CITY OF ALBUQUERQUE

Planning Department
Alan Varela, Director

Mayor Timothy M. Keller

November 13, 2025

Luis Noriega
Tierra West LLC
5571 Midway Park Place NE
Albuquerque, NM 87109

RE: KPSW Project
5201 Hawking Dr SE
Grading and Drainage Plans
Engineer's Stamp Date: 10/23/2025
Hydrology File: Q16DA5000D
Case # HYDR-2025-00396

Dear Mr. Noriega:

Based upon the information provided in your submittal received 11/03/2025, the Grading & Drainage Plan is approved for Building Permit. Please attach a copy of this approved plan in the construction sets for Building Permit processing along with a copy of this letter.

PRIOR TO CERTIFICATE OF OCCUPANCY:

1. Engineer's Certification, per the DPM Part 6-14 (F): *Engineer's Certification Checklist For Non-Subdivision* is required.

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,

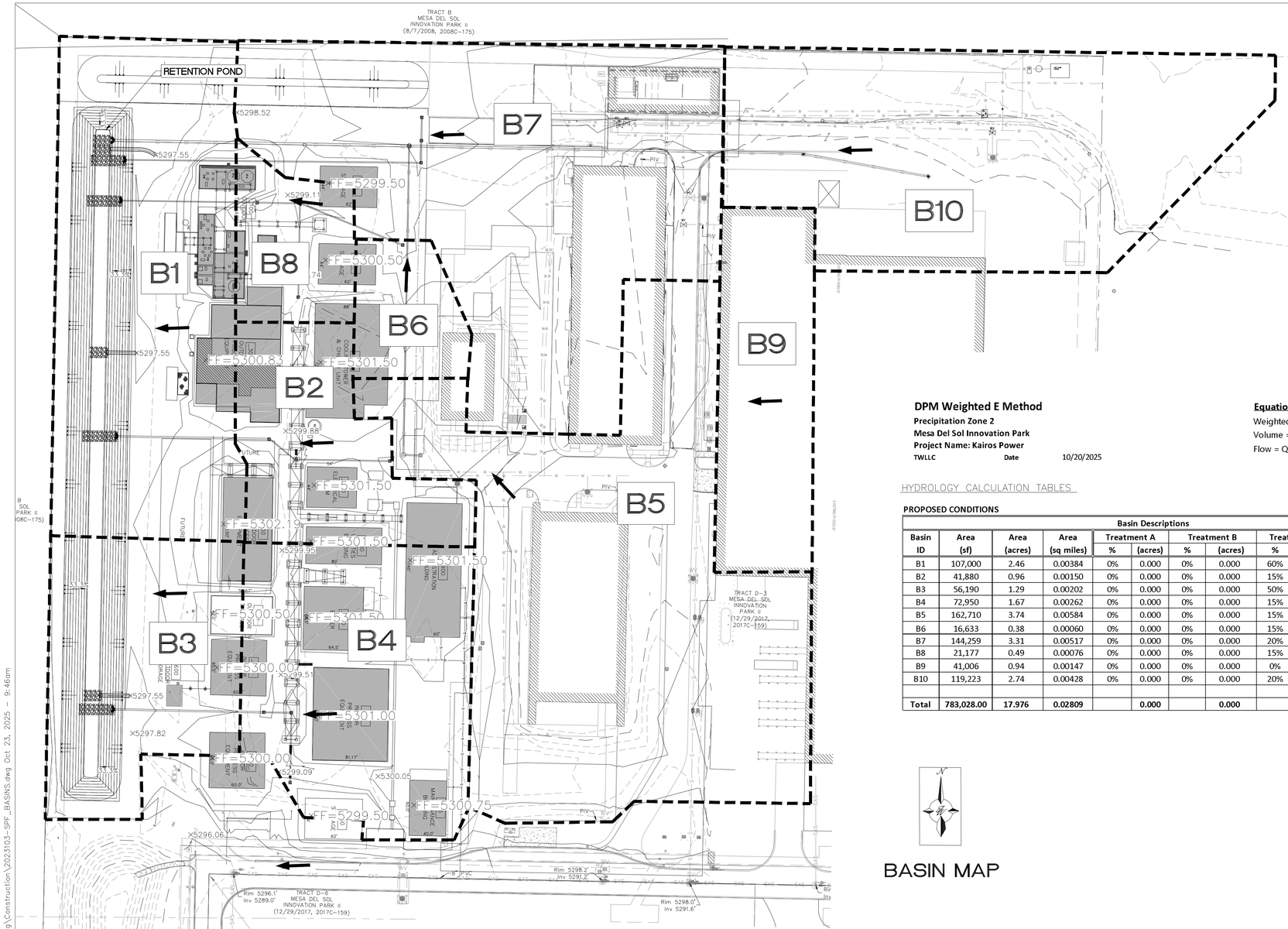
Anthony Montoya, Jr., P.E., CFM
Senior Engineer, Hydrology
Planning Department, Development Review Services

PO Box 1293

Albuquerque

NM 87103

www.cabq.gov



FIRM MAP: 35001C0363G

LEGAL DESCRIPTION

TR D-1-A PLAT OF TRACT D-1-A MESA DEL SOL INNOVATION PARK II(BEING A REPLAT OF TRACT D-1 & D-3 MESA DEL SOL INNOVATIONPARK II)

DPM Weighted E Method
Precipitation Zone 2
Mesa Del Sol Innovation Park
Project Name: Kairos Power
TWLLC **Date** 10/20/2025

Equations:
Weighted E = Ea*Aa + Eb*Ab + Ec*Ac + Ed
Volume = Weighted E * Total Area
Flow = Qa*Aa + Qb*Ab + Qc*Ac + Qd*Ad

