

CITY OF ALBUQUERQUE

Planning Department
David Campbell, Director



Mayor Timothy M. Keller

June 3, 2019

Scott Eddings, P.E.
Huitt-Zollars
333 Rio Rancho Blvd., Suite 101
Rio Rancho, NM 87124

RE: **Winrock Road Town Center**
2100 Louisiana Blvd NE
Drainage Master Plan- Drainage Implementation Plan
Engineer's Stamp Date: 5/23/19
Hydrology File: J19D058

Dear Mr. Eddings:

PO Box 1293
Albuquerque
NM 87103
www.cabq.gov

Based on submittal received on 5/29/19, the Drainage Implementation Plan is approved for Site Plan for Building Permit.

1. For Information. Include Exhibit 1 in the DRB Master Site Plan. Please check that the phases match the Architect's phases. The remaining exhibits (2-9) can remain in the DIP, so long as the master summary table is provided on Exhibit 1.
2. For Information. Prior to Work Order for each phase, a detailed drainage report will be required to detail many of the hydraulics shown in the DIP as well as address all grading and drainage criteria per the DPM, such as storm water quality and surface flow hydraulics.

If you have any questions, please contact me at 924-3695 or dpeterson@cabq.gov.

Sincerely,

Dana Peterson, P.E.
Senior Engineer, Planning Dept.
Development Review Services



City of Albuquerque

Planning Department
Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 6/2018)

Winrock Town Center - DMP

Project Title: Drainage Improvement Plan Building Permit #: _____ Hydrology File #: J19D058G

DRB#: 2018-001579 EPC#: _____ Work Order#: 4553.90

Legal Description: A-1-A-1-A-1 Winrock Town Center

City Address: 2100 Louisiana Blvd NE

Applicant: Winrock Partners LLC Contact: Darin Sand

Address: 100 Sun Avenue

Phone#: 505-881-0100 Fax#: _____ E-mail: seddings@huitt-zollars.com

Other Contact: Huitt-Zollars, Inc. Contact: Scott Eddings

Address: 333 Rio Rancho Blvd, Rio Rancho, NM 87124

Phone#: 505-235-7211 Fax#: _____ E-mail: seddings@huitt-zollars.com

TYPE OF DEVELOPMENT: _____ PLAT (# of lots) _____ RESIDENCE ☒ DRB SITE _____ ADMIN SITE

IS THIS A RESUBMITTAL? ☒ Yes _____ No

DEPARTMENT _____ TRANSPORTATION ☒ HYDROLOGY/DRAINAGE

Check all that Apply:

TYPE OF SUBMITTAL:

- ☐ ENGINEER/ARCHITECT CERTIFICATION
- ☐ PAD CERTIFICATION
- ☐ CONCEPTUAL G & D PLAN
- ☐ GRADING PLAN
- ☒ DRAINAGE REPORT
- ☐ DRAINAGE MASTER PLAN
- ☐ FLOODPLAIN DEVELOPMENT PERMIT APPLIC
- ☐ ELEVATION CERTIFICATE
- ☐ CLOMR/LOMR
- ☐ TRAFFIC CIRCULATION LAYOUT (TCL)
- ☐ TRAFFIC IMPACT STUDY (TIS)
- ☐ STREET LIGHT LAYOUT
- ☐ OTHER (SPECIFY) _____
- ☐ PRE-DESIGN MEETING?

TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

- ☐ BUILDING PERMIT APPROVAL
- ☐ CERTIFICATE OF OCCUPANCY
- ☐ PRELIMINARY PLAT APPROVAL
- ☒ SITE PLAN FOR SUB'D APPROVAL
- ☐ SITE PLAN FOR BLDG. PERMIT APPROVAL
- ☐ FINAL PLAT APPROVAL
- ☐ SIA/ RELEASE OF FINANCIAL GUARANTEE
- ☐ FOUNDATION PERMIT APPROVAL
- ☐ GRADING PERMIT APPROVAL
- ☐ SO-19 APPROVAL
- ☐ PAVING PERMIT APPROVAL
- ☐ GRADING/ PAD CERTIFICATION
- ☐ WORK ORDER APPROVAL
- ☐ CLOMR/LOMR
- ☐ FLOODPLAIN DEVELOPMENT PERMIT
- ☐ OTHER (SPECIFY) _____

DATE SUBMITTED: May 28, 2019 By: Scott Eddings

COA STAFF:

ELECTRONIC SUBMITTAL RECEIVED: _____

FEE PAID: _____

WINROCK TOWN CENTER DRAINAGE IMPLEMENTATION PLAN

Prepared For



Project Location:

Albuquerque, New Mexico

MAY 2019



Prepared By

HUITT-ZOLLARS

ENGINEERING ARCHITECTURE CONSTRUCTION MANAGEMENT SURVEY

6501 Americas Parkway, NE, Suite 830
Albuquerque, NM 87110
(505) 883-8114, Fax (505) 883-5022
www.huitt-zollars.com



**WINROCK TOWN CENTER
DRAINAGE IMPLEMENTATION PLAN**

**CITY OF ALBUQUERQUE
PROJECT NO. 4553.90**

PREPARED FOR:



PREPARED BY:

HUITT-ZOLIARS
333 RIO RANCHO BLVD., SUITE 101
RIO RANCHO, NEW MEXICO 87124

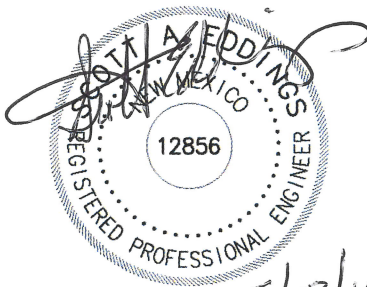
MAY 2019

HZI Project No. R303699.04



WINROCK TOWN CENTER DRAINAGE IMPLEMENTATION PLAN

I, Scott A. Eddings, being first duly sworn upon my oath, state that I am a registered professional engineer, qualified in civil engineering and that the accompanying report was prepared by me or under my supervision and is true and correct to the best of my knowledge and belief.



5/23/19



Purpose.....	1
Executive Summary	1
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EXHIBITS

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PURPOSE

The purpose of this Drainage Implementation Plan is to: 1) Provide an overall map of the proposed drainage improvements for Winrock Town Center, 2) Identify the specific components of the drainage improvements, 3) Relate individual development tracts to associated drainage improvements, and 4) Identify the proposed drainage flows at major analysis points.

This Drainage Implementation Plan presents a summary for the “Drainage Master Plan for Winrock Town Center” to facilitate planning and implementation of required storm drainage infrastructure for the development of this project.

This Drainage Implementation Plan is intended to define the overall plan for construction and implementation of drainage improvements, while the “Drainage Master Plan for Winrock Town Center” provides the design requirements for those improvements.

EXECUTIVE SUMMARY

The “Drainage Master Plan for Winrock Town Center” was completed by Isaacson & Arfman, PA with a final revision date of June 26, 2015. The purpose of the Drainage Master Plan was to provide analysis and a drainage framework for Winrock Town Center. All hydrology calculations were completed for the 100-year, 6-hour storm. The Drainage Master Plan defines allowable peak flowrates at major analysis points as shown on Exhibit 1. Site hydrology calculations from the Drainage Master Plan are accepted as-is for use in this Drainage Implementation Plan.

QUALIFICATION & DISCLAIMERS

The calculations and designs in the Drainage Master Plan provides adequate detail to ensure that the overall drainage system is sufficient to safely convey the 100-year storm event. Design of these drainage systems should be considered 50% complete for construction purposes, however, the detail required for construction is not presented in the Drainage Master Plan. Final hydraulic design calculations must be provided for all storm drainage improvements at the time of final engineering design.

This Drainage Implementation Plan utilizes Bentley StormCAD V8i for the hydraulic modeling of the storm drain pipe system. For headloss calculations at junctions, the HEC-22 Energy Method (Third Edition) was chosen to comply with City of Albuquerque DPM requirements.

Upon City of Albuquerque approval of this document, this Drainage Implementation Plan shall be the basis of hydraulic design of future improvement projects in Winrock Town Center.



SPECIAL CONDITIONS

Portions of the storm drain network have changed since the Drainage Master Plan was completed. The proposed changes will be implemented without altering the peak flowrates at the major analysis points. Please refer to Exhibit 2 through Exhibit 7 for detailed information regarding the updated storm drain network.

The existing storm drain network AP-A may have been incorrectly modeled for the revised flowrates in previous analyses. The existing storm drain pipes were originally designed to convey 46 CFS. With the revised development in that area, the peak flowrate of AP-A increased to 82 CFS which causes the existing pipes to have insufficient capacity during the 100-year storm event. Refer to Exhibit 8 for the existing condition of network AP-A. As a future solution to correct this pipe network, the storm drain should be upsized and/or replaced with an alternate material to safely convey the 100-year peak flowrate. Refer to Exhibit 9 for the proposed improvements to network AP-A.

INFRASTRUCTURE REQUIREMENTS BY PHASE

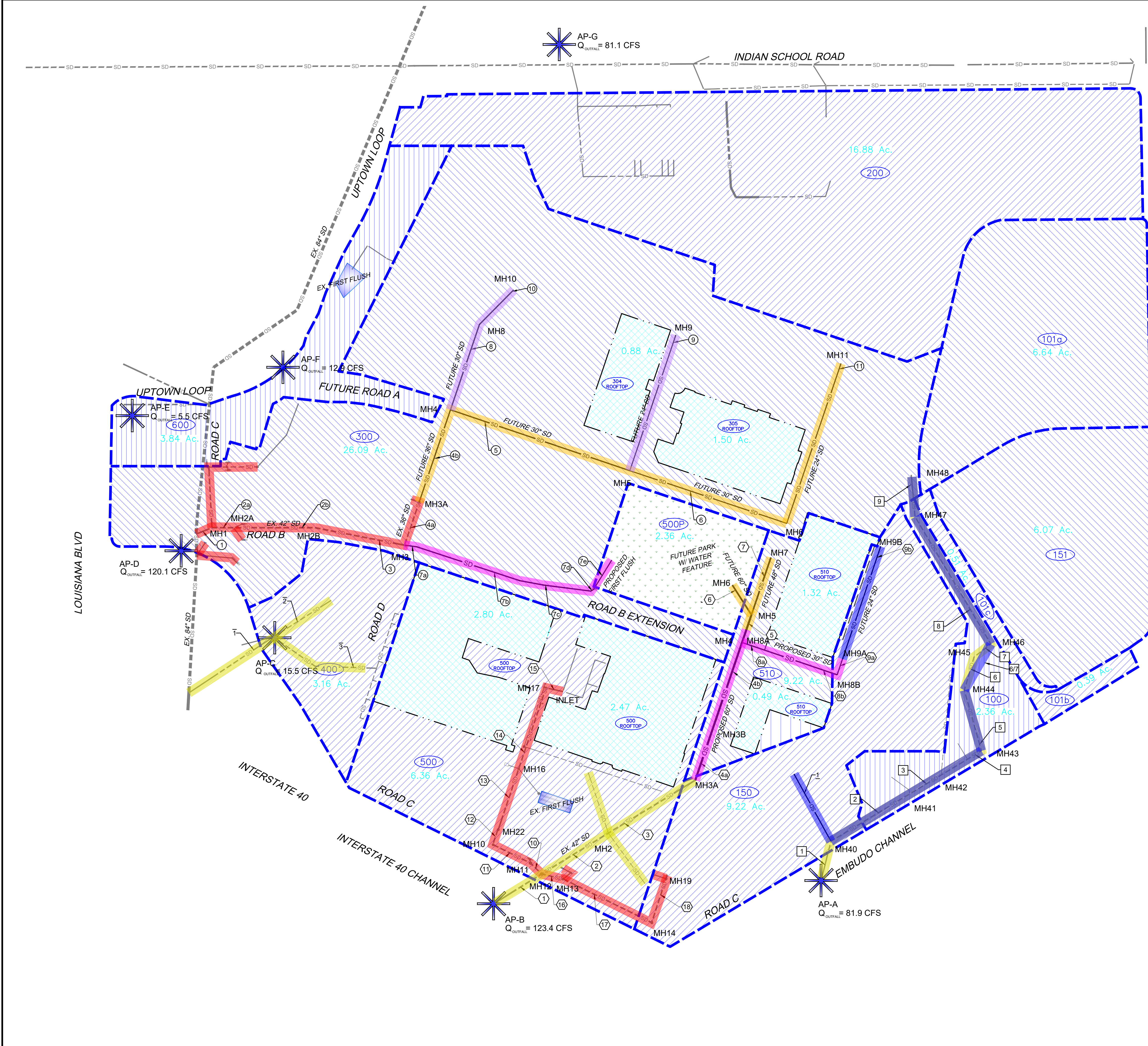
The storm drain systems presented in the Drainage Master Plan are intended to provide overall site storm water management and storm water quality control. The development of each phase will require final design of the onsite drainage system to convey flows to major analysis points. Prior to Work Order for each phase, a detailed drainage report will be required to detail the hydraulics shown in this Drainage Implementation Plan, as well as address all grading and drainage criteria per the City of Albuquerque DPM, such as storm water quality and surface flow hydraulics. Please refer to Exhibit 1 for phasing of the proposed storm drain network.

