

CITY OF ALBUQUERQUE

Planning Department
David Campbell, Director



Mayor Timothy M. Keller

February 26, 2019

Ronald Bohannon, P.E.
Tierra West, LLC
5571 Midway Park Place NE
Albuquerque, NM, 87109

**RE: Multi-Use Recreational Facility
1600 Desert Surf Circle NE
Grading and Drainage Plan
Engineer's Stamp Date: 02/12/19
Hydrology File: F16D003E1**

Dear Mr. Bohannon:

PO Box 1293

Based upon the information provided in your resubmittal received 02/14/2019, the Grading and Drainage Plan is approved for Building Permit and Grading Permit.

Albuquerque

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 approval in support of Permanent Release of Occupancy by Hydrology, Engineer Certification per the DPM checklist will be required.

NM 87103

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 (Curtis Cherne, PE, ccherne@cabq.gov, 924-3420) 14 days prior to any earth disturbance.

www.cabq.gov

If you have any questions, please contact me at 924-3995 or rbrissette@cabq.gov.

Sincerely,

Renée C. Brissette, P.E. CFM
Senior Engineer, Hydrology
Planning Department

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NOTICE TO CONTRACTORS

- TWO WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT LINE LOCATING SERVICE, 765-1234, FOR LOCATION OF EXISTING UTILITIES.
- PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL CONNECTIONS. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY THE ENGINEER SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT OF DELAY.
- BACKFILL COMPACTION SHALL BE ACCORDING TO TRAFFIC/STREET USE.
- MAINTENANCE OF THESE FACILITIES SHALL BE THE RESPONSIBILITY OF THE OWNER OF THE PROPERTY SERVED.
- SOURCE OF TOPO IS ALTA/ACSM LAND TITLE SURVEY OF LOT 2 HARMS INDUSTRIAL PARK PREPARED BY PRECISION SURVEYS, INC DATED JANUARY 11, 2012.
- STORM WATER RUNOFF WILL BE PASSIVELY HARVESTED ALONG THE WEST, SOUTH AND EAST PROPERTY LINES WITHIN LANDSCAPED AREAS IN COMPLIANCE WITH WATER CONSERVATION ORDINANCE REQUIREMENTS.