HYDROLOGY CALCULATION TABLES

PROPOSED CONDITIONS

Basin Descriptions												100-Year, 10-Day		
Basin ID	Area (sf)	Area (acres)	Area (sq miles)	Treatment A %	Treatment A (acres)	Treatment B %	Treatment B (acres)	Treatment C %	Treatment C (acres)	Treatment D %	Treatment D (acres)	Weighted E (in)	Volume (ac-ft)	Flow cfs
B1	107,000	2.46	0.00384	0%	0.000	0%	0.000	60%	1.474	40%	0.983	1.550	0.426	8.76
B2	41,880	0.96	0.00150	0%	0.000	0%	0.000	15%	0.144	85%	0.817	2.135	0.262	3.99
B3	56,190	1.29	0.00202	0%	0.000	0%	0.000	50%	0.645	50%	0.645	1.680	0.252	4.77
B4	72,950	1.67	0.00262	0%	0.000	0%	0.000	15%	0.251	85%	1.423	2.135	0.456	6.94
B5	162,710	3.74	0.00584	0%	0.000	0%	0.000	15%	0.560	85%	3.175	2.135	1.016	15.49
B6	16,633	0.38	0.00060	0%	0.000	0%	0.000	15%	0.057	85%	0.325	2.135	0.104	1.58
B7	144,259	3.31	0.00517	0%	0.000	0%	0.000	20%	0.662	80%	2.649	2.070	0.865	13.52
B8	21,177	0.49	0.00076	0%	0.000	0%	0.000	15%	0.073	85%	0.413	2.135	0.132	2.02
B9	41,006	0.94	0.00147	0%	0.000	0%	0.000	0%	0.000	100%	0.941	2.330	0.287	4.09
B10	119,223	2.74	0.00428	0%	0.000	0%	0.000	20%	0.547	80%	2.190	2.070	0.715	11.17
Total	**783,028.00**	**17.976**	**0.02809**		**0.000**		**0.000**		**4.414**		**13.561**		**4.515**	**72.32**

Retention Pond Volume Calculation		
Top Elevation	5,297.50	Ft.
Top Area	49,764	Sq. Ft.
Bottom Elevation	5,288.50	Ft.
Bottom Area	8,400	Sq. Ft.
Total Volume	261,738.00	Cubic Ft.
Max Water Elevation	5,296.50	Ft.
Max Water Elevation Area	44,880.00	Sq. Ft.
Max Water Volume	213,120.00	Cubic Ft.
Provided Volume	**213,081.01**	**Cubic Ft.**
Design Free Board	1.00	Ft.
Volume Required = 4.515 ac-ft = 196,679		

BASIN MAP

HYDROLOGY NOTES

THE PROJECT SITE IS LOCATED ON THE EAST SIDE OF ALBUQUERQUE WITHIN THE MESA DEL SOL INNOVATION PARK. IT LIES WITHIN A LARGER DRAINAGE BASIN AND IS INCLUDED IN THE KAIROS POWER FULLY DEVELOPED POND PROJECT (HYDRO NO. Q16DA50000). STORMWATER DISCHARGE FROM THE SITE IS CURRENTLY ROUTED TOWARD THE NEW RETENTION POND LOCATED ON THE WEST SIDE OF THE PROPERTY.

BASIN DATA

THE INTENT OF THIS PLAN IS TO PROVIDE COMPLETE RETENTION OF THE DEVELOPED LAND FOR THE 100 YEAR, 10 DAY. STORM FOR ALL OF LOT D-1-A. THIS GRADING PLAN WILL CONTAIN THE RUN-OFF FROM ALL BUILDINGS PER THE APPROVED SITE PLAN.

ACS BENCHMARK

A.G.R.S. MONUMENT "4-Q16"
NEW MEXICO STATE PLANE COORDINATES
(CENTRAL ZONE-N.A.D. 1983)
PUBLISHED EL=5298.643 US SURVEY FT (NAVD 1988)

City of Albuquerque
Planning Department
Development Review Services
HYDROLOGY SECTION
APPROVED
DATE: 11-13-2025
BY:
HydroTrans # Q16DA5000D

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ENGINEER'S SEAL
RONALD R. BOHANNAN
NEW MEXICO
7868
PROFESSIONAL ENGINEER
10/23/2025
RONALD R. BOHANNAN
P.E. #7868

KPSW PROJECT
ALBUQUERQUE, NM

GRADING AND DRAINAGE BASIN MAP

TIERRA WEST, LLC
5571 MIDWAY PARK PLACE NE
ALBUQUERQUE, NM 87109
(505) 858-3100
www.tierrawestllc.com

DRAWN BY: LN
DATE: 10/23/2025
2023103-SPF_BASINS
SHEET # GR-1
JOB # 2023103

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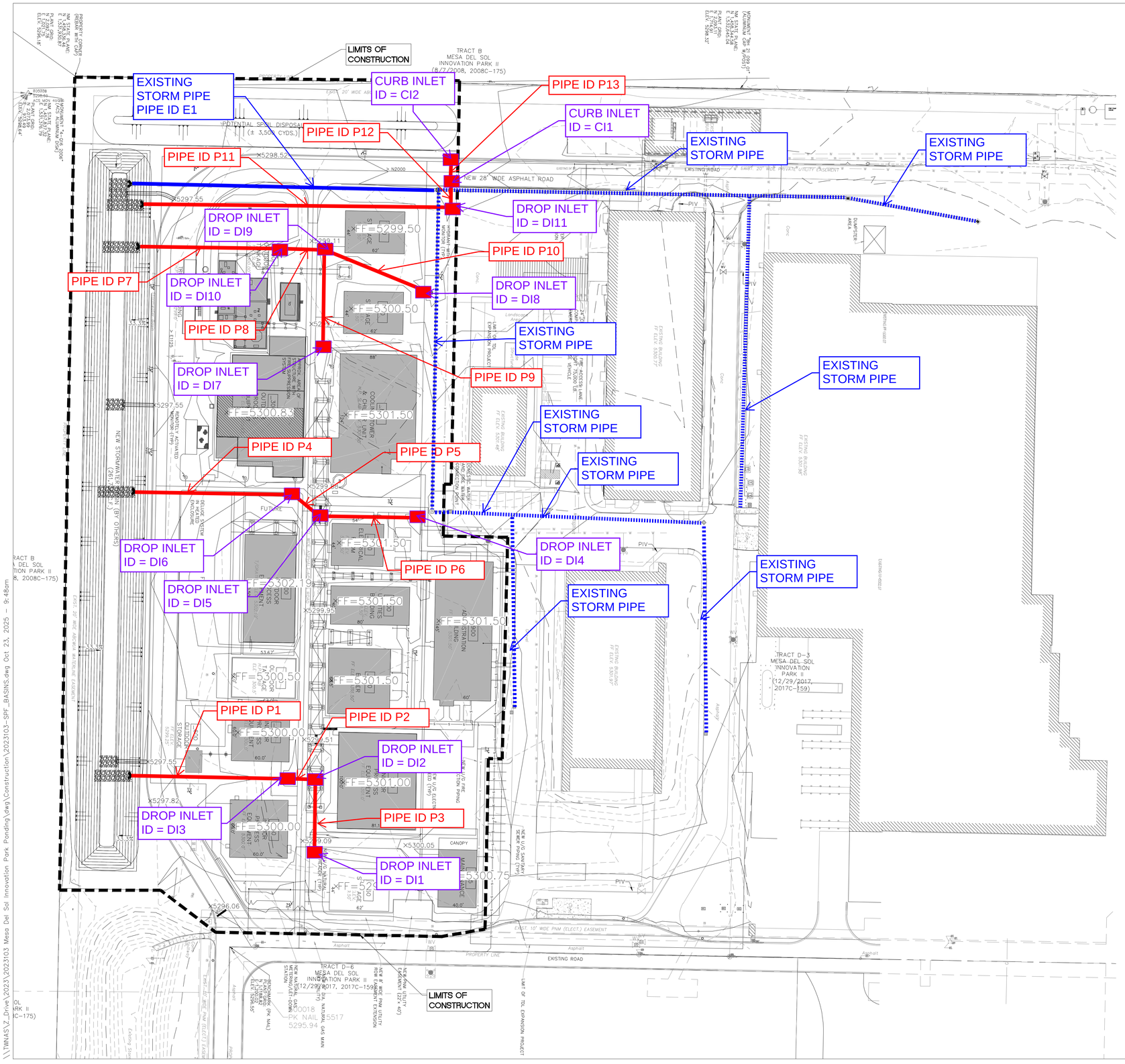

