CITY OF ALBUQUERQUE

Planning Department
Brennon Williams, Director

Mayor Timothy M. Keller

December 12, 2025

Kelly Klein
Bohannan Huston, Inc.
7500 Jefferson St NE
Albuquerque, NM 87109

RE: TA Lands Subdivision
99999 Unser SW
Grading & Drainage Plan and Drainage Report
Engineer's Stamp Date: 12/05/2025
Hydrology File: N09D017
Case # HYDR-2025-00387

Dear Ms. Klein:

PO Box 1293

Albuquerque

NM 87103

www.cabq.gov

Based upon the information provided in your resubmittal received 12/08/2025, the Grading & Drainage Plan and Drainage Report are approved for Grading Permit, for action by the DFT on Site Plan for Building Permit, and for action by the DHO for platting.

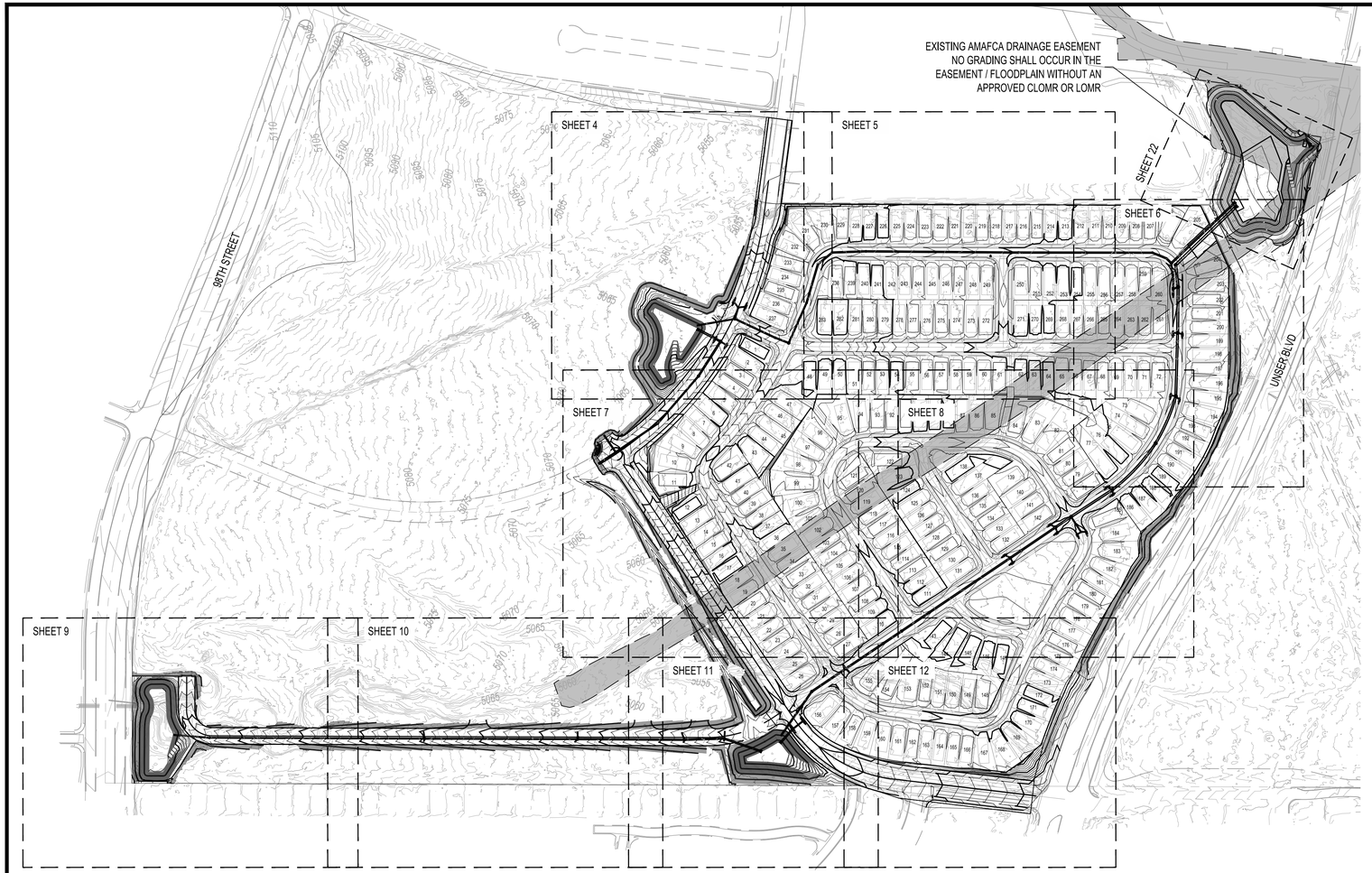
PRIOR TO BUILDING PERMIT:
An Engineer's Certification of the compacted pad and grading (Pad Certification), per the DPM Chapter 22.7: *Engineer's Certification Checklist for Non-Subdivision,* is required prior to issuing Building Permit

As a reminder, if the project total area of disturbance (including the staging area and any work within the adjacent Right-of-Way) is 1 acre or more, then an Erosion and Sediment Control (ESC) Plan and Owner's certified Notice of Intent (NOI) is required to be submitted to the Stormwater Quality Engineer (Doug Hughes, PE, jhughes@cabq.gov, 505-924-3420) 14 days prior to any earth disturbance.

If you have any questions, please contact me at 505-924-3314 or amontoya@cabq.gov.

Sincerely,

Anthony Montoya, Jr., P.E. C.F.M.
Senior Engineer, Hydrology
Planning Department, Development Review Services



GENERAL NOTES

1. ALL WORK DETAILED ON THESE PLANS AND PERFORMED UNDER THIS CONTRACT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS AND THE PROJECT GEOTECHNICAL REPORT. WHERE APPLICABLE, CITY OF ALBUQUERQUE PUBLIC WORKS STANDARDS SHALL APPLY.

2. THE CONTRACTOR SHALL ABIDE BY ALL LOCAL, STATE, AND FEDERAL LAWS, RULES AND REGULATIONS WHICH APPLY TO THE CONSTRUCTION OF THESE IMPROVEMENTS, INCLUDING EPA REQUIREMENTS WITH RESPECT TO STORM WATER DISCHARGE.

3. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL FIELD VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL POTENTIAL OBSTRUCTIONS INCLUDING ALL UNDERGROUND UTILITIES. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION OBSERVER OR ENGINEER SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT OF DELAY.

4. TWO (2) WORKING DAYS PRIOR TO ANY EXCAVATION, THE CONTRACTOR SHALL CONTACT LINE LOCATING SERVICE FOR LOCATION OF EXISTING UTILITIES.

5. ALL ELECTRICAL, TELEPHONE, CABLE TV, GAS AND OTHER UTILITY LINES, CABLES, AND APPURTENANCES ENCOUNTERED DURING CONSTRUCTION THAT REQUIRE RELOCATION, SHALL BE COORDINATED WITH THAT UTILITY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION OF ALL NECESSARY UTILITY ADJUSTMENTS. NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR DELAYS OR INCONVENIENCES CAUSED BY UTILITY COMPANY WORK CREWS. THE CONTRACTOR MAY BE REQUIRED TO RESCHEDULE HIS ACTIVITIES TO ALLOW UTILITY CREWS TO PERFORM THEIR REQUIRED WORK.

6. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING ALL EXISTING UTILITY LINES WITHIN THE CONSTRUCTION AREA. ANY DAMAGE TO EXISTING FACILITIES CAUSED BY CONSTRUCTION ACTIVITY SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE AND APPROVED BY THE CONSTRUCTION OBSERVER.

7. CONSTRUCTION ACTIVITY SHALL BE LIMITED TO THE PROPERTY AND/OR PROJECT LIMITS. ANY DAMAGE TO ADJACENT PROPERTIES RESULTING FROM THE CONSTRUCTION PROCESS SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE.

8. OVERNIGHT PARKING OF CONSTRUCTION EQUIPMENT SHALL NOT OBSTRUCT DRIVEWAYS OR DESIGNATED TRAFFIC LANES. THE CONTRACTOR SHALL NOT STORE ANY EQUIPMENT OR MATERIAL WITHIN THE PUBLIC RIGHT-OF-WAY.

9. THE CONTRACTOR SHALL OBTAIN ALL THE NECESSARY PERMITS FOR THE PROJECT PRIOR TO COMMENCING CONSTRUCTION (I.E., BARRICADING, TOPSOIL DISTURBANCE, EXCAVATION PERMITS, EPA STORM WATER PERMITS, ETC.).

10. ALL PROPERTY CORNERS DESTROYED DURING CONSTRUCTION SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE. ALL PROPERTY CORNERS MUST BE RESET BY A REGISTERED LAND SURVEYOR.

11. THE CONTRACTOR SHALL PREPARE A CONSTRUCTION TRAFFIC CONTROL AND SIGNING PLAN AND OBTAIN APPROVAL OF SUCH PLAN FROM THE CITY OF ALBUQUERQUE, TRAFFIC ENGINEERING DEPARTMENT, PRIOR TO BEGINNING ANY CONSTRUCTION WORK ON OR ADJACENT TO EXISTING STREETS.

12. ALL BARRICADES AND CONSTRUCTION SIGNING SHALL CONFORM TO APPLICABLE SECTIONS OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD), US DEPARTMENT OF TRANSPORTATION, LATEST EDITION.

13. THE CONTRACTOR SHALL MAINTAIN ALL CONSTRUCTION BARRICADES AND SIGNING AT ALL TIMES. THE CONTRACTOR SHALL VERIFY THE PROPER LOCATION OF ALL BARRICADING AT THE END AND BEGINNING OF EACH DAY.

14. THE CONTRACTOR SHALL TAKE ALL STEPS NECESSARY TO CONFORM WITH EPA REQUIREMENTS, INCLUDING COMPLIANCE WITH NPDES REQUIREMENTS.

GRADING NOTES

1. EXCEPT AS PROVIDED HERIN, GRADING SHALL BE PERFORMED AT THE ELEVATIONS AND IN ACCORDANCE WITH THE DETAILS SHOWN ON THIS PLAN.

2. CONTRACTOR SHALL OBTAIN AND ABIDE BY A TOPSOIL DISTURBANCE PERMIT FROM THE CITY OF ALBUQUERQUE ENVIRONMENTAL HEALTH DIVISION, PRIOR TO CONSTRUCTION. THE COST FOR REQUIRED CONSTRUCTION DUST AND EROSION CONTROL MEASURES SHALL BE INCIDENTAL TO THE PROJECT COST. THE CONTRACTOR SHALL CONFORM TO ALL CITY, COUNTY, STATE, AND FEDERAL DUST CONTROL MEASURES AND REQUIREMENTS AND WILL BE RESPONSIBLE FOR PREPARING AND OBTAINING ALL NECESSARY APPLICATIONS AND APPROVALS.

3. ALL WORK RELATIVE TO FOUNDATION CONSTRUCTION, SITE PREPARATION, AND PAVEMENT INSTALLATION, AS SHOWN ON THIS PLAN, SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE SOILS REPORT. ALL OTHER WORK, UNLESS OTHERWISE STATED OR PROVIDED FOR HEREON, SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS (FIRST PRIORITY), AND/OR THE CITY OF ALBUQUERQUE (COA) STANDARD SPECIFICATIONS FOR PUBLIC WORKS (SECOND PRIORITY)

4. TWO WORKING DAYS PRIOR TO EXCAVATION, CONTRACTOR MUST CONTACT LINE LOCATING SERVICE FOR LOCATION OF EXISTING UTILITIES.

5. PRIOR TO GRADING, ALL VEGETATION DEBRIS, AND NEAR SURFACE ORGANICALLY CONTAMINATED SOIL SHALL BE STRIPPED FROM ALL AREAS TO BE GRADED. VEGETATION AND DEBRIS SHALL BE DISPOSED OF OFF-SITE OR STOCK-PILED FOR USE IN PLANTERS AND NON-STRUCTURAL FILLS.

6. EARTH SLOPES SHALL NOT EXCEED 4 HORIZONTAL TO 1 VERTICAL UNLESS SHOWN OTHERWISE.

7. IT IS THE INTENT OF THESE PLANS THAT THIS CONTRACTOR SHALL NOT PERFORM ANY WORK OUTSIDE OF THE PROPERTY BOUNDARIES EXCEPT AS REQUIRED BY THIS PLAN.

8. THE CONTRACTOR IS TO ENSURE THAT NO SOIL ERODES FROM THE SITE ONTO ADJACENT PROPERTY OR PUBLIC RIGHT-OF-WAY. THIS SHOULD BE ACHIEVED BY CONSTRUCTING TEMPORARY BERMS AT THE PROPERTY LINES WETTING THE SOIL TO PROTECT IT FROM WIND EROSION.

9. A DISPOSAL SITE FOR ALL EXCESS EXCAVATION AND UNSUITABLE MATERIAL SHALL BE OBTAINED BY THE CONTRACTOR IN COMPLIANCE WITH APPLICABLE ENVIRONMENTAL REGULATIONS AND APPROVED BY THE OBSERVER. ALL COSTS INCURRED IN OBTAINING A DISPOSAL SITE AND HAUL THERETO SHALL BE CONSIDERED INCIDENTAL TO THE PROJECT, AND NO SEPARATE MEASUREMENT OR PAYMENT SHALL BE MADE.

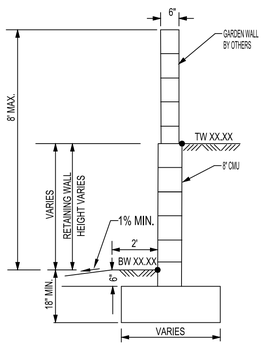
10. PAVING AND ROADWAY GRADES SHALL BE +/- 0.1' FROM PLAN ELEVATIONS. PAD ELEVATION SHALL BE +/- 0.05' FROM BUILDING PLAN ELEVATIONS.

11. ALL SPOT ELEVATIONS ARE TO FLOWLINE UNLESS OTHERWISE NOTED. VALLEY GUTTER ELEVATIONS ARE SHOWN AT FLOWLINE ELEVATION.

12. GRADING SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL REPORT.

LEGEND

PROPOSED SPOT ELEVATION	5235.25
EXISTING SPOT ELEVATION	EX 5235.25
PROPOSED CONTOUR	5025
EXISTING STORM DRAIN LINE	
PROPOSED STORM DRAIN INLET	
PROPOSED STORM DRAIN LINE	
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RETAINING WALL	
GARDEN WALL	
PAD	10 P=5300.00
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SLOPE CHANGE IN REAR YARD	

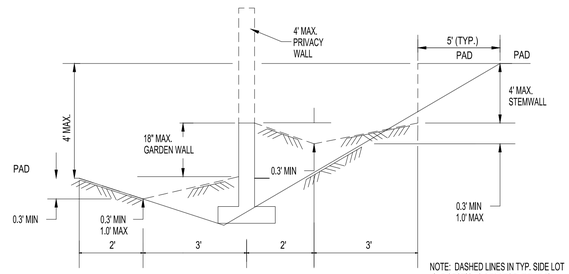


TW=FINISHED GRADE ELEVATION AT TOP OF RETAINING WALL
BW=FINISHED GRADE ELEVATION AT BOTTOM OF RETAINING WALL

TYPICAL RETAINING WALL NOMENCLATURE
NOT TO SCALE

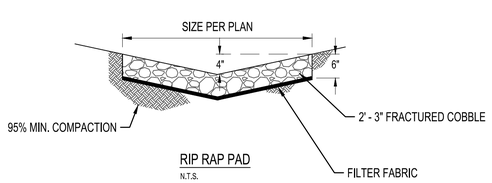
(RETAINING HEIGHT IS TAKEN TO BE DIFFERENCE IN FINISHED GRADES ON LEFT AND RIGHT SIDE OF WALL.)

HEIGHT IS IN ACCORDANCE WITH CITY COMPREHENSIVE ZONING CODE, SECTION 14-16-3-19, GENERAL HEIGHT AND DESIGN REGULATIONS FOR WALLS, FENCES, AND RETAINING WALLS.

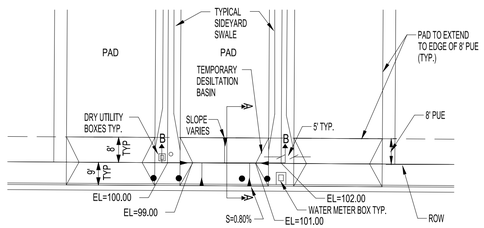


TYPICAL SIDE LOT LINE SECTION
NOT TO SCALE

NOTE: DASHED LINES IN TYP. SIDE LOT LINE SECTIONS REPRESENT THE FINAL CONDITION AFTER THE GARDEN, STEM, AND PRIVACY WALLS HAVE BEEN CONSTRUCTED. THE INTERIM CONDITION, WHICH IS TO BE CONSTRUCTED BY THE GRADING CONTRACTOR AND CERTIFIED BY THE ENGINEER, IS REPRESENTED BY THE SOLID LINES. RETAINING WALLS WILL BE CONSTRUCTED PRIOR TO GRADING CERTIFICATION.

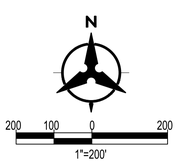


RIP RAP PAD
N.T.S.



TEMPORARY DESILTATION BASIN
NOT TO SCALE

** BOTTOM OF BASIN IS 1' BELOW PROPERTY LINE ELEVATION SEE GRADING PLANS FOR EXACT ELEVATIONS



811
CALL NM ONE-CALL SYSTEM SEVEN (7) DAYS PRIOR TO ANY EXCAVATION

City of Albuquerque
Planning Department
Development Review Services
HYDROLOGY SECTION
APPROVED
DATE: 12-12-2025
BY:
HydroTrans # N09D017

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BH-HOBBS-20250216

CONSULTANTS
Bohannan Huston
www.bhinc.com
800.877.5332

BENCH MARKS
ACS MONUMENT "2_P9
NAD 1983 CENTRAL ZONE
X=1494599.151 *
Y=1464676.438 *
Z=5056.962 * (NAVD 1988)
G-G=0.999686399
MAPPING ANGLE=0°16'46.36"
*U.S. SURVEY FEET

SEAL
KELLY M. KLEIN
NEW MEXICO
24834
REGISTERED PROFESSIONAL ENGINEER
12-05-2025
December 5, 2025

NO.	DATE	DESCRIPTION	BY
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		CONTRACTOR:	
		WORK STAKED BY: DATE:	
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DESIGNED BY: KK
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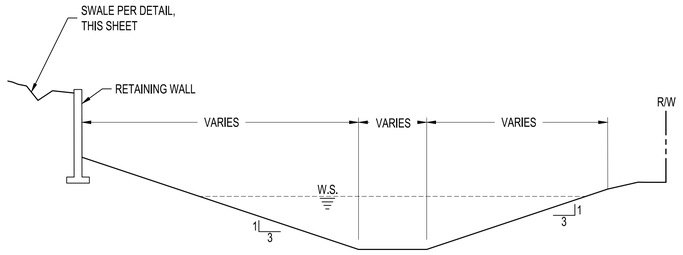
CITY OF ALBUQUERQUE
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ENGINEERING DIVISION

TA LANDS PHASE 1
OVERALL GRADING PLAN

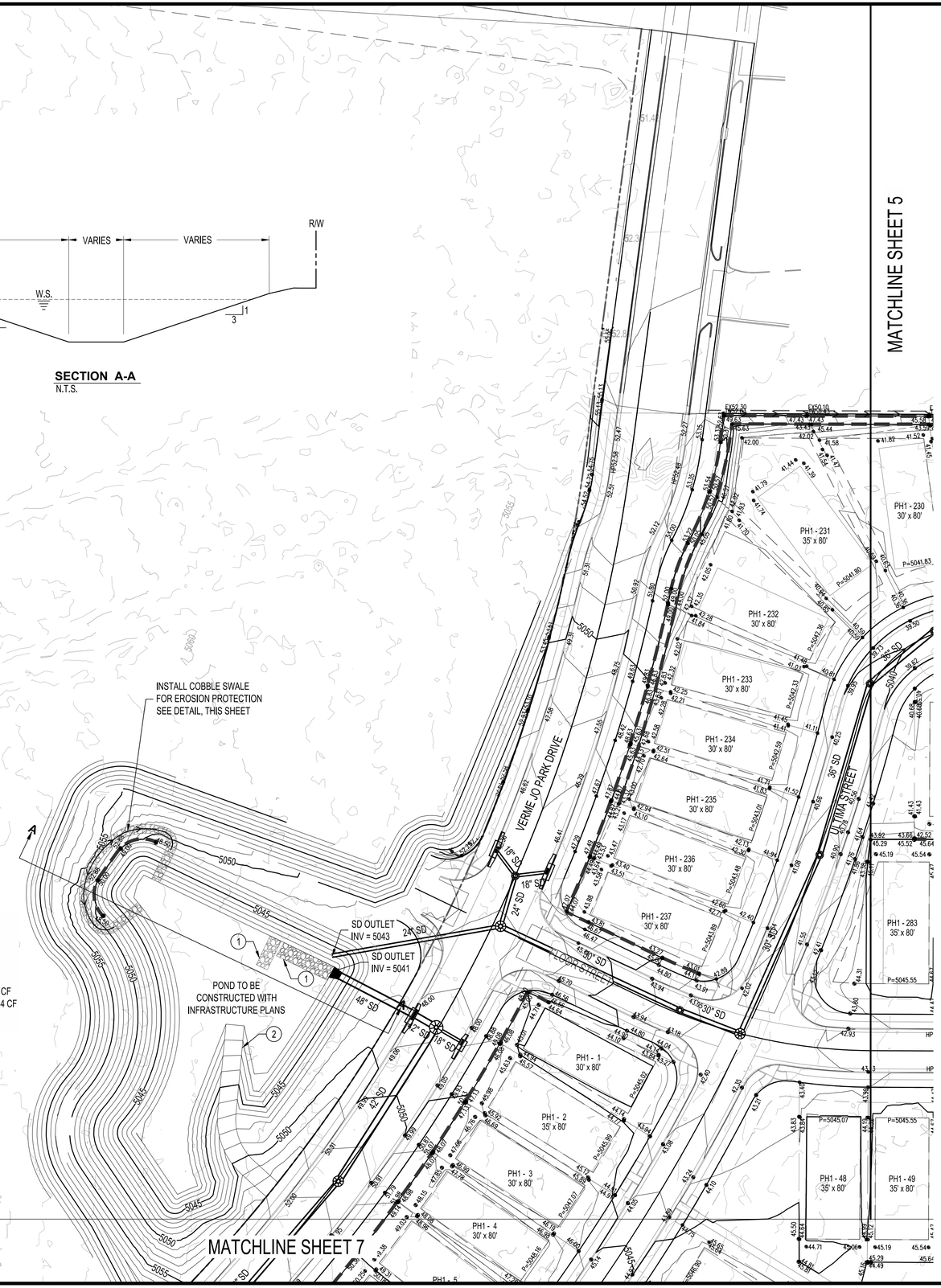
DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL

ZONE MAP NO. N-09-Z
CITY PROJECT NO. 763684
SHEET NO. 3 OF 43

Fri, 5-Dec-2025 - 4:46 pm, Plotted by: SSUSMITA
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SECTION A-A
N.T.S.



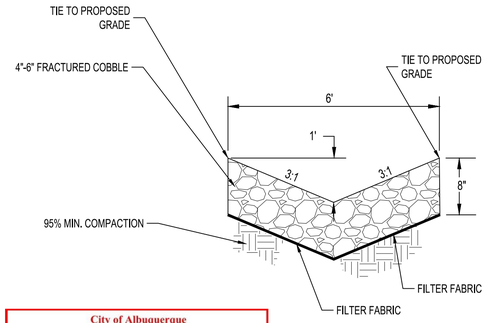
NORTH POND
BOTTOM = 5041'
POND TOP = 5048'
Qin = 102.6 cfs
Qout = 21.4 cfs
PEAK ELEVATION = 5047.1'
REQUIRED VOLUME = 100,188 CF
PROVIDED VOLUME = 124,349.4 CF
3:1 SIDE SLOPES
1' FREE BOARD

LEGEND

PROPOSED SPOT ELEVATION	5235.25
EXISTING SPOT ELEVATION	EX 5235.25
PROPOSED CONTOUR	5025
EXISTING STORM DRAIN LINE	
PROPOSED STORM DRAIN INLET	
PROPOSED STORM DRAIN LINE	
PROPOSED STORM DRAIN MANHOLE	
PROPOSED WATER BLOCK	
PERIMETER WALL	
RETAINING WALL	
GARDEN WALL	
PAD	10 P=5300.00
STREET SLOPE	XX
DIRECTION OF FLOW	
SWALE	
WATER BLOCK	
PEDESTRIAN TRAIL	
SLOPE CHANGE IN REAR YARD	

GRADING KEYNOTES

1. INSTALL RIP RAP PAD PER DETAIL SHEET 3
2. 12' WIDE MAINTENANCE ROAD PER PAVEMENT SECTION



COBBLE SWALE
NOT TO SCALE

City of Albuquerque
Planning Department
Development Review Services
HYDROLOGY SECTION
APPROVED
DATE: 12-12-2025
BY:
HydroTrans # N09D017

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N

40 20 0 40
1"=40'

811
CALL NM ONE-CALL SYSTEM SEVEN (7) DAYS PRIOR TO ANY EXCAVATION

BHI JOB NO. 20250012

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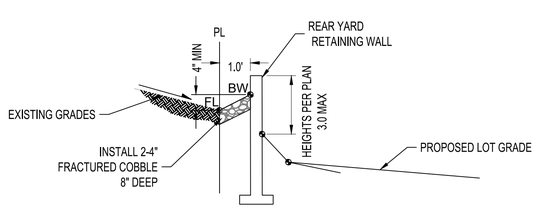
CITY OF ALBUQUERQUE
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TA LANDS PHASE 1
GRADING PLAN

DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL

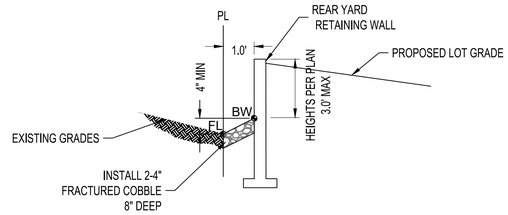
ZONE MAP NO. N-09-Z
CITY PROJECT NO. 763684
SHEET NO. 4 OF 43

Fri, 5-Dec-2025 - 4:46 pm, Plotted by: SSUSMITA
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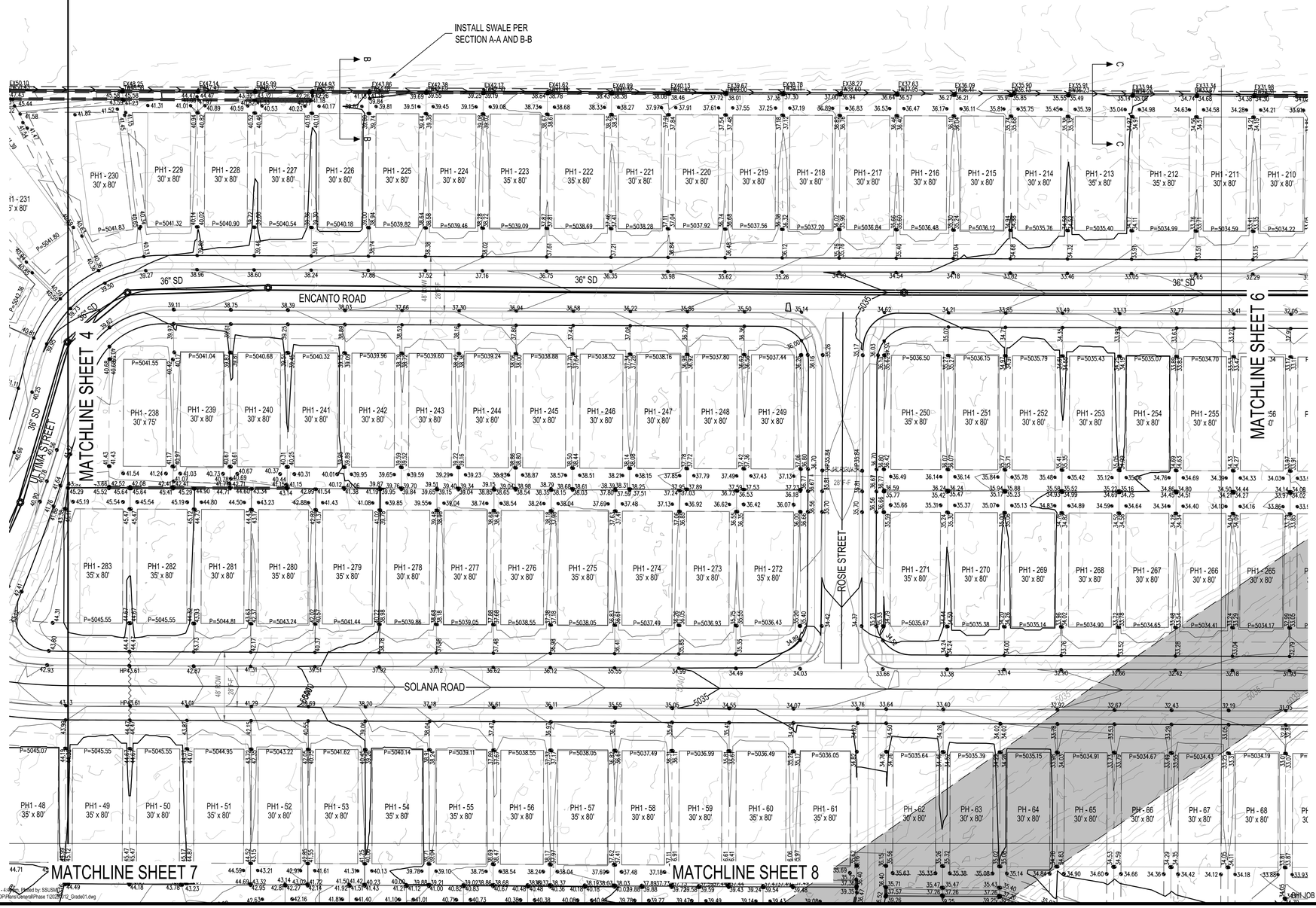
SECTION B-B

N.T.S.



SECTION C-C

N.T.S.



LEGEND

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2. 12' WIDE MAINTENANCE ROAD PER PAVEMENT SECTION

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HYDROLOGY SECTION
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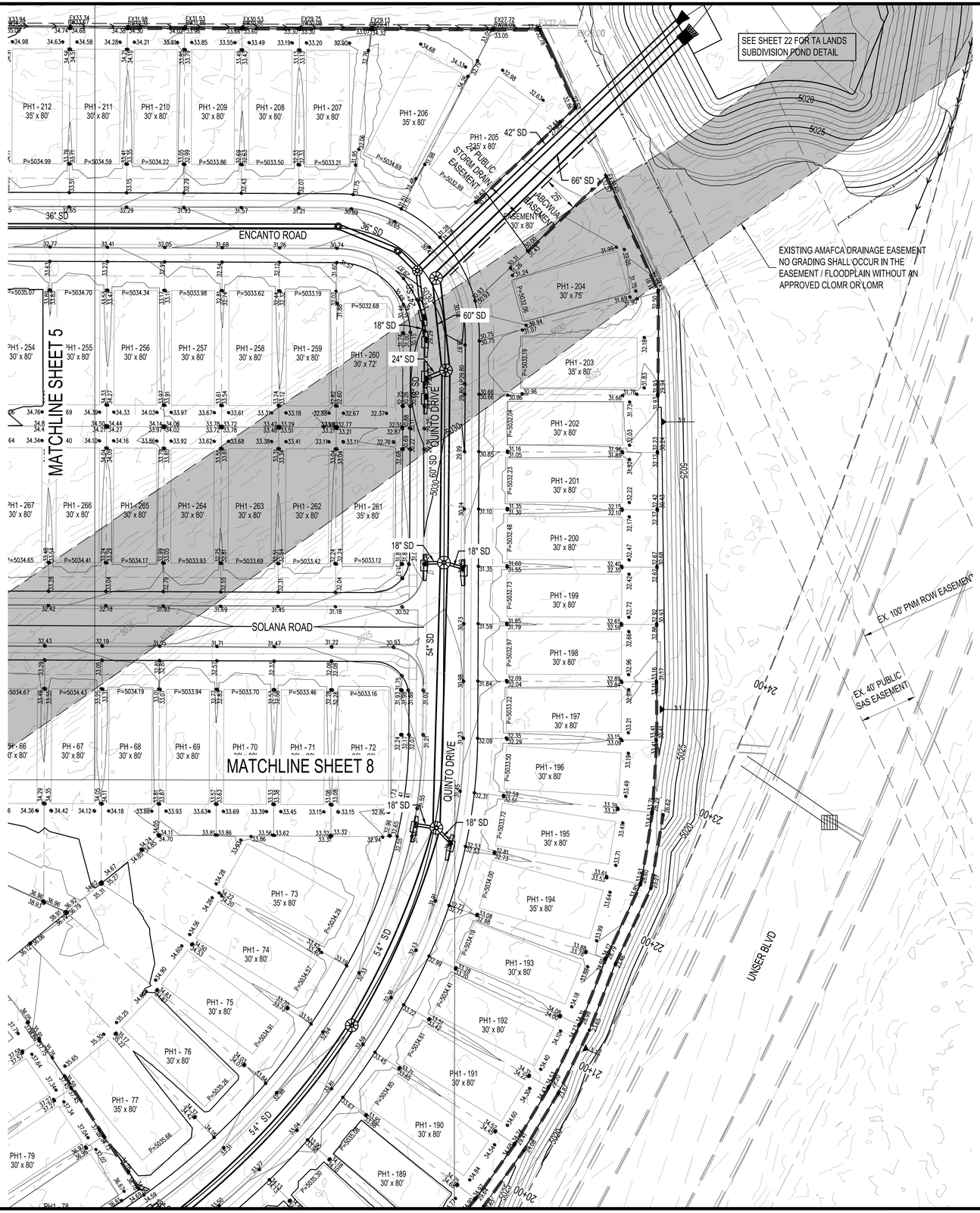
TA LANDS PHASE 1
GRADING PLAN

DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL

ZONE MAP NO. N-09-Z
CITY PROJECT NO. 763684
SHEET NO. 5 OF 43

DRH JOB NO. 20250012

Fri, 5-Dec-2025 - 4:49pm Plotted by: SSUSHKO
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X=1494599.151 *
Y=1464676.438 *
Z=5056.962 * (NAVD 1988)
G-G=0.999686399
MAPPING ANGLE=0°16'46.36"
*U.S. SURVEY FEET

SEAL
KELLY M. KLEIN
NEW MEXICO
24834
LICENSED PROFESSIONAL ENGINEER
12-05-2025
December 5, 2025

NO.	DATE	DESCRIPTION	BY
		AS-BUILT INFORMATION	
		CONTRACTOR:	
			DATE:
		WORK STAKED BY:	
			DATE:
		INSPECTOR'S ACCEPTANCE BY:	
			DATE:
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			DATE:

DESIGNED BY: KK
DRAWN BY: DO, SMS, RV, RC
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DATE 12/12/2025

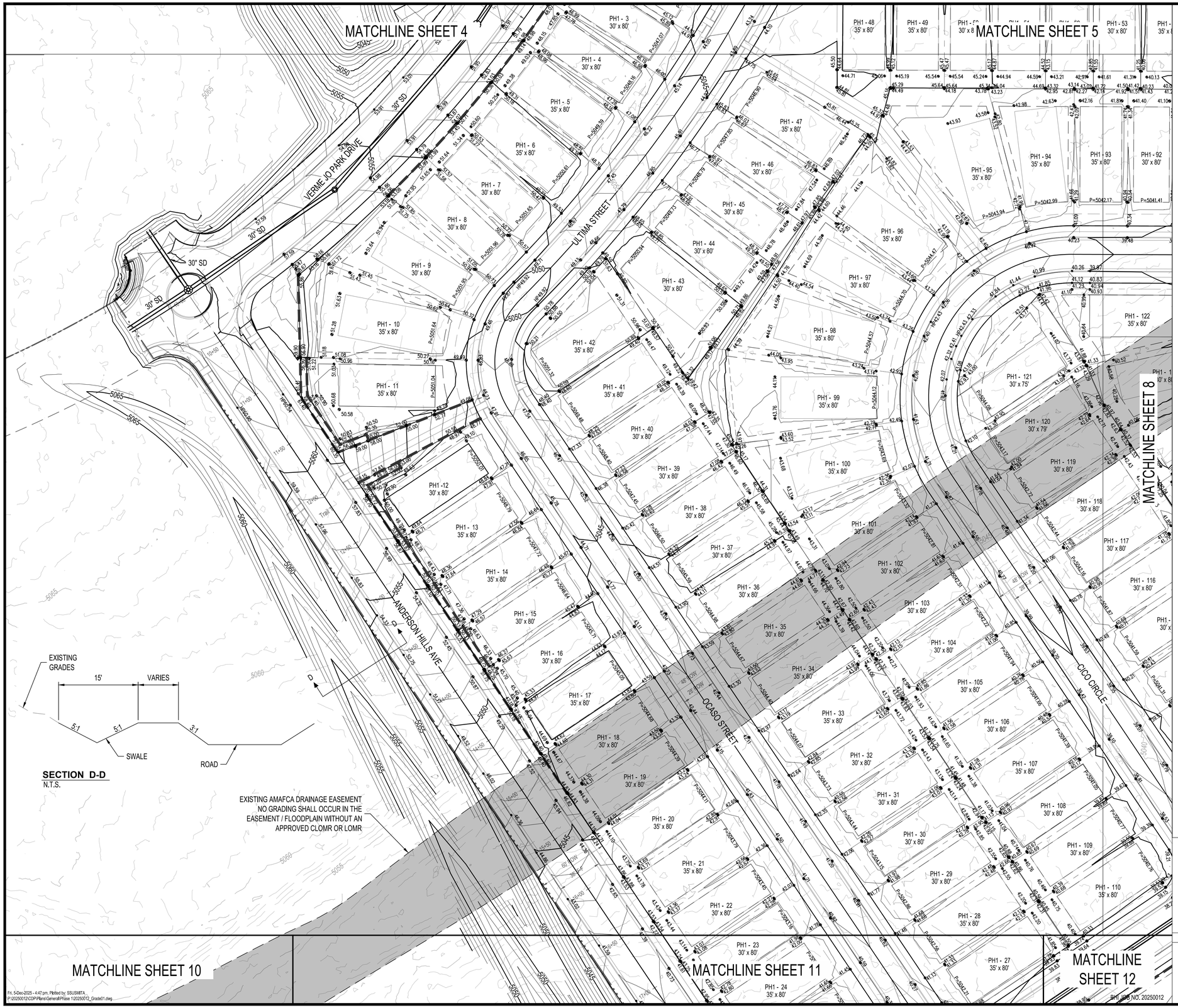
CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

TA LANDS PHASE 1
GRADING PLAN

DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL	ZONE MAP NO. N-09-Z
		CITY PROJECT NO. 763684
		SHEET NO. 6 OF 43

BHI JOB NO. 20250012

Fri, 5-Dec-2025 - 4:47:pm, Plotted by: SSUSMTA
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LEGEND

- PROPOSED SPOT ELEVATION — 5235.25
- EXISTING SPOT ELEVATION — EX 5235.25
- PROPOSED CONTOUR — 5025
- EXISTING STORM DRAIN LINE
- PROPOSED STORM DRAIN INLET
- PROPOSED STORM DRAIN LINE
- PROPOSED STORM DRAIN MANHOLE
- PROPOSED WATER BLOCK
- PERIMETER WALL
- RETAINING WALL
- GARDEN WALL
- PAD — 10 P=5300.00
- STREET SLOPE — XX
- DIRECTION OF FLOW
- SWALE
- WATER BLOCK
- PEDESTRIAN TRAIL
- SLOPE CHANGE IN REAR YARD

GRADING KEYNOTES

1. INSTALL RIP RAP PAD PER DETAIL SHEET 3
2. 12' WIDE MAINTENANCE ROAD PER PAVEMENT SECTION

City of Albuquerque
Planning Department
Development Review Services
HYDROLOGY SECTION
APPROVED

DATE: 12-12-2025
BY:
HydroTrans #: N09D017

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N

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1"=40'

811
CALL NM ONE-CALL SYSTEM
SEVEN (7) DAYS PRIOR TO
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CONSULTANTS

Bohannan Huston
www.bhinc.com
800.877.5332

BENCH MARKS

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December 5, 2025

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DATE	12/12/2025

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

TA LANDS PHASE 1
GRADING PLAN

DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL

ZONE MAP NO. N-09-Z
CITY PROJECT NO. 763684
SHEET NO. 7 OF 43

PH1 DRB NO. 20250012

Fri, 5-Dec-2025 - 4:47 pm, Plotted by: SSUSMTA
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LEGEND

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GRADING KEYNOTES

1. INSTALL RIP RAP PAD PER DETAIL SHEET 3
2. 12' WIDE MAINTENANCE ROAD PER PAVEMENT SECTION

City of Albuquerque
Planning Department
Development Review Services
HYDROLOGY SECTION
APPROVED

DATE: 12-12-2025
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HydroTrans # N09D017

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NEW MEXICO
24834
12-05-2025
LICENSED PROFESSIONAL ENGINEER

December 5, 2025

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DESIGNED BY:	KK
DRAWN BY:	DO, SMS, RV, RC
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CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

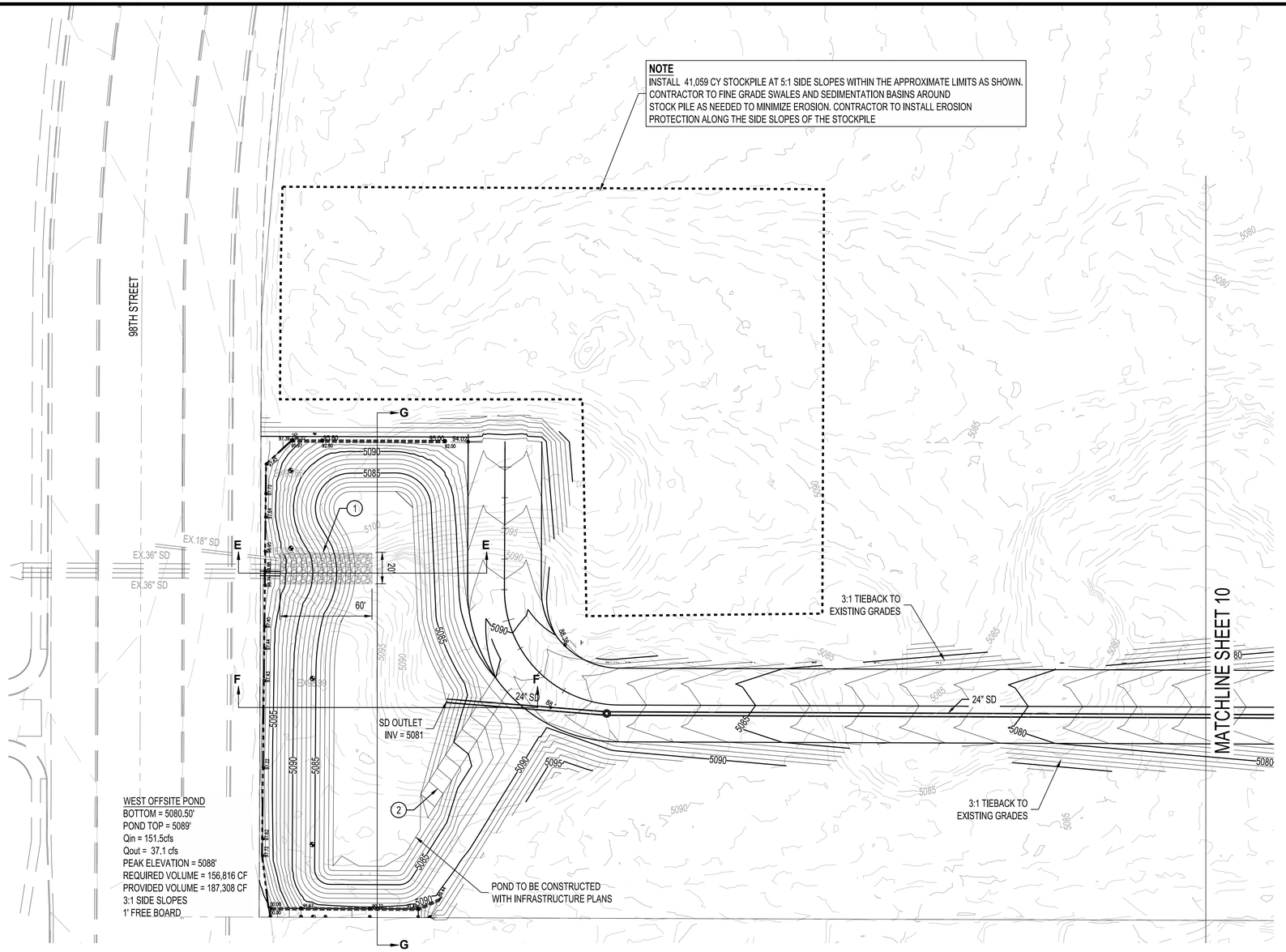
TA LANDS PHASE 1
GRADING PLAN

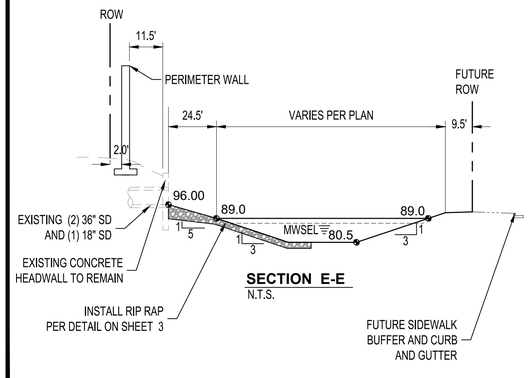
DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL

ZONE MAP NO.	N-09-Z
CITY PROJECT NO.	763684
SHEET NO.	8 OF 43

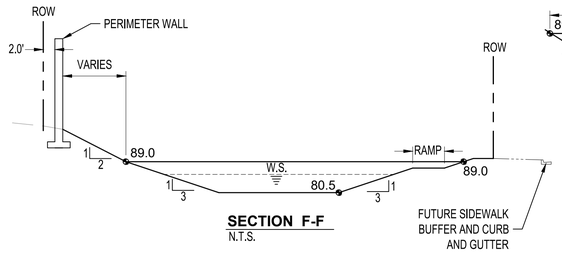
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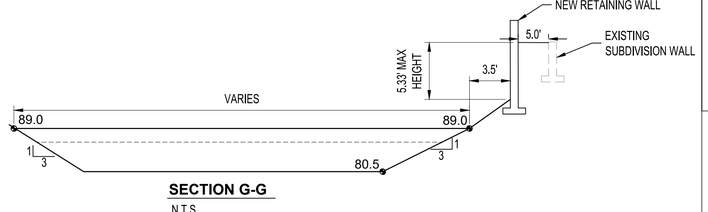




SECTION E-E
N.T.S.



SECTION F-F
N.T.S.



SECTION G-G
N.T.S.

Fri, 5-Dec-2025 - 4:48:pm, Plotted by: SSUSMTA
P:\20250012\CDP\Plans\General\Phase 1\20250012_Grade01.dwg

BHI JOB NO. 20250012

LEGEND

PROPOSED SPOT ELEVATION	5235.25
EXISTING SPOT ELEVATION	EX 5235.25
PROPOSED CONTOUR	5025
EXISTING STORM DRAIN LINE	
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PAD	10 P=5300.00
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SWALE	
WATER BLOCK	
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GRADING KEYNOTES

1. INSTALL RIP RAP PAD PER DETAIL SHEET 3
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City of Albuquerque
Planning Department
Development Review Services
HYDROLOGY SECTION
APPROVED
DATE: 12-12-2025
BY:
HydroTrans #: N09D017

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NEW MEXICO
24834
REGISTERED PROFESSIONAL ENGINEER
12-05-2025
December 5, 2025

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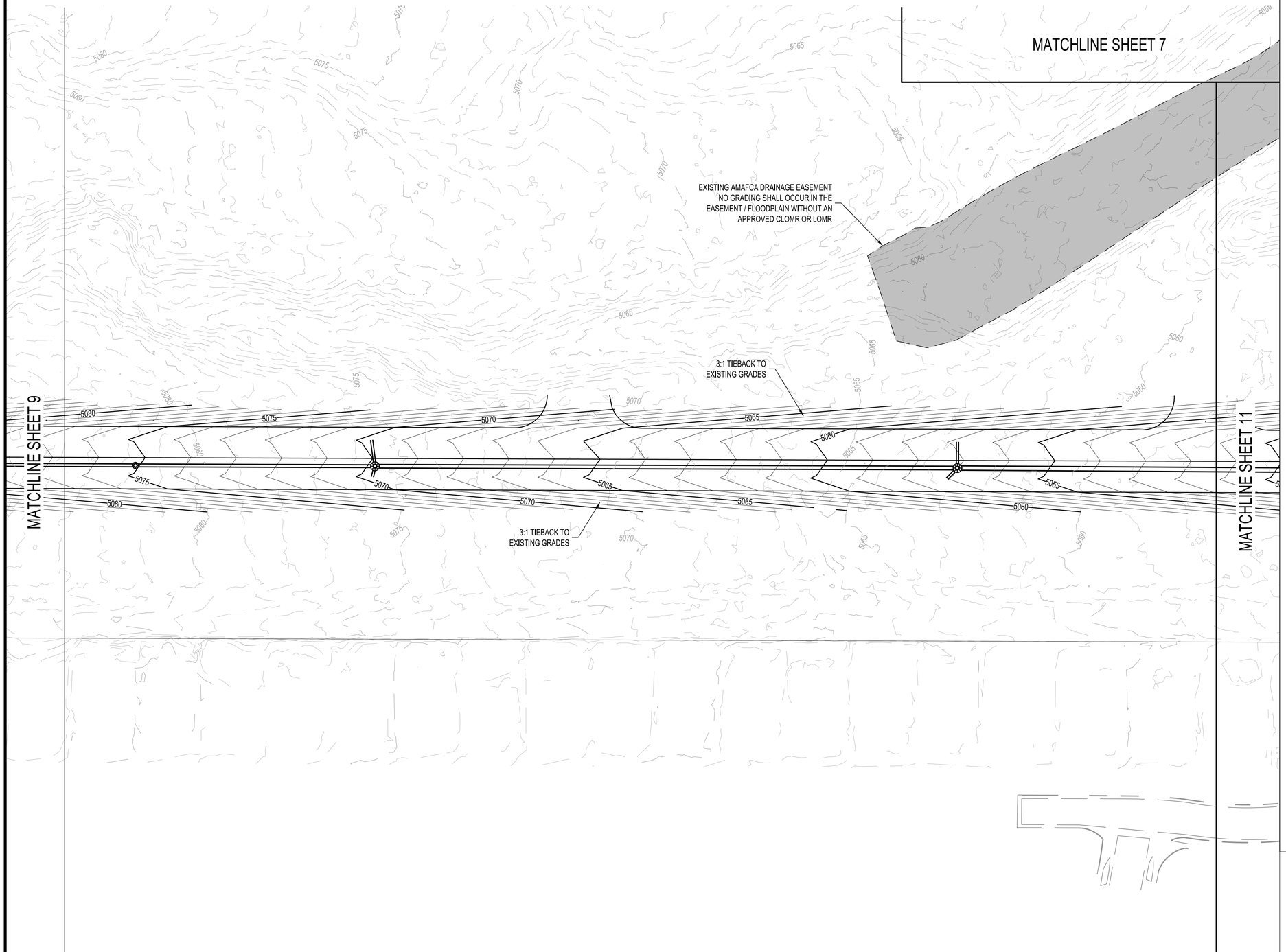
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DRAWN BY: DO, SMS, RV, RC
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DATE 12/12/2025

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

TA LANDS PHASE 1
GRADING PLAN

DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL

ZONE MAP NO. N-09-Z
CITY PROJECT NO. 763684
SHEET NO. 9 OF 43



LEGEND

PROPOSED SPOT ELEVATION	● 5235.25
EXISTING SPOT ELEVATION	● EX 5235.25
PROPOSED CONTOUR	5025
EXISTING STORM DRAIN LINE	
PROPOSED STORM DRAIN INLET	
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GRADING KEYNOTES

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City of Albuquerque
Planning Department
Development Review Services
HYDROLOGY SECTION
APPROVED
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KELLY M. KLEIN
NEW MEXICO
24834
LICENSED PROFESSIONAL ENGINEER
12-05-2025
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CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
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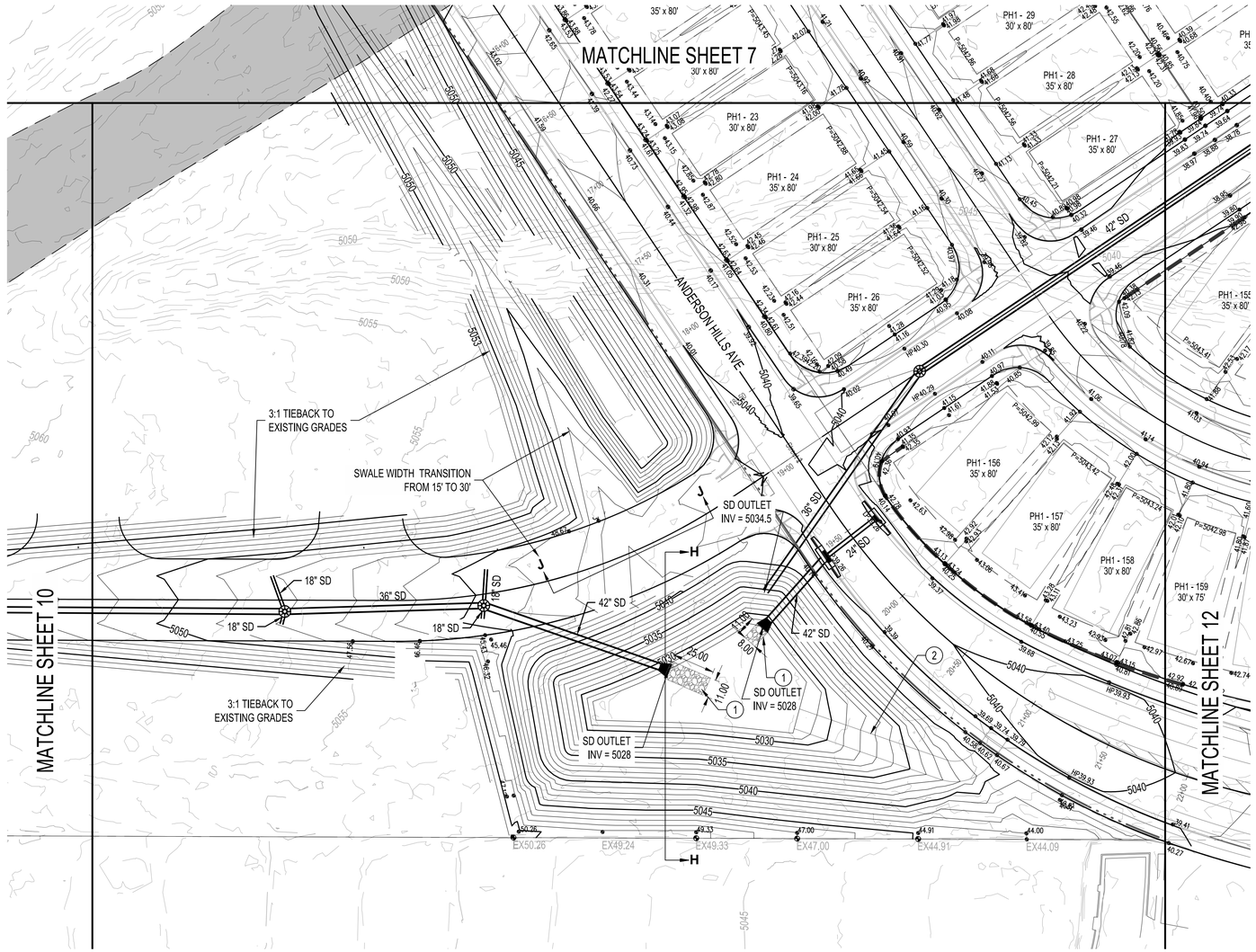
TA LANDS PHASE 1
GRADING PLAN

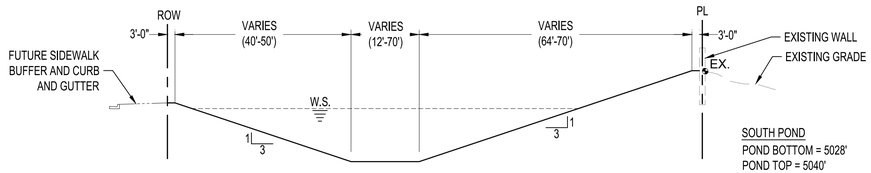
DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL

ZONE MAP NO. N-09-Z
CITY PROJECT NO. 763684
SHEET NO. 10 OF 43

BHI JOB NO. 20250012

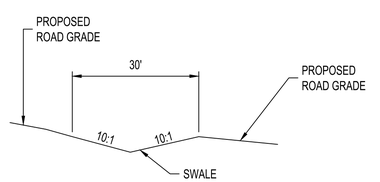
Fri, 5-Dec-2025 - 4:49:pm, Plotted by: SSUSMITA
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SECTION H-H
N.T.S.

SOUTH POND
POND BOTTOM = 5028'
POND TOP = 5040'
Qin = 108.5 cfs
Qout = 54.8 cfs
PEAK ELEVATION = 5039'
REQUIRED VOLUME = 139,392 CF
PROVIDED VOLUME = 161,602.8 CF
3:1 SIDE SLOPES
1' FREE BOARD



SECTION J- J
N.T.S.

LEGEND

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GRADING KEYNOTES

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City of Albuquerque
Planning Department
Development Review Services
HYDROLOGY SECTION
APPROVED
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CITY OF ALBUQUERQUE
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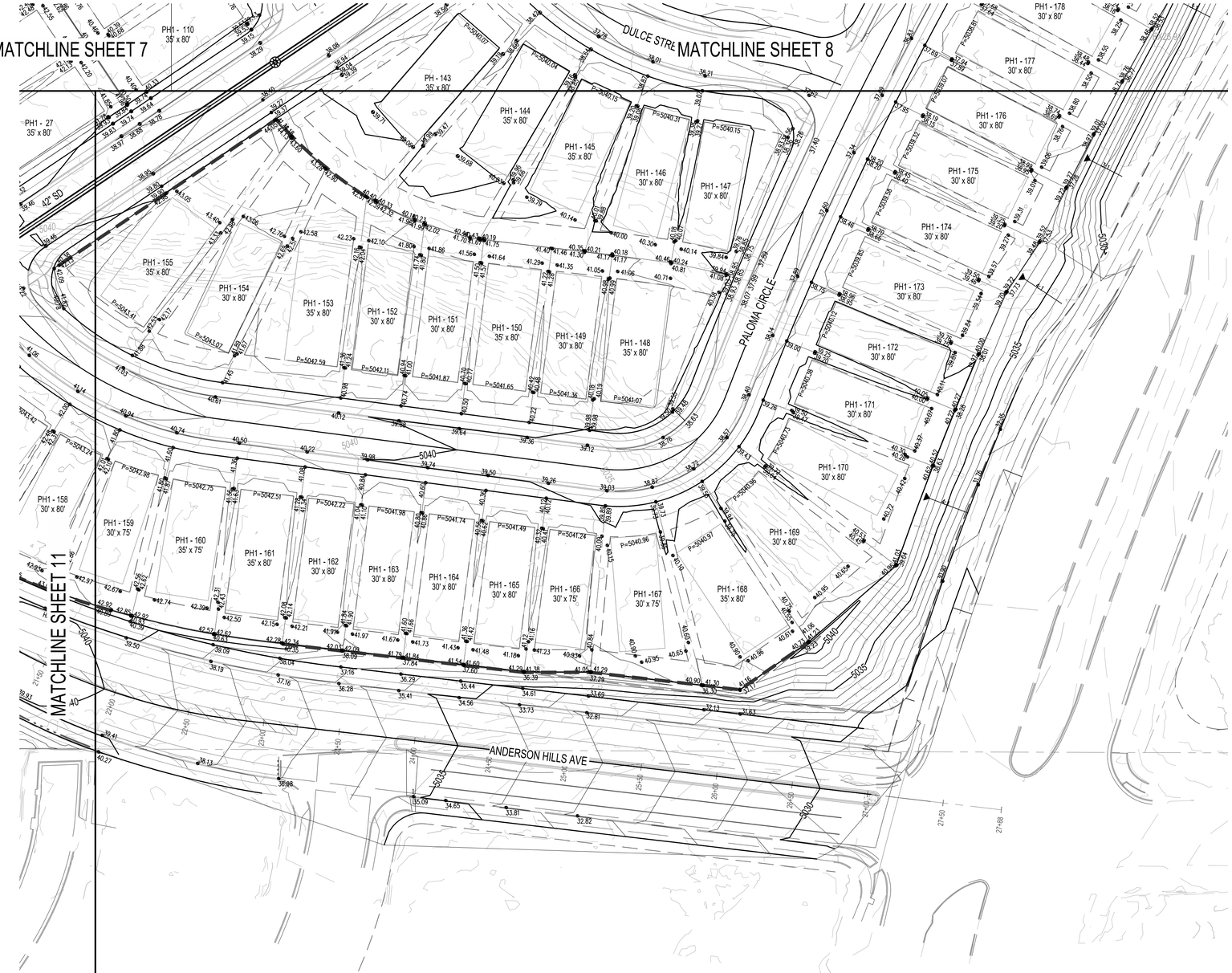
TA LANDS PHASE 1
GRADING PLAN

DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL

ZONE MAP NO. N-09-Z
CITY PROJECT NO. 763684
SHEET NO. 11 OF 43

BHI JOB NO. 20250012

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CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
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TA LANDS PHASE 1
GRADING PLAN

DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL

ZONE MAP NO. N-09-Z
CITY PROJECT NO. 763684
SHEET NO. 12 OF 43

BHI JOB NO. 20250012

Fri, 5-Dec-2025 - 4:50:pm, Plotted by: SSUSMITA
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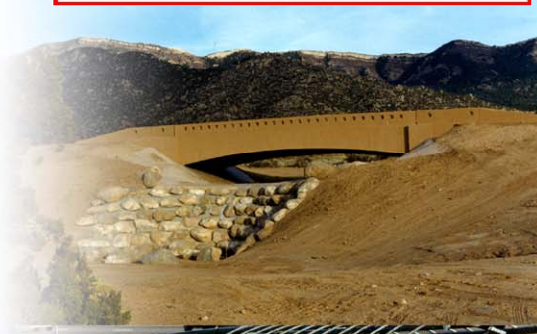
HydroTrans # N09D017

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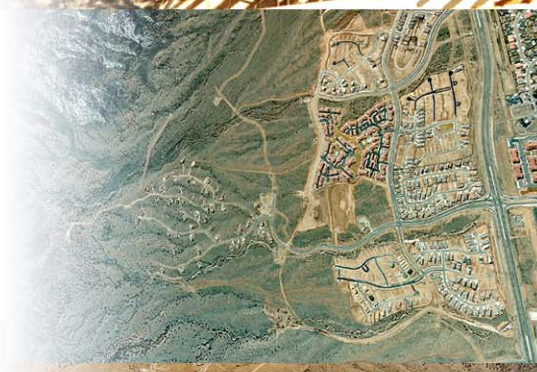
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DRAINAGE REPORT FOR TA LANDS SUBDIVISION

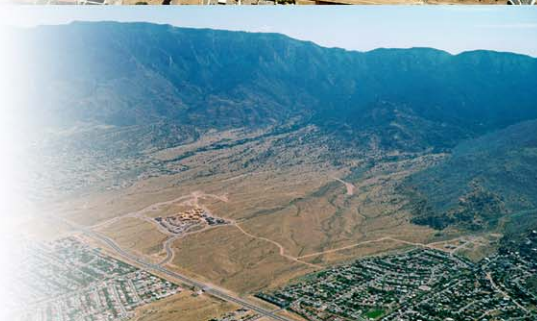
DECEMBER 2025











Prepared for:

TITAN DEVELOPMENT
6300 RIVERSIDE PLAZA LN NW # 200
ALBUQUERQUE, NM 87120

Prepared by:

Bohannan Huston

Engineering

Spatial Data

Advanced Technologies

DRAINAGE REPORT
FOR
TA LAND SUBDIVISION PHASE 1
ALBUQUERQUE, NM

DECEMBER 2025

SUBMITTAL 002

Prepared for:

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TABLE OF CONTENTS

I. INTRODUCTION 1
II. PURPOSE OF REPORT 1
III. METHODOLOGY AND REFERENCES 2
IV. SITE LOCATION AND CHARACTERISTICS 3
V. EXISTING CONDITIONS 3
VI. DEVELOPED CONDITIONS 4
A. ALLOWABLE 5
B. OFFSITE FLOW MANAGEMENT 5
C. ONSITE FLOW MANAGEMENT 6
VII. TA LANDS DOWNSTREAM POND 8
A. POND PRIMARY OUTFALL DESIGN 9
B. POND EMERGENCY SPILLWAY DESIGN 9
VIII. STORMWATER QUALITY REQUIREMENTS 9
IX. FEMA FLOODPLAIN ANALYSIS 10
A. PROPOSED FLOODPLAIN IMPACTS 10
B. LETTER OF MAP REVISION SUBMITTALS 11
X. GRADING PLAN 11
XI. CONCLUSION 11

APPENDICES

APPENDIX A BASIN ANALYSIS AND SUMMARY OF LAND TREATMENTS
APPENDIX B INLET/STREET HYDRAULICS
APPENDIX C STORM DRAIN PIPE ANALYSIS
APPENDIX D ONSITE DETENTION PONDS ANALYSIS
APPENDIX E TA LANDS SUBDIVISION POND ANALYSIS
APPENDIX E MANUFACTURES CURVILINEAR PIPE RECOMMENDATIONS

EXHIBITS

EXHIBIT A SUBDIVISION LOCATION MAP AND PRELIMINARY PLAT
EXHIBIT B FEMA FIRMETTE
EXHIBIT C DRAINAGE BASINS: EXISTING CONDITIONS
EXHIBIT D DRAINAGE BASINS: MASTER PLANNED SUBDIVISION PROPOSED CONDITIONS
EXHIBIT E DRAINAGE BASINS: PHASE 1 PROPOSED CONDITIONS
EXHIBIT F STORM DRAIN EXHIBIT (BACKBONE AND NORTH STORM DRAIN)

EXHIBIT G GRADING PLAN

EXHIBIT H TA LANDS SUBDIVISION POND GRADING PLAN

EXHIBIT I EXCERPTS FROM SUPPORTING MASTER DRAINAGE PLANS

I. INTRODUCTION

TA Land Subdivision is a single-family residential development community that will be built in three phases, ultimately consisting of approximately 628 lots on 127 acres. The site is located between Unser Blvd and 98th Street, just south of the Amole Channel and north of Anderson Hills. This drainage report will address the overall master drainage plan for the full three phased subdivision to adequately size the backbone infrastructure, including the storm drain and the TA Lands Pond, but will focus primarily on Phase 1. Phase 1 will contain 283 lots on approximately 55 acres within IDO zoning R1-A. The site currently drains from the west to northeast. In the proposed conditions the site will have the same drainage pattern and will accept any offsite flows. Storm runoff will be conveyed by the internal street network and collected by an internal storm drain network through a series of onsite detention ponds, finally culminating at the TA Subdivision Pond located at the northeast most corner of the site. The ponds will reduce the discharge from the site to be within the allowable discharge.

Although the full development will occur in three phases, only portions of the full site will be graded with the construction of the Phase 1 to install the backbone infrastructure and balance the earthwork.

In addition, the site currently contains two floodplains. The northern floodplain has been cut off by the Desert Sands Subdivision and is no longer an active floodplain, but is still identified as a FEMA floodplain Zone A. The southern floodplain is formally known as the Sacate Blanco Diversion Channel and is a man-made diversion channel which conveys the offsite developed flows from Desert Sands Subdivision through our proposed site to the Amole Channel. A FEMA floodplain, Zone A is located along this diversion. This development will be removing this diversion channel and replacing it with a backbone storm drain system. In addition, to help attenuate these offsite flows, a series of detention ponds will be constructed onsite. A CLOMR and\or LOMR will be prepared to remove both of these floodplains. We will work with the COA, AMAFCA, and FEMA for this process.