OWNERSHIP & MAINTENANCE RESPONSIBILITIES

This drainage system, in its entirety, shall be dedicated to the City of Albuquerque. Maintenance of the system will be the responsibility of the developer as part of the TIDD agreement and defined by the TIDD infrastructure MOU.

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Last Saved: 6/28/2019 3:28:14 PM, User: Tadeya, Linda

Plot: 6/28/2019 3:28:05 PM, By: Tadeya, Linda
Last Saved: 6/28/2019 3:28:14 PM, User: Tadeya, Linda



BASIN	STORM DRAIN NO.	PIPE DIAMETER (in)	FLOW RATE (cfs)	CONSTRUCTION PHASE
150	1	24	10	E
100	1	36	82	E
100	2	48	71	E
100	3	48	71	E
100	4	36	51	E
100	5	36	51	E
100	6	36	51	E
100	7	36	51	E
100	5/7	36	51	E
100	8	36	49	E
100	9	36	30	E
300	1	42	120	A
300	2	42	113	A
300	3 a-b	42	94	A
300	4	36	70	A
300	5	30	28	C
300	6	30	14	C
300	7 a-e	30	24	B
300	8	30	42	C
300	9	24	14	D
300	10	24	18	D
300	11	24	14	D
400	1	24	15	PRE-DMP
400	2	18	7	PRE-DMP
400	3	18	8	PRE-DMP
500	1	42	123	PRE-DMP
500	2	42	85	PRE-DMP
500	3	42	75	PRE-DMP
500	4 a-b	60	75	B
500	5	60	58	B
500	6	60	51	C
500	7	48	8	C
500	8 a-b	36-30	17	B
500	9 a-b	24	10	B/E
500	10	36	24	A
500	11	36	22	A
500	12	(2) 24	22	A
500	13	36	22	A
500	14	36	22	A
500	15	36	22	A
500	16	36	14	A
500	17	36	10	A
500	18	24	10	A

STORM DRAIN PHASING LEGEND

PHASE DESIGNATION

PRE-DMP

A

B

C

D

E

DRAINAGE BASIN BOUNDARY PER DMP

EXISTING STORM DRAIN LINE - PUBLIC

EXISTING STORM DRAIN LINE - PRIVATE

PROPOSED STORM DRAIN LINE - PUBLIC

PROPOSED STORM DRAIN LINE - PRIVATE

FUTURE STORM DRAIN LINE - PUBLIC

FUTURE STORM DRAIN LINE - PRIVATE

REMOVE STORM DRAIN LINE - PRIVATE

REMOVE STORM DRAIN LINE - PRIVATE (FUTURE PHASE) PHASE B LIMITS

EXISTING FIRST FLUSH FACILITY

AP-# ANALYSIS POINT PER WINROCK TOWN CENTER DMP PREPARED BY ISAACSON&BARFMAN DATED 6/26/15

SCALE: NTS

AS BUILT INFORMATION

CONTRACTOR

WORK ORDER NO.

DATE

INSPECTOR'S NAME

DATE

ACCEPTANCE BY

DATE

VERIFICATION BY

DATE

COMPLETED BY

DATE

MICRO-FILM INFORMATION

RECORDED BY

DATE

BENCH MARKS

FOUND MONUMENT "20-H18"

STANDARD 3 1/4" ALUMINUM DISC (FOUND IN PLACE)

NEW MEXICO STATE PLANE COORDINATES (CENTRAL ZONE-NAD 1983)

N=1,493,154.978

E=1,545,048.210

PUBLISHED EL=5283.22 (MWD 1989)

GROUND TO GRID FACTOR=0.999661580

DELTA ALPHA ANGLE=-011'00.11"

SURVEY INFORMATION

FIELD NOTES

DATE

BY

NO.

ENGINEER'S SEAL

REVISIONS

DESIGN

DATE

BY

NO.

REMARKS

DESIGNED BY: NV

DATE: MAY 15, 2019

DRAWN BY: SAE

DATE: APR 18, 2019

DWG NAME: DRAINAGE EXHIBIT 1.dwg

PROJ #: R303898.04

CHECKED BY: SAE

DATE: MAY 23, 2019

TITLE:

BASIN MAP AND ULTIMATE STORM DRAIN NETWORK

Design Review Committee

City Engineer

Mo./Day/Yr.

Mo./Day/Yr.

City Project No.

4553.90

Zone Map No.

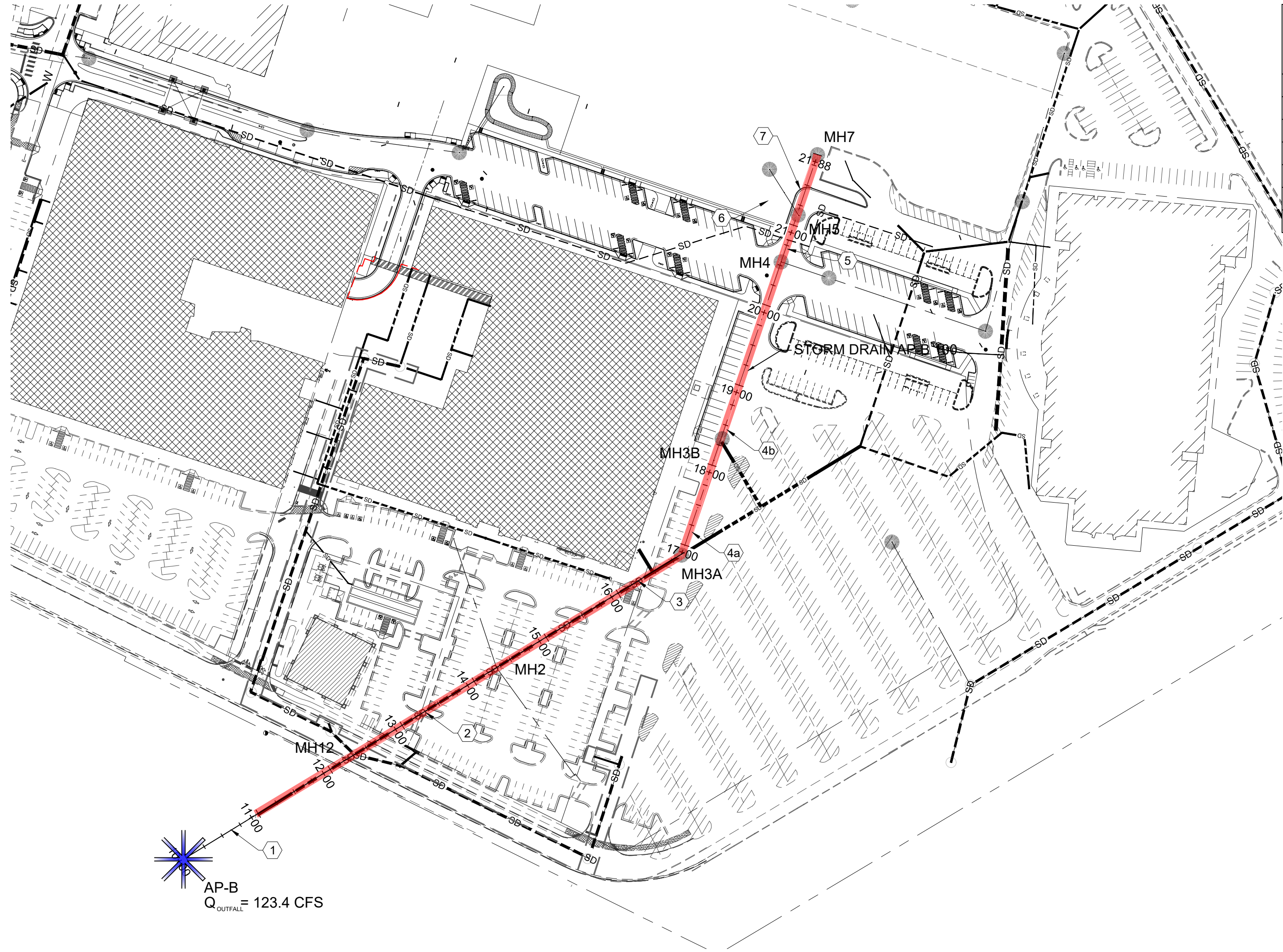
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Sheet

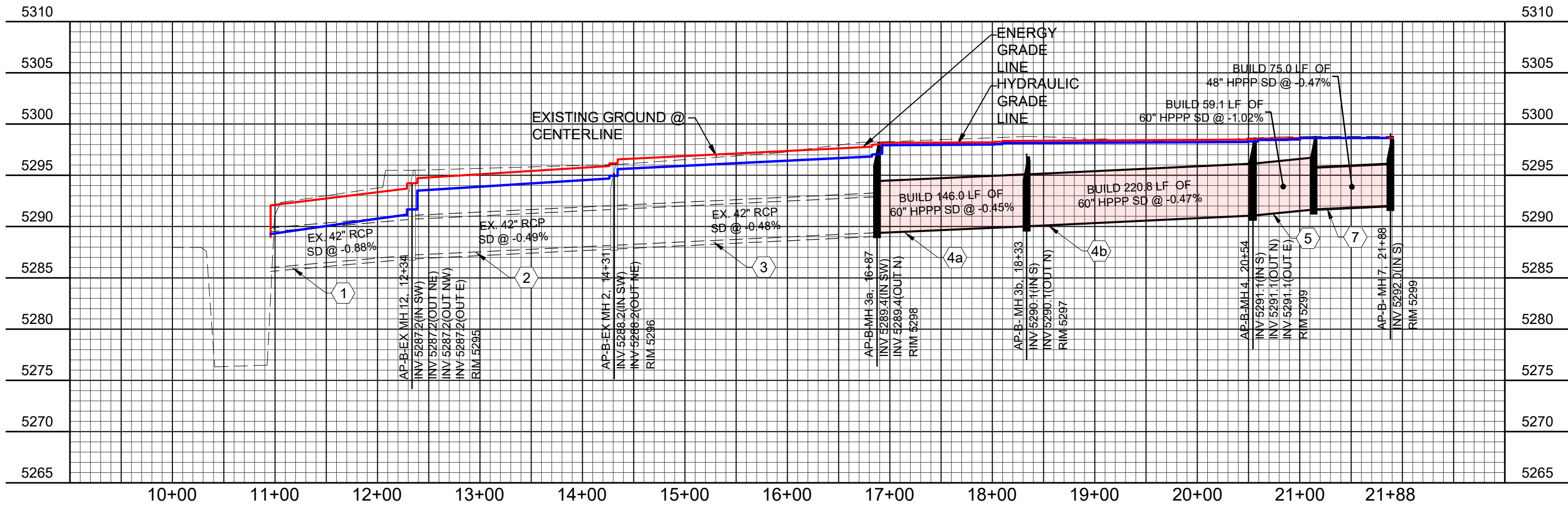
Of

EXHIBIT 1

Plotted: 5/26/2019 10:35:57 AM By: Edginga, Scott
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STORM DRAIN AP-B 100