LEGEND

- CURB & GUTTER
- BOUNDARY LINE
- EASEMENT
- BUILDING
- SIDEWALK
- STEM WALL
- 5010 CONTOUR MAJOR
- 5011 CONTOUR MINOR
- LIMITS OF CONSTRUCTION
- x 5048.25 SPOT ELEVATION
- FLOW ARROW
- EXISTING CURB & GUTTER
- EXISTING BOUNDARY LINE
- 5010 EXISTING CONTOUR MAJOR
- 5011 EXISTING CONTOUR MINOR
- x 5048.25 EXISTING SPOT ELEVATION
- GRADE BREAK

Pipe Capacity Tables

Pipe Number	Diameter (in)	Slope (%)	PIPE TYPE	Developed Q (cfs)	Q Capacity (cfs)
P1	18	0.50	HDPE	6.940	8.650
P2	18	0.50	HDPE	4.620	8.650
P3	12	0.50	HDPE	2.310	2.930
P4	12	1.00	HDPE	3.990	4.140
P5	12	1.00	HDPE	2.600	4.140
P6	12	1.00	HDPE	1.300	4.140
P7	12	1.00	HDPE	3.600	4.140
P8	12	1.00	HDPE	2.920	4.140
P9	12	1.00	HDPE	0.670	4.140
P10	12	1.00	HDPE	1.580	4.140
P11	18	1.30	HDPE	13.520	13.950
P12	18	1.30	HDPE	9.000	13.950
P13	18	1.30	HDPE	4.500	13.950
E1	30	0.40	HDPE	30.750	32.970

Drop Inlet Capacity Tables

Inlet Number	Grate Size (ft)	Head (ft)	Developed Q (cfs)	Q Capacity (cfs)
DI1	2x2	0.50	2.930	6.600
DI2	2x2	0.50	2.930	6.600
DI3	2x2	0.50	2.930	6.600
DI4	2x2	0.50	1.300	6.600
DI5	2x2	0.50	1.330	6.600
DI6	2x2	0.50	1.360	6.600
DI7	2x2	0.50	0.670	6.600
DI8	2x2	0.50	1.580	6.600
DI9	2x2	0.50	0.670	6.600
DI10	2x2	0.50	0.670	6.600
DI11	2x2	0.50	4.500	10.000
CI1	2x3	0.50	4.500	10.000
CI2	2x3	0.50	4.500	10.000

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GRAPHIC SCALE
50 25 0 25 50
SCALE: 1"=50'

ENGINEER'S SEAL
RONALD R. BOHANNAN NEW MEXICO 7868 PROFESSIONAL ENGINEER
10/23/2025
RONALD R. BOHANNAN P.E. #7868

KPSW PROJECT
ALBUQUERQUE, NM

GRADING AND DRAINAGE STORM DRAIN PLAN

TIERRA WEST, LLC
5571 MIDWAY PARK PLACE NE
ALBUQUERQUE, NM 87109
(505) 858-3100
www.tierrawestllc.com

DRAWN BY LN
DATE 10/23/2025
2023103-SPF_BASINS
SHEET # GR-2
JOB # 2023103

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"4-Q16_2006" NUM DISK)

EXISTING 30" PIPE END SECTION AND RIP-RAP

3' WIDE CONCRETE RUNDOWN TO POND BOTTOM, SEE DETAIL SHEET GR-5

18" PIPE END SECTION INV=5288.8

9' RIP-RAP BED (AVG) AT 18" DEPTH: 20'X10'

RIP-RAP AROUND PIPE SEE DETAIL SHEET GR-5

12" PIPE END SECTION INV=5292.0

RIP-RAP AROUND PIPE SEE DETAIL SHEET GR-5

EXISTING 30" PIPE

18" HDPE PIPE

EXISTING MANHOLE RIM=5298

2'X3' CURB INLET RIM=5297.25 INV=5293.78

2'X3' CURB INLET RIM=5297.25 INV=5293.44

2'X2' AREA INLET RIM=5297.50 INV=5293.16

LIMITS OF CONSTRUCTION

NEW 28' WIDE ASPHALT ROAD

18" HDPE PIPE

FF=5299.50

2'X2' AREA INLET RIM=5298.75 INV=5294.04

12" HDPE PIPE

2'X2' AREA INLET RIM=5298.75 INV=5293.56

12" HDPE PIPE

SWALE

12" HDPE PIPE

2'X2' AREA INLET RIM=5298.75 INV=5295.27

FF=5300.50

SWALE

FF=5302.00

FF=5300.00

SWALE

SWALE

SWALE

SWALE

SWALE

SWALE

EXISTING 12" PIPE

CURB CUT

3' WIDE CONCRETE RUNDOWN TO POND BOTTOM, SEE DETAIL SHEET GR-5

9' RIP-RAP BED (AVG) AT 18" DEPTH: 20'X10'

2'X2' AREA INLET RIM=5299.50 INV=5295.07

SIDEWALK CULVERT

FF=5300.83

FF=5301.50

SWALE

12" PIPE END SECTION INV=5293.15

RIP-RAP AROUND PIPE SEE DETAIL SHEET GR-5

2'X2' AREA INLET RIM=5299.10 INV=5294.83

2'X2' AREA INLET RIM=5299.50 INV=5296.22

LIMITS OF CONSTRUCTION

EXISTING MANHOLE

EXISTING DROP INLET

12" HDPE PIPE

SIDEWALK CULVERT

12" HDPE PIPE

FUTURE

2'X2' AREA INLET RIM=5298.70 INV=5295.20

12" HDPE PIPE

SWALE

FF=5302.19

FF=5301.50

NEW STORMWATER POND (BY OTHERS) (261,700 C.F.)