II. PURPOSE OF REPORT

The purpose of this report is to provide site-specific drainage analysis for existing and ultimate conditions for the subdivision development referred to as TA Lands Subdivision. This plan is prepared and submitted to support the design and grading of the subdivision and internal streets for preliminary, final plat, and construction plan approvals.

III. METHODOLOGY AND REFERENCES

The drainage analysis was completed for the fully developed conditions of the entire three phased TA Lands Subdivision in order to size the backbone infrastructure. This analysis is presented for reference in Exhibit D. This report specifically details the drainage analysis for Phase 1. The runoff flow rates and volumes for the onsite basins were computed for the 100 year – 24 hour storms in accordance with the City of Albuquerque Development Process Manual (DPM), Chapter 6. Rational Method is used in this report for the hydrology analysis to size swales, storm drain, and inlet capacity. The storm drain system hydraulic grade line (HGL) has been computed using the software Stormwater Studio. To analyze the detention ponds, HEC-HMS V14.2 was utilized. Street hydraulic capacities were computed in accordance with the COA DPM and using 8" standard curb & gutter for the subdivision. Manufactures curvilinear pipe recommendations can be found in Appendix F.

This report is consistent with previously approved drainage reports for this development, the *Amole-Hubbell Drainage Master Plan Update* (Wilson, 2013), as superseded by the *Design Analysis Report for the Expansion of Hubbell Lake Detention Dam* (BHI, December 2024), and the drainage criteria presented in the City of Albuquerque DPM. The following City of Albuquerque documents will be referenced throughout this report. Excerpts from these documents can be found in Exhibit I.

Desert Sands Subdivision Drainage Analysis Report, prepared by Mark Goodwin & Associates, PA Inc., April 2016. This document provides the offsite flow entering our site from the Desert Sands Subdivision.

98th Street Improvements from Gibson Blvd SW to Senator Dennis Chavez Boulevard SW Drainage Report, prepared by WHPacific, April 2013. This document provides the drainage master plan for the flow entering our property from 98th Street.

Albuquerque Public Schools Prototype Elementary School Site No 3, prepared by Bohannan Huston Inc., December 2007. This document provides the drainage master plan for full buildout condition of the APS Property to the north of our site.

Design Analysis Report for the Expansion of Hubbell Lake Detention Dam, prepared by Bohannan Huston Inc., December 2024. This document includes a hydrologic analysis for the fully developed watershed upstream of the Amole and Hubbell Lake Detention system.

Amole-Hubbell Drainage Master Plan Update Final Report, prepared by Wilson and Company, May 2013. This document is the basis for the fully developed hydrology presented in *Design Analysis Report for the Expansion of Hubbell Lake Detention Dam* (BHI, December 2024) and is superseded by said report.

IV. SITE LOCATION AND CHARACTERISTICS

Phase 1 is approximately 55 acres, located between Unser Blvd and 98th Street, just south of the Amole Channel and north of Anderson Hills. See Exhibit A. The existing topography slopes primarily from the west to northeast across the site with the majority of the slopes less than 9%.

As mentioned, there is an existing diversion channel, known as the Sacate Blanco Diversion Channel, within the Phase 1 site that conveys storm runoff to AMAFCA Amole Channel.

V. EXISTING CONDITIONS

Based on the existing topography, the site is broken into six offsite and two onsite basins. The existing basin and drainage patterns are shown graphically on the Existing Conditions Basin Map Exhibit C. This map supports the narrative below when describing the existing flow patterns. Additionally, this basin map quantifies the flow rates based on the City of Albuquerque Rational Method to size the various drainage components used to mitigate the offsite flows that enter the Phase 1 development. The site consists of undeveloped land and currently drains from west to northeast. There is an existing diversion channel within the property boundary.

Offsite Ex Basin-1 flows from the west to the east and discharges into Vermejo Park Drive. This basin also contains the northern floodplain mentioned above This floodplain is no longer active since it has been cut off by the Desert Sands Subdivision.

Offsite Ex Basin-4 drains into the southwest corner of our site through 2 x 36” pipes and 1 x 18” pipe running under 98th Street before discharging into an existing stormwater quality pond. This flow represents the fully developed flows from the Desert Sands Subdivision (Q=138 cfs) as well as some surface flows from 98th street (Q=12 cfs max). The total flow entering the site from this Offsite Basin-4 is approximately Q=150 cfs.

Offsite Ex Basin-2C accepts the offsite flows from Offsite Ex Basin 4 and conveys them through an existing “arroyo” to the Sacate Blanco Diversion Channel located in Onsite Ex Basin-2D.

Offsite Ex Basin-2A and 2B drain towards Onsite Ex Basin-2D.

Onsite Ex Basin-2D is located within the phase 1 boundary and contains the Sacate Blanco Diversion Channel. This Basin ultimately discharges into the Amole Channel

Offsite Basin-3A flows into Onsite Ex Basin 3B. Onsite Ex Basin 3B is also located within the phase 1 boundary. The majority of this basin primarily drains northeast towards an existing culvert that captures these flows and conveys them under Unser Blvd to the east of the site. However, this basin also contains an existing “arroyo” that flows to the southeast corner of the site. The flow from this “arroyo” will turn and then be conveyed north by a natural swale running parallel to Unser towards an existing culvert. In existing conditions, the total flow from our site into this culvert is 62 cfs.

Offsite Ex Basin-5 is a small portion of the existing APS property that drains towards Onsite Ex Basin–2D. Per the approved APS Drainage Master Plan, this flow is 2.73 cfs.

In existing conditions, Offsite Ex Basin 4, 2A, 2B, 2C and Onsite Ex basin 2D discharge to the Amole Channel and have a total flow rate of 258 cfs (as determined with the rational method, 229cfs as determined by HMS model).

VI. DEVELOPED CONDITIONS

The proposed development drainage plan follows the existing drainage paths. In order to size the backbone infrastructure, the entire three phased subdivision was broken into multiple subbasins and analyzed for future developed flows. This Master Planned Proposed Conditions Basin Map is provided for reference in Exhibit D. Similarly, for the Phase 1 Development, the site was broken into separate subbasins and analyzed for the developed flows and is shown shown graphically on the Phase 1 Proposed Conditions Basin Map in Exhibit E. Phase 1 also includes the construction of the backbone storm drain that will convey the Desert Sands Subdivision developed flows though the TA Lands Subdivision as well as the onsite detention ponds required to detain the developed flows prior to entering the downstream TA Lands Subdivision Pond. In the interim conditions, prior to the full development of phase 2 and phase 3, these detention ponds also serve to mitigate the offsite existing flows that enter the Phase 1 development.

A. ALLOWABLE

Per the City drainage policy, Article 6-7, the allowable discharge is the historic conditions flowrate of 229 cfs reaching the existing 84" RCP pipe that conveys flow from the Sacate Blanco Arroyo Channel to the Amole Channel underneath Unser Blvd. Although both the approved *Amole-Hubbell Drainage Master Plan Update* (Wilson, 2013) and superseding *Design Analysis Report for the Expansion of Hubbell Lake Detention Dam* (BHI, December 2024) show a smaller drainage area contributing to the Sacate Blanco Arroyo Channel at this location, they both show a higher developed flowrate, 338 cfs and 359 cfs, respectively. Two additional drainage areas that were assumed to drain to the Amole Channel directly via a storm drain (Basin A230) or drain underneath Unser (area southeast of Basin A233) have been redirected to the project outfall (AP 16). Limiting the allowable discharge from this larger drainage to the historic conditions flowrate at this location results in a decrease to the peak flowrate being discharged into the Amole Channel from the project area. The existing flowrate was calculated using HEC-HMS version 4.12 and the drainage basins included in the *Design Analysis Report for the Expansion of Hubbell Lake Detention Dam* (BHI, December 2024). The percent impervious for the basins that represent the project site was updated to zero to represent existing conditions and the existing stormwater quality volume (SWQV) pond at the southwest corner of the project site was modeled. Existing conditions flowrate calculations, modeled in HEC-HMS and used for the detention ponds' design, are included in Appendix E.

B. OFFSITE FLOW MANAGEMENT

The total offsite flow entering the Phase 1 site in proposed conditions remains the same as in the existing conditions. The offsite flow will be accepted by the proposed development and safely conveyed by the proposed swales, streets and storm drain network. Refer to Phase 1 Proposed Conditions Basins Map (Exhibit E) and the Grading Plan (Exhibit G) for additional details on the offsite flow management.

The developed flows from Offsite Ex Basin 4 (Q=148 cfs), will be captured and detained in the West Pond before discharging into the backbone storm drain. The West detention pond is designed with a 1' freeboard. The flow out of this pond is 37 cfs.

The flows from Offsite Ex Basin 5 (Q=2.7 cfs) will be conveyed by a proposed swale along the rear of the perimeter wall. The swale will direct the flows as in existing conditions towards the Amole Channel.

Offsite Ex Basin -1 will remain as in existing conditions and will discharge into Vermejo Park Dr and flow north away from our site.

Offsite Ex Basin – 2A will flow into the North detention pond before discharging into the Phase 1 northern storm drain system.

Offsite Ex Basin - 2B and 2C will flow towards the western boundary of the Phase 1 subdivision. A proposed swale adjacent to this boundary (parallel to Anderson Hills Avenue) will capture these flows and divert them to the South Pond.

Basin - 36A produces 6 cfs during the full buildout. This is significantly less than the existing conditions of 62 cfs and thus improves the downstream conditions.

Basin – 35A will drain towards Unser Blvd and to an existing inlet at the corner of Anderson Hill and Unser Blvd. This project will ultimately remove and replace this inlet to account for a right turn lane in Unser Blvd.

C. ONSITE FLOW MANAGEMENT

In the Phase 1 proposed conditions, the site is divided into twenty three onsite basins for analysis purposes. Using Section 6-1(A)(2) of the City's DPM, a land treatment was assigned to each onsite basin. Since the number of residential units per acre is less than 6, the percent D land treatment area was determined by "Single Family Residential" equation listed in the City's DPM Table 6.2.10. The remaining area was split between land treatments B and C.

Developed flows are calculated for the 100 year – 24 hour storm event and are shown in Appendix A. The developed flows from the subdivision will be conveyed by the internal streets and proposed storm drain networks to the pond located at the northeast corner of the site known as TA Lands Subdivision Pond.

The Phase 1 Proposed Conditions Basin Map, Exhibit E, illustrates the basin locations and flow directions for the proposed development as well as the proposed street configurations for the subdivision.

There are multiple water blocks and low points planned and placed strategically throughout the site to direct the flow to the detention ponds. The sections below will discuss the basins and their flow path to each pond and discharge points.

Drainage to South pond:

The South pond is sized for the future development as illustrated in the Planned Subdivision Proposed Conditions in Appendix D. At this fully developed condition, this pond accepts 108 cfs of developed flow and releases 55 cfs into the downstream backbone storm drain. It is designed with 1' of freeboard. For Phase 1, as mentioned above, Offsite Ex Basins 2B and 2C drain towards a proposed swale that enters the South Pond. Ex Basin 3A contains the backbone storm drain. In Phase 2, the backbone storm drain will be under a paved road, so, for Phase 1, this area will be graded to these future road grades and, as such, will be draining into the South pond. In addition, the developed flows from Basin-20 (Anderson Hills Avenue) will drain to a sump inlet that also discharges into the South pond. Since the Phase 1 conditions produce less flow than the fully developed conditions, the South pond will have adequate capacity for Phase 1.

Drainage to North pond:

The North pond is sized for the future development as illustrated in the Planned Subdivision Proposed Conditions in Appendix D. At this fully developed condition, this pond accepts 103 cfs of developed flow and releases 22 cfs into the downstream north storm drain. It is designed with 1' of freeboard. For Phase 1, as mentioned above, Offsite Ex Basin 2A drains into this pond. In addition, on grade inlets capture street flow from the proposed roads in Basin 28 and discharge into the North pond. Since the Phase 1 conditions produce less flow than the fully developed conditions, the North pond will have adequate capacity for Phase 1.

TA Lands Subdivision Pond:

The TA Lands Subdivision Pond is the final discharge point for the TA Lands subdivision and is discussed in more detail later in this report. The proposed subdivision drains to this pond from two separate storm drain systems. The north storm drain system and the backbone storm drain system. These storm drain systems are detailed in Exhibit F. The north storm drain system accepts the detained flows from the North pond as well and the basins 28, 28A, 38, 39 and 40. The north storm drain system ultimately discharges 82 cfs into the TA Lands Subdivision Pond. The backbone storm drain system accepts the detained flows from the South pond as well and the developed flows from the basins 29-37 and Basin 41. The backbone storm drain system ultimately discharges 188 cfs into the TA Lands Subdivision Pond.

VII. TA LANDS SUBDIVISION POND

The TA Lands Subdivision Pond, shown in Exhibit H, stores a 100-year volume of 6.9 acre-feet with a total volume of 11.5 acre-feet including three and a half feet of freeboard measured from the 100-year water surface elevation to the top of the pond embankment. The pond will have 4:1 side slopes and a 12-foot access road around the top. The pond will be maintained by the subdivision homeowner's association. Where the top of the pond is higher than existing ground, the 12-foot (top width) access road will function as an earthen berm. A seepage and slope stability is currently underway. The proposed pond was modeled using HEC-HMS version 4.12. The stage storage rating curve used to model the pond is provided in Table 1 below.

TABLE 1 - TA LANDS SUBDIVISION POND STAGE-STORAGE

Elevation (ft)	Storage (ac-ft)
5017.0	0.0
5020.2	1.7
5027.5	11.5

The pond outlet will consist of a single, existing 84" reinforced concrete pipe (RCP) pipe with an invert elevation of 5020.2. The bottom of the pond is set below the invert elevation of the existing pipe to provide the required Storm Water Quality Volume (SWQV), discussed later in this report. The pond bottom varies from 5017-ft to 5020.2-ft. Two storm drains from the subdivision outlet to the pond with invert elevations of 5017-ft, in the southwestern corner of the pond. To accommodate the elevation of these storm drains and the SWQV, the bottom of the pond gradually transitions up to meet the elevation of the 84" RCP pipe invert. The 12-ft maintenance access road also slopes down into the bottom of the pond, at an approximate slope of 10%. Because a Water Surface Elevation (WSE) of around 5024 is necessary for the subdivision storm drain hydraulics, the HEC-HMS pond routing model results show that the pond stores 6.9 ac-ft and has an outflow of 93 cfs. The results of this analysis are included in Appendix E and are summarized in Table 2.

TABLE 2 - HEC-HMS MODEL RESULTS

Peak Inflow (cfs)	222
Peak Outflow (cfs)	93
Peak Storage (ac-ft)	6.9
Peak Water Surface Elevation (WSE) (ft)	5024.05

A. POND PRIMARY OUTFALL DESIGN

The pond's principal outfall will be one, existing 84-inch RCP, with a ported riser or trash rack at the inlet for floatable capture per AMAFCA Technical Standards Manual, Section 6.3.1.

Hydraulic analysis of the outfall pipe was performed using HEC-HMS version 4.12. The peak outflow listed in Table 2 is less than the existing conditions 100-year peak flow of 223 cfs. Due to limitations in the internal storm drain design, the 100-year WSE was limited to 5024 feet and the maximum flow out of the existing 84” pipe with only 3.8 feet of head is 93 cfs. The discharge from the pond enters the AMAFCA Amole Channel downstream east of Unser Blvd.

B. POND EMERGENCY SPILLWAY DESIGN

An emergency spillway was not included in the pond design because the existing ground in the direction of the historic flow path is 5 feet above the 100-year WSE. In lieu of an emergency spillway, an additional 1.5 feet of freeboard is provided in addition to the 2.0 feet required per AMAFCA Technical Standards Manual, Section 4.3.6, for a total of 3.5 feet of freeboard. This approach was verified with City of Albuquerque Hydrology, and this correspondence is included in Appendix E. If the pond were to overtop, discharge would flow over the southeast corner of the pond and along Unser for approximately 400 feet to an existing 68”x43” arch pipe which conveys flow from west to east under Unser.

VIII. STORMWATER QUALITY REQUIREMENTS

The TA Lands Subdivision Pond provides dead storage of 1.7 ac-ft. This is achieved by holding the pond bottom at an elevation of 5017 feet, which is 3.2 feet below the inlet into the outlet pipe. This dead storage volume, in addition to dead storage provided in the internal ponds, meets the SWQV requirements of the new City Drainage Ordinance per

Section 6-12 of the City's DPM. The required storage for the entire subdivision is calculated as 0.42 inches times the subdivision acreage times the percent impervious, and is equal to 3.1 ac-ft. The percolation test data and infiltration calculations included in Appendix E show that the dead storage will drain in less than 96 hours. This percolation test data was taken at the location of the TA Lands Subdivision Pond and the percolation rate is assumed to be similar at the internal pond locations.

The retention volume of 1.7 ac-ft provided in the TA Lands Subdivision Pond and 2.5 ac-ft provided the internal ponds, fulfil the water quality requirement for this project. The results of the detention pond analysis are included in Appendix E and are summarized in Table 3.

TABLE 3 – RETENTION VOLUME

Pond Name	Retention Volume (ac-ft)	Retention Depth (ft)	Infiltration Time (hours)
South West	0.16	0.5	1
Mid	0.23	2.0	5
North	0.79	2.0	5
South	1.33	6.5	17
Main	1.70	3.2	9
Total	4.21	-	-

IX. FEMA FLOODPLAIN ANALYSIS

The Sacate Blanco Arroyo is currently delineated as a FEMA Zone A. Refer to Exhibit B for an excerpt from the FEMA Flood Insurance Rate Map (FIRM) panel. Zone A is defined by FEMA as:

The flood hazard zone that corresponds to the 1-percent-annual chance floodplains that are determined by Zone A study methods in shallow flooding areas. No 1-percent-annual-chance flood elevations or average depths are shown within this zone on the FIRM.

A. PROPOSED FLOODPLAIN IMPACTS

The existing floodplain delineation will be removed from the FIRM by the proposed development because the 1-percent-annual-chance flood event will be conveyed underground in the storm drain network with some above ground ponding areas. The ponding areas will be added to the FIRM as Zone AE areas.

B. LETTER OF MAP REVISION SUBMITTALS

Coordination with FEMA and the local floodplain manager is required as part of the Conditional Letter of Map Revision (CLOMR) and Letter of Map Revision (LOMR) process. A CLOMR will be submitted to FEMA during the design phase to demonstrate the proposed improvements are sufficient to remove the floodplain. After construction is complete, a LOMR will be submitted to FEMA to demonstrate the improvements constructed are consistent with the CLOMR at which time the FIRM can officially be revised.

X. GRADING PLAN

The grading plan for TA Lands Subdivision is included in Exhibit G of this report. Exhibit H illustrates the grading for the TA Lands Subdivision downstream pond.

XI. CONCLUSION

This drainage report is in compliance with the previously approved *Amole-Hubbell Drainage Master Plan Update* (Wilson, 2013), drainage reports, and the City of Albuquerque DPM and summarizes the hydrologic and hydraulic analysis for the new subdivision. With the proposed storm drain network there are no adverse effects anticipated to the existing infrastructure. The proposed storm drain infrastructure and drainage management schemes allow for the safe management of storm runoff. The implementation of these concepts would result in the safe passage of the 100 year - 24 hour storm event.

APPENDICES

APPENDIX A: BASIN ANALYSIS AND SUMMARY OF LAND TREATMENTS

APPENDIX B: INLET/STREET HYDRAULICS

APPENDIX C: STORM DRAIN PIPE ANALYSIS

APPENDIX D: ONSITE DETENTION PONDS ANALYSIS

APPENDIX E: TA LANDS SUBDIVISION POND ANALYSIS

APPENDIX F: MANUFACTURES CURVILINEAR PIPE RECOMMENDATIONS

APPENDIX A
BASIN ANALYSIS AND SUMMARY OF LAND TREATMENTS

TA Land

Existing Conditions Basin Data Table

This table is based on the DPM Section 6-2, Zone: 1

Basin ID	Area (SQ. FT)	Area (AC.)	Land Treatment Percentages				Q(100yr) (cfs/ac.)	Q(100yr) (CFS)
			A	B	C	D		
			77	79	86	98		
Onsite								
OFFSITE EX BASIN 1	1034013.643	23.74	75.0%	20.0%	5.0%	0.0%	1.73	*41.1*
OFFSITE EX BASIN 2A	334106.756	7.67	80.0%	17.0%	3.0%	0.0%	1.69	*12.9*
OFFSITE EX BASIN 2B	225905.9836	5.19	80.0%	17.0%	3.0%	0.0%	1.69	*8.7*
OFFSITE EX BASIN 2C	1107522.353	25.43	80.0%	17.0%	3.0%	0.0%	1.69	*42.8*
ONSITE EX BASIN 2D	1173948.954	26.95	80.0%	17.0%	3.0%	0.0%	1.69	*45.4*
OFFSITE EX BASIN 3A	402370.7844	9.24	78.0%	15.0%	7.0%	0.0%	1.73	*15.9*
ONSITE EX BASIN 3B	1158636.409	26.60	78.0%	15.0%	7.0%	0.0%	1.73	*45.9*
OFFSITE EX BASIN 4	-	-	-	-	-	-		*148.4*
OFFSITE EX BASIN 5	-	-	-	-	-	-		*2.7*
SUBTOTAL	**5436504.88**	**124.80**	**-**	**-**	**-**	**-**	**-**	***364.0***

TA Land

Proposed Conditions Basin Data Table

1

Basin ID	Area (SQ. FT)	Area (AC.)	Land Treatment Percentages				Q(100yr) (CFS)
			A	B	C	D	
			77	79	86	98	
Onsite							
Offsite EX basin 4	-	-	-	-	-	-	*148.4*
Offsite EX basin 5	-	-	-	-	-	-	*2.7*
Basin 1	22078.3099	0.51	0.0%	25.0%	25.0%	50.0%	*1.7*
Basin 2	129579.9752	2.97	0.0%	25.0%	25.0%	50.0%	*9.9*
Basin 2A	99403.2586	2.28	0.0%	50.0%	50.0%	0.0%	*5.7*
Basin 3	74454.7247	1.71	0.0%	25.0%	25.0%	50.0%	*5.7*
Basin 4	124389.773	2.86	0.0%	25.0%	25.0%	50.0%	*9.5*
Basin 5	82202.3323	1.89	0.0%	25.0%	25.0%	50.0%	*6.3*
Basin 6	51489.7563	1.18	0.0%	25.0%	25.0%	50.0%	*3.9*
Basin 6A	78762.4576	1.81	0.0%	25.0%	25.0%	50.0%	*6.0*
Basin 7	233683.8426	5.36	0.0%	25.0%	25.0%	50.0%	*17.8*
Basin 7A	14067.4922	0.32	0.0%	25.0%	25.0%	50.0%	*1.1*
Basin 8	134694.3744	3.09	0.0%	25.0%	25.0%	50.0%	*10.3*
Basin 9	60822.2287	1.40	0.0%	50.0%	50.0%	0.0%	*3.5*
Basin 10	233500.3371	5.36	0.0%	25.0%	25.0%	50.0%	*17.8*
Basin 10A	49954.058	1.15	0.0%	50.0%	50.0%	0.0%	*2.9*
Basin 11	72030.94	1.65	0.0%	25.0%	25.0%	50.0%	*5.5*
Basin 12	92431.96	2.12	0.0%	25.0%	25.0%	50.0%	*7.0*
Basin 13	129084.19	2.96	0.0%	25.0%	25.0%	50.0%	*9.8*
Basin 14	39161.14	0.90	0.0%	25.0%	25.0%	50.0%	*3.0*
Basin 15	195266.80	4.48	0.0%	25.0%	25.0%	50.0%	*14.9*
Basin 16	89320.97	2.05	0.0%	25.0%	25.0%	50.0%	*6.8*
Basin 16A	204619.55	4.70	0.0%	25.0%	25.0%	50.0%	*15.6*
Basin 17	103087.21	2.37	0.0%	25.0%	25.0%	50.0%	*7.9*
Basin 18	90120.93	2.07	0.0%	25.0%	25.0%	50.0%	*6.9*
Basin 19	22126.02	0.51	0.0%	25.0%	25.0%	50.0%	*1.7*
Basin 20	71523.32	1.64	0.0%	25.0%	25.0%	50.0%	*5.4*
Basin 21	160763.2526	3.69	0.0%	25.0%	25.0%	50.0%	*12.2*
Basin 22	74170.8261	1.70	0.0%	25.0%	25.0%	50.0%	*5.6*
Basin 23	168857.226	3.88	0.0%	25.0%	25.0%	50.0%	*12.9*
Basin 24	39893.2901	0.92	0.0%	25.0%	25.0%	50.0%	*3.0*
Basin 25	47031.8901	1.08	0.0%	25.0%	25.0%	50.0%	*3.6*
Basin 25A	13853.4094	0.32	0.0%	25.0%	25.0%	50.0%	*1.1*
Basin 26	46988.6408	1.08	0.0%	25.0%	25.0%	50.0%	*3.6*
Basin 27	102731.9143	2.36	0.0%	50.0%	50.0%	0.0%	*5.9*
Basin 28	65074.46	1.49	0.0%	25.0%	25.0%	50.0%	*5.0*
Basin 28A	92631.83	2.13	0.0%	25.0%	25.0%	50.0%	*7.1*
Basin 29	214538.49	4.93	0.0%	25.0%	25.0%	50.0%	*16.3*
Basin 30	158252.90	3.63	0.0%	25.0%	25.0%	50.0%	*12.1*
Basin 31	182192.11	4.18	0.0%	25.0%	25.0%	50.0%	*13.9*
Basin 32	110105.69	2.53	0.0%	25.0%	25.0%	50.0%	*8.4*
Basin 33	198682.69	4.56	0.0%	25.0%	25.0%	50.0%	*15.1*
Basin 33A	18178.85	0.42	0.0%	25.0%	25.0%	50.0%	*1.4*
Basin 34	30767.30	0.71	0.0%	25.0%	25.0%	50.0%	*2.3*
Basin 34A	66439.73	1.53	0.0%	25.0%	25.0%	50.0%	*5.1*
Basin 35	118597.23	2.72	0.0%	25.0%	25.0%	50.0%	*9.0*
Basin 35A	59972.58	1.38	0.0%	50.0%	50.0%	0.0%	*3.5*
Basin 35B	14149.14	0.32	0.0%	50.0%	50.0%	0.0%	*0.8*
Basin 36	180730.72	4.15	0.0%	25.0%	25.0%	50.0%	*13.8*
Basin 36A	95115.28	2.18	0.0%	50.0%	50.0%	0.0%	*5.5*
Basin 37	159139.13	3.65	0.0%	25.0%	25.0%	50.0%	*12.1*
Basin 38	218528.24	5.02	0.0%	25.0%	25.0%	50.0%	*16.6*
Basin 39	6670.00	0.15	0.0%	25.0%	25.0%	50.0%	*0.5*
Basin 39A	8428.00	0.19	0.0%	25.0%	25.0%	50.0%	*0.6*
Basin 40	144975.91	3.33	0.0%	25.0%	25.0%	50.0%	*11.0*
Basin 41	135270.89	3.11	0.0%	25.0%	25.0%	50.0%	*10.3*
Basin 42	4936.28	0.11	0.0%	25.0%	25.0%	50.0%	*0.4*
SUBTOTAL	**5435523.86**	**124.8**	-	-	-	-	***556.2***

APPENDIX B
INLET/STREET HYDRAULICS

AP19
Q = 6.3 + 9.5 + 3.9 +6.0 cfs
Q = 25.7cfs
(flow contained in street)

AP25
Q = 17.8 cfs
(flow contained in street)

AP26
Q = 17.8 + 1.1 = 18.9 cfs
(flow contained in street)

AP27
Q = 18.9 + 10.3 = 29.2 cfs
Inlet in sump condition

IN1
Q = 29.2 cfs

Q_T = 29.2 cfs

Qin = 151.4 cfs

Qout = 37.0 cfs

Qout = 12.5 cfs

AP29
Q = 6.8 cfs
(flow contained in street)

IN2
Q = 5.3 cfs

Q_T = 16.24 cfs

Q_{bypass} = 5.64 cfs

IN3
Q = 5.3 cfs

AP28
Q = 16.24 - 10.6 cfs
Q = 5.64 cfs
(inlets 2 & 3)
(flow contained in street)

AP30
Q = 5.64 + 1.56 + 6.8 + = 14.0 cfs
(flow contained in street)

IN4
Q = 5.9 cfs

Q_T = 19.39 cfs

Q_{bypass} = 7.59 cfs

IN5
Q = 5.9 cfs

AP31
Q = 14.0 + 5.39 cfs
Q = 19.39 - 11.8 = 7.59 cfs
(inlets 4 & 5)
(flow contained in street)

AP11
Q = 9.5 cfs
(flow contained in street)

Q = 25.7+ 3.0 = 28.7 cfs
Q = 28.7 - 13.6 = 15.1 cfs
(inlets 11 & 12)
(flow contained in street)

IN6
Q = 6.8 cfs

IN6
Q = 6.8 cfs

PH3-20 PH3-19 PH3-18 PH3-17 PH3-16 PH3-15 PH3-14 PH3-13 PH3-12 PH3-9 PH3-8 PH3-7 PH3-6 PH3-5 PH3-2

LEGEND

EXISTING STORM DRAIN

PROPOSED STORM DRAIN

PROPOSED STORM DRAIN MANHOLE

PROPOSED STORM DRAIN INLET

N

60 30 0 60

1" = 60'

INLET SCHEMATICS EXHIBIT

TA LAND

DRAWN BY: RV	DATE: 6/24/25	
CHECKED BY: KMK	BHI PROJECT NO. 20250012	SHEET NO.

Bohannan Huston
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Fri, 24-Oct-2025 - 1:17 pm, Plotted by: RVELA, ONYX
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Inlet 1

BACKBONE SD INLET IN SUMP CONDITION IN 1

ANALYSIS OF AN INLET IN A SUMP CONDITION - **1 inlet in sump**

INLET TYPE: Double Grate Type "A" with curb opening wings on both sides on inlet.

WEIR: Q=C*L*H^1.5

Wing opening	Grate opening
C= 3.0	C=3.0
L= 4.0 ft	L(double grate)=[2(2.67')+2(1.8')]=8.94 ft
Q=3.0(4.0')H^1.5= 12.0H^1.5	Q=3.0(8.94)H^1.5=26.82*H^1.5

ORIFICE: Q=C*A*(2*G*H)^0.5

Grate opening	Wing opening*
C=0.6	C=0.6
A(double grate)=8.19 sf	A=2.0 sf
Q=0.6(7.14)((64.4*H))^0.5	Q=1.2*(64.4*H)^0.5

*not included in the orifice calc

	WS ELEVATION	HEIGHT ABOVE INLET	Q (CFS) WEIR "A" OPENING	Q (CFS) WEIR DOUBLE GRATE	Q (CFS) ORIFICE DOUBLE GRATE	TOTAL Q (CFS)	**COMMENTS:**
~FL @ INLET	0.00	0.00	0.00	0.00	0.00	0.00	Flow at double "A" inlet w/ two wing openings
	0.10	0.10	0.38	0.85	12.47	1.61	Weir controls on grate analysis
	0.20	0.20	1.07	2.40	17.64	4.55	
	0.30	0.30	1.97	4.41	21.60	8.35	
	0.40	0.40	3.04	6.78	24.94	12.86	
	0.50	0.50	4.24	9.48	27.88	17.97	
	0.60	0.60	5.58	12.46	30.55	23.62	
TOP OF CURB	0.70	0.70	7.03	15.71	32.99	29.76	@ Q(100 yr) = 29.2 cfs (flow below curb)
	0.80	0.80	8.59	19.19	35.27	36.36	
ROW LIMIT	0.86	0.86	9.52	21.28	36.51	40.32	@ 2x Q(100 yr) = 29.2 cfs (flow below ROW)
	0.90	0.90	10.25	22.90	37.41	43.39	
	1.00	1.00	12.00	26.82	39.43	50.82	
	1.10	1.10	13.84	30.94	41.36	58.63	

NOTE: The total runoff intercepted by the inlet at the low point in the road is:

Qr(100) = 2*[(runoff of the wing opening) + (the lesser of the weir or orifice amount taken by the double grate)].

Inlets 2-9

48ft Streets @ S=2.86%

MANNING'S N = 0.017 SLOPE = 0.029 (ft/ft)

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1.0	0.000	0.860	5.000	12.000	0.130	9.000	38.000	0.670
2.0	9.380	0.670	6.000	24.000	0.370	10.000	38.630	0.670
3.0	10.000	0.670	7.000	36.000	0.130	11.000	48.000	0.860
4.0	10.000	0.000	8.000	38.000	0.000			

WSEL FT.	DEPTH INC	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID PLUS OBSTRUCTIONS	TOPWID WATER	TOTAL ENERGY (FT)	FROUDE NO.
0.020	0.020	0.006	0.004	0.657	0.657	1.865	0.615	0.027	1.158
0.040	0.040	0.025	0.026	1.313	1.043	2.481	1.231	0.057	1.300
0.060	0.060	0.055	0.076	1.970	1.367	3.096	1.846	0.089	1.391
0.080	0.080	0.098	0.163	2.627	1.656	3.712	2.462	0.123	1.460
0.100	0.100	0.154	0.296	3.283	1.921	4.327	3.077	0.157	1.515
0.120	0.120	0.222	0.481	3.940	2.170	4.942	3.692	0.193	1.562
0.140	0.140	0.305	0.673	5.289	2.207	6.250	5.000	0.216	1.575
0.160	0.160	0.425	0.941	7.329	2.215	8.250	7.000	0.236	1.585
0.180	0.180	0.585	1.361	9.369	2.327	10.250	9.000	0.264	1.609
0.200	0.200	0.785	1.948	11.410	2.482	12.250	11.000	0.296	1.638
0.220	0.220	1.025	2.724	13.450	2.657	14.250	13.000	0.330	1.668
0.240	0.240	1.305	3.707	15.491	2.841	16.250	15.000	0.366	1.698
0.260	0.260	1.625	4.920	17.531	3.028	18.250	17.000	0.403	1.726
0.280	0.280	1.985	6.382	19.571	3.215	20.250	19.000	0.441	1.754
0.300	0.300	2.385	8.112	21.612	3.401	22.250	21.000	0.480	1.779
0.320	0.320	2.825	10.128	23.652	3.585	24.250	23.000	0.520	1.804
0.340	0.340	3.305	12.450	25.693	3.767	26.250	25.000	0.561	1.827
0.360	0.360	3.825	15.094	27.733	3.946	28.250	27.000	0.602	1.848
0.380	0.380	4.380	18.459	28.773	4.214	29.250	28.000	0.656	1.879
0.400	0.400	4.940	22.537	28.813	4.562	29.250	28.000	0.724	1.915
0.420	0.420	5.500	26.929	28.853	4.896	29.250	28.000	0.793	1.948
0.440	0.440	6.060	31.623	28.893	5.218	29.250	28.000	0.864	1.978
0.460	0.460	6.620	36.609	28.933	5.530	29.250	28.000	0.936	2.005
0.480	0.480	7.180	41.876	28.973	5.832	29.250	28.000	1.009	2.030
0.500	0.500	7.740	47.416	29.013	6.126	29.250	28.000	1.084	2.054
0.520	0.520	8.300	53.221	29.053	6.412	29.250	28.000	1.160	2.076
0.540	0.540	8.860	59.285	29.093	6.691	29.250	28.000	1.236	2.097
0.560	0.560	9.420	65.601	29.133	6.964	29.250	28.000	1.314	2.117
0.580	0.580	9.980	72.163	29.173	7.231	29.250	28.000	1.393	2.135
0.600	0.600	10.540	78.965	29.213	7.492	29.250	28.000	1.473	2.153
0.620	0.620	11.100	86.002	29.253	7.748	29.250	28.000	1.554	2.169
0.640	0.640	11.660	93.269	29.293	7.999	29.250	28.000	1.635	2.185
0.660	0.660	12.220	100.762	29.333	8.246	29.250	28.000	1.718	2.200
0.680	0.680	12.785	106.181	30.360	8.305	30.237	28.987	1.753	2.205
0.700	0.700	13.422	107.566	33.624	8.014	32.211	32.211	1.699	2.189
0.720	0.720	14.086	112.145	35.638	7.962	34.184	34.184	1.706	2.187
0.740	0.740	14.789	117.256	37.653	7.928	36.158	36.158	1.718	2.186
0.760	0.760	15.532	122.892	39.667	7.912	38.132	38.132	1.734	2.186
0.780	0.780	16.315	129.049	41.681	7.910	40.105	40.105	1.753	2.186
0.800	0.800	17.136	135.727	43.695	7.920	42.079	42.079	1.776	2.188
0.820	0.820	17.998	142.927	45.709	7.941	44.053	44.053	1.801	2.190
0.840	0.840	18.898	150.654	47.723	7.972	46.026	46.026	1.828	2.193

Q = 16.24 CFS
D = .37'
Inlets 2 & 3

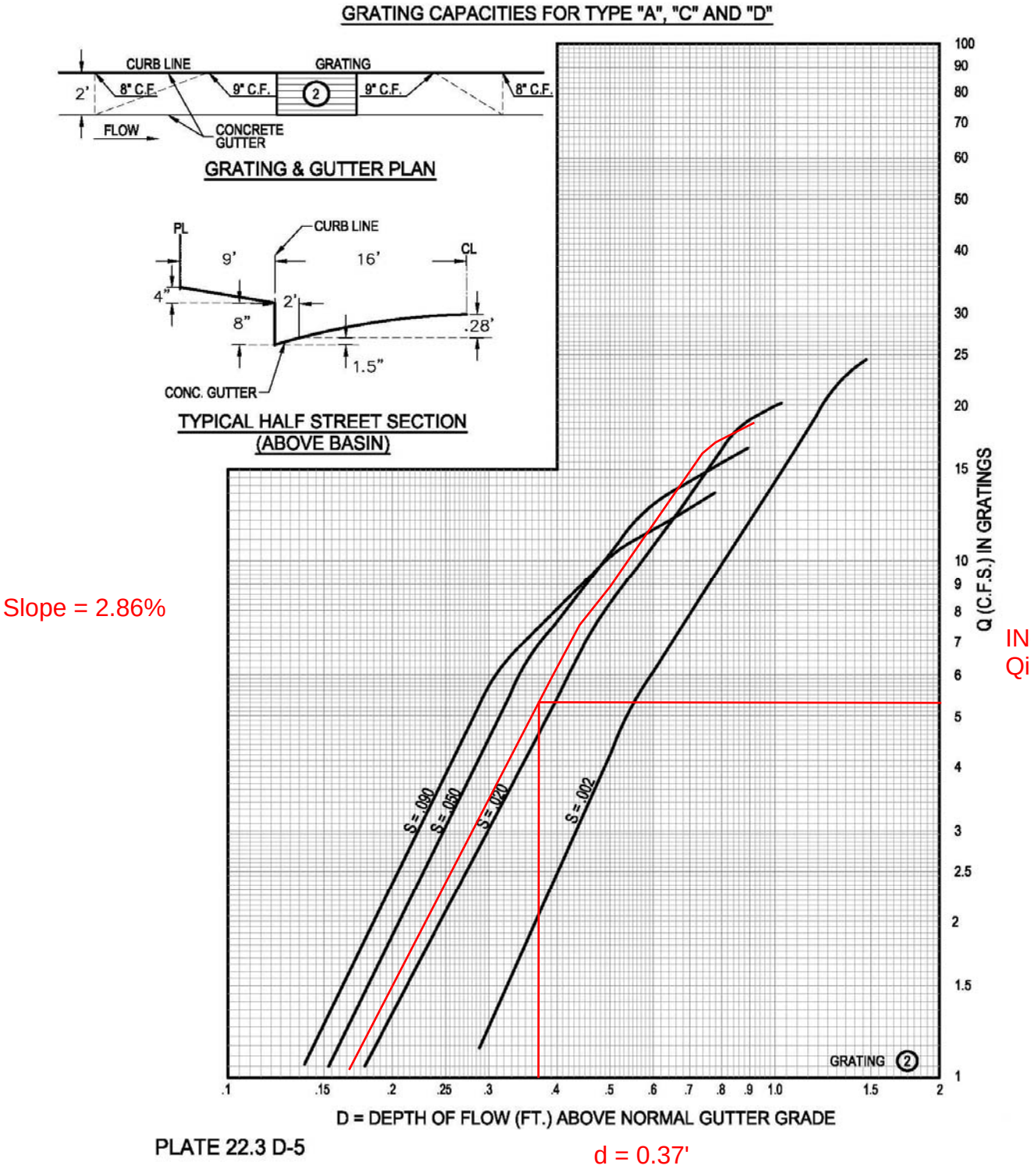
Q = 19.39 CFS
D = .39'
Inlets 4 & 5

Q = 27.12 CFS
D = .43'
Inlets 6 & 7

Q = 29.55 CFS
D = .43'
Inlets 8 & 9

Q = 31.623 CFS
EGL Controlled

Inlets 2 & 3

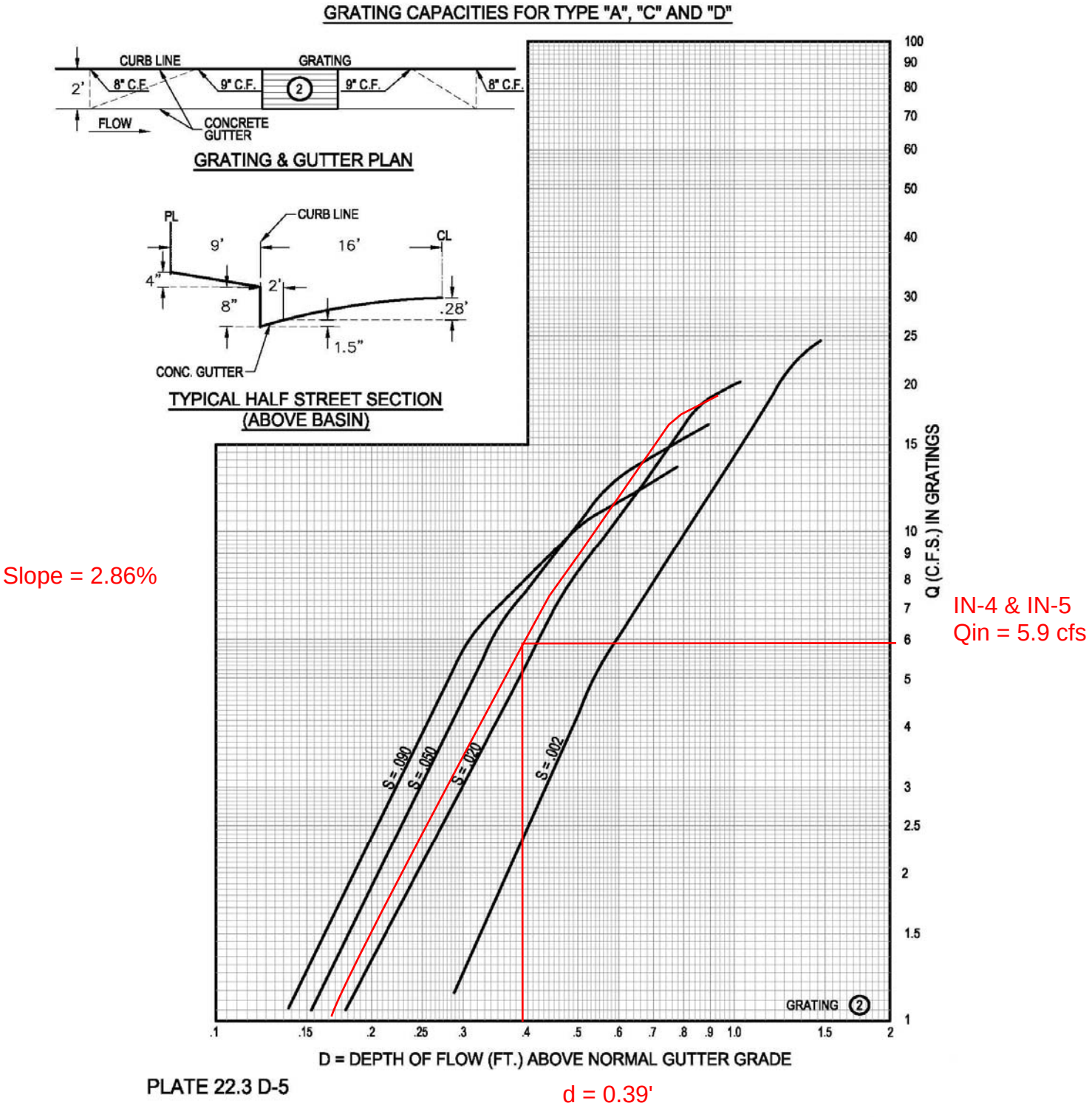


Slope = 2.86%

IN-2 & IN-3
Qin = 5.3 cfs

d = 0.37'

Inlets 4 & 5



Slope = 2.86%

IN-4 & IN-5
Qin = 5.9 cfs

d = 0.39'

LEGEND

EXISTING STORM DRAIN

PROPOSED STORM DRAIN

PROPOSED STORM DRAIN MANHOLE

PROPOSED STORM DRAIN INLET

AP20
Q = 25.7+ 3.0 = 28.7 cfs
Q = 28.7 - 13.6 = 15.1 cfs
(inlets 11 & 12)
(flow contained in street)

IN5
Q = 6.8 cfs

IN6
Q = 6.8 cfs

Q = 9.8 cfs
(flow contained in street)

(flow contained in street)

AP41
Q = 8.4 + 30.4+ 2.3 + 1.49
Q = 42.6 cfs
(flow contained in street)

AP40
Q = 8.4 cfs
(flow contained in street)

AP38
Q = 12.1 cfs
(flow contained in street)

AP39
Q = 12.1 + 17.0 + 1.31
Q = 30.4 cfs
(flow contained in street)

AP24
Q = 5.4 cfs
(flow contained in street)

AP36
Q = 16.3 cfs
(flow contained in street)

AP34
Q = 14.9 cfs
(flow contained in street)

AP35
Q = 15.15 + 1.68 = 16.8 cfs
(flow contained in street)

AP37
Q = 16.3 + .67 cfs
Q = 17.0 cfs
(flow contained in street)

AP33
Q = 25.6 + 1.50 cfs
Q = 27.12- 14.0= 13.12 cfs
(flow contained in street)

AP29
Q = 6.8 cfs
(flow contained in street)

IN10
Q = 11.5

cfs

Q_T = 23.0 cfs

cfs

IN10A
Q = 11.5

AP35A
Q = 5.4 + 16.8+ 0.8 cfs
Q = 23.0 cfs
Inlet in sump condition

IN4
Q = 5.9 cfs

IN5
Q = 5.9 cfs

Q_T = 27.12 cfs

IN6
Q = 7.0 cfs

Q_{bypass} = 13.12 cfs

IN8
Q = 7.2 cfs

IN9
Q = 7.2 cfs

Q_{bypass} = 15.15 cfs

IN7
Q = 7.0 cfs

Q_T = 29.55 cfs

Q_{in} = 108.6 cfs
Q_{in} = 56.0 cfs

AP31
Q = 14.0 + 5.39 cfs
Q = 19.39 - 11.8 = 7.59 cfs
(Inlets 4 & 5)
(flow contained in street)

AP32
Q = 7.56 + 15.6 + 2.46
= 25.6 cfs
(flow contained in street)

AP34A
Q = 13.12 + 14.9 + 1.53 = 29.55 cfs
Q = 29.55 - 14.4 = 15.15 cfs
(Inlets 8 & 9)
(flow contained in street)

AP30
Q = 5.64 + 1.56 + 6.8 + = 14.0 cfs
(flow contained in street)

N

60 30 0 60

1" = 60'

INLET SCHEMATICS EXHIBIT

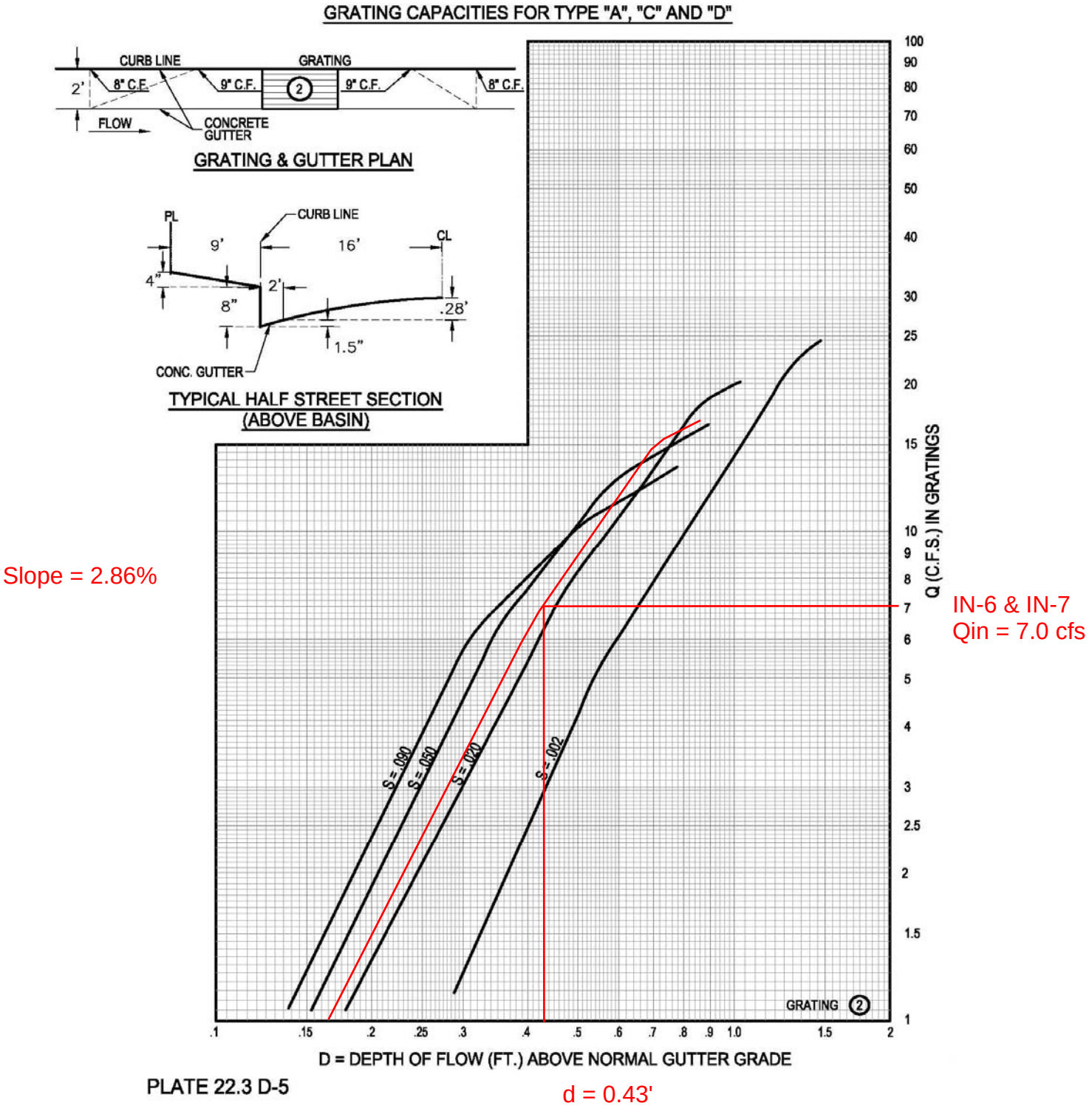
TA LAND

DRAWN BY:	DATE:	
RV	6/24/25	
CHECKED BY:	BHI PROJECT NO.	SHEET NO.
KMK	20250012	

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P:\20250012\CIVIL\Plans\General\20250012_LMic_Schematics.dwg

Inlets 6 & 7

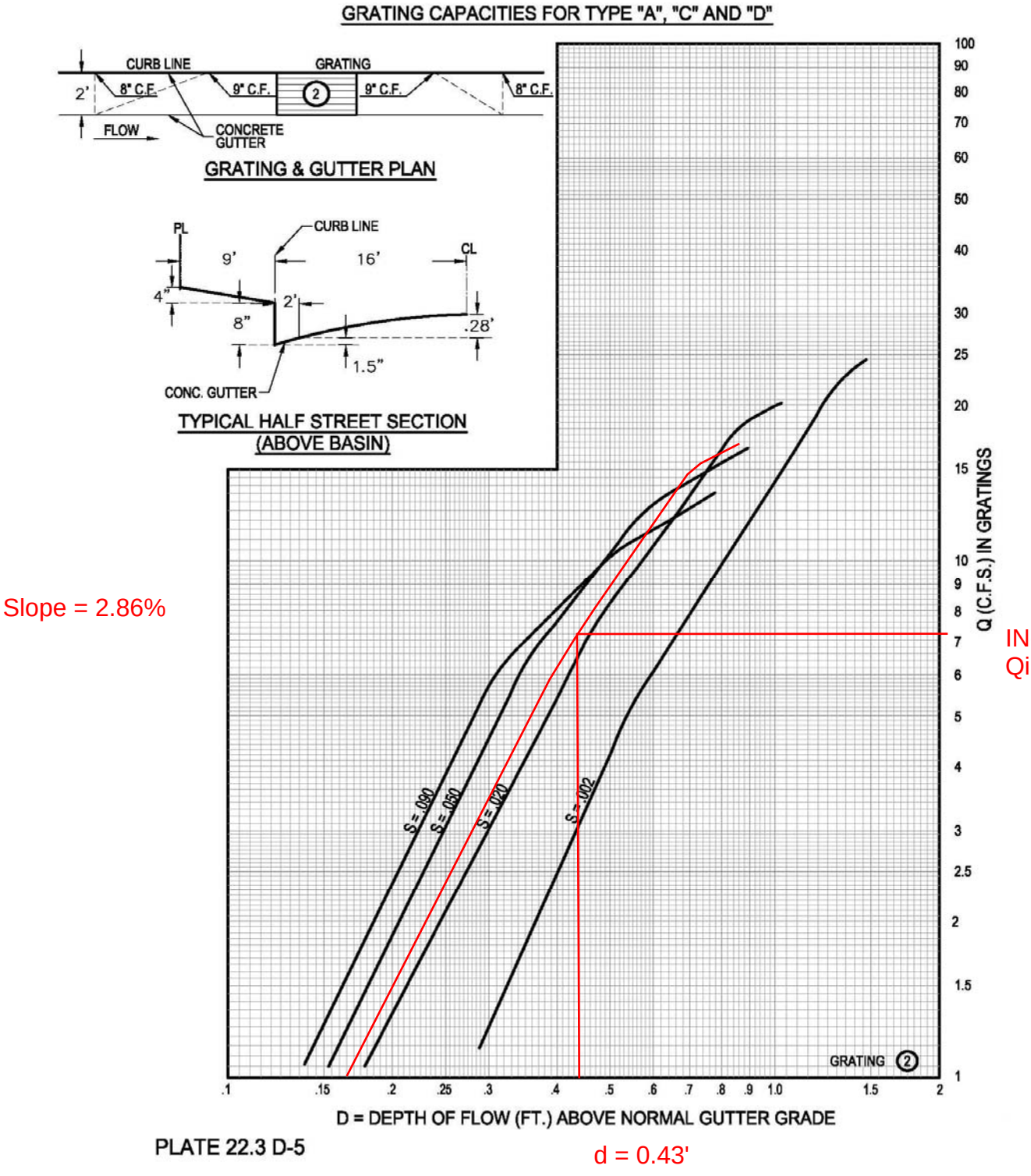


Slope = 2.86%

IN-6 & IN-7
Qin = 7.0 cfs

d = 0.43'

Inlets 8 & 9



Slope = 2.86%

IN-8 & IN-9
Qin = 7.2 cfs

d = 0.43'

Backbone SD Inlets 10

ANALYSIS OF AN INLET IN A SUMP CONDITION **1 INLET IN SUMP CONDITION**

INLET TYPE: Single Grate Type "A" with curb opening wings on both sides on inlet.

WEIR: Q=C*L*H^1.5

Wing opening
C= 3.0
L= 4.0 ft
Q=3.0(4.0')H^1.5= 12.0H**1.5

Grate opening
C=3.0
L(single grate)=[(2.67')+2(1.8')]=6.27 ft
Q=3.0(6.27)H^1.5=18.81*H^1.5

ORIFICE: Q=C*A*(2*G*H)^0.5

Grate opening
C=0.6
A(single grate)=3.72 sf
Q=0.6*3.72*(64.4*H)^0.5

Wing opening*
C=0.6
A=2.0 sf
Q=1.2*(64.4*H)^0.5
*not included in the orifice calcs

	WS ELEVATION	HEIGHT ABOVE INLET	Q (CFS) WEIR WING OPENING	Q (CFS) WEIR SINGLE GRATE	Q (CFS) ORIFICE SINGLE GRATE	TOTAL Q (CFS)	**COMMENTS:**
~FL @ INLET	0.00	0.00	0.00	0.00	0.00	0.00	Flow at single "A" inlet w/ two wing openings
	0.10	0.10	0.38	0.59	5.66	1.35	Weir controls on grate analysis
	0.20	0.20	1.07	1.68	8.01	3.83	
	0.30	0.30	1.97	3.09	9.81	7.03	
	0.40	0.40	3.04	4.76	11.33	10.83	
	0.50	0.50	4.24	6.65	12.67	15.14	
	0.60	0.60	5.58	8.74	13.87	19.90	
TOP OF CURB	0.70	0.70	7.03	11.02	14.99	25.07	@ Q(100 yr) = 11.5 per inlet (Flow below curb)
	0.80	0.80	8.59	13.46	16.02	30.63	
ROW LIMIT	0.86	0.86	9.52	14.92	16.58	33.96	@ 2x Q(100 yr) = 23 per inlet (Flow below ROW)
	0.90	0.90	10.25	16.06	16.99	36.55	
	1.00	1.00	12.00	18.81	17.91	41.91	

NOTE: The total runoff intercepted by the inlet at the low point in the road is:

Q(100) = 2*[(runoff of the wing opening) + (the lesser of the weir or orifice amount taken by the double grate)].

BACKBONE SD INLET IN SUMP CONDITION IN 10A

ANALYSIS OF AN INLET IN A SUMP CONDITION - **1 inlet in sump**

INLET TYPE: Double Grate Type "A" with curb opening wings on both sides on inlet.

WEIR: Q=C*L*H^1.5

Wing opening
C= 3.0
L= 4.0 ft
Q=3.0(4.0')H^1.5= 12.0H^1.5

Grate opening
C=3.0
L(double grate)=[2(2.67')+2(1.8')]=8.94 ft
Q=3.0(8.94)H^1.5=26.82*H^1.5

ORIFICE: Q=C*A*(2*G*H)^0.5

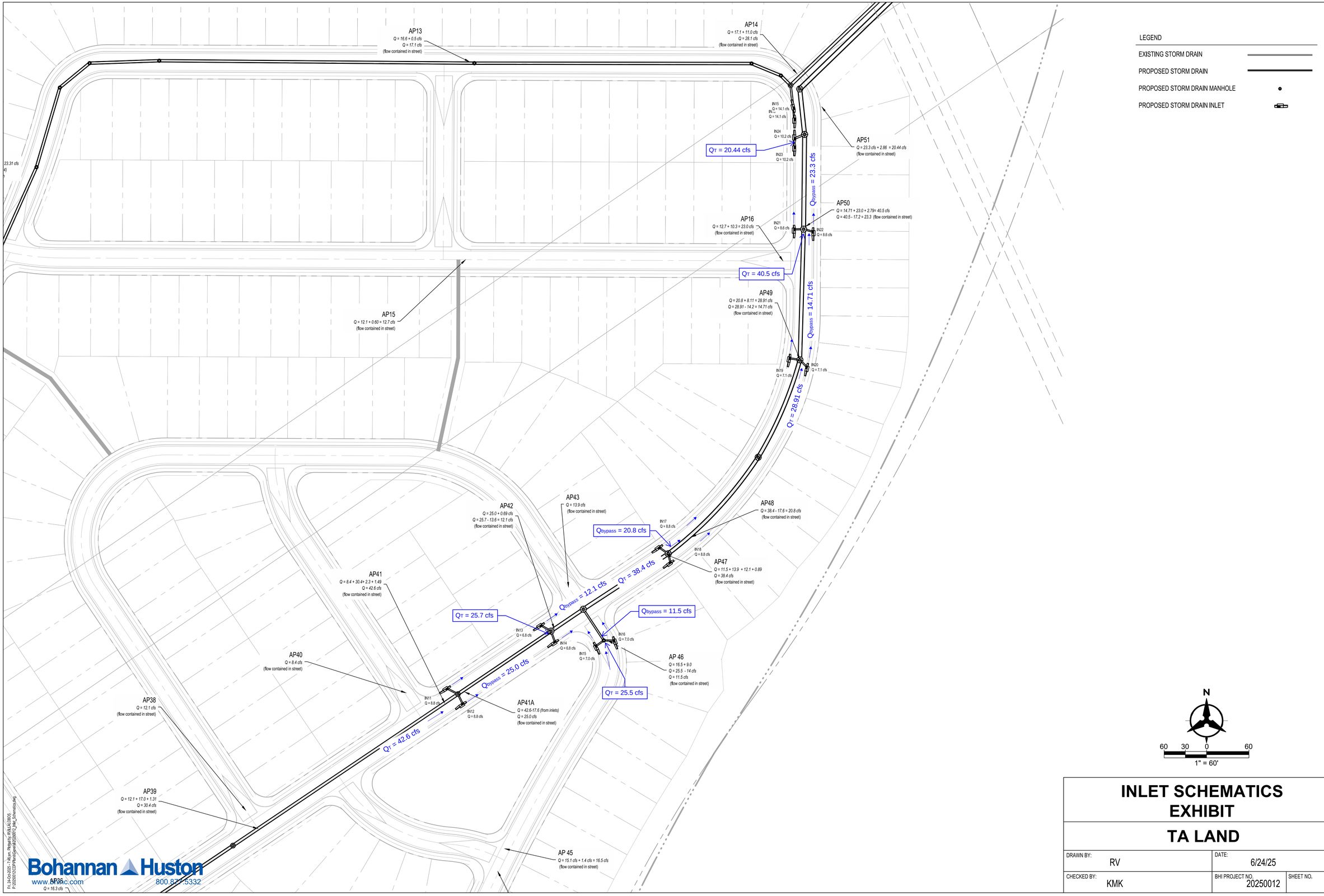
Grate opening
C=0.6
A(double grate)=8.19 sf
Q=0.6(7.14)((64.4*H))^0.5

Wing opening*
C=0.6
A=2.0 sf
Q=1.2*(64.4*H)^0.5
*not included in the orifice calc

	WS ELEVATION	HEIGHT ABOVE INLET	Q (CFS) WEIR "A" OPENING	Q (CFS) WEIR DOUBLE GRATE	Q (CFS) ORIFICE DOUBLE GRATE	TOTAL Q (CFS)	**COMMENTS:**
~FL @ INLET	0.00	0.00	0.00	0.00	0.00	0.00	Flow at double "A" inlet w/ two wing openings
	0.10	0.10	0.38	0.85	12.47	1.61	Weir controls on grate analysis
	0.20	0.20	1.07	2.40	17.64	4.55	
	0.30	0.30	1.97	4.41	21.60	8.35	
	0.40	0.40	3.04	6.78	24.94	12.86	
	0.50	0.50	4.24	9.48	27.88	17.97	
	0.60	0.60	5.58	12.46	30.55	23.62	
TOP OF CURB	0.70	0.70	7.03	15.71	32.99	29.76	@ Q(100 yr) = 11.5 cfs (flow below curb)
	0.80	0.80	8.59	19.19	35.27	36.36	
ROW LIMIT	0.86	0.86	9.52	21.28	36.51	40.32	@ 2x Q(100 yr) = 23 cfs (flow below ROW)
	0.90	0.90	10.25	22.90	37.41	43.39	
	1.00	1.00	12.00	26.82	39.43	50.82	
	1.10	1.10	13.84	30.94	41.36	58.63	

NOTE: The total runoff intercepted by the inlet at the low point in the road is:

Qr(100) = 2*[(runoff of the wing opening) + (the lesser of the weir or orifice amount taken by the double grate)].



INLET SCHEMATICS EXHIBIT

TA LAND

DRAWN BY: RV	DATE: 6/24/25	
CHECKED BY: KMK	BHI PROJECT NO. 20250012	SHEET NO.