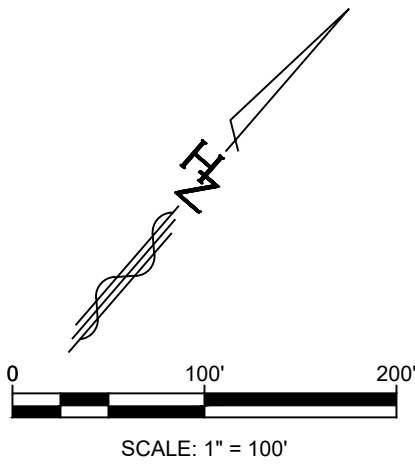


PROFILE VIEW: STORM DRAIN AP-B 100

STORM CAD OUTPUT

Label	Start Node	Stop Node	Diameter (in)	Length (ft)	Allowable Flow (cfs)	Velocity (ft/s)	Invert (Start) (ft)	Invert (Stop) (ft)	Elevation Ground (Start) (ft)	Elevation Ground (Stop) (ft)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)
LINE 1	MH 12	AP-B	42.0	138.0	123.4	14.57	5,287.22	5,286.00	5,295.61	5,286.00	5,291.16	5,289.27	5,293.71	5,291.98
LINE 2	MH 2	MH 12	42.0	212.3	85.1	8.85	5,288.18	5,287.22	5,296.00	5,295.61	5,294.80	5,293.50	5,296.01	5,294.72
LINE 3	MH 3	MH 2	42.0	241.4	75.1	7.81	5,289.41	5,288.18	5,298.20	5,296.00	5,296.83	5,295.69	5,297.78	5,296.64
LINE 4A	MH 4B	MH 3	60.0	144.1	75.1	5.98	5,290.06	5,289.41	5,298.32	5,298.20	5,298.00	5,297.94	5,298.23	5,298.17
LINE 4B	MH 4	MH 4B	60.0	227.7	75.1	5.98	5,291.10	5,290.06	5,298.50	5,298.32	5,298.26	5,298.14	5,298.48	5,298.36
LINE 5	MH 5	MH 4	60.0	34.9	58.1	4.62	5,291.40	5,291.10	5,298.50	5,298.50	5,298.46	5,298.45	5,298.60	5,298.58
LINE 7	MH 7	MH 5	48.0	94.1	7.5	1.06	5,291.90	5,291.40	5,298.50	5,298.50	5,298.64	5,298.64	5,298.65	5,298.65

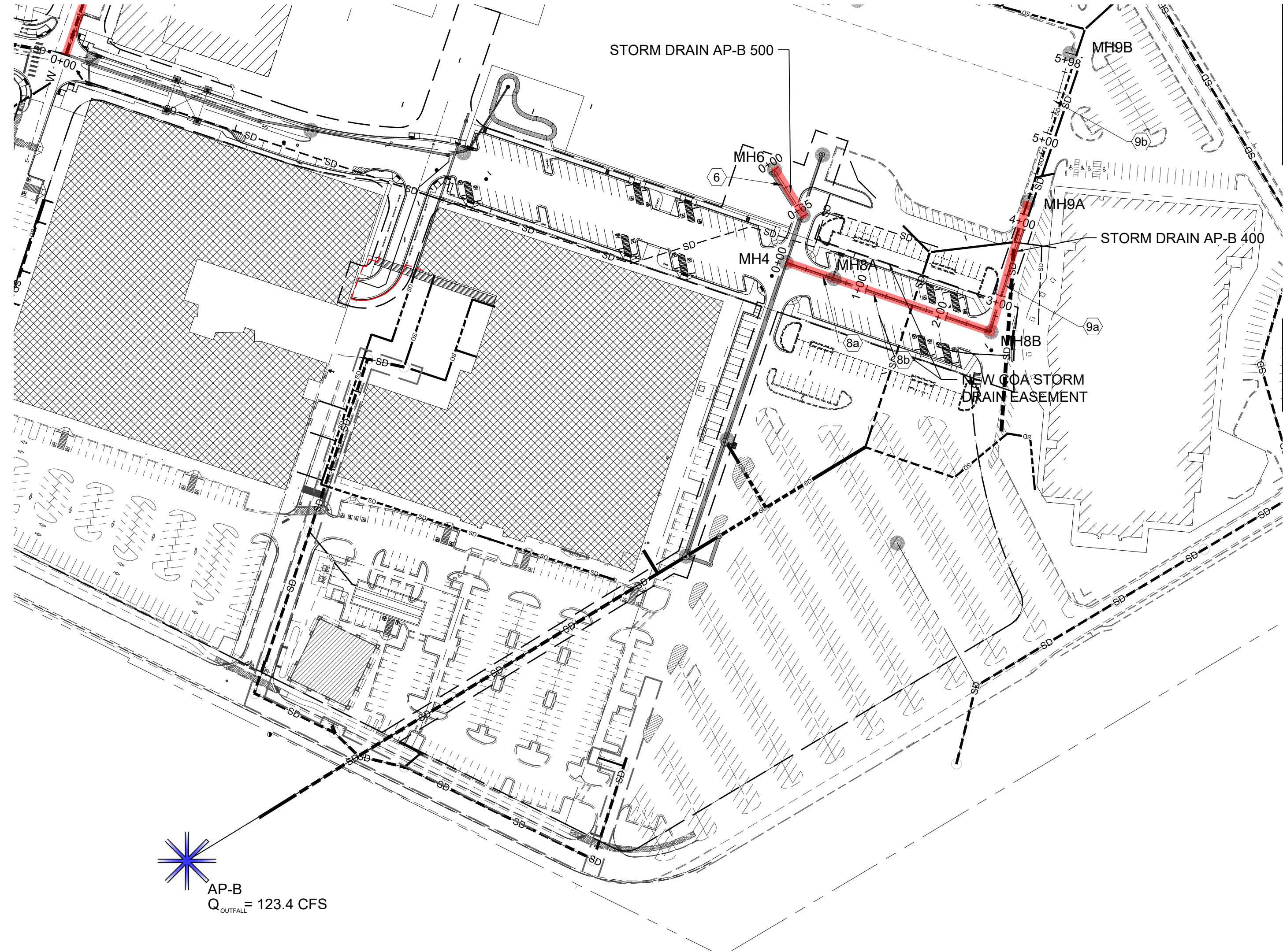
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CONTRACTOR	DATE	FOUND MONUMENT "20_H18"	DATE	NO.	BY	NO.	DATE	NO.	DATE	REMARKS	BY	NO.	DATE	REMARKS	BY
WORK BY	DATE	STANDARD 3 1/4" ALUMINUM DISC (FOUND IN PLACE)	DATE												
INSPECTOR'S	DATE	NEW MEXICO STATE PLANE COORDINATES (CENTRAL ZONE-N.A.D. 1983)	DATE												
ACCEPTANCE BY	DATE	N=1,483,154.978	DATE												
VERIFICATION BY	DATE	E=1,545,048.210	DATE												
DRAWING NO.	DATE	PUBLISHED EL=5283.22 (NAD 1988)	DATE												
MICRO-FILM INFORMATION		GROUND TO GRID FACTOR=0.999661580													
RECORDED BY	DATE	DELTA ALPHA ANGLE=0°11'00.11"	DATE												
NO.															



Designed By:
HUITT-ZOLIARS
Huitt-Zollars, Inc. Rio Rancho
333 Rio Rancho Drive NE, Suite 101
Rio Rancho, New Mexico 87124
Phone (505) 892-5141 Fax (505) 892-3259

WINROCK TOWN CENTER PHASE B INFRASTRUCTURE IMPROVEMENTS			
TITLE: STORM DRAIN AP-B 100			
Design Review Committee	City Engineer	Ms./Day/Yr.	
		Ms./Day/Yr.	
		Ms./Day/Yr.	
		Ms./Day/Yr.	
		Ms./Day/Yr.	
City Project No.	Zone Map No.	Sheet	Of
4553.90	J-19-Z		EXHIBIT 2

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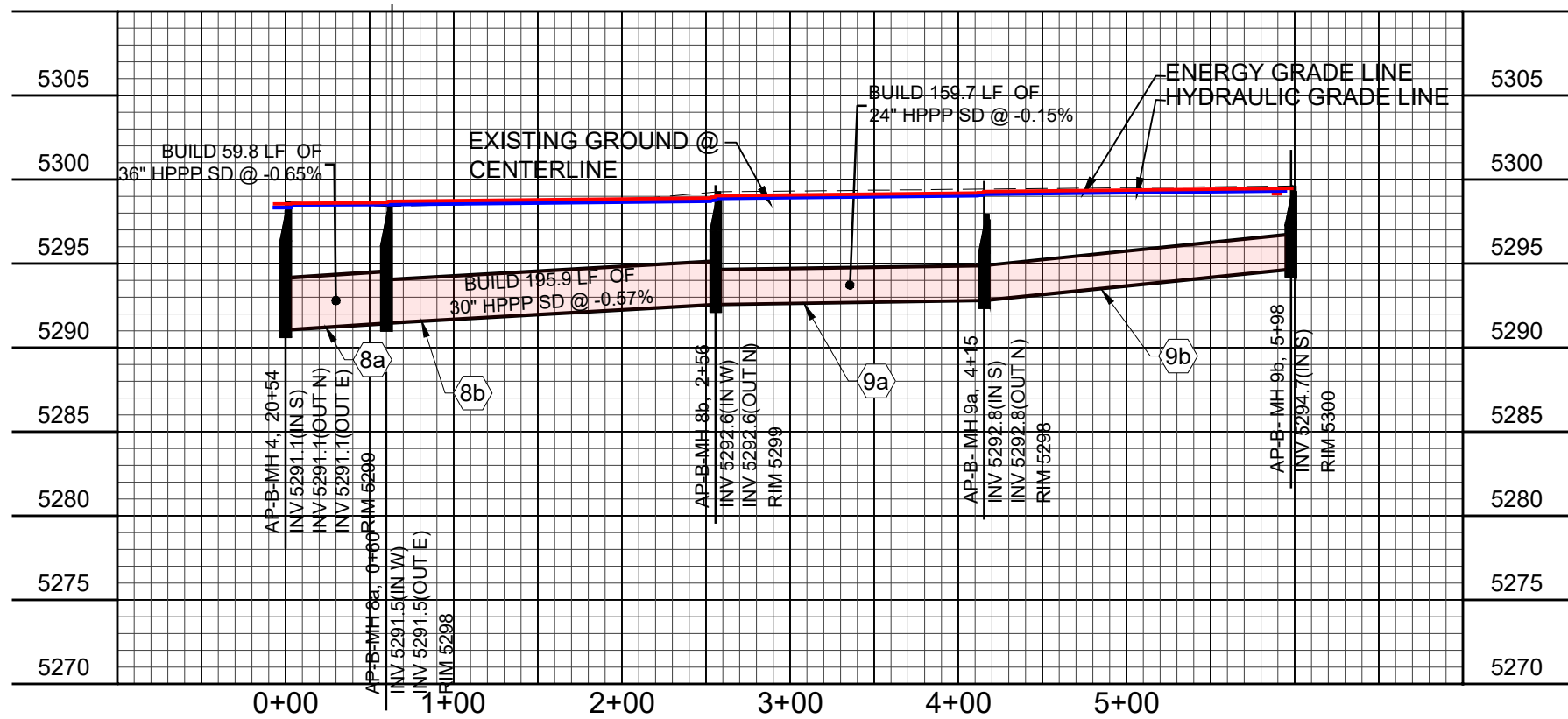


STORM DRAIN AP-B 400 & 500

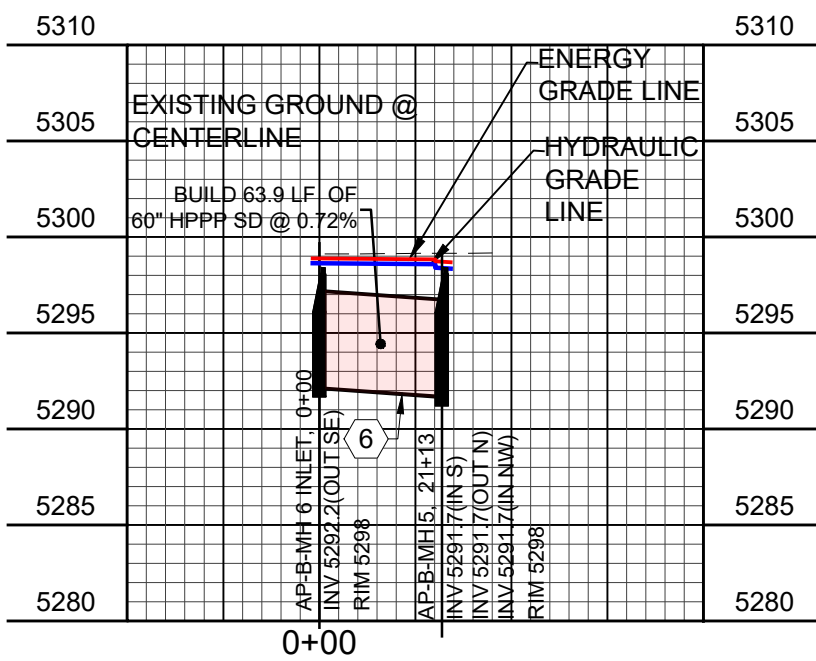
STORM CAD OUTPUT

Label	Start Node	Stop Node	Diameter (in)	Length (ft)	Allowable Flow (cfs)	Velocity (ft/s)	Invert (Start) (ft)	Invert (Stop) (ft)	Elevation Ground (Start) (ft)	Elevation Ground (Stop) (ft)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)
LINE 8A	MH 8A	MH 4	36.0	59.8	17.0	3.46	5,291.49	5,291.10	5,298.68	5,298.50	5,298.50	5,298.48	5,298.59	5,298.57
LINE 8B	MH 8B	MH 8A	30.0	196.0	17.0	3.46	5,292.60	5,291.49	5,299.20	5,298.68	5,298.69	5,298.50	5,298.88	5,298.68
LINE 9A	MH 9A	MH 8B	24.0	159.0	9.5	3.02	5,293.20	5,292.60	5,299.18	5,299.20	5,299.03	5,298.86	5,299.17	5,299.00
LINE 9B	MH 9B	MH 9A	24.0	183.0	9.5	3.02	5,294.70	5,293.20	5,300.00	5,299.18	5,299.30	5,299.11	5,299.45	5,299.29

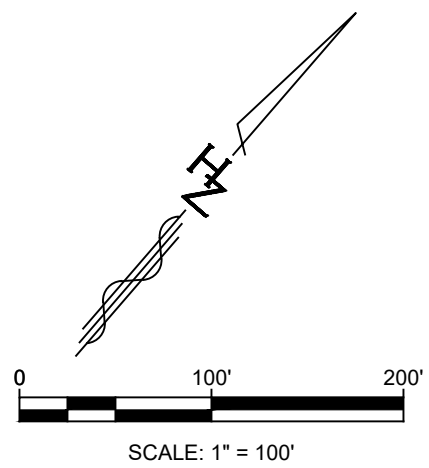
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LINE 6	MH 6	MH 5	60.0	88.8	50.6	2.58	5,292.16	5,291.30	5,298.80	5,298.80	5,298.60	5,298.58	5,298.70	5,298.69



PROFILE VIEW: STORM DRAIN AP-B 400



PROFILE VIEW: STORM DRAIN AP-B 500



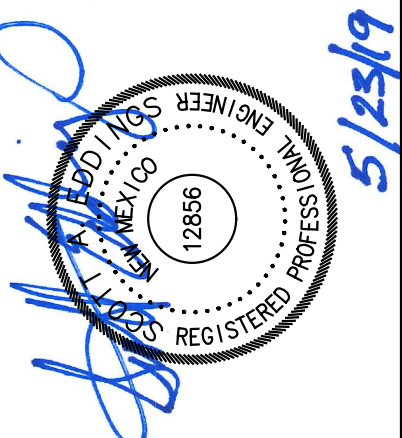
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WORK BY		INSPECTOR'S		DATE	
ACCEPTANCE BY		DATE		DATE	
DRAWING NO.		DATE		DATE	
MICRO-FILM INFORMATION		RECORDED BY		DATE	
NO.		DATE		DATE	
FOUND MONUMENT "20_H18"		FIELD NOTES		ENGINEER'S SEAL	
STANDARD 3 1/4" ALUMINUM DISC (FOUND IN PLACE)		NO.		DATE	
NEW MEXICO STATE PLANE COORDINATES (CENTRAL ZONE-N.A.D. 1983)		BY		DATE	
N=1,483,154.978		NO.		DATE	
E=1,545,048.210		NO.		DATE	
PUBLISHED EL=5283.22 (NAD 1988)		NO.		DATE	
GROUND TO GRID FACTOR=0.999661580		NO.		DATE	
DELTA ALPHA ANGLE=011'00.11"		NO.		DATE	
REVISIONS		REMARKS		BY	
DESIGN		DATE		DATE	
DESIGNED BY: NV		DATE: MAY 15, 2019		DATE: MAY 15, 2019	
DRAWN BY: SAE		DATE: APR 18, 2019		DATE: APR 18, 2019	
DWG NAME: DRAINAGE EXHIBIT 2.dwg PROJ #:		R303699.04		R303699.04	
CHECKED BY: SAE		DATE: MAY 23, 2019		DATE: MAY 23, 2019	

Designed By:

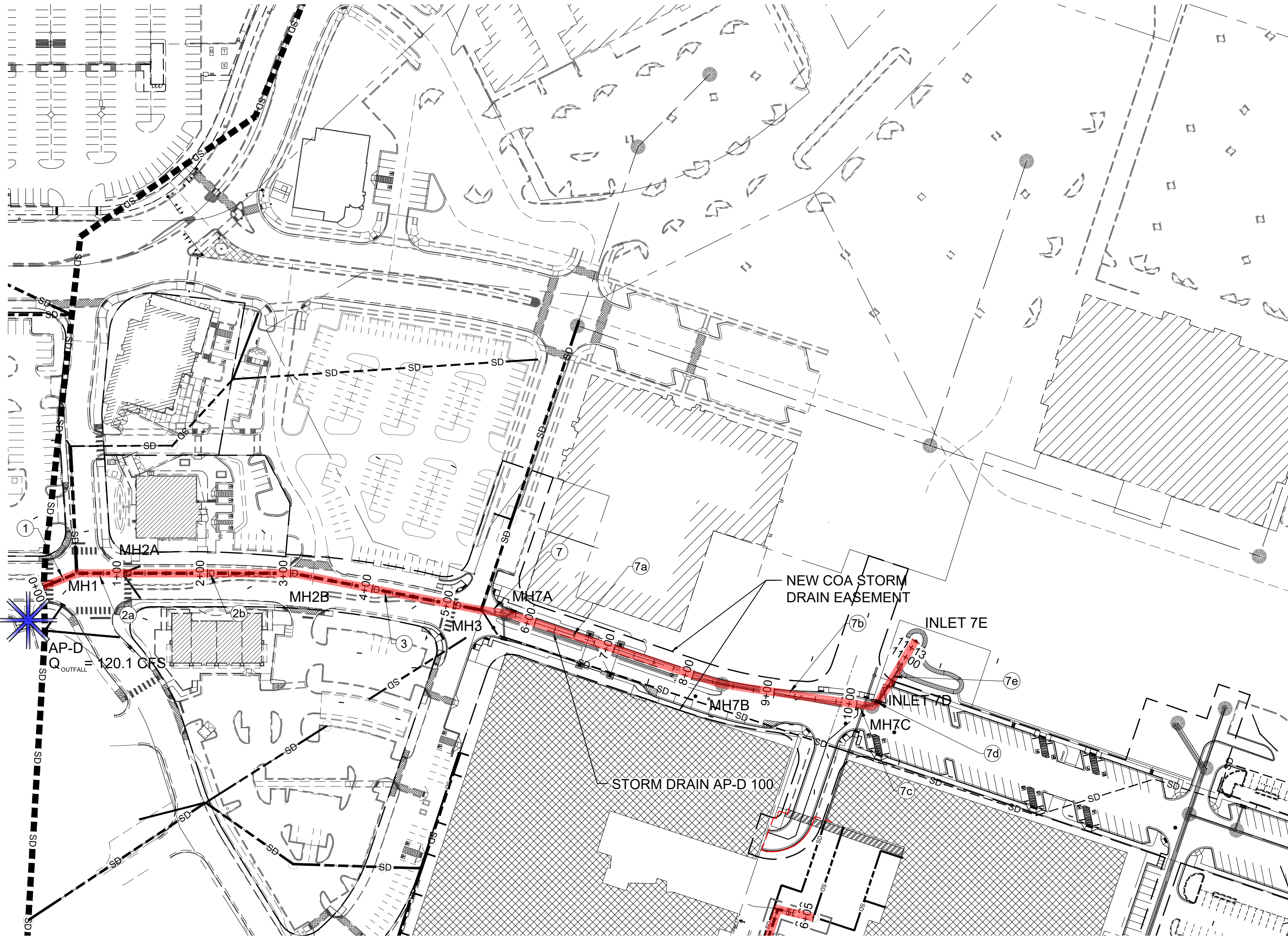
HUITT-ZOLIARS

Huitt-Zollars, Inc. Rio Rancho
333 Rio Rancho Drive NE, Suite 101
Rio Rancho, New Mexico 87124
Phone (505) 892-5141 Fax (505) 892-3259

WINROCK TOWN CENTER	
PHASE B INFRASTRUCTURE IMPROVEMENTS	
TITLE: STORM DRAIN AP-B 400 & 500	
Design Review Committee	City Engineer
Ms./Day/Yr.	
Ms./Day/Yr.	
Last Update	
City Project No.	
4553.90	
Zone Map No.	J-19-Z
Sheet	Of
EXHIBIT 4	



Plotted: 5/23/2019 8:03:22 AM, By:Edwards, Scott
H:\proj\R303699\04 - Phase C Road B Extension\TDD\05 Design\05 - 2 Drainage\Exhibit\DRAINAGE EXHIBIT 2.dwg
Last Saved: 5/23/2019 8:03:22 AM, Saved by:

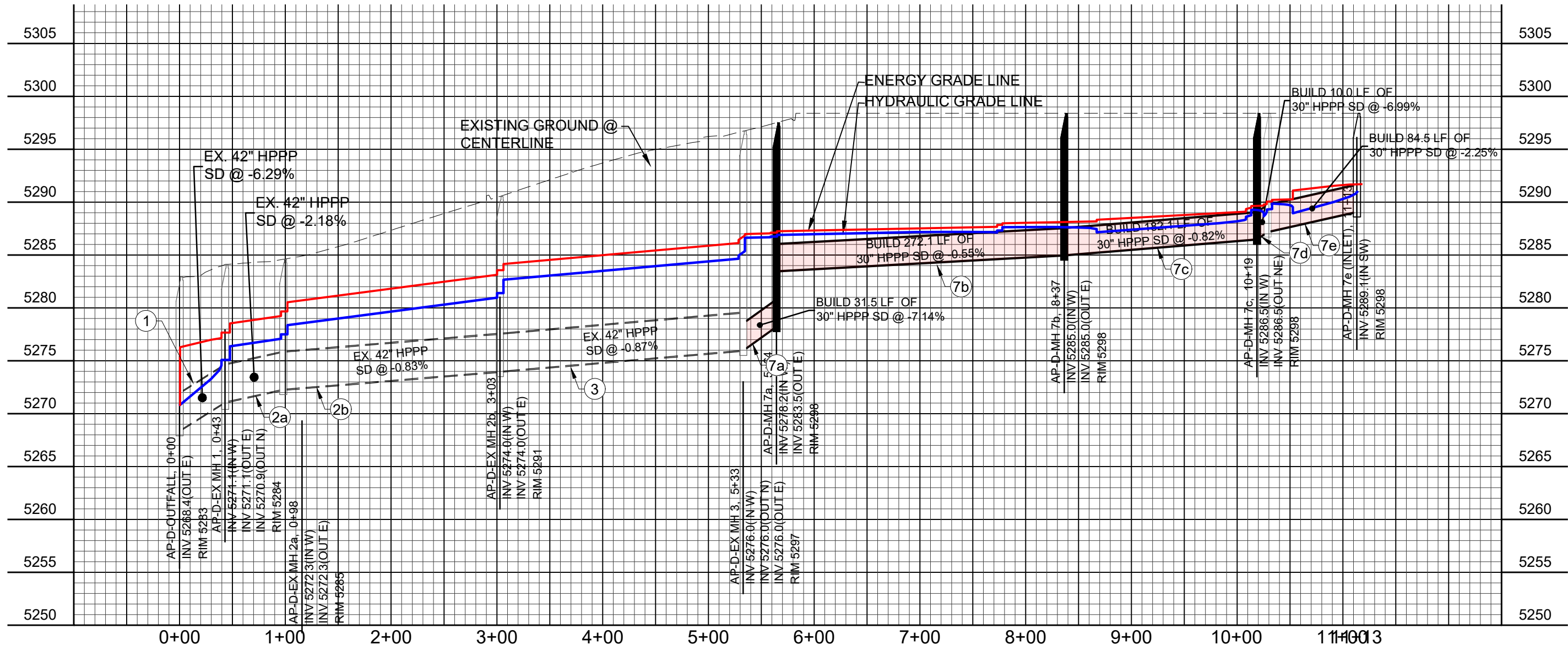


STORM DRAIN AP-D 100

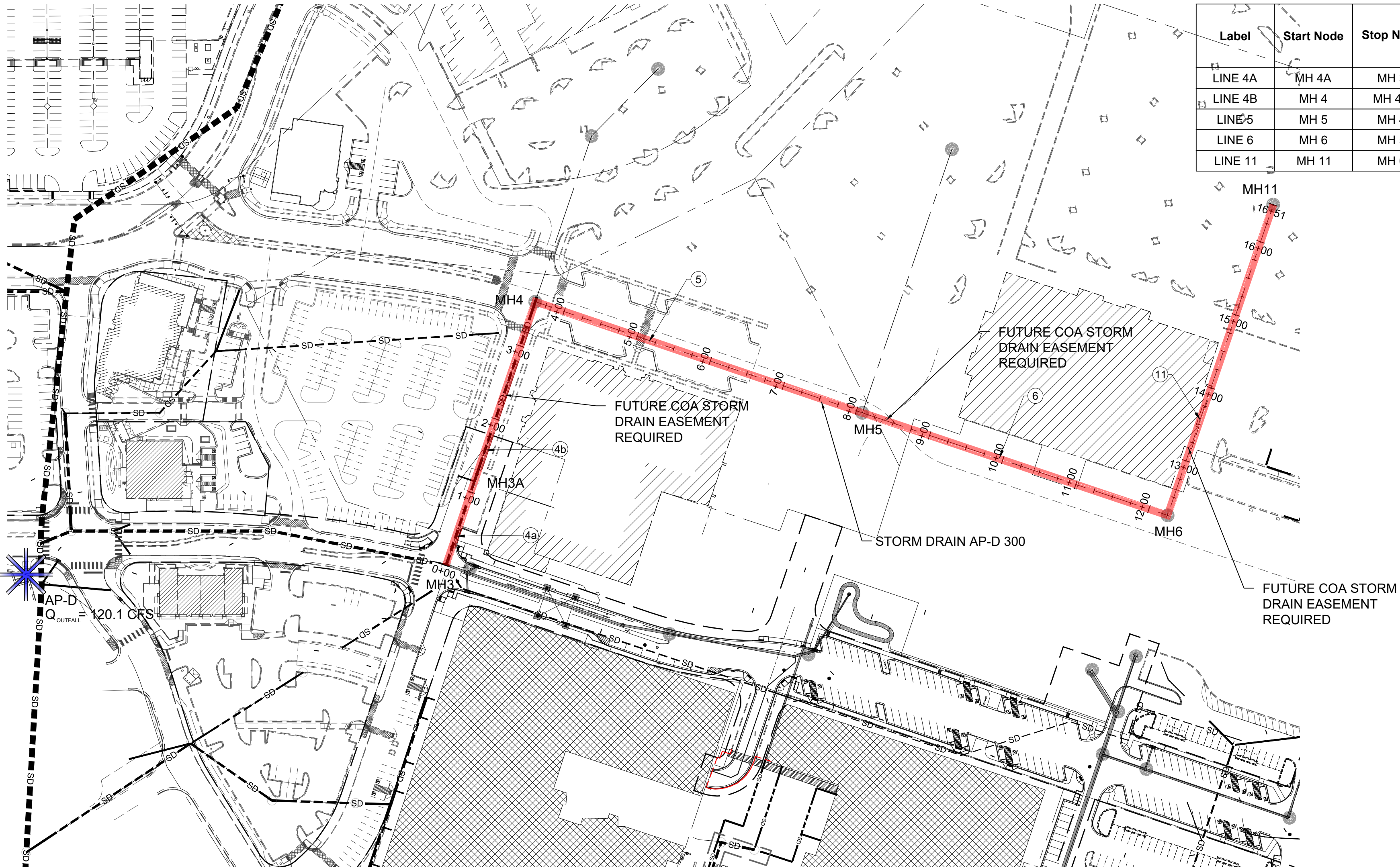
STORM CAD OUTPUT

Label	Start Node	Stop Node	Diameter (in)	Length (ft)	Allowable Flow (cfs)	Velocity (ft/s)	Invert (Start) (ft)	Invert (Stop) (ft)	Elevation Ground (Start) (ft)	Elevation Ground (Stop) (ft)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)
LINE 1	MH 1	AP-D	42.0	43.0	120.1	25.88	5,271.10	5,268.40	5,284.10	5,282.94	5,274.35	5,270.61	5,276.93	5,276.06
LINE 2A	MH 2A	MH 1	42.0	55.4	113.4	11.79	5,272.30	5,271.10	5,284.59	5,284.10	5,276.86	5,276.15	5,279.02	5,278.31
LINE 2B	MH 2	MH 2A	42.0	204.4	113.4	11.79	5,274.00	5,272.30	5,290.53	5,284.59	5,280.75	5,278.15	5,282.91	5,280.31
LINE 3	MH 3	MH 2	42.0	228.2	93.8	9.75	5,276.00	5,274.00	5,296.69	5,290.53	5,284.44	5,282.45	5,285.92	5,283.93
LINE 7A	MH 7A	MH 3	30.0	30.4	23.5	7.48	5,278.25	5,276.00	5,297.22	5,296.69	5,286.47	5,286.41	5,286.82	5,286.76
LINE 7B	MH 7B	MH 7A	30.0	213.6	23.5	7.48	5,285.00	5,283.50	5,297.26	5,297.22	5,287.12	5,286.68	5,287.55	5,287.04
LINE 7C	MH 7C	MH 7B	30.0	235.3	23.5	7.48	5,286.50	5,285.00	5,296.00	5,297.26	5,288.15	5,287.43	5,288.88	5,287.78
LINE 7D	MH 7D	MH 7C	30.0	19.7	23.5	7.48	5,287.20	5,286.50	5,296.87	5,296.00	5,288.85	5,289.06	5,289.58	5,289.41
LINE 7E	INLET	MH 7D	30.0	85.0	23.5	7.48	5,289.10	5,287.20	5,294.52	5,296.87	5,290.75	5,289.64	5,291.48	5,290.00

AS BUILT INFORMATION				BENCH MARKS				SURVEY INFORMATION				ENGINEER'S SEAL			
CONTRACTOR	DATE	WORK BY	DATE	FOUND MONUMENT "20_H18"	DATE	FIELD NOTES	NO.	NO.	DATE	BY	NO.	DATE	REMARKS	BY	
INSPECTOR'S	DATE	ACCEPTANCE BY	DATE	STANDARD 3 1/4" ALUMINUM DISC (FOUND IN PLACE)											
VERIFICATION BY	DATE	PROWSES	DATE	NEW MEXICO STATE PLANE COORDINATES (CENTRAL ZONE-N.A.D. 1983)											
PROWSES	DATE	PROWSES	DATE	N=1,483,154.978											
MICRO-FILM INFORMATION				E=1,545,048.210				DESIGNED BY: NV				DATE: MAY 15, 2019			
RECORDED BY				PUBLISHED EL=5283.22 (NAD 1988)				DRAWN BY: SAE				DATE: APR 18, 2019			
NO.				GROUND TO GRID FACTOR=0.999661580				DWG NAME: DRAINAGE EXHIBIT 2.dwg PROJ #:				R304101.01			
				DELTA ALPHA ANGLE=0°11'00.11"				CHECKED BY: SAE				DATE: MAY 23, 2019			



Plotted: 5/26/2019 10:41:18 AM By: Edging, Scott
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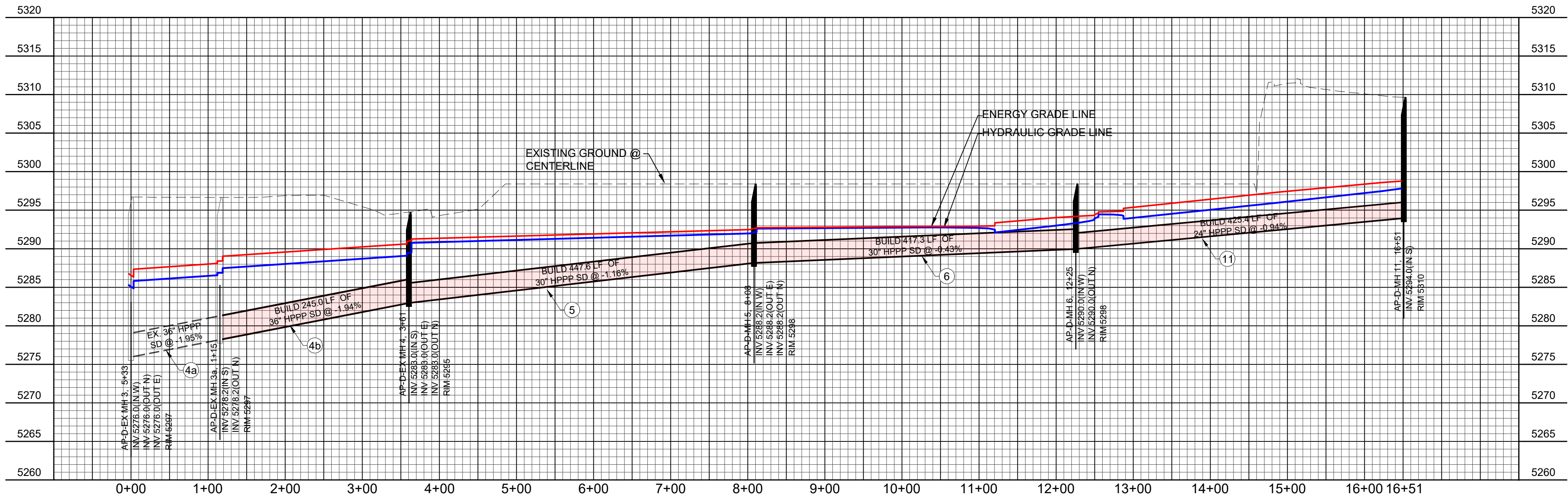
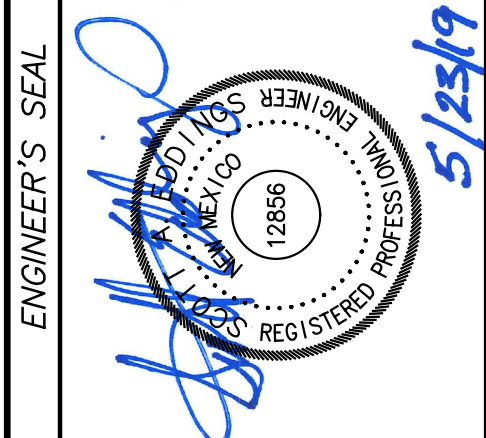


STORM DRAIN AP-D 300

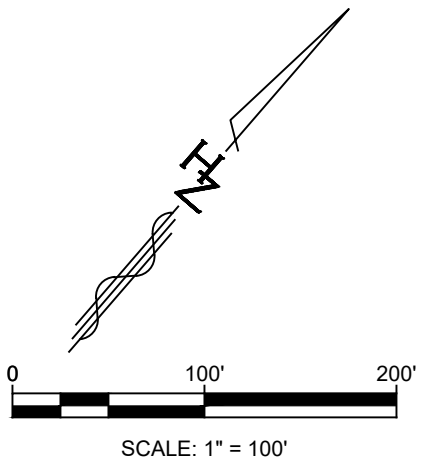
STORM CAD OUTPUT

Label	Start Node	Stop Node	Diameter (in)	Length (ft)	Allowable Flow (cfs)	Velocity (ft/s)	Invert (Start) (ft)	Invert (Stop) (ft)	Elevation Ground (Start) (ft)	Elevation Ground (Stop) (ft)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)
LINE 4A	MH 4A	MH 3	36.0	115.0	70.3	9.95	5,278.25	5,276.00	5,296.06	5,296.69	5,286.46	5,285.70	5,287.99	5,287.24
LINE 4B	MH 4	MH 4A	36.0	242.0	70.3	9.95	5,283.00	5,278.25	5,294.74	5,296.06	5,288.97	5,287.38	5,290.51	5,288.92
LINE 5	MH 5	MH 4	30.0	477.5	28.0	5.70	5,288.20	5,283.00	5,298.00	5,294.74	5,291.87	5,290.63	5,292.38	5,291.14
LINE 6	MH 6	MH 5	30.0	417.5	14.0	9.35	5,292.50	5,288.20	5,298.40	5,298.00	5,293.76	5,292.48	5,294.26	5,292.60
LINE 11	MH 11	MH 6	24.0	425.2	14.0	9.38	5,296.92	5,292.50	5,303.80	5,298.40	5,298.27	5,294.39	5,298.87	5,294.70

AS BUILT INFORMATION				BENCH MARKS				SURVEY INFORMATION				ENGINEER'S SEAL				REVISIONS			
CONTRACTOR	DATE	WORK BY	DATE	FOUND MONUMENT "20_H18"	DATE	FIELD NOTES	BY	NO.	DATE	BY	NO.	DATE	REMARKS	BY	NO.	DATE	REMARKS	BY	NO.
INSPECTOR'S	DATE	ACCEPTANCE BY	DATE	STANDARD 3 1/4" ALUMINUM DISC (FOUND IN PLACE)															
VERIFICATION BY	DATE	DATE	DATE	NEW MEXICO STATE PLANE COORDINATES (CENTRAL ZONE-N.A.D. 1983)															
DATE	DATE	DATE	DATE	N=1,483,154.978															
DATE	DATE	DATE	DATE	E=1,545,048.210															
DATE	DATE	DATE	DATE	PUBLISHED EL=5283.22 (NAD 1988)															
DATE	DATE	DATE	DATE	GROUND TO GRID FACTOR=0.999661580															
DATE	DATE	DATE	DATE	DELTA ALPHA ANGLE=-0°11'00.11"															
DATE	DATE	DATE	DATE																
DATE	DATE	DATE	DATE																



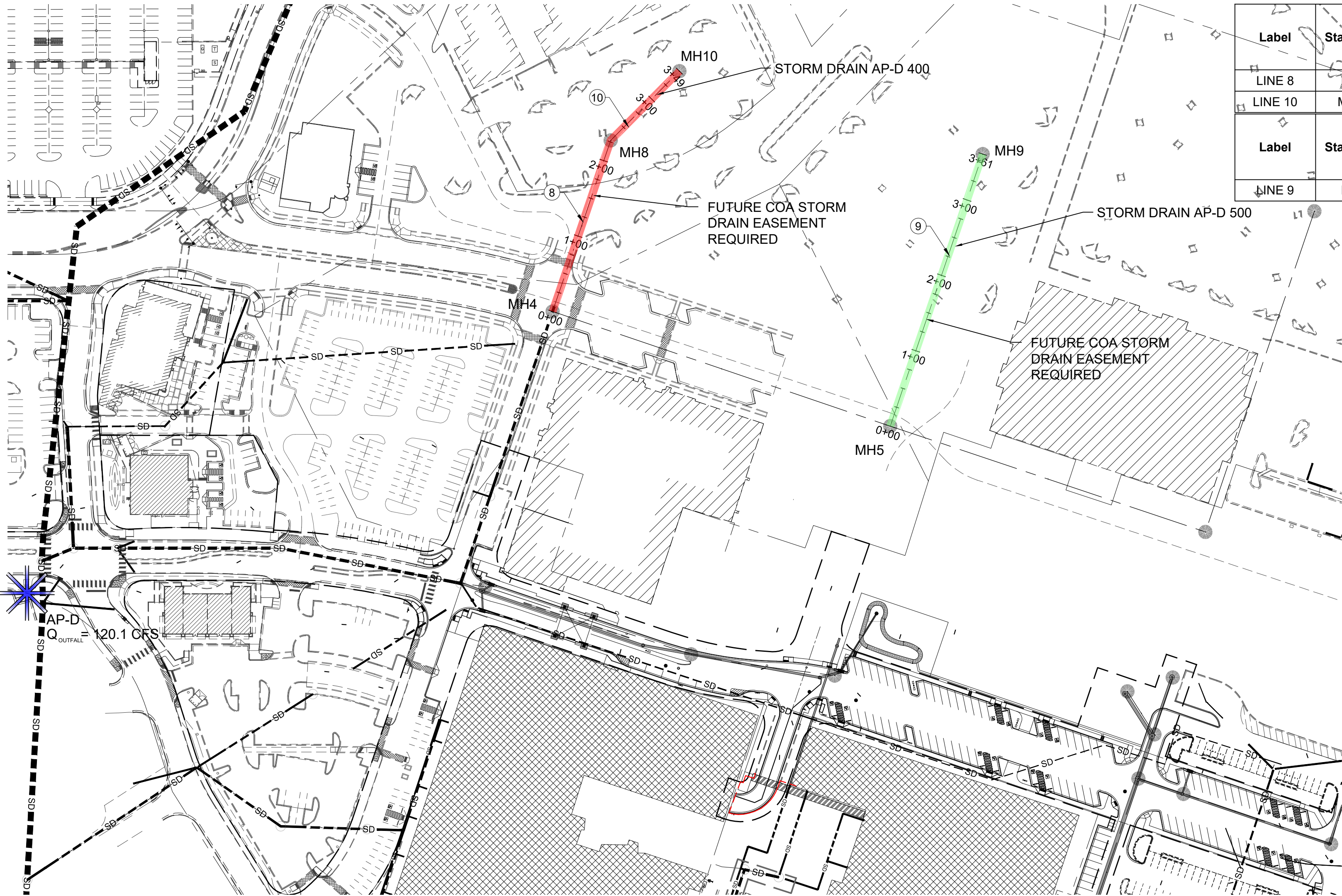
PROFILE VIEW: STORM DRAIN AP-D 300



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WINROCK TOWN CENTER			
PHASE B INFRASTRUCTURE IMPROVEMENTS			
TITLE: STORM DRAIN AP-D 300			
Design Review Committee	City Engineer	Ms./Day/Yr.	
		Last Update	
City Project No.	Zone Map No.	Sheet	Of
4553.90	J-19-Z		EXHIBIT 6

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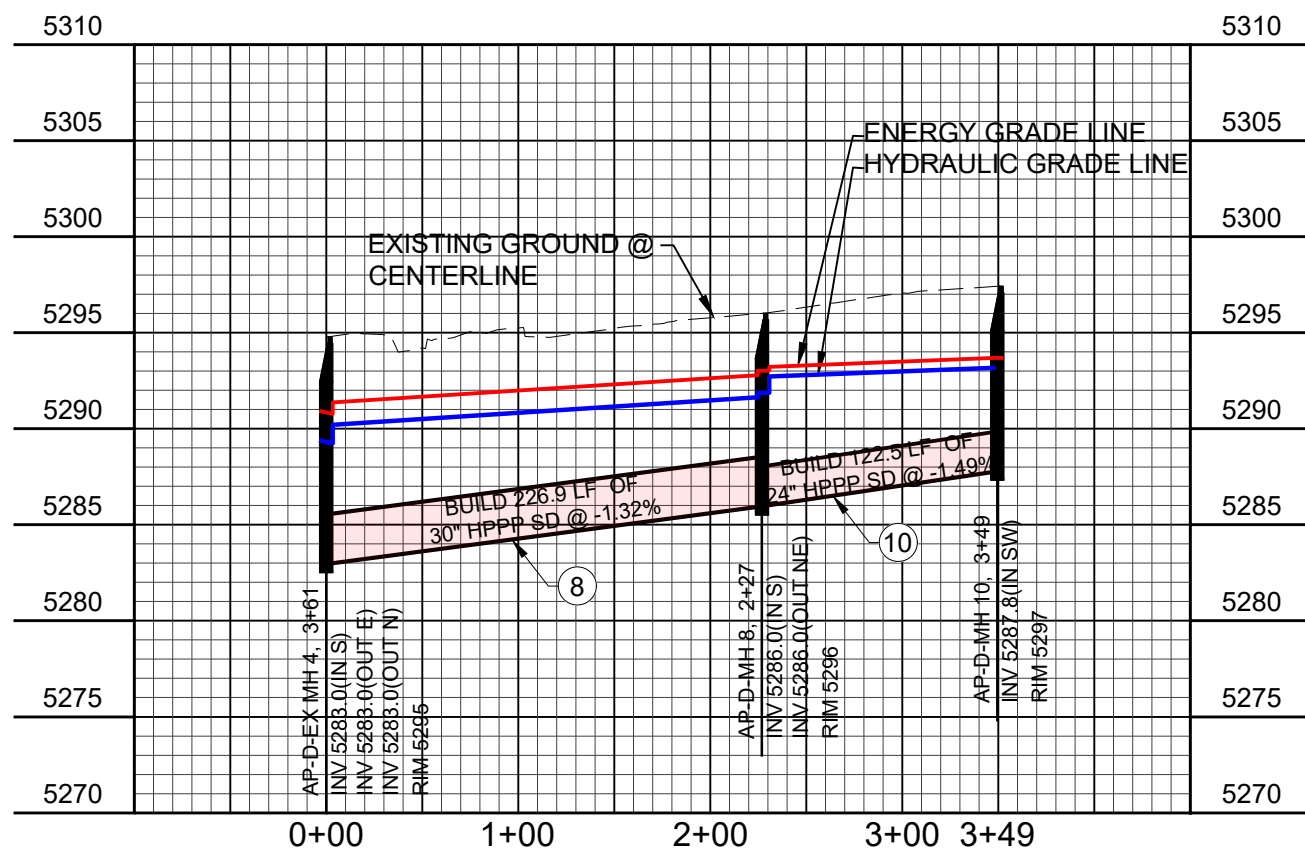


STORM DRAIN AP-D 400 & 500

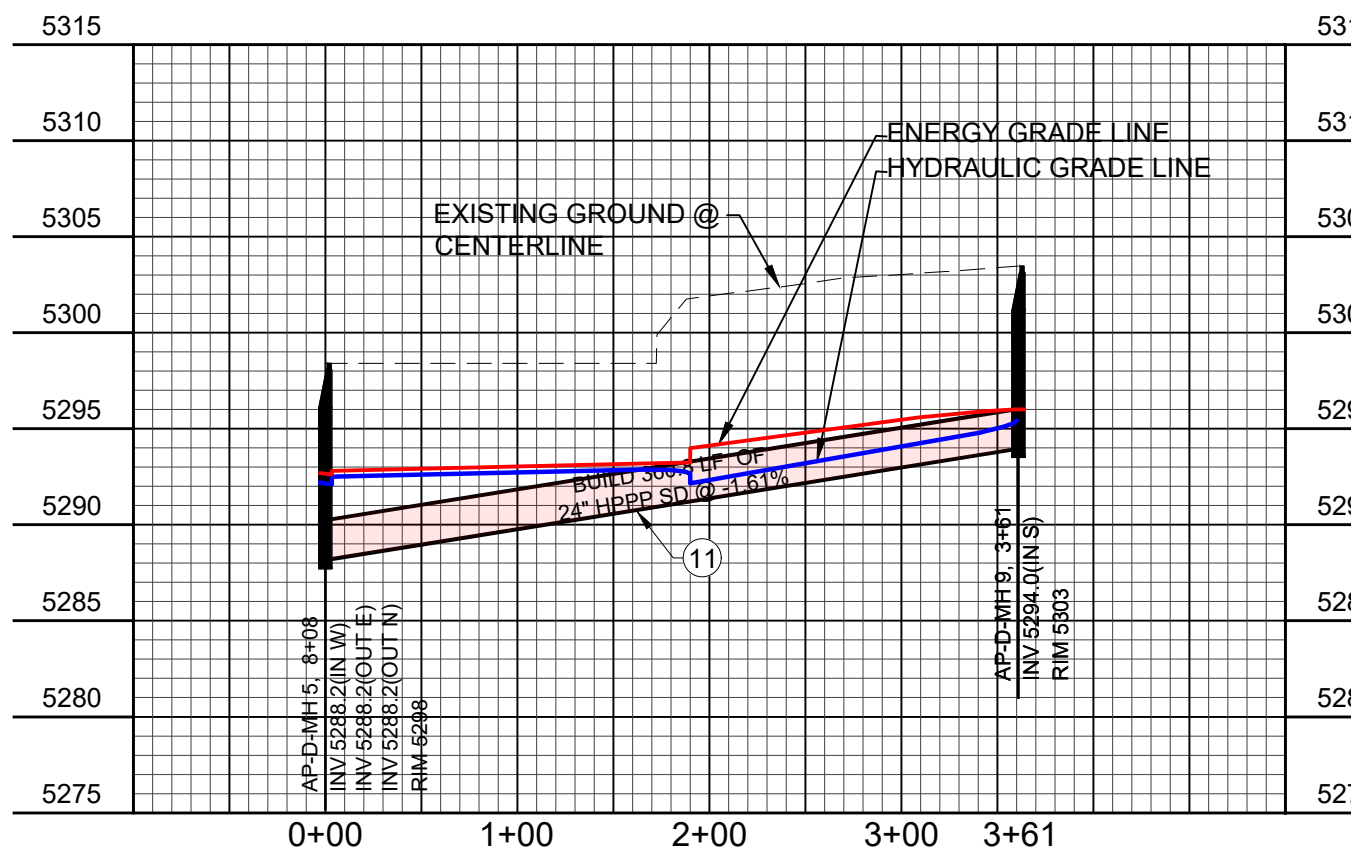
STORM CAD OUTPUT

Label	Start Node	Stop Node	Diameter (in)	Length (ft)	Allowable Flow (cfs)	Velocity (ft/s)	Invert (Start) (ft)	Invert (Stop) (ft)	Elevation Ground (Start) (ft)	Elevation Ground (Stop) (ft)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)
LINE 8	MH 8	MH 4	30.0	227.2	42.3	5.98	5,286.00	5,283.00	5,296.00	5,294.74	5,291.68	5,290.25	5,292.83	5,291.40
LINE 10	MH 10	MH 8	24.0	121.8	18.0	5.73	5,287.82	5,286.00	5,297.00	5,296.00	5,293.21	5,292.75	5,293.72	5,293.26
Label	Start Node	Stop Node	Diameter (in)	Length (ft)	Allowable Flow (cfs)	Velocity (ft/s)	Invert (Start) (ft)	Invert (Stop) (ft)	Elevation Ground (Start) (ft)	Elevation Ground (Stop) (ft)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)
LINE 9	MH 9	MH 5	24.0	361.4	14.0	11.02	5,294.00	5,288.20	5,303.00	5,298.00	5,295.35	5,292.45	5,295.95	5,292.76

AS BUILT INFORMATION		BENCH MARKS		SURVEY INFORMATION		ENGINEER'S SEAL		REVISIONS		DESIGN	
CONTRACTOR	DATE	FOUND MONUMENT "20_H18"	DATE	FIELD NOTES	DATE			NO.	DATE	REMARKS	BY
WORK BY	DATE	STANDARD 3 1/4" ALUMINUM DISC (FOUND IN PLACE)	DATE	BY	DATE			NO.	DATE	REMARKS	BY
INSPECTOR'S	DATE	NEW MEXICO STATE PLANE COORDINATES (CENTRAL ZONE-N.A.D. 1983)	DATE	NO.	DATE			NO.	DATE	REMARKS	BY
ACCEPTANCE BY	DATE	N=1,483,154.978	DATE	NO.	DATE			NO.	DATE	REMARKS	BY
VERIFICATION BY	DATE	E=1,545,048.210	DATE	NO.	DATE			NO.	DATE	REMARKS	BY
DESIGNED BY	DATE	PUBLISHED EL=5283.22 (NAD 1988)	DATE	NO.	DATE	REGISTERED PROFESSIONAL ENGINEER	DATE: MAY 15, 2019	DESIGNED BY: NV	DATE: MAY 15, 2019	DESIGN	BY
DRAWN BY	DATE	GROUND TO GRID FACTOR=0.999661580	DATE	NO.	DATE	12856	DATE: APR 18, 2019	DRAWN BY: SAE	DATE: APR 18, 2019	DESIGN	BY
RECORDED BY	DATE	DELTA ALPHA ANGLE=0°11'00.11"	DATE	NO.	DATE	5/23/19	DATE: MAY 23, 2019	DWG NAME: DRAINAGE EXHIBIT 2.dwg PROJ #:	DATE: MAY 23, 2019	DESIGN	BY
NO.	DATE		DATE	NO.	DATE		DATE: MAY 23, 2019	CHECKED BY: SAE	DATE: MAY 23, 2019	DESIGN	BY



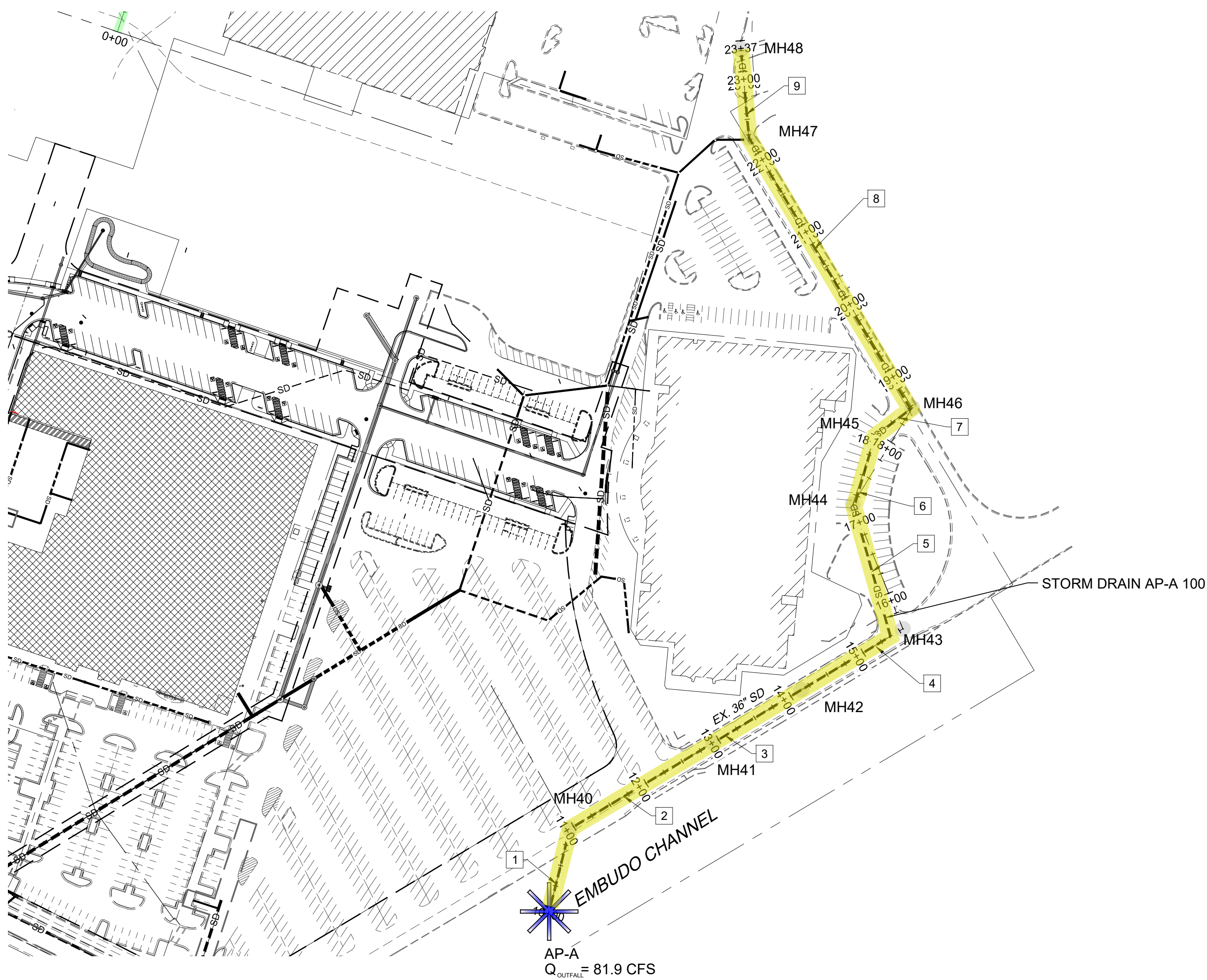
PROFILE VIEW: STORM DRAIN AP-D 400



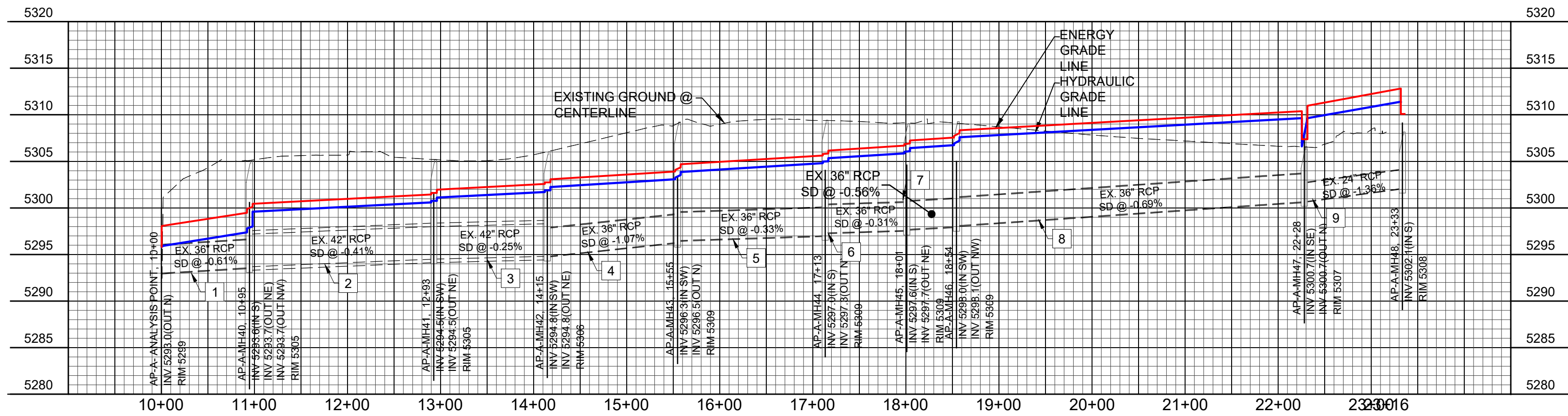
PROFILE VIEW: STORM DRAIN AP-D 500

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WINROCK TOWN CENTER			
PHASE B INFRASTRUCTURE IMPROVEMENTS			
TITLE: STORM DRAIN AP-D 400 & 500			
Design Review Committee	City Engineer	Ms./Day/Yr.	Ms./Day/Yr.
Last Update			
City Project No.	Zone Map No.	Sheet	Of
4553.90	J-19-Z		EXHIBIT 7



STORM DRAIN AP-A 100 EXISTING CONDITIONS

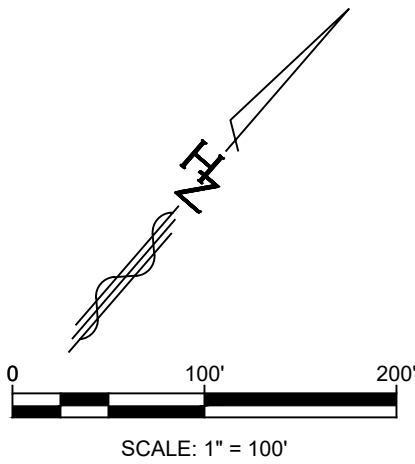


PROFILE VIEW: STORM DRAIN AP-A 100

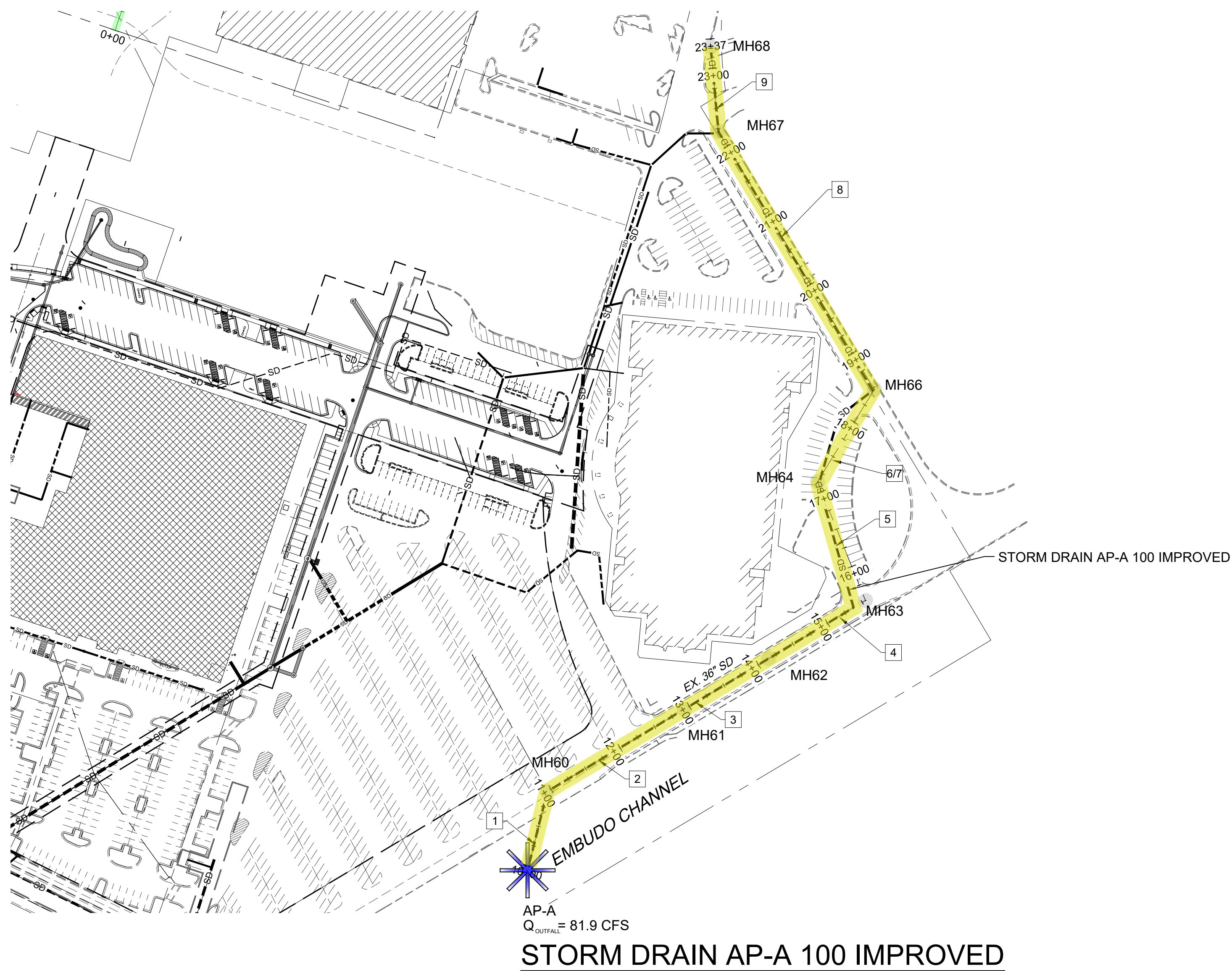
STORM CAD OUTPUT

Label	Start Node	Stop Node	Diameter (in)	Length (ft)	Flow (cfs)	Velocity (ft/s)	Invert (Start) (ft)	Invert (Stop) (ft)	Elevation Ground (Start) (ft)	Elevation Ground (Stop) (ft)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)
LINE 1	MH 40	AP-A	36.0	94.6	81.9	11.59	5,293.58	5,293.00	5,305.13	5,302.00	5,297.34	5,295.79	5,299.42	5,298.01
LINE 2	MH 41	MH 40	42.0	198.0	71.4	7.42	5,294.50	5,293.58	5,305.55	5,305.13	5,300.54	5,299.54	5,301.40	5,300.40
LINE 3	MH 42	MH 41	42.0	122.0	71.4	7.42	5,295.00	5,294.50	5,306.53	5,305.55	5,301.67	5,301.06	5,302.53	5,301.91
LINE 4	MH 43	MH 42	36.0	140.0	51.4	7.27	5,296.30	5,295.00	5,308.94	5,306.53	5,303.04	5,302.20	5,303.86	5,303.03
LINE 5	MH 44	MH 43	36.0	158.7	51.4	7.27	5,297.02	5,296.30	5,309.32	5,308.94	5,304.76	5,303.82	5,305.58	5,304.64
LINE 6	MH 45	MH 44	36.0	87.6	51.4	7.27	5,297.59	5,297.02	5,309.34	5,309.32	5,305.82	5,305.30	5,306.64	5,306.12
LINE 7	MH 46	MH 45	36.0	53.4	51.4	7.27	5,298.09	5,297.59	5,309.44	5,309.34	5,306.70	5,306.38	5,307.52	5,307.20
LINE 8	MH 47	MH 46	36.0	373.8	49.4	6.99	5,300.67	5,298.09	5,306.57	5,309.44	5,309.59	5,307.54	5,310.35	5,308.30
LINE 9	MH 48	MH 47	24.0	105.3	30.1	9.58	5,302.10	5,300.67	5,308.62	5,306.57	5,311.36	5,309.49	5,312.78	5,310.92

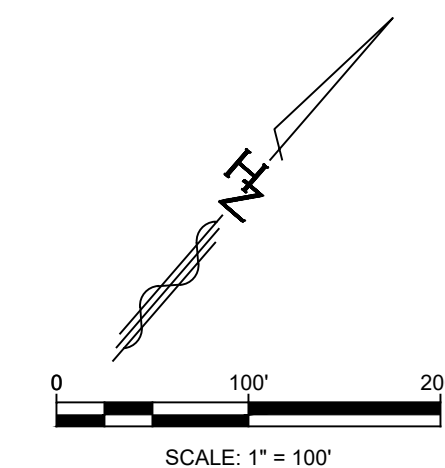
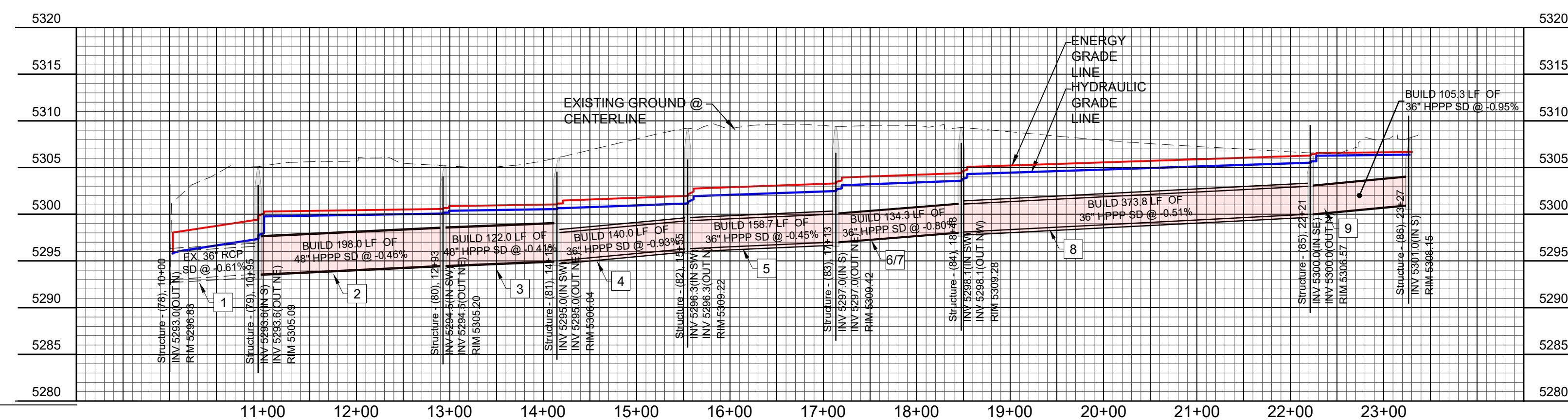
AS BUILT INFORMATION		BENCH MARKS		SURVEY INFORMATION		ENGINEER'S SEAL		REVISIONS		DESIGN	
CONTRACTOR	DATE	FOUND MONUMENT "20_H18"	DATE	NO.	BY	ENGINEER'S SEAL	DATE	REMARKS	BY	DESIGNED BY: NV	DATE: MAY 15, 2019
WORK BY	DATE	STANDARD 3 1/4" ALUMINUM DISC (FOUND IN PLACE)	DATE							DRAWN BY: SAE	DATE: APR 18, 2019
INSPECTOR'S	DATE	NEW MEXICO STATE PLANE COORDINATES (CENTRAL ZONE-N.A.D. 1983)	DATE							DWG NAME: DRAINAGE EXHIBIT 2-9.dwg PROJ #:	R303699.04
ACCEPTANCE BY	DATE	N=1,483,154.978	DATE							CHECKED BY: SAE	DATE: MAY 23, 2019
VERIFICATION BY	DATE	E=1,545,048.210	DATE								
DRAWINGS	DATE	PUBLISHED EL=5283.22 (NAD 1988)	DATE								
BY	DATE	GROUND TO GRID FACTOR=0.999661680	DATE								
MICRO-FILM INFORMATION	DATE	DELTA ALPHA ANGLE=0°11'00.11"	DATE								
RECORDED BY	DATE		DATE								
NO.											



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Rio Rancho, New Mexico 87124			
Phone (505) 892-5141 Fax (505) 892-3259			
WINROCK TOWN CENTER			
PHASE B INFRASTRUCTURE IMPROVEMENTS			
TITLE: STORM DRAIN AP-A 100 EX. CONDITIONS			
Design Review Committee	City Engineer	Ms./Day/Yr.	Ms./Day/Yr.
City Project No.	Zone Map No.	Sheet	Of
4553.90	J-19-Z		EXHIBIT 8



Label	Start Node	Stop Node	Diameter (in)	Length (ft)	Flow (cfs)	Velocity (ft/s)	Invert (Start) (ft)	Invert (Stop) (ft)	Elevation Ground (Start) (ft)	Elevation Ground (Stop) (ft)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)
LINE 1	MH 60	AP-A	36.0	94.6	81.9	11.59	5,293.58	5,293.00	5,305.13	5,302.00	5,297.34	5,295.79	5,299.42	5,298.01
LINE 2	MH 61	MH 60	48.0	198.0	71.4	5.68	5,294.50	5,293.58	5,305.55	5,305.13	5,300.05	5,299.76	5,300.55	5,300.26
LINE 3	MH 62	MH 61	48.0	122.0	71.4	5.68	5,295.00	5,294.50	5,306.53	5,305.55	5,300.53	5,300.35	5,301.03	5,300.85
LINE 4	MH 63	MH 62	36.0	140.0	51.4	7.27	5,296.30	5,295.00	5,308.94	5,306.53	5,301.13	5,300.64	5,301.95	5,301.46
LINE 5	MH 64	MH 63	36.0	158.7	51.4	7.27	5,297.02	5,296.30	5,309.32	5,308.94	5,302.47	5,301.91	5,303.29	5,302.73
LINE 6/7	MH 66	MH 64	36.0	134.4	51.4	7.27	5,298.09	5,297.02	5,309.44	5,309.32	5,303.56	5,303.09	5,304.38	5,303.91
LINE 8	MH 67	MH 66	36.0	373.8	49.4	6.99	5,300.00	5,298.09	5,306.57	5,309.44	5,305.50	5,304.29	5,306.26	5,305.05
LINE 9	MH 68	MH 67	36.0	105.3	30.1	4.26	5,301.00	5,300.00	5,308.15	5,306.57	5,306.37	5,306.24	5,306.65	5,306.52



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WINROCK TOWN CENTER PHASE B INFRASTRUCTURE IMPROVEMENTS	
TITLE:	STORM DRAIN AP-A 100 IMPROVED

Design Review Committee		City Engineer		Last Update	Mo./Day/Yr.		Mo./Day/Yr.	
City Project No.		Zone Map No.		Sheet		Of		
4553.90		J-19-Z				EXHIBIT 9		



Office Locations

Albuquerque, New Mexico (505) 883-8114
Austin, Texas (512) 237-1129
Dallas, Texas (214) 871-3311
Denver, Colorado (303) 740-7325
El Paso, Texas (915) 587-4339
Fort Worth, Texas (817) 335-3000
Glendale, California (818-456-1833
Houston (Downtown), Texas (713) 622-1180
Houston (West), Texas (281) 496-0066
Irvine, California (949) 988-5815
Los Angeles, California (310) 820-4600
Oklahoma City, Oklahoma (405) 842-0363
Ontario, California (909) 941-7799
Orlando , Florida (407) 839-0414
Phoenix, Arizona (602) 952-9123
Rio Rancho, New Mexico (505) 892-5141
Seattle, Washington (206) 324-5500
Tacoma, Washington (253) 627-9131
Thousand Oaks, California (805) 418-1802



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