MATCH LINE SHEET GR-4

LEGEND

- CURB & GUTTER
- BOUNDARY LINE
- EASEMENT
- BUILDING
- SIDEWALK
- STEM WALL
- 5010 CONTOUR MAJOR
- 5011 CONTOUR MINOR
- x 5048.25 SPOT ELEVATION
- FLOW ARROW
- EXISTING CURB & GUTTER
- EXISTING BOUNDARY LINE
- EXISTING CONTOUR MAJOR
- EXISTING CONTOUR MINOR
- x 5048.25 EXISTING SPOT ELEVATION
- GRADE BREAK

SPOT ELEVATION NOTE:

ALL SPOT ELEVATIONS ARE FLOW LINE UNLESS OTHERWISE NOTED.

FF = FINISH FLOOR ELEVATION
SW = SIDEWALK TOP ELEVATION
TW = FINISH GRADE NEAR TOP OF STEM WALL
FL = FLOW LINE ELEVATION
TC = TOP OF CURB ELEVATION

COA NOTICE TO CONTRACTORS

1. TWO WORKING DAYS PRIOR TO ANY EXCAVATION, THE CONTRACTOR MUST CONTACT **NEW MEXICO ONE CALL, DIAL "811"** [OR (505) 260-1990] FOR THE LOCATION OF EXISTING UTILITIES.
2. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE AND VERIFY THE LOCATIONS OF ALL OBSTRUCTIONS. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY THE ENGINEER SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT OF DELAY.
3. BACKFILL COMPACTION SHALL BE ACCORDING TO TRAFFIC/STREET USE.
4. MAINTENANCE OF THE FACILITY SHALL BE THE RESPONSIBILITY OF THE OWNER OF THE PROPERTY BEING SERVED.
5. WORK ON ARTERIAL STREETS MAY BE REQUIRED ON A 24-HOUR BASIS.

CAUTION

ALL EXISTING UTILITIES/TOPOGRAPHY SHOWN WERE OBTAINED FROM RESEARCH, AS-BUILTS, SURVEYS OR INFORMATION PROVIDED BY OTHERS. IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO CONDUCT ALL NECESSARY FIELD INVESTIGATIONS PRIOR TO AND INCLUDING ANY EXCAVATION, TO DETERMINE THE ACTUAL LOCATION OF UTILITIES AND OTHER IMPROVEMENTS, PRIOR TO STARTING THE WORK. ANY CHANGES FROM THIS PLAN SHALL BE COORDINATED WITH AND APPROVED BY THE ENGINEER.

N

GRAPHIC SCALE
20 10 0 10 20
SCALE: 1"=20'

City of Albuquerque
Planning Department
Development Review Services
HYDROLOGY SECTION
APPROVED
DATE: 11-13-2025
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RONALD R. BOHANNAN NEW MEXICO 7868 PROFESSIONAL ENGINEER
10/23/2025
RONALD R. BOHANNAN P.E. #7868

KPSW PROJECT
ALBUQUERQUE, NM

GRADING & DRAINAGE PLAN NORTH

DRAWN BY LN
DATE 10/23/2025
2023103-SPF_GRB
SHEET # **GR-3**
JOB # 2023103

TIERRA WEST, LLC
5571 MIDWAY PARK PLACE NE
ALBUQUERQUE, NM 87109
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MATCH LINE SHEET GR-3

LEGEND

- CURB & GUTTER
- BOUNDARY LINE
- EASEMENT
- BUILDING
- SIDEWALK
- STEM WALL
- 5010 CONTOUR MAJOR
- 5011 CONTOUR MINOR
- x 5048.25 SPOT ELEVATION
- FLOW ARROW
- EXISTING CURB & GUTTER
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10/23/2025
RONALD R. BOHANNAN P.E. #7868

KPSW PROJECT
ALBUQUERQUE, NM

GRADING & DRAINAGE PLAN SOUTH

TIERRA WEST, LLC
5571 MIDWAY PARK PLACE NE
ALBUQUERQUE, NM 87109
(505) 858-3100
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DRAWN BY: LN
DATE: 10/23/2025
2023103-SPF_GRB
SHEET # GR-4
JOB # 2023103

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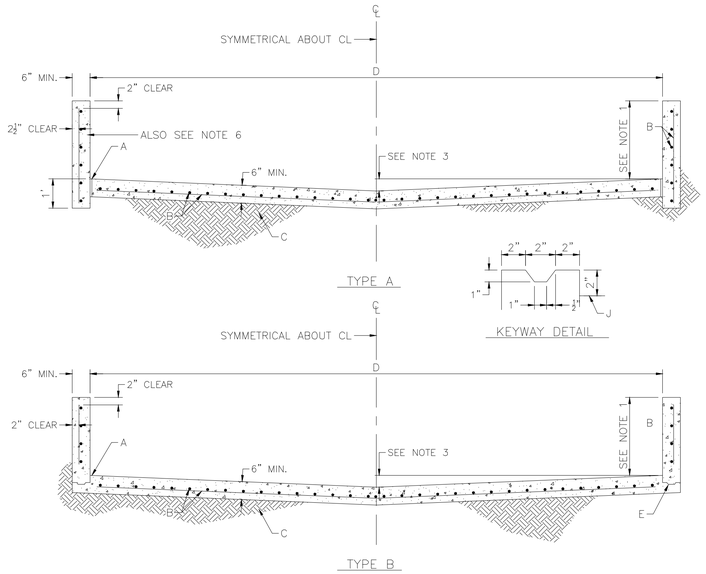


GENERAL NOTES:

1. CHANNEL DEPTHS EXCEEDING 2' WILL REQUIRE SEPARATE DESIGN FOR FLOOR AND WALLS.
2. TYPE B LINING WILL BE USED ONLY WHERE NO UTILITIES ARE LOCATED OR PROPOSED.
3. UP TO 16' WIDTH USE 4" INVERTED CROWN. 16' WIDTH AND OVER USE 6" INVERTED CROWN.
4. WARNING: THESE WALLS ARE NOT DESIGNED TO SUPPORT THE ADDITION OF GARDEN OR RETAINING TYPE WALLS.
5. THE OUTSIDE OF DRAINAGE WALLS SHALL NOT EXTEND BEYOND EASEMENT LINES OR ROW LINES.
6. 6" CONC. BLOCK WITH CORES FILLED WITH CONC. AND #4 BARS INSERTED INTO CORES AT 1'-6" O.C. MAY BE SUBSTITUTED FOR FORMED CONC. WALLS.

CONSTRUCTION NOTES:

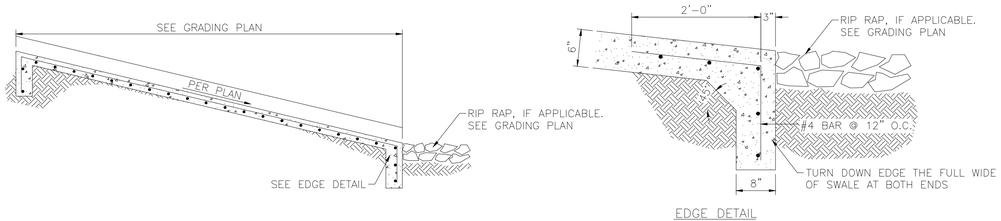
A. EXPANSION JOINT

B. #4 REBARS @ 6" O.C. LONG AND 12" O.C. TRANSVERSE

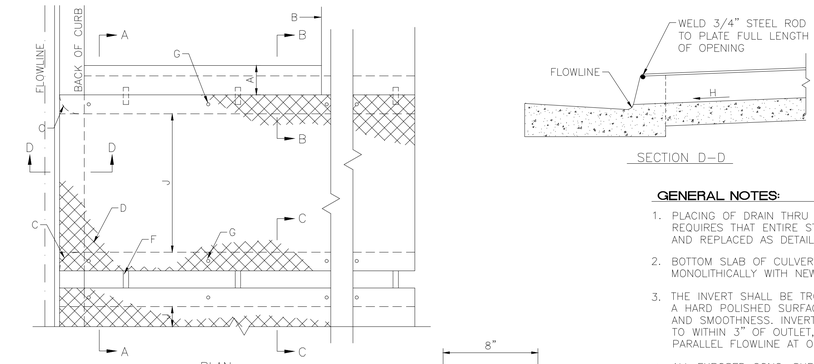
C. 6" COMPACTED SOIL 95% ASTM D 1557

D. WIDTH OF CHANNEL

E. KEYED CONSTRUCTION JOINT



CONCRETE DRAINAGE RUNDOWN
NTS



GENERAL NOTES:

1. PLACING OF DRAIN THRU EX. SIDEWALK AND C&G REQUIRES THAT ENTIRE STONES BE REMOVED AND REPLACED AS DETAILED.
2. BOTTOM SLAB OF CULVERT SHALL BE POURED MONOLITHICALLY WITH NEW GUTTER
3. THE INVERT SHALL BE TROWELED TO PRODUCE A HARD POLISHED SURFACE OF MAX DENSITY AND SMOOTHNESS. INVERT SHALL BE V-SHAPED TO WITHIN 3" OF OUTLET, THEN WARPED TO PARALLEL FLOWLINE AT OUTLET.
4. ALL EXPOSED CONC. SURFACE SHALL MATCH GRADE. COLOR, FINISH AND SCORING OF ADJACENT CURB AND SIDEWALK
5. SIDEWALK REPLACED DURING CONSTRUCTION SHALL BE POURED MONOLITHICALLY WITH CULVERT WALLS.
6. IF ROD ANCHORS ARE USED, DRILL & TAP FOR F.H. MACHINE SCREW. ATTACH ANCHORS TO PLATE AND SECURE PLATE IN PLACE PRIOR TO POURING WALLS.
7. LENGTH OF EACH PLATE SHALL BE SUCH THAT THE WEIGHT WILL NOT EXCEED 300LDS. AND SHALL BE STRESS RELIEVED AFTER FABRICATION. CLEAN SURFACE OF PLATE AND FRAMING MEMBERS AND PAINT W/ONE SHOP COAT RED OXIDE AND TWO FINISH COATS ALUMINUM PAINT (AASHTO M 69)
8. THE CITY WILL NOT ASSUME RESPONSIBLITY FOR MAINTENANCE OF ANY SIDEWALK CULVERT INSTALLED BY OR FOR PRIVATE PROPERTY OWNERS

CONSTRUCTION NOTES:

A. MATCH NEAREST CONTROL JOINT, INSTALL 1/2" EXPANSION JOINT

B. EDGE OF SIDEWALK OR SETBACK

C. 3" RADIUS

D. 3/8" CHECKERED STEEL PLATE (PAINT PER NOTE 7, ABOVE)

E. FOR SECURING PLATE USE 1"x5" S.S. ROD ANCHOR, "RED HEAD MULTI-SET II SRM-38 ANCHOR" OR APPROVED EQUAL. INSTALL PER MANUFACTOR'S INSTRUCTIONS AT MAX. 24" O.C. A MIN. OF 2 PER SIDE AND ONE WITHIN 6" OF EACH OTHER

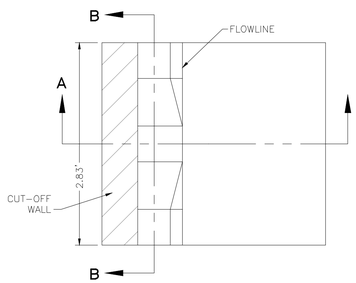
F. CONSTRUCTION JOINT IS OPTIONAL. IF USED SPACE DOWELS AT 18" O.C. MAX. 1-1/2" MIN. FROM FACE OF CONC.

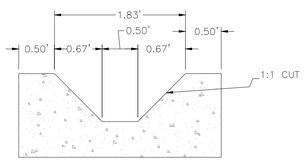
G. 3/8" - 16x1-1/4" COUNTERSUNK, F.H. STAINLESS STEEL, MACHINE SCREW.

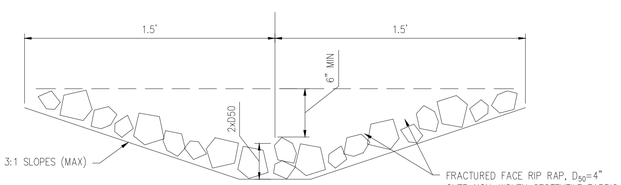
H. SLOPE 1/4" PER FT. MIN.

J. DRAIN WIDTH PER PLAN (12" MIN, 24" MAX.)

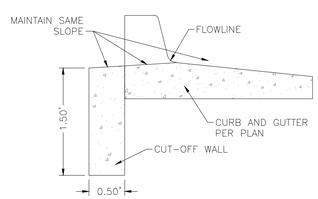
2' WIDE SIDEWALK CULVERT DETAIL
NTS



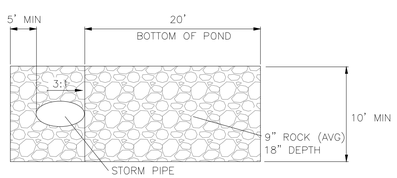




ROCK SWALE
NTS



CURB CUT DETAIL
SCALE: NTS



RIPRAP DETAIL
NTS

City of Albuquerque
Planning Department
Development Review Services
HYDROLOGY SECTION
APPROVED
DATE: 11-13-2025
BY:
HydroTrans # Q16DA5000D

THE APPROVAL OF THESE PLANS/REPORTS SHALL NOT BE CONSTRUED TO PERMIT VIOLATIONS OF ANY CITY ORDINANCE OR STATE LAW, AND SHALL NOT PREVENT THE CITY OF ALBUQUERQUE FROM REQUIRING CORRECTIONS FOR ERRORS OR DIMENSIONS IN PLANS, SPECIFICATIONS, OR CONSTRUCTION DOCUMENTS. SUCH APPROVED 11 PLANS/REPORTS SHALL NOT BE CHANGED, MODIFIED OR ALTERED WITHOUT AUTHORIZATION.

THE APPROVAL OF THESE PLANS/REPORTS SHALL EXPIRE TWO (2) YEARS AFTER THE APPROVAL DATE IF NO BUILDING PERMIT HAS BEEN PULLED ON THE DEVELOPMENT.

ENGINEER'S SEAL
RONALD R. BOHANNAN NEW MEXICO 7868 PROFESSIONAL ENGINEER
10/23/2025
RONALD R. BOHANNAN P.E. #7868

KPSW PROJECT
ALBUQUERQUE, NM

GRADING & DRAINAGE DETAILS

TIERRA WEST, LLC
5571 MIDWAY PARK PLACE NE
ALBUQUERQUE, NM 87109
(505) 858-3100
www.tierrawestllc.com

DRAWN BY: LN
DATE: 10/23/2025
2023103-SPF_GRB
SHEET # GR-5
JOB # 2023103

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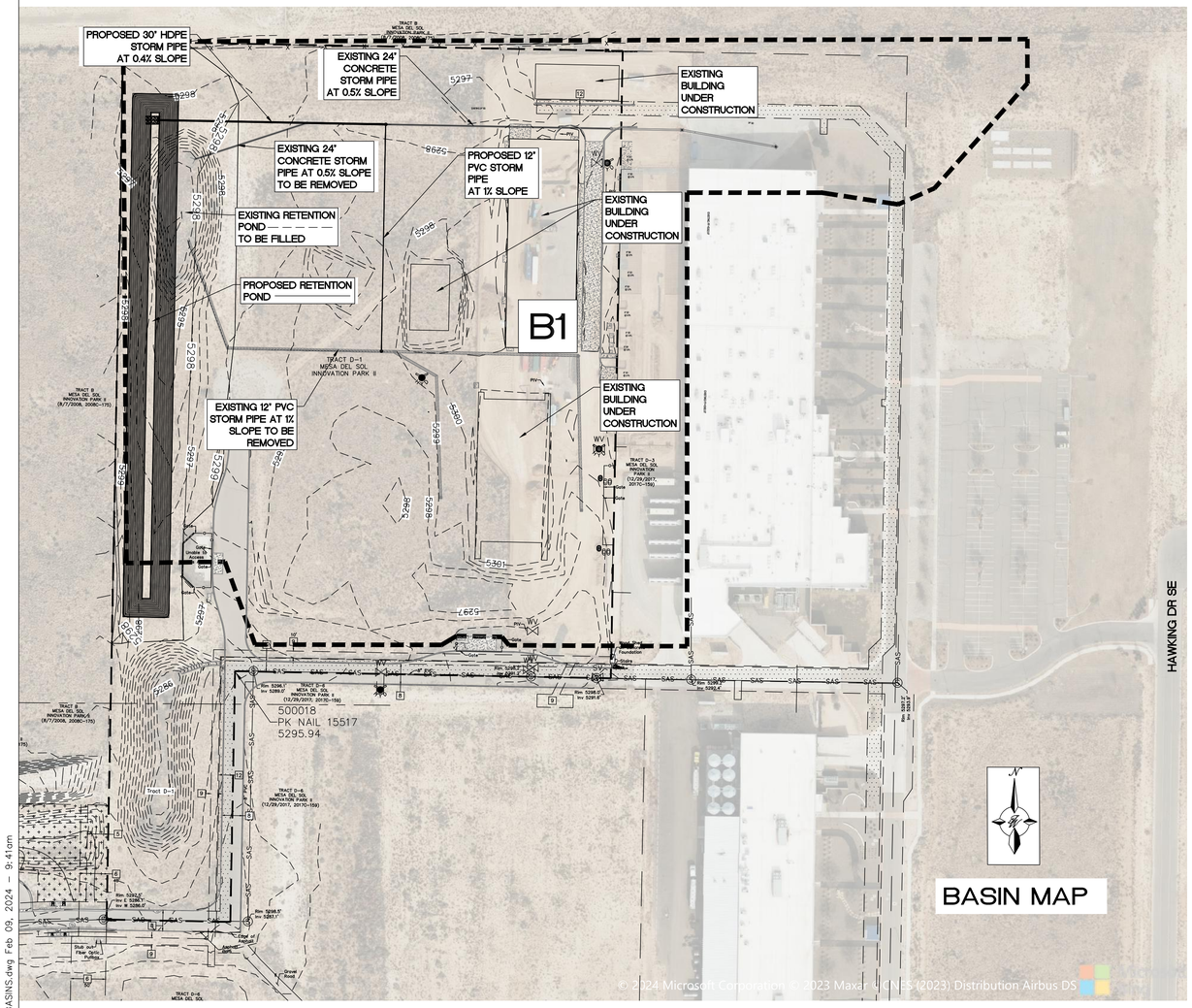

LEGEND

- CURB & GUTTER
- PROPERTY LINE
- EASEMENT
- BUILDING
- SIDEWALK/CONCRETE
- STORM DRAIN
- 5010 CONTOUR MAJOR
- 5011 CONTOUR MINOR
- x 5048.25 SPOT ELEVATION
- FLOW ARROW
- EXISTING CONCRETE STORM DRAIN PIPE
- EXISTING PVC STORM DRAIN PIPE
- 5010 EXISTING CONTOUR MAJOR
- 5011 EXISTING CONTOUR MINOR
- BASIN BOUNDARY LINE

HYDROLOGY NOTES

THE PROJECT SITE IS LOCATED ON THE EAST SIDE OF ALBUQUERQUE WITHIN THE MESA DEL SOL INNOVATION PARK. THE PROJECT BASIN AS OF 02/06/2024 HAS RECENTLY BEEN DEVELOPED AT ROUGHLY 50% WITH SEVERAL BUILDINGS AND INCLUDES PAVING, UTILITIES AND STORM DRAIN. STORM WATER WITHIN THE BASIN BOUNDARY CURRENTLY FLOWS TO A RETENTION POND LOCATED ON THE WEST SIDE OF THE BASIN BOUNDARY. THE INTEND OF THIS DRAINAGE REPORT IS TO IDENTIFY THE MINIMUM RETENTION POND SIZE REQUIRED TO CONTAIN THE 100 YR- 10 DAY STORM FOR FULLY DEVELOPED CONDITIONS.

THE SITE IS NOT LOCATED IN A 100YR FLOOD ZONE PER FEMA FIRM MAP

FIRM MAP: 35001C0363G

LEGAL DESCRIPTION

TR D-1 PLAT OF TRACTS D-1 THRU D-7 MESA DEL SOL INNOVATION PARK II (A SUBDIVISION OF TRACT D MESA DEL SOL INNOVATION PARK II) CONT 16.4161 AC

ACS BENCHMARK

A.G.R.S. MONUMENT "4-016"
NEW MEXICO STATE PLANE COORDINATES
(CENTRAL ZONE-N.A.D. 1983)
PUBLISHED EL=5298.643 US SURVEY FT (NAVD 1988)

DPM Weighted E Method

Precipitation Zone 2
Area Vicinity
Site Name and Address: Mesa Del Sol Kairos Pond
TWLLC **Date** 2/6/2024

Equations:

Weighted E = Ea*Aa + Eb*Ab + Ec*Ac + Ed
Volume = Weighted E * Total Area
Flow = Qa*Aa + Qb*Ab + Qc*Ac + Qd*Ad

HYDROLOGY CALCULATION TABLES

EXISTING CONDITIONS

Basin Descriptions												100-Year, 10-Day			
Basin ID	Area (sf)	Area (acres)	Area (sq miles)	Treatment A %	Treatment A (acres)	Treatment B %	Treatment B (acres)	Treatment C %	Treatment C (acres)	Treatment D %	Treatment D (acres)	Weighted E (in)	Volume (ac-ft)	Flow cfs	Volume (cf)
B1	783,028	17.98	0.02809	0%	0.000	0%	0.000	60%	10.786	40%	7.190	1.550	3.119	64.10	135855.046
Total	**783,028.00**	**17.976**	**0.02809**		**0.000**		**0.000**		**0.000**		**7.190**		**3.119**	**64.10**	**135855.05**

FULLY DEVELOPED CONDITIONS

Basin Descriptions												100-Year, 10-Day			
Basin ID	Area (sf)	Area (acres)	Area (sq miles)	Treatment A %	Treatment A (acres)	Treatment B %	Treatment B (acres)	Treatment C %	Treatment C (acres)	Treatment D %	Treatment D (acres)	Weighted E (in)	Volume (ac-ft)	Flow cfs	Volume (cf)
B1	783,028	17.98	0.02809	0%	0.000	0%	0.000	15%	2.696	85%	15.279	2.135	4.892	74.54	213081.005
Total	**783,028.00**	**17.976**	**0.02809**		**0.000**		**0.000**		**0.000**		**15.279**		**4.892**	**74.54**	**213081.01**

Retention Pond Volume Calculation		
Top Elevation	5,297.50	Ft.
Top Area	49,764	Sq. Ft.
Bottom Elevation	5,288.50	Ft.
Bottom Area	8,400	Sq. Ft.
Total Volume	261,738.00	Cubic Ft.
Max Water Elevation	5,296.50	Ft.
Max Water Elevation Area	44,880.00	Sq. Ft.
Max Water Volume	213,120.00	Cubic Ft.
Required Volume	213,081.01	Cubic Ft.
Design Free Board	1.00	Ft.
Note: Existing Pond Volume = 100,431 Cubic Ft.		

Pipe Sizing Calculation		
24" Conc Pipe Max Flow	16.00	CFS
12" PVC Pipe Max Flow	5.15	CFS
Combined Max Flow	21.15	CFS
30" HDPE Pipe Max Flow	28.10	CFS
Flow Required	21.15	CFS
Note: Previous Drainage Reports Q16DA5000A and Q16DA5000B indicate that the existing storm drain pipe system is flowing at max capacity. Note: See pipe capacity charts for additional pipe information.		

City of Albuquerque
Planning Department
Development Review Services
HYDROLOGY SECTION
APPROVED
DATE: 2/13/2024
BY:
HydroTrans # R16DA5000D
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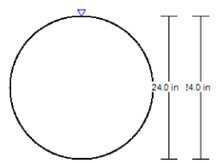
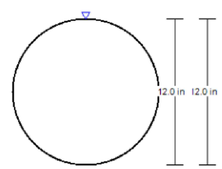
24" CONCRETE PIPE CAPACITY

Project Description	
Friction Method	Manning Formula
Solve For	Discharge
Input Data	
Roughness Coefficient	0.013
Channel Slope	0.005 ft/ft
Normal Depth	24.0 in
Diameter	24.0 in
Discharge	16.00 cfs



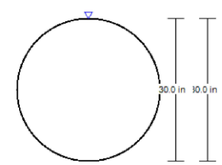
12" PVC PIPE CAPACITY

Project Description	
Friction Method	Manning Formula
Solve For	Discharge
Input Data	
Roughness Coefficient	0.009
Channel Slope	0.010 ft/ft
Normal Depth	12.0 in
Diameter	12.0 in
Discharge	5.15 cfs



30" HDPE PIPE CAPACITY

Project Description	
Friction Method	Manning Formula
Solve For	Discharge
Input Data	
Roughness Coefficient	0.012
Channel Slope	0.004 ft/ft
Normal Depth	30.0 in
Diameter	30.0 in
Discharge	28.10 cfs



ENGINEER'S SEAL
RONALD R. BOHANNAN NEW MEXICO 7868 PROFESSIONAL ENGINEER
02/06/2024
RONALD R. BOHANNAN P.E. #7868

KAIROS FULLY DEVELOEPD POND
ALBUQUERQUE, NM
GRADING AND DRAINAGE BASIN MAP

TIERRA WEST, LLC
5571 MIDWAY PARK PLACE NE
ALBUQUERQUE, NM 87109
(505) 858-3100
www.tierrawestllc.com