Bohannan Huston
www.bhinc.com 800.877.5332

Fr: 24-Oct-2025 - 7:46 am Plotted by: RVELLA0 08/25
P:\2025\01CCP\Plans\Exhibits\20250012_Inlet_Schematics.dwg

Inlets 11-14

52ftROW-32ftRoad @ S=0.62%

MANNING'S N = 0.017 SLOPE = 0.006 (ft/ft)

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1.0	0.000	0.860	5.000	12.000	0.130	9.000	42.000	0.670
2.0	9.380	0.670	6.000	26.000	0.410	10.000	42.630	0.670
3.0	10.000	0.670	7.000	40.000	0.130	11.000	52.000	0.860
4.0	10.000	0.000	8.000	42.000	0.000			

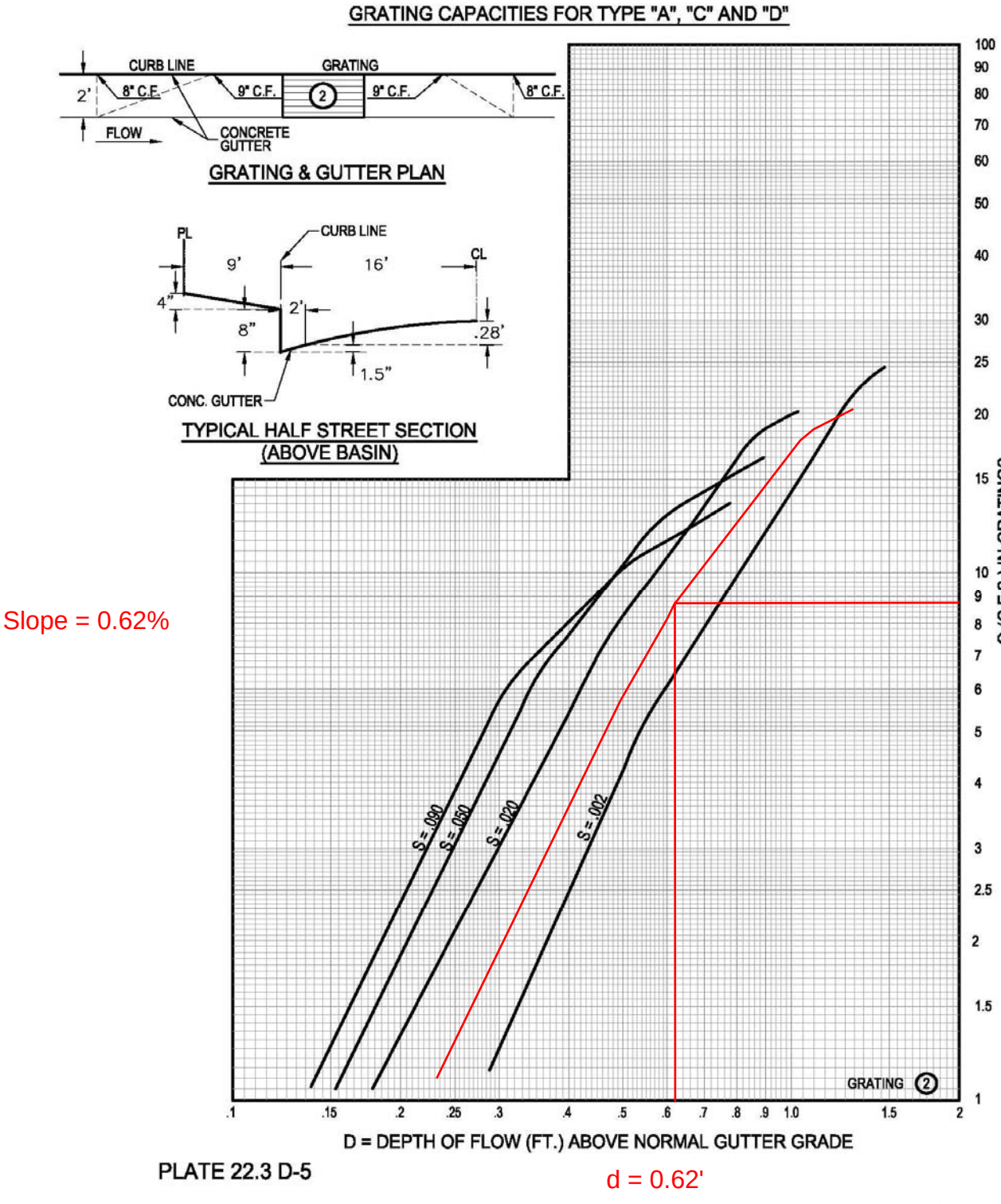
WSEL FT.	DEPTH INC	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID PLUS OBSTRUCTIONS	TOPWID WATER	TOTAL ENERGY (FT)	FROUDE NO.
0.020	0.020	0.006	0.002	0.657	0.306	1.865	0.615	0.021	0.539
0.040	0.040	0.025	0.012	1.313	0.486	2.481	1.231	0.044	0.605
0.060	0.060	0.055	0.035	1.970	0.636	3.096	1.846	0.066	0.648
0.080	0.080	0.098	0.076	2.627	0.771	3.712	2.462	0.089	0.680
0.100	0.100	0.154	0.138	3.283	0.895	4.327	3.077	0.112	0.705
0.120	0.120	0.222	0.224	3.940	1.010	4.942	3.692	0.136	0.727
0.140	0.140	0.305	0.313	5.289	1.027	6.250	5.000	0.156	0.733
0.160	0.160	0.425	0.438	7.329	1.031	8.250	7.000	0.177	0.738
0.180	0.180	0.585	0.634	9.369	1.083	10.250	9.000	0.198	0.749
0.200	0.200	0.785	0.907	11.410	1.156	12.250	11.000	0.221	0.763
0.220	0.220	1.025	1.268	13.450	1.237	14.250	13.000	0.244	0.777
0.240	0.240	1.305	1.726	15.491	1.323	16.250	15.000	0.267	0.791
0.260	0.260	1.625	2.291	17.531	1.410	18.250	17.000	0.291	0.804
0.280	0.280	1.985	2.971	19.571	1.497	20.250	19.000	0.315	0.816
0.300	0.300	2.385	3.777	21.612	1.584	22.250	21.000	0.339	0.828
0.320	0.320	2.825	4.716	23.652	1.669	24.250	23.000	0.363	0.840
0.340	0.340	3.305	5.797	25.693	1.754	26.250	25.000	0.388	0.850
0.360	0.360	3.825	7.028	27.733	1.837	28.250	27.000	0.413	0.861
0.380	0.380	4.385	8.417	29.773	1.920	30.250	29.000	0.437	0.870
0.400	0.400	4.985	9.972	31.814	2.000	32.250	31.000	0.462	0.879
0.420	0.420	5.620	11.920	32.854	2.121	33.250	32.000	0.490	0.892
0.440	0.440	6.260	14.255	32.894	2.277	33.250	32.000	0.521	0.908
0.460	0.460	6.900	16.753	32.934	2.428	33.250	32.000	0.552	0.922
0.480	0.480	7.540	19.406	32.974	2.574	33.250	32.000	0.583	0.935
0.500	0.500	8.180	22.210	33.014	2.715	33.250	32.000	0.615	0.947
0.520	0.520	8.820	25.161	33.054	2.853	33.250	32.000	0.647	0.958
0.540	0.540	9.460	28.254	33.094	2.987	33.250	32.000	0.679	0.968
0.560	0.560	10.100	31.486	33.134	3.117	33.250	32.000	0.711	0.978
0.580	0.580	10.740	34.853	33.174	3.245	33.250	32.000	0.744	0.988
0.600	0.600	11.380	38.352	33.214	3.370	33.250	32.000	0.777	0.996
0.620	0.620	12.020	41.980	33.254	3.493	33.250	32.000	0.810	1.005
0.640	0.640	12.660	45.735	33.294	3.613	33.250	32.000	0.843	1.013
0.660	0.660	13.300	49.613	33.334	3.730	33.250	32.000	0.876	1.020
0.680	0.680	13.945	52.612	34.361	3.773	34.237	32.987	0.901	1.023
0.700	0.700	14.662	53.839	37.625	3.672	36.211	36.211	0.910	1.017
0.720	0.720	15.406	56.471	39.639	3.666	38.184	38.184	0.929	1.017
0.740	0.740	16.189	59.344	41.653	3.666	40.158	40.158	0.949	1.018
0.760	0.760	17.012	62.459	43.667	3.671	42.132	42.132	0.970	1.019
0.780	0.780	17.875	65.816	45.682	3.682	44.105	44.105	0.991	1.020
0.800	0.800	18.776	69.417	47.696	3.697	46.079	46.079	1.013	1.021
0.820	0.820	19.718	73.265	49.710	3.716	48.053	48.053	1.035	1.023
0.840	0.840	20.698	77.364	51.724	3.738	50.026	50.026	1.057	1.024

Q = 25.27 CFS
D = .52'
Inlets 13 & 14

Q = 42.6 CFS
D = .62'
Inlets 11 & 12

Q = 47.73 CFS
EGL Controlled

Inlets 11 & 12

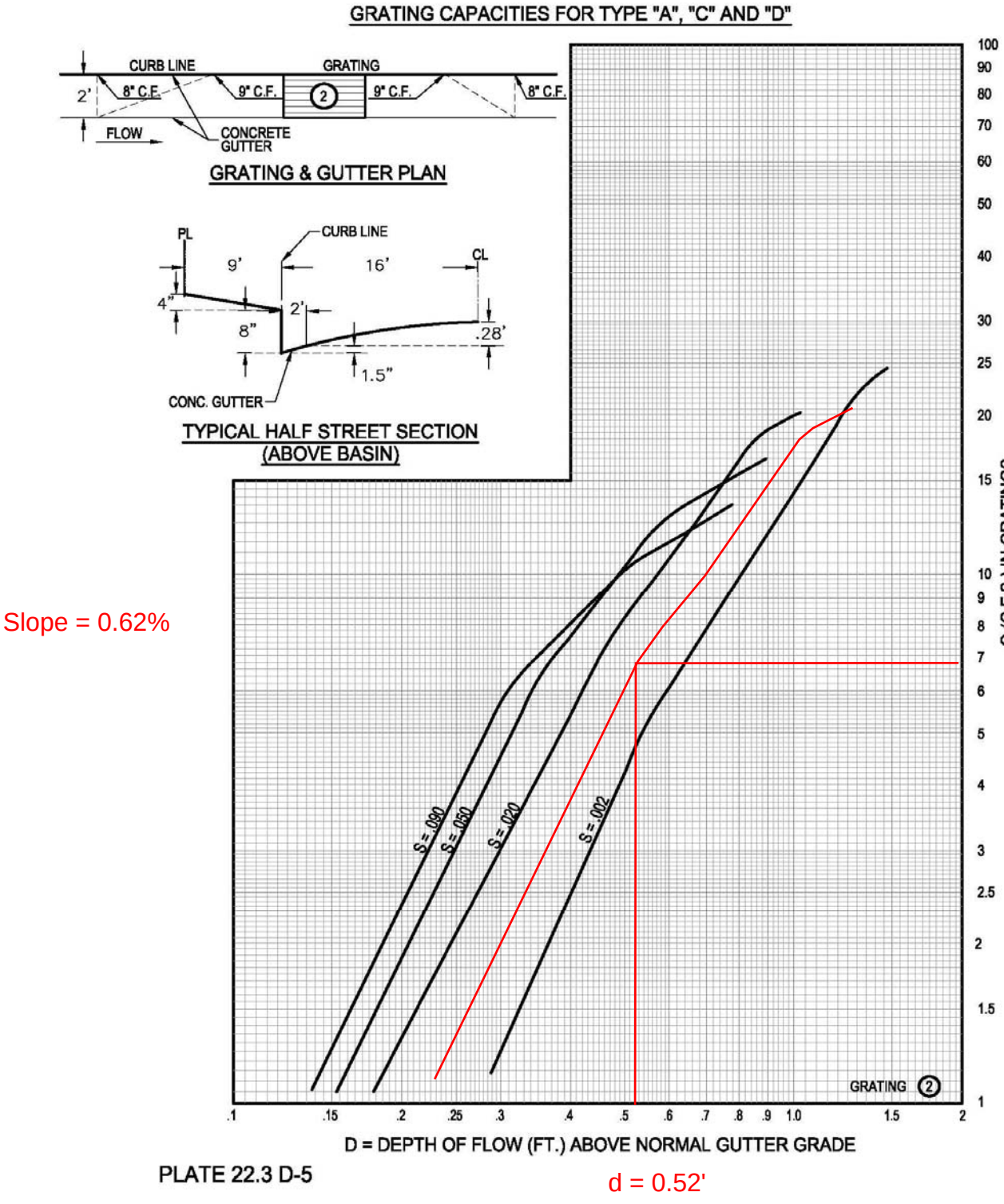


Slope = 0.62%

IN-11 & IN-12
Qin = 8.8 cfs

d = 0.62'

Inlets 13 & 14



Slope = 0.62%

IN-13 & IN-14
Qin = 6.8 cfs

d = 0.52'

Inlets 15 & 16

48ftROW-28ftRoad @ S=0.60%

MANNING'S N = 0.017 SLOPE = 0.006 (ft/ft)

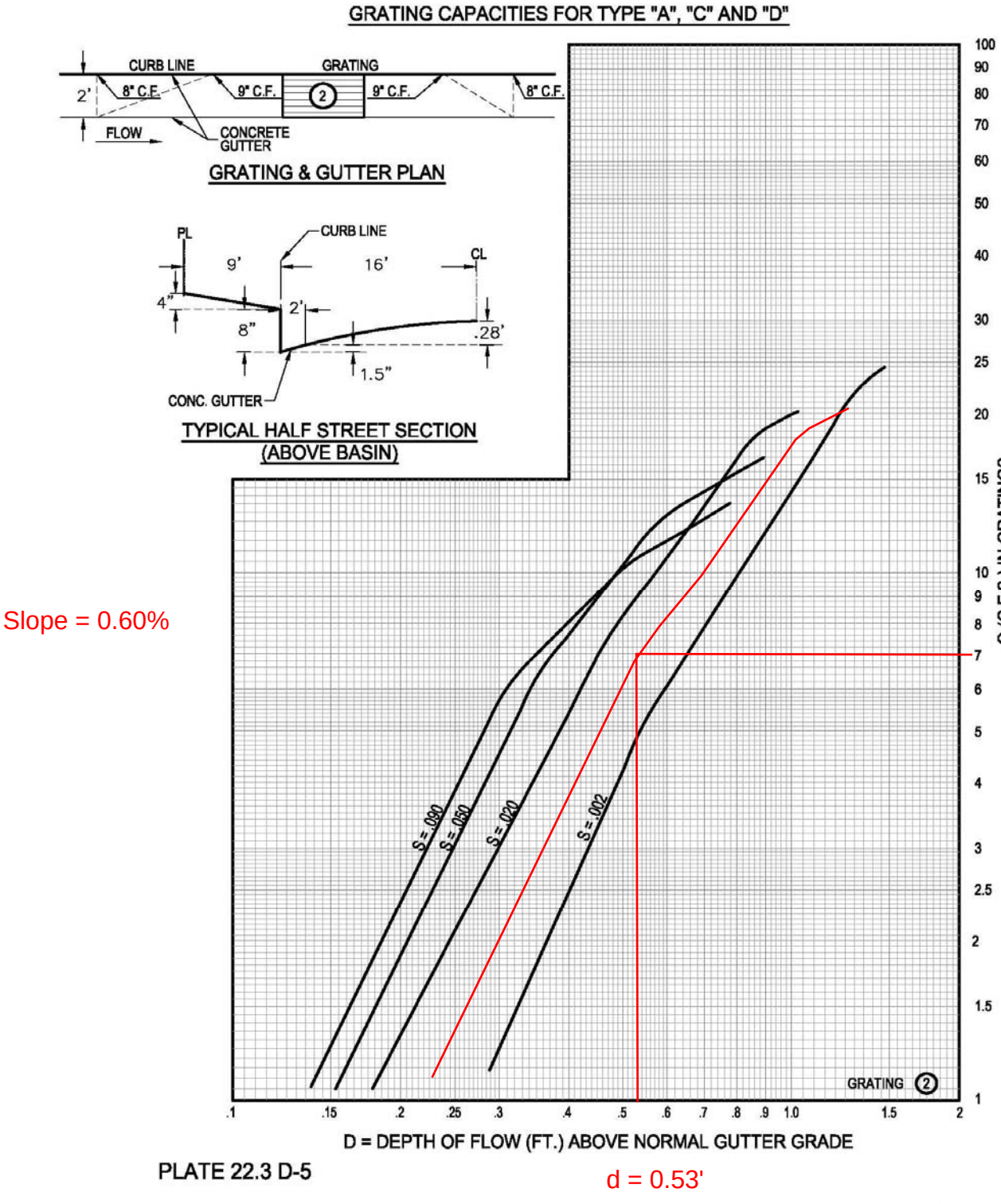
POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1.0	0.000	0.860	5.000	12.000	0.130	9.000	38.000	0.670
2.0	9.380	0.670	6.000	24.000	0.370	10.000	38.630	0.670
3.0	10.000	0.670	7.000	36.000	0.130	11.000	48.000	0.860
4.0	10.000	0.000	8.000	38.000	0.000			

WSEL FT.	DEPTH INC	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID PLUS OBSTRUCTIONS	TOPWID WATER	TOTAL ENERGY (FT)	FROUDE NO.
0.020	0.020	0.006	0.002	0.657	0.301	1.865	0.615	0.021	0.531
0.040	0.040	0.025	0.012	1.313	0.478	2.481	1.231	0.044	0.596
0.060	0.060	0.055	0.035	1.970	0.626	3.096	1.846	0.066	0.637
0.080	0.080	0.098	0.075	2.627	0.758	3.712	2.462	0.089	0.668
0.100	0.100	0.154	0.135	3.283	0.880	4.327	3.077	0.112	0.694
0.120	0.120	0.222	0.220	3.940	0.994	4.942	3.692	0.135	0.715
0.140	0.140	0.305	0.308	5.289	1.011	6.250	5.000	0.156	0.721
0.160	0.160	0.425	0.431	7.329	1.014	8.250	7.000	0.176	0.726
0.180	0.180	0.585	0.623	9.369	1.066	10.250	9.000	0.198	0.737
0.200	0.200	0.785	0.892	11.410	1.137	12.250	11.000	0.220	0.750
0.220	0.220	1.025	1.247	13.450	1.217	14.250	13.000	0.243	0.764
0.240	0.240	1.305	1.698	15.491	1.301	16.250	15.000	0.266	0.778
0.260	0.260	1.625	2.254	17.531	1.387	18.250	17.000	0.290	0.791
0.280	0.280	1.985	2.923	19.571	1.473	20.250	19.000	0.314	0.803
0.300	0.300	2.385	3.715	21.612	1.558	22.250	21.000	0.338	0.815
0.320	0.320	2.825	4.639	23.652	1.642	24.250	23.000	0.362	0.826
0.340	0.340	3.305	5.702	25.693	1.725	26.250	25.000	0.386	0.837
0.360	0.360	3.825	6.914	27.733	1.807	28.250	27.000	0.411	0.847
0.380	0.380	4.380	8.455	28.773	1.930	29.250	28.000	0.438	0.860
0.400	0.400	4.940	10.323	28.813	2.090	29.250	28.000	0.468	0.877
0.420	0.420	5.500	12.334	28.853	2.243	29.250	28.000	0.498	0.892
0.440	0.440	6.060	14.484	28.893	2.390	29.250	28.000	0.529	0.906
0.460	0.460	6.620	16.768	28.933	2.533	29.250	28.000	0.560	0.918
0.480	0.480	7.180	19.180	28.973	2.671	29.250	28.000	0.591	0.930
0.500	0.500	7.740	21.718	29.013	2.806	29.250	28.000	0.622	0.941
0.520	0.520	8.300	24.377	29.053	2.937	29.250	28.000	0.654	0.951
0.540	0.540	8.860	27.154	29.093	3.065	29.250	28.000	0.686	0.961
0.560	0.560	9.420	30.047	29.133	3.190	29.250	28.000	0.718	0.970
0.580	0.580	9.980	33.053	29.173	3.312	29.250	28.000	0.751	0.978
0.600	0.600	10.540	36.168	29.213	3.432	29.250	28.000	0.783	0.986
0.620	0.620	11.100	39.391	29.253	3.549	29.250	28.000	0.816	0.994
0.640	0.640	11.660	42.720	29.293	3.664	29.250	28.000	0.849	1.001
0.660	0.660	12.220	46.152	29.333	3.777	29.250	28.000	0.882	1.008
0.680	0.680	12.785	48.634	30.360	3.804	30.237	28.987	0.905	1.010
0.700	0.700	13.422	49.268	33.624	3.671	32.211	32.211	0.910	1.003
0.720	0.720	14.086	51.366	35.638	3.647	34.184	34.184	0.927	1.002
0.740	0.740	14.789	53.707	37.653	3.631	36.158	36.158	0.945	1.001
0.760	0.760	15.532	56.288	39.667	3.624	38.132	38.132	0.964	1.001
0.780	0.780	16.315	59.108	41.681	3.623	40.105	40.105	0.984	1.001
0.800	0.800	17.136	62.167	43.695	3.628	42.079	42.079	1.005	1.002
0.820	0.820	17.998	65.465	45.709	3.637	44.053	44.053	1.026	1.003
0.840	0.840	18.898	69.004	47.723	3.651	46.026	46.026	1.047	1.005

Q = 25.5 CFS
D = .53'
Inlets 15 & 16

Q = 45.86 CFS
D = .65'
EGL Controlled

Inlets 15 & 16



Slope = 0.60%

IN-15 & IN-16
Qin = 7 cfs

d = 0.53'

Inlets 17 & 22

48ftROW-28ftRoad @ S=0.62%

MANNING'S N = 0.017 SLOPE = 0.006 (ft/ft)

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1.0	0.000	0.860	5.000	12.000	0.130	9.000	38.000	0.670
2.0	9.380	0.670	6.000	24.000	0.370	10.000	38.630	0.670
3.0	10.000	0.670	7.000	36.000	0.130	11.000	48.000	0.860
4.0	10.000	0.000	8.000	38.000	0.000			

WSEL FT.	DEPTH INC	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID PLUS OBSTRUCTIONS	TOPWID WATER	TOTAL ENERGY (FT)	FROUDE NO.
0.020	0.020	0.006	0.002	0.657	0.306	1.865	0.615	0.021	0.539
0.040	0.040	0.025	0.012	1.313	0.486	2.481	1.231	0.044	0.605
0.060	0.060	0.055	0.035	1.970	0.636	3.096	1.846	0.066	0.648
0.080	0.080	0.098	0.076	2.627	0.771	3.712	2.462	0.089	0.680
0.100	0.100	0.154	0.138	3.283	0.895	4.327	3.077	0.112	0.705
0.120	0.120	0.222	0.224	3.940	1.010	4.942	3.692	0.136	0.727
0.140	0.140	0.305	0.313	5.289	1.027	6.250	5.000	0.156	0.733
0.160	0.160	0.425	0.438	7.329	1.031	8.250	7.000	0.177	0.738
0.180	0.180	0.585	0.634	9.369	1.083	10.250	9.000	0.198	0.749
0.200	0.200	0.785	0.907	11.410	1.156	12.250	11.000	0.221	0.763
0.220	0.220	1.025	1.268	13.450	1.237	14.250	13.000	0.244	0.777
0.240	0.240	1.305	1.726	15.491	1.323	16.250	15.000	0.267	0.791
0.260	0.260	1.625	2.291	17.531	1.410	18.250	17.000	0.291	0.804
0.280	0.280	1.985	2.971	19.571	1.497	20.250	19.000	0.315	0.816
0.300	0.300	2.385	3.777	21.612	1.584	22.250	21.000	0.339	0.828
0.320	0.320	2.825	4.716	23.652	1.669	24.250	23.000	0.363	0.840
0.340	0.340	3.305	5.797	25.693	1.754	26.250	25.000	0.388	0.850
0.360	0.360	3.825	7.028	27.733	1.837	28.250	27.000	0.413	0.861
0.380	0.380	4.380	8.595	28.773	1.962	29.250	28.000	0.440	0.875
0.400	0.400	4.940	10.493	28.813	2.124	29.250	28.000	0.470	0.892
0.420	0.420	5.500	12.538	28.853	2.280	29.250	28.000	0.501	0.907
0.440	0.440	6.060	14.724	28.893	2.430	29.250	28.000	0.532	0.921
0.460	0.460	6.620	17.045	28.933	2.575	29.250	28.000	0.563	0.934
0.480	0.480	7.180	19.497	28.973	2.716	29.250	28.000	0.595	0.945
0.500	0.500	7.740	22.077	29.013	2.852	29.250	28.000	0.627	0.956
0.520	0.520	8.300	24.780	29.053	2.986	29.250	28.000	0.659	0.967
0.540	0.540	8.860	27.603	29.093	3.115	29.250	28.000	0.691	0.976
0.560	0.560	9.420	30.544	29.133	3.242	29.250	28.000	0.724	0.986
0.580	0.580	9.980	33.599	29.173	3.367	29.250	28.000	0.756	0.994
0.600	0.600	10.540	36.766	29.213	3.488	29.250	28.000	0.789	1.002
0.620	0.620	11.100	40.043	29.253	3.607	29.250	28.000	0.822	1.010
0.640	0.640	11.660	43.426	29.293	3.724	29.250	28.000	0.856	1.017
0.660	0.660	12.220	46.915	29.333	3.839	29.250	28.000	0.889	1.025
0.680	0.680	12.785	49.438	30.360	3.867	30.237	28.987	0.913	1.027
0.700	0.700	13.422	50.083	33.624	3.731	32.211	32.211	0.917	1.019
0.720	0.720	14.086	52.215	35.638	3.707	34.184	34.184	0.934	1.018
0.740	0.740	14.789	54.594	37.653	3.691	36.158	36.158	0.952	1.018
0.760	0.760	15.532	57.218	39.667	3.684	38.132	38.132	0.971	1.018
0.780	0.780	16.315	60.085	41.681	3.683	40.105	40.105	0.991	1.018
0.800	0.800	17.136	63.194	43.695	3.688	42.079	42.079	1.012	1.019
0.820	0.820	17.998	66.547	45.709	3.698	44.053	44.053	1.033	1.020
0.840	0.840	18.898	70.144	47.723	3.712	46.026	46.026	1.054	1.021

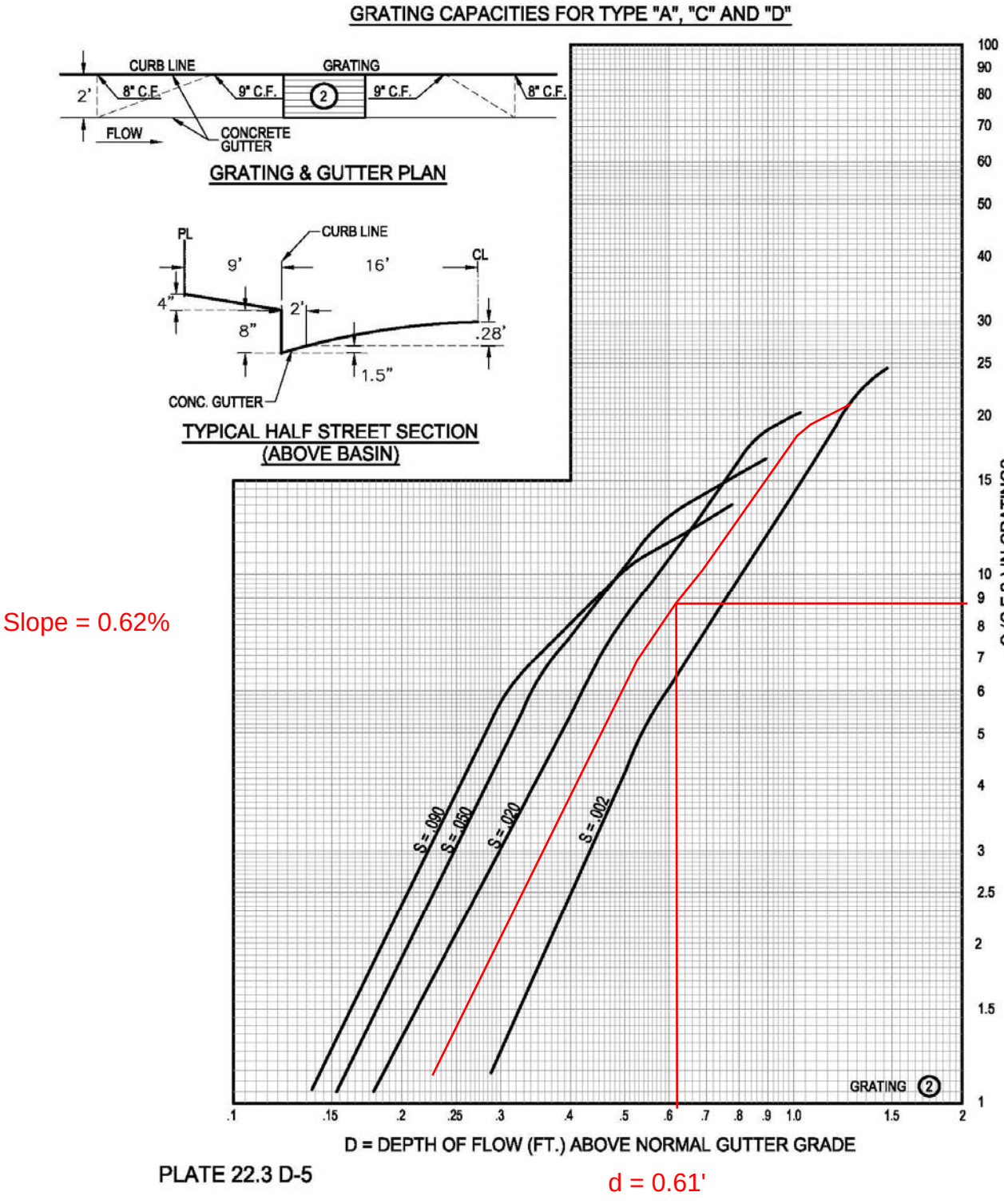
Q = 28.91 CFS
D = .55'
Inlets 19 & 20

Q = 38.4 CFS
D = .61'
Inlets 17 & 18

Q = 40.5 CFS
D = .62'
Inlets 21 & 22

Q = 43.43 CFS
EGL Controlled

Inlets 17 & 18

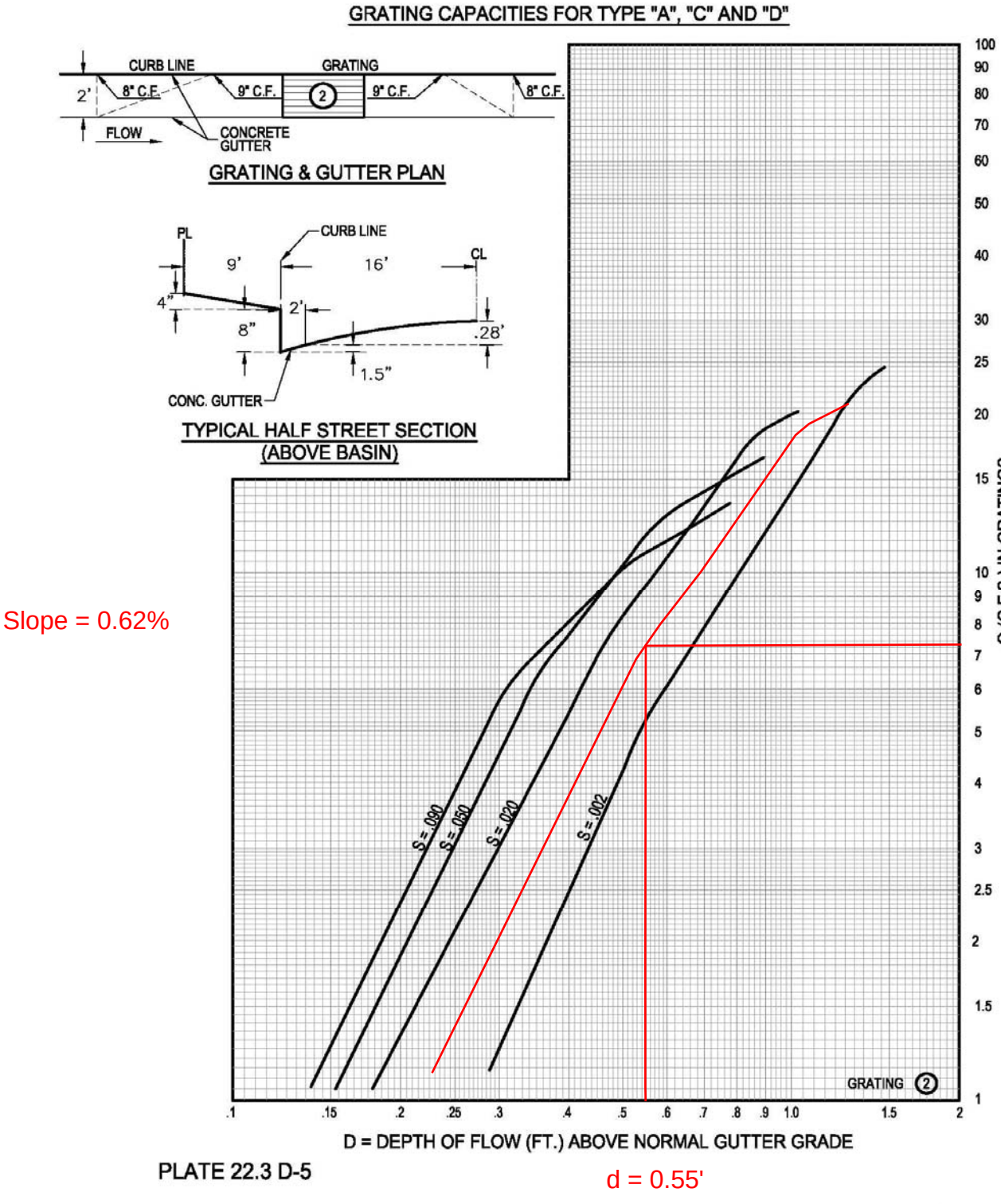


Slope = 0.62%

IN-17 & IN-18
Qin = 8.8 cfs

d = 0.61'

Inlets 19 & 20



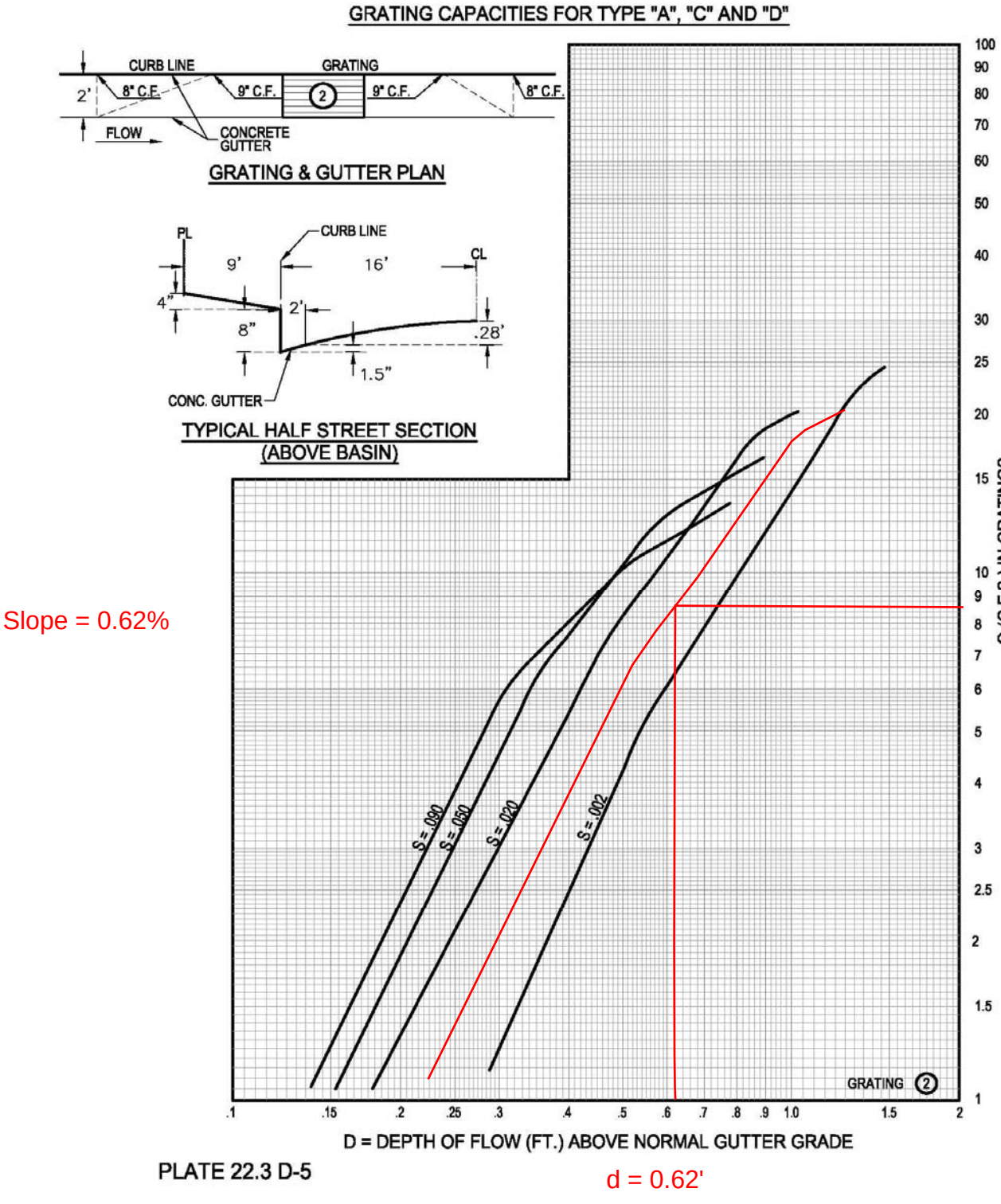
Slope = 0.62%

IN-19 & IN-20
Qin = 7.1 cfs

PLATE 22.3 D-5

d = 0.55'

Inlets 20 & 21



Slope = 0.62%

IN-21 & IN-22
Qin = 8.6 cfs

d = 0.62'

Backbone SD Inlets 23 and 24

ANALYSIS OF AN INLET IN A SUMP CONDITION **2 INLETS IN SUMP CONDITION**

INLET TYPE: Single Grate Type "A" with curb opening wings on both sides on inlet.

WEIR: Q=C*L*H^1.5

Wing opening	Grate opening
C= 3.0	C=3.0
L= 4.0 ft	L(single grate)=[(2.67')+2(1.8')]=6.27 ft
Q=3.0(4.0')H^1.5= 12.0H**1.5	Q=3.0(6.27)H^1.5=18.81*H^1.5

ORIFICE: Q=C*A*(2*G*H)^0.5

Grate opening	Wing opening*
C=0.6	C=0.6
A(single grate)=3.72 sf	A=2.0 sf
Q=0.6*3.72*(64.4*H)^0.5	Q=1.2*(64.4*H)^0.5

*not included in the orifice calcs

	WS ELEVATION	HEIGHT ABOVE INLET	Q (CFS) WEIR WING OPENING	Q (CFS) WEIR SINGLE GRATE	Q (CFS) ORIFICE SINGLE GRATE	TOTAL Q (CFS)	COMMENTS:
~FL @ INLET	0.00	0.00	0.00	0.00	0.00	0.00	Flow at single "A" inlet w/ two wing openings
	0.10	0.10	0.38	0.59	5.66	1.35	Weir controls on grate analysis
	0.20	0.20	1.07	1.68	8.01	3.83	
	0.30	0.30	1.97	3.09	9.81	7.03	
	0.40	0.40	3.04	4.76	11.33	10.83	
	0.50	0.50	4.24	6.65	12.67	15.14	
	0.60	0.60	5.58	8.74	13.87	19.90	
TOP OF CURB	0.70	0.70	7.03	11.02	14.99	25.07	@ Q(100 yr) = 10.2 per inlet (Flow below curb)
	0.80	0.80	8.59	13.46	16.02	30.63	
ROW LIMIT	0.86	0.86	9.52	14.92	16.58	33.96	@ 2x Q(100 yr) = 20.44 per inlet (flow below ROW)
	0.90	0.90	10.25	16.06	16.99	36.55	
	1.00	1.00	12.00	18.81	17.91	41.91	

NOTE: The total runoff intercepted by the inlet at the low point in the road is:

Q(100) = 2*[(runoff of the wing opening) + (the lesser of the weir or orifice amount taken by the double grate)].

LEGEND

EXISTING STORM DRAIN

PROPOSED STORM DRAIN

PROPOSED STORM DRAIN MANHOLE

PROPOSED STORM DRAIN INLET

AP6
Q = 1.7 + 12.2 = 13.93 cfs
(flow contained in street)

AP5
Q = 5.6 + 3.0 = 8.6 cfs
(flow contained in street)

AP7
Q = 8.6 + 13.93 = 22.53 cfs
(flow contained in street)

AP8
Q = 1.1 + 22.53 + 2.88 cfs
Q = 26.51 cfs
(flow contained in street)

AP4
Q = 5.6 cfs
(flow contained in street)

AP9
Q = 26.51 + (12.9 - 2.88) = 36.53 cfs
Q = 36.53 - 14.0 = 22.53 cfs
(Inlets 9 and 10)
(flow contained in street)

QT = 36.53 cfs

AP10
Q = 22.53 + 3.6 + 3.2 = 29.33 cfs
Q = 29.33 - 14.6 = 14.73 cfs
(Inlets 11 and 12)
(flow contained in street)

IN9
Q = 7.0 cfs

IN10
Q = 7.0 cfs

Qbypass = 22.53 cfs

Qbypass = 14.73 cfs

QT = 23.31 cfs

IN12
Q = 7.3 cfs

IN13
Q = 11.7 cfs

IN14
Q = 11.7 cfs

AP12
Q = 6.6 + 1.6 + 15.11= 23.31 cfs
Q = 0 cfs (Inlets 13 & 14)
Inlets in sump conditon

QT = 29.33 cfs

IN11
Q = 7.3 cfs

AP3
Q = 21.3 + 0.80 = 22.1 cfs
Q = 22.1 - 13.6 = 8.5 cfs
(Inlets 1 and 2)
(flow contained in street)

Qbypass = 8.5 cfs

AP3A
Q = 8.5 + 4.69 cfs
Q = 13.19 cfs
(flow contained in street)

QT = 22.1 cfs

Qin = x cfs
Qout = x cfs

Qbypass = 6.6 cfs

IN7
Q = 5.9 cfs

IN8
Q = 5.9 cfs

AP11
Q = 14.73 + 0.38 (remaining basin 25)
Q = 15.11 cfs
(flow contained in street)

QT = 18.4 cfs

AP21
Q = 7.0 cfs
(flow contained in street)

QT = 31.69 cfs

AP23
Q = 7.0 + 9.8 + 13.19 + 1.7 cfs
Q = 31.69 - 31.69 = 0 cfs (inlets 9 & 10)
(flow contained in street)

IN4
Q = 15.9 cfs

IN3
Q = 15.9 cfs

Qbypass = 0 cfs

AP22
Q = 9.8 cfs
(flow contained in street)

AP23A
Q = 3.3 + 15.1 cfs
Q = 18.4 - 11.8 = 6.6 cfs
(flow contained in street)

AP20
Q = 25.7+ 3.0 = 28.7 cfs
Q = 28.7 - 13.6 = 15.1 cfs
(inlets 11 & 12)
(flow contained in street)

Qbypass = 15.1 cfs

IN5
Q = 6.8 cfs

IN6
Q = 6.8 cfs

QT = 28.7 cfs

AP19
Q = 6.3 + 9.5 + 3.9 +6.0 cfs
Q = 25.7cfs
(flow contained in street)

N

60 30 0 60

1" = 60'

INLET SCHEMATICS EXHIBIT

TA LAND

DRAWN BY:	DATE:	
RV	6/24/25	
CHECKED BY:	BHI PROJECT NO.	SHEET NO.
KMK	20250012	

Bohannan Huston
www.bhinc.com
800.877.5332

Fri, 24-Oct-2025 - 4:57pm - Plotted by: RVELLA | P:\2025\20250012\CDP\Plans\Sheets\20250012_HNI_Schematics.dwg

48ft Street @S=5.77%

MANNING'S N = 0.017 SLOPE = 0.058 (ft/ft)

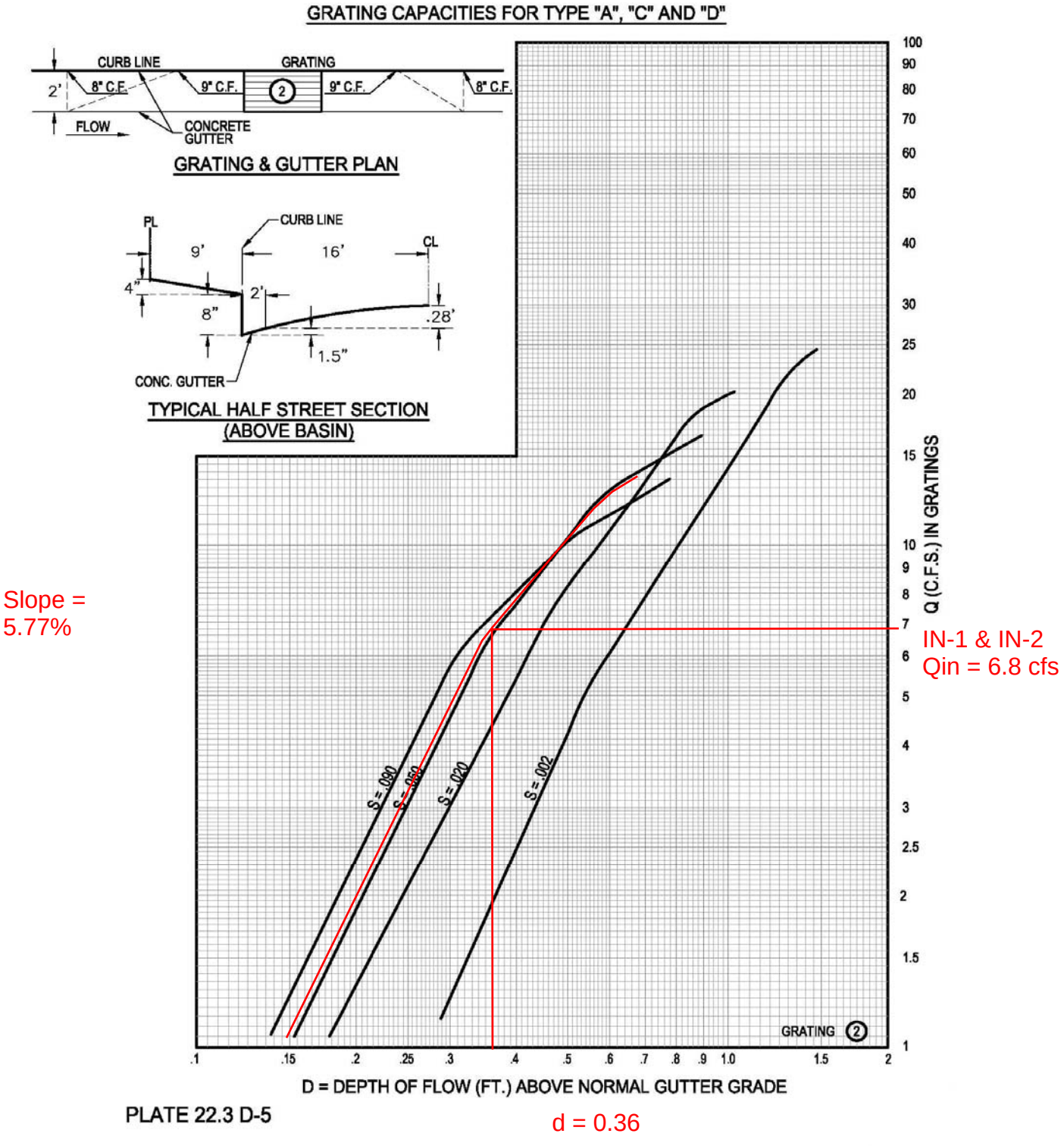
POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1.0	0.000	0.860	5.000	12.000	0.130	9.000	38.000	0.670
2.0	9.380	0.670	6.000	24.000	0.370	10.000	38.630	0.670
3.0	10.000	0.670	7.000	36.000	0.130	11.000	48.000	0.860
4.0	10.000	0.000	8.000	38.000	0.000			

WSEL FT.	DEPTH INC	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID PLUS OBSTRUCTIONS	TOPWID WATER	TOTAL ENERGY (FT)	FROUDE NO.
0.020	0.020	0.006	0.006	0.657	0.933	1.865	0.615	0.034	1.645
0.040	0.040	0.025	0.036	1.313	1.482	2.481	1.231	0.074	1.847
0.060	0.060	0.055	0.108	1.970	1.941	3.096	1.846	0.119	1.976
0.080	0.080	0.098	0.232	2.627	2.352	3.712	2.462	0.166	2.073
0.100	0.100	0.154	0.420	3.283	2.729	4.327	3.077	0.216	2.152
0.120	0.120	0.222	0.683	3.940	3.082	4.942	3.692	0.268	2.218
0.140	0.140	0.305	0.956	5.289	3.134	6.250	5.000	0.293	2.237
0.160	0.160	0.425	1.337	7.329	3.146	8.250	7.000	0.314	2.251
0.180	0.180	0.585	1.933	9.369	3.305	10.250	9.000	0.350	2.285
0.200	0.200	0.785	2.767	11.410	3.525	12.250	11.000	0.393	2.327
0.220	0.220	1.025	3.869	13.450	3.774	14.250	13.000	0.442	2.370
0.240	0.240	1.305	5.266	15.491	4.035	16.250	15.000	0.493	2.412
0.260	0.260	1.625	6.988	17.531	4.301	18.250	17.000	0.548	2.452
0.280	0.280	1.985	9.064	19.571	4.566	20.250	19.000	0.604	2.491
0.300	0.300	2.385	11.522	21.612	4.831	22.250	21.000	0.663	2.527
0.320	0.320	2.825	14.386	23.652	5.092	24.250	23.000	0.723	2.562
0.340	0.340	3.305	17.684	25.693	5.351	26.250	25.000	0.785	2.594
0.360	0.360	3.825	21.439	27.733	5.605	28.250	27.000	0.849	2.625
0.380	0.380	4.380	26.219	28.773	5.986	29.250	28.000	0.937	2.668
0.400	0.400	4.940	32.012	28.813	6.480	29.250	28.000	1.053	2.720
0.420	0.420	5.500	38.250	28.853	6.955	29.250	28.000	1.172	2.766
0.440	0.440	6.060	44.917	28.893	7.412	29.250	28.000	1.295	2.809
0.460	0.460	6.620	51.998	28.933	7.855	29.250	28.000	1.420	2.848
0.480	0.480	7.180	59.479	28.973	8.284	29.250	28.000	1.547	2.884
0.500	0.500	7.740	67.349	29.013	8.701	29.250	28.000	1.678	2.918
0.520	0.520	8.300	75.595	29.053	9.108	29.250	28.000	1.810	2.949
0.540	0.540	8.860	84.208	29.093	9.504	29.250	28.000	1.945	2.979
0.560	0.560	9.420	93.179	29.133	9.892	29.250	28.000	2.082	3.007
0.580	0.580	9.980	102.499	29.173	10.270	29.250	28.000	2.221	3.033
0.600	0.600	10.540	112.160	29.213	10.641	29.250	28.000	2.361	3.058
0.620	0.620	11.100	122.156	29.253	11.005	29.250	28.000	2.504	3.081
0.640	0.640	11.660	132.478	29.293	11.362	29.250	28.000	2.648	3.104
0.660	0.660	12.220	143.121	29.333	11.712	29.250	28.000	2.794	3.126
0.680	0.680	12.785	150.817	30.360	11.796	30.237	28.987	2.844	3.131
0.700	0.700	13.422	152.784	33.624	11.383	32.211	32.211	2.715	3.109
0.720	0.720	14.086	159.288	35.638	11.308	34.184	34.184	2.709	3.106
0.740	0.740	14.789	166.548	37.653	11.261	36.158	36.158	2.713	3.104
0.760	0.760	15.532	174.553	39.667	11.238	38.132	38.132	2.724	3.104
0.780	0.780	16.315	183.299	41.681	11.235	40.105	40.105	2.743	3.106
0.800	0.800	17.136	192.783	43.695	11.250	42.079	42.079	2.769	3.108
0.820	0.820	17.998	203.011	45.709	11.280	44.053	44.053	2.799	3.111
0.840	0.840	18.898	213.986	47.723	11.323	46.026	46.026	2.834	3.115

Q = 22.1 CFS
D = .36'
Inlets 1 & 2

Q = 22.1 CFS
EGL Controlled

Inlets 1 & 2



Slope = 5.77%

IN-1 & IN-2
Qin = 6.8 cfs

d = 0.36

NORTH SD Inlets 3 and 4

ANALYSIS OF AN INLET IN A SUMP CONDITION **2 INLETS IN SUMP CONDITION**

INLET TYPE: Single Grate Type "A" with curb opening wings on both sides on inlet.

WEIR: Q=C*L*H^1.5

Wing opening	Grate opening
C= 3.0	C=3.0
L= 4.0 ft	L(single grate)=[(2.67')+2(1.8')]=6.27 ft
Q=3.0(4.0')H^1.5= 12.0H**1.5	Q=3.0(6.27)H^1.5=18.81*H^1.5

ORIFICE: Q=C*A*(2*G*H)^0.5

Grate opening	Wing opening*
C=0.6	C=0.6
A(single grate)=3.72 sf	A=2.0 sf
Q=0.6*3.72*(64.4*H)^0.5	Q=1.2*(64.4*H)^0.5

*not included in the orifice calcs

	WS ELEVATION	HEIGHT ABOVE INLET	Q (CFS) WEIR WING OPENING	Q (CFS) WEIR SINGLE GRATE	Q (CFS) ORIFICE SINGLE GRATE	TOTAL Q (CFS)	**COMMENTS:**
~FL @ INLET	0.00	0.00	0.00	0.00	0.00	0.00	Flow at single "A" inlet w/ two wing openings
	0.10	0.10	0.38	0.59	5.66	1.35	Weir controls on grate analysis
	0.20	0.20	1.07	1.68	8.01	3.83	
	0.30	0.30	1.97	3.09	9.81	7.03	
	0.40	0.40	3.04	4.76	11.33	10.83	
	0.50	0.50	4.24	6.65	12.67	15.14	
	0.60	0.60	5.58	8.74	13.87	19.90	
TOP OF CURB	0.70	0.70	7.03	11.02	14.99	25.07	@ Q(100 yr) = 15.9 per inlet (Flow below curb)
	0.80	0.80	8.59	13.46	16.02	30.63	
ROW LIMIT	0.86	0.86	9.52	14.92	16.58	33.96	@ 2x Q(100 yr) = 31.69 per inlet (flow below ROW)
	0.90	0.90	10.25	16.06	16.99	36.55	
	1.00	1.00	12.00	18.81	17.91	41.91	

NOTE: The total runoff intercepted by the inlet at the low point in the road is:

Q(100) = 2*[(runoff of the wing opening) + (the lesser of the weir or orifice amount taken by the double grate)].

48ft Streets\48ftROW @S = 3.00%

MANNING'S N = 0.017 SLOPE = 0.030 (ft/ft)

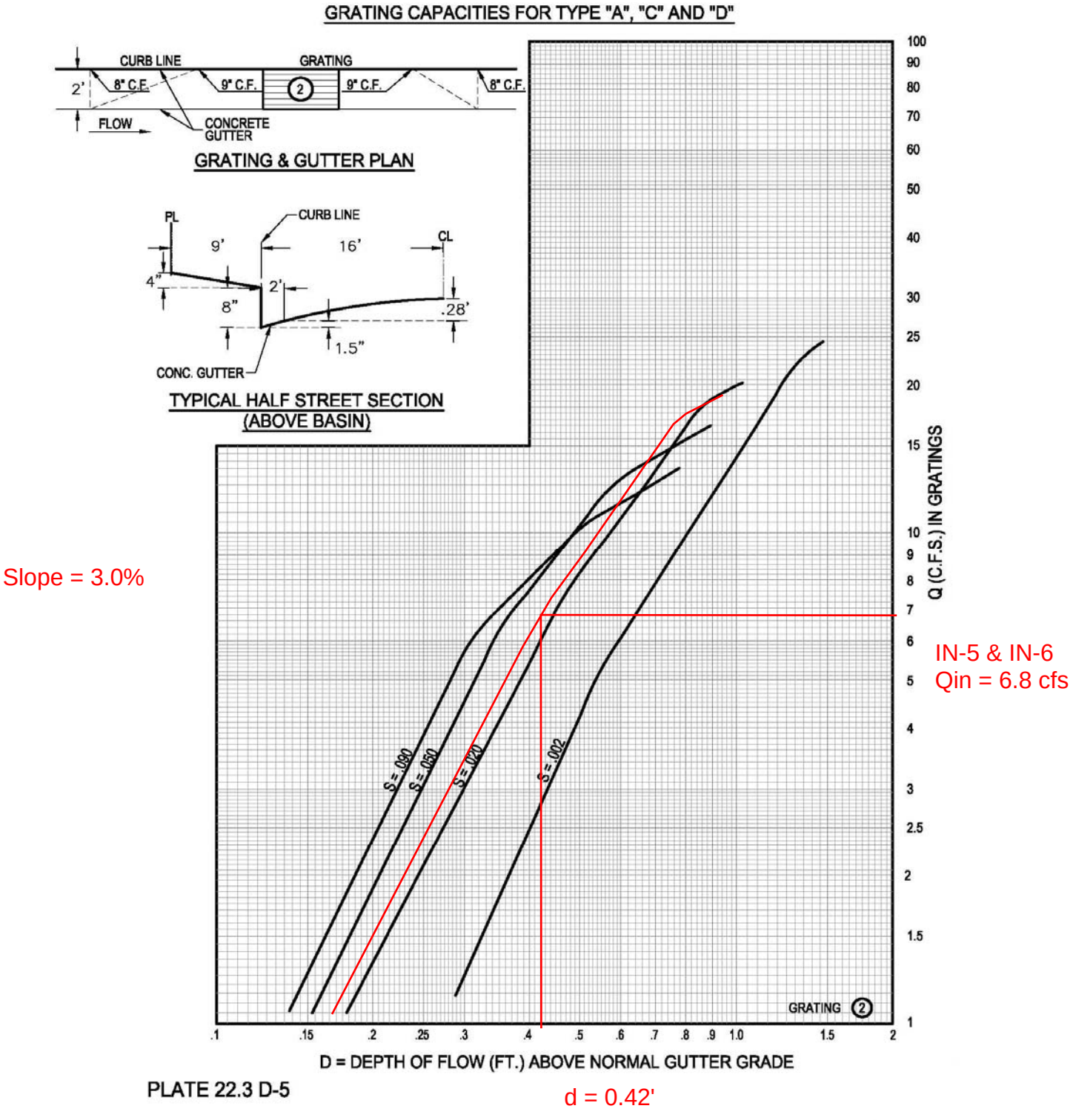
POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1.0	0.000	0.860	5.000	12.000	0.130	9.000	38.000	0.670
2.0	9.380	0.670	6.000	24.000	0.370	10.000	38.630	0.670
3.0	10.000	0.670	7.000	36.000	0.130	11.000	48.000	0.860
4.0	10.000	0.000	8.000	38.000	0.000			

WSEL FT.	DEPTH INC	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID PLUS OBSTRUCTIONS	TOPWID WATER	TOTAL ENERGY (FT)	FROUDE NO.
0.020	0.020	0.006	0.004	0.657	0.673	1.865	0.615	0.027	1.186
0.040	0.040	0.025	0.026	1.313	1.068	2.481	1.231	0.058	1.332
0.060	0.060	0.055	0.078	1.970	1.400	3.096	1.846	0.090	1.425
0.080	0.080	0.098	0.167	2.627	1.696	3.712	2.462	0.125	1.495
0.100	0.100	0.154	0.303	3.283	1.968	4.327	3.077	0.160	1.551
0.120	0.120	0.222	0.492	3.940	2.222	4.942	3.692	0.197	1.599
0.140	0.140	0.305	0.689	5.289	2.260	6.250	5.000	0.219	1.613
0.160	0.160	0.425	0.964	7.329	2.268	8.250	7.000	0.240	1.623
0.180	0.180	0.585	1.394	9.369	2.383	10.250	9.000	0.268	1.648
0.200	0.200	0.785	1.996	11.410	2.542	12.250	11.000	0.301	1.678
0.220	0.220	1.025	2.789	13.450	2.721	14.250	13.000	0.335	1.709
0.240	0.240	1.305	3.797	15.491	2.910	16.250	15.000	0.372	1.739
0.260	0.260	1.625	5.039	17.531	3.101	18.250	17.000	0.410	1.768
0.280	0.280	1.985	6.536	19.571	3.293	20.250	19.000	0.449	1.796
0.300	0.300	2.385	8.308	21.612	3.483	22.250	21.000	0.489	1.822
0.320	0.320	2.825	10.373	23.652	3.672	24.250	23.000	0.530	1.847
0.340	0.340	3.305	12.751	25.693	3.858	26.250	25.000	0.572	1.871
0.360	0.360	3.825	15.459	27.733	4.042	28.250	27.000	0.614	1.893
0.380	0.380	4.380	18.906	28.773	4.316	29.250	28.000	0.670	1.924
0.400	0.400	4.940	23.082	28.813	4.673	29.250	28.000	0.740	1.961
0.420	0.420	5.500	27.581	28.853	5.015	29.250	28.000	0.811	1.995
0.440	0.440	6.060	32.388	28.893	5.345	29.250	28.000	0.884	2.025
0.460	0.460	6.620	37.494	28.933	5.664	29.250	28.000	0.959	2.054
0.480	0.480	7.180	42.888	28.973	5.973	29.250	28.000	1.035	2.080
0.500	0.500	7.740	48.563	29.013	6.274	29.250	28.000	1.112	2.104
0.520	0.520	8.300	54.509	29.053	6.567	29.250	28.000	1.191	2.127
0.540	0.540	8.860	60.719	29.093	6.853	29.250	28.000	1.271	2.148
0.560	0.560	9.420	67.188	29.133	7.132	29.250	28.000	1.351	2.168
0.580	0.580	9.980	73.908	29.173	7.406	29.250	28.000	1.433	2.187
0.600	0.600	10.540	80.875	29.213	7.673	29.250	28.000	1.516	2.205
0.620	0.620	11.100	88.082	29.253	7.935	29.250	28.000	1.599	2.222
0.640	0.640	11.660	95.525	29.293	8.193	29.250	28.000	1.684	2.238
0.660	0.660	12.220	103.199	29.333	8.445	29.250	28.000	1.769	2.254
0.680	0.680	12.785	108.749	30.360	8.506	30.237	28.987	1.805	2.258
0.700	0.700	13.422	110.167	33.624	8.208	32.211	32.211	1.748	2.242
0.720	0.720	14.086	114.857	35.638	8.154	34.184	34.184	1.754	2.239
0.740	0.740	14.789	120.092	37.653	8.120	36.158	36.158	1.766	2.238
0.760	0.760	15.532	125.864	39.667	8.103	38.132	38.132	1.781	2.238
0.780	0.780	16.315	132.170	41.681	8.101	40.105	40.105	1.801	2.239
0.800	0.800	17.136	139.009	43.695	8.112	42.079	42.079	1.824	2.241
0.820	0.820	17.998	146.383	45.709	8.133	44.053	44.053	1.849	2.243
0.840	0.840	18.898	154.297	47.723	8.165	46.026	46.026	1.877	2.246

Q = 28.7 CFS
D = .42'
Inlets 5 & 6

Q = 30.81 CFS
EGL Controlled

Inlets 5 & 6



Slope = 3.0%

IN-5 & IN-6
Qin = 6.8 cfs

d = 0.42'

Inlets 7 & 8

48ft Street @S=2.44%

MANNING'S N = 0.017 SLOPE = 0.024 (ft/ft)

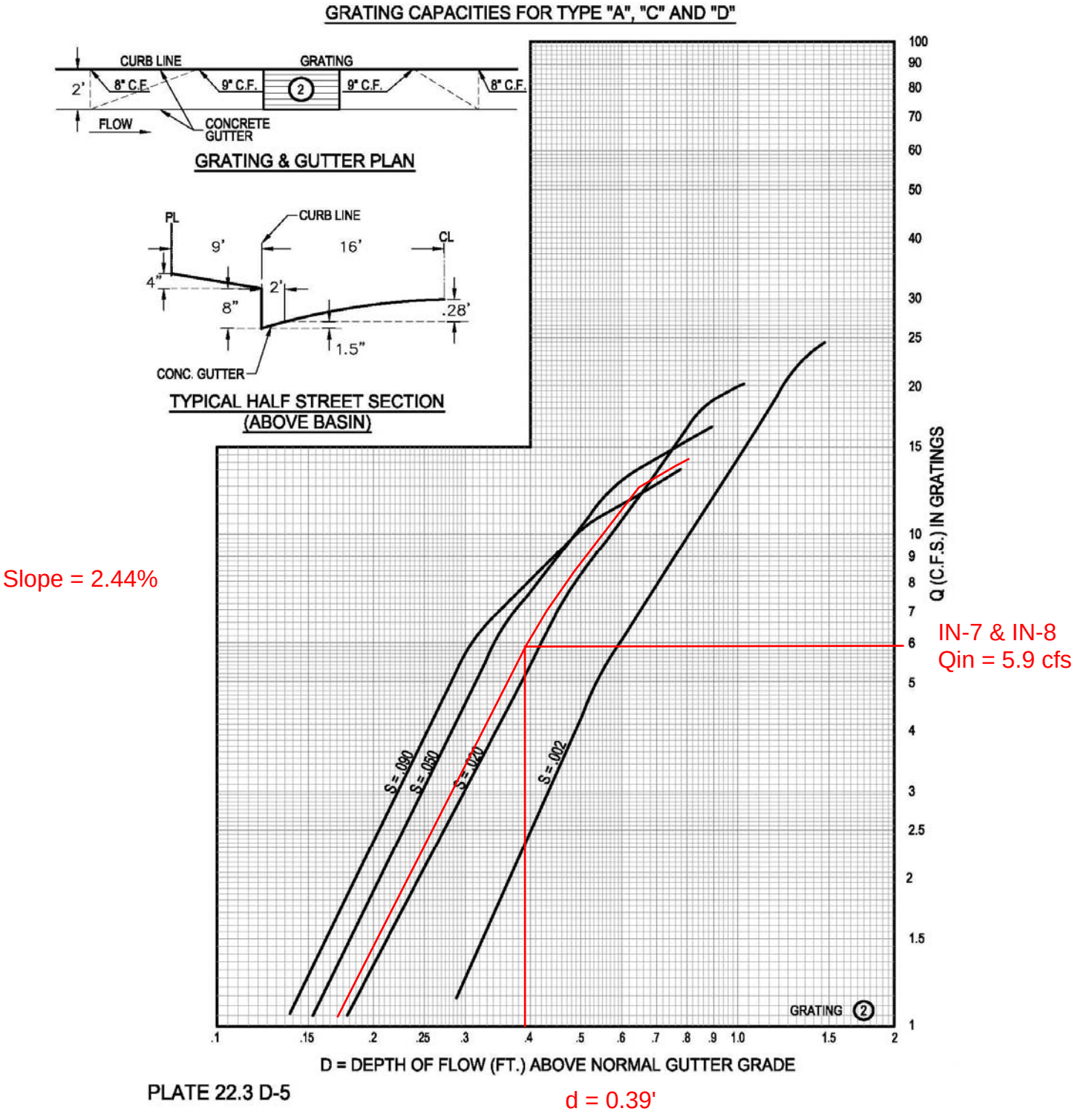
POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1.0	0.000	0.860	5.000	12.000	0.130	9.000	38.000	0.670
2.0	9.380	0.670	6.000	24.000	0.370	10.000	38.630	0.670
3.0	10.000	0.670	7.000	36.000	0.130	11.000	48.000	0.860
4.0	10.000	0.000	8.000	38.000	0.000			

WSEL FT.	DEPTH INC	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID PLUS OBSTRUCTIONS	TOPWID WATER	TOTAL ENERGY (FT)	FROUDE NO.
0.020	0.020	0.006	0.004	0.657	0.607	1.865	0.615	0.026	1.070
0.040	0.040	0.025	0.024	1.313	0.963	2.481	1.231	0.054	1.201
0.060	0.060	0.055	0.070	1.970	1.262	3.096	1.846	0.085	1.285
0.080	0.080	0.098	0.151	2.627	1.529	3.712	2.462	0.116	1.348
0.100	0.100	0.154	0.273	3.283	1.775	4.327	3.077	0.149	1.399
0.120	0.120	0.222	0.444	3.940	2.004	4.942	3.692	0.182	1.442
0.140	0.140	0.305	0.622	5.289	2.038	6.250	5.000	0.205	1.455
0.160	0.160	0.425	0.869	7.329	2.046	8.250	7.000	0.225	1.464
0.180	0.180	0.585	1.257	9.369	2.149	10.250	9.000	0.252	1.486
0.200	0.200	0.785	1.800	11.410	2.293	12.250	11.000	0.282	1.513
0.220	0.220	1.025	2.516	13.450	2.454	14.250	13.000	0.314	1.541
0.240	0.240	1.305	3.424	15.491	2.624	16.250	15.000	0.347	1.568
0.260	0.260	1.625	4.544	17.531	2.797	18.250	17.000	0.382	1.595
0.280	0.280	1.985	5.895	19.571	2.970	20.250	19.000	0.417	1.620
0.300	0.300	2.385	7.492	21.612	3.141	22.250	21.000	0.453	1.643
0.320	0.320	2.825	9.355	23.652	3.312	24.250	23.000	0.491	1.666
0.340	0.340	3.305	11.499	25.693	3.479	26.250	25.000	0.528	1.687
0.360	0.360	3.825	13.942	27.733	3.645	28.250	27.000	0.567	1.707
0.380	0.380	4.380	17.050	28.773	3.893	29.250	28.000	0.616	1.735
0.400	0.400	4.940	20.817	28.813	4.214	29.250	28.000	0.676	1.769
0.420	0.420	5.500	24.874	28.853	4.522	29.250	28.000	0.738	1.799
0.440	0.440	6.060	29.209	28.893	4.820	29.250	28.000	0.801	1.827
0.460	0.460	6.620	33.814	28.933	5.108	29.250	28.000	0.866	1.852
0.480	0.480	7.180	38.679	28.973	5.387	29.250	28.000	0.931	1.875
0.500	0.500	7.740	43.796	29.013	5.658	29.250	28.000	0.998	1.897
0.520	0.520	8.300	49.158	29.053	5.923	29.250	28.000	1.066	1.918
0.540	0.540	8.860	54.760	29.093	6.181	29.250	28.000	1.134	1.937
0.560	0.560	9.420	60.593	29.133	6.432	29.250	28.000	1.204	1.955
0.580	0.580	9.980	66.654	29.173	6.679	29.250	28.000	1.274	1.972
0.600	0.600	10.540	72.937	29.213	6.920	29.250	28.000	1.345	1.988
0.620	0.620	11.100	79.437	29.253	7.156	29.250	28.000	1.417	2.004
0.640	0.640	11.660	86.149	29.293	7.388	29.250	28.000	1.489	2.019
0.660	0.660	12.220	93.070	29.333	7.616	29.250	28.000	1.562	2.032
0.680	0.680	12.785	98.075	30.360	7.671	30.237	28.987	1.595	2.036
0.700	0.700	13.422	99.354	33.624	7.402	32.211	32.211	1.552	2.022
0.720	0.720	14.086	103.584	35.638	7.354	34.184	34.184	1.561	2.020
0.740	0.740	14.789	108.305	37.653	7.323	36.158	36.158	1.574	2.019
0.760	0.760	15.532	113.510	39.667	7.308	38.132	38.132	1.591	2.019
0.780	0.780	16.315	119.197	41.681	7.306	40.105	40.105	1.610	2.020
0.800	0.800	17.136	125.365	43.695	7.316	42.079	42.079	1.632	2.021
0.820	0.820	17.998	132.016	45.709	7.335	44.053	44.053	1.657	2.023
0.840	0.840	18.898	139.153	47.723	7.363	46.026	46.026	1.683	2.026