EXISTING DRAINAGE CONDITIONS

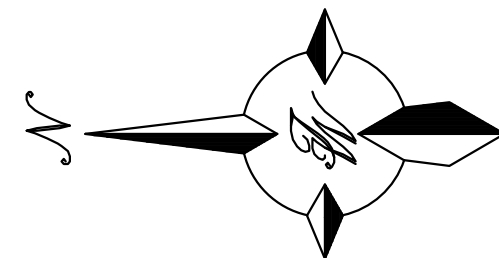
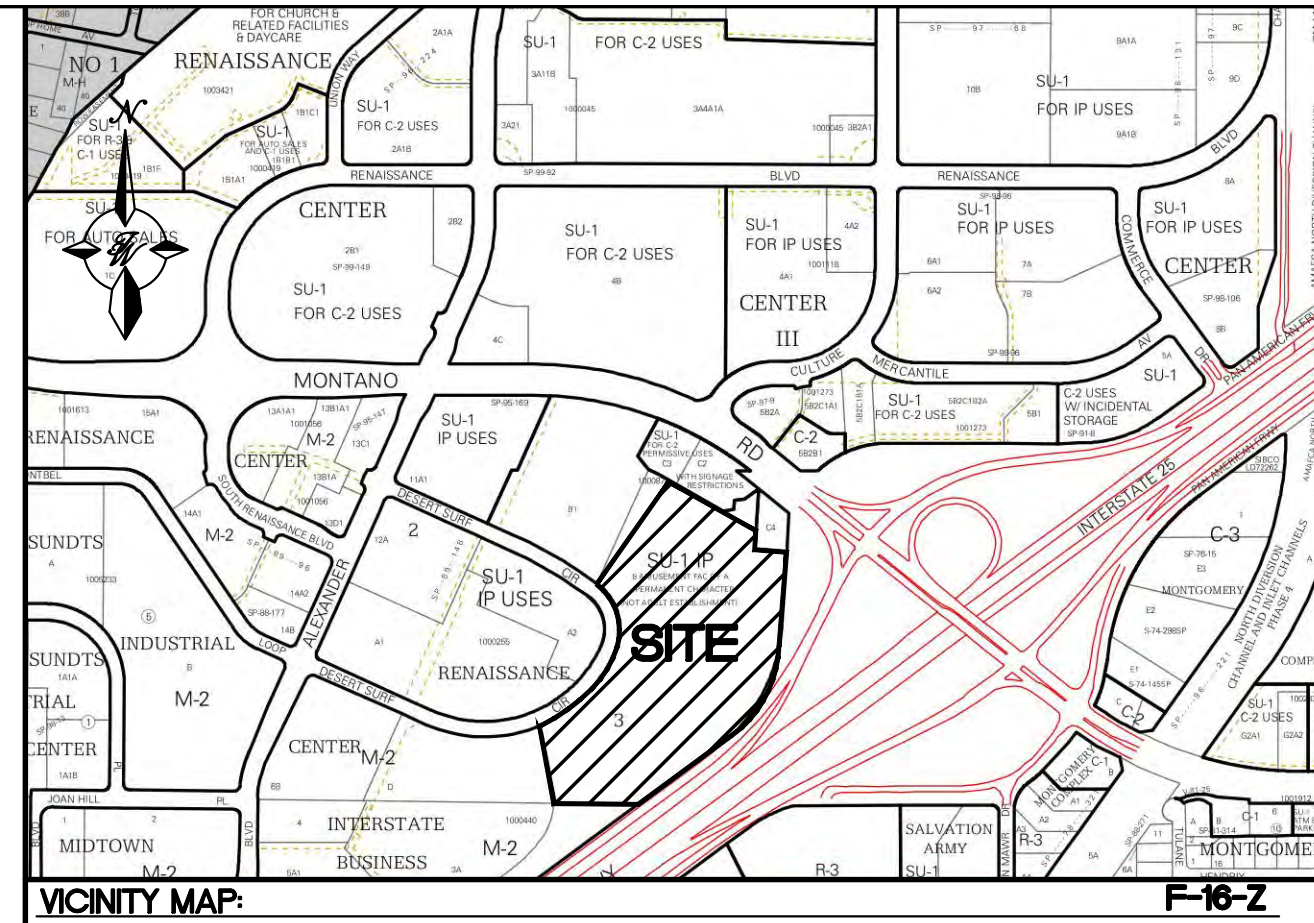
THE SITE IS CURRENTLY UNDEVELOPED AND WAS FORMALLY THE BEACH WATERPARK. THERE IS A PREVIOUSLY APPROVED MASTER DRAINAGE MANAGEMENT PLAN AND REPORT FOR THE SITE, DATED 10/29/18 BY TERRA WEST LLC. (F-16/D3E1). THE REPORT DEFINES BASINS AND PROVIDED FOR STORM SEWER ANALYSIS FOR THIS PARCEL AS WELL AS THE BALANCE OF WHAT WAS FORMERLY THE BEACH WATERPARK. THE OVERALL SITE WILL BE GRADED BASED ON THAT OVERALL GRADING PLAN AND THIS GRADING PLAN IS DESIGNED ASSUMING THOSE IMPROVEMENTS ARE COMPLETED AND THE REVISED STORM SEWER IS IN PLACE. THE SITE IS LOCATED ON FIRM MAP 3500C0138H AS SHOWN ABOVE. THE MAP SHOWS THAT THE SITE DOES NOT LIE WITHIN ANY 100 YEAR FLOOD PLAINS.

PROPOSED DRAINAGE MANAGEMENT PLAN

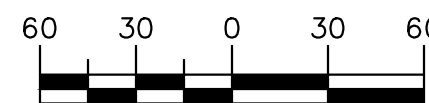
THIS PROPOSED GRADING AND DRAINAGE PLAN IS FOR THE SITE SPECIFIC IMPROVEMENTS FOR THE TOP GOLF PARCEL AND BUILDING CONSTRUCTION. THIS PLAN IS CONSISTENT WITH THE PREVIOUSLY APPROVED MASTER DRAINAGE MANAGEMENT PLAN WITH THE EXCEPTION THAT BASIN 5 WILL NOW DRAIN THROUGH A DROP INLET AND CONNECT TO A STORM SEWER SYSTEM DESIGNED TO DRAIN THE OUTFIELD OF TOP GOLF. BASIN 5 PREVIOUSLY DRAINED THROUGH BASIN 6 AND THE FLOWS FROM THOSE BASINS WERE TO BE RESTRICTED DUE TO DOWNSTREAM CAPACITY LIMITATIONS IN THE STORM SEWER. THE STORM SEWER PREVIOUSLY DESIGNED FOR THE OUTFIELD DRAINAGE HAS CAPACITY TO ACCEPT THE FLOWS FROM BASIN 5.

BASIN 6 WILL CONTINUE TO DISCHARGE TO THE EXISTING STORM SEWER AS PREVIOUSLY APPROVED IN THE MASTER DRAINAGE PLAN. BASIN 6 DISCHARGES A TOTAL OF 2.14 CFS TO THE EXISTING STORM SEWER WHICH IS SLIGHTLY ABOVE THE CAPACITY. THEREFORE THE DROP INLET IN BASIN 6 WILL HAVE A 5.75" ORIFICE PLATE ON THE DISCHARGE PIPE TO LIMIT THE FLOW TO 2.08 CFS WHICH IS SLIGHTLY BELOW THE ALLOWED DISCHARGE OF 2.10 CFS. THE AREA AROUND THE DROP INLET IS DEPRESSED AND HAS ENOUGH CAPACITY TO POND THE DISCHARGE TO THE DROP INLET AT THE RESTRICTED FLOW RATE.