DRAWN BY: BF
DATE: 02/06/2024
2023103_BASINS
SHEET # GR-0
JOB # 2023103

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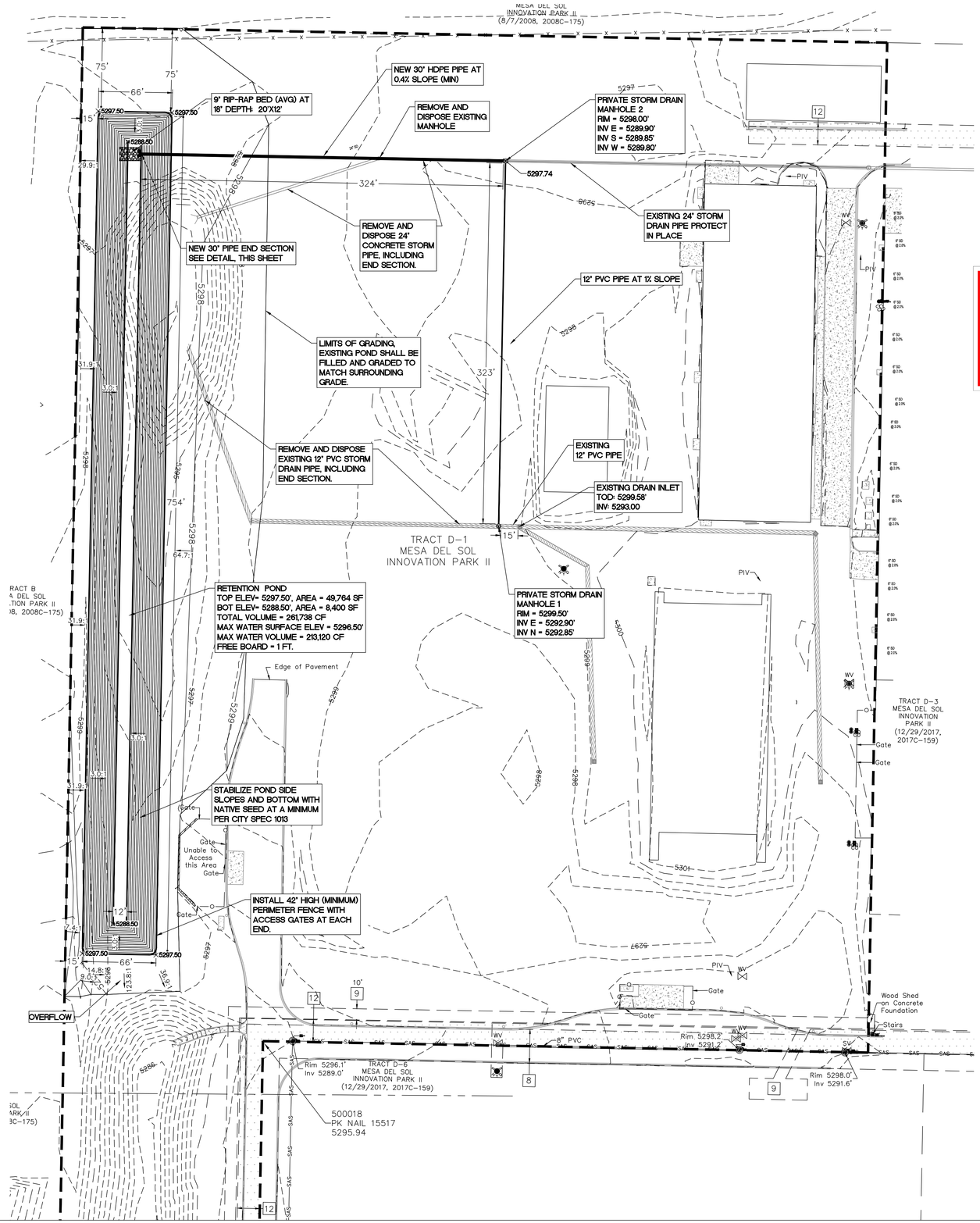

GRAPHIC SCALE

50 25 0 25 50

SCALE: 1"=50'

City of Albuquerque
Planning Department
Development Review Services
HYDROLOGY SECTION
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LEGEND

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- EXISTING PVC STORM DRAIN PIPE
- 5010 EXISTING CONTOUR MAJOR
- 5011 EXISTING CONTOUR MINOR

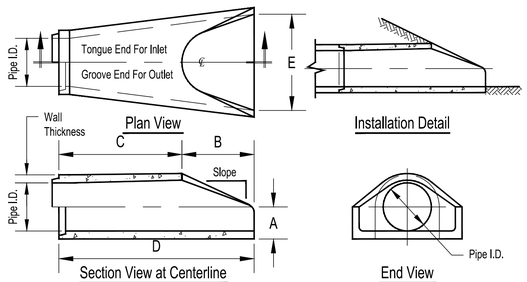
CAUTION

ALL EXISTING UTILITIES/TOPOGRAPHY SHOWN WERE OBTAINED FROM RESEARCH, AS-BUILTS, SURVEYS OR INFORMATION PROVIDED BY OTHERS. IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO CONDUCT ALL NECESSARY FIELD INVESTIGATIONS PRIOR TO AND INCLUDING ANY EXCAVATION, TO DETERMINE THE ACTUAL LOCATION OF UTILITIES AND OTHER IMPROVEMENTS, PRIOR TO STARTING THE WORK. ANY CHANGES FROM THIS PLAN SHALL BE COORDINATED WITH AND APPROVED BY THE ENGINEER.

EROSION CONTROL NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING RUN-OFF ON SITE DURING CONSTRUCTION.
2. CONTRACTOR IS RESPONSIBLE FOR CLEANING ALL SEDIMENT THAT GETS INTO EXISTING ROADWAY.
3. REPAIR OF DAMAGED FACILITIES AND CLEANUP OF SEDIMENT ACCUMULATIONS ON ADJACENT PROPERTIES AND IN PUBLIC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR.
4. ALL EXPOSED EARTH SURFACES MUST BE PROTECTED FROM WIND AND WATER EROSION PRIOR TO FINAL ACCEPTANCE OF ANY PROJECT.

Flared End Section
12" - 72" Diameter Pipe



Pipe Inner Diameter (inches)	Wall Thickness (inches)	A (inches)	B (inches)	C (inches)	D (inches)	E (inches)	Slope
12	2	4	24	48 7/8	72 7/8	30	3:1
15	2 1/4	6	27	46	73	30	3:1
18	2 1/2	9	27	46	73	36	3:1
24	3	9 1/2	43 1/2	30	73 1/2	48	3:1
30	3 1/2	12	54	19 3/4	73 3/4	60	3:1
36	4	15	63	34 3/4	97 3/4	72	3:1
42	4 1/2	21	63	35	98	78	3:1
48	5	24	72	26	98	84	3:1
54	5 1/2	27	65	35	100	90	2.4:1
60	6	30	60	39	99	96	2:1
66	6 1/2	32	78	21	99	102	2:1
72	7	34	78	21	99	108	2:1

Dimensions may vary depending upon equipment availability.

Notes:
1. Produced to meet ASTM specifications.
2. Contact a Concrete Pipe Division representative for details not listed on this sheet.

Rinker

FLARED END SECTION DETAIL
NTS

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DATE 02/06/2024
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