Q = 18.8 CFS
D = .39'
Inlets 7 & 8

Q = 33.45 CFS
EGL Controlled

Inlets 7 & 8


GRATING CAPACITIES FOR TYPE "A", "C" AND "D"
CURB LINE
GRATING
2'
8" C.F.
9" C.F.
2
9" C.F.
8" C.F.
FLOW
CONCRETE GUTTER
GRATING & GUTTER PLAN
PL
CURB LINE
9'
16'
CL
4"
2'
8"
.28'
1.5"
CONC. GUTTER
TYPICAL HALF STREET SECTION (ABOVE BASIN)
Slope = 2.44%
S = .090
S = .050
S = .020
S = .002
GRATING 2
Q (C.F.S.) IN GRATINGS
100
90
80
70
60
50
40
30
25
20
15
10
9
8
7
6
5
4
3
2.5
2
1.5
1
.1
.15
.2
.25
.3
.4
.5
.6
.7
.8
.9
1.0
1.5
2
D = DEPTH OF FLOW (FT.) ABOVE NORMAL GUTTER GRADE
IN-7 & IN-8
Qin = 5.9 cfs
PLATE 22.3 D-5
d = 0.39'

Inlets 9 & 10

48ft Street @S=1.19%

MANNING'S N = 0.017 SLOPE = 0.012 (ft/ft)

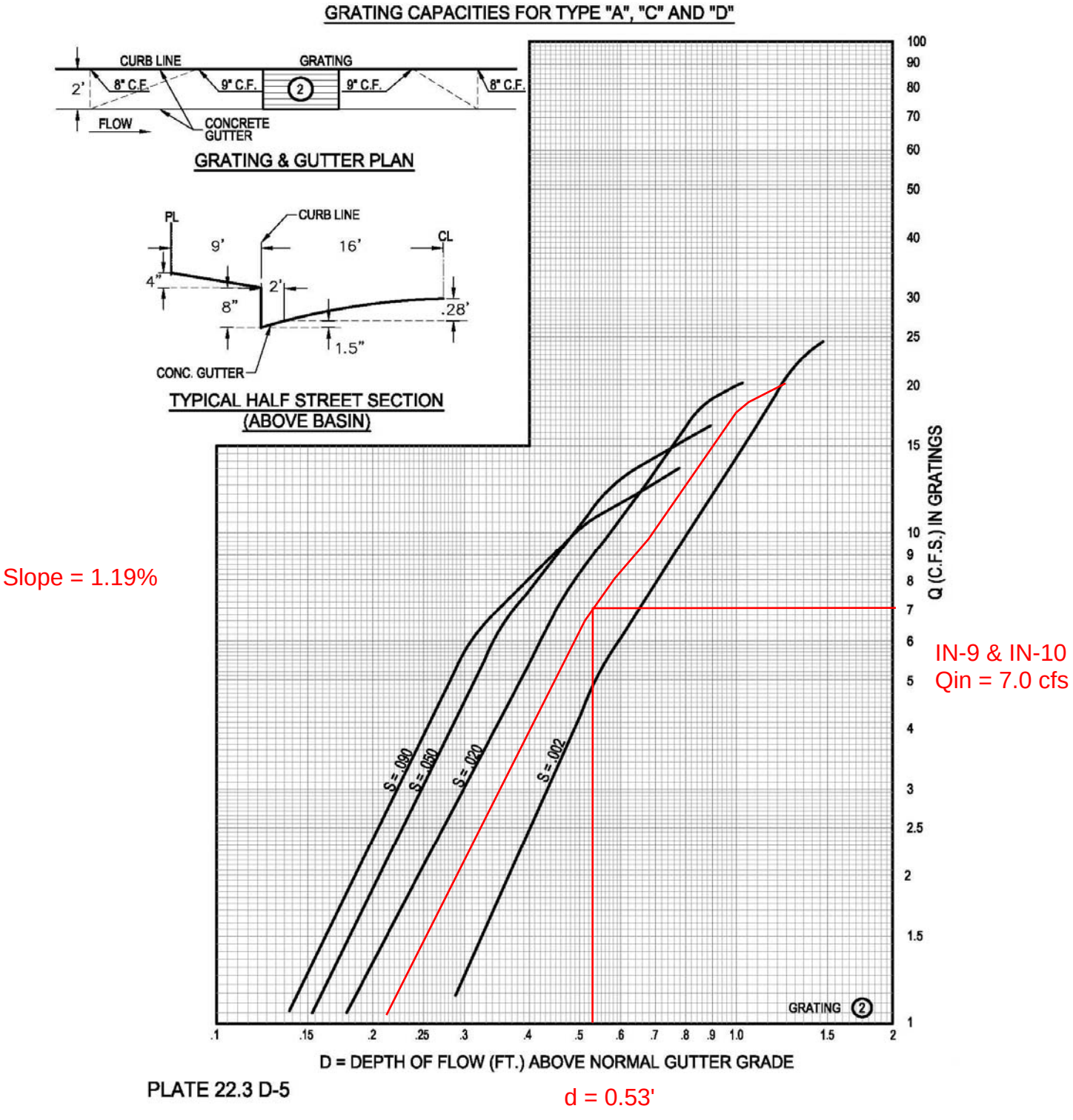
POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1.0	0.000	0.860	5.000	12.000	0.130	9.000	38.000	0.670
2.0	9.380	0.670	6.000	24.000	0.370	10.000	38.630	0.670
3.0	10.000	0.670	7.000	36.000	0.130	11.000	48.000	0.860
4.0	10.000	0.000	8.000	38.000	0.000			

WSEL FT.	DEPTH INC	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID PLUS OBSTRUCTIONS	TOPWID WATER	TOTAL ENERGY (FT)	FROUDE NO.
0.020	0.020	0.006	0.003	0.657	0.424	1.865	0.615	0.023	0.747
0.040	0.040	0.025	0.017	1.313	0.673	2.481	1.231	0.047	0.839
0.060	0.060	0.055	0.049	1.970	0.882	3.096	1.846	0.072	0.897
0.080	0.080	0.098	0.105	2.627	1.068	3.712	2.462	0.098	0.941
0.100	0.100	0.154	0.191	3.283	1.239	4.327	3.077	0.124	0.977
0.120	0.120	0.222	0.310	3.940	1.399	4.942	3.692	0.150	1.007
0.140	0.140	0.305	0.434	5.289	1.423	6.250	5.000	0.172	1.016
0.160	0.160	0.425	0.607	7.329	1.429	8.250	7.000	0.192	1.022
0.180	0.180	0.585	0.878	9.369	1.501	10.250	9.000	0.215	1.038
0.200	0.200	0.785	1.257	11.410	1.601	12.250	11.000	0.240	1.057
0.220	0.220	1.025	1.757	13.450	1.714	14.250	13.000	0.266	1.076
0.240	0.240	1.305	2.391	15.491	1.832	16.250	15.000	0.292	1.095
0.260	0.260	1.625	3.174	17.531	1.953	18.250	17.000	0.319	1.114
0.280	0.280	1.985	4.117	19.571	2.074	20.250	19.000	0.347	1.131
0.300	0.300	2.385	5.232	21.612	2.194	22.250	21.000	0.375	1.148
0.320	0.320	2.825	6.533	23.652	2.313	24.250	23.000	0.403	1.163
0.340	0.340	3.305	8.031	25.693	2.430	26.250	25.000	0.432	1.178
0.360	0.360	3.825	9.736	27.733	2.545	28.250	27.000	0.461	1.192
0.380	0.380	4.380	11.907	28.773	2.719	29.250	28.000	0.495	1.212
0.400	0.400	4.940	14.538	28.813	2.943	29.250	28.000	0.535	1.235
0.420	0.420	5.500	17.371	28.853	3.158	29.250	28.000	0.575	1.256
0.440	0.440	6.060	20.399	28.893	3.366	29.250	28.000	0.616	1.276
0.460	0.460	6.620	23.614	28.933	3.567	29.250	28.000	0.658	1.293
0.480	0.480	7.180	27.012	28.973	3.762	29.250	28.000	0.700	1.310
0.500	0.500	7.740	30.585	29.013	3.952	29.250	28.000	0.743	1.325
0.520	0.520	8.300	34.330	29.053	4.136	29.250	28.000	0.786	1.339
0.540	0.540	8.860	38.242	29.093	4.316	29.250	28.000	0.830	1.353
0.560	0.560	9.420	42.316	29.133	4.492	29.250	28.000	0.874	1.365
0.580	0.580	9.980	46.548	29.173	4.664	29.250	28.000	0.918	1.377
0.600	0.600	10.540	50.936	29.213	4.833	29.250	28.000	0.963	1.389
0.620	0.620	11.100	55.475	29.253	4.998	29.250	28.000	1.009	1.399
0.640	0.640	11.660	60.163	29.293	5.160	29.250	28.000	1.054	1.410
0.660	0.660	12.220	64.996	29.333	5.319	29.250	28.000	1.100	1.419
0.680	0.680	12.785	68.492	30.360	5.357	30.237	28.987	1.126	1.422
0.700	0.700	13.422	69.385	33.624	5.170	32.211	32.211	1.116	1.412
0.720	0.720	14.086	72.338	35.638	5.136	34.184	34.184	1.130	1.410
0.740	0.740	14.789	75.635	37.653	5.114	36.158	36.158	1.147	1.410
0.760	0.760	15.532	79.271	39.667	5.104	38.132	38.132	1.165	1.410
0.780	0.780	16.315	83.242	41.681	5.102	40.105	40.105	1.185	1.410
0.800	0.800	17.136	87.550	43.695	5.109	42.079	42.079	1.206	1.411
0.820	0.820	17.998	92.194	45.709	5.123	44.053	44.053	1.228	1.413
0.840	0.840	18.898	97.178	47.723	5.142	46.026	46.026	1.251	1.415

@ Q = 36.53 CFS
D = .53'
Inlets 9 & 10

Q = 41.02 CFS
EGL Controlled

Inlets 9 & 10



Slope = 1.19%

IN-9 & IN-10
Qin = 7.0 cfs

d = 0.53'

Inlets 11 & 12

48ft Street @S=2.40%

MANNING'S N = 0.017 SLOPE = 0.024 (ft/ft)

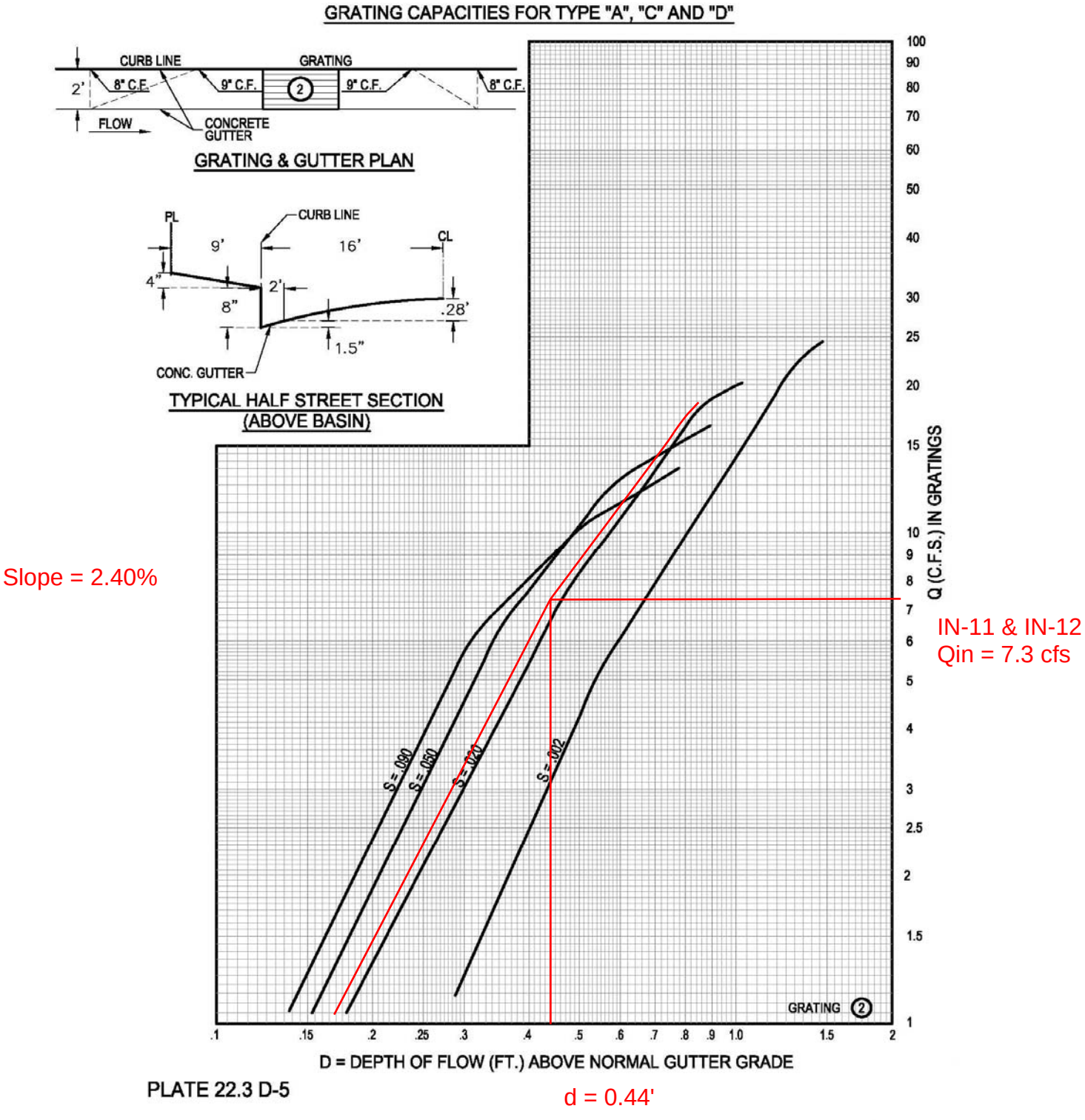
POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1.0	0.000	0.860	5.000	12.000	0.130	9.000	38.000	0.670
2.0	9.380	0.670	6.000	24.000	0.370	10.000	38.630	0.670
3.0	10.000	0.670	7.000	36.000	0.130	11.000	48.000	0.860
4.0	10.000	0.000	8.000	38.000	0.000			

WSEL FT.	DEPTH INC	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID PLUS OBSTRUCTIONS	TOPWID WATER	TOTAL ENERGY (FT)	FROUDE NO.
0.020	0.020	0.006	0.004	0.657	0.602	1.865	0.615	0.026	1.061
0.040	0.040	0.025	0.024	1.313	0.955	2.481	1.231	0.054	1.191
0.060	0.060	0.055	0.069	1.970	1.252	3.096	1.846	0.084	1.274
0.080	0.080	0.098	0.149	2.627	1.517	3.712	2.462	0.116	1.337
0.100	0.100	0.154	0.271	3.283	1.760	4.327	3.077	0.148	1.388
0.120	0.120	0.222	0.440	3.940	1.987	4.942	3.692	0.181	1.430
0.140	0.140	0.305	0.617	5.289	2.021	6.250	5.000	0.204	1.443
0.160	0.160	0.425	0.862	7.329	2.029	8.250	7.000	0.224	1.452
0.180	0.180	0.585	1.247	9.369	2.131	10.250	9.000	0.251	1.474
0.200	0.200	0.785	1.785	11.410	2.274	12.250	11.000	0.280	1.501
0.220	0.220	1.025	2.495	13.450	2.434	14.250	13.000	0.312	1.528
0.240	0.240	1.305	3.396	15.491	2.602	16.250	15.000	0.345	1.555
0.260	0.260	1.625	4.507	17.531	2.774	18.250	17.000	0.380	1.582
0.280	0.280	1.985	5.846	19.571	2.945	20.250	19.000	0.415	1.606
0.300	0.300	2.385	7.431	21.612	3.116	22.250	21.000	0.451	1.630
0.320	0.320	2.825	9.278	23.652	3.284	24.250	23.000	0.488	1.652
0.340	0.340	3.305	11.405	25.693	3.451	26.250	25.000	0.525	1.673
0.360	0.360	3.825	13.827	27.733	3.615	28.250	27.000	0.563	1.693
0.380	0.380	4.380	16.910	28.773	3.861	29.250	28.000	0.612	1.721
0.400	0.400	4.940	20.646	28.813	4.179	29.250	28.000	0.672	1.754
0.420	0.420	5.500	24.669	28.853	4.485	29.250	28.000	0.733	1.784
0.440	0.440	6.060	28.969	28.893	4.780	29.250	28.000	0.795	1.812
0.460	0.460	6.620	33.536	28.933	5.066	29.250	28.000	0.859	1.837
0.480	0.480	7.180	38.361	28.973	5.343	29.250	28.000	0.924	1.860
0.500	0.500	7.740	43.436	29.013	5.612	29.250	28.000	0.990	1.882
0.520	0.520	8.300	48.754	29.053	5.874	29.250	28.000	1.057	1.902
0.540	0.540	8.860	54.309	29.093	6.130	29.250	28.000	1.124	1.921
0.560	0.560	9.420	60.094	29.133	6.379	29.250	28.000	1.193	1.939
0.580	0.580	9.980	66.105	29.173	6.624	29.250	28.000	1.262	1.956
0.600	0.600	10.540	72.336	29.213	6.863	29.250	28.000	1.333	1.972
0.620	0.620	11.100	78.783	29.253	7.098	29.250	28.000	1.404	1.987
0.640	0.640	11.660	85.440	29.293	7.328	29.250	28.000	1.475	2.002
0.660	0.660	12.220	92.304	29.333	7.554	29.250	28.000	1.547	2.016
0.680	0.680	12.785	97.268	30.360	7.608	30.237	28.987	1.580	2.020
0.700	0.700	13.422	98.536	33.624	7.341	32.211	32.211	1.538	2.005
0.720	0.720	14.086	102.731	35.638	7.293	34.184	34.184	1.547	2.003
0.740	0.740	14.789	107.413	37.653	7.263	36.158	36.158	1.560	2.002
0.760	0.760	15.532	112.576	39.667	7.248	38.132	38.132	1.577	2.002
0.780	0.780	16.315	118.216	41.681	7.246	40.105	40.105	1.597	2.003
0.800	0.800	17.136	124.333	43.695	7.256	42.079	42.079	1.619	2.004
0.820	0.820	17.998	130.929	45.709	7.275	44.053	44.053	1.643	2.007
0.840	0.840	18.898	138.007	47.723	7.303	46.026	46.026	1.669	2.009

Q = 29.33 CFS
D = .44'
Inlets 11 & 12

Q = 33.536 CFS
EGL Controlled

Inlets 11 & 12


GRATING CAPACITIES FOR TYPE "A", "C" AND "D"
CURB LINE
GRATING
2'
8" C.F.
9" C.F.
2
9" C.F.
8" C.F.
FLOW
CONCRETE GUTTER
GRATING & GUTTER PLAN
PL
CURB LINE
9'
16'
CL
4"
2'
8"
.28'
1.5"
CONC. GUTTER
TYPICAL HALF STREET SECTION (ABOVE BASIN)
Slope = 2.40%
S = .090
S = .050
S = .020
S = .002
GRATING 2
Q (C.F.S.) IN GRATINGS
100
90
80
70
60
50
40
30
25
20
15
10
9
8
7
6
5
4
3
2.5
2
1.5
1
.1
.15
.2
.25
.3
.4
.5
.6
.7
.8
.9
1.0
1.5
2
D = DEPTH OF FLOW (FT.) ABOVE NORMAL GUTTER GRADE
IN-11 & IN-12
Qin = 7.3 cfs
d = 0.44'
PLATE 22.3 D-5

48ftROW-28ftRoad @ Slope = 1.00%

MANNING'S N = 0.017 SLOPE = 0.010 (ft/ft)

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1.0	0.000	0.860	5.000	12.000	0.130	9.000	38.000	0.670
2.0	9.380	0.670	6.000	24.000	0.370	10.000	38.630	0.670
3.0	10.000	0.670	7.000	36.000	0.130	11.000	48.000	0.860
4.0	10.000	0.000	8.000	38.000	0.000			

WSEL FT.	DEPTH INC	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID PLUS OBSTRUCTIONS	TOPWID WATER	TOTAL ENERGY (FT)	FROUDE NO.
0.020	0.020	0.006	0.002	0.657	0.389	1.865	0.615	0.022	0.685
0.040	0.040	0.025	0.015	1.313	0.617	2.481	1.231	0.046	0.769
0.060	0.060	0.055	0.045	1.970	0.808	3.096	1.846	0.070	0.823
0.080	0.080	0.098	0.096	2.627	0.979	3.712	2.462	0.095	0.863
0.100	0.100	0.154	0.175	3.283	1.136	4.327	3.077	0.120	0.896
0.120	0.120	0.222	0.284	3.940	1.283	4.942	3.692	0.146	0.923
0.140	0.140	0.305	0.398	5.289	1.305	6.250	5.000	0.166	0.931
0.160	0.160	0.425	0.557	7.329	1.310	8.250	7.000	0.187	0.937
0.180	0.180	0.585	0.805	9.369	1.376	10.250	9.000	0.209	0.951
0.200	0.200	0.785	1.152	11.410	1.468	12.250	11.000	0.234	0.969
0.220	0.220	1.025	1.610	13.450	1.571	14.250	13.000	0.258	0.986
0.240	0.240	1.305	2.192	15.491	1.680	16.250	15.000	0.284	1.004
0.260	0.260	1.625	2.909	17.531	1.790	18.250	17.000	0.310	1.021
0.280	0.280	1.985	3.774	19.571	1.901	20.250	19.000	0.336	1.037
0.300	0.300	2.385	4.796	21.612	2.011	22.250	21.000	0.363	1.052
0.320	0.320	2.825	5.989	23.652	2.120	24.250	23.000	0.390	1.066
0.340	0.340	3.305	7.362	25.693	2.227	26.250	25.000	0.417	1.080
0.360	0.360	3.825	8.925	27.733	2.333	28.250	27.000	0.445	1.093
0.380	0.380	4.380	10.915	28.773	2.492	29.250	28.000	0.477	1.111
0.400	0.400	4.940	13.327	28.813	2.698	29.250	28.000	0.513	1.132
0.420	0.420	5.500	15.924	28.853	2.895	29.250	28.000	0.550	1.152
0.440	0.440	6.060	18.699	28.893	3.086	29.250	28.000	0.588	1.169
0.460	0.460	6.620	21.647	28.933	3.270	29.250	28.000	0.626	1.186
0.480	0.480	7.180	24.762	28.973	3.449	29.250	28.000	0.665	1.201
0.500	0.500	7.740	28.038	29.013	3.622	29.250	28.000	0.704	1.215
0.520	0.520	8.300	31.471	29.053	3.792	29.250	28.000	0.744	1.228
0.540	0.540	8.860	35.056	29.093	3.957	29.250	28.000	0.784	1.240
0.560	0.560	9.420	38.791	29.133	4.118	29.250	28.000	0.824	1.252
0.580	0.580	9.980	42.671	29.173	4.276	29.250	28.000	0.864	1.263
0.600	0.600	10.540	46.693	29.213	4.430	29.250	28.000	0.905	1.273
0.620	0.620	11.100	50.854	29.253	4.581	29.250	28.000	0.946	1.283
0.640	0.640	11.660	55.151	29.293	4.730	29.250	28.000	0.988	1.292
0.660	0.660	12.220	59.582	29.333	4.876	29.250	28.000	1.030	1.301
0.680	0.680	12.785	62.786	30.360	4.911	30.237	28.987	1.055	1.304
0.700	0.700	13.422	63.605	33.624	4.739	32.211	32.211	1.049	1.294
0.720	0.720	14.086	66.313	35.638	4.708	34.184	34.184	1.065	1.293
0.740	0.740	14.789	69.335	37.653	4.688	36.158	36.158	1.082	1.292
0.760	0.760	15.532	72.667	39.667	4.679	38.132	38.132	1.100	1.292
0.780	0.780	16.315	76.308	41.681	4.677	40.105	40.105	1.120	1.293
0.800	0.800	17.136	80.257	43.695	4.683	42.079	42.079	1.141	1.294
0.820	0.820	17.998	84.514	45.709	4.696	44.053	44.053	1.163	1.295
0.840	0.840	18.898	89.083	47.723	4.714	46.026	46.026	1.186	1.297

Q = 38.41 CFS
D = .56'
Inlets 13 & 14

Q = 42.28 CFS
EGL Controlled

NORTH SD Inlets 13 and 14

ANALYSIS OF AN INLET IN A SUMP CONDITION **2 INLETS IN SUMP CONDITION**

INLET TYPE: Single Grate Type "A" with curb opening wings on both sides on inlet.

WEIR: Q=C*L*H^1.5

Wing opening	Grate opening
C= 3.0	C=3.0
L= 4.0 ft	L(single grate)=[(2.67')+2(1.8')]=6.27 ft
Q=3.0(4.0')H^1.5= 12.0H**1.5	Q=3.0(6.27)H^1.5=18.81*H^1.5

ORIFICE: Q=C*A*(2*G*H)^0.5

Grate opening	Wing opening*
C=0.6	C=0.6
A(single grate)=3.72 sf	A=2.0 sf
Q=0.6*3.72*(64.4*H)^0.5	Q=1.2*(64.4*H)^0.5

*not included in the orifice calcs

	WS ELEVATION	HEIGHT ABOVE INLET	Q (CFS) WEIR WING OPENING	Q (CFS) WEIR SINGLE GRATE	Q (CFS) ORIFICE SINGLE GRATE	TOTAL Q (CFS)	COMMENTS:
~FL @ INLET	0.00	0.00	0.00	0.00	0.00	0.00	Flow at single "A" inlet w/ two wing openings
	0.10	0.10	0.38	0.59	5.66	1.35	Weir controls on grate analysis
	0.20	0.20	1.07	1.68	8.01	3.83	
	0.30	0.30	1.97	3.09	9.81	7.03	
	0.40	0.40	3.04	4.76	11.33	10.83	
	0.50	0.50	4.24	6.65	12.67	15.14	
	0.60	0.60	5.58	8.74	13.87	19.90	
TOP OF CURB	0.70	0.70	7.03	11.02	14.99	25.07	@ Q(100 yr) = 11.7 per inlet (Flow below curb)
	0.80	0.80	8.59	13.46	16.02	30.63	
ROW LIMIT	0.86	0.86	9.52	14.92	16.58	33.96	@ 2x Q(100 yr) = 23.31 per inlet (flow below ROW)
	0.90	0.90	10.25	16.06	16.99	36.55	
	1.00	1.00	12.00	18.81	17.91	41.91	

NOTE: The total runoff intercepted by the inlet at the low point in the road is:

Q(100) = 2*[(runoff of the wing opening) + (the lesser of the weir or orifice amount taken by the double grate)].

LEGEND

EXISTING STORM DRAIN

PROPOSED STORM DRAIN

PROPOSED STORM DRAIN MANHOLE

PROPOSED STORM DRAIN INLET

AP12
Q = 6.6 + 1.6 + 15.11= 23.31 cfs
Q = 0 cfs (Inlets 13 & 14)
Inlets in sump condition

AP13
Q = 16.6 + 0.5 cfs
Q = 17.1 cfs
(flow contained in street)

AP14
Q = 17.1 + 11.0 cfs
Q = 28.1 cfs
(flow contained in street)

Q_T = 28.2 cfs

IN12
Q = 14.1 cfs
IN13
Q = 14.1 cfs

IN24
Q = 10.2 cfs

IN23
Q = 10.2 cfs

AP51
Q = 23.3 cfs + 2.86 = 20.44 cfs
(flow contained in street)

AP50
Q = 14.71 + 23.0 + 2.79= 40.5 cfs
Q = 40.5 - 17.2 = 23.3 (flow contained in street)

AP16
Q = 12.7 + 10.3 = 23.0 cfs
(flow contained in street)

IN21
Q = 8.6 cfs

IN22
Q = 8.6 cfs

AP49
Q = 20.8 + 8.11 = 28.91 cfs
Q = 28.91 - 14.2 = 14.71 cfs
(flow contained in street)

IN19
Q = 7.1 cfs

IN20
Q = 7.1 cfs

AP15
Q = 12.1 + 0.60 = 12.7 cfs
(flow contained in street)

AP42
Q = 25.0 + 0.69 cfs
Q = 25.7 - 13.6 = 12.1 cfs
(flow contained in street)

AP43
Q = 13.9 cfs
(flow contained in street)

AP48
Q = 38.4 - 17.6 = 20.8 cfs
(flow contained in street)

IN17
Q = 8.8 cfs

IN18
Q = 8.8 cfs

AP47
Q = 11.5 + 13.9 + 12.1 + 0.89
Q = 38.4 cfs

AP41

N

60 30 0 60

1" = 60'

INLET SCHEMATICS EXHIBIT

TA LAND

DRAWN BY:	DATE:	
RV	6/24/25	
CHECKED BY:	BHI PROJECT NO.	SHEET NO.
KMK	20250012	

Bohannan Huston
www.bhinc.com 800.877.5332

Fri, 04-Oct-2025 - 8:09 am Plotted by: RVILLALONGOS
P:\2025\01\20250012\Plans\General\20250012_Inlet_Schematics.dwg

NORTH SD Inlets 15 and 16

ANALYSIS OF AN INLET IN A SUMP CONDITION **2 INLETS IN SUMP CONDITION**

INLET TYPE: Single Grate Type "A" with curb opening wings on both sides on inlet.

WEIR: Q=C*L*H^1.5

Wing opening	Grate opening
C= 3.0	C=3.0
L= 4.0 ft	L(single grate)=[(2.67')+2(1.8')]=6.27 ft
Q=3.0(4.0')H^1.5= 12.0H**1.5	Q=3.0(6.27)H^1.5=18.81*H^1.5

ORIFICE: Q=C*A*(2*G*H)^0.5

Grate opening	Wing opening*
C=0.6	C=0.6
A(single grate)=3.72 sf	A=2.0 sf
Q=0.6*3.72*(64.4*H)^0.5	Q=1.2*(64.4*H)^0.5

*not included in the orifice calcs

	WS ELEVATION	HEIGHT ABOVE INLET	Q (CFS) WEIR WING OPENING	Q (CFS) WEIR SINGLE GRATE	Q (CFS) ORIFICE SINGLE GRATE	TOTAL Q (CFS)	COMMENTS:
~FL @ INLET	0.00	0.00	0.00	0.00	0.00	0.00	Flow at single "A" inlet w/ two wing openings
	0.10	0.10	0.38	0.59	5.66	1.35	Weir controls on grate analysis
	0.20	0.20	1.07	1.68	8.01	3.83	
	0.30	0.30	1.97	3.09	9.81	7.03	
	0.40	0.40	3.04	4.76	11.33	10.83	
	0.50	0.50	4.24	6.65	12.67	15.14	
	0.60	0.60	5.58	8.74	13.87	19.90	
TOP OF CURB	0.70	0.70	7.03	11.02	14.99	25.07	@ Q(100 yr) = 14.05 per inlet (Flow below curb)
	0.80	0.80	8.59	13.46	16.02	30.63	
ROW LIMIT	0.86	0.86	9.52	14.92	16.58	33.96	@ 2x Q(100 yr) = 28.1 per inlet (flow below ROW)
	0.90	0.90	10.25	16.06	16.99	36.55	
	1.00	1.00	12.00	18.81	17.91	41.91	

NOTE: The total runoff intercepted by the inlet at the low point in the road is:

Q(100) = 2*[(runoff of the wing opening) + (the lesser of the weir or orifice amount taken by the double grate)].

APPENDIX C
STORM DRAIN PIPE ANALYSIS

HGL Analysis Report

LineNo.	LineID	LineSize (in)	VelAve (ft/s)	FlowRate (cfs)	Grnd/RimElevDn (ft)	HGLDn (ft)	Grnd/RimElevUp (ft)	HGLUp (ft)	EGLDn (ft)	EGLUp (ft)	VelDn (ft/s)	VelUp (ft/s)
1	SDP 10	42	10.44	100.4	5028	5039	5044.76	5039.95	5040.69	5041.64	10.44	10.44
2	SDP 9	36	12.17	86	5044.76	5040.83	5048.08	5042.78	5043.13	5045.08	12.17	12.17
3	SDP 8 (1)	36	10.19	72	5048.08	5044.32	5057.02	5047.96	5045.93	5049.57	10.19	10.19
4	SDP 7 (1)	30	14.26	60.2	5057.02	5046.5	5069.83	5061.35	5050.67	5063.76	16.09	12.44
5	SDP 7	24	11.81	37.1	5069.83	5062.46	5075.09	5067.42	5064.63	5069.58	11.81	11.81
6	SDP 6	24	11.81	37.1	5075.09	5068.35	5087.59	5080.32	5070.52	5082.49	11.81	11.81
7	SDP 4	24	11.81	37.1	5087.59	5081.33	5089	5084.14	5083.5	5086.31	11.81	11.81
8	SDP 104	48	5.63	70.8	5044.88	5047.1	5048.27	5047.25	5047.59	5047.74	5.64	5.63
9	SDP 105	48	5.17	64.9	5048.27	5047.51	5048.71	5047.54	5047.92	5047.96	5.17	5.16
10	SDP 100	42	6.13	59	5048.71	5047.87	5051.65	5048.28	5048.45	5048.87	6.13	6.13
11	SDP 48 (1)	36	11.91	59	5051.65	5045.61	5056.07	5051.41	5049.35	5052.83	14.27	9.55
12	SDP 48 (1)	30	12.94	59	5056.07	5051.12	5060.37	5054.91	5053.77	5057.23	13.67	12.21
13	SDP 48 (3)	30	9.25	45.4	5060.37	5057.69	5064.18	5058.42	5059.02	5059.75	9.25	9.25
14	SDP 48	30	9.25	45.4	5064.18	5058.42	5064.18	5060.68	5059.75	5062.01	9.25	9.25
15	SDP 77	24	4.57	13.6	5064.18	5062.43	5069.98	5063.61	5062.72	5063.97	4.33	4.81
16	SDP 76	24	8.28	13.6	5069.98	5062.89	5076.63	5067.12	5064.29	5067.73	10.3	6.26
17	SDP 80	18	7.96	6.8	5076.63	5071.59	5076.83	5073.83	5072.46	5074.29	10.46	5.46
18	SDP 79	18	6.19	6.8	5076.63	5070.42	5076.52	5071	5071.06	5071.46	6.91	5.46
19	SDP 38	18	3	5.3	5069.83	5067.5	5069.64	5067.52	5067.64	5067.66	3	3
20	SDP 37	24	12.47	29	0	5063.16	5070.41	5068.42	5065.33	5069.84	15.37	9.56
21	SDP 37 (1)	18	10.07	17.8	5069.83	5062.81	5069.66	5063.39	5064.39	5064.97	10.07	10.07
22	SDP 37 (2)	18	7.07	12.5	5069.66	5064.82	0	5065.4	5065.6	5066.18	7.07	7.07
23	SDP 35	18	9	15.9	5064.18	5061.85	5063.76	5062.23	5063.11	5063.49	9	9
24	SDP 73	18	9	15.9	5064.18	5061.85	5063.76	5062.22	5063.11	5063.48	9	9
25	SDP 54 (2)	24	4.33	13.6	5060.37	5058.31	5062.35	5058.53	5058.6	5058.82	4.33	4.33
26	SDP 54	24	4.33	13.6	5062.35	5058.53	5062.35	5058.56	5058.82	5058.85	4.33	4.33
27	SDP 55	18	4.24	6.8	5062.35	5058.85	5062.16	5058.85	5059.08	5059.18	3.85	4.63
28	SDP 53	18	3.85	6.8	5062.35	5058.85	5062.44	5058.94	5059.08	5059.17	3.85	3.85
29	SDP 56	18	6.79	5.9	5057.02	5052.63	5057	5053.93	5053.34	5054.34	8.44	5.14
30	SDP 57	18	8.48	5.9	5057.02	5046.11	5056.77	5049.7	5049.8	5050.11	11.81	5.14
31	SDP 91	30	5.83	28.6	5043.79	5047.1	5048.93	5047.37	5047.63	5047.9	5.83	5.83
32	SDP 94	30	4.34	21.3	5048.93	5047.75	5049.29	5047.79	5048.04	5048.08	4.34	4.34
33	SDP 27	30	2.85	14	5049.29	5048.15	5050.6	5048.2	5048.27	5048.32	2.85	2.85
34	SDP 26	30	2.85	14	5050.6	5048.33	5050.73	5048.42	5048.46	5048.55	2.85	2.85
35	SDP 87	18	3.96	7	5050.73	5048.48	5050.41	5048.54	5048.72	5048.78	3.96	3.96
36	SDP 88	18	3.96	7	5050.73	5048.48	5050.41	5048.55	5048.72	5048.79	3.96	3.96

LineNo.	LineID	LineSize (in)	VelAve (ft/s)	FlowRate (cfs)	Grnd/RimElevDn (ft)	HGLDn (ft)	Grnd/RimElevUp (ft)	HGLUp (ft)	EGLDn (ft)	EGLUp (ft)	VelDn (ft/s)	VelUp (ft/s)
37	SDP 58	18	4.18	7	5048.08	5045.14	5047.91	5045.11	5045.38	5045.41	3.96	4.4
38	SDP 89	18	4.13	7.3	5049.29	5048.06	5048.93	5048.13	5048.33	5048.39	4.13	4.13
39	SDP 102	30	1.2	5.9	5048.71	5048.21	5048.27	5048.21	5048.23	5048.23	1.2	1.2
40	SDP 82	42	7.51	72.2	5020.88	5024.03	5030.16	5025.32	5024.91	5026.2	7.51	7.5
41	SDP 34	36	6.23	44	5030.16	5026.34	5030.41	5026.42	5026.94	5027.03	6.23	6.22
42	SDP 33	36	6.23	44	5030.41	5026.79	5030.98	5026.98	5027.39	5027.59	6.23	6.22
43	SDP 32 (1)	36	6.23	44	5030.98	5027.35	5034.9	5029.06	5027.95	5029.66	6.23	6.22
44	SDP 32	36	7.24	44	5034.9	5029.32	5038.88	5031.49	5029.92	5032.56	6.23	8.26
45	SDP 31	36	7.5	44	5038.88	5032.08	5039.76	5032.7	5032.79	5033.77	6.74	8.26
46	SDP 30	36	7.51	44	5039.76	5033.29	5040.25	5033.42	5034	5034.48	6.76	8.26
47	SDP 29	36	7.51	44	5040.25	5034.01	5041.33	5034.84	5034.71	5035.9	6.76	8.26
48	SDP 28	30	9.77	44	5041.33	5034.94	5042.55	5036.49	5036.49	5037.92	9.97	9.57
49	SDP 27 (1)	30	12.45	44	5042.55	5035.8	5043.15	5039.54	5038.42	5040.97	15.32	9.57
50	SDP 27 (2)	30	8.96	44	5043.15	5040.22	5047.08	5041.72	5041.47	5042.96	8.97	8.96
51	SDP 122	24	7.19	22.6	5047.08	5043.07	5046.84	5043.42	5043.88	5044.22	7.2	7.19
52	SDP 123	18	6.4	11.3	5046.84	5044.23	5046.36	5044.48	5044.86	5045.12	6.4	6.39
53	SDP 95	18	4.07	7.2	5044.76	5042.06	5044.58	5042.08	5042.32	5042.34	4.08	4.07
54	SDP 121	18	6.4	11.3	5046.84	5044.23	5046.36	5044.48	5044.86	5045.12	6.4	6.39
55	SDP 27 (3)	24	7.29	21.4	5047.08	5043.12	5045	5044.64	5043.84	5045.58	6.81	7.77
56	SDP 59	18	3.96	7	5048.08	5045.14	5048.73	5045.24	5045.38	5045.48	3.96	3.96
57	SDP 96	18	4.07	7.2	5044.76	5042.06	5044.61	5042.16	5042.32	5042.41	4.08	4.07
58	SDP 86	42	2.39	23	5032	5039	5039.58	5039.03	5039.09	5039.12	2.39	2.39
59	SDP 124	24	3.66	11.5	5039.58	5039	5039.27	5039.1	5039.21	5039.3	3.66	3.66
60	SDP 20 (1)	66	7.13	169.4	5022.5	5024.03	5030.21	5024.64	5024.82	5025.44	7.13	7.13
61	SDP 19 (2)	60	8.63	169.4	5030.21	5025.08	5029.63	5025.35	5026.23	5026.51	8.63	8.63
62	SDP 19	60	7.59	149	5029.63	5026.14	5030.46	5026.58	5027.03	5027.47	7.59	7.59
63	SDP 18	54	8.29	131.8	5030.46	5026.93	5031.99	5027.76	5028	5028.83	8.29	8.29
64	SDP 120	54	7.39	117.6	5031.99	5028.58	5032.94	5029.11	5029.43	5029.96	7.4	7.39
65	SDP 117	54	7.39	117.6	5032.94	5029.61	5034.08	5030.28	5030.46	5031.13	7.4	7.39
66	SDP 14 (1)	54	6.29	100	5034.08	5030.93	5034.99	5031.3	5031.55	5031.92	6.29	6.29
67	SDP 14	48	6.84	86	5034.99	5031.56	5035.32	5031.76	5032.29	5032.49	6.84	6.84
68	SDP 13 (2)	42	7.53	72.4	5035.32	5032.05	5036.31	5032.87	5032.93	5033.75	7.53	7.53
69	SDP 13	42	5.7	54.8	5036.31	5033.6	5038.69	5034.73	5034.1	5035.24	5.7	5.7
70	SDP 12 (1)	42	5.7	54.8	5038.69	5034.95	5040.7	5035.89	5035.46	5036.39	5.7	5.7
71	SDP 11	36	10.21	54.8	5040.7	5034.18	5039	5036.87	5036.87	5038.18	11.22	9.19
72	SDP 98	18	5.11	8.8	5036.31	5033.67	5035.93	5033.73	5034.05	5034.16	4.98	5.24
73	SDP 67	18	4.69	6.8	5035.32	5032.42	5034.96	5032.58	5032.66	5033.04	3.92	5.46
74	SDP 70	24	4.46	14	5034.99	5031.82	5035.3	5032.02	5032.12	5032.33	4.46	4.46

LineNo.	LineID	LineSize (in)	VelAve (ft/s)	FlowRate (cfs)	Grnd/RimElevDn (ft)	HGLDn (ft)	Grnd/RimElevUp (ft)	HGLUp (ft)	EGLDn (ft)	EGLUp (ft)	VelDn (ft/s)	VelUp (ft/s)
75	SDP 68	18	3.96	7	5035.3	5032.35	5034.97	5032.42	5032.6	5032.67	3.96	3.96
76	SDP 66	18	3.85	6.8	5035.32	5032.44	5034.98	5032.51	5032.67	5032.74	3.85	3.85
77	SDP 71	18	4.98	8.8	5034.08	5031.07	5033.74	5031.17	5031.45	5031.55	4.98	4.98
78	SDP 69	18	3.96	7	5035.3	5032.35	5035.54	5032.42	5032.6	5032.66	3.96	3.96
79	SDP 74	18	4.19	7.1	5031.99	5028.94	5031.67	5028.96	5029.19	5029.25	4.02	4.37
80	SDP 97	18	4.98	8.8	5036.31	5033.67	5035.97	5033.79	5034.05	5034.18	4.98	4.98
81	SDP 72	18	4.98	8.8	5034.08	5031.07	5033.74	5031.18	5031.45	5031.57	4.98	4.98
82	SDP 84	18	5.47	8.6	5030.46	5027.35	5030.5	5027.55	5027.72	5028.13	4.87	6.08
83	SDP 75	18	4.02	7.1	5031.99	5028.94	5031.62	5029.01	5029.19	5029.26	4.02	4.02
84	SDP 110	24	6.49	20.4	5029.63	5026.28	5029.15	5026.41	5026.94	5027.07	6.49	6.49
85	SDP 109	18	5.77	10.2	5029.15	5026.84	5029.16	5026.96	5027.36	5027.47	5.77	5.77
86	SDP 83	18	4.87	8.6	5030.46	5027.35	5030.19	5027.45	5027.72	5027.81	4.87	4.87
87	SDP 112	24	8.98	28.2	5030.16	5025.95	5029.4	5026.46	5027.2	5027.71	8.98	8.98
88	SDP 111	18	7.98	14.1	5029.4	5027.25	5029.25	5027.53	5028.24	5028.52	7.98	7.98

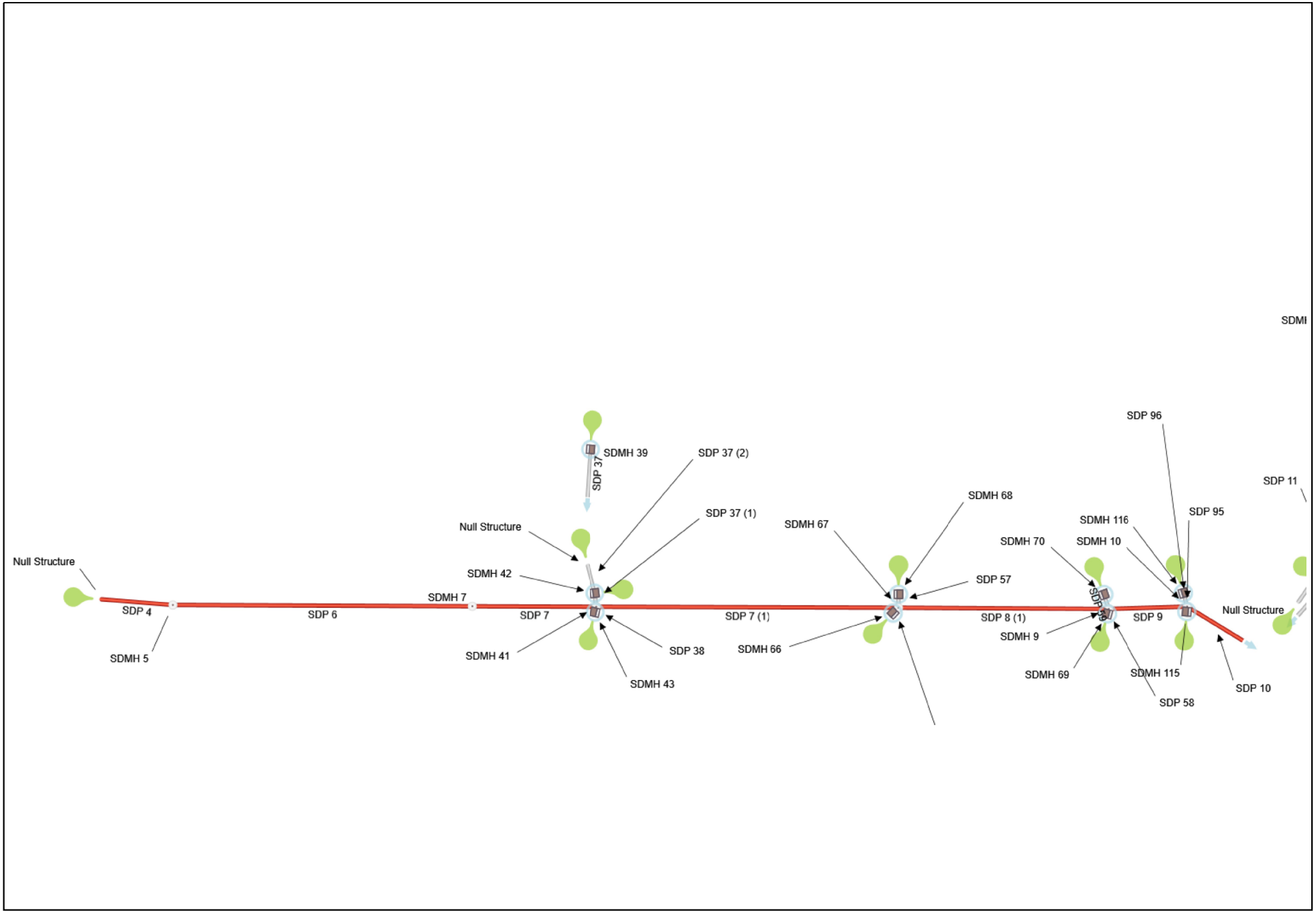
Offsite SW Pond to South Pond HGL

Plan View

Stormwater Studio 2026 v 3.0.0.40

Project Name: SD

10-27-2025



Project File: 2025-10-24 20250012 HGL Analysis.sws

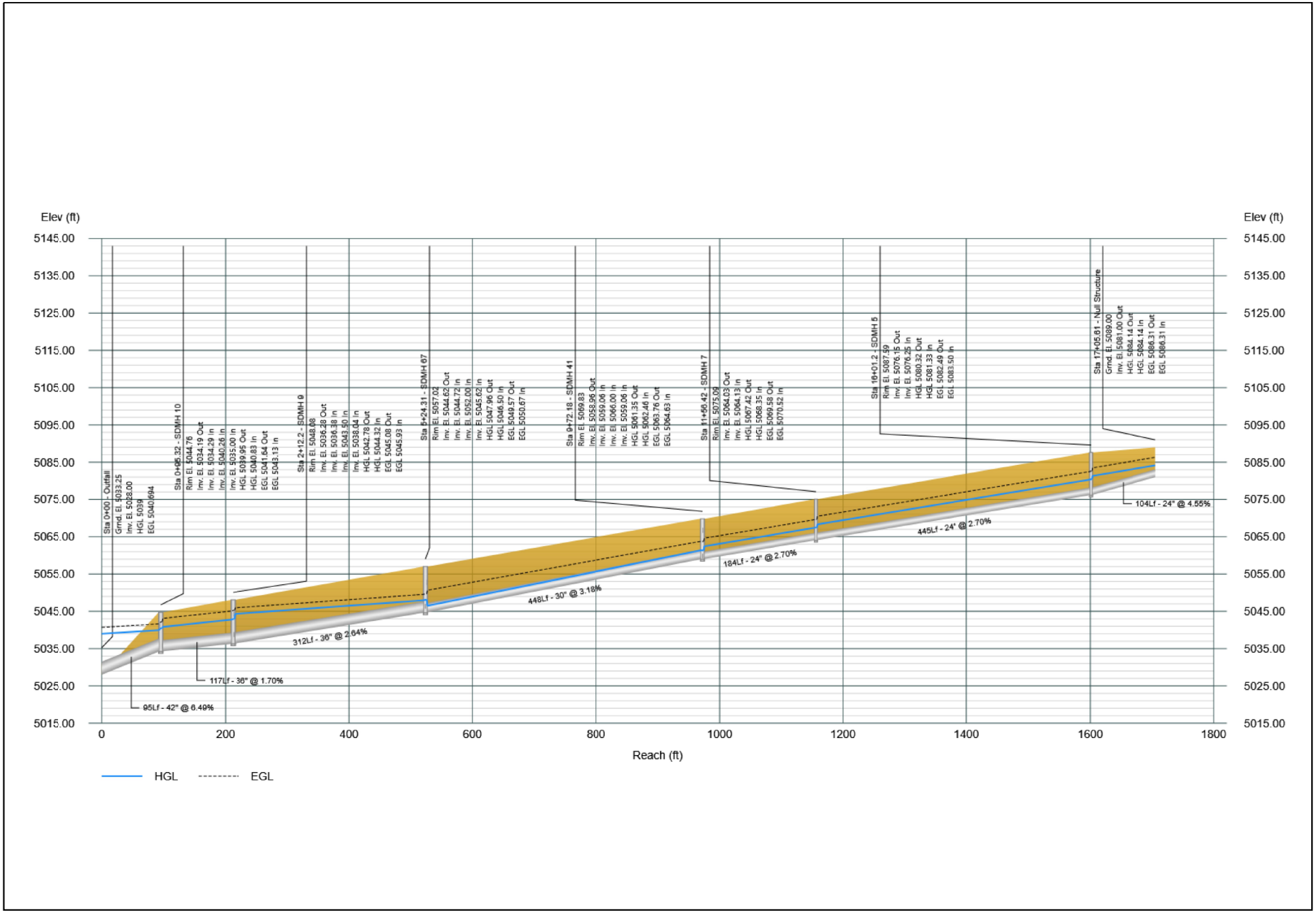
Offsite SW Pond to South Pond HGL

Profile View

Stormwater Studio 2026 v 3.0.0.40

Project Name: SD

10-27-2025



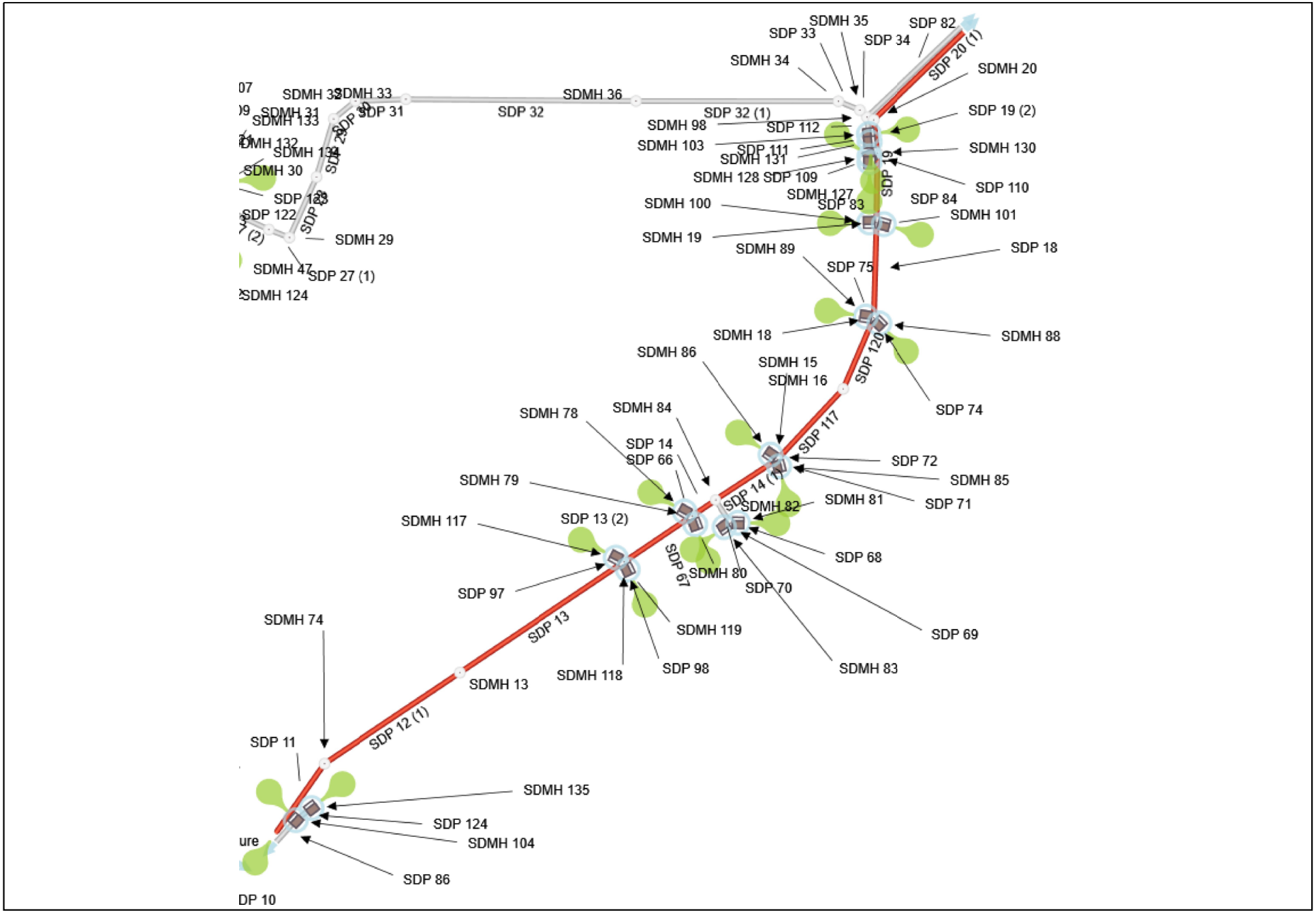
South Pond to TA Lands Pond

Plan View

Stormwater Studio 2026 v 3.0.0.40

Project Name: SD

10-27-2025



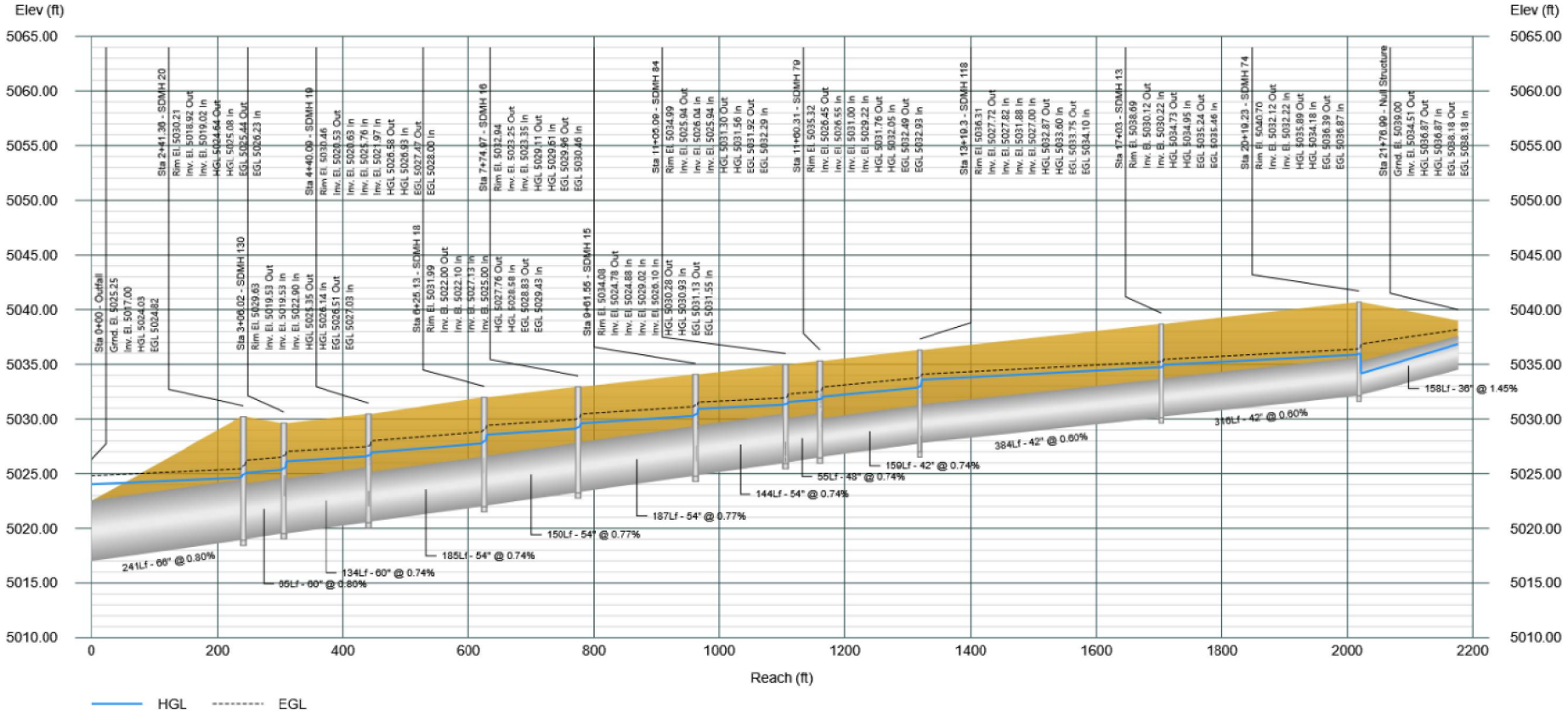
South Pond to TA Lands Pond

Profile View

Stormwater Studio 2026 v 3.0.0.40

Project Name: SD

12-04-2025



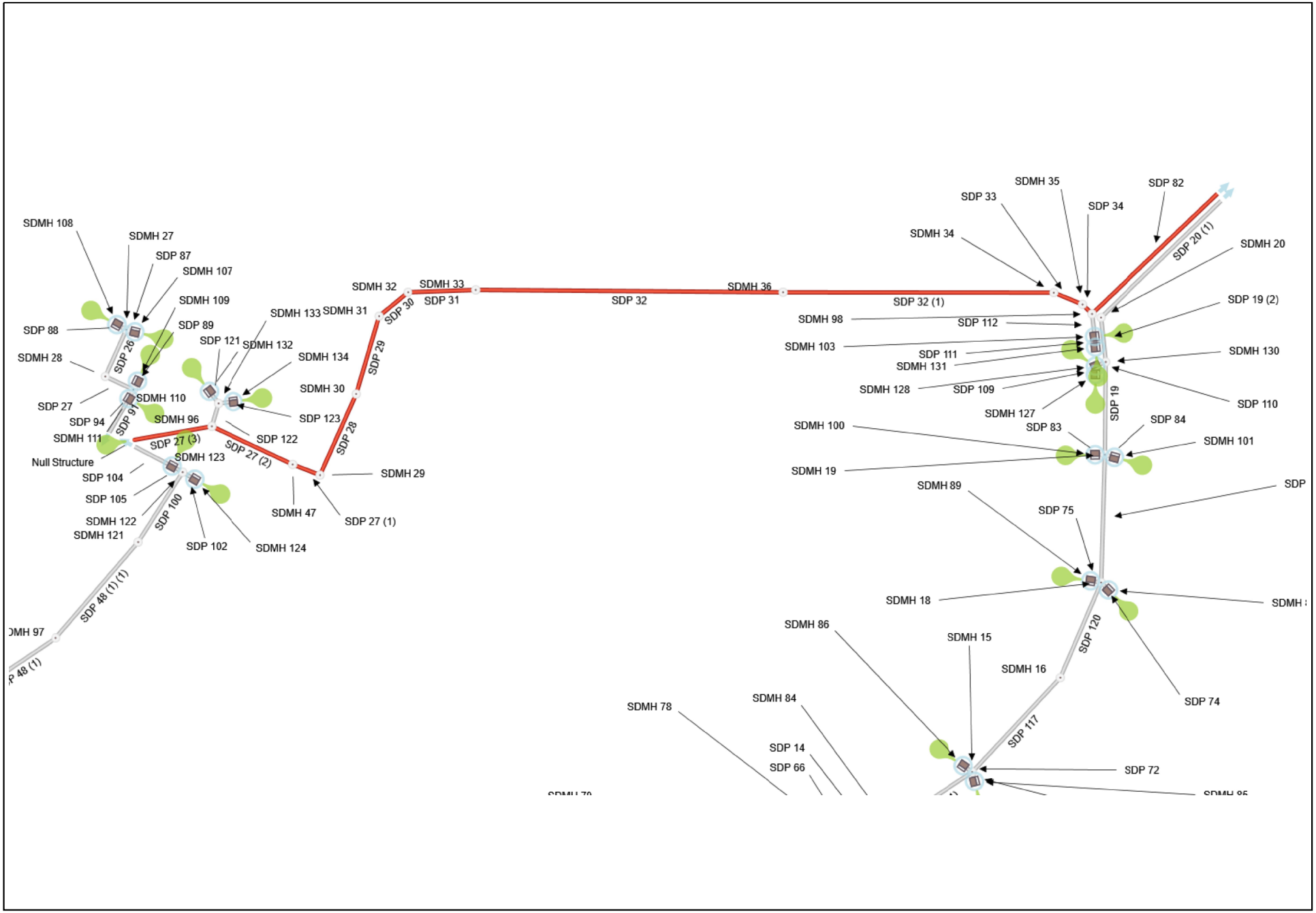
North Pond to TA Lands Pond

Plan View

Stormwater Studio 2026 v 3.0.0.40

Project Name: SD

10-27-2025



Project File: 2025-10-24 20250012 HGL Analysis.sws

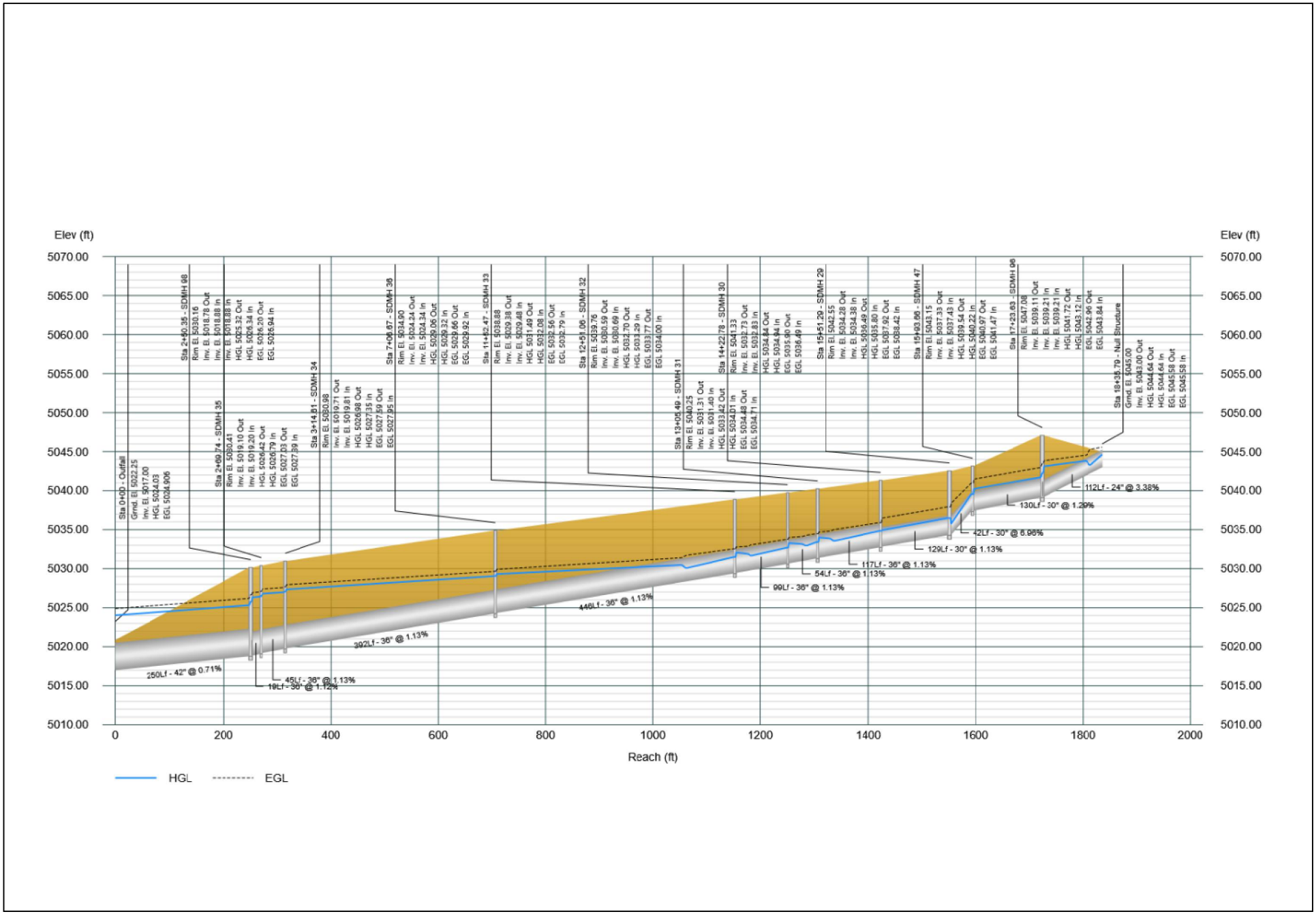
North Pond to TA Lands Pond

Profile View

Stormwater Studio 2026 v 3.0.0.40

Project Name: SD

12-04-2025



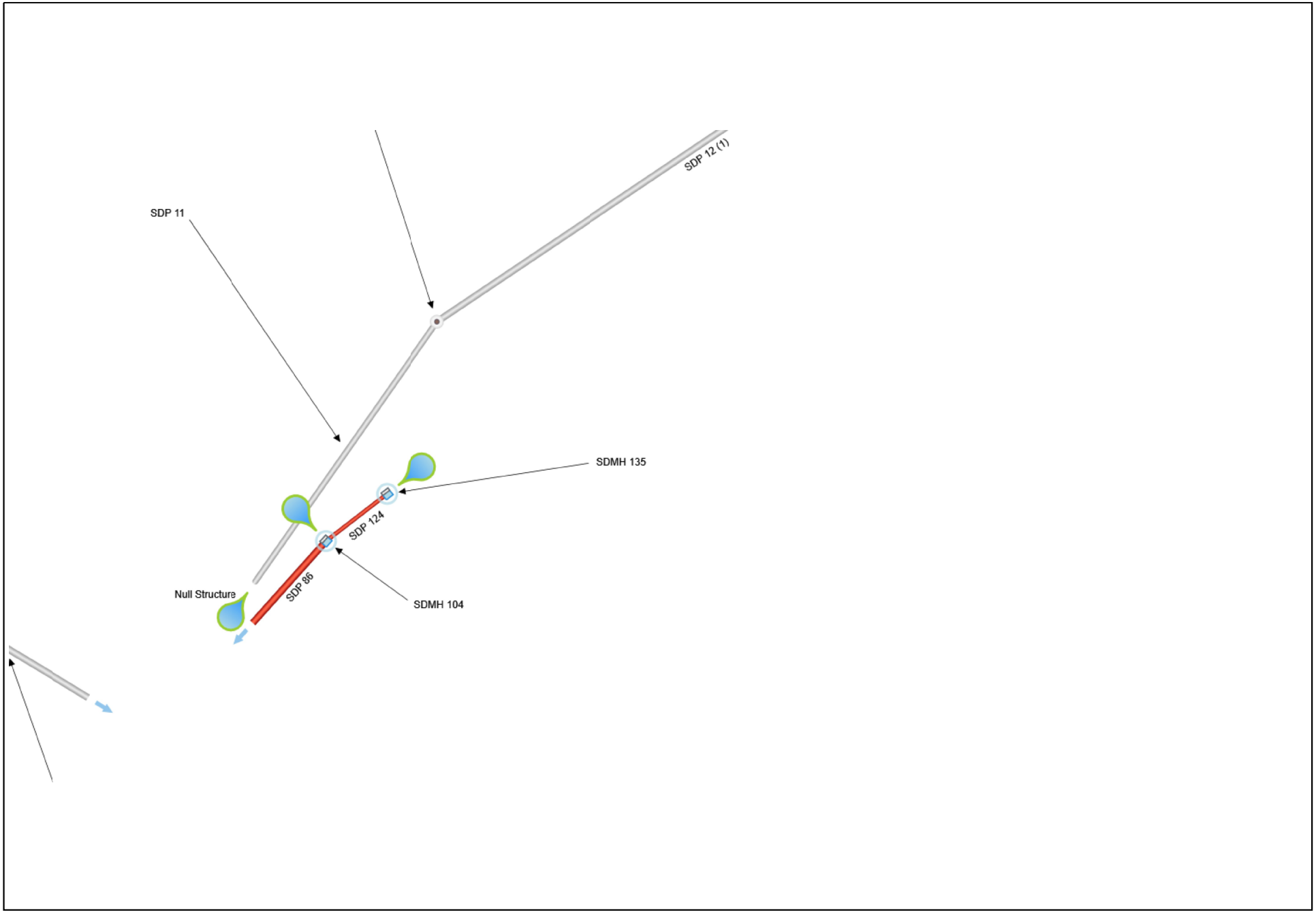
Inlet 10 & 10A to South Pond

Plan View

Stormwater Studio 2026 v 3.0.0.40

Project Name: SD

10-27-2025



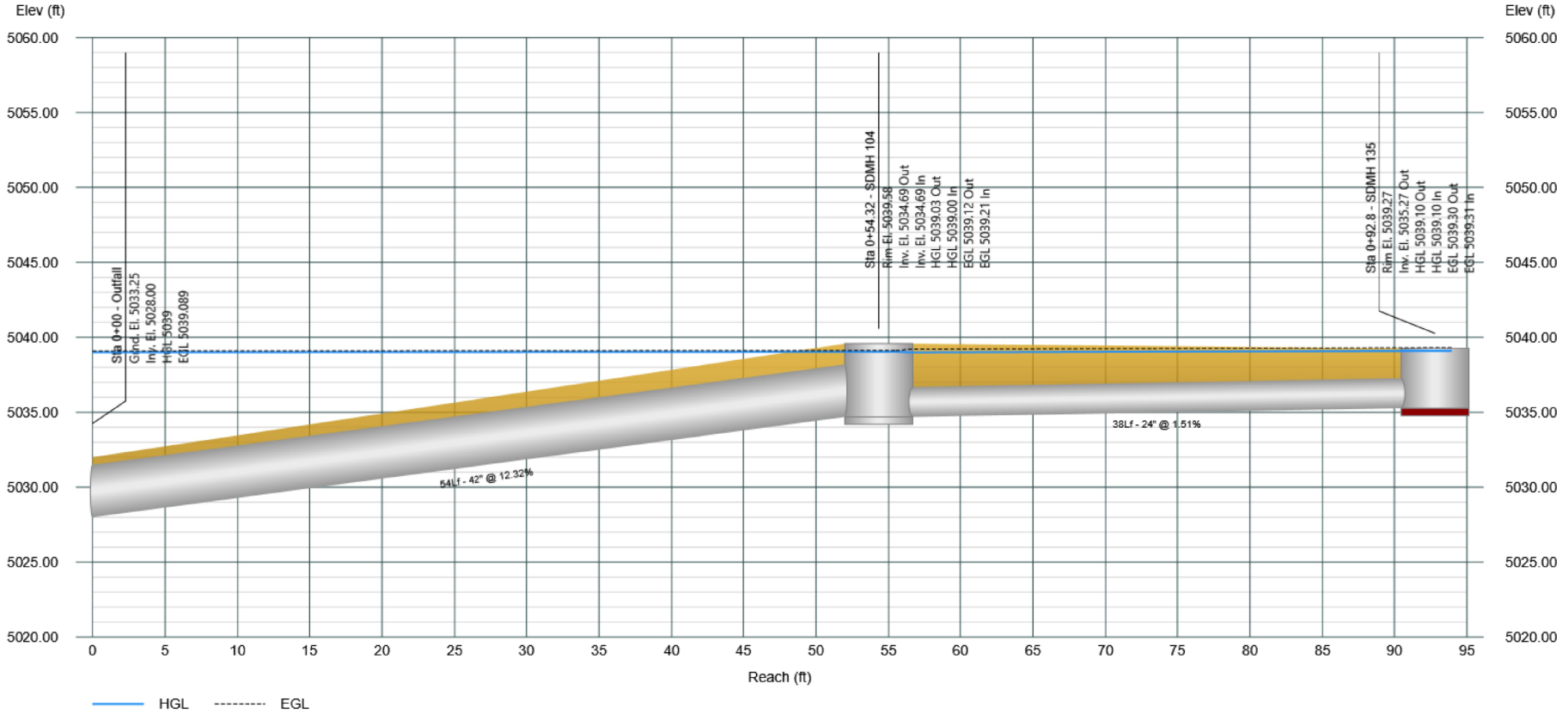
Inlet 10 & 10A to South Pond

Profile View

Stormwater Studio 2026 v 3.0.0.40

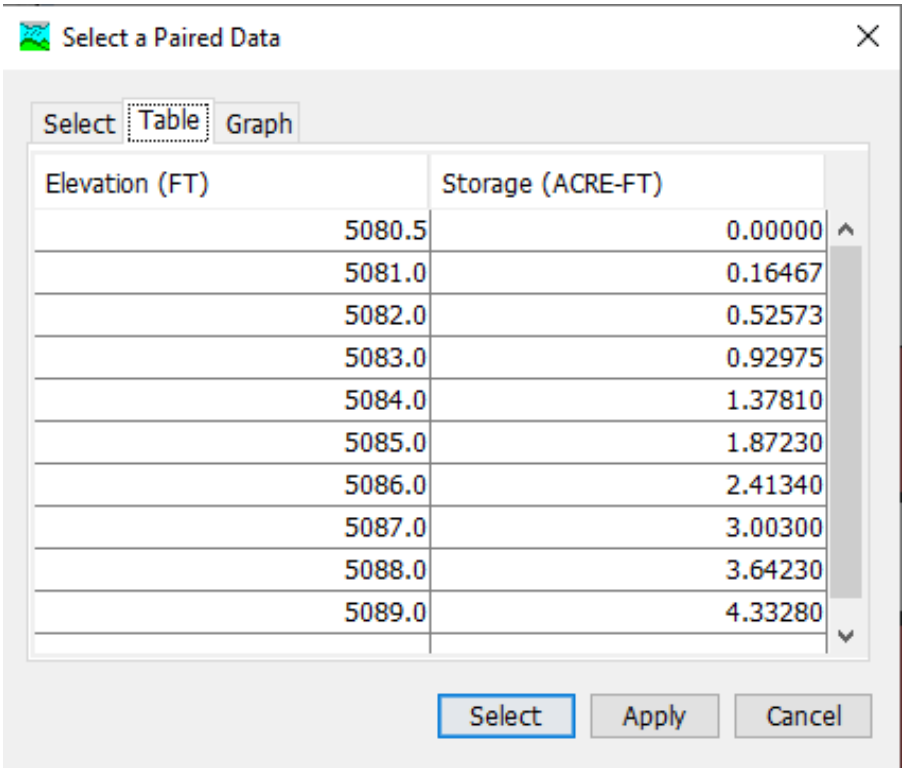
Project Name: SD

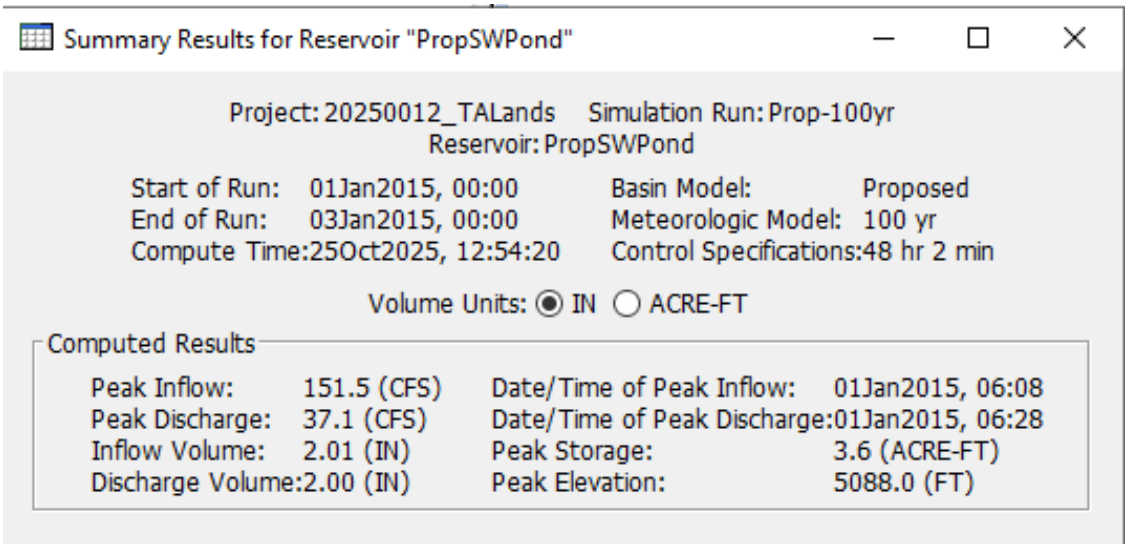
10-27-2025



APPENDIX D
ONSITE DETENTION PONDS ANALYSIS

OFFSITE SOUTHWEST POND -STAGED STORAGE





FUTURE CONDITIONS - FOR REFERENCE

MID POND -STAGED STORAGE

Select a Paired Data

Select | Table | Graph

Elevation (FT)	Storage (ACRE-FT)
5061	0.0
5062	0.10587
5063	0.23219
5064	0.38039
5065	0.55178
5066	0.74769
5067	0.96946
5068	1.2184

Select | Apply | Cancel

Summary Results for Reservoir "PropMidPond"

Project: 20250012_TALands Simulation Run: Prop-100yr
Reservoir: PropMidPond

Start of Run:	01Jan2015, 00:00	Basin Model:	Proposed
End of Run:	03Jan2015, 00:00	Meteorologic Model:	100 yr
Compute Time:	DATA CHANGED, RECOMPUTE	Control Specifications:	48 hr 2 min

Volume Units: ○ IN ◉ ACRE-FT

Computed Results

Peak Inflow:	31.3 (CFS)	Date/Time of Peak Inflow:	01Jan2015, 06:10
Peak Discharge:	12.5 (CFS)	Date/Time of Peak Discharge:	01Jan2015, 06:22
Inflow Volume:	1.3 (ACRE-FT)	Peak Storage:	0.7 (ACRE-FT)
Discharge Volume:	1.3 (ACRE-FT)	Peak Elevation:	5066.0 (FT)

SOUTH POND -STAGED STORAGE

Select a Paired Data

Select | Table | Graph

Elevation (FT)	Storage (ACRE-FT)
5028	0.00000
5029	0.11911
5030	0.26574
5031	0.44218
5032	0.65147
5033	0.89521
5034	1.17520
5035	1.49260
5036	1.84910
5037	2.24680
5038	2.68810
5039	3.17610
5040	3.71430

Select | Apply | Cancel

Summary Results for Reservoir "PropSEPond"

Project: 20250012_TALands Simulation Run: Prop-100yr
Reservoir: PropSEPond

Start of Run:	01Jan2015, 00:00	Basin Model:	Proposed
End of Run:	03Jan2015, 00:00	Meteorologic Model:	100 yr
Compute Time:	DATA CHANGED, RECOMPUTE	Control Specifications:	48 hr 2 min

Volume Units: (•) IN ( ) ACRE-FT

Computed Results

Peak Inflow:	108.5 (CFS)	Date/Time of Peak Inflow:	01Jan2015, 06:10
Peak Discharge:	54.8 (CFS)	Date/Time of Peak Discharge:	01Jan2015, 06:42
Inflow Volume:	1.84 (IN)	Peak Storage:	3.2 (ACRE-FT)
Discharge Volume:	1.62 (IN)	Peak Elevation:	5039.0 (FT)

NORTH POND -STAGED STORAGE

Select a Paired Data

Select | Table | Graph

Elevation (FT)	Storage (ACRE-FT)
5041	0.00000
5042	0.25960
5043	0.56570
5044	0.91860
5045	1.31890
5046	1.76740
5047	2.26490
5048	2.81300

Select | Apply | Cancel

Summary Results for Reservoir "North Pond"

Project: 20250012_TALands Simulation Run: Prop-100yr
Reservoir: North Pond

Start of Run:	01Jan2015, 00:00	Basin Model:	Proposed
End of Run:	03Jan2015, 00:00	Meteorologic Model:	100 yr
Compute Time:	DATA CHANGED, RECOMPUTE	Control Specifications:	48 hr 2 min

Volume Units: (•) IN ( ) ACRE-FT

Computed Results

Peak Inflow:	102.6 (CFS)	Date/Time of Peak Inflow:	01Jan2015, 06:10
Peak Discharge:	21.4 (CFS)	Date/Time of Peak Discharge:	01Jan2015, 06:30
Inflow Volume:	1.62 (IN)	Peak Storage:	2.3 (ACRE-FT)
Discharge Volume:	1.40 (IN)	Peak Elevation:	5047.1 (FT)

APPENDIX E
TA LANDS SUBDIVISION POND ANALYSIS



TA Land

Proposed Conditions Basin Data Table

Basin ID	Area (SQ. FT)	Area (SQ. MI)	SCS Curve Number Initial Abstraction	CN	Impervious (%)	Q(100yr) (CFS)
A232	1846665	0.0662	0.0	79	65%	*148.4*
A233	3044321	0.1092	0.0	90	0%	*221.9*
Basin 10A	37915	0.0014	0.0	79	65%	*3.1*
Bypass Basin Flow	81405	0.0029	0.0	90	0%	*5.9*
Bypass Basin 18 & Basin 35B	220518	0.0079	0.0	90	0%	*16.1*
Flow from inlets	667130	0.0239	0.0	90	0%	*48.6*
Inlet in sump + Basin 9	429606	0.0154	0.0	90	0%	*31.3*
Northern Inlets	1407575	0.0505	0.0	90	0%	*102.6*
Pond Area Basin 18	28994	0.0010	0.0	90	0%	*2.1*
SUBTOTAL	**7764129**	**0.28**	**-**	**-**	**-**	***580.0***

Pond Table

POND	Total Volume Required (CF)	Total Volume Provided (CF)	Peak Elevation	Pond Bottom	Pond Top	Qin (CFS)	Qout (CFS)	Pond Outlet
South West Pond	156,816.00	158,558.4	5088.0	5080.5	5089.0	151.5	37.1	(1)24" pipe
South East Pond	139,392.00	161,607.6	5039.0	5028.0	5040.0	108.5	55.3	(1)42" pipe
Mid Pond	30,492.00	52,707.6	5066.0	5061.0	5068.0	31.3	12.5	(1)18" pipe
North Pond	104,544.00	109,013.6	5,046.2	5041.0	5050.0	102.6	24.7	(1)30" pipe
Main Pond	300,564.0	74,052.0	5,024.0	5017.0	5027.5	222.0	92.4	(1)84" pipe

N

150 75 0 150

1" = 150'

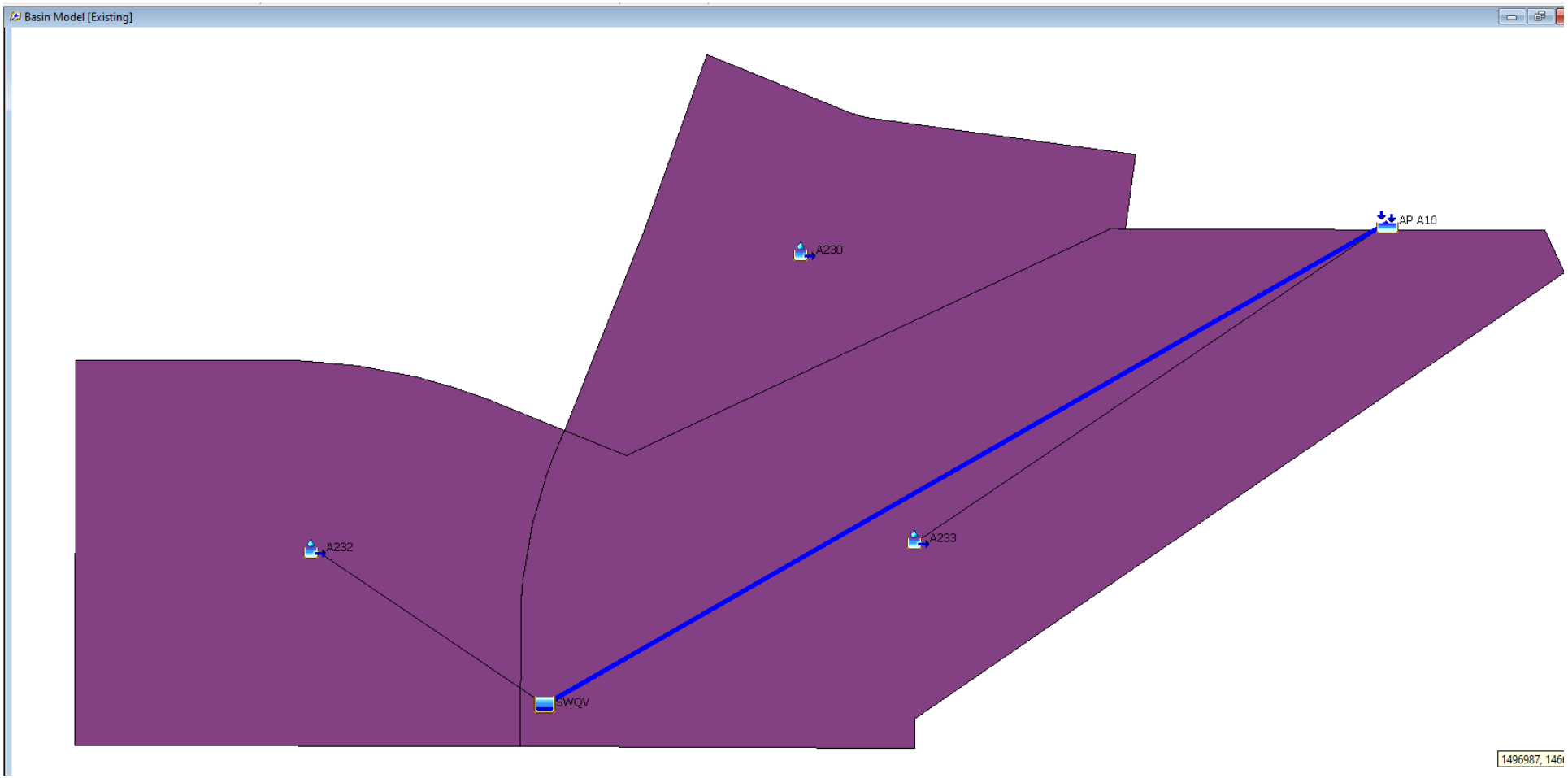
TA LAND

HEC-HMS PROPOSED BASINS

DRAWN BY:	DATE:	
AC	6/24/25	
CHECKED BY: AE	BHI PROJECT NO. 20250012	SHEET NO.

Bohannan Huston
www.bhinc.com 800.877.5332

Wed, 25-Jun-2025, - 2:56pm, Plotted by: ACAFFREY
P:\2025\01\25\WP\Reports\Preliminary & Draft\Figures\Source Files\Proposed Basins.dwg


Basin Model [Existing]
A230
AP A16
A232
A233
SWQV
1496987, 146

Global Summary Results for Run "Ex-100yr"

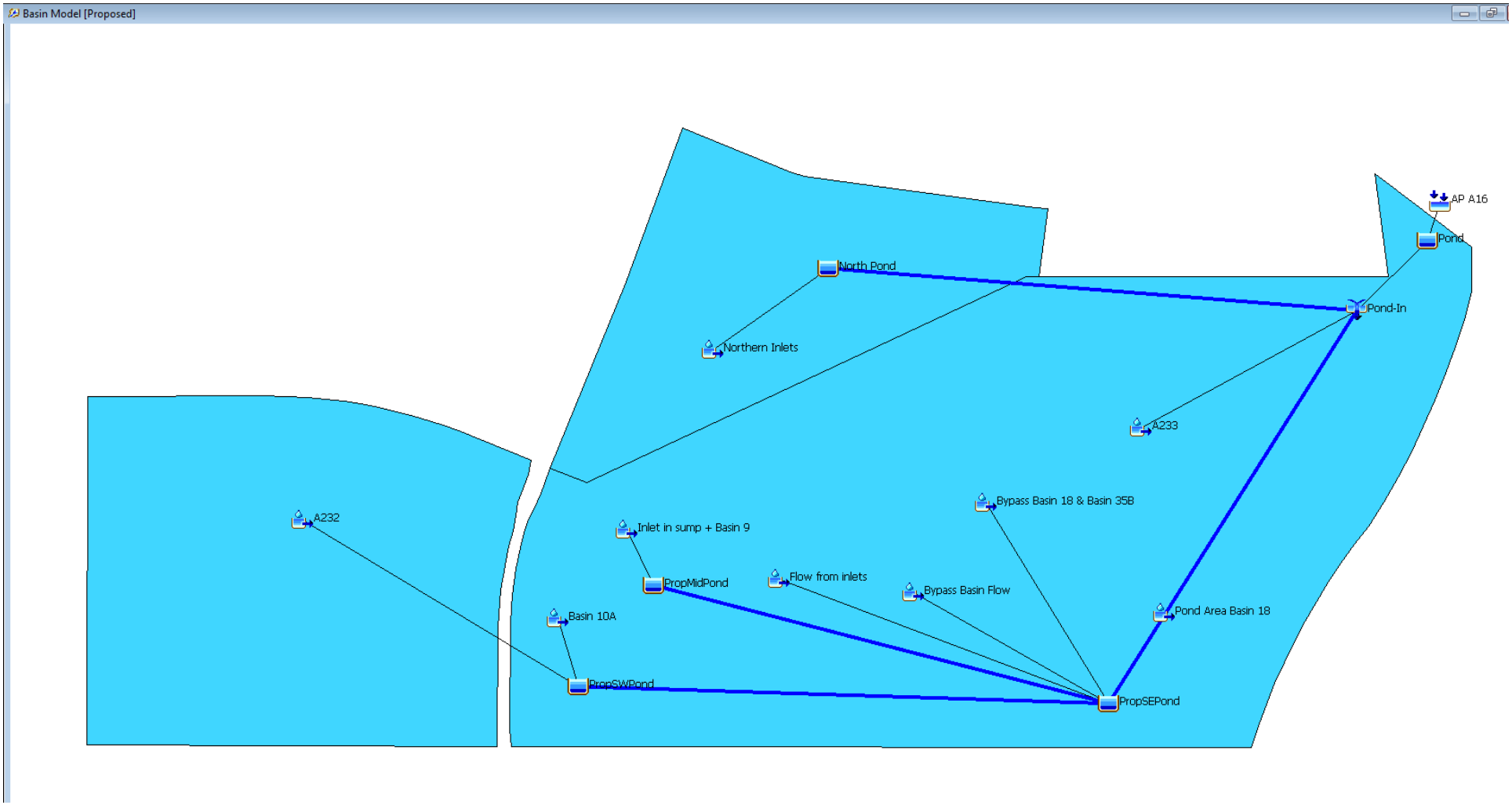
Project: 20250012_TALands Simulation Run: Ex-100yr

Start of Run: 01Jan2015, 00:00
End of Run: 03Jan2015, 00:00
Compute Time: 24Oct2025, 08:24:00

Basin Model: Existing
Meteorologic Model: 100 yr
Control Specifications: 48 hr 2 min

Show Elements: All Elements Volume Units: IN ACRE-FT Sorting: Alphabetic

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (ACRE-FT)
A233	0.1136	83.77	1 January 2015, 06:18	5.17
A232	0.0654	146.44	1 January 2015, 06:08	7.00
SWQV	0.0654	143.49	1 January 2015, 06:10	6.67
A232RT	0.0654	144.83	1 January 2015, 06:18	6.68
AP A16	0.1790	228.60	1 January 2015, 06:18	11.85
A230	0.0431	41.73	1 January 2015, 06:10	1.96


Basin Model [Proposed]
AP A16
Pond
North Pond
Pond-In
Northern Inlets
A233
A232
Bypass Basin 18 & Basin 35B
Inlet in sump + Basin 9
PropMidPond
Flow from inlets
Bypass Basin Flow
Pond Area Basin 18
Basin 10A
PropSWPond
PropSEPond

Global Summary Results for Run "Prop-100yr"

Project: 20250012_TALands Simulation Run: Prop-100yr

Start of Run: 01Jan2015, 00:00 Basin Model: Proposed
End of Run: 03Jan2015, 00:00 Meteorologic Model: 100 yr
Compute Time: 24Oct2025, 12:24:00 Control Specifications: 48 hr 2 min

Show Elements: All Elements Volume Units: IN ACRE-FT Sorting: Alphabetic

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (ACRE-FT)
AP A16	0.2785	91.68	1 January 2015, 06:50	21.63
A232	0.0662	148.42	1 January 2015, 06:08	7.09
A233	0.1092	221.87	1 January 2015, 06:10	9.44
Basin 10A	0.0014	3.05	1 January 2015, 06:08	0.15
Bypass Basin Flow	0.0029	5.93	1 January 2015, 06:10	0.25
Bypass Basin 18 & Basin 35B	0.0079	16.07	1 January 2015, 06:10	0.68
Flow from inlets	0.0239	48.62	1 January 2015, 06:10	2.07
Inlet in sump + Basin 9	0.0154	31.31	1 January 2015, 06:10	1.33
Northern Inlets	0.0505	102.59	1 January 2015, 06:10	4.36
North Pond	0.0505	21.39	1 January 2015, 06:30	3.76
Pond	0.2785	91.68	1 January 2015, 06:50	21.63
Pond Area Basin 18	0.0010	2.11	1 January 2015, 06:10	0.09
Pond-In	0.2785	222.04	1 January 2015, 06:10	23.51
PropMidPond	0.0154	12.52	1 January 2015, 06:22	1.33
PropSEPond	0.1188	54.76	1 January 2015, 06:42	10.29
PropSWPond	0.0676	37.14	1 January 2015, 06:28	7.22
Reach-1	0.0676	37.13	1 January 2015, 06:28	7.22
Reach-2	0.1188	54.78	1 January 2015, 06:44	10.29
Reach-3	0.0154	12.53	1 January 2015, 06:24	1.33
Reach-4	0.0505	21.69	1 January 2015, 06:30	3.78

Summary Results for Reservoir "Pond"

Project: 20250012_TALands Simulation Run: Prop-100yr

Reservoir: Pond

Start of Run:	01Jan2015, 00:00	Basin Model:	Proposed
End of Run:	03Jan2015, 00:00	Meteorologic Model:	100 yr
Compute Time:	24Oct2025, 12:24:00	Control Specifications:	48 hr 2 min

Volume Units: ○ IN ◉ ACRE-FT

Computed Results

Peak Inflow:	222.04 (CFS)	Date/Time of Peak Inflow:	01Jan2015, 06:10
Peak Discharge:	91.68 (CFS)	Date/Time of Peak Discharge:	01Jan2015, 06:50
Inflow Volume:	23.51 (ACRE-FT)	Peak Storage:	6.85 (ACRE-FT)
Discharge Volume:	21.63 (ACRE-FT)	Peak Elevation:	5024.03 (FT)

Anna Caffrey

From: Chen, Tiequan <tchen@cabq.gov>
Sent: Tuesday, August 19, 2025 8:20 AM
To: Anna Caffrey
Cc: Alandren Etlantus; Kelly Klein; Yolanda Padilla Moyer; Montoya, Anthony
Subject: Re: Emergency Spillway Requirement for HOA-Maintained Detention Pond

You don't often get email from tchen@cabq.gov. Learn why this is important

Hi Anna:
In this situation, using additional freeboard in lieu of a spillway is acceptable.

Thanks!

ONE ALBUQUERQUE planning

TIEQUAN CHEN, P.E.
principal engineer, hydrology
development review services
o 505.924.3695
e tchen@cabq.gov
cabq.gov/planning

From: Anna Caffrey <acaffrey@bhinc.com>
Sent: Friday, August 15, 2025 9:56 AM
To: Chen, Tiequan <tchen@cabq.gov>
Cc: Alandren Etlantus <aetlantus@bhinc.com>; Kelly Klein <kklein@bhinc.com>; Yolanda Padilla Moyer <ypadilla@bhinc.com>
Subject: Emergency Spillway Requirement for HOA-Maintained Detention Pond

Hi Tiequan,

I am working on the design for a subdivision pond that will be maintained by the Homeowner's Association. Due to constraints with the storm drain system for the subdivision, the 100-year water surface elevation in the pond is about 5' below the elevation of the public right-of-way and historic flow path downstream of the pond. Therefore, including an emergency spillway would cause the pond volume to be much larger than needed for the 100-year event. Have you ever used additional freeboard in lieu of a spillway for a pond? If the pond is completely full, the storm drain will not be convey any inflow to the pond in a larger event or if the primary outlet was plugged.

Thank you,

Anna Caffrey, PE, CFM
Project Engineer Water Resources
Bohannan Huston
p. 505.823.1000 | **d.** 505.259.3204

PERCOLATION TEST RESULTS

DATE	7/18/2025
PROJECT NAME	TA Land Pond
TEST LOCATION	B-1 @ 15' BGS
TEST PERFORMED BY	BD

TEST DATA

PIPE DIAMETER (inches)	4		
PIPE LENGTH (inches)	172	DEPTH OF WATER IN HOLE	
TIME OF PRESOAKING (hours)	4	AT START OF TEST (inches)	6

TIME OF READING	TIME DIFFERENCE (minutes) (1)	DEPTH TO WATER (inches)	DEPTH DIFFERENCE (inches) (2)	PERCOLATION RATE (minutes/inch) (1) / (2)	COMMENTS
15:50	-	166.00	-	-	Start
16:00	10	167.50	1.50	6.67	Test
16:03	-	166.00	-	-	Refill
16:13	20	167.00	1.00	10.00	Test
16:17	-	166.00	-	-	Refill
16:27	30	167.00	1.00	10.00	Test
16:31	-	166.00	-	-	Refill
16:41	40	167.00	1.00	10.00	Test
16:46		166.00	-	-	Refill
16:56	50	166.75	0.75	13.33	Test
16:58		166.00	-	-	Refill
17:08	60	166.75	0.75	13.33	End
				13.33	**Final Perc. Rate**

PERCOLATION TEST RESULTS

DATE	7/22/2025
PROJECT NAME	TA Land Pond
TEST LOCATION	B-2 @ 15' BGS
TEST PERFORMED BY	BD

TEST DATA

PIPE DIAMETER (inches)	4		
PIPE LENGTH (inches)	156.5	DEPTH OF WATER IN HOLE	
TIME OF PRESOAKING (hours)	4	AT START OF TEST (inches)	6

TIME OF READING	TIME DIFFERENCE (minutes) (1)	DEPTH TO WATER (inches)	DEPTH DIFFERENCE (inches) (2)	PERCOLATION RATE (minutes/inch) (1) / (2)	COMMENTS
15:42	-	150.50	-	-	Start
15:52	10	151.50	1.00	10.00	Test
15:57	-	150.50	-	-	Refill
16:07	20	151.50	1.00	10.00	Test
16:10	-	150.50	-	-	Refill
16:20	30	151.50	1.00	10.00	Test
16:22	-	150.50	-	-	Refill
16:32	40	151.25	0.75	13.33	Test
16:35		150.50	-	-	Refill
16;45	50	151.25	0.75	13.33	Test
16:48		150.50	-	-	Refill
16:58	60	151.25	0.75	13.33	End
				13.33	**Final Perc. Rate**

PERCOLATION TEST RESULTS

DATE	7/18/2025
PROJECT NAME	TA Land Pond
TEST LOCATION	B-3 @ 15' BGS
TEST PERFORMED BY	BD

TEST DATA

PIPE DIAMETER (inches)	4		
PIPE LENGTH (inches)	171	DEPTH OF WATER IN HOLE	
TIME OF PRESOAKING (hours)	4	AT START OF TEST (inches)	6

TIME OF READING	TIME DIFFERENCE (minutes) (1)	DEPTH TO WATER (inches)	DEPTH DIFFERENCE (inches) (2)	PERCOLATION RATE (minutes/inch) (1) / (2)	COMMENTS
15:30	-	165.00	-	-	Start
15:40	10	166.50	1.50	6.67	Test
15:42	-	165.00	-	-	Refill
15:52	20	166.00	1.00	10.00	Test
15:59	-	165.00	-	-	Refill
16:09	30	166.00	1.00	10.00	Test
16:13	-	165.00	-	-	Refill
16:23	40	166.00	1.00	10.00	Test
16:24		165.00	-	-	Refill
16:34	50	165.50	0.50	20.00	Test
16:36		165.00	-	-	Refill
16:46	60	165.50	0.50	20.00	End
				20.00	**Final Perc. Rate**

Pond Infiltration/Draw-Down Analysis

Project Name: **TA Lands**
BHI Project No.: **20250012**
Prepared By: **A. Caffrey**
Date: **10/23/2025**

Pond	Min. Percolation Rate[1]		Depth	Time to Drain
	(min/in)	(in./hr)	(feet)	(hours)
South	13.33	4.5	0.5	1
Mid	13.33	4.5	2.0	5
North	13.33	4.5	2.0	5
SE	13.33	4.5	6.5	17
Main	13.33	4.5	3.2	9

Notes:

1. Per percolation tests conducted by Geotek (July 2025).

APPENDIX E
MANUFACTURES CURVILINEAR PIPE RECOMMENDATIONS

6560 Langfield Rd. Bldg. 3
Houston, Texas 77092
832-590-5300
832-590-5399 (fax)

September 13, 2018

12" – 108" Gasketed Joint Concrete Pipe (RCP)
Bernalillo Facility
Albuquerque, New Mexico

The 12" – 108" RCP rubber gasket pipe joint that is currently produced at our Bernalillo facility is designed to provide an adequate seal when the joint is not fully 'homed'. The allowable joint gaps that will still maintain an adequate seal for these sizes are listed below.

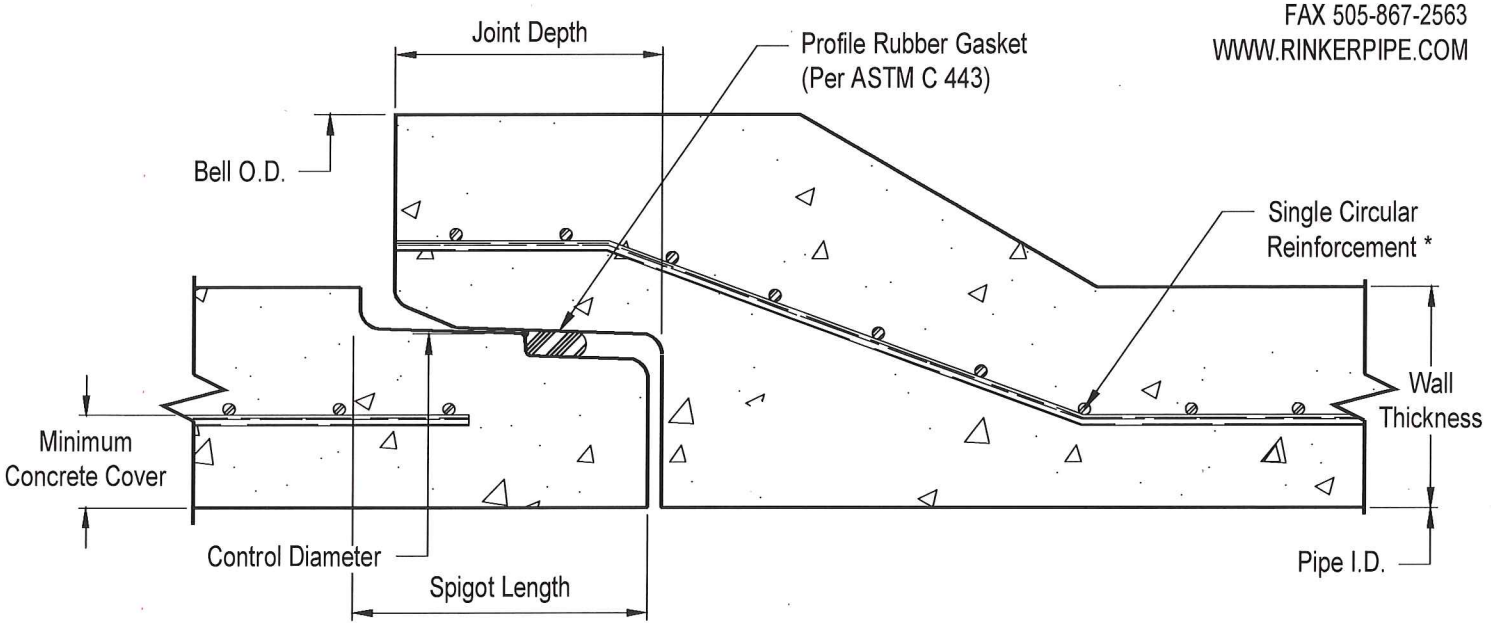
Pipe Diameter	Allowable Joint Gap
12"	0.75"
15"	0.75"
18"	0.75"
24"	0.75"
30"	1.00"
36"	1.00"
48"	1.00"
54"	1.00"
60"	1.00"
66"	1.00"
72"	1.00"
78"	1.00"
84"	1.00"
90"	1.00"
96	1.00"
102"	1.00"
108"	1.00"

Steve Hiner, P.E.
Director – Product Development/Corporate Engineer
Rinker Materials
6560 Langfield Road
Houston, TX 77092
832-590-5351 (work)
281-435-8237 (cell)
www.lovicks.hiner@rinkerpipe.com

Rinker MATERIALS™
A QUIKRETE® COMPANY

Concrete Pipe Division
ALBUQUERQUE, NM PIPE (BERNALILLO)
3700 HIGHWAY 528
BERNALILLO, NM 87004-6600
PHONE 505-867-2394
FAX 505-867-2563
WWW.RINKERPIPE.COM

Reinforced Concrete Pipe (RCP)
Single Offset Joint 12"Ø - 36"Ø Diameter



Section Thru Joint

12"Ø to 36"Ø RCP (Big Bell Single Offset Joint) w/ Single Cage Reinforcement								
Pipe I.D. (Nom.)	Wall Thickness	Joint Depth	Spigot Length	Control Diameter	Gasket Height	Bell O.D.	RCP Length	Weight (Lbs./Foot)
12"Ø	2" (B)	3 5/8"	3 3/4"	15 1/4"Ø	3/4"	20"Ø	8'	95
15"Ø	2 1/4" (B)	3 5/8"	3 3/4"	18 3/4"Ø	3/4"	23 7/8"Ø	8'	130
18"Ø	2 1/2" (B)	3 5/8"	3 3/4"	22 1/8"Ø	3/4"	27 3/4"Ø	8'	175
24"Ø	3" (B)	3 7/8"	4"	29"Ø	3/4"	35 1/2"Ø	8'	275
30"Ø	3 1/2" (B)	4 5/8"	4 3/4"	35 5/8"Ø	13/16"	42 1/4"Ø	8'	395
36"Ø	4" (B)	4 7/8"	5"	42 5/16"Ø	13/16"	50 1/4"Ø	8'	540
"X" RCP (size & class) are included as part of the submittal for the project identified on the cover letter herein.								

NOTES:

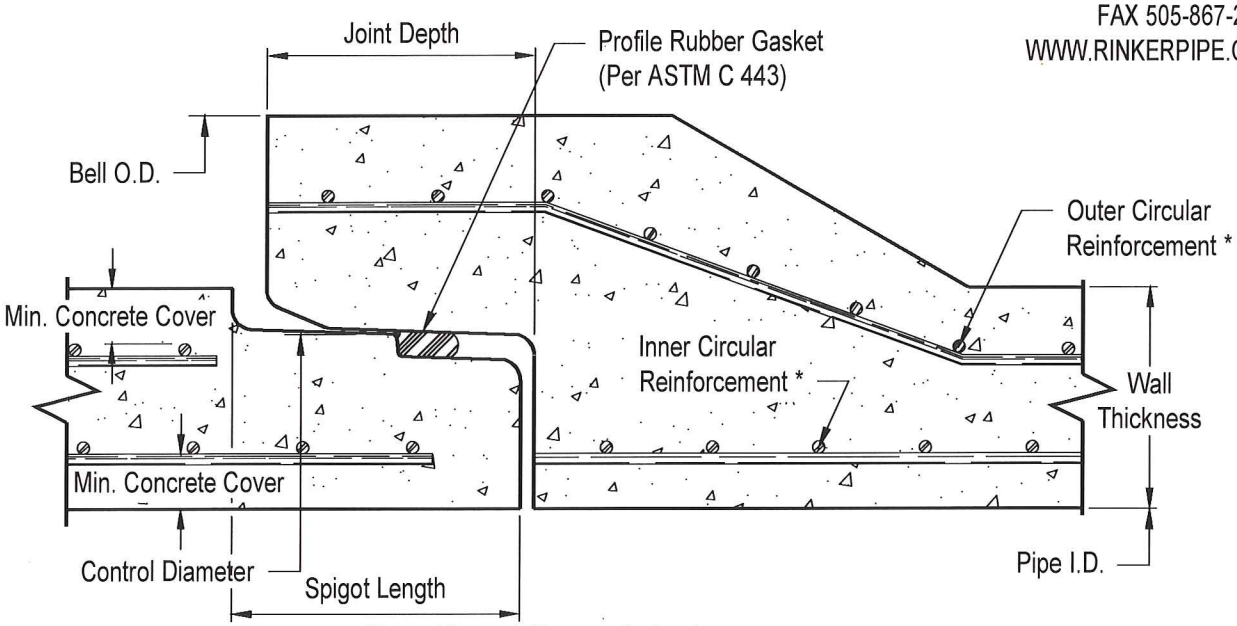
1. Reinforced Concrete Pipe (RCP) manufactured to meet ASTM C76 & AASHTO M170 specifications (latest edition). RCP strength classification requirements as per project requirements and or determined by a qualified engineer.
* 2. Product Data subject to change without notice, reinforcement shown may vary.
3. Profile rubber gaskets are furnished with the pipe and will meet the performance requirements of ASTM C443.
4. Consult a Rinker Materials representative for further details and information not shown.

Rinker MATERIALS™
A QUIKRETE® COMPANY

Concrete Pipe Division

ALBUQUERQUE, NM PIPE (BERNALILLO)
3700 HIGHWAY 528
BERNALILLO, NM 87004-6600
PHONE 505-867-2394
FAX 505-867-2563
WWW.RINKERPIPE.COM

Reinforced Concrete Pipe (RCP)
Single Offset Joint 30"Ø - 72"Ø Diameter



Section Thru Joint

30"Ø to 72"Ø RCP (Big Bell Single Offset Joint) w/ Double Cage Reinforcement

Pipe I.D. (Nom.)	Wall Thickness	Joint Depth	Spigot Length	Control Diameter	Gasket Height	Bell O.D.	RCP Length	Weight (Lbs./Foot)
30"Ø	3 1/2" (B)	4 5/8"	4 3/4"	35 5/8"Ø	13/16"	42 1/4"Ø	8'	395
36"Ø	4" (B)	4 7/8"	5"	42 5/16"Ø	13/16"	50 1/4"Ø	8'	540
42"Ø	4 1/2" (B)	5 1/4"	5 3/8"	49 5/16"Ø	13/16"	58"Ø	8'	705
48"Ø	5" (B)	5 1/2"	5 5/8"	55 5/16"Ø	13/16"	64"Ø	8'	895
54"Ø	6 1/4" (C)	5 1/2"	5 5/8"	61 1/4"Ø	13/16"	70"Ø	8'	1270
60"Ø	6 3/4" (C)	5 1/2"	5 5/8"	67 1/4"Ø	13/16"	76"Ø	8'	1525
66"Ø	7 1/4" (C)	5 1/2"	5 5/8"	73 1/4"Ø	13/16"	82"Ø	8'	1800
72"Ø	7 3/4" (C)	5 1/2"	5 5/8"	79 1/4"Ø	13/16"	88"Ø	8'	2090

"X" RCP (size & class) are included as part of the submittal for the project identified on the cover letter herein.

NOTES:

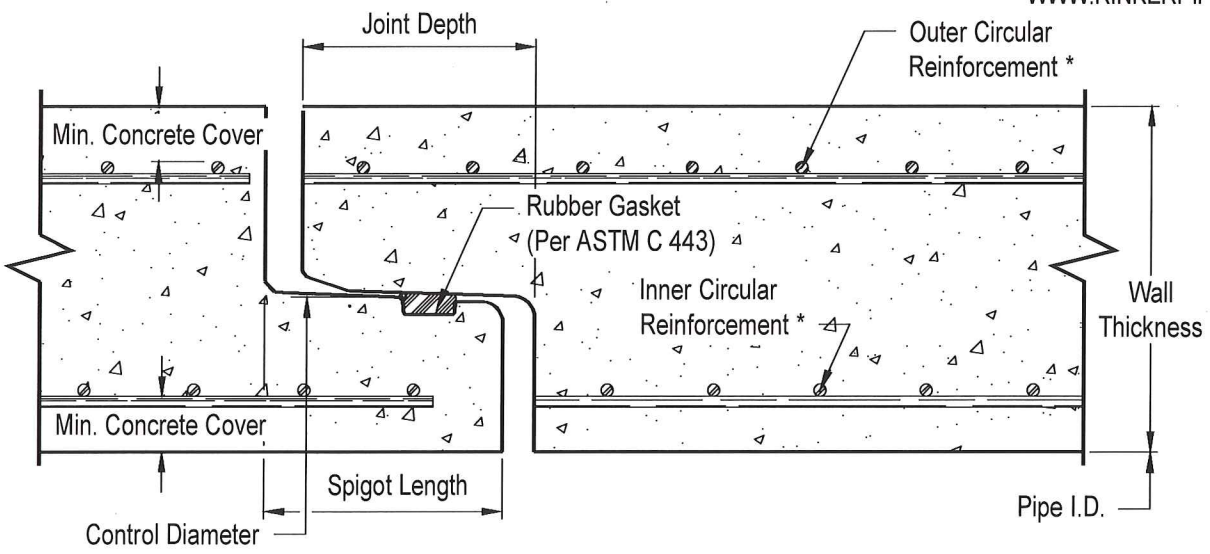
1. Reinforced Concrete Pipe (RCP) manufactured to meet ASTM C76 & AASHTO M170 specifications (latest edition). RCP strength classification requirements as per project requirements and or determined by a qualified engineer.
* 2. Product Data subject to change without notice, reinforcement shown may vary.
3. Profile rubber gaskets are furnished with the pipe and will meet the performance requirements of ASTM C443.
4. Consult a Rinker Materials representative for further details and information not shown.

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PHONE 505-867-2394
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WWW.RINKERPIPE.COM

Reinforced Concrete Pipe (RCP)
Rubber Gasket Joint 78"Ø - 96"Ø Diameter



Section Thru Joint

78"Ø to 96"Ø RCP (Flush Bell Rubber Gasket Joint) w/ Double Cage Reinforcement								
Pipe I.D. (Nom.)	Wall Thickness	Joint Depth	Spigot Length	Control Diameter	Gasket Height	Pipe O.D.	RCP Length	Weight (Lbs./Foot)
78"Ø	8 1/4" (C)	5 1/2"	5 5/8"	85 1/4"Ø	13/16"	94 1/2"Ø	8'	2410
84"Ø	8" (B)	5 3/4"	5 7/8"	91"Ø	13/16"	100"Ø	8'	2490
90"Ø	8 1/2" (B)	6 1/8"	6 1/4"	97 1/2"Ø	13/16"	107"Ø	8'	2830
96"Ø	9" (B)	6 5/8"	6 3/4"	104"Ø	13/16"	114"Ø	8'	3195
"X" RCP (size & class) are included as part of the submittal for the project identified on the cover letter herein.								

NOTES:

1. Reinforced Concrete Pipe (RCP) manufactured to meet ASTM C76 & AASHTO M170 specifications (latest edition). RCP strength classification requirements as per project requirements and or determined by a qualified engineer.
* 2. Product Data subject to change without notice, reinforcement shown may vary.
3. Rubber gaskets are furnished with the pipe and will meet the performance requirements of ASTM C443.
4. Consult a Rinker Materials representative for further details and information not shown.

Curved Alignment

Changes in direction of sewer lines are usually accomplished at manhole structures. Grade and alignment changes in concrete pipe sewers, however, can be incorporated into the line through the use of deflected straight pipe, radius pipe or specials.

DEFLECTED STRAIGHT PIPE

With concrete pipe installed in straight alignment and the joints in a home (or normal) position, the joint space, or distance between the ends of adjacent pipe sections, is essentially uniform around the periphery of the pipe. Starting from this home position any joint may be opened up to the maximum permissible on one side while the other side remains in the home position. The difference between the home and opened joint space is generally designated as the pull. The maximum permissible pull must be limited to that opening which will provide satisfactory joint performance. This varies for different joint configurations and is best obtained from the pipe manufacturer.

The radius of curvature which may be obtained by this method is a function of the deflection angle per joint (joint opening), diameter of the pipe and the length of the pipe sections.

The radius of curvature is computed by the equation:

$$R = \frac{L}{2\left(\text{TAN}\,\frac{1}{2}\,\frac{\Delta}{N}\right)} \qquad (1)$$

where:

- R = radius of curvature, feet
- L = length of pipe sections measured along the centerline, feet
- Δ = total deflection angle of curve, degrees
- N = number of pipe with pulled joints
- $\frac{\Delta}{N}$ = total deflection of each pipe, degrees

From Figure 1, the deflection angle $\frac{1}{2}\,\frac{D}{N}$ is further defined as:

$$\frac{1}{2}\,\frac{\Delta}{N} = \text{SIN}^{-1}\,\frac{\text{PULL}}{2(D + 2t)} \text{ or } \text{SIN}^{-1}\,\frac{\text{PULL}}{2B_c} \qquad (2)$$

where:

- PULL = joint opening, inches
- D = inside pipe diameter, inches
- t = wall thickness, inches

Figure 1 Deflected Straight Pipe

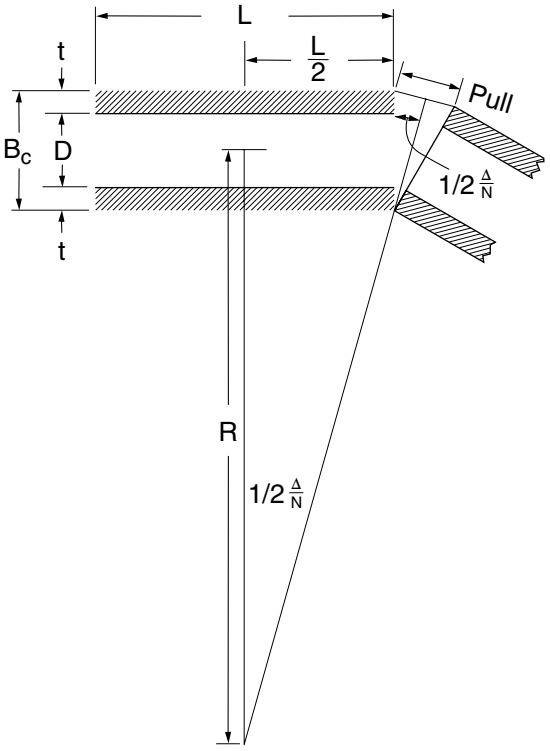
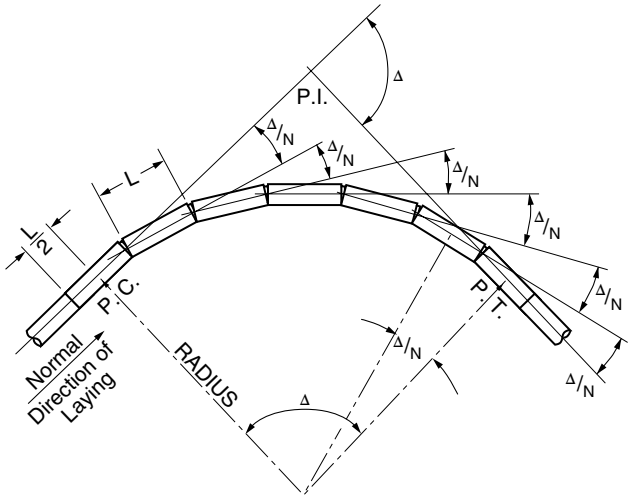


Figure 2 Curved Alignment Using Deflected Straight Pipe



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B_c = outside pipe diameter, inches

The joint opening and pipe length required to provide a curved pipeline alignment may be calculated using the unit values found in Table 1 on page 3. The table tabulates the radius of a pipeline constructed of standard eight-foot laying length pipe with a 1-inch joint opening (PULL). Other pipeline radii may be calculated by changing, first, the joint opening, and if necessary, the pipe laying length. An eight-foot laying length is standard for most concrete pipe manufacturers. Other lengths may require special manufacturing procedures. Changes in the design radius are directly proportional to the pipe laying length and inversely proportional to the joint opening. The specific pull per pipe joint is found by the equation:

$$PULL_x = \left(\frac{L_x}{L_8}\right)\left(\frac{R_u}{R_x}\right)\left(PULL_8\right) \quad (3)$$

$$R_x = (L_x/L_8)(PULL_8/PULL_x)\, R_u \quad (4)$$

where:

PULL = the joint opening
Ru = the Unit Radius (Taken from Table 1)
Lx = Length of deflected pipe

Specific radii may be calculated by the following procedure:

- Select the unit radius of curvature for the specified diameter pipe from the chart.
- Increase or decrease the joint opening (PULL) in Equation 1 to obtain the design radius. If the required joint opening exceeds the pipe manufacturers recommendations, select a pipe with a shorter laying length. Four and six foot are common non-standard pipe lengths. Check with the pipe manufacturer for availability of non-standard lengths.
- Recalculate the pull for the shorter pipe.

As illustrated in Figure 2, when concrete pipe is installed on curved alignment using deflected straight pipe, the point of curve (P.C.) is at the midpoint of the last undeflected pipe section and the point of tangent (P.T.) is at the midpoint of the last pulled pipe.

RADIUS PIPE

Radius pipe, also referred to as bevelled or mitered pipe, incorporates the deflection angle into the pipe joint. The pipe is manufactured by shortening one side of the pipe. The amount of shortening or drop for any given pipe is dependent on manufacturing feasibility. Because of the possibility of greater deflection angles per joint, sharper curvature with correspondingly shorter radii can be obtained with radius pipe than with deflected straight pipe. As in the case of deflected straight pipe, the radius of curvature which may be obtained by radius pipe is a function of the deflection angle per joint, diameter of the pipe, length of pipe sections and wall thickness.

The radius of curvature is computed by the equation:

$$R = \frac{L}{\text{TAN}\ \frac{\Delta}{N}} - \left(\frac{D}{2} + t\right) \quad (5)$$

where:

Δ = total deflection angle of curve, degrees
N = number of radius pipe
L = standard pipe length being used, feet
$\frac{\Delta}{N}$ = total deflection angle of each pipe

From Figure 3, the radius of curvature can be expressed in terms of the drop and is given by the equation:

$$R = \frac{L(D + 2t)}{DROP} - \left(\frac{D}{2} + t\right) \quad (6)$$

$$R = B_c\left(\frac{L}{DROP} - \frac{1}{2}\right) \quad (7)$$

$$DROP = \frac{LB_c}{R + B_{c/2}} \quad (8)$$

where:

B_c = outside diameter of the pipe, feet

Figure 5 presents R/Bc ratios for drops from one inch through 15 inches and commonly manufactured pipe lengths. **Since the maximum permissible drop for any given pipe is dependent on manufacturing feasibility, it is essential to coordinate the design of radius pipe with the pipe manufacturer. Many manufacturers have standardized joint configurations and deflections for specific radii and economics may be realized by utilizing standard radius pipe.**

As illustrated in Figure 4, when concrete pipe is installed on curved alignment using radius pipe, the pipe sections are oriented such that the plane of the dropped joint is tangent to the theoretical circular curve. Projection of the joints do not converge at a common point, but are tangents to a common circle of diameter equal to the length of pipe sections. The point of curve (P.C.) is at the midpoint of the last straight pipe and the point of tangent (P.T.) is one half of the standard pipe length back from the straight end of the last radius pipe. The required number of pieces of radius pipe is equal to the length of the circular curve in feet divided by the centerline length of the radius pipe (L-1/2 DROP). Where possible, minor modifications in the radius are normally made so this quotient will be a whole number.

Minimum radius of curvature obtained from equations (1) and (5) are approximate, but are within a range of accuracy that will enable the pipe to be readily installed to fit the required alignment. A reasonable amount of field adjustment is possible for radius pipe by pulling the joints in the same manner as with deflected straight pipe.

BENDS AND SPECIAL SECTIONS

Special precast sections can be used for extremely

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short radius curves which cannot be negotiated with either deflected straight pipe or with conventional radius pipe. Sharper curves can be handled by using special short lengths of radius pipe rather than standard lengths. These may be computed in accordance with the methods discussed for radius pipe. Certain types of manufacturing processes permit the use of a dropped joint on both ends of the pipe, which effectively doubles the deflection. Special bends, or elbows can be manufactured to meet any required deflection angle and some manufacturers produce standard bends which provide given angular deflection per section.

One or more of these methods may be employed to meet the most severe alignment requirements. **Since manufacturing processes and local standards vary, local concrete pipe manufacturers should be consulted to determine the availability and geometric configuration of special sections.**

The following example illustrates proper use of the Tables and Figures.

Given: A 42-inch diameter concrete pipe storm sewer is to be installed on curved alignment corresponding to the roadway curvature. The pipe will be manufactured in 7-1/2 foot lengths with a 4-1/2-inch wall thickness. The curve data for the roadway curb is:

point of intersection station	P.I.	= 50+00
point of curve station	P.C.	= 49+29.6
point of tangent station	P.T.	= 50+63.1
total deflection angle	Δ	= 45°
radius of curvature	R	= 170 feet

Find: The required pull per joint for deflected straight pipe or the required drop for radius pipe.

Solution: From Table 1, for a 42-inch diameter pipe, the radius of curvature for a 1-inch pull is 408 feet. The required pull for 170 feet is:

$$PULL_X = \left(\frac{7.5}{8}\right)\left(\frac{408}{170}\right)(1) = 1.125"$$

To evaluate the required drop for radius pipe to negotiate the roadway curvature, it is first necessary to calculate the R/Bc ratio:

$$\frac{R}{B_c} = \frac{170}{4.25} = 40$$

Enter Figure 5 on the vertical scale at R/Bc 40. Proceed horizontally until the line representing L = 7.5 feet is intersected. At this point the horizontal scale shows the required drop to be 2.2 inches. Or

$$\text{Drop} = \frac{(7.5)\ (4.25)}{170 + 4.25/2} = 0.185 \text{ ft.} = 2.2 \text{ in.}$$

Answer: Radius pipe with a 2-1/4-inch drop would be required. **It is important to consult local concrete pipe manufacturers to determine the feasibility of manufacturing a 42-inch diameter pipe with the required drop.**

Figure 3 Radius Pipe

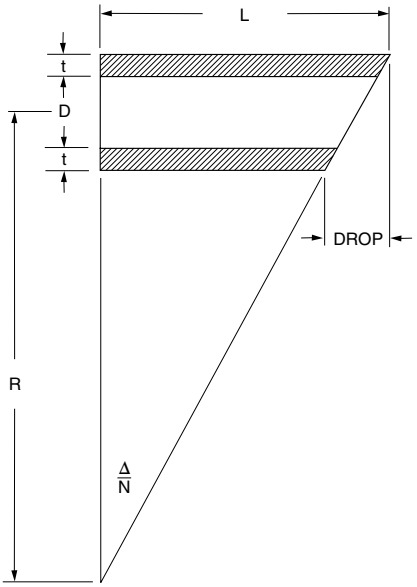


Figure 4 Curved Alignment Using Radius Pipe

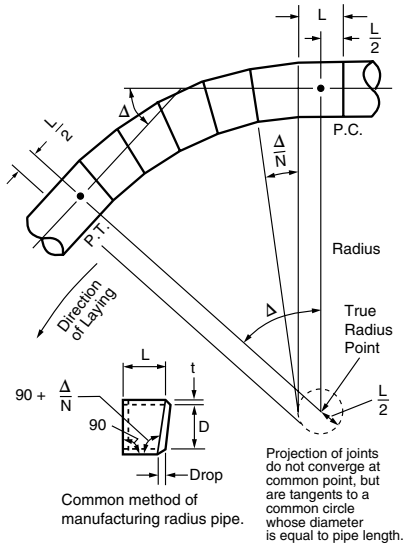
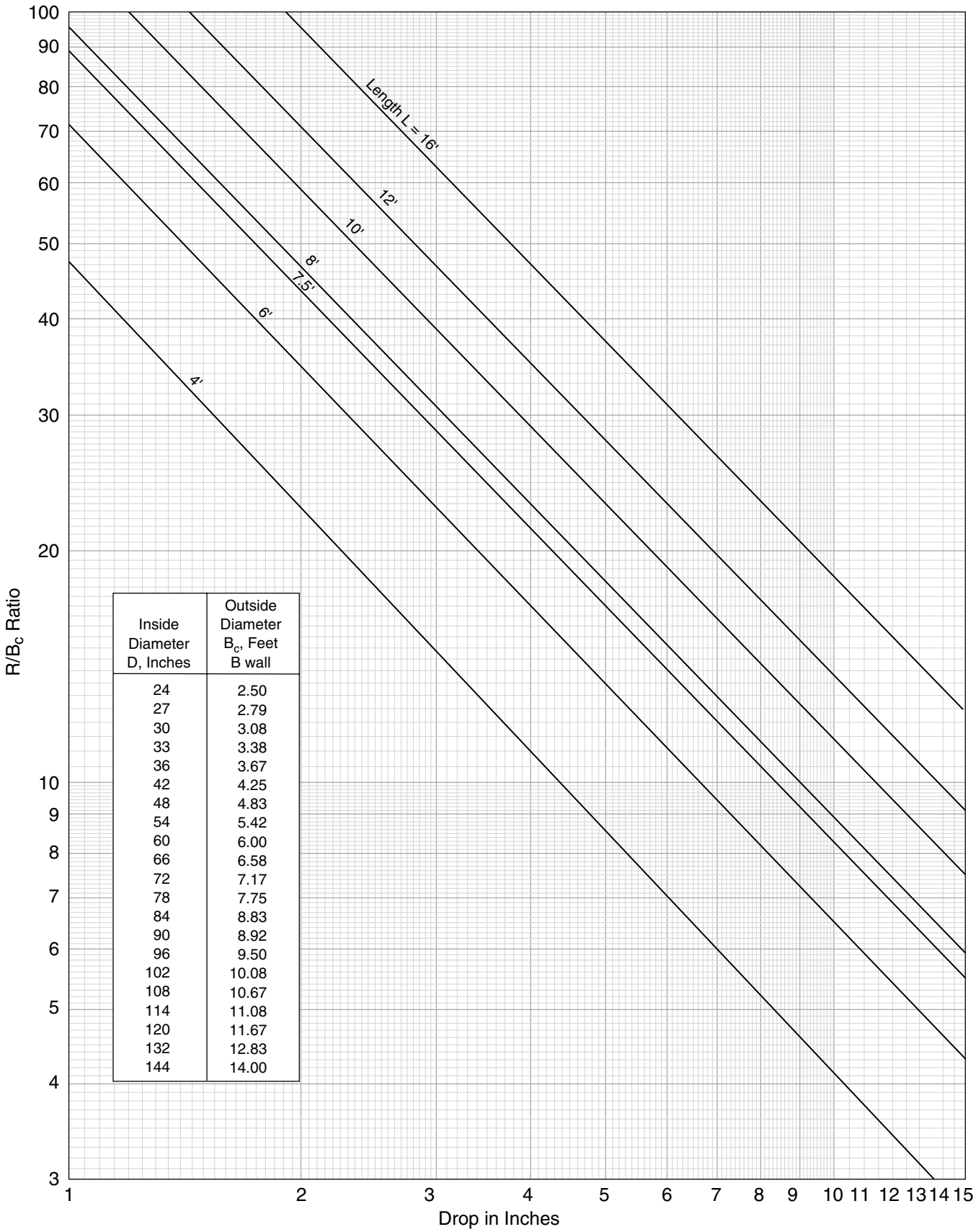


Table 1 Unit Radius of Curature For 8-Foot Straight Deflected Pipe With 1" Pull

Size	12	15	18	20	24	27	30	33	36	42	48	54	60	66	72	78	84	90	96
Radius	128	156	184	212	240	268	286	364	352	408	464	520	576	632	688	744	780	856	912

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Figure 5 Radius of Curature For Radius Pipe



Inside Diameter D, Inches	Outside Diameter B_c, Feet B wall
24	2.50
27	2.79
30	3.08
33	3.38
36	3.67
42	4.25
48	4.83
54	5.42
60	6.00
66	6.58
72	7.17
78	7.75
84	8.83
90	8.92
96	9.50
102	10.08
108	10.67
114	11.08
120	11.67
132	12.83
144	14.00

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Technical data herein is considered reliable, but no guarantee is made or liability assumed.

SD SIZE	PULL* (in)	D (inside dia)	t (wall thickness)	Bc	1/2 *theta/N	R (ft)
	(max joint gap)[1]	(in)	(in)	Outer dia (in)		
18"	0.7500	18	2 1/2	23	0.9342	245
24"	0.7500	24	3	30	0.7162	320
30"	1.0000	30	3 1/2	37	0.7743	296
36"	1.0000	36	4	44	0.6511	352
42"	1.0000	42	4 1/2	51	0.5617	408

[1] Allowable joint gap provided by Rinker 09-13-18

* max joint gap suggested by manufacturer
is 1/2 Dimension "A" + 3/8"

$$\text{min Radius}^{**} = \frac{L}{2(\tan 1/2^{*}\ \text{theta}/N)}$$

** see formula on enclosed data sheet for american concrete pipe association

$$1/2\ ^{*}\text{theta}/N = \sin^{-1}{}^{*}\ \text{sin-1}\ ^{*}\ \frac{(\text{PULL})}{2\text{Bc}}$$

D= inside pipe diameter
t=wall thickness

EXHIBITS

EXHIBIT A: SUBDIVISION LOCATION MAP AND PRELIMINARY PLAT

EXHIBIT B: FEMA FIRMETTE

EXHIBIT C: DRAINAGE BASINS: EXISTING CONDITIONS

EXHIBIT D: DRAINAGE BASINS: MASTER PLANNED SUBDIVISION PROPOSED CONDITIONS

EXHIBIT E: DRAINAGE BASINS: PHASE 1 PROPOSED CONDITIONS

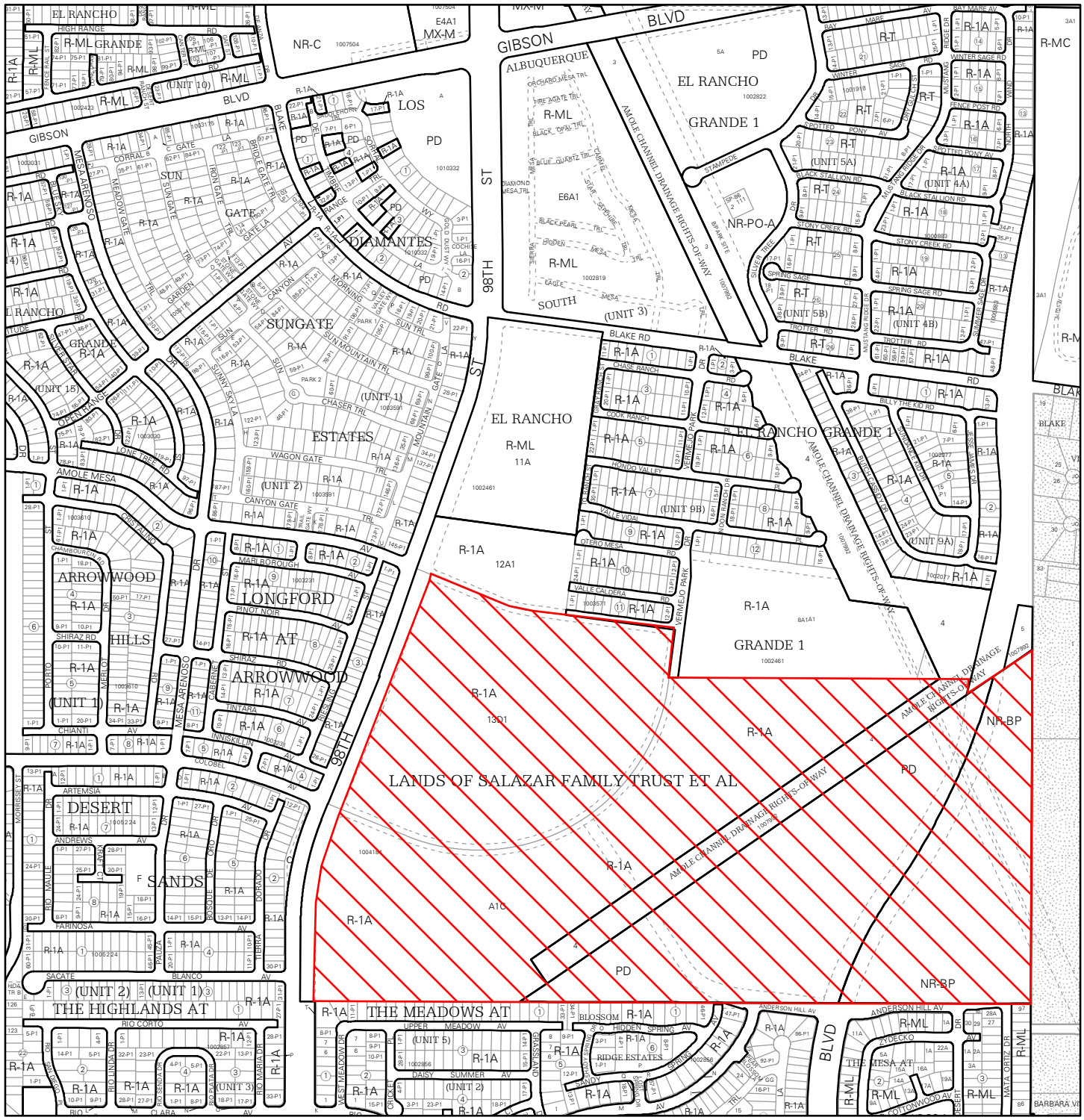
EXHIBIT F: STORM DRAIN EXHIBIT

EXHIBIT G: GRADING PLAN

EXHIBIT H: TA LANDS SUBDIVISION POND GRADING PLAN

EXHIBIT I: EXCERPTS FROM SUPPORTING MASTER DRAINAGE PLANS

EXHIBIT A
SUBDIVISION LOCATION MAP AND PRELIMINARY PLAT



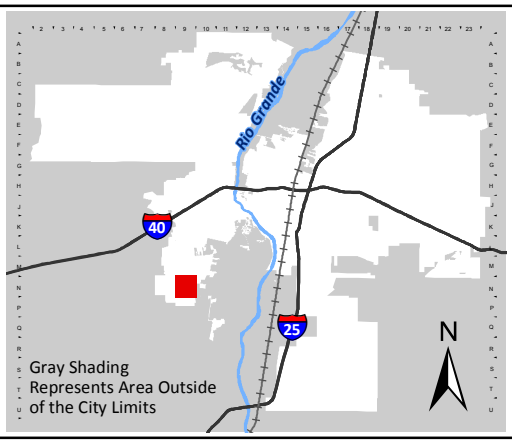
For more details about the Integrated Development Ordinance visit: http://www.cabq.gov/planning/codes-policies-regulations/integrated-development-ordinance

IDO Zone Atlas
May 2018

Albuquerque Geographic Information System

IDO Zoning information as of May 17, 2018

The Zone Districts and Overlay Zones are established by the Integrated Development Ordinance (IDO).



Zone Atlas Page:

N-09-Z

- Easement
- Escarpment
- Petroglyph National Monument
- Areas Outside of City Limits
- Airport Protection Overlay (APO) Zone
- Character Protection Overlay (CPO) Zone
- Historic Protection Overlay (HPO) Zone
- View Protection Overlay (VPO) Zone

Feet

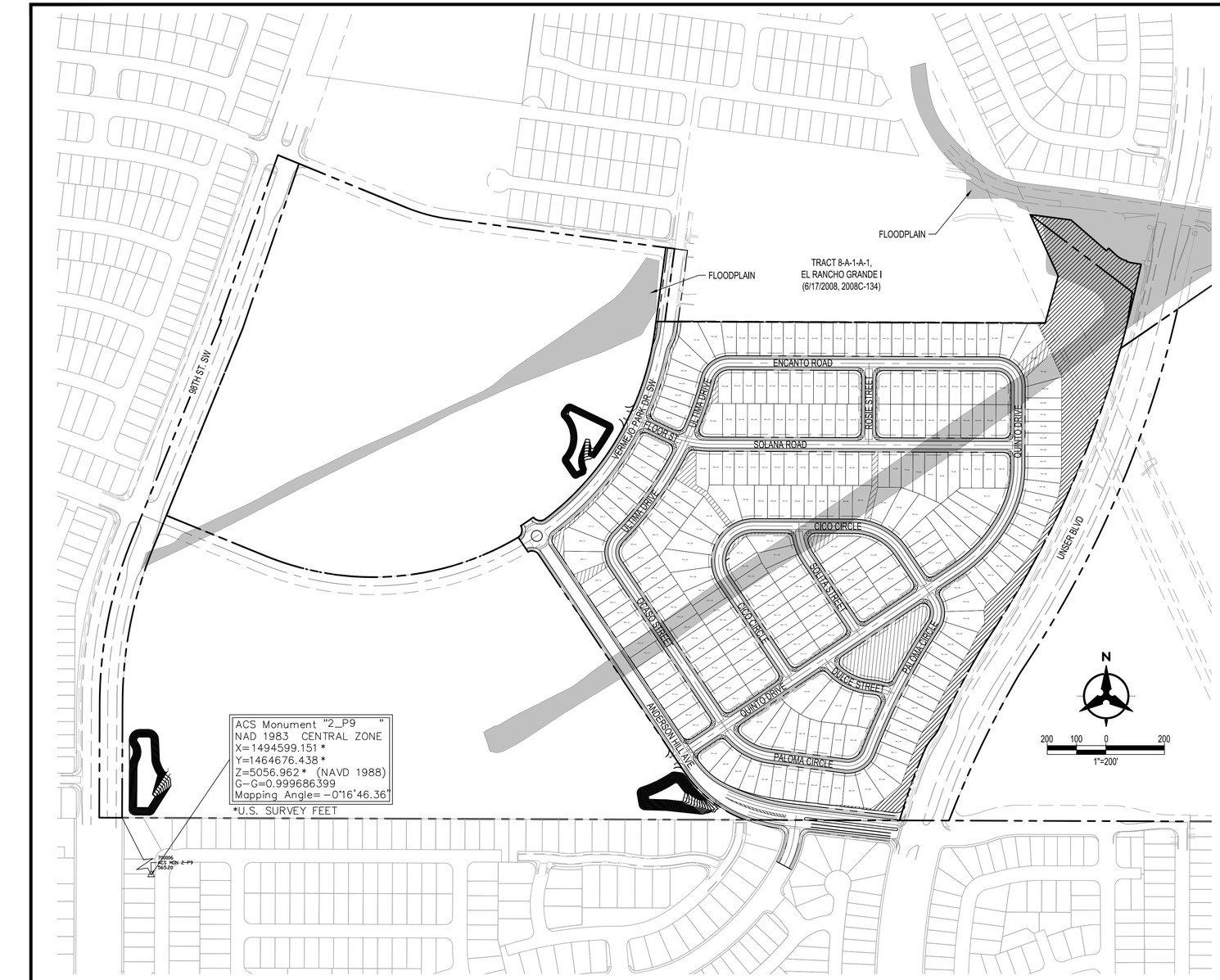
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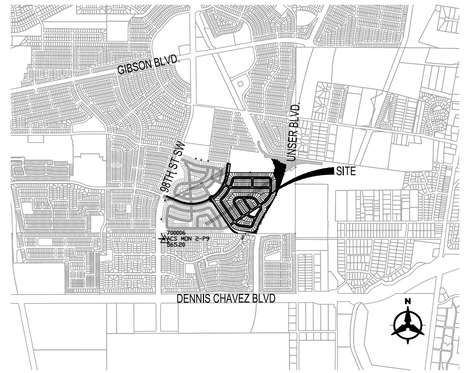
PRELIMINARY PLAT
TA LANDS SUBDIVISION PHASE 1
TRACT 1

(A REPLAT OF TA LANDS SUBDIVISION)
PROJECTED SECTION 4, TOWNSHIP 9 NORTH, RANGE 2 EAST, TOWN OF ATRISCO GRANT

CITY OF ALBUQUERQUE
BERNALILLO COUNTY, NEW MEXICO

DECEMBER, 2025





VICINITY MAP (ZONE ATLAS N-09-Z)
NOT TO SCALE

LEGEND

- SUBDIVISION BOUNDARY LINE
- PHASE LINE
- TRACT LINE
- ADJOINING PROPERTY LINE
- EXISTING EASEMENT
- PROPOSED EASEMENT
- PROPOSED HOA TRACT
- FLOOD PLAIN

SURVEY NOTES:

1. UNLESS OTHERWISE NOTED, ALL BOUNDARY CORNERS SHOWN THUS (●) SHALL BE MARKED BY A #4 REBAR WITH CAP MARKED "CARTESIAN LS 18374".
2. ALL STREET CENTERLINE MONUMENTATION SHALL BE INSTALLED AT ALL CENTERLINE PC'S, PT'S, ANGLE POINTS AND STREET INTERSECTIONS AND SHOWN THUS (▲) WILL BE MARKED BY A FOUR (4") ALUMINUM CAP STAMPED "CITY OF ALBUQUERQUE CENTERLINE MONUMENTATION MARKED. DO NOT DISTURB, P.L.S. 18374".
3. THE SUBDIVISION BOUNDARY WILL BE TIED TO THE NEW MEXICO STATE PLANE COORDINATE SYSTEM AS SHOWN.
4. BASIS OF BEARINGS WILL BE NEW MEXICO STATE PLANE GRID BEARINGS.
5. DISTANCES SHALL BE GROUND DISTANCES.
6. MANHOLES WILL BE OFFSET AT ALL POINTS OF CURVATURE POINTS OF TANGENCY, STREET INTERSECTIONS AND ALL OTHER ANGLE POINTS TO ALLOW THE USE OF CENTERLINE MONUMENTATION.

Solar Collection Note

NO PROPERTY WITHIN THE AREA OF REQUESTED FINAL ACTION SHALL AT ANY TIME BE SUBJECT TO A DEED RESTRICTION, COVENANT, OR BUILDING AGREEMENT PROHIBITING SOLAR COLLECTORS FROM BEING INSTALLED ON BUILDINGS OR ERECTED ON THE LOTS OR PARCELS WITHIN THE AREA OF PROPOSED PLAT, THE FOREGOING REQUIREMENT SHALL BE A CONDITION TO APPROVAL OF THIS PLAT.

Purpose of Plat

1. SUBDIVIDE AS SHOWN HEREON.
2. GRANT EASEMENTS AS SHOWN HEREON.
3. DEDICATE ADDITIONAL RIGHT-OF-WAY AS SHOWN HEREON.

PLAT IS LOCATED WITHIN PROJECTED SECTION 4, TOWNSHIP 9 NORTH, RANGE 2 EAST, NEW MEXICO PRINCIPAL MERIDIAN AS PROJECTED INTO THE TOWN OF ATRISCO GRANT, CITY OF ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO.

ABCWUA PUBLIC WATER & SANITARY SEWER EASEMENTS:

ALBUQUERQUE BERNALILLO COUNTY WATER UTILITY AUTHORITY (ABCWUA) IS GRANTED EASEMENT(S) IN THE DIMENSIONS NOTED ON THIS PLAT FOR THE CONSTRUCTION, INSTALLATION, MAINTENANCE, REPAIR, MODIFICATIONS, REPLACEMENT AND OPERATION OF PUBLIC WATER AND SANITARY SERVICE LINES, EQUIPMENT AND FACILITIES REASONABLY NECESSARY TO PROVIDE SERVICE TOGETHER WITH FREE ACCESS ON AND OVER THE EASEMENT AND THE RIGHT TO REMOVE TREES SHRUBS, UNDERGROWTH AND ANY OTHER OBSTACLES, MODIFICATIONS, OR STRUCTURES WHICH INTERFERE WITH USE OF THE EASEMENT.

SURVEYOR'S CERTIFICATE

I, BRIAN J. MARTINEZ, NEW MEXICO PROFESSIONAL SURVEYOR NO. 18374 DO HEREBY CERTIFY THAT THIS BOUNDARY SURVEY PLAT AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION; THAT I AM RESPONSIBLE FOR THIS SURVEY; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO; AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

PRELIMINARY NOT FOR RECORDING OR SALES PURPOSES

BRIAN J. MARTINEZ
N.M.R.P.S. NO. 18374

DATE 12/4/25

BRIAN J. MARTINEZ NEW MEXICO No. 18374 REGISTERED PROFESSIONAL SURVEYOR

APPROVED FOR MONUMENTATION AND STREET NAMES

CITY SURVEYOR DATE

Bohannan Huston
www.bhinc.com 800.877.5332

Wed, 3-Dec-2025 - 6:15 pm. Plotted by: CELLERTSON
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LEGEND

- SUBDIVISION BOUNDARY LINE
- PHASE LINE
- TRACT LINE
- EXISTING EASEMENT
- PROPOSED EASEMENT
- PROPOSED HOA TRACT
- FLOOD PLAIN

PHASE 3
TRACT 3

PHASE 2
TRACT 2

PHASE 1
TRACT 1

FLOODPLAIN

TRACT 8-A-1-A-1,
EL RANCHO GRANDE I
(6/17/2008, 2008C-134)

1' PUBLIC DRAINGE EASEMENT TO
BE MAINTAINED BY THE HOA

25' PUBLIC STORM DRAIN
EASEMENT GRANTED TO THE
CITY OF ALBUQUERQUE WITH
THE FILING OF THIS PLAT

EXISTING BLANKET
DRAINAGE EASEMENT

60' EXISTING ROADWAY
EASEMENT TO BE
DEDICATED AS ROW
TO THE CITY OF
ALBUQUERQUE

60' EXISTING ROADWAY
EASEMENT TO BE
DEDICATED AS ROW TO
THE CITY OF ALBUQUERQUE

PEDESTRIAN
ACCESS

PUBLIC DRAINAGE EASEMENT
TO BE MAINTAINED BY THE HOA

25' PUBLIC SANITARY SEWER
EASEMENT GRANTED TO THE
ABQWUA WITH THE FILING OF
THIS PLAT

EXISTING DRAINIAGE EASEMENT
TO BE VACATED WITH THE FINAL PLAT
(SHADED AREA)

EXISTING 20'
EASEMENT

100' PNM PERPETURAL
RIGHT-OF-WAY EASEMENT

EXISTING 40' SANITARY
SEWER EASEMENT

EXISTING 7'
LANDSCAPE AND
PUE EASEMENT

PRELIMINARY PLAT
TA LANDS SUBDIVISION PHASE 1
TRACT 1

(A REPLAT OF TA LANDS SUBDIVISION)
PROJECTED SECTION 4, TOWNSHIP 9 NORTH, RANGE 2 EAST, TOWN OF ATRISCO GRANT

CITY OF ALBUQUERQUE
BERNALILLO COUNTY, NEW MEXICO

DECEMBER, 2025

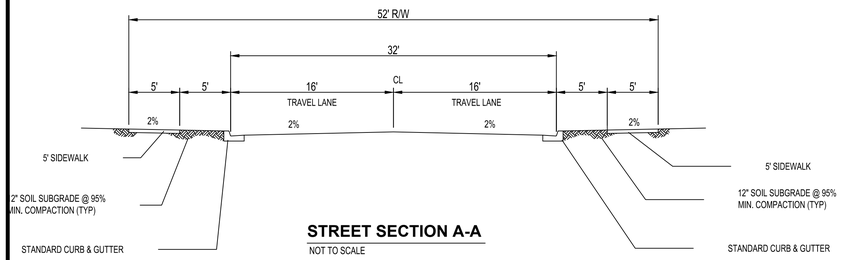
N

100 50 0 100
1"=100'

Bohannan Huston
www.bhinc.com 800.877.5332

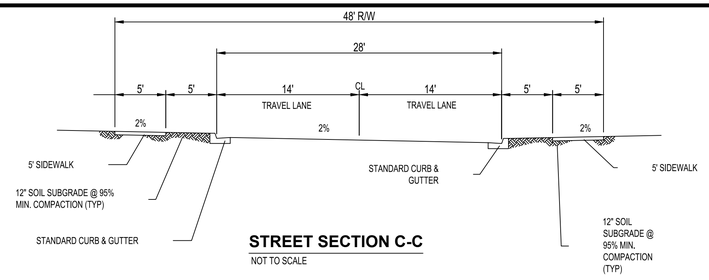
SHEET 2 of 3

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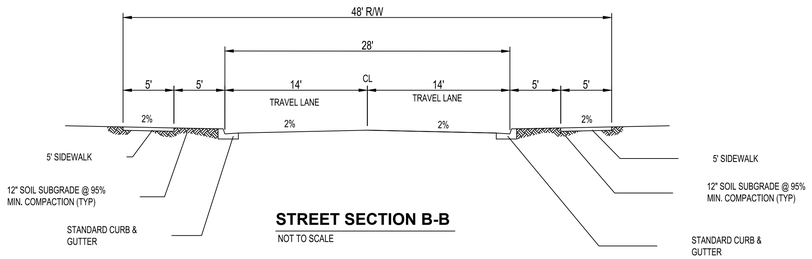
STREET SECTION A-A

NOT TO SCALE



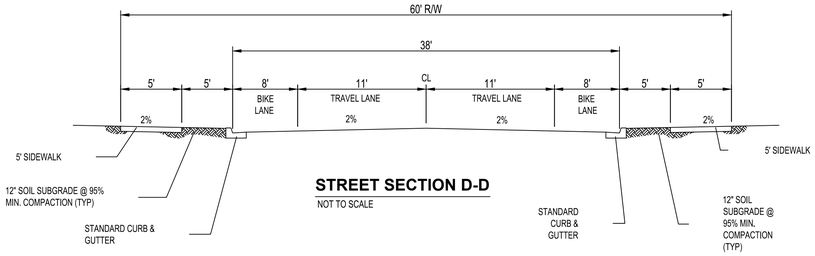
STREET SECTION C-C

NOT TO SCALE



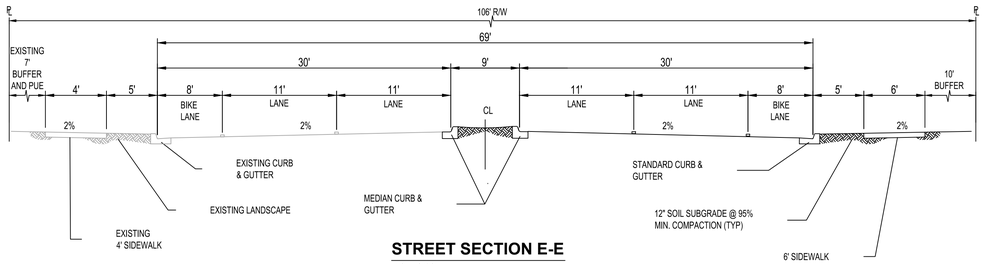
STREET SECTION B-B

NOT TO SCALE



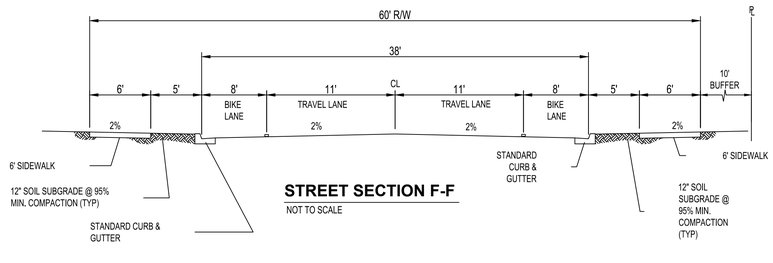
STREET SECTION D-D

NOT TO SCALE



STREET SECTION E-E

NOT TO SCALE



STREET SECTION F-F

NOT TO SCALE

LEGAL DESCRIPTION:

TRACT '1' OF THE BULK LAND PLAT FOR TA LANDS SUBDIVISION WITHIN PROJECTED SECTION 4, TOWNSHIP 9 NORTH, RANGE 2 EAST OF THE NEW MEXICO PRIME MERIDIAN AS PROJECTED INTO THE TOWN OF ATRISCO GRANT, ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO AS THE SAME IS SHOWN AND DESIGNATED ON SAID PLAT FILED FOR RECORD IN THE OFFICE OF THE COUNTY CLERK OF BERNALILLO COUNTY, NEW MEXICO

1. EXISTING ZONING: R1-A
   PROPOSED ZONING: R1-A

   PROPOSED RESIDENTIAL DEVELOPMENT:
   SINGLE FAMILY DETACHED RESIDENTIAL

2. TOTAL ACREAGE:
   EXISTING TRACT '1' = 55.1202 ACRES

   ACREAGE:

   TRACT '1' = 0.1721 ACRES
   TRACT '2' = 0.0903 ACRES
   TRACT '3' = 0.0806 ACRES
   TRACT '4' = 0.0098 ACRES
   TRACT '5' = 0.2252 ACRES
   TRACT '6' = 0.0549 ACRES
   TRACT '7' = 0.0549 ACRES
   TRACT '8' = 0.1123 ACRES
   TRACT '9' = 0.0230 ACRES
   TRACT '10' = 0.0230 ACRES
   TRACT '11' = 0.1424 ACRES
   TRACT '12' = 0.0205 ACRES
   TRACT '13' = 0.1095 ACRES
   TRACT '14' = 0.0124 ACRES
   TRACT '15' = 0.0120 ACRES
   TRACT '16' = 0.0101 ACRES
   TRACT '17' = 0.0230 ACRES
   TRACT '18' = 0.0384 ACRES
   TRACT '19' = 0.0231 ACRES
   TRACT '20' = 0.0228 ACRES
   TRACT '21' = 0.0119 ACRES
   TRACT '22' = 0.0118 ACRES
   TRACT '23' = 0.9090 ACRES
   TRACT '24' = 0.0219 ACRES
   TRACT '25' = 0.0108 ACRES

   NUMBER OF LOTS:
   PHASE 1 = 283

   PROPOSED DENSITY: 5.13 D.U./ACRE

3. MINIMUM LOT DIMENSIONS: 40'X110'
   MINIMUM LOT AREA: 4,400 SF

4. LOT SETBACKS:
   FRONT:15'
   SIDE : 5'
   REAR: 15' PROVIDED
   REAR: 10' MINIMUM FOR ZONE R1-A

5. PROPOSED SOLAR ACCESS PROVISIONS, SHALL BE IN ACCORDANCE WITH INTEGRATED DEVELOPMENT ORDINANCE 14-16-5-10.

6. THE H.O.A. SHALL MAINTAIN ALL TRAILS LOCATED WITHIN H.O.A. TRACTS AND ITS CONNECTIONS TO ANY PUBLIC OWNED AND MAINTAINED SIDEWALK / TRAIL.

7. TRACTS '1' - '24' CONTAIN A PUBLIC PEDESTRIAN AND PUBLIC DRAINAGE EASEMENT GRANTED TO THE H.O.A SEE THIS SHEET FOR 'DRAINAGE FACILITIES MAINTENANCE NOTE' FOR OWNERSHIP AND MAINTENANCE RESPONSIBILITY

LINE TABLE		
ID	BEARING	LENGTH
L1	N15°22'52"E	167.05'
L2	N24°28'35"W	230.10'
L3	S82°30'15"E	140.35'
L4	S48°58'33"E	160.40'
L5	N40°56'52"E	11.54'
L6	S47°08'52"E	35.32'
L7	S16°09'02"W	2.85'
L8	S75°55'49"E	16.47'
L9	S81°27'31"E	33.86'
L10	S12°49'49"W	110.43'
L11	N89°48'16"W	525.95'
L12	N33°49'49"W	894.86'
L13	N33°41'29"W	60.08'
L14	N56°05'26"E	52.00'
L15	N07°30'46"E	29.80'
L16	S89°45'50"E	1328.43'

ABCWUA PUBLIC WATER & SANITARY SEWER EASEMENTS:

ALBUQUERQUE BERNALILLO COUNTY WATER UTILITY AUTHORITY (ABCWUA) IS GRANTED EASEMENT(S) IN THE DIMENSIONS NOTED ON THIS PLAT FOR THE CONSTRUCTION, INSTALLATION, MAINTENANCE, REPAIR, MODIFICATIONS, REPLACEMENT AND OPERATION OF PUBLIC WATER AND SANITARY SERVICE LINES, EQUIPMENT AND FACILITIES REASONABLY NECESSARY TO PROVIDE SERVICE TOGETHER WITH FREE ACCESS ON AND OVER THE EASEMENT AND THE RIGHT TO REMOVE TREES, SHRUBS, UNDERGROWTH AND ANY OTHER OBSTACLES, MODIFICATIONS, OR STRUCTURES WHICH INTERFERE WITH USE OF THE EASEMENT.

DRAINAGE FACILITIES MAINTENANCE NOTES:

AREAS DESIGNATED ON THE ACCOMPANYING PLAT AS "DRAINAGE EASEMENTS" ["DETENTION AREAS"] ARE HEREBY DEDICATED BY THE OWNER AS A PERPETUAL EASEMENT FOR THE COMMON USE AND BENEFIT OF THE VARIOUS LOTS WITHIN THE SUBDIVISIONS FOR THE PURPOSE OF PERMITTING THE CONVEYANCE OF STORM WATER RUNOFF AND THE CONSTRUCTING AND MAINTAINING OF DRAINAGE FACILITIES [STORM WATER DETENTION FACILITIES] IN ACCORDANCE WITH STANDARDS PRESCRIBED BY THE CITY OF ALBUQUERQUE. NO FENCE, WALL, BUILDING OR OTHER OBSTRUCTION (UNLESS SHOWN ON THE APPROVED GRADING PLAN) MAY BE PLACED OR MAINTAINED IN THE EASEMENT AREA WITHOUT APPROVAL OF THE CITY ENGINEER OF THE CITY OF ALBUQUERQUE. THERE ALSO SHALL BE NO ALTERATION OF THE GRADES OR CONTOURS IN SAID EASEMENT AREA WITHOUT THE APPROVAL OF THE CITY ENGINEER. IT SHALL BE THE DUTY OF THE LOT OWNERS OF THIS SUBDIVISION TO MAINTAIN SAID DRAINAGE EASEMENT [DETENTION AREA] AND FACILITIES AT THEIR COST IN ACCORDANCE WITH STANDARDS PRESCRIBED BY THE CITY OF ALBUQUERQUE. THE CITY SHALL HAVE THE RIGHT TO ENTER PERIODICALLY TO INSPECT THE FACILITIES. IN THE EVENT SAID LOT OWNERS FAIL TO ADEQUATELY AND PROPERLY MAINTAIN DRAINAGE EASEMENT [DETENTION AREA] AND FACILITIES, AT ANY TIME FOLLOWING FIFTEEN (15) DAYS WRITTEN NOTICE TO SAID LOT OWNERS, THE CITY MAY ENTER UPON SAID AREA, PERFORM SAID MAINTENANCE, AND THE COST OF PERFORMING SAID MAINTENANCE SHALL BE PAID BY APPLICABLE LOT OWNERS PROPORTIONATELY ON THE BASIS OF LOT OWNERSHIP. IN THE EVENT LOT OWNERS FAIL TO PAY THE COST OF MAINTENANCE WITHIN THIRTY (30) DAYS AFTER DEMAND FOR PAYMENT MADE BY THE CITY, THE CITY MAY FILE A LIEN AGAINST ALL LOTS IN THE SUBDIVISION FOR WHICH PROPORTIONATE PAYMENT HAS NOT BEEN MADE. THE OBLIGATIONS IMPOSED HEREIN SHALL BE BINDING UPON THE OWNER, HIS HEIRS, AND ASSIGNS AND SHALL RUN WITH ALL LOTS WITHIN THIS SUBDIVISION.

THE GRANTOR AGREES TO DEFEND, INDEMNIFY, AND HOLD HARMLESS, THE CITY, ITS OFFICIALS, AGENTS AND EMPLOYEES FROM AND AGAINST ANY AND ALL CLAIMS, ACTIONS, SUITS, OR PROCEEDINGS OF ANY KIND BROUGHT AGAINST SAID PARTIES FOR OR ON ACCOUNT OF ANY MATTER ARISING FROM THE DRAINAGE FACILITY PROVIDED FOR HEREIN OR THE GRANTOR'S FAILURE TO CONSTRUCT, MAINTAIN, OR MODIFY SAID DRAINAGE FACILITY.

Free Consent & Dedication

THE SUBDIVISION SHOWN AND DESCRIBED HEREON IS WITH THE FREE CONSENT AND IN ACCORDANCE WITH THE DESIRES OF THE UNDERSIGNED OWNER(S) THEREOF AND GRANT ALL EASEMENTS AS SHOWN HEREON. EXISTING AND/OR GRANTED PUBLIC UTILITY EASEMENTS (P.U.E) AS SHOWN HEREON, UNLESS NOTED OTHERWISE, ARE FOR THE COMMON AND JOINT USE OF GAS, ELECTRICAL POWER AND COMMUNICATION SERVICES FOR BURIED AND/OR OVERHEAD DISTRIBUTION LINES, CONDUIT AND PIPES FOR UNDERGROUND UTILITIES. SAID UTILITY COMPANIES HAVE THE RIGHT OF INGRESS/EGRESS FOR CONSTRUCTION OF, MAINTENANCE OF AND REPLACEMENT OF SAID UTILITIES INCLUDING THE RIGHT TO TRIM INTERFERING TREES AND SHRUBS WITHIN SAID P.U.E.. SAID OWNERS CERTIFY THAT THIS SUBDIVISION IS THEIR FREE ACT AND DEED.

THE PLAT SHOWN HEREON IS MADE WITH FREE CONSENT AND IN ACCORDANCE OF THE DESIRES OF THE UNDERSIGNED OWNER(S), THE EXECUTION OF THIS PLAT IS THEIR FREE ACT AND DEED, THOSE SIGNING AS OWNER(S) WARRANT THAT THEY HOLD AMONG THEM, COMPLETE INDEFEASIBLE TITLE IN FEE SIMPLE TO THE LAND SHOWN ON THIS PLAT. OWNER(S) HEREBY AFFIRM THAT THE DESCRIBED PROPERTY SHOWN ON THIS PLAT LIES WITHIN THE PLATTING AND SUBDIVISION JURISDICTION OF CITY OF ALBUQUERQUE, NEW MEXICO. SAID OWNER(S) HEREBY GRANT ALL EASEMENTS AS MAY BE SHOWN ON THIS PLAT TO THE CITY OF ALBUQUERQUE, NEW MEXICO IN FEE SIMPLE WITH WARRANTY COVENANTS. SAID OWNERS DO HEREBY DEDICATE ADDITIONAL PUBLIC RIGHT 0F WAY AS SHOWN HEREON TO THE CITY OF ALBUQUERQUE IN FEE SIMPLE

BY: _____
BEN SPENCER, MANAGER
TA LANDS COMPANY, LLC
TITAN PROPERTY MANAGEMENT, LLC ITS MANAGER

STATE OF NEW MEXICO)
) SS
COUNTY OF BERNALILLO)

THIS INSTRUMENT WAS ACKNOWLEDGED BEFORE ME ON _____DAY OF_____, 20___
BY BEN SPENCER, TA LAND COMPANY, LLC
MY COMMISSION EXPIRES _____
NOTARY PUBLIC

CURVE TABLE				
ID	ARC	RADIUS	DELTA	TANGENT
C1	41.16'	81.22'	29°02'05"	21.03'
C2	101.63'	3876.54'	01°30'07"	50.82'
C3	83.91'	3876.54'	01°14'25"	41.96'
C4	1137.02'	3522.00'	18°29'49"	573.50'
C5	302.51'	3678.00'	04°42'45"	151.34'
C6	43.26'	150.00'	16°31'30"	21.78'
C7	49.71'	150.00'	18°59'23"	25.09'
C8	254.98'	2082.00'	07°01'01"	127.65'
C9	269.19'	429.28'	35°55'43"	139.19'
C10	19.70'	25.00'	45°09'36"	10.40'
C11	1.70'	53.00'	01°50'16"	0.85'
C12	19.04'	25.00'	43°38'17"	10.01'
C13	20.43'	25.00'	46°48'48"	10.82'
C14	2.56'	53.00'	02°46'00"	1.28'
C15	21.45'	25.00'	49°10'04"	11.44'
C16	21.45'	25.00'	49°10'04"	11.44'
C17	2.47'	53.00'	02°40'30"	1.24'
C18	20.44'	24.72'	47°22'31"	10.84'
C19	766.44'	970.00'	45°16'18"	404.48'

PRELIMINARY PLAT
TA LANDS SUBDIVISION PHASE 1
TRACT 1

(A REPLAT OF TA LANDS SUBDIVISION)
PROJECTED SECTION 4, TOWNSHIP 9 NORTH, RANGE 2 EAST, TOWN OF ATRISCO GRANT

CITY OF ALBUQUERQUE
BERNALILLO COUNTY, NEW MEXICO

DECEMBER, 2025

Bohannan Huston
www.bhinc.com 800.877.5332

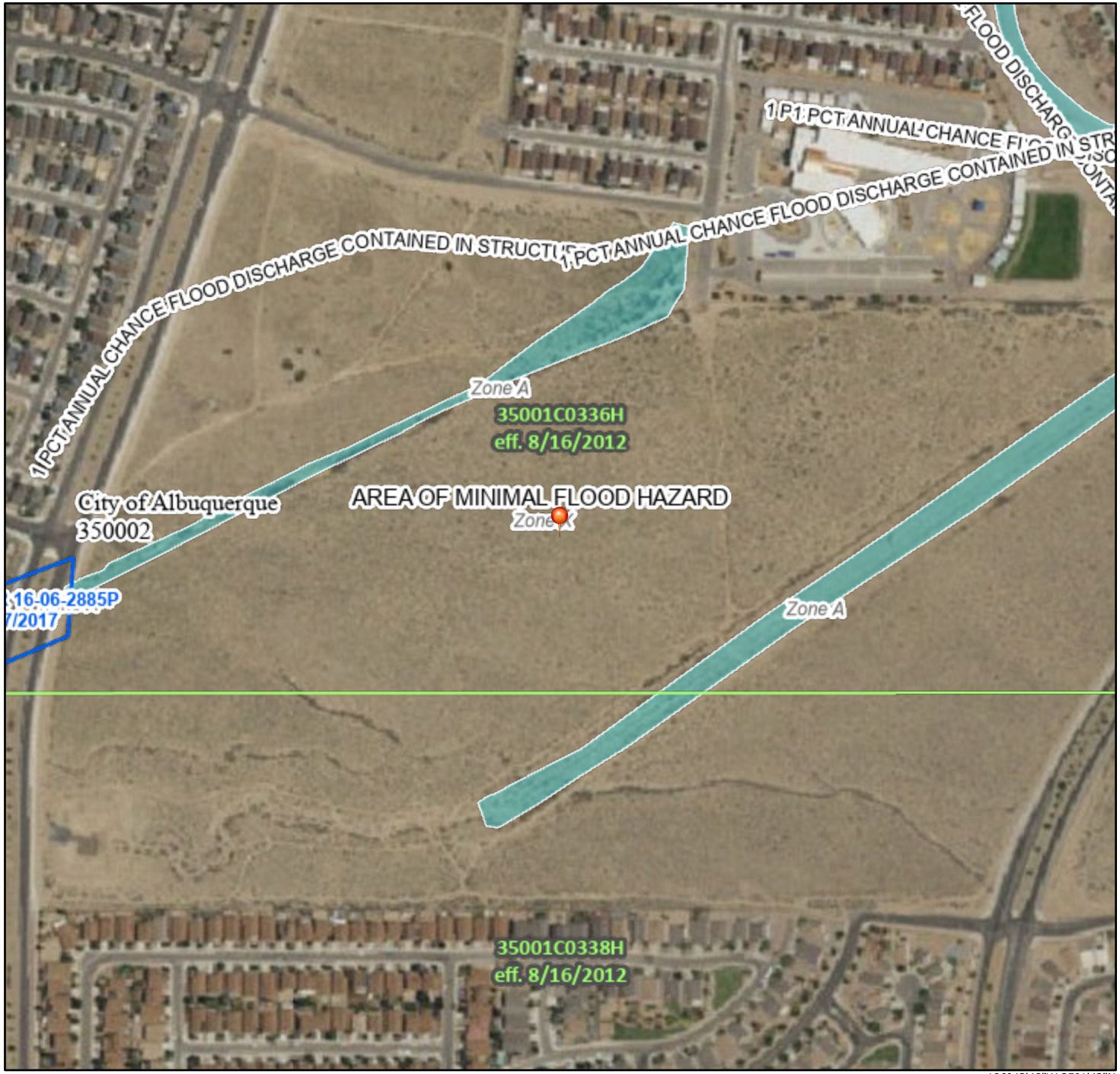
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EXHIBIT B
FEMA FIRMETTE

National Flood Hazard Layer FIRMette

FEMA

106°44'25"W 35°2'12"N



106°43'48"W 35°1'42"N

Feet

0 250 500 1,000 1,500 2,000

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/24/2025 at 3:13 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

EXHIBIT C

DRAINAGE BASINS: EXISTING CONDITIONS



TA Land

Existing Conditions Basin Data Table

Basin ID	Area (SQ. FT)	Area (AC.)	Land Treatment Percentages A	B	C	D	Q(100yr) (CFS)
			77	79	86	98	
Onsite							
OFFSITE EX BASIN 1	1034013.643	23.74	75.0%	20.0%	5.0%	0.0%	*41.1*
OFFSITE EX BASIN 2A	334106.756	7.67	80.0%	17.0%	3.0%	0.0%	*12.9*
OFFSITE EX BASIN 2B	225905.9836	5.19	80.0%	17.0%	3.0%	0.0%	*8.7*
OFFSITE EX BASIN 2C	1107522.353	25.43	80.0%	17.0%	3.0%	0.0%	*42.8*
ONSITE EX BASIN 2D	1173948.954	26.95	80.0%	17.0%	3.0%	0.0%	*45.4*
OFFSITE EX BASIN 3A	402370.7844	9.24	78.0%	15.0%	7.0%	0.0%	*15.9*
ONSITE EX BASIN 3B	1158636.409	26.60	78.0%	15.0%	7.0%	0.0%	*45.9*
OFFSITE EX BASIN 4	-	-	-	-	-	-	*148.4*
OFFSITE EX BASIN 5	-	-	-	-	-	-	*2.7*
SUBTOTAL	**5436504.88**	**124.80**	-	-	-	-	***364.0***

LEGEND

PHASE 1 BOUNDARY

N

150 75 0 150

1" = 150'

TA LAND

EXISTING CONDITIONS BASIN MAP

DRAWN BY:	DATE:	
RV	6/24/25	
CHECKED BY:	BHI PROJECT NO.	SHEET NO.
KMK	20250012	

Bohannan Huston
www.bhinc.com 800.877.5332

Mon, 27-Oct-2025 - 1:54 pm Plotted by: RVB LAUNCH
P:\2025\20125\CDP\Plans\Grading\Existing Basins.dwg

EXHIBIT D
DRAINAGE BASINS: MASTER PLANNED SUBDIVISION
PROPOSED CONDITIONS



TA Land

Proposed Conditions Basin Data Table

Basin ID	Area (SQ. FT)	Area (AC.)	Land Treatment Percentages A	B	C	D	Q(100yr) (CFS)
			77	79	86	98	
Onsite							
Offsite EX basin 4	-	-	-	-	-	-	*148.4*
Offsite EX basin 5	-	-	-	-	-	-	*2.7*
Basin 1	22078.3099	0.51	0.0%	25.0%	25.0%	50.0%	*1.7*
Basin 2	129579.9752	2.97	0.0%	25.0%	25.0%	50.0%	*9.9*
Basin 2A	99403.2586	2.28	0.0%	50.0%	50.0%	0.0%	*5.7*
Basin 3	74454.7247	1.71	0.0%	25.0%	25.0%	50.0%	*5.7*
Basin 4	124389.773	2.86	0.0%	25.0%	25.0%	50.0%	*9.5*
Basin 5	82202.3323	1.89	0.0%	25.0%	25.0%	50.0%	*6.3*
Basin 6	51489.7563	1.18	0.0%	25.0%	25.0%	50.0%	*3.9*
Basin 6A	78762.4576	1.81	0.0%	25.0%	25.0%	50.0%	*6.0*
Basin 7	233683.8426	5.36	0.0%	25.0%	25.0%	50.0%	*17.8*
Basin 7A	14067.4922	0.32	0.0%	25.0%	25.0%	50.0%	*1.1*
Basin 8	134694.3744	3.09	0.0%	25.0%	25.0%	50.0%	*10.3*
Basin 9	60822.2287	1.40	0.0%	50.0%	50.0%	0.0%	*3.5*
Basin 10	233500.3371	5.36	0.0%	25.0%	25.0%	50.0%	*17.8*
Basin 10A	49954.058	1.15	0.0%	50.0%	50.0%	0.0%	*2.9*
Basin 11	72030.94	1.65	0.0%	25.0%	25.0%	50.0%	*5.5*
Basin 12	92431.96	2.12	0.0%	25.0%	25.0%	50.0%	*7.0*
Basin 13	129084.19	2.96	0.0%	25.0%	25.0%	50.0%	*9.8*
Basin 14	39161.14	0.90	0.0%	25.0%	25.0%	50.0%	*3.0*
Basin 15	195266.80	4.48	0.0%	25.0%	25.0%	50.0%	*14.9*
Basin 16	89320.97	2.05	0.0%	25.0%	25.0%	50.0%	*6.8*
Basin 16A	204619.55	4.70	0.0%	25.0%	25.0%	50.0%	*15.6*
Basin 17	103087.21	2.37	0.0%	25.0%	25.0%	50.0%	*7.9*
Basin 18	90120.93	2.07	0.0%	25.0%	25.0%	50.0%	*6.9*
Basin 19	22126.02	0.51	0.0%	25.0%	25.0%	50.0%	*1.7*
Basin 20	71523.32	1.64	0.0%	25.0%	25.0%	50.0%	*5.4*
Basin 21	160763.2526	3.69	0.0%	25.0%	25.0%	50.0%	*12.2*
Basin 22	74170.8261	1.70	0.0%	25.0%	25.0%	50.0%	*5.6*
Basin 23	168857.226	3.88	0.0%	25.0%	25.0%	50.0%	*12.9*
Basin 24	39893.2901	0.92	0.0%	25.0%	25.0%	50.0%	*3.0*
Basin 25	47031.8901	1.08	0.0%	25.0%	25.0%	50.0%	*3.6*
Basin 25A	13853.4094	0.32	0.0%	25.0%	25.0%	50.0%	*1.1*
Basin 26	46988.6408	1.08	0.0%	25.0%	25.0%	50.0%	*3.6*
Basin 27	102731.9143	2.36	0.0%	50.0%	50.0%	0.0%	*5.9*
Basin 28	65074.46	1.49	0.0%	25.0%	25.0%	50.0%	*5.0*
Basin 28A	92631.83	2.13	0.0%	25.0%	25.0%	50.0%	*7.1*
Basin 29	214538.49	4.93	0.0%	25.0%	25.0%	50.0%	*16.3*
Basin 30	158252.90	3.63	0.0%	25.0%	25.0%	50.0%	*12.1*
Basin 31	182192.11	4.18	0.0%	25.0%	25.0%	50.0%	*13.9*
Basin 32	110105.69	2.53	0.0%	25.0%	25.0%	50.0%	*8.4*
Basin 33	198682.69	4.56	0.0%	25.0%	25.0%	50.0%	*15.1*
Basin 33A	18178.85	0.42	0.0%	25.0%	25.0%	50.0%	*1.4*
Basin 34	30767.30	0.71	0.0%	25.0%	25.0%	50.0%	*2.3*
Basin 34A	66439.73	1.53	0.0%	25.0%	25.0%	50.0%	*5.1*
Basin 35	118597.23	2.72	0.0%	25.0%	25.0%	50.0%	*9.0*
Basin 35A	59972.58	1.38	0.0%	50.0%	50.0%	0.0%	*3.5*
Basin 35B	14149.14	0.32	0.0%	50.0%	50.0%	0.0%	*0.8*
Basin 36	180730.72	4.15	0.0%	25.0%	25.0%	50.0%	*13.8*
Basin 36A	95115.28	2.18	0.0%	50.0%	50.0%	0.0%	*5.5*
Basin 37	159139.13	3.65	0.0%	25.0%	25.0%	50.0%	*12.1*
Basin 38	218528.24	5.02	0.0%	25.0%	25.0%	50.0%	*16.6*
Basin 39	6670.00	0.15	0.0%	25.0%	25.0%	50.0%	*0.5*
Basin 39A	8428.00	0.19	0.0%	25.0%	25.0%	50.0%	*0.6*
Basin 40	144975.91	3.33	0.0%	25.0%	25.0%	50.0%	*11.0*
Basin 41	135270.89	3.11	0.0%	25.0%	25.0%	50.0%	*10.3*
Basin 42	4936.28	0.11	0.0%	25.0%	25.0%	50.0%	*0.4*
SUBTOTAL	**5435523.86**	**124.8**	-	-	-	-	***556.2***

Pond Table

POND	Total Volume Required (CF)	Total Volume Provided (CF)	Peak Elevation	Pond Bottom	Pond Top	Qin (CFS)	Qout (CFS)	Pond Outlet
South West Offsite Pond	156,816.00	187,308.0	5088.0	5080.5	5089.0	151.5	37.1	(1)24" pipe
South Pond	139,392.00	161,602.8	5039.0	5028.0	5040.0	108.5	54.8	(1)36" pipe
Mid Pond	30,492.00	53,073.5	5066.0	5061.0	5068.0	31.3	12.5	(1)18" pipe
North Pond	100,188.00	124,349.4	5,047.1	5041.0	5048.0	102.6	21.4	(1)24" pipe
TA Lands Pond	SEE TA LANDS POND INFORMATION							

N

150 75 0 150

1" = 150'

TA LAND

MASTER PLAN PROPOSED CONDITIONS BASIN MAP

DRAWN BY:	DATE:	
RV	6/24/25	
CHECKED BY: KMK	BHI PROJECT NO. 20250012	SHEET NO.

Bohannan Huston
www.bhinc.com 800.877.5332

Fri, 5/Dec/2025 - 8:44 am Plotted by: RVB,LALDWG
P:\2025\20250012\CDP\Plans\General\Proposed Basins.dwg

EXHIBIT E
DRAINAGE BASINS: PHASE 1 PROPOSED CONDITIONS



TA Land							
Proposed Conditions Basin Data Table							
							1
Basin ID	Area (SQ. FT)	Area (AC.)	Land Treatment Percentages A	B	C	D	Q(100yr) (CFS)
			77	79	86	98	
Onsite							
Offsite EX basin 4	-	-	-	-	-	-	*148.4*
Offsite EX basin 5	-	-	-	-	-	-	*2.7*
Offsite EX Basin 1	1034013.643	23.74	75.0%	20.0%	5.0%	0.0%	*41.1*
Offsite EX Basin 2A	327679.9556	7.52	80.0%	17.0%	3.0%	0.0%	*12.7*
Offsite EX Basin 2B	220975.4387	5.07	80.0%	17.0%	3.0%	0.0%	*8.5*
Offsite EX Basin 2C	1105378.334	25.38	80.0%	17.0%	3.0%	0.0%	*42.8*
Offsite EX Basin 3A	393561.1207	9.03	78.0%	15.0%	7.0%	0.0%	*15.6*
Basin 20	71523.32	1.64	0.0%	25.0%	25.0%	50.0%	*5.4*
Basin 28	65074.46	1.49	0.0%	25.0%	25.0%	50.0%	*5.0*
Basin 28A	92631.83	2.13	0.0%	25.0%	25.0%	50.0%	*7.1*
Basin 29	214538.49	4.93	0.0%	25.0%	25.0%	50.0%	*16.3*
Basin 30	158252.90	3.63	0.0%	25.0%	25.0%	50.0%	*12.1*
Basin 31	182192.11	4.18	0.0%	25.0%	25.0%	50.0%	*13.9*
Basin 32	110105.69	2.53	0.0%	25.0%	25.0%	50.0%	*8.4*
Basin 33	198682.69	4.56	0.0%	25.0%	25.0%	50.0%	*15.1*
Basin 33A	18178.85	0.42	0.0%	25.0%	25.0%	50.0%	*1.4*
Basin 34	30767.30	0.71	0.0%	25.0%	25.0%	50.0%	*2.3*
Basin 34A	66439.73	1.53	0.0%	25.0%	25.0%	50.0%	*5.1*
Basin 35	118597.23	2.72	0.0%	25.0%	25.0%	50.0%	*9.0*
Basin 35A	59972.58	1.38	0.0%	50.0%	50.0%	0.0%	*3.5*
Basin 35B	14149.14	0.32	0.0%	50.0%	50.0%	0.0%	*0.8*
Basin 36	180730.72	4.15	0.0%	25.0%	25.0%	50.0%	*13.8*
Basin 36A	95115.28	2.18	0.0%	50.0%	50.0%	0.0%	*5.5*
Basin 37	159139.13	3.65	0.0%	25.0%	25.0%	50.0%	*12.1*
Basin 38	218528.24	5.02	0.0%	25.0%	25.0%	50.0%	*16.6*
Basin 39	6670.00	0.15	0.0%	25.0%	25.0%	50.0%	*0.5*
Basin 39A	8428.00	0.19	0.0%	25.0%	25.0%	50.0%	*0.6*
Basin 40	144975.91	3.33	0.0%	25.0%	25.0%	50.0%	*11.0*
Basin 41	135270.89	3.11	0.0%	25.0%	25.0%	50.0%	*10.3*
Basin 42	4936.28	0.11	0.0%	25.0%	25.0%	50.0%	*0.4*
SUBTOTAL	**2354900.77**	**124.8**	-	-	-	-	***448.0***

SWALE TABLE					
SWALE	SWALE TYPE	Swale Capacity	Actual Flow	Depth of Flow (FT)	Velocity (FT/S)
SWALE 1	V Swale 5:1 side slopes d=1.5' n=0.025 S=1.83%	73.7	52.8	1.48	6.0

N

150 75 0 150

1" = 150'

TA LAND

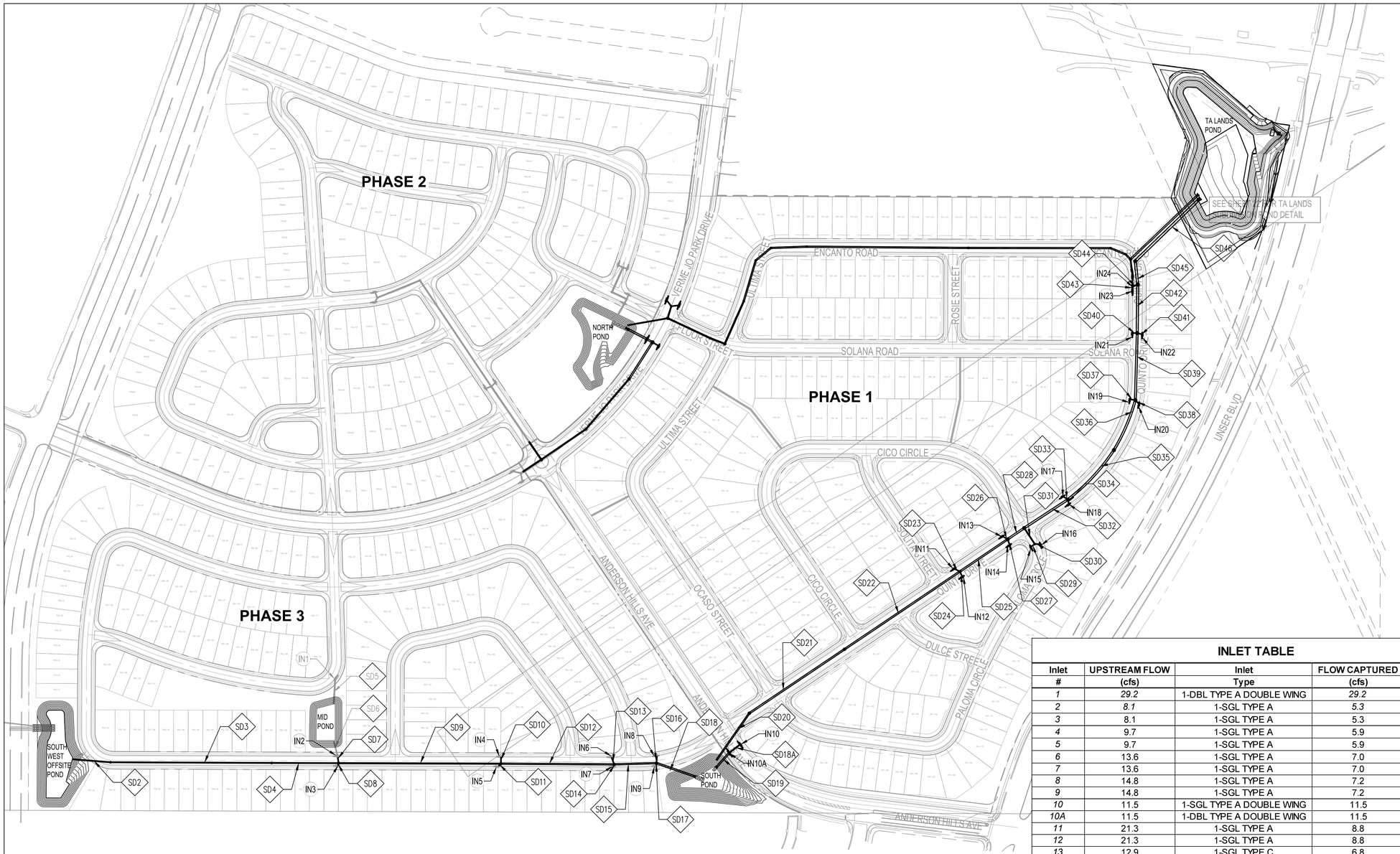
PHASE 1 PROPOSED CONDITIONS BASIN MAP

DRAWN BY:	DATE:
RV	6/24/25
CHECKED BY: KMK	BHI PROJECT NO. 20250012
	SHEET NO.

Bohannan Huston
www.bhinc.com 800.877.5332

Fri, 5-Dec-2025 - 9:32am Plotted by: RVILLALOBOS
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EXHIBIT F
STORM DRAIN EXHIBIT



STORM DRAIN PIPE TABLE

PIPE #	Size in.	Slope	Capacity1 cfs	ACTUAL FLOW cfs
ONSITE				
SD2	24	5.03%	50.7	37.1
SD3	24	2.70%	37.2	37.1
SD4	24	2.70%	37.2	37.1
SD5	24	6.55%	57.9	29.2
SD6	18	3.31%	19.1	12.5
SD7	18	12.90%	37.7	17.8
SD8	18	5.07%	23.7	5.3
SD9	30	3.18%	73.1	60.2
SD10	18	15.88%	41.9	5.9
SD11	18	8.83%	31.2	5.9
SD12	36	2.64%	108.4	72.0
SD13	18	14.12%	39.5	7.0
SD14	18	4.59%	22.5	7.0
SD15	36	1.70%	87.0	86.0
SD16	18	4.43%	22.1	7.2
SD17	18	4.19%	21.5	7.2
SD18	42	6.49%	256.3	100.4
SD18A	24	1.50%	27.7	11.5
SD19	42	12.31%	353.0	23.0
SD20	36	0.84%	61.1	54.8
SD21	42	0.74%	86.5	54.8
SD22	42	0.74%	86.5	54.8
SD23	18	13.64%	38.8	8.8
SD24	18	3.00%	18.2	8.8
SD25	48	0.74%	123.6	72.4
SD26	18	2.76%	17.5	6.8
SD27	18	3.36%	19.3	6.8
SD28	54	0.74%	169.2	86.0
SD29	18	0.65%	8.5	7.0
SD30	18	6.00%	25.7	7.0
SD31	24	7.00%	59.9	14.0
SD32	54	0.74%	169.2	100.0
SD33	18	6.00%	25.7	8.8
SD34	18	7.00%	27.8	8.8
SD35	54	0.76%	171.4	117.6
SD36	54	0.77%	172.6	117.6
SD37	18	7.00%	27.8	7.1
SD38	18	5.00%	23.5	7.1
SD39	54	0.74%	169.2	131.8
SD40	18	10.00%	33.2	8.6
SD41	18	5.00%	23.5	8.6
SD42	60	0.74%	224.0	149.0
SD43	18	10.00%	33.2	10.2
SD44	24	2.83%	38.1	20.4
SD45	60	0.80%	232.9	169.4
SD46	66	0.80%	300.4	171.6

INLET TABLE

Inlet #	UPSTREAM FLOW (cfs)	Inlet Type	FLOW CAPTURED (cfs)	BYPASS FLOW (cfs)
1	*29.2*	1-DBL TYPE A DOUBLE WING	*29.2*	*0.0*
2	*8.1*	1-SGL TYPE A	*5.3*	*2.8*
3	8.1	1-SGL TYPE A	5.3	*2.8*
4	9.7	1-SGL TYPE A	5.9	*3.8*
5	9.7	1-SGL TYPE A	5.9	*3.8*
6	13.6	1-SGL TYPE A	7.0	*6.6*
7	13.6	1-SGL TYPE A	7.0	*6.6*
8	14.8	1-SGL TYPE A	7.2	*7.6*
9	14.8	1-SGL TYPE A	7.2	*7.6*
10	11.5	1-SGL TYPE A DOUBLE WING	11.5	*0.0*
10A	11.5	1-DBL TYPE A DOUBLE WING	11.5	*0.0*
11	21.3	1-SGL TYPE A	8.8	*12.5*
12	21.3	1-SGL TYPE A	8.8	*12.5*
13	12.9	1-SGL TYPE C	6.8	*6.1*
14	12.9	1-SGL TYPE C	6.8	*6.1*
15	12.8	1-SGL TYPE A	7.0	*5.8*
16	12.8	1-SGL TYPE A	7.0	*5.8*
17	19.2	1-SGL TYPE A	8.8	*10.4*
18	19.2	1-SGL TYPE A	8.8	*10.4*
19	14.5	1-SGL TYPE A	7.1	*7.4*
20	14.5	1-SGL TYPE A	7.1	*7.4*
21	20.3	1-SGL TYPE A	8.6	*11.7*
22	20.3	1-SGL TYPE A	8.6	*11.7*
23	10.2	1-SGL TYPE A SINGLE WING	10.2	*0.0*
24	10.2	1-SGL TYPE A SINGLE WING	10.2	*0.0*

LEGEND

- EXISTING STORM DRAIN
- PROPOSED STORM DRAIN
- PROPOSED STORM DRAIN MANHOLE
- PROPOSED STORM DRAIN INLET
- PROPOSED SD AND INLET NOTATION (SDXX, INX)
- FUTURE SD AND INLET NOTATION (SDXX, INX)

N

150 75 0 150

1" = 150'

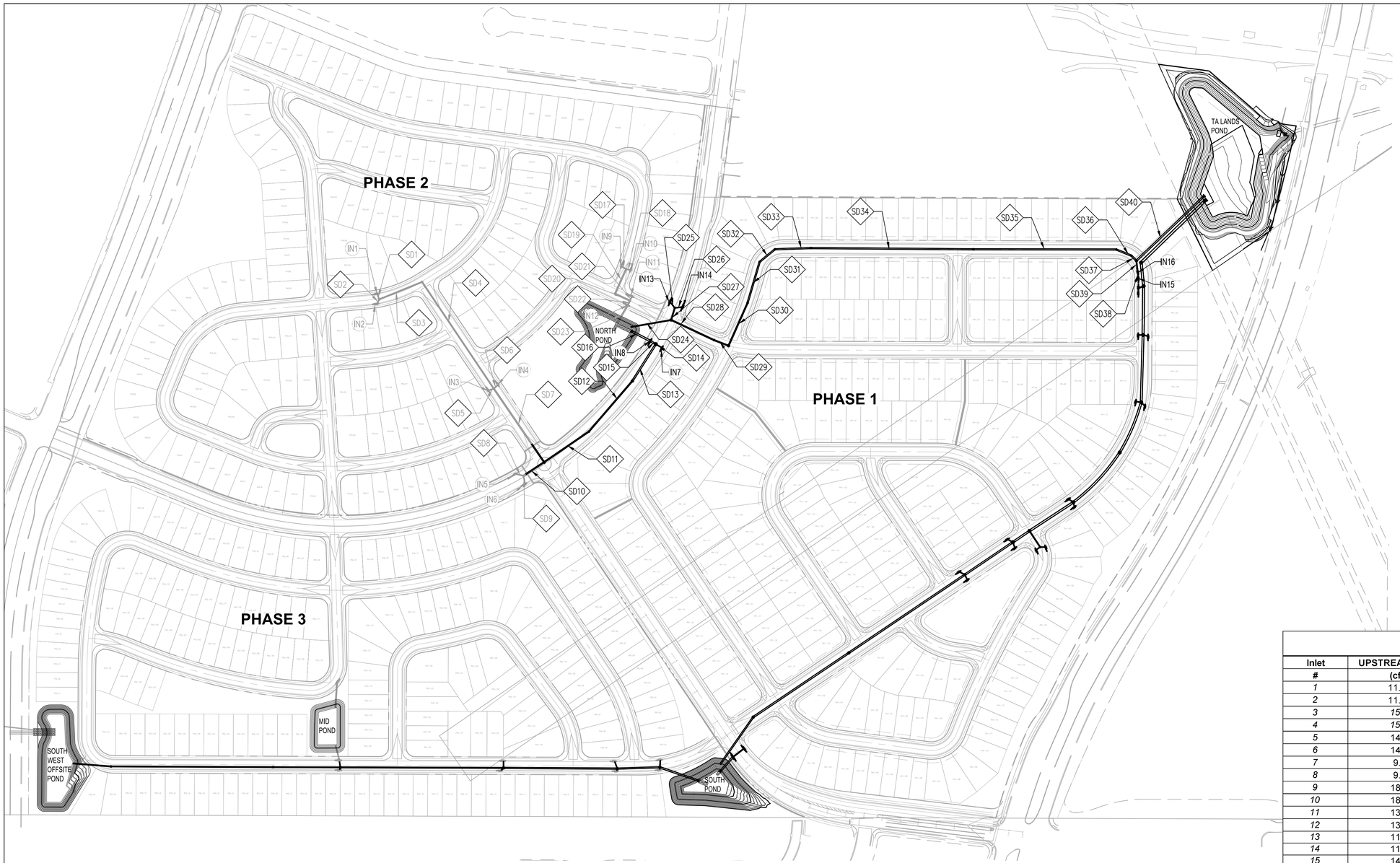
TA LAND

BACKBONE STORM DRAIN EXHIBIT

DRAWN BY:	DATE:	
RV	10/20/25	
CHECKED BY:	BHI PROJECT NO.	SHEET NO.
KMK	20250012	

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Fri, 5-Dec-2025 - 10:20 am Plotted by: RVB LA / DEIS
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STORM DRAIN PIPE TABLE

PIPE #	Size in.	Slope	Capacity1 cfs	ACTUAL FLOW cfs
ONSITE				
SD1	18	2.35%	16.1	6.8
SD2	18	12.59%	37.3	6.8
SD3	24	3.00%	39.2	13.6
SD4	24	1.32%	26.0	13.6
SD5	18	2.50%	16.6	15.9
SD6	18	2.44%	16.4	15.9
SD7	30	1.86%	55.9	45.3
SD8	18	4.23%	21.6	6.8
SD9	18	2.91%	17.9	6.8
SD10	24	1.00%	22.6	13.6
SD11	30	2.32%	62.5	58.9
SD12	30	2.77%	68.3	58.9
SD13	42	1.40%	119.0	58.9
SD14	18	0.50%	7.4	5.9
SD15	48	2.00%	203.1	70.7
SD16	48	1.13%	152.7	76.6
SD17	18	0.65%	8.5	7.0
SD18	18	4.47%	22.2	7.0
SD19	24	1.32%	26.0	14.0
SD20	24	1.48%	27.5	14.0
SD21	18	1.00%	10.5	7.3
SD22	30	0.60%	31.8	21.3
SD23	36	2.39%	103.1	28.6
SD24	24	4.35%	47.2	30.2
SD25	18	1.25%	11.7	11.7
SD26	18	3.91%	20.8	11.7
SD27	24	1.00%	22.6	23.3 *
SD28	30	1.29%	46.6	53.5 *
SD29	30	1.29%	46.6	53.5 *
SD30	30	1.29%	46.6	53.5 *
SD31	36	1.29%	75.8	53.5
SD32	36	1.29%	75.8	53.5
SD33	36	1.29%	75.8	53.5
SD34	36	1.29%	75.8	53.5
SD35	36	1.29%	75.8	53.5
SD36	36	1.65%	85.7	53.5
SD37	36	1.98%	93.9	53.5
SD38	18	1.80%	14.1	14.1
SD39	24	3.98%	45.1	28.1
SD40	42	0.71%	84.8	81.6

* HGL Controlled

INLET TABLE

Inlet #	UPSTREAM FLOW (cfs)	Inlet Type	CAPTURED (cfs)	BYPASS FLOW (cfs)
1	11.05	1-SGL TYPE A	*6.8*	*4.3*
2	11.05	1-SGL TYPE A	*6.8*	*4.3*
3	*15.9*	1-SGL TYPE A DOUBLE WING	*15.9*	*0.0*
4	*15.9*	1-SGL TYPE A DOUBLE WING	*15.9*	*0.0*
5	14.4	1-SGL TYPE A	6.8	*7.6*
6	14.4	1-SGL TYPE A	6.8	*7.6*
7	9.2	1-SGL TYPE A	5.9	*3.3*
8	9.2	1-DBL TYPE A SINGLE WING	5.9	*3.3*
9	18.3	1-SGL TYPE A	7.0	*11.3*
10	18.3	1-SGL TYPE A	7.0	*11.3*
11	13.7	1-SGL TYPE A	7.3	*6.4*
12	13.7	1-SGL TYPE A	7.3	*6.4*
13	11.7	1-SGL TYPE A DOUBLE WING	11.7	*0.0*
14	11.7	1-SGL TYPE A DOUBLE WING	11.7	*0.0*
15	14.1	1-SGL TYPE A SINGLE WING	14.1	*0.0*
16	14.1	1-SGL TYPE A SINGLE WING	14.1	*0.0*

LEGEND

- EXISTING STORM DRAIN
- PROPOSED STORM DRAIN
- PROPOSED STORM DRAIN MANHOLE
- PROPOSED STORM DRAIN INLET
- PROPOSED SD AND INLET NOTATION (SDXX, INX)
- FUTURE SD AND INLET NOTATION (SDXX, INX)

N

150 75 0 150

1" = 150'

TA LAND

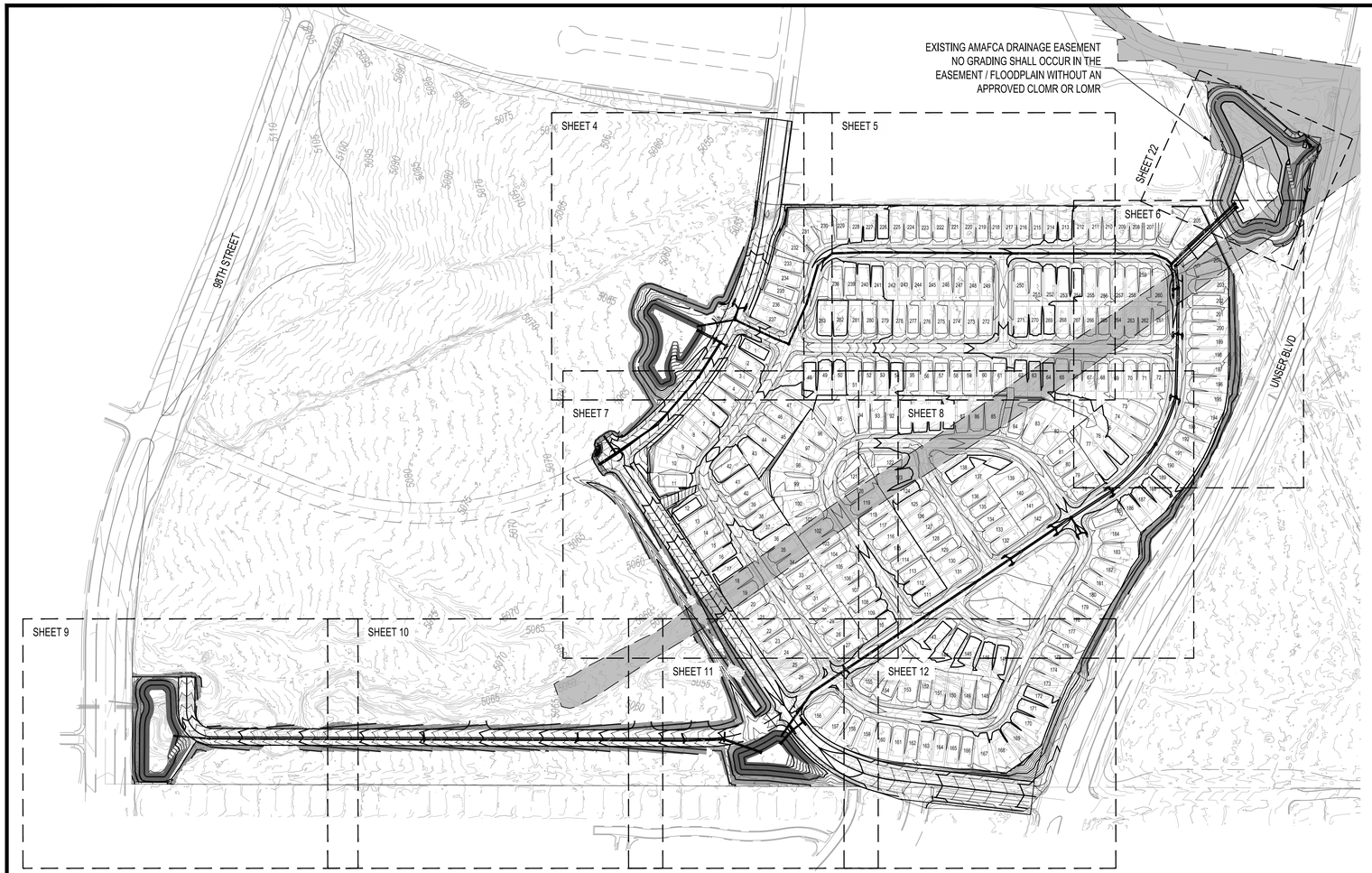
NORTH STORM DRAIN EXHIBIT

DRAWN BY:	DATE:	
RV	7/29/25	
CHECKED BY:	BHI PROJECT NO.	SHEET NO.
KMK	20250012	

Bohannan Huston
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Fri, 5-Dec-2025 - 9:50 am Plotted by: RVILLALOBOS
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EXHIBIT G
GRADING PLAN



GENERAL NOTES

1. ALL WORK DETAILED ON THESE PLANS AND PERFORMED UNDER THIS CONTRACT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS AND THE PROJECT GEOTECHNICAL REPORT. WHERE APPLICABLE, CITY OF ALBUQUERQUE PUBLIC WORKS STANDARDS SHALL APPLY.

2. THE CONTRACTOR SHALL ABIDE BY ALL LOCAL, STATE, AND FEDERAL LAWS, RULES AND REGULATIONS WHICH APPLY TO THE CONSTRUCTION OF THESE IMPROVEMENTS, INCLUDING EPA REQUIREMENTS WITH RESPECT TO STORM WATER DISCHARGE.

3. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL FIELD VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL POTENTIAL OBSTRUCTIONS INCLUDING ALL UNDERGROUND UTILITIES. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION OBSERVER OR ENGINEER SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT OF DELAY.

4. TWO (2) WORKING DAYS PRIOR TO ANY EXCAVATION, THE CONTRACTOR SHALL CONTACT LINE LOCATING SERVICE FOR LOCATION OF EXISTING UTILITIES.

5. ALL ELECTRICAL, TELEPHONE, CABLE TV, GAS AND OTHER UTILITY LINES, CABLES, AND APPURTENANCES ENCOUNTERED DURING CONSTRUCTION THAT REQUIRE RELOCATION, SHALL BE COORDINATED WITH THAT UTILITY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION OF ALL NECESSARY UTILITY ADJUSTMENTS. NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR DELAYS OR INCONVENIENCES CAUSED BY UTILITY COMPANY WORK CREWS. THE CONTRACTOR MAY BE REQUIRED TO RESCHEDULE HIS ACTIVITIES TO ALLOW UTILITY CREWS TO PERFORM THEIR REQUIRED WORK.

6. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING ALL EXISTING UTILITY LINES WITHIN THE CONSTRUCTION AREA. ANY DAMAGE TO EXISTING FACILITIES CAUSED BY CONSTRUCTION ACTIVITY SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE AND APPROVED BY THE CONSTRUCTION OBSERVER.

7. CONSTRUCTION ACTIVITY SHALL BE LIMITED TO THE PROPERTY AND/OR PROJECT LIMITS. ANY DAMAGE TO ADJACENT PROPERTIES RESULTING FROM THE CONSTRUCTION PROCESS SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE.

8. OVERNIGHT PARKING OF CONSTRUCTION EQUIPMENT SHALL NOT OBSTRUCT DRIVEWAYS OR DESIGNATED TRAFFIC LANES. THE CONTRACTOR SHALL NOT STORE ANY EQUIPMENT OR MATERIAL WITHIN THE PUBLIC RIGHT-OF-WAY.

9. THE CONTRACTOR SHALL OBTAIN ALL THE NECESSARY PERMITS FOR THE PROJECT PRIOR TO COMMENCING CONSTRUCTION (I.E., BARRICADING, TOPSOIL DISTURBANCE, EXCAVATION PERMITS, EPA STORM WATER PERMITS, ETC.).

10. ALL PROPERTY CORNERS DESTROYED DURING CONSTRUCTION SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE. ALL PROPERTY CORNERS MUST BE RESET BY A REGISTERED LAND SURVEYOR.

11. THE CONTRACTOR SHALL PREPARE A CONSTRUCTION TRAFFIC CONTROL AND SIGNING PLAN AND OBTAIN APPROVAL OF SUCH PLAN FROM THE CITY OF ALBUQUERQUE, TRAFFIC ENGINEERING DEPARTMENT, PRIOR TO BEGINNING ANY CONSTRUCTION WORK ON OR ADJACENT TO EXISTING STREETS.

12. ALL BARRICADES AND CONSTRUCTION SIGNING SHALL CONFORM TO APPLICABLE SECTIONS OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD), US DEPARTMENT OF TRANSPORTATION, LATEST EDITION.

13. THE CONTRACTOR SHALL MAINTAIN ALL CONSTRUCTION BARRICADES AND SIGNING AT ALL TIMES. THE CONTRACTOR SHALL VERIFY THE PROPER LOCATION OF ALL BARRICADING AT THE END AND BEGINNING OF EACH DAY.

14. THE CONTRACTOR SHALL TAKE ALL STEPS NECESSARY TO CONFORM WITH EPA REQUIREMENTS, INCLUDING COMPLIANCE WITH NPDES REQUIREMENTS.

GRADING NOTES

1. EXCEPT AS PROVIDED HERIN, GRADING SHALL BE PERFORMED AT THE ELEVATIONS AND IN ACCORDANCE WITH THE DETAILS SHOWN ON THIS PLAN.

2. CONTRACTOR SHALL OBTAIN AND ABIDE BY A TOPSOIL DISTURBANCE PERMIT FROM THE CITY OF ALBUQUERQUE ENVIRONMENTAL HEALTH DIVISION, PRIOR TO CONSTRUCTION. THE COST FOR REQUIRED CONSTRUCTION DUST AND EROSION CONTROL MEASURES SHALL BE INCIDENTAL TO THE PROJECT COST. THE CONTRACTOR SHALL CONFORM TO ALL CITY, COUNTY, STATE, AND FEDERAL DUST CONTROL MEASURES AND REQUIREMENTS AND WILL BE RESPONSIBLE FOR PREPARING AND OBTAINING ALL NECESSARY APPLICATIONS AND APPROVALS.

3. ALL WORK RELATIVE TO FOUNDATION CONSTRUCTION, SITE PREPARATION, AND PAVEMENT INSTALLATION, AS SHOWN ON THIS PLAN, SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE SOILS REPORT. ALL OTHER WORK, UNLESS OTHERWISE STATED OR PROVIDED FOR HEREON, SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS (FIRST PRIORITY), AND/OR THE CITY OF ALBUQUERQUE (COA) STANDARD SPECIFICATIONS FOR PUBLIC WORKS (SECOND PRIORITY)

4. TWO WORKING DAYS PRIOR TO EXCAVATION, CONTRACTOR MUST CONTACT LINE LOCATING SERVICE FOR LOCATION OF EXISTING UTILITIES.

5. PRIOR TO GRADING, ALL VEGETATION DEBRIS, AND NEAR SURFACE ORGANICALLY CONTAMINATED SOIL SHALL BE STRIPPED FROM ALL AREAS TO BE GRADED. VEGETATION AND DEBRIS SHALL BE DISPOSED OF OFF-SITE OR STOCK-PILED FOR USE IN PLANTERS AND NON-STRUCTURAL FILLS.

6. EARTH SLOPES SHALL NOT EXCEED 4 HORIZONTAL TO 1 VERTICAL UNLESS SHOWN OTHERWISE.

7. IT IS THE INTENT OF THESE PLANS THAT THIS CONTRACTOR SHALL NOT PERFORM ANY WORK OUTSIDE OF THE PROPERTY BOUNDARIES EXCEPT AS REQUIRED BY THIS PLAN.

8. THE CONTRACTOR IS TO ENSURE THAT NO SOIL ERODES FROM THE SITE ONTO ADJACENT PROPERTY OR PUBLIC RIGHT-OF-WAY. THIS SHOULD BE ACHIEVED BY CONSTRUCTING TEMPORARY BERMS AT THE PROPERTY LINES WETTING THE SOIL TO PROTECT IT FROM WIND EROSION.

9. A DISPOSAL SITE FOR ALL EXCESS EXCAVATION AND UNSUITABLE MATERIAL SHALL BE OBTAINED BY THE CONTRACTOR IN COMPLIANCE WITH APPLICABLE ENVIRONMENTAL REGULATIONS AND APPROVED BY THE OBSERVER. ALL COSTS INCURRED IN OBTAINING A DISPOSAL SITE AND HAUL THERETO SHALL BE CONSIDERED INCIDENTAL TO THE PROJECT, AND NO SEPARATE MEASUREMENT OR PAYMENT SHALL BE MADE.

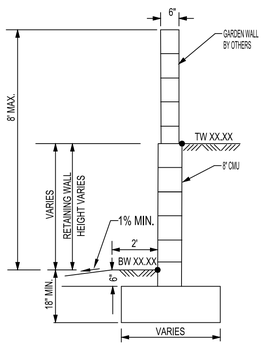
10. PAVING AND ROADWAY GRADES SHALL BE +/- 0.1' FROM PLAN ELEVATIONS. PAD ELEVATION SHALL BE +/- 0.05' FROM BUILDING PLAN ELEVATIONS.

11. ALL SPOT ELEVATIONS ARE TO FLOWLINE UNLESS OTHERWISE NOTED. VALLEY GUTTER ELEVATIONS ARE SHOWN AT FLOWLINE ELEVATION.

12. GRADING SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL REPORT.

LEGEND

PROPOSED SPOT ELEVATION	5235.25
EXISTING SPOT ELEVATION	EX 5235.25
PROPOSED CONTOUR	5025
EXISTING STORM DRAIN LINE	
PROPOSED STORM DRAIN INLET	
PROPOSED STORM DRAIN LINE	
PROPOSED STORM DRAIN MANHOLE	
PROPOSED WATER BLOCK	
PERIMETER WALL	
RETAINING WALL	
GARDEN WALL	
PAD	10 P=5300.00
STREET SLOPE	XX
DIRECTION OF FLOW	
SWALE	
WATER BLOCK	
PEDESTRIAN TRAIL	
SLOPE CHANGE IN REAR YARD	

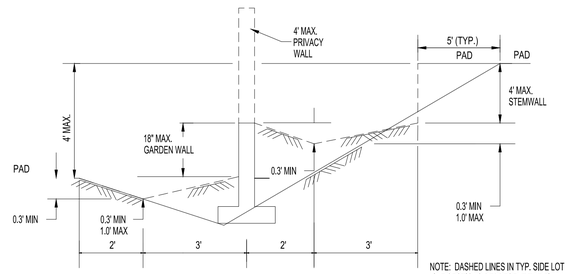


TW=FINISHED GRADE ELEVATION AT TOP OF RETAINING WALL
BW=FINISHED GRADE ELEVATION AT BOTTOM OF RETAINING WALL

TYPICAL RETAINING WALL NOMENCLATURE
NOT TO SCALE

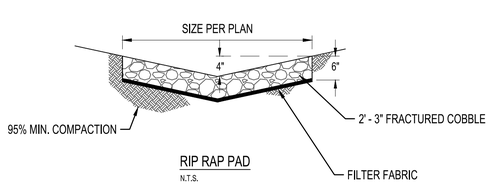
(RETAINING HEIGHT IS TAKEN TO BE DIFFERENCE IN FINISHED GRADES ON LEFT AND RIGHT SIDE OF WALL.)

HEIGHT IS IN ACCORDANCE WITH CITY COMPREHENSIVE ZONING CODE, SECTION 14-16-3-19, GENERAL HEIGHT AND DESIGN REGULATIONS FOR WALLS, FENCES, AND RETAINING WALLS.

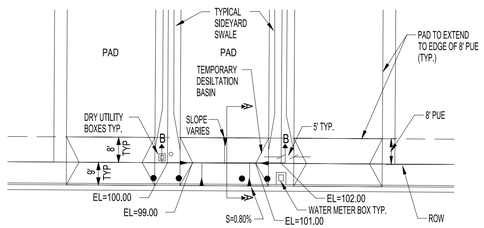


TYPICAL SIDE LOT LINE SECTION
NOT TO SCALE

NOTE: DASHED LINES IN TYP. SIDE LOT LINE SECTIONS REPRESENT THE FINAL CONDITION AFTER THE GARDEN, STEM, AND PRIVACY WALLS HAVE BEEN CONSTRUCTED. THE INTERIM CONDITION, WHICH IS TO BE CONSTRUCTED BY THE GRADING CONTRACTOR AND CERTIFIED BY THE ENGINEER, IS REPRESENTED BY THE SOLID LINES. RETAINING WALLS WILL BE CONSTRUCTED PRIOR TO GRADING CERTIFICATION.

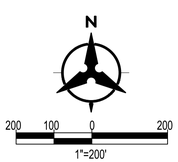


RIP RAP PAD
N.T.S.



TEMPORARY DESILTATION BASIN
NOT TO SCALE

** BOTTOM OF BASIN IS 1' BELOW PROPERTY LINE ELEVATION SEE GRADING PLANS FOR EXACT ELEVATIONS



811
CALL NM ONE-CALL SYSTEM SEVEN (7) DAYS PRIOR TO ANY EXCAVATION

CONSULTANTS
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BENCH MARKS
ACS MONUMENT "2_P9
NAD 1983 CENTRAL ZONE
X=1494599.151 *
Y=1464676.438 *
Z=5056.962 * (NAVD 1988)
G-G=0.999686399
MAPPING ANGLE=0°16'46.36"
*U.S. SURVEY FEET

SEAL

December 5, 2025

NO.	DATE	DESCRIPTION	BY
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DESIGNED BY: KK
DRAWN BY: DO, SMS, RV, RC
CHECKED BY: KK
DATE 12/12/2025

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

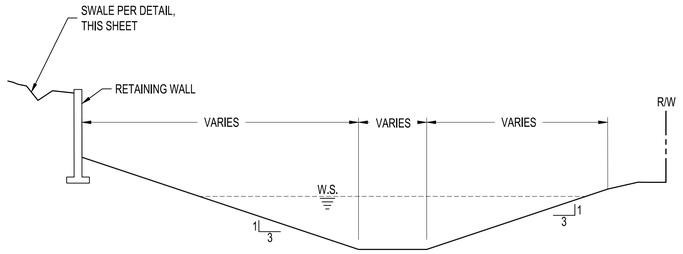
TA LANDS PHASE 1
OVERALL GRADING PLAN

DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL

ZONE MAP NO. N-09-Z
CITY PROJECT NO. 763684
SHEET NO. 3 OF 43

Fri, 5-Dec-2025 - 4:46 pm, Plotted by: SSUSMITA
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BHI JOB NO. 025012.16



SECTION A-A
N.T.S.

MATCHLINE SHEET 5

MATCHLINE SHEET 7

INSTALL COBBLE SWALE
FOR EROSION PROTECTION
SEE DETAIL, THIS SHEET

NORTH POND
BOTTOM = 5041'
POND TOP = 5048'
Qin = 102.6 cfs
Qout = 21.4 cfs
PEAK ELEVATION = 5047.1'
REQUIRED VOLUME = 100,188 CF
PROVIDED VOLUME = 124,349.4 CF
3:1 SIDE SLOPES
1' FREE BOARD

POND TO BE
CONSTRUCTED WITH
INFRASTRUCTURE PLANS

SD OUTLET
INV = 5043

SD OUTLET
INV = 5041

VERMEJO PARK DRIVE

ALCOTA STREET

ULTIMA STREET

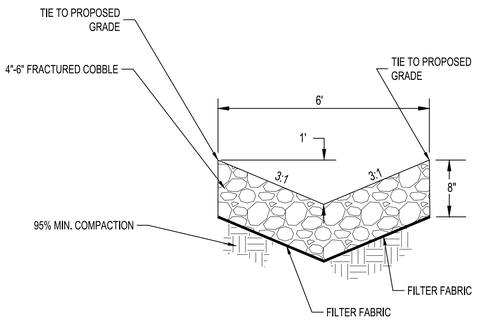
PH1 - 1
30' x 80'
PH1 - 2
35' x 80'
PH1 - 3
30' x 80'
PH1 - 4
30' x 80'
PH1 - 5
PH1 - 230
30' x 80'
PH1 - 231
35' x 80'
PH1 - 232
30' x 80'
PH1 - 233
30' x 80'
PH1 - 234
30' x 80'
PH1 - 235
30' x 80'
PH1 - 236
30' x 80'
PH1 - 237
30' x 80'
PH1 - 283
35' x 80'
PH1 - 48
35' x 80'
PH1 - 49
35' x 80'

LEGEND

PROPOSED SPOT ELEVATION	5235.25
EXISTING SPOT ELEVATION	EX 5235.25
PROPOSED CONTOUR	5025
EXISTING STORM DRAIN LINE	
PROPOSED STORM DRAIN INLET	
PROPOSED STORM DRAIN LINE	
PROPOSED STORM DRAIN MANHOLE	
PROPOSED WATER BLOCK	
PERIMETER WALL	
RETAINING WALL	
GARDEN WALL	
PAD	10 P=5300.00
STREET SLOPE	XX
DIRECTION OF FLOW	
SWALE	
WATER BLOCK	
PEDESTRIAN TRAIL	
SLOPE CHANGE IN REAR YARD	

GRADING KEYNOTES

1. INSTALL RIP RAP PAD PER DETAIL SHEET 3
2. 12' WIDE MAINTENANCE ROAD PER PAVEMENT SECTION



COBBLE SWALE
NOT TO SCALE

N

40 20 0 40
1"=40'

811
CALL NM ONE-CALL SYSTEM
SEVEN (7) DAYS PRIOR TO
ANY EXCAVATION

BHI JOB NO. 20250012

CONSULTANTS

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BENCH MARKS

ACS MONUMENT "2_P9
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*U.S. SURVEY FEET

SEAL

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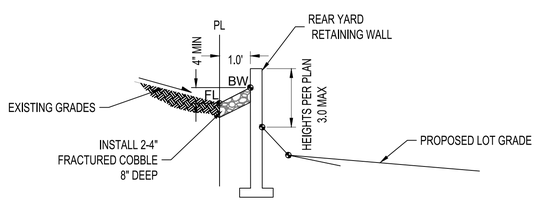
CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

TA LANDS PHASE 1
GRADING PLAN

DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL

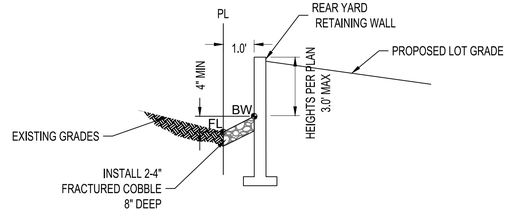
ZONE MAP NO. N-09-Z
CITY PROJECT NO. 763684
SHEET NO. 4 OF 43

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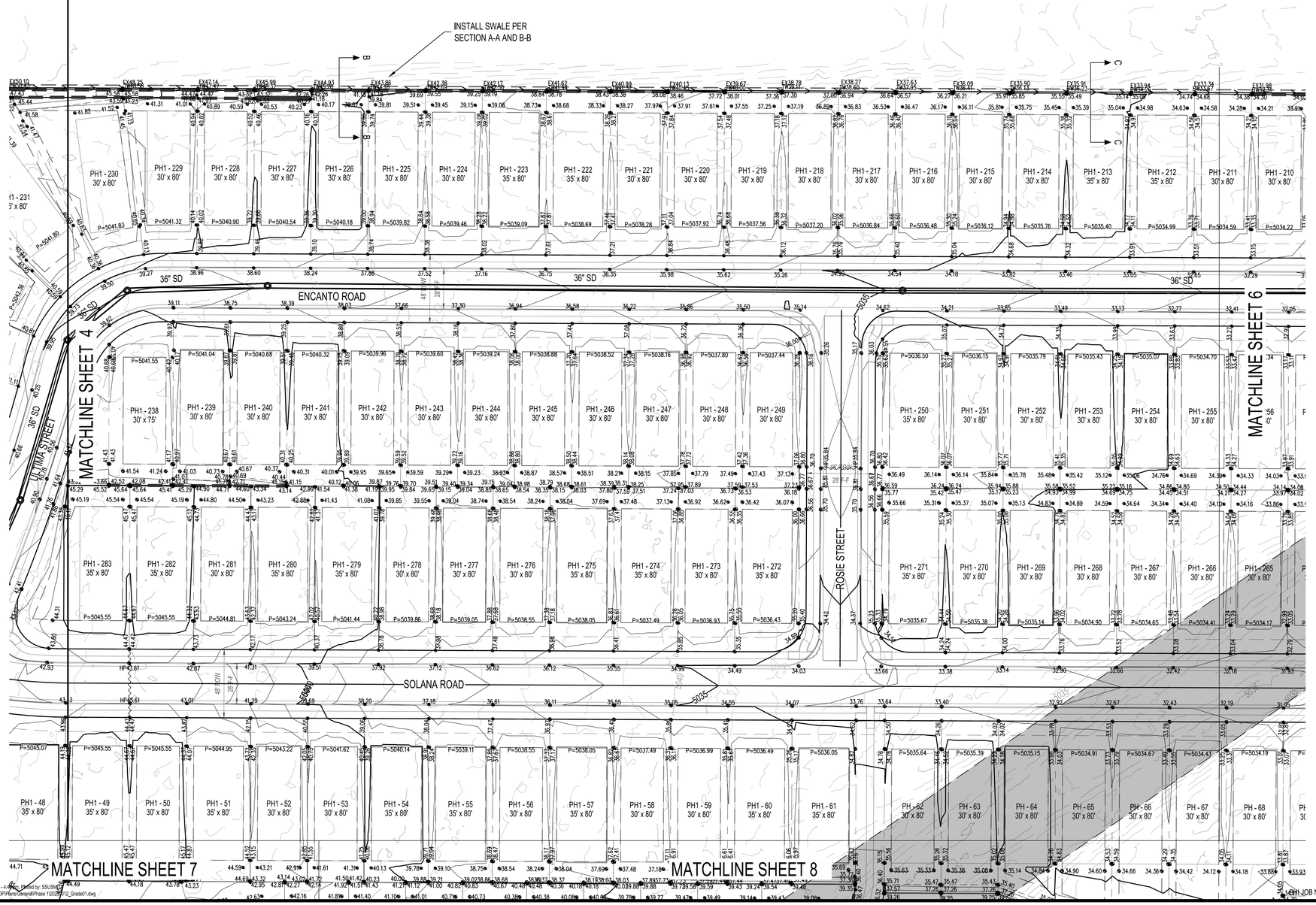
SECTION B-B

N.T.S.



SECTION C-C

N.T.S.



LEGEND

- PROPOSED SPOT ELEVATION — 5235.25
- EXISTING SPOT ELEVATION — EX 5235.25
- PROPOSED CONTOUR — 5025
- EXISTING STORM DRAIN LINE
- PROPOSED STORM DRAIN INLET
- PROPOSED STORM DRAIN LINE
- PROPOSED STORM DRAIN MANHOLE
- PROPOSED WATER BLOCK
- PERIMETER WALL
- RETAINING WALL
- GARDEN WALL
- PAD — 10 P=5300.00
- STREET SLOPE — XX
- DIRECTION OF FLOW
- SWALE
- WATER BLOCK
- PEDESTRIAN TRAIL
- SLOPE CHANGE IN REAR YARD

GRADING KEYNOTES

1. INSTALL RIP RAP PAD PER DETAIL SHEET 3
2. 12' WIDE MAINTENANCE ROAD PER PAVEMENT SECTION

N

40 20 0 40

1"=40'

811

CALL NM ONE-CALL SYSTEM SEVEN (7) DAYS PRIOR TO ANY EXCAVATION

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CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
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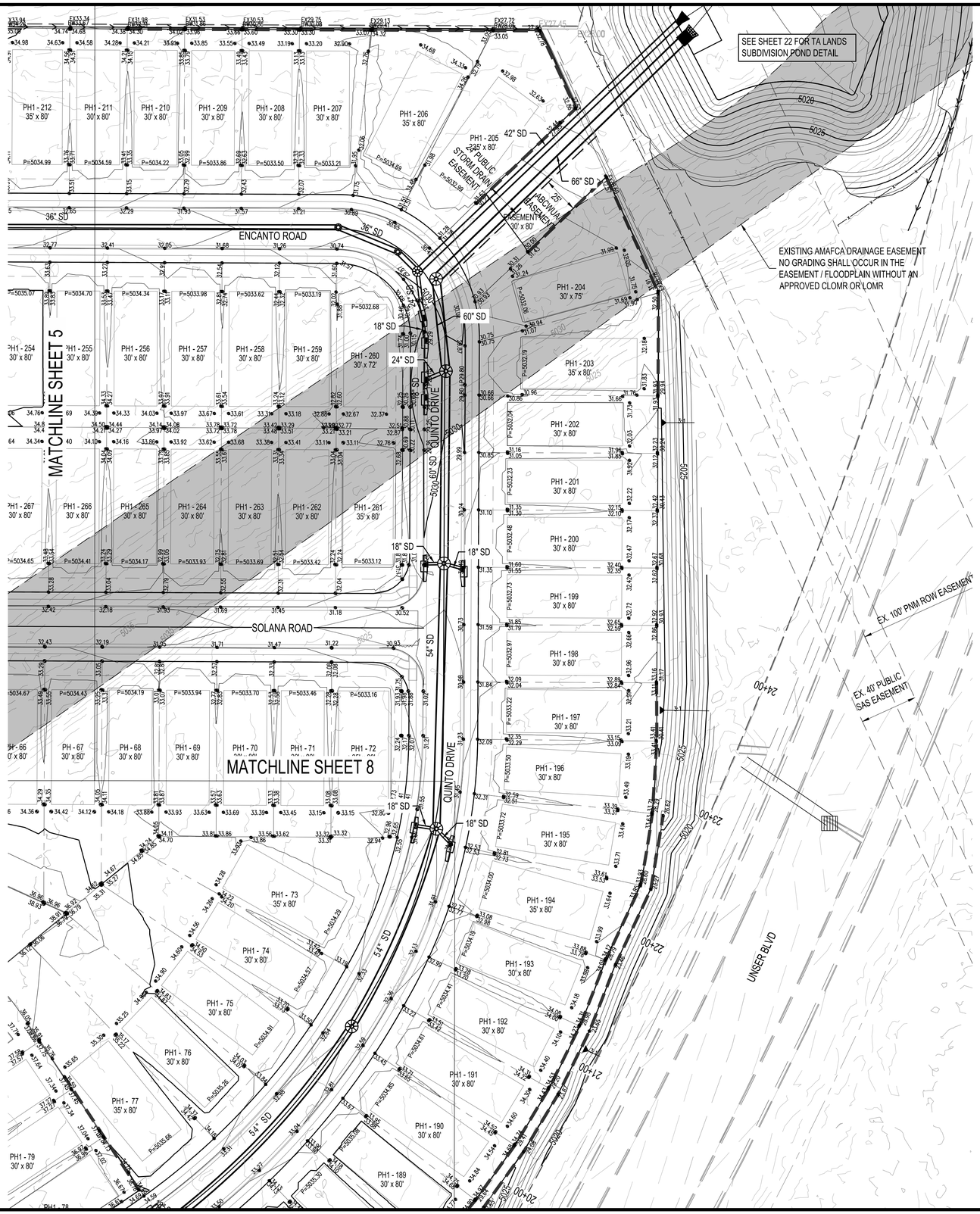
TA LANDS PHASE 1
GRADING PLAN

DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL

ZONE MAP NO. N-09-Z
CITY PROJECT NO. 763684
SHEET NO. 5 OF 43

DRC JOB NO. 20250012

Fri, 5-Dec-2025 - 4:49pm Plotted by: SSUSHER
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LEGEND

- PROPOSED SPOT ELEVATION — 5235.25
- EXISTING SPOT ELEVATION — EX 5235.25
- PROPOSED CONTOUR — 5025
- EXISTING STORM DRAIN LINE
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- PAD — 10 / P=5300.00
- STREET SLOPE — XX
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- SWALE
- WATER BLOCK
- PEDESTRIAN TRAIL
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GRADING KEYNOTES

1. INSTALL RIP RAP PAD PER DETAIL SHEET 3
2. 12' WIDE MAINTENANCE ROAD PER PAVEMENT SECTION

N

40 20 0 40

1"=40'

811

CALL NM ONE-CALL SYSTEM SEVEN (7) DAYS PRIOR TO ANY EXCAVATION

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SEAL

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CHECKED BY: KK
DATE 12/12/2025

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

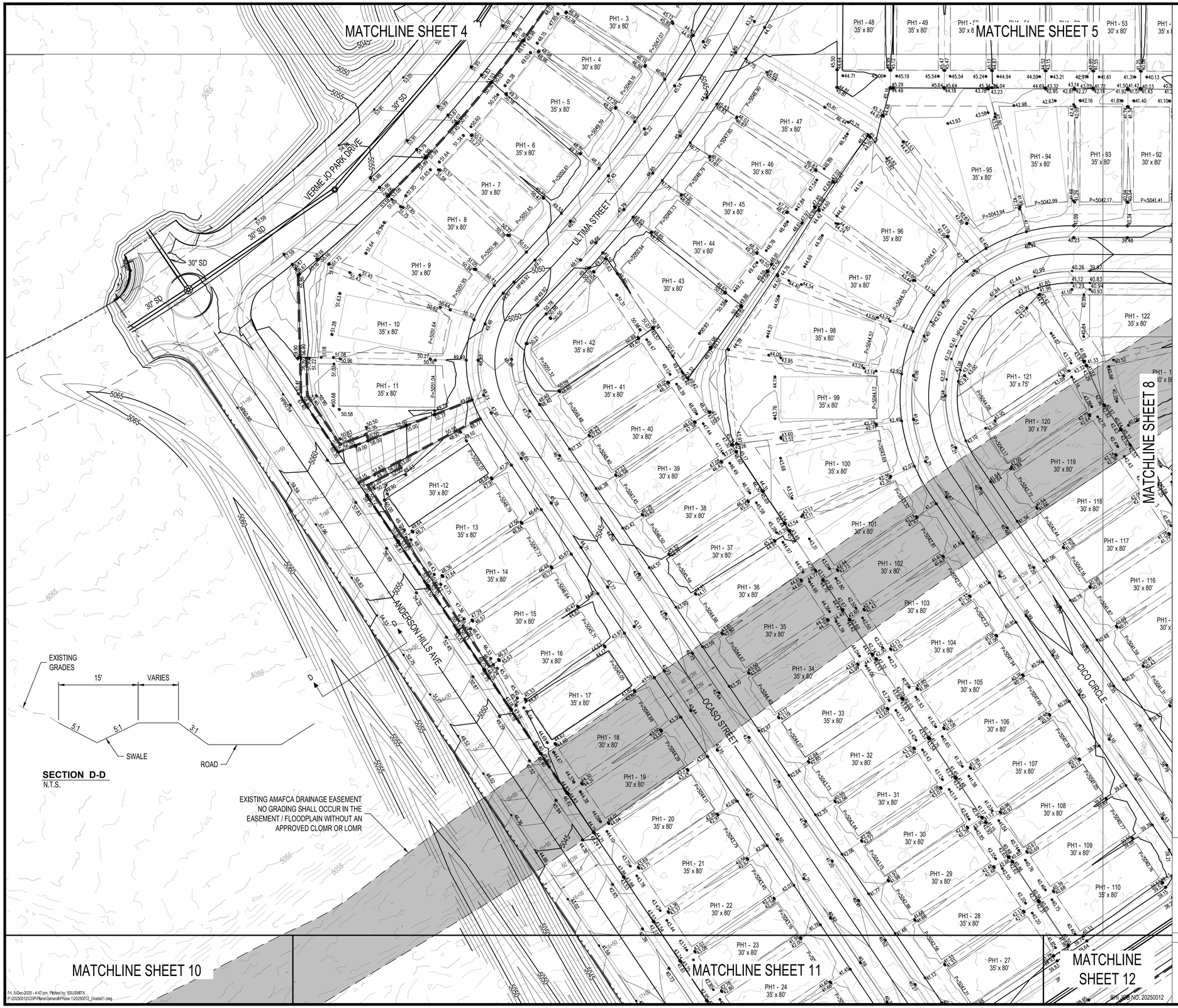
TA LANDS PHASE 1
GRADING PLAN

DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL

ZONE MAP NO. N-09-Z
CITY PROJECT NO. 763684
SHEET NO. 6 OF 43

BHI JOB NO. 20250012

Fri, 5-Dec-2025 - 4:47:pm, Plotted by: SSUSMTA
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LEGEND

- PROPOSED SPOT ELEVATION — 5235.25
- EXISTING SPOT ELEVATION — EX 5235.25
- PROPOSED CONTOUR — 5025
- EXISTING STORM DRAIN LINE
- PROPOSED STORM DRAIN INLET
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- GARDEN WALL
- PAD — 10 P=5300.00
- STREET SLOPE — XX
- DIRECTION OF FLOW
- SWALE
- WATER BLOCK
- PEDESTRIAN TRAIL
- SLOPE CHANGE IN REAR YARD

GRADING KEYNOTES

1. INSTALL RIP RAP PAD PER DETAIL SHEET 3
2. 12' WIDE MAINTENANCE ROAD PER PAVEMENT SECTION

N

40 20 0 40

1"=40'

811

CALL NM ONE-CALL SYSTEM
SEVEN (7) DAYS PRIOR TO
ANY EXCAVATION

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BENCH MARKS

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SEAL

December 5, 2025

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DESIGNED BY:	KK
DRAWN BY:	DO, SMS, RV, RC
CHECKED BY:	KK
DATE	12/12/2025

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

TA LANDS PHASE 1
GRADING PLAN

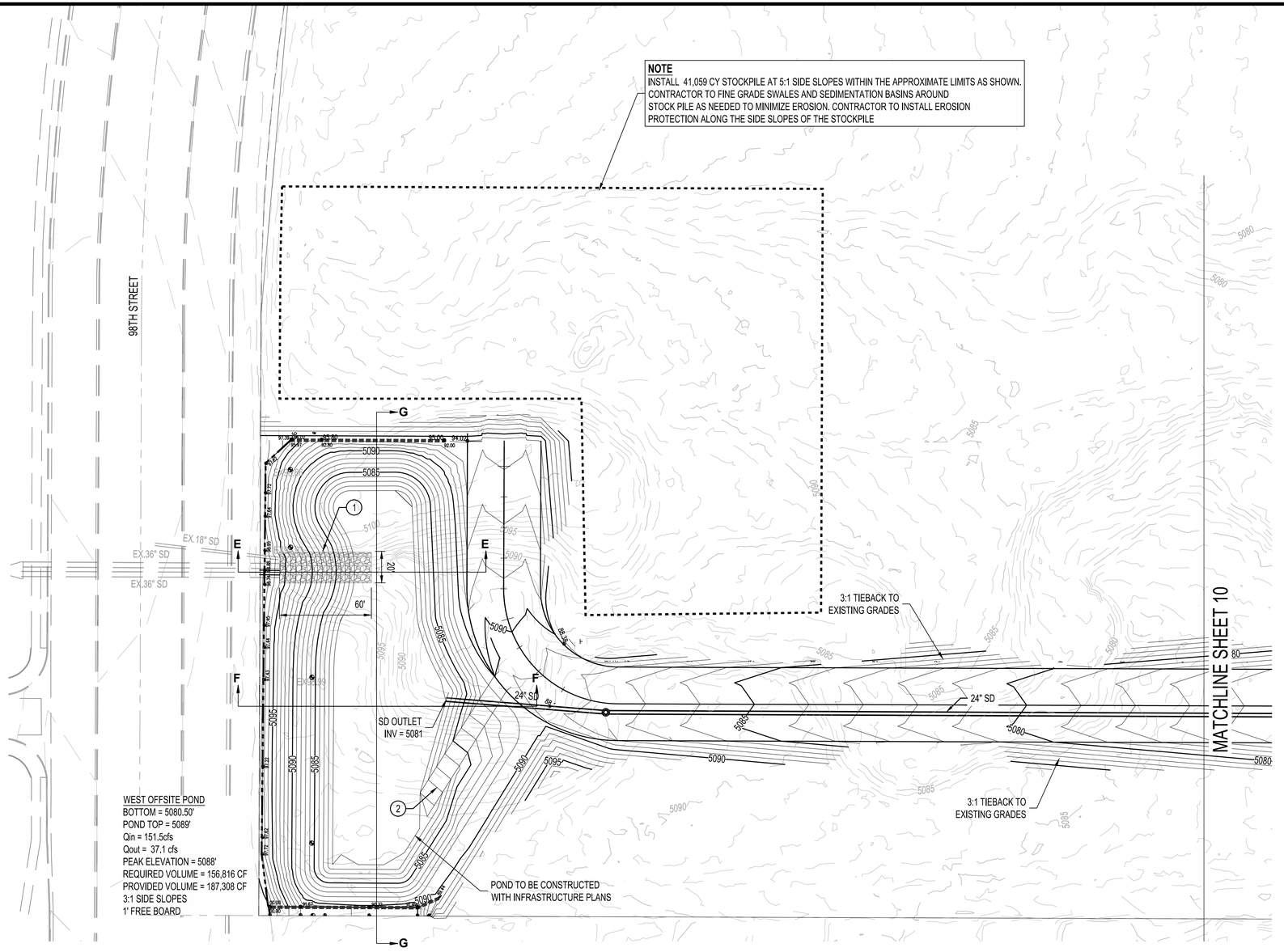
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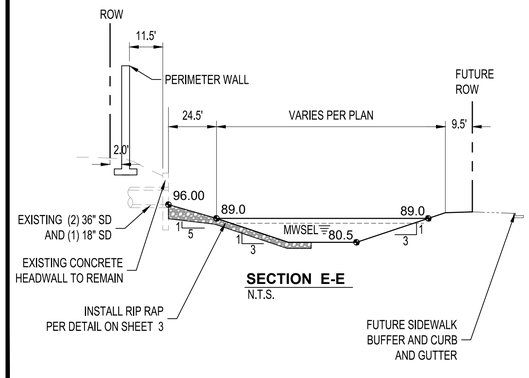
ZONE MAP NO.	N-09-Z
CITY PROJECT NO.	763684
SHEET NO.	7 OF 43

PRT. LOG NO. 20250012

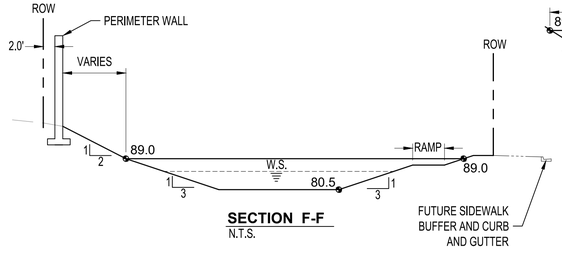
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MATCHLINE SHEET 5
MATCHLINE SHEET 6
MATCHLINE SHEET 7
MATCHLINE SHEET 12
CICO CIRCLE
SOLITA STREET
QUINTO DRIVE
DULCE STREET
PALOMA CIRCLE
UNSER BLVD
5.4' SD
42" SD
48" SD
24" SD
18" SD
PH1 - 52 30' x 80'
PH1 - 53 30' x 80'
PH1 - 54 35' x 80'
PH1 - 55 35' x 80'
PH1 - 56 30' x 80'
PH1 - 57 35' x 80'
PH1 - 58 30' x 80'
PH - 62 30' x 80'
PH - 63 30' x 80'
PH - 64 30' x 80'
PH - 65 30' x 80'
PH - 66 30' x 80'
PH - 67 30' x 80'
PH - 68 30' x 80'
PH1 - 69 30' x 80'
PH1 - 70 30' x 80'
PH1 - 93 35' x 80'
PH1 - 92 30' x 80'
PH1 - 91 30' x 80'
PH1 - 90 35' x 80'
PH1 - 89 30' x 80'
PH1 - 88 30' x 80'
PH1 - 87 30' x 80'
PH1 - 86 35' x 80'
PH1 - 85 35' x 80'
PH1 - 84 35' x 80'
PH1 - 83 35' x 80'
PH1 - 82 35' x 80'
PH1 - 81 30' x 80'
PH1 - 80 30' x 80'
PH1 - 79 30' x 80'
PH1 - 78 35' x 80'
PH1 - 77 35' x 80'
PH1 - 76 30' x 80'
PH1 - 75 30' x 80'
PH1 - 74 30' x 80'
PH1 - 73 35' x 80'
PH1 - 122 35' x 80'
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PH1 - 132 30' x 75'
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PH1 - 136 30' x 75'
PH1 - 137 35' x 80'
PH1 - 138 35' x 80'
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PH1 - 140 35' x 80'
PH1 - 141 35' x 80'
PH1 - 142 35' x 80'
PH1 - 192 30' x 80'
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PH1 - 179 35' x 80'
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PH1 - 176 30' x 80'
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PH1 - 146
PH1 - 145 35' x 80'
PH 143 35' x 80'
PH1 - 94 30' x 80'
PH1 - 119 80'
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PH1 - 116 30' x 80'
PH1 - 115 30' x 80'
PH1 - 114 30' x 80'
PH1 - 113 30' x 80'
PH1 - 112 30' x 80'
PH1 - 111 30' x 80'
PH1 - 108 30' x 80'
PH1 - 109 30' x 80'
PH1 - 110 35' x 80'
P=5042.99
P=5042.17
P=5041.41
P=5041.02
P=5040.74
P=5040.39
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P=5039.78
P=5039.50
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P=5033.72
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P=5037.76
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P=5034.19
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P=5038.02
P=5037.98
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P=5037.76
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P=5037.06
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P=5036.30
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P=5035.53
P=5035.30
P=5035.06
P=5035.00
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5235

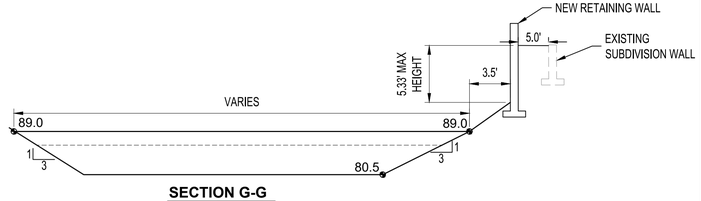




SECTION E-E
N.T.S.



SECTION F-F
N.T.S.



SECTION G-G
N.T.S.

LEGEND

PROPOSED SPOT ELEVATION	5235.25
EXISTING SPOT ELEVATION	EX 5235.25
PROPOSED CONTOUR	5025
EXISTING STORM DRAIN LINE	
PROPOSED STORM DRAIN INLET	
PROPOSED STORM DRAIN LINE	
PROPOSED STORM DRAIN MANHOLE	
PROPOSED WATER BLOCK	
PERIMETER WALL	
RETAINING WALL	
GARDEN WALL	
PAD	10 P=5300.00
STREET SLOPE	XX
DIRECTION OF FLOW	
SWALE	
WATER BLOCK	
PEDESTRIAN TRAIL	
SLOPE CHANGE IN REAR YARD	

GRADING KEYNOTES

1. INSTALL RIP RAP PAD PER DETAIL SHEET 3
2. 12' WIDE MAINTENANCE ROAD PER PAVEMENT SECTION

N

40 20 0 40
1"=40'

CALL NM ONE-CALL SYSTEM SEVEN (7) DAYS PRIOR TO ANY EXCAVATION

CONSULTANTS

Bohannan Huston
www.bhinc.com
800.877.5332

BENCH MARKS

ACS MONUMENT "2_P9
NAD 1983 CENTRAL ZONE
X=1494599.151 *
Y=1464676.438 *
Z=5056.962 * (NAVD 1988)
G-G=0.999686399
MAPPING ANGLE=0°16'46.36"
*U.S. SURVEY FEET

SEAL

December 5, 2025

NO.	DATE	DESCRIPTION	BY
		AS-BUILT INFORMATION	
		CONTRACTOR:	
		WORK STAKED BY:	DATE:
		INSPECTOR'S ACCEPTANCE BY:	DATE:
		FIELD VERIFICATION BY:	DATE:
		DRAWINGS CORRECTED BY:	DATE:

DESIGNED BY: KK
DRAWN BY: DO, SMS, RV, RC
CHECKED BY: KK
DATE 12/12/2025

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

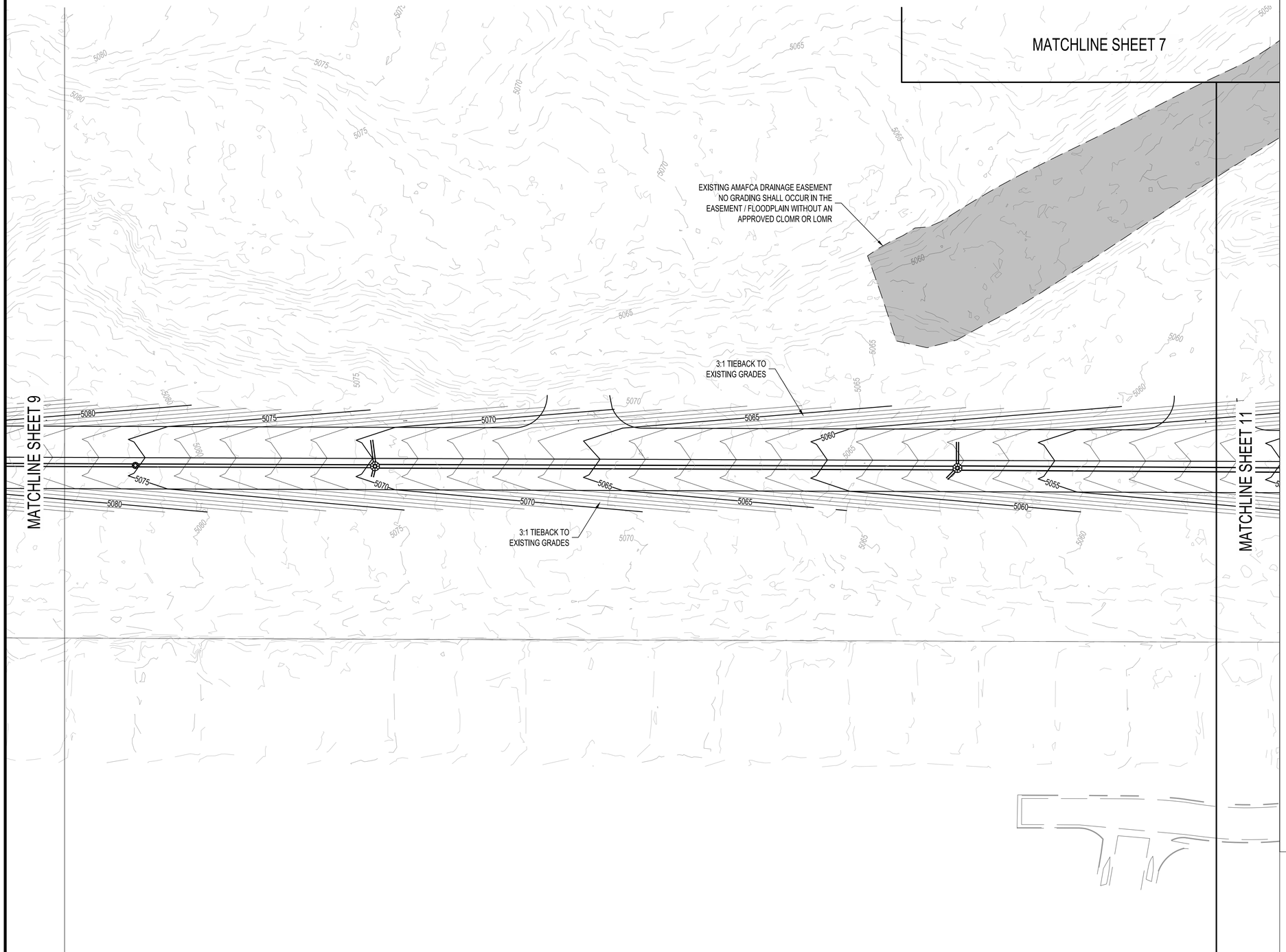
TA LANDS PHASE 1
GRADING PLAN

DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL

ZONE MAP NO. N-09-Z
CITY PROJECT NO. 763684
SHEET NO. 9 OF 43

BHI JOB NO. 20250012

Fri, 5-Dec-2025 - 4:48:pm, Plotted by: SSUSMTA
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LEGEND

PROPOSED SPOT ELEVATION	5235.25
EXISTING SPOT ELEVATION	EX 5235.25
PROPOSED CONTOUR	5025
EXISTING STORM DRAIN LINE	
PROPOSED STORM DRAIN INLET	
PROPOSED STORM DRAIN LINE	
PROPOSED STORM DRAIN MANHOLE	
PROPOSED WATER BLOCK	
PERIMETER WALL	
RETAINING WALL	
GARDEN WALL	
PAD	10 P=5300.00
STREET SLOPE	XX
DIRECTION OF FLOW	
SWALE	
WATER BLOCK	
PEDESTRIAN TRAIL	
SLOPE CHANGE IN REAR YARD	

GRADING KEYNOTES

1. INSTALL RIP RAP PAD PER DETAIL SHEET 3
2. 12' WIDE MAINTENANCE ROAD PER PAVEMENT SECTION

N

40 20 0 40

1"=40'

811

CALL NM ONE-CALL SYSTEM
SEVEN (7) DAYS PRIOR TO
ANY EXCAVATION

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BENCH MARKS

ACS MONUMENT "2_P9
NAD 1983 CENTRAL ZONE
X=1494599.151 *
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G-G=0.999686399
MAPPING ANGLE=0°16'46.36"
*U.S. SURVEY FEET

SEAL

December 5, 2025

NO.	DATE	DESCRIPTION	BY
		AS-BUILT INFORMATION	
		CONTRACTOR:	
		WORK STAKED BY:	DATE:
		INSPECTOR'S ACCEPTANCE BY:	DATE:
		FIELD VERIFICATION BY:	DATE:
		DRAWINGS CORRECTED BY:	DATE:

DESIGNED BY: KK
DRAWN BY: DO, SMS, RV, RC
CHECKED BY: KK
DATE 12/12/2025

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

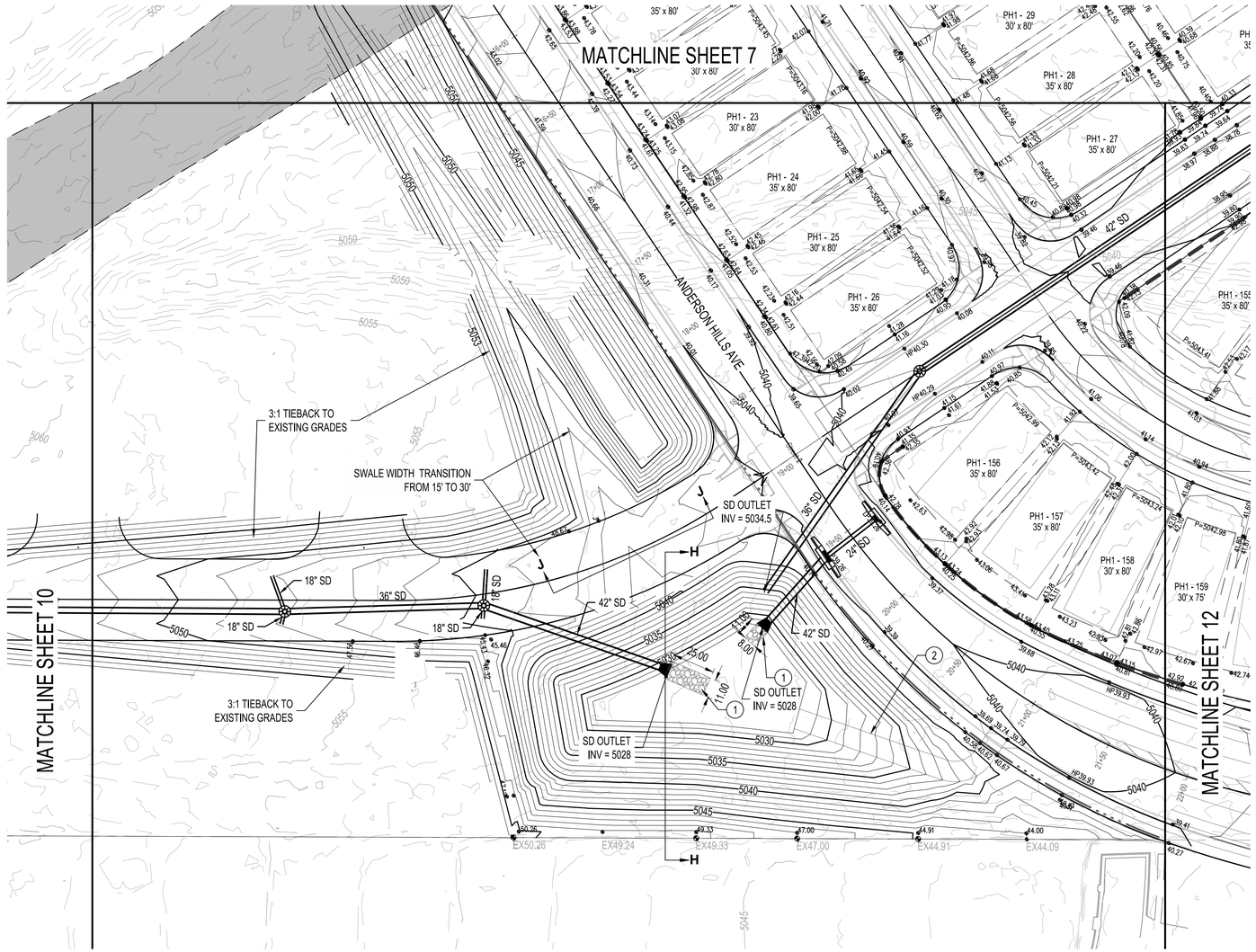
TA LANDS PHASE 1
GRADING PLAN

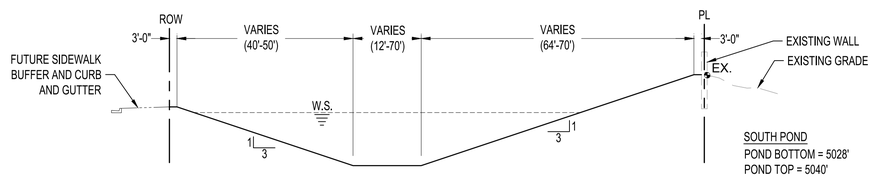
DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL

ZONE MAP NO. N-09-Z
CITY PROJECT NO. 763684
SHEET NO. 10 OF 43

BHI JOB NO. 20250012

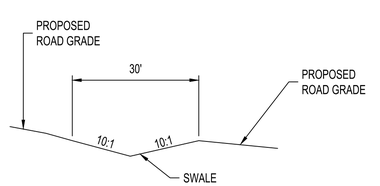
Fri, 5-Dec-2025 - 4:49:pm, Plotted by: SSUSMITA
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SECTION H-H
N.T.S.

SOUTH POND
POND BOTTOM = 5028'
POND TOP = 5040'
Qin = 108.5 cfs
Qout = 54.8 cfs
PEAK ELEVATION = 5039'
REQUIRED VOLUME = 139,392 CF
PROVIDED VOLUME = 161,602.8 CF
3:1 SIDE SLOPES
1' FREE BOARD



SECTION J- J
N.T.S.

LEGEND

PROPOSED SPOT ELEVATION	5235.25
EXISTING SPOT ELEVATION	EX 5235.25
PROPOSED CONTOUR	5025
EXISTING STORM DRAIN LINE	
PROPOSED STORM DRAIN INLET	
PROPOSED STORM DRAIN LINE	
PROPOSED STORM DRAIN MANHOLE	
PROPOSED WATER BLOCK	
PERIMETER WALL	
RETAINING WALL	
GARDEN WALL	
PAD	10 P=5300.00
STREET SLOPE	XX
DIRECTION OF FLOW	
SWALE	
WATER BLOCK	
PEDESTRIAN TRAIL	
SLOPE CHANGE IN REAR YARD	

GRADING KEYNOTES

1. INSTALL RIP RAP PAD PER DETAIL SHEET 3
2. 12' WIDE MAINTENANCE ROAD PER PAVEMENT SECTION

N

40 20 0 40
1"=40'

CALL NM ONE-CALL SYSTEM SEVEN (7) DAYS PRIOR TO ANY EXCAVATION

811

CONSULTANTS

Bohannan Huston
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800.877.5332

BENCH MARKS

ACS MONUMENT "2_P9
NAD 1983 CENTRAL ZONE
X=1494599.151 *
Y=1464676.438 *
Z=5056.962 * (NAVD 1988)
G-G=0.999686399
MAPPING ANGLE=0°16'46.36"
*U.S. SURVEY FEET

SEAL

December 5, 2025

NO.	DATE	DESCRIPTION	BY
		AS-BUILT INFORMATION	
		CONTRACTOR:	
		WORK STAKED BY:	DATE:
		INSPECTOR'S ACCEPTANCE BY:	DATE:
		FIELD VERIFICATION BY:	DATE:
		DRAWINGS CORRECTED BY:	DATE:

DESIGNED BY: KK
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CHECKED BY: KK
DATE 12/12/2025

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

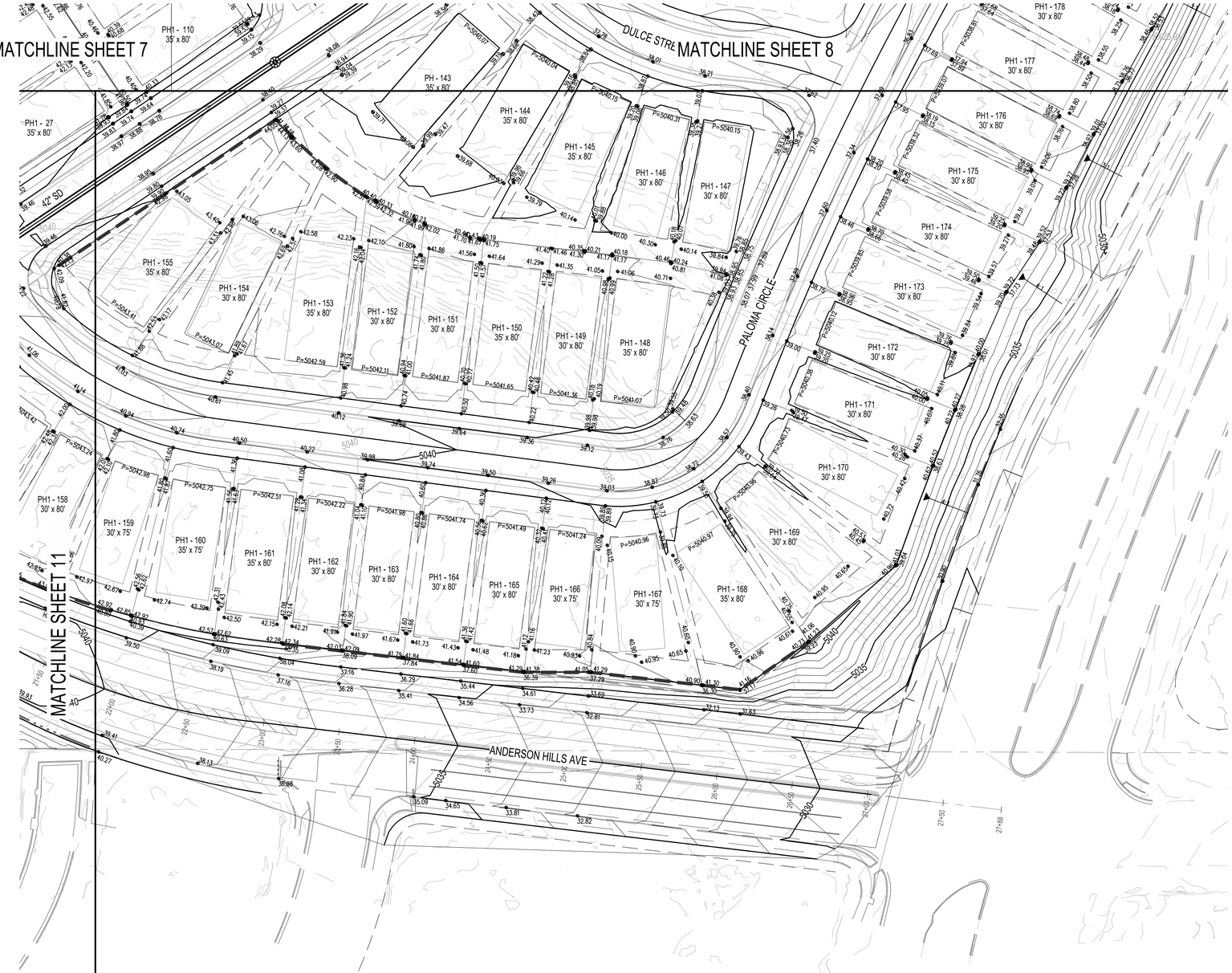
TA LANDS PHASE 1
GRADING PLAN

DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL

ZONE MAP NO. N-09-Z
CITY PROJECT NO. 763684
SHEET NO. 11 OF 43

BHI JOB NO. 20250012

Fri, 5-Dec-2025 - 4:49:pm, Plotted by: SSUSMITA
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LEGEND

PROPOSED SPOT ELEVATION	5235.25
EXISTING SPOT ELEVATION	EX 5235.25
PROPOSED CONTOUR	5025
EXISTING STORM DRAIN LINE	
PROPOSED STORM DRAIN INLET	
PROPOSED STORM DRAIN LINE	
PROPOSED STORM DRAIN MANHOLE	
PROPOSED WATER BLOCK	
PERIMETER WALL	
RETAINING WALL	
GARDEN WALL	
PAD	10 P=5300.00
STREET SLOPE	XX
DIRECTION OF FLOW	
SWALE	
WATER BLOCK	
PEDESTRIAN TRAIL	
SLOPE CHANGE IN REAR YARD	

GRADING KEYNOTES

1. INSTALL RIP RAP PAD PER DETAIL SHEET 3
2. 12' WIDE MAINTENANCE ROAD PER PAVEMENT SECTION

N

40 20 0 40

1"=40'

811

CALL NM ONE-CALL SYSTEM SEVEN (7) DAYS PRIOR TO ANY EXCAVATION

CONSULTANTS

Bohannan Huston
www.bhinc.com
800.877.5332

BENCH MARKS

ACS MONUMENT "2_P9
NAD 1983 CENTRAL ZONE
X=1494599.151 *
Y=1464676.438 *
Z=5056.962 * (NAVD 1988)
G-G=0.999686399
MAPPING ANGLE=0°16'46.36"
*U.S. SURVEY FEET

SEAL

December 5, 2025

NO.	DATE	DESCRIPTION	BY
		AS-BUILT INFORMATION	
		CONTRACTOR:	
		WORK STAKED BY: DATE:	
		INSPECTOR'S ACCEPTANCE BY: DATE:	
		FIELD VERIFICATION BY: DATE:	
		DRAWINGS CORRECTED BY: DATE:	

DESIGNED BY: KK
DRAWN BY: DO, SMS, RV, RC
CHECKED BY: KK
DATE 12/12/2025

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

TA LANDS PHASE 1
GRADING PLAN

DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL

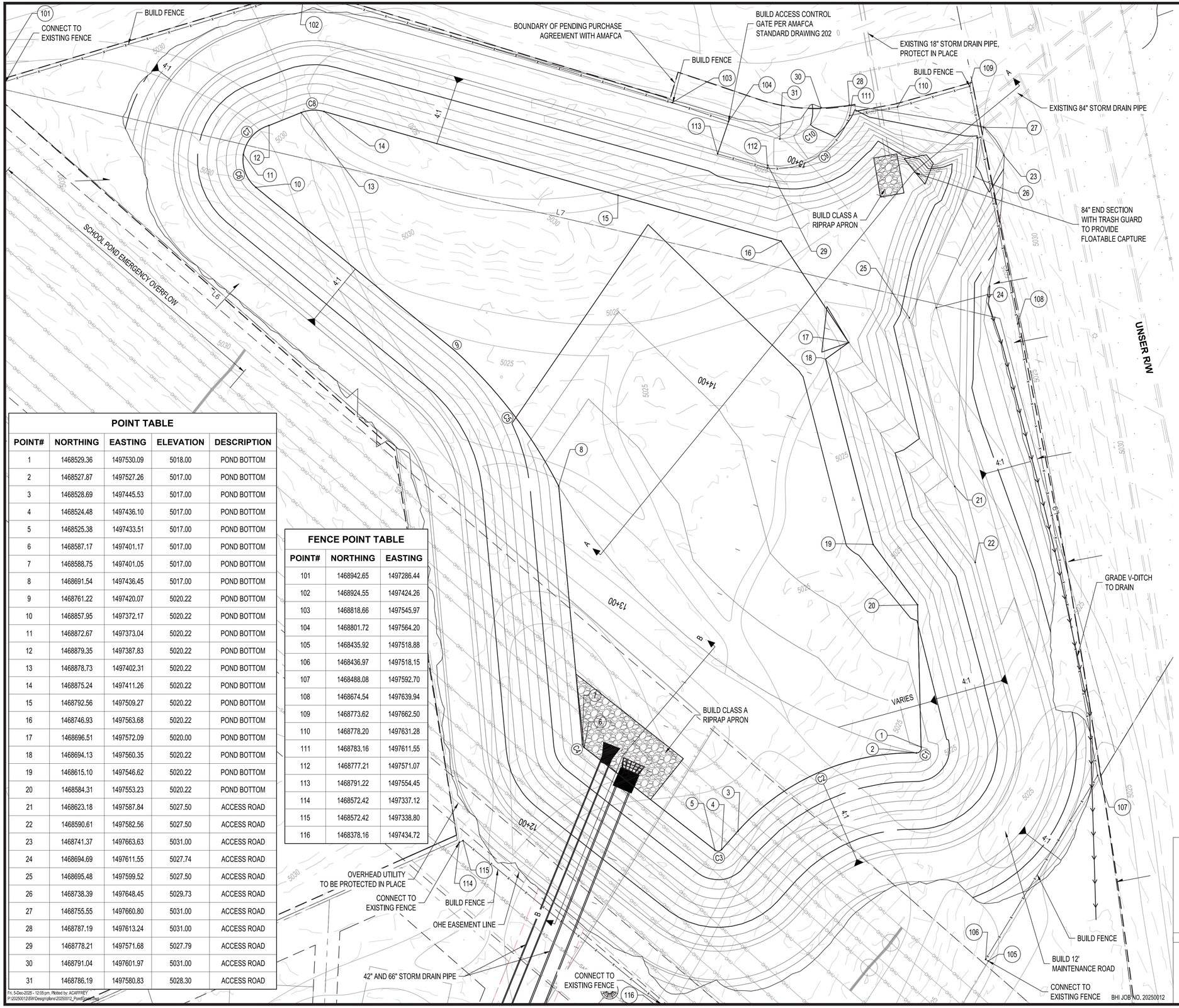
ZONE MAP NO. N-09-Z
CITY PROJECT NO. 763684
SHEET NO. 12 OF 43

BHI JOB NO. 20250012

Fri, 5-Dec-2025 - 4:50:pm, Plotted by: SSUSMITA
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EXHIBIT H

TA LANDS SUBDIVISION POND GRADING PLAN



LEGEND

PROPOSED SPOT ELEVATION	5235.25
EXISTING SPOT ELEVATION	EX 5235.25
PROPOSED CONTOUR	5025
EXISTING STORM DRAIN LINE	
PROPOSED STORM DRAIN INLET	
PROPOSED STORM DRAIN LINE	
PROPOSED STORM DRAIN MANHOLE	
PROPOSED WATER BLOCK	
PERIMETER WALL	
RETAINING WALL	
GARDEN WALL	
PAD	10 P=5300.00
TURNED BLOCK WITH SWALE SEE SWALE DETAIL SHEET 1	TB
STREET SLOPE	XX
DIRECTION OF FLOW	

POND DATA

CUT	16,057 CY
FILL	2102 CY
BALANCE	-13955 CY
STORAGE VOLUME 100 YR.	6.9 AC-FT.
WATER QUALITY STORAGE	1.7 AC-FT.
BOTTOM OF POND	5017 FT.
WSEL 100 YR.	5024 FT.
CREST ELEVATION	5727.5 FT.
TOP OF EMBANKMENT	5727.5 FT.
Q100 IN	222 CFS
Q100 OUT	93 CFS
V100 OUT	2.4 FPS
INUNDATION AREA 100 YR.	63016 SQ. FT.
LENGTH OF TIME TO DRAIN	24.0 HOURS

EARTHWORK VOLUMES FOR INFORMATION ONLY

CURVE TABLE

ID	RADIUS	ARC	DELTA	TANGENT
C1	2.00'	3.70'	106° 01' 53"	2.66'
C2	98.00'	84.32'	49° 17' 42"	44.97'
C3	2.00'	3.02'	86° 26' 27"	1.88'
C4	2.00'	1.63'	46° 37' 54"	0.86'
C5	199.10'	71.97'	20° 42' 36"	36.38'
C6	14.88'	15.43'	59° 23' 55"	8.49'
C7	15.18'	17.12'	64° 37' 12"	9.60'
C8	14.88'	9.78'	37° 38' 56"	5.07'
C9	31.00'	46.86'	86° 36' 57"	29.22'
C10	19.79'	22.96'	66° 28' 01"	12.97'

POINT TABLE

POINT#	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	1468529.36	1497530.09	5018.00	POND BOTTOM
2	1468527.87	1497527.26	5017.00	POND BOTTOM
3	1468528.69	1497445.53	5017.00	POND BOTTOM
4	1468524.48	1497436.10	5017.00	POND BOTTOM
5	1468525.38	1497433.51	5017.00	POND BOTTOM
6	1468587.17	1497401.17	5017.00	POND BOTTOM
7	1468588.75	1497401.05	5017.00	POND BOTTOM
8	1468691.54	1497436.45	5017.00	POND BOTTOM
9	1468761.22	1497420.07	5020.22	POND BOTTOM
10	1468857.95	1497372.17	5020.22	POND BOTTOM
11	1468872.67	1497373.04	5020.22	POND BOTTOM
12	1468879.35	1497387.83	5020.22	POND BOTTOM
13	1468878.73	1497402.31	5020.22	POND BOTTOM
14	1468875.24	1497411.26	5020.22	POND BOTTOM
15	1468792.56	1497509.27	5020.22	POND BOTTOM
16	1468746.93	1497563.68	5020.22	POND BOTTOM
17	1468696.51	1497572.09	5020.00	POND BOTTOM
18	1468694.13	1497560.35	5020.22	POND BOTTOM
19	1468615.10	1497546.62	5020.22	POND BOTTOM
20	1468584.31	1497553.23	5020.22	POND BOTTOM
21	1468623.18	1497587.84	5027.50	ACCESS ROAD
22	1468590.61	1497582.56	5027.50	ACCESS ROAD
23	1468741.37	1497663.63	5031.00	ACCESS ROAD
24	1468694.69	1497611.55	5027.74	ACCESS ROAD
25	1468695.48	1497599.52	5027.50	ACCESS ROAD
26	1468738.39	1497648.45	5029.73	ACCESS ROAD
27	1468755.55	1497660.80	5031.00	ACCESS ROAD
28	1468787.19	1497613.24	5031.00	ACCESS ROAD
29	1468778.21	1497571.68	5027.79	ACCESS ROAD
30	1468791.04	1497601.97	5031.00	ACCESS ROAD
31	1468786.19	1497580.83	5028.30	ACCESS ROAD

FENCE POINT TABLE

POINT#	NORTHING	EASTING
101	1468942.65	1497286.44
102	1468924.55	1497424.26
103	1468818.66	1497545.97
104	1468801.72	1497564.20
105	1468435.92	1497518.88
106	1468436.97	1497518.15
107	1468488.08	1497592.70
108	1468674.54	1497639.94
109	1468773.62	1497662.50
110	1468778.20	1497631.28
111	1468783.16	1497611.55
112	1468777.21	1497571.07
113	1468791.22	1497554.45
114	1468572.42	1497337.12
115	1468572.42	1497338.80
116	1468378.16	1497434.72

30 15 0 30
1"=30'

CALL NM ONE-CALL SYSTEM SEVEN (7) DAYS PRIOR TO ANY EXCAVATION

CONSULTANTS

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BENCH MARKS

CENTERLINE MONUMENT
GEOGRAPHIC POSITION (NAD 1983)
NM STATE PLANE GRID COORDINATES (CENTRAL ZONE)
N = 1,466,851.79 U.S. SURVEY FEET
E = 1,496,482.20 U.S. SURVEY FEET
NAVD 88 ELEVATION = 5,036.06 (U.S. SURVEY FT)

SEAL

ANNA D. CAFFREY NEW MEXICO 18095 PROFESSIONAL ENGINEER 12/5/25

NO.	DATE	DESCRIPTION	BY
		AS-BUILT INFORMATION	
		CONTRACTOR:	
		WORK STAKED BY: DATE:	
		INSPECTOR'S ACCEPTANCE BY: DATE:	
		FIELD VERIFICATION BY: DATE:	
		DRAWINGS CORRECTED BY: DATE:	

DESIGNED BY: AC
DRAWN BY: AC
CHECKED BY: AE
DATE 12/5/2025

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

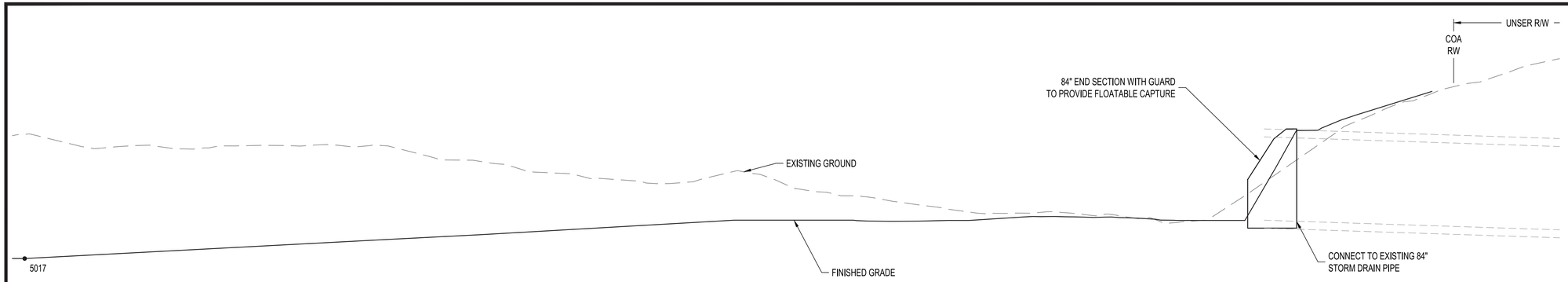
TA LANDS
POND
POND GRADING PLAN

DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL

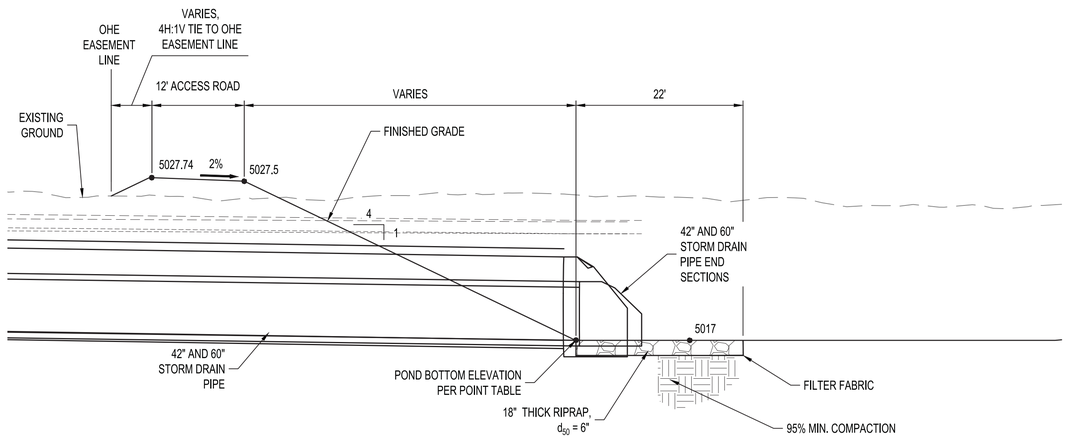
ZONE MAP NO. N-9-Z
CITY PROJECT NO. ----
SHEET NO. 22 OF 23

BHI JOB NO. 20250012

Fri, 5-Dec-2025 - 12:05 pm Plotted by: ACAFFREY
P:\20250012\SW\Design\plans\20250012_PondGrading.dgn



PRIMARY OUTLET SECTION A-A
SCALE: 1" = 10' HORIZ.
1" = 5' VERT.



PRIMARY INLET SECTION B-B
SCALE: 1" = 10' HORIZ.
1" = 5' VERT.

10 5 0 10
1"=10'

CALL NM ONE-CALL SYSTEM
SEVEN (7) DAYS PRIOR TO
ANY EXCAVATION

Bohannan Huston
www.bhinc.com
800.877.5332

CONSULTANTS

BENCH MARKS

CENTERLINE MONUMENT
GEOGRAPHIC POSITION (NAD 1983)
NM STATE PLANE GRID COORDINATES (CENTRAL ZONE)
N = 1,466,851.79 U.S. SURVEY FEET
E = 1,496,482.20 U.S. SURVEY FEET
NAVD 88 ELEVATION = 5,036.06 (U.S. SURVEY FT)

SEAL

ANNA O CAFFREY NEW MEXICO 18095 PROFESSIONAL ENGINEER 12.5.25

NO.	DATE	DESCRIPTION	BY
		AS-BUILT INFORMATION	
		CONTRACTOR:	
		WORK STAKED BY: DATE:	
		INSPECTOR'S ACCEPTANCE BY: DATE:	
		FIELD VERIFICATION BY: DATE:	
		DRAWINGS CORRECTED BY: DATE:	

DESIGNED BY: AC
DRAWN BY: AC
CHECKED BY: AE
DATE 12/5/2025

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

TA LANDS
POND
POND DETAILS

DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL

ZONE MAP NO. N-9-Z
CITY PROJECT NO. ---
SHEET NO. 23 OF 23

BHI JOB NO. 20250012

Fri, 5-Dec-2025 - 12:04 pm, Plotted by: ACAFFREY
P:\20250012\SW\Design\dwg\20250012_PondDetails.dwg

EXHIBIT I

SUPPORTING MASTER DRAINAGE PLANS

EXCERPT FROM: Desert Sands Subdivision Drainage Analysis Report, N09D014_PP_Cmmt2

Sump Inlet Summary Table

Inlet #	Alignment	Type	Area (SF)	Effective Perimiter (FT)	Q100 (CFS)	Orifice depth[1] (FT)	Weir Depth[2] (FT)	Top of Curb Elevation	100-YR Water Surface Elev.	Overflow Crest Elevation	Emergency Overflow Depth	Emergency Overflow Elevation	Lowest Adjacent Pad Elevation
7	E	Dbl 'C'	17.39	10.50	12.88	0.02	0.55	5107.51	5107.52	5107.78	0.67	5108.45	5108.70
8	E	Dbl 'C'	17.39	10.50	12.88	0.02	0.55	5107.51	5107.52	5107.78	0.67	5108.45	5108.70
11	F	Dbl 'C'	16.09	10.50	10.22	0.02	0.47	5107.59	5107.52	5107.78	0.67	5108.45	5108.70
12	F	Dbl 'C'	16.09	10.50	10.22	0.02	0.47	5107.59	5107.52	5107.78	0.67	5108.45	5108.70
15	D	Dbl 'C'	16.09	10.50	6.38	0.01	0.34	5107.74	5107.54	5107.57	0.40	5107.97	5108.70
16	D	Dbl 'C'	16.09	10.50	6.38	0.01	0.34	5107.74	5107.54	5107.57	0.40	5107.97	5108.70

1) Orifice Equa Q = 0.6 A (2gh)$^{0.5}$ so h=(Q/.6/A)^2/2/g
2) Weir Equati Q = 3 L h$^{3/2}$ so h= (Q/3/L)$^{2/3}$
3) The orifice equation is used in accordance with FHA HEC-22, and the height is added to the center of the grate elevation which is 0.72' below the top of curb elevation.
4) The weir equation is used in accordance with FHA HEC-22, and the height is added to the lip of gutter elevation which is 0.54' below the top of curb elevation.
5) The Area and Effective Perimiter are calculated by "Hydraulic Tool Box 4.2" in accordance with Federal Highway Administration HEC-22 3rd eddition, Rev Aug., 2013
6) Emergency Overflow from inlets #7, 8, 11, & 12 goes south in alignment F to alignment D. The total flow is 52.58 cfs and has a normal depth of 0.67' at 0.5% slope.
7) Emergency Overflow from inlets #15 & 16 goes east in alignment D to 98th St. The total flow is 12.28 cfs and has a critical depth of 0.40' at the high spot.

Storm Drain Pipe Summary

Inlet Location	Inlet ID #	Inlet Q_{100} cfs	Pipe Q_{100} cfs	Pipe ID #	Pipe SLOPE %	Pipe Diam. in	Pipe Capacity cfs	Pipe Velocity fps	Pipe K	Pipe Area sf
Sacate Blanco Ave.	13	6.60	13.20	18	0.50	24	15.99	4.20	226.2	3.142
Sacate Blanco Ave.	14	6.60	6.60	19	0.50	18	7.42	3.74	105.00	1.767
Sacate Blanco Ave.	15	6.38	6.38	20	0.50	18	7.42	3.61	105.00	1.767
Sacate Blanco Ave.	16	6.38	25.96	21	0.50	36	47.16	3.67	666.9	7.069
Farinosa Ave.	1	7.50	7.50	1	1.00	18	10.50	4.24	105	1.767
Farinosa Ave.	2	7.50	7.50	2	2.70	18	17.25	4.24	105.00	1.767
Farinosa Ave.	3	6.00	6.00	3	1.00	18	10.50	3.40	105	1.767
Farinosa Ave.	4	6.00	6.00	4	1.00	18	10.50	3.40	105	1.767
Farinosa Ave.			38.80	5	0.50	36	47.16	5.49	666.9	7.069
Farinosa Ave.	5	7.50	7.50	6	1.00	18	10.50	4.24	105	1.767
Farinosa Ave.	6	7.50	7.50	7	1.00	18	10.50	4.24	105	1.767
Farinosa Ave.			53.80	8	0.60	42	77.92	5.59	1006	9.621
Farinosa Ave.	7	12.88	12.88	9	1.00	24	22.62	4.10	226.2	3.142
Farinosa Ave.	8	12.88	12.88	10	1.00	24	22.62	4.10	226.2	3.142
Farinosa Ave.			79.56	11	0.70	42	84.17	8.27	1006	9.621
Tierra Dorando Dr.	9	6.10	6.10	12	1.00	18	10.50	3.45	105	1.767
Tierra Dorando Dr.	10	6.10	12.20	13	0.50	24	15.99	3.88	226.2	3.142
Tierra Dorando Dr.	11	10.22	10.22	14	1.20	18	11.50	5.78	105	1.767
Tierra Dorando Dr.	12	10.22	32.64	15	0.50	36	47.16	4.62	666.9	7.069
Tierra Dorando Dr.			112.20	16	0.70	54	164.57	7.05	1967	15.904
Lot 29 Esm't			138.15	17	1.00	54	196.70	8.69	1967	15.904
Ex Double 36" RCP @ 98th St.			138.15	18	2.00	36	188.63	9.77	666.9	7.069
Farinosa Ave.	17	5.90	5.90	22	1.00	18	10.50	3.34	105.00	1.767
Farinosa Ave.	18	5.90	5.90	23	1.00	18	10.50	3.34	105.00	1.767
Farinosa Ave.			11.80	24	4.10	24	45.80	3.76	226.2	3.142
Farinosa Ave.			26.80	25	2.70	24	37.17	8.53	226.2	3.142

Hydrology and Surface Drainage Summary

Hydrology

BASIN ID	AREA (Ac)	Ground Cover (%) A	B	C	D	Peak 100-YR Flow Q_{100} (cfs) Incremental	Surface
101	4.10	-	19	19	62	14.93	14.93
102	3.03	-	19	19	62	11.03	25.96
							12.76
103	3.32	-	19	19	62	12.09	12.09
104	1.70	-	19	19	62	6.19	18.27
105	4.14	-	19	19	62	15.07	15.07
106	3.08	-	19	19	62	11.21	26.28
107	1.22	-	19	19	62	4.44	37.20
							22.20
108	3.56	-	19	19	62	12.96	26.70
109	1.06	-	19	19	62	3.86	40.76
							25.76
111	3.79	-	19	19	62	13.80	13.80
112	1.45	-	19	19	62	5.28	19.08
113	2.31	-	19	19	62	8.41	27.49
116	1.53	-	19	19	62	5.57	19.31
117	2.81	-	19	19	62	10.23	29.54
118	0.85	-	19	19	62	3.09	20.44
119	0.81	-	19	19	62	2.95	15.70
120	1.23	-	0	66	34	4.16	
						130.33	

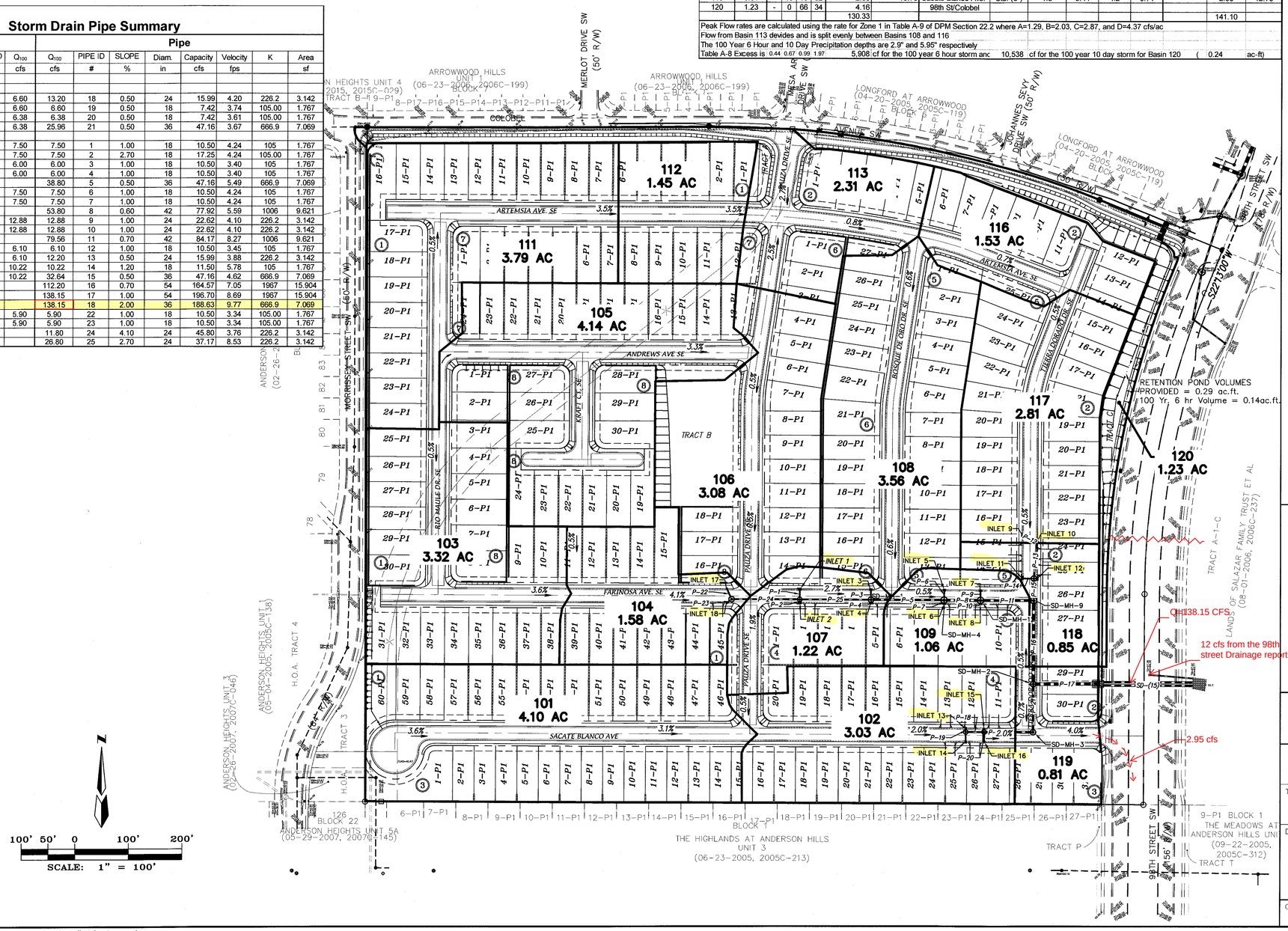
Street flows

Location	Curb Type	Slope (%)	Depth (ft)	Velocity (fps)	Energy (ft)
Sacate Blanco Ave.	Roll (4")	3.1	0.28	4.0	0.53
Sacate Blanco Ave.	Std. (8")	2.9	0.43	4.0	0.68
Sacate Blanco Ave.	Std. (8")	Sump			
Farinosa Ave.	Roll (4")	3.6	0.26	4.0	0.51
Farinosa Ave.	Std. (8")	4.1	0.36	4.7	0.70
Andrews Ave.	Roll (4")	3.3	0.28	4.0	0.53
Pauza Drive	Std. (8")	0.5	0.54	2.8	0.66
Farinosa Ave.	Std. (8")	2.7	0.47	5.1	0.87
Farinosa Ave.	Std. (8")	2.7	0.40	4.1	0.66
Bosque de Oro Dr.	Std. (8")	0.6	0.54	2.9	0.67
Farinosa Ave.	Std. (8")	0.5	0.62	3.4	0.80
Farinosa Ave.	Std. (8")	Sump			
Artemsia Ave.	Roll (4")	3.5	0.28	4.0	0.53
Artemsia Ave.	Std. (8")	3.5	0.37	4.6	0.70
Artemsia Ave.	Std. (8")	0.8	0.52	3.2	0.68
Artemsia Ave.	Std. (8")	0.7	0.48	2.7	0.59
Tierra Dorando Dr.	Std. (8")	0.5	0.57	2.9	0.70
Tierra Dorando Dr.	Std. (8")	Sump			
Sacate Blanco Ave.	Std. (8")	1.8	0.44	4.2	0.71
98th St/Colobel					

Inlet Calcs

Inlet ID #	Intercepted (cfs)	By-pass (cfs)
-	0.00	14.93
13 & 14	13.20	12.76
15 & 16	12.76	
-	0.00	12.09
17 & 18	11.80	6.47
-	0.00	15.07
	0.00	26.28
1 & 2	15.00	22.20
3 & 4	12.00	10.20
-	0.00	26.70
5 & 6	15.00	25.76
7 & 8	25.76	
-	0.00	13.80
-	0.00	19.08
-	0.00	27.49
-	0.00	19.31
9 & 10	12.20	17.34
11 & 12	20.44	0.00
	2.95	12.76
	141.10	

Peak Flow rates are calculated using the rate for Zone 1 in Table A-9 of DPM Section 22.2 where A=1.29, B=2.03, C=2.87, and D=4.37 cfs/ac
Flow from Basin 113 devides and is split evenly between Basins 108 and 116
The 100 Year 6 Hour and 10 Day Precipitation depths are 2.9" and 5.95" respectively
Table A-8 Excess is 0.44 0.67 0.99 1.97 5,908 cf for the 100 year 6 hour storm and 10,538 cf for the 100 year 10 day storm for Basin 120 (0.24 ac-ft)



AS BUILT INFORMATION
CONTRACTOR
WORK MISS - BY DATE
INSPECTORS
ACCEPTANCE BY DATE
FIELD VERIFICATION BY DATE
DRAWINGS
CORRECTED BY DATE

SURVEY INFORMATION
BENCH MARKS
FIELD NOTES
NO. BY DATE

AGRS Aluminum Cap stamped "TRANS 1969" from the intersection of Central Avenue and 98th Street SW go south on 98th Street 1.2 miles to the intersection of 98th Street and Snow Vista Boulevard. Then go southeast along Snow Vista Boulevard and the co-op electric transmission line 0.85 miles to pylon numbered 52. The station is just east of this point. Geographic Position (NAD83), in feet N.M. State Plane Coordinates(Central Zone) N=1471885.503, E=1495145.466 Elevation (NAVD88), in feet = 5121.089

ENGINEER'S SEAL
JAMES D. HUGHES 15974 REGISTERED PROFESSIONAL ENGINEER NEW MEXICO
6-30-2016
7-6-2016

CERTIFICATE OF SUBSTANTIAL COMPLIANCE

NO. DATE REMARKS BY
REVISIONS
DESIGNED BY JDH 03/16
DRAWN BY SPS 01/16
CHECKED BY DMG 01/16

dmg MARK GOODWIN & ASSOCIATES, P.A.
CONSULTING ENGINEERS
P.O. BOX 90606
ALBUQUERQUE, NEW MEXICO 87199
OFFICE (505) 828-2200, FAX (505) 797-9539

CITY OF ALBUQUERQUE
PLANNING DEPARTMENT

TITLE: DESERT SANDS SUBDIVISION DRAINAGE PLAN

DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL	LAST DESIGN UPDATE	MO./DAY/YR.	MO./DAY/YR.

CITY PROJECT NO. . | ZONE MAP NO. | SHEET 5 OF 5

F:\A15\D09\A1563 Lands of Salazar\GRADE & DRAIN\A1563 BASINS.dwg, 7/1/2016 1:12:09 PM, SPS

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EXCERPT FROM: 98th Street Improvements from Gibson Blvd SW to Senator Dennis Chavez Boulevard SW Drainage Report

Coordinate System: NAD 1983 NSRS2007 StatePlane New Mexico Central FIPS 3002 Ft US
Datum: NAD 1983 NSRS2007
Units: Foot US

Offsite Drainage Basin: A

Offsite Drainage Basin: B

Q_{100} Interim = 60 cfs
Q_{100} Final = 137 cfs

30" Culvert to be Removed
(2) 36" Culverts to be Installed

$Q_{100\ MAX}$ = 12 cfs

98th St

Project Limits

Q_{100} Interim = 60 cfs
Q_{100} Final = 137 cfs

Drainage Basin: 1

Drainage Basin: 2

Drainage Basin: 3

Drainage Basin: 4

Drainage Basin: 5

Drainage Basin: 6

60" Storm Drain

60" Storm Drain

72" Storm Drain

Project Limits

Sacate Blanco Arroyo

Tributary 1-Sacate Blanco Arroyo

AMOLE CHANNEL DRAINAGE RIGHTS-OF-WAY

CITY OWNED PROPERTY: TRACT 4

CITY OWNED PROPERTY: B

ANDERSON HEIGHTS UNIT 3

ANDERSON HEIGHTS UNIT 9

SIERRA RANCH UNIT 1

EL RANCHO GRANDE UNIT 14

EL RANCHO GRANDE UNIT 15

ARROWWOOD HILLS UNIT 1

HIGHLANDS AT ANDERSON HILLS UNIT 3

MEADOWS AT ANDERSON HILLS UNIT 5

MEADOWS AT ANDERSON HILLS UNIT 2

LONGFORD AT ARROWWOOD

SUNGATE ESTATES

SALAZAR FAMILY TRUST ET AL

SALAZAR/SALAZAR QUATRO/JSJ/HANNETT & CURB INC

EL RANCHO GRANDE 1

ALBUQUERQUE SOUTH UNIT 3

Zone R-LT
Zone R-D
Zone R-2
Zone SU-1

PAYTON
FLINT AXE
COVERT
GAULT
POTSHARD
PITOCHE
MORRISSEY
RIO SAN DIEGO
RIO CLARA
RIO CORTO
RIO SENDA
WEST MEADOW
CRICKET
GRASSLAND
SHADY SPRING
SANDY SPRING
HIDDEN SPRING
DAISY SUMMER
UPPER MEADOW
COLOBEL
CHIANTI
SHIRAZ
MERLOT
PORTO
CHAMBOURCIN
CRISTALINO
BACO NOIR
MESA ARENOSO
CABERNET
TINTARA
RIESLING
PINOT NOIR
MARLBOROUGH
AMOLE MESA
CANYON GATE
WAGON GATE
SUN CANYON
OPEN RANGE
SUNNY SKY
TO RANCH
GRAY RANCH
BRIDLE GATE
VALLE CALDERA
OTERO MESA
VALLE VIDAL
MOUNTAIN GATE
SUN MOUNTAIN
SUN CHASER
VALLEY GATE
MORNING SUN
GARDEN GATE
CORRAL GATE
MEADOW GATE
SUN GATE
IRON GATE
LONE TREE
SOLITUDE
SILVER STAR
GHOST RANCH
MESSINA
SANDY TRAIL
SANDY CREEK
SANDY RIDGE
BLUE SKY
GIBSON
BISON SPRINGS
SCARP
CACHE
QUERN
REAVES
SITULA
SHARD
KULA RING
ANTLER TOOL
CENOTE
HILGENBER
MCMIC
GEN
98TH
DIAMOND MESA

5+00 10+00 15+00 20+00 25+00 30+00 35+00 40+00 45+00

5210 5200 5180 5170 5160 5150 5140 5130 5120 5110 5100 5090 5080 5070 5060 5050

0 200 400 800
Feet

LEGEND

- Flow Arrow
- SUBDIVISION NAME
- Onsite Drainage Basins
- Offsite Drainage Basins
- Zoning Boundary

Storm Drains

- Existing
- Proposed

Summary Table

	Basin	Area (acres)	Land Treatments (%)				Discharge (cfs)	
			Type A	Type B	Type C	Type D	Q10	Q100
1	Basin 1-NB	0.383	0	0	10	90	1.05	1.61
	Basin 1-SB	0.420	0	0	10	90	1.16	1.77
	Median 1	0.287	0	0	100	0	0.43	0.82
2	Basin 2-NB	0.637	0	0	10	90	1.75	2.69
	Basin 2-SB	0.615	0	0	10	90	1.69	2.60
	Median 2	0.974	0	0	100	0	1.45	2.79
3	Basin 3-NB	1.118	0	0	10	90	3.07	4.72
	Basin 3-SB	0.268	0	0	10	90	0.74	1.13
	Median 3	0.835	0	0	100	0	1.24	2.40
4	Basin 4-NB	0.774	0	0	10	90	2.13	3.27
	Median 4	0.559	0	0	100	0	0.83	1.60
5	Basin 5-NB	1.006	0	0	10	90	2.91	4.40
	Median 5	1.133	0	0	100	0	1.69	3.25
6	Basin 6-NB	0.366	0	0	10	90	1.06	1.60
	Median 6	0.374	0	0	100	0	0.56	1.07
	Offsite A	12.655	87%	0	13%	0	5.02	18.66
	Offsite B	27.787	89%	0	11%	0	10.49	40.67
	Future Offsite A&B	40.442	*	*	*	*	*	137*

Q_{100} is taken from the Lands of Salazar DMP (Ref. #4). Q_{10} was not provided.

WHPacific

DRAWING INFO
Job # : 021528
Author: CPackard
Scale: 1:4,800

DRAINAGE BASIN MAP
ZONE ATLAS PAGES N9 AND P9

98TH STREET IMPROVEMENTS
CITY OF ALBUQUERQUE

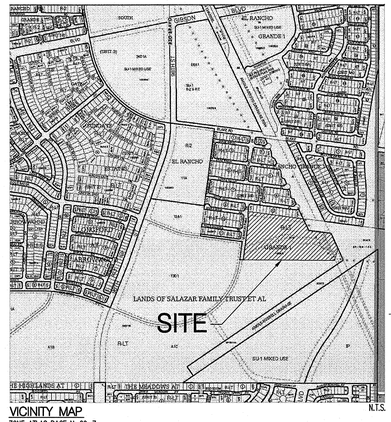
February, 2013

EXHIBIT 2

User: cpackard WHPacific Inc.
Date: 3/27/2013 Time: 2:06:56 PM
Path: P:\City of Albuquerque\021528\GIS\Maps\021528 - 98th St - Overall with contours.mxd

EXCERPT FROM: DMP Albuquerque Public Schools Prototype Elementary School Site No 3





VICINITY MAP
ZONE ATLAS PAGE N-09-Z

LEGAL DESCRIPTION
TRACT 8-A1-A, EL RANCHO GRANDE I, ALBUQUERQUE, NEW MEXICO

GRADING AND DRAINAGE NARRATIVE

Site Location and Background Information

The purpose of this submittal is to present a final grading and drainage plan for the proposed Prototype 3 Elementary School (El Rancho Grande Elementary School) off the far west end of Blake Road S.W. The site is in rainfall zone 1 as defined by figure A-1 of the DPM section 22. The existing legal description of the site is TRACT 8-A1-A, EL RANCHO GRANDE I, ALBUQUERQUE, NEW MEXICO . Please see the vicinity map on this sheet for a graphic depiction of the site location.

Existing Conditions

This entire site is approximately 15 acres and is undeveloped land that is approved for rough grading (stamp date: 7-06-07) per concepts of the approved master drainage plan for Tract 8-A-1-A, El Rancho Grande Elementary School (stamp date: 7-09-2007). The site is naturally sloped roughly 1% to 4% to the east, draining to an existing developed outfall (rated for 57 CFS per the master drainag plan) to the Amole arroyo that was sized for fully developed flows.

Proposed Conditions

Under proposed conditions the site will slope to the east with gentler slopes than present and will make up grade differences w/ steps and terraces. The site contours and storm drain systems will divert and convey runoff to a concrete rundown which will tie directly to the existing site outfall structure. The field will drain to the remainder of the existing detention pond and then to the existing outfall structure. Per the approved plan, the allowable outfall is 57 CFS, and with this plan we are complying with that requirement: Qproposed = 49 CFS.

Flood plain

In accordance with FEMA community map panel #35001C0336E, the site has a zone A flood plain flowing across the northeast portion. This map was revised per a LOMR dated 11/20/06 which removed most of it.

Per the master drainage plan; "The existing flood hazard zone and flood plain drainage easements previously impacting the site are obsolete and will be eliminated by others. As such, they will not limit site developement. APS is working with the seller to have the obsolete floodplain easement officially vacated through DRB."

Conclusions

The proposed site improvemets and drainage trends are consistent with previously approved plans for the site.

This Tract is permitted free discharge up to 57 CFS to an existing 36" RCP outlet near the NE corner to the AMAFCA Amole channel. This design discharges 49 CFS at the peak of the design storm.

Offsite flows do not impact the site.

This drainage submittal has been prepared in accordance with City of Albuquerque requirements. This plan is compliant with the master drainage plan. The implementation of this design would result in the safe passage of the 100 year storm event. With this submittal we request hydrology department approval for building permit.

APS PROTOTYPE #3 SITE BASIN PROPERTIES

Proposed Ultimate Development Conditions Basin Data Table

This table is based on the DPM Section 22.2, Zone: 1

Basin	Area	Area	Land Treatment Percentages				Q(100)	Q(100)	V(100)	V(100)$_{6HR}$
ID	(SQ. FT)	(AC.)	A	B	C	D	(cfs/ac.)	(CFS)	(inches)	(CF)
B1	102665	2.36	0.0%	16.0%	16.0%	68.0%	3.76	***8.85***	*1.61*	*13733*
B2	134730	3.09	0.0%	8.0%	8.0%	84.0%	4.06	***12.57***	*1.79*	*20070*
B3	33291	0.76	0.0%	7.0%	7.0%	86.0%	4.10	***3.13***	*1.81*	*5023*
B4	42456	0.97	0.0%	11.0%	11.0%	78.0%	3.95	***3.85***	*1.72*	*6083*
B5	68370	1.57	0.0%	12.5%	12.5%	75.0%	3.89	***6.11***	*1.69*	*9600*
B6	59608	1.37	0.0%	15.5%	15.5%	69.0%	3.77	***5.17***	*1.62*	*8030*
B7	164009	3.77	0.0%	50.0%	50.0%	0.0%	2.45	***9.22***	*0.83*	*11344*
					SUBTOTAL			***48.90***		
B8	48599	1.12	0.0%	50.0%	50.0%	0.0%	2.45	***2.73***	*0.83*	*3361*
B9	7047	0.16	0.0%	50.0%	50.0%	0.0%	2.45	***0.40***	*0.83*	*487*

STORM DRAIN PIPE TABLE

PIPE #	Contributing Basins and Storm Drains	Size in.	Slope	Capacity* cfs	ACTUAL FLOW cfs
PIPES					
SD1	B3	12	1.00%	3.56	3.13
SD2	SD1+B2	24	1.08%	23.51	15.70
SD3	B5	18	1.75%	13.90	6.11
SD4	B4	18	1.00%	10.50	3.85
SD5	B1	18	5.79%	25.28	8.85
SD6	SD2+B6	24	1.00%	22.62	20.87
SD7	SD4+SD5	24	0.50%	16.00	12.70
SD8	SD3+SD6+SD7	30	1.00%	41.02	39.67

INLET TABLE

Inlet #	Inlet Type	Actual Flow	Avail Head ft	Capacity CFS
IN1	1-SGL COA TYPE C	2.09	0.50	5.07
IN2	24" NYLOPLAST PEDESTRIAN	1.04	0.50	3.25
IN4	1-SGL COA TYPE C	3.14	0.50	5.07
IN5	1-SGL COA TYPE C	9.42	0.50	5.07
IN7	24" NYLOPLAST STANDARD	2.58	1.00	5.30
IN8	24" NYLOPLAST PEDESTRIAN	1.04	0.50	3.25
IN9	24" NYLOPLAST PEDESTRIAN	1.16	0.50	3.25
IN10	24" DBL NYLOPLAST PEDESTRIAN	2.75	0.50	6.50
IN11	24" NYLOPLAST STANDARD	1.16	0.50	3.25
IN12	1-DBL COA TYPE C	8.85	0.50	10.14
IN13	24" NYLOPLAST STANDARD	3.85	2.00	7.00
IN14	30" NYOPLAST STANDARD	2.58	1.00	7.75

8FT SWALE CHANNEL CAPACITY
MANNING'S N = 0.013 SLOPE = 0.108

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1.0	0.0	1.0	2.0	3.0	0.0	3.0	6.0	1.0

WSEL FT.	DEPTH INC	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID PLUS OBSTRUCTIONS	TOTAL ENERGY (FT)
0.100	0.100	0.030	0.148	0.632	4.932	0.600	0.478
0.200	0.200	0.120	0.939	1.265	7.828	1.200	1.153
0.300	0.300	0.270	2.770	1.897	10.258	1.800	1.937
0.400	0.400	0.480	5.965	2.530	12.427	2.400	2.802
0.500	0.500	0.750	10.815	3.162	14.420	3.000	3.734
0.600	0.600	1.080	17.586	3.795	16.284	3.600	4.724
0.700	0.700	1.470	26.528	4.427	18.046	4.200	5.765
0.800	0.800	1.920	37.874	5.060	19.726	4.800	6.852
0.900	0.900	2.430	51.850	5.692	21.338	5.400	7.982
1.000	1.000	3.000	68.671	6.325	22.890	6.000	9.150

8FT SWALE CHANNEL CAPACITY
MANNING'S N = 0.013 SLOPE = 0.006

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1.0	0.0	1.0	2.0	4.0	0.0	3.0	8.0	1.0

WSEL FT.	DEPTH INC	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID PLUS OBSTRUCTIONS	TOTAL ENERGY (FT)
0.100	0.100	0.040	0.047	0.825	1.178	0.800	0.122
0.200	0.200	0.160	0.299	1.649	1.869	1.600	0.254
0.300	0.300	0.360	0.882	2.474	2.450	2.400	0.393
0.400	0.400	0.640	1.899	3.298	2.968	3.200	0.537
0.500	0.500	1.000	3.444	4.123	3.444	4.000	0.684
0.600	0.600	1.440	5.600	4.948	3.889	4.800	0.835
0.700	0.700	1.960	8.446	5.772	4.309	5.600	0.989
0.800	0.800	2.560	12.059	6.597	4.711	6.400	1.145
0.900	0.900	3.240	16.509	7.422	5.095	7.200	1.304
1.000	1.000	4.000	21.865	8.246	5.466	8.000	1.465

LEGEND

- PROPERTY LINE
- 5301 EXISTING CONTOURS
- BASIN BOUNDARY
- PROPOSED DIRECTION OF FLOW
- WATER BLOCK
- 5305 PROPOSED INDEX CONTOURS
- PROPOSED INTER CONTOURS
- PROPOSED STORM DRAIN INLET

X DRAINAGE MANAGEMENT PLAN
1" = 50'-0"

Van H. Gilbert Architect PC
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PROJECT

ALBUQUERQUE PUBLIC SCHOOLS

Prototype Elementary School Site No. 3

ADDRESS

Vermejo Park Dr SW
Albuquerque, NM

APS

Mark	Date	Description

Date	September 5, 2007
Project Number	548.01
Project File	
Drawn By	Staff
Checked By	Staff
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SHEET TITLE

DRAINAGE MANAGEMENT PLAN

DMP-101

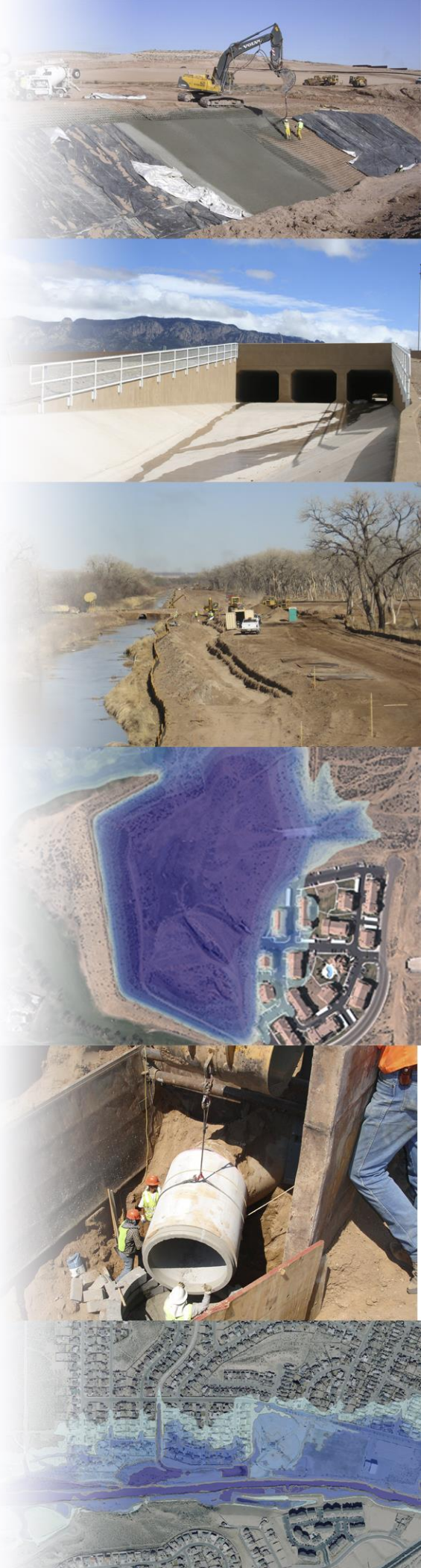
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Bohannan ▲ Huston
Courtyard I 7500 Jefferson St. NE Albuquerque, NM 87109-4335
ENGINEERING ▲ SPATIAL DATA ▲ ADVANCED TECHNOLOGIES

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Extracts from:

DESIGN ANALYSIS REPORT FOR THE EXPANSION OF HUBBELL LAKE DETENTION DAM



DRAFT

DECEMBER 20, 2024

Prepared for:

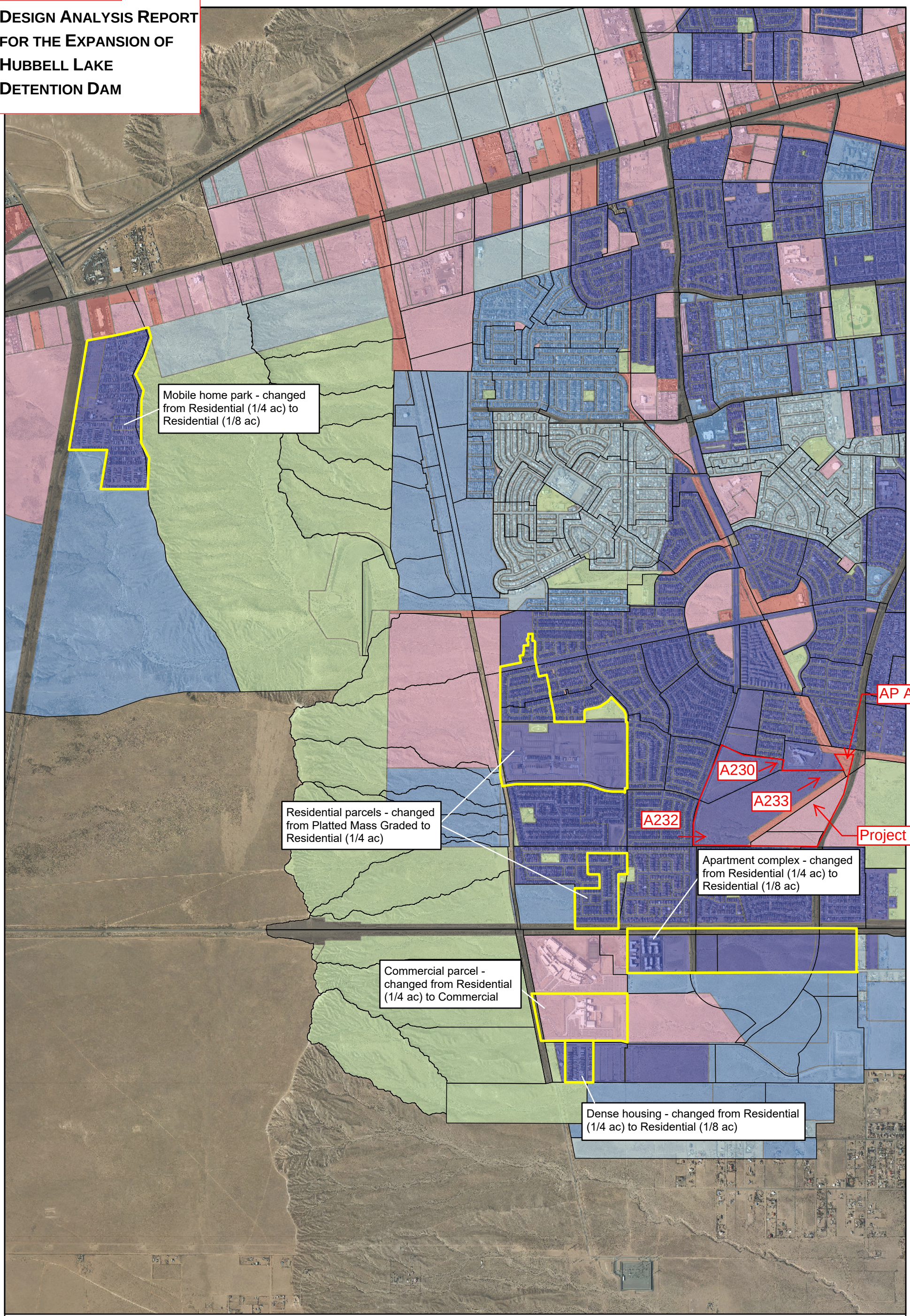
AMAFCA

Prepared by:

Bohannan Huston

Extracts from:

DESIGN ANALYSIS REPORT FOR THE EXPANSION OF HUBBELL LAKE DETENTION DAM



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Hubbell Lake Dam Expansion

Figure 5
Land Use Category Modifications

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Author: mcrooks

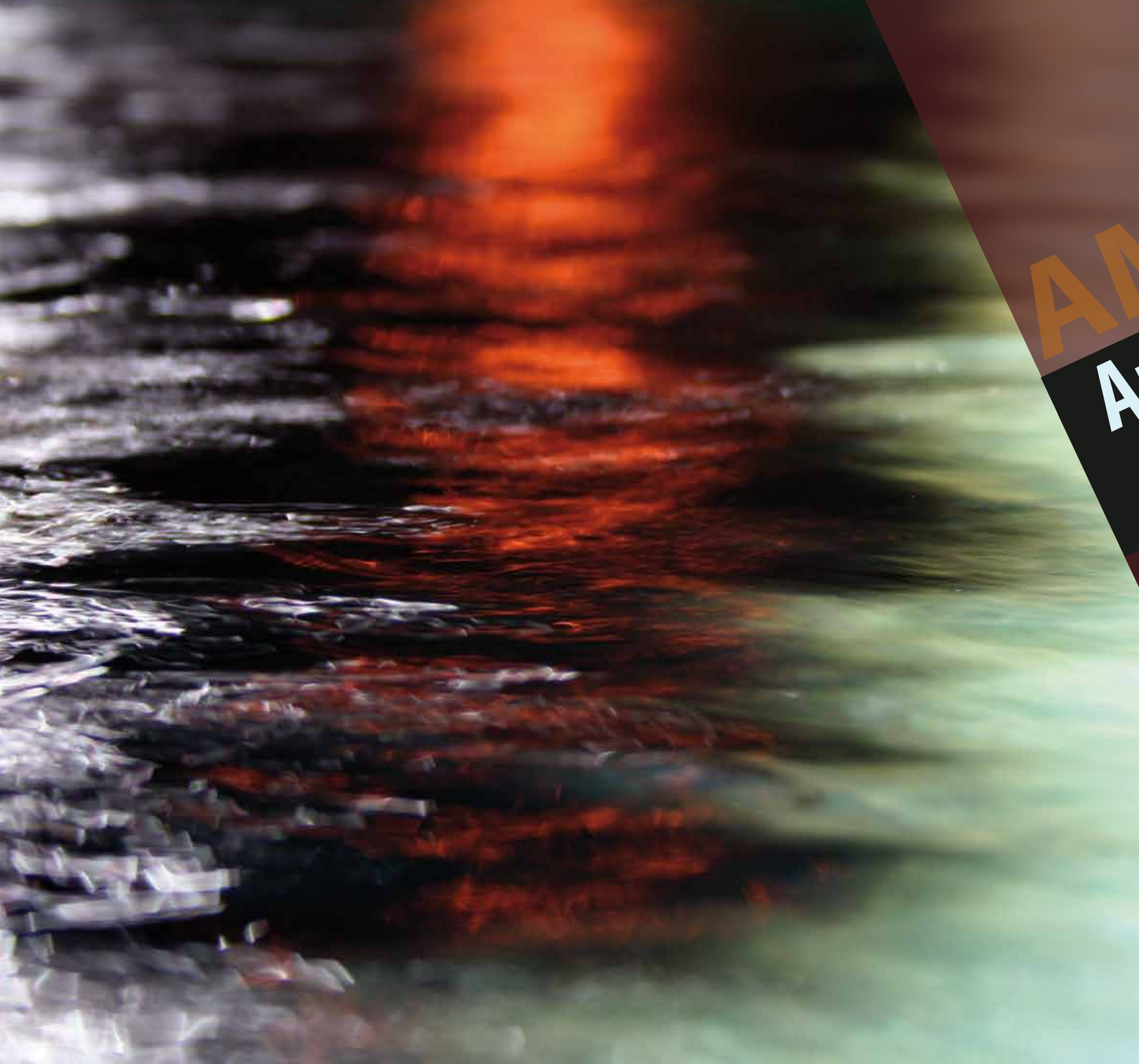
December 2024

Extracts from:
DESIGN ANALYSIS REPORT FOR THE EXPANSION OF HUBBELL LAKE DETENTION DAM

Table 2. Zoning to TR-55 Categorization

City/County Zoning Category	Table 2-2a Category (shown on Figure 7)	TR-55 Imperviousness
Business Park	Commercial and business	85
City-owned or Managed Public Parks	Open space, poor condition	0
Commercial	Commercial and business	85
Commercial and business	Commercial and business	85
Commercial Light Industrial Zone	Commercial and business	85
Drainage Right of Way	Industrial	72
General Manufacturing	Industrial	72
Industrial	Industrial	72
Light Manufacturing	Industrial	72
Light Manufacturing Zone	Industrial	72
Low Intensity	Residential, 1/4 acre	38
Major Right of Way	Street and Road	90
Manufactured Home Community	Residential, 1/8 acre or less (townhouse)	65
Mobile Home & Single Family Residential Zone	Residential, 1/8 acre or less (townhouse)	65
Moderate Intensity	Industrial	72
Multi-family High Density	Residential, 1/8 acre or less (townhouse)	65
Multi-family Low Density	Residential, 1/8 acre or less (townhouse)	65
Neighborhood Commercial Zone	Commercial and business	85
Non-City Parks and Open Space	Open space, poor condition	0
Open Space	Open space, poor condition	0
Parks	Open space, poor condition	0
Planned Development	Commercial and business	85
Residential, 1 acre	Residential, 1 acre	20
Residential, 1/4 acre	Residential, 1/4 acre	38
Residential, 1/8 acre or less (townhouses)	Residential, 1/8 acre or less (townhouse)	65
Single Family Residential Zone	Residential, 1/4 acre	38
Single-Family (Large Lot)	Residential, 1 acre	20
Single-Family (Medium Lot)	Residential, 1/4 acre	38
Single-Family (Small Lot)	Residential, 1/8 acre or less (townhouse)	65
Townhouse	Residential, 1/8 acre or less (townhouse)	65
Transition	Commercial and business	85
Upper Petroglyphs Highway Commercial Zone	Commercial and business	85
Upper Petroglyphs Industrial Park Zone	Industrial	72
West Central Commercial/Light Industrial Zone	Commercial and business	85
Rural and agricultural **	- Open space, poor condition or - Residential, 1/4 acre	- 0 or - 38

**Rural and agricultural areas that are anticipated to remain undeveloped will be categorized as open space in poor conditions. However, many of the areas currently zoned as Rural Agricultural were assumed to be developed as residential, industrial, commercial, or used an average percent impervious of 42.3% to represent unknown future development in the 2015 study. For this study, it is recommended the average percent impervious of 42.3% assumption be represented using the Residential, 1/4 acre land use category based on how the area has been developing.



AMAFCA

Amole-Hubbell

Drainage Master Plan Update

May 2013

Final Report

AMAFCA

WILSON & COMPANY
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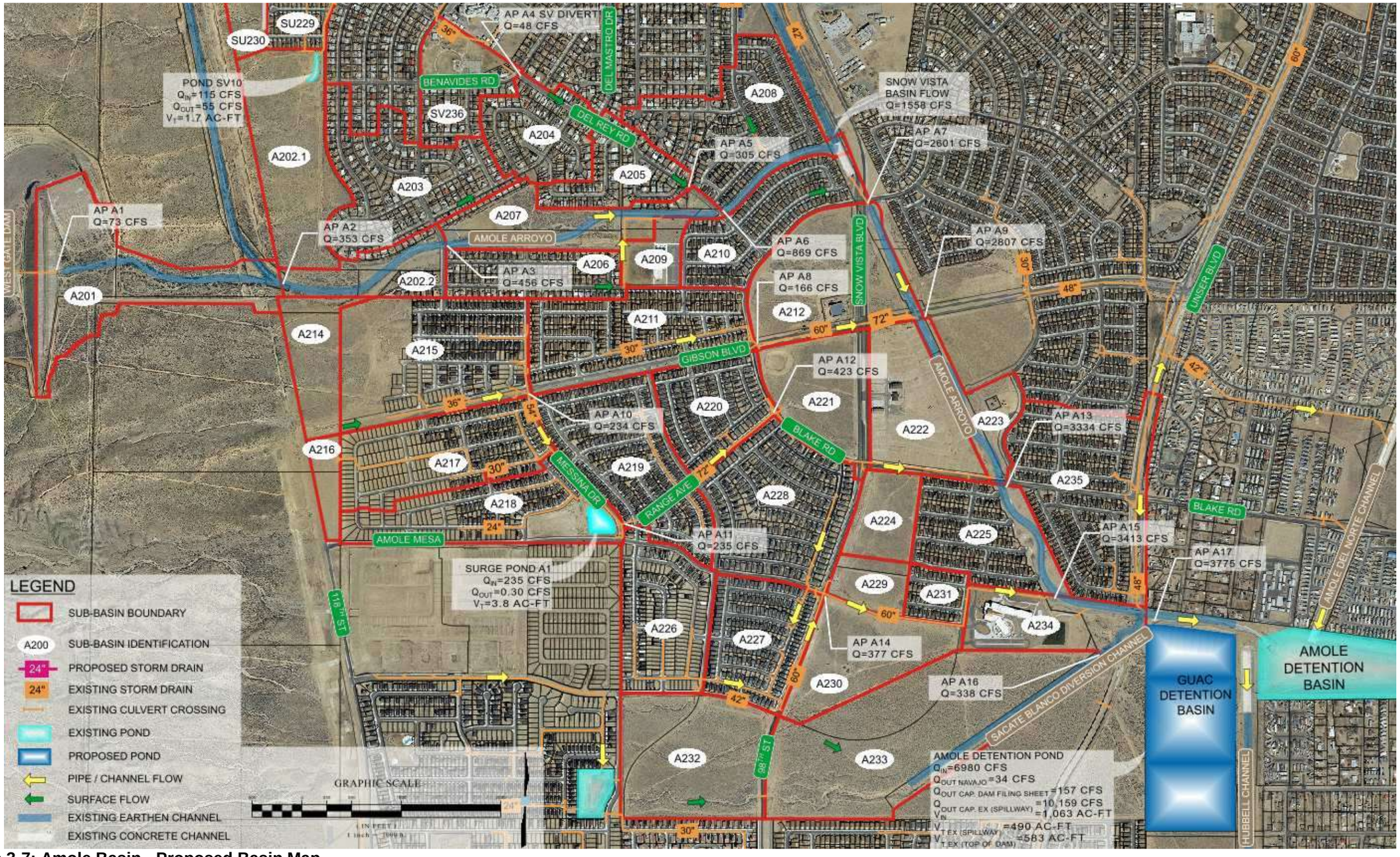


Figure 3-7: Amole Basin - Proposed Basin Map

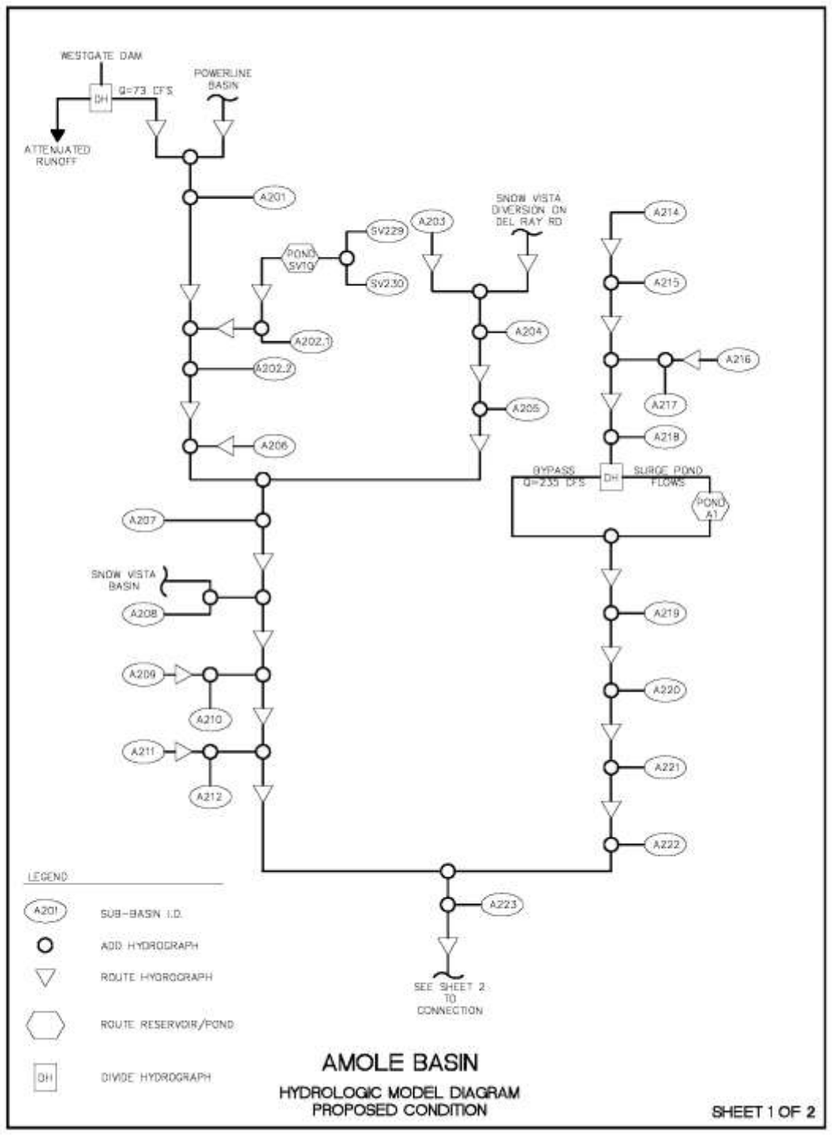


Figure 3-8: Amole Basin - Proposed Hydrologic Model Diagram

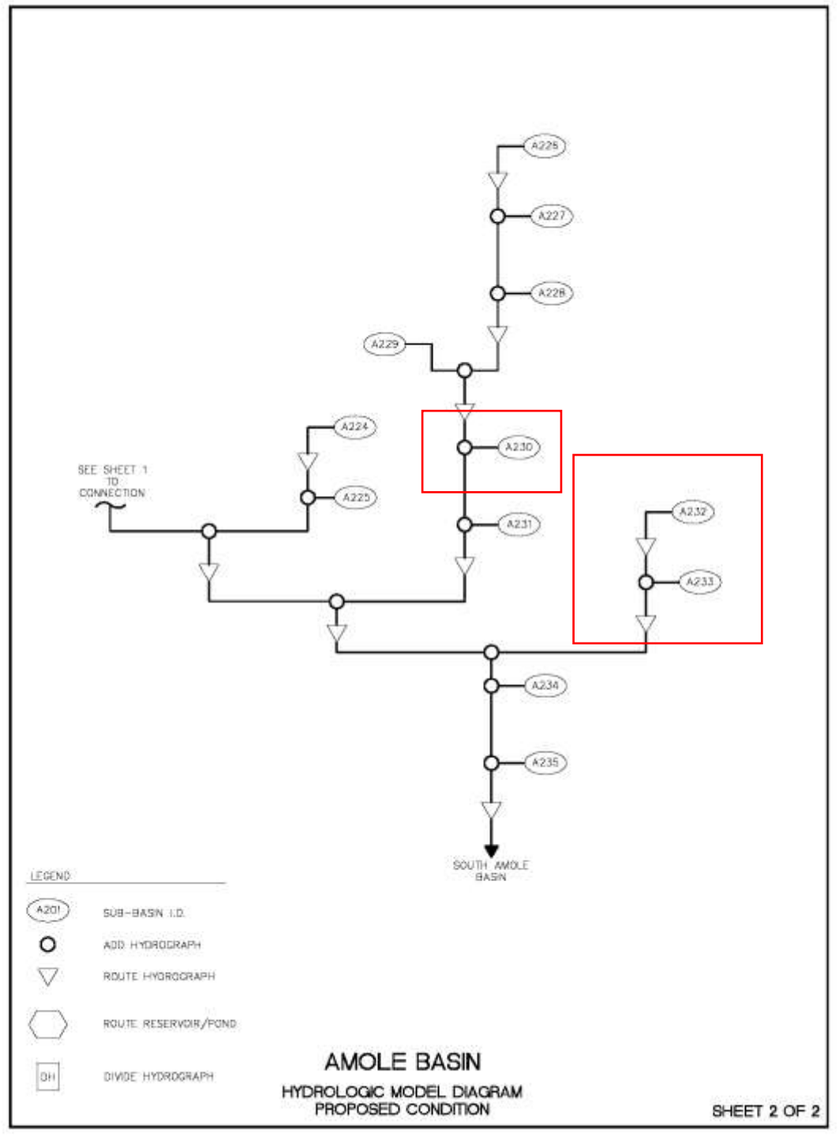


Figure 3-8 Continued: Amole Basin - Proposed Hydrologic Model Diagram

Table 3-8: Amole Basin - Proposed Sub-Basin Peak Discharge and Volumes			
Sub-Basin	Area (ac)	$Q_{100yr-6hr}$ (cfs)	$V_{100yr-24hr}$ (ac-ft)
A201	46	122.09	4.373
A202.1	38	60.67	3.969
A202.2	17	53.58	1.938
A203	40	143.75	5.299
A204	22	78.99	2.908
A205	18	61.77	2.435
A206	20	74.47	2.828
A207	26	60.01	1.945
A208	43	164.52	6.375
A209	8	18.08	0.571
A210	28	111.71	4.491
A211	42	165.76	6.637
A212	40	174.78	7.656
A214	16	61.49	2.335
A215	51	191.61	7.261
A216	6	21.87	0.830
A217	37	133.19	4.615
A218	36	128.79	4.429
A219	41	159.68	6.256
A220	23	89.59	3.514
A221	27	118.26	5.098
A222	29	128.19	5.539
A223	13	57.77	2.479
A224	13	48.08	1.826
A225	30	119.33	4.782
A226	31	122.90	4.929
A227	28	104.57	4.474
A228	45	167.59	6.379
A229	9	33.43	1.269
A230	28	112.97	4.625
A231	8	30.23	1.209
A232	42	171.36	7.021
A233	73	245.20	12.206
A234	23	89.40	3.501
A235	52	194.03	7.857