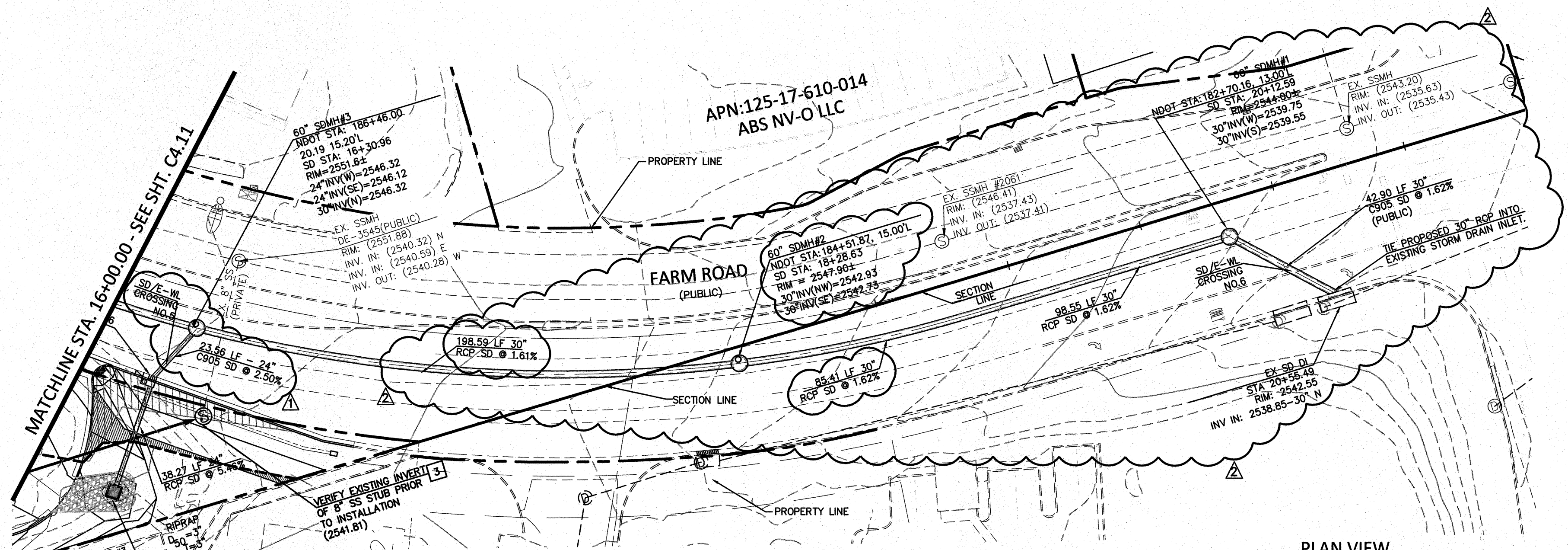
OFFSITE IMPROVEMENTS
 SEE SHEETS C4.05-C4.08 FOR OFFSITE IMPROVEMENT PLANS.

ALL GRADING WORK SHALL BE IN STRICT ACCORDANCE WITH THE SOILS REPORT FOR THE SITE ENTITLED "PROPOSED COMMERCIAL DEVELOPMENT SOUTH CORNER OF DURANGO DR. AND FARM RD."

PROJECT NO.: 4125XD130, DATED DECEMBER 22, 2015
 PREPARED BY: WESTERN TECHNOLOGIES INC.
 6633 WEST POST ROAD
 LAS VEGAS, NV 89118
 PHONE NO. (702) 798-8050
 FAX NO. (702) 798-7664

ALL WORK SHALL BE PERFORMED UNDER THE DIRECTION OF A REGISTERED PROFESSIONAL SOILS ENGINEER.

THOMAS D. MILLER - 15776 DATE



PLAN VIEW
 SCALE: 1"=30'

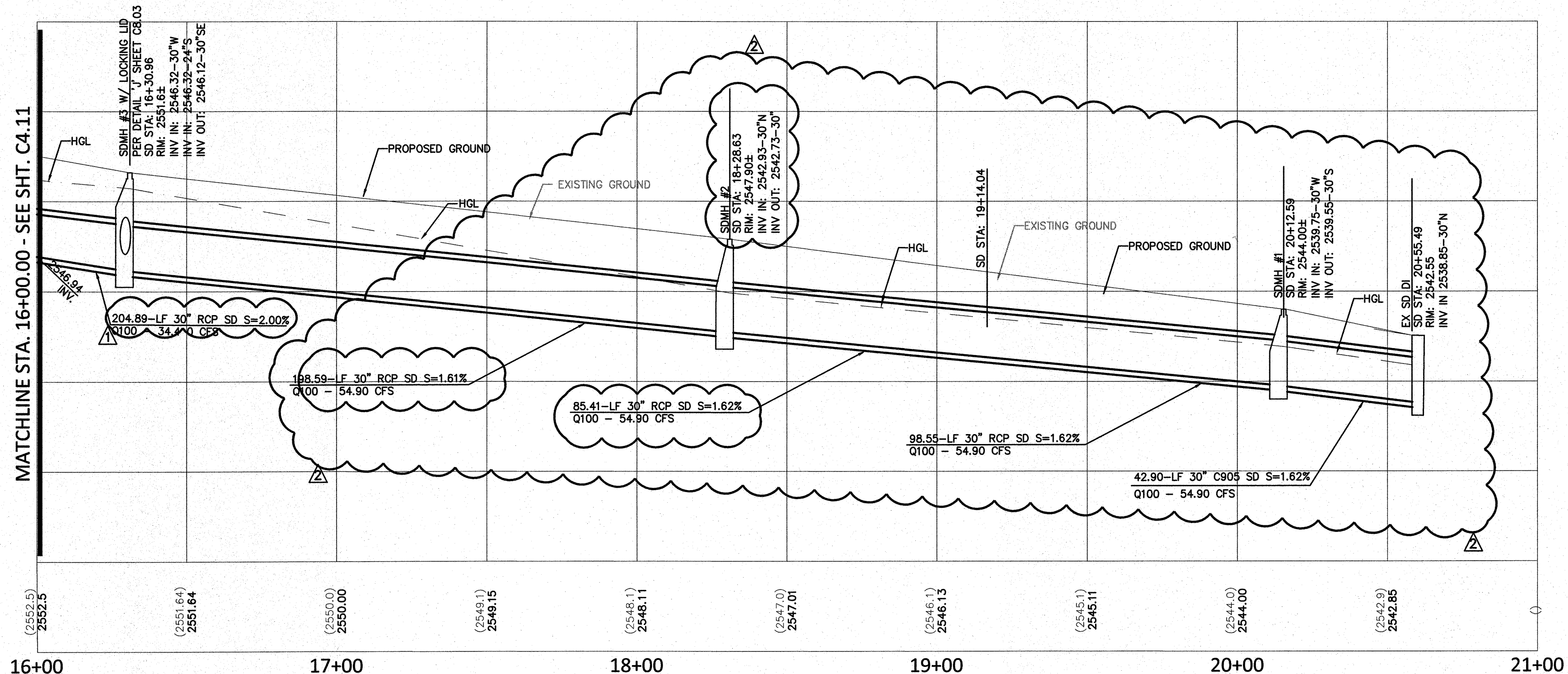
NOTE: NDOT PERMIT REQUIRED FOR WORK IN NDOT R/W

- PAVING NOTES:**
- PRIOR TO PLACING THE FIRST LIFT OF PLANTMIX THE AGGREGATE BASE SHALL BE PRIMED WITH CUTBACK ASPHALT, TYPE MC-70N/V AT 0.28 GAL/YD² OR AN APPROVED EQUAL FROM THE NDOT QPL, APPLIED AT THE MANUFACTURER'S RECOMMENDATION.
 - EMULSIFIED ASPHALT FOR THE TACK COAT SHALL BE EMULSIFIED ASPHALT, TYPE SS-1H (DILUTED) AT FOLLOWING APPLICATION RATES:

I. TACK COLD MILLED SURFACE	0.10 GAL/SQYD
II. TACK BETWEEN DENSE GRADE LIFTS	0.06 GAL/SQYD
III. TACK OPEN GRADE TO DENSE GRADE	0.07 GAL/SQYD

NOTE

STORM SEWER TWENTY FOUR(24) INCHES IN DIAMETER OR GREATER MAY BE INSTALLED WITH WATERTIGHT JOINTS USING AGENCY APPROVED INTERNAL ELASTOMERIC JOINT SEALANT, IN COMPLIANCE WITH ASTM C920, OR JOINT GASKETS, WITH PROVISIONS TO INSURE AGAINST DIFFERENTIAL SETTLEMENT OF THE STORM DRAIN.
 AT MANHOLE INSTALLATION USE A WATERTIGHT GASKET BY A-LOK, KOR-N-SEAL OR APPROVED EQUAL.



PROFILE VIEW
 H: 1"=30'
 V: 1"=5'

NDOT NOTE:
 NDOT PERMIT REQUIRED. CONTRACTOR TO OBTAIN NDOT OCCUPANCY PERMIT PRIOR TO CONSTRUCTION IN NDOT RIGHT OF WAY

EXISTING	PROPOSED	EXISTING	PROPOSED	EXISTING	PROPOSED	EXISTING	PROPOSED
PL-ADJACENT LINE	PL-ADJACENT LINE	PL-ADJACENT LINE	PL-ADJACENT LINE	PL-ADJACENT LINE	PL-ADJACENT LINE	PL-ADJACENT LINE	PL-ADJACENT LINE
PL-ADJACENT LINE	PL-ADJACENT LINE	PL-ADJACENT LINE	PL-ADJACENT LINE	PL-ADJACENT LINE	PL-ADJACENT LINE	PL-ADJACENT LINE	PL-ADJACENT LINE
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