THE REMAINDER OF THE SITE WILL CONTINUE TO DRAIN AS PROPOSED IN THE APPROVED MASTER DRAINAGE MANAGEMENT PLAN AT THE FLOW RATES IDENTIFIED ON THE DRAINAGE BASIN MAP.



GRAPHIC SCALE



SCALE: 1"=60'



LEGEND

- CURB & GUTTER
- BOUNDARY LINE
- EASEMENT
- CENTERLINE
- RIGHT-OF-WAY
- BUILDING
- SIDEWALK
- CONTOUR MAJOR
- CONTOUR MINOR
- SPOT ELEVATION
- FLOW ARROW
- EXISTING CURB & GUTTER
- EXISTING RETAINING WALL
- EXISTING SIDEWALK
- EXISTING BOUNDARY LINE
- PROPOSED CONTOUR MAJOR
- PROPOSED CONTOUR MINOR
- EXISTING CONTOUR MAJOR
- EXISTING CONTOUR MINOR
- EXISTING SPOT ELEVATION
- EXISTING SD MANHOLE
- EXISTING STORM SEWER LINE

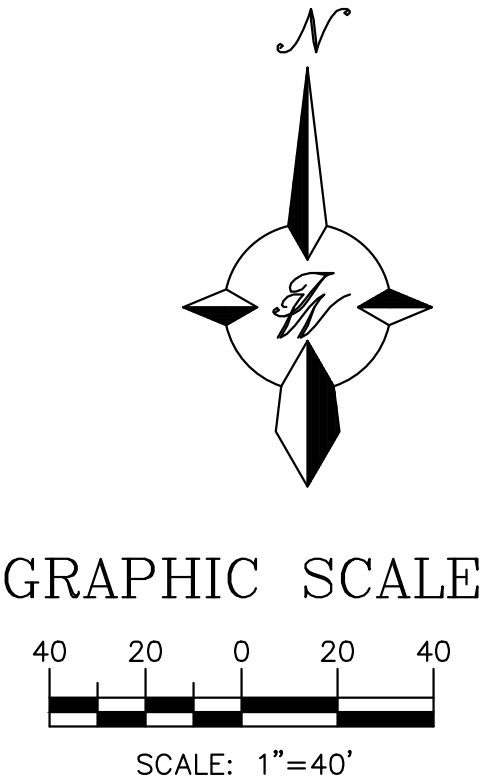
CAUTION:

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<div>ENGINEER'S SEAL</div> <div>RONALD R. BOHANNAN NEW MEXICO 7868 PROFESSIONAL ENGINEER 2/12/2019 RONALD R. BOHANNAN P.E. #7868</div>	TOPGOLF ALBUQUERQUE, NM	DRAWN BY BF
	TOPGOLF GRADING PLAN FOR BUILDING PERMIT	DATE 02/12/19
	<div>TERRA WEST, LLC</div> <div>5571 MIDWAY PARK PLACE NE ALBUQUERQUE, NM 87109 (505) 858-3100 www.tierrowestllc.com</div>	2017035_GRB-3
		SHEET # C4 JOB # 2017065

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MURRAY
DESIGN BUILD

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LEGEND	
	CURB & GUTTER
	BOUNDARY LINE
	EASEMENT
	CENTERLINE
	RIGHT-OF-WAY
	BUILDING
	SIDEWALK
	CONTOUR MAJOR
	CONTOUR MINOR
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	FLOW ARROW
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	EXISTING CONTOUR MINOR
	EXISTING SPOT ELEVATION
	EXISTING SD MANHOLE
	EXISTING STORM SEWER LINE

NOTES:
1. SPOT ELEVATIONS ARE AT FLOWLINE UNLESS OTHERWISE SPECIFIED.

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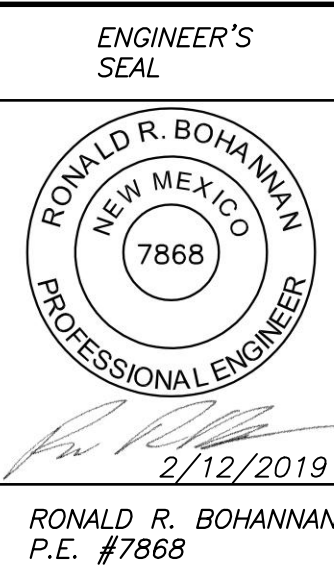
EROSION CONTROL NOTES:

- CONTRACTOR IS RESPONSIBLE FOR OBTAINING A TOPSOIL DISTURBANCE PERMIT PRIOR TO BEGINNING WORK.
- CONTRACTOR IS RESPONSIBLE FOR MAINTAINING RUN-OFF ON SITE DURING CONSTRUCTION.
- CONTRACTOR IS RESPONSIBLE FOR CLEANING ALL SEDIMENT THAT GETS INTO EXISTING RIGHT-OF-WAY.
- REPAIR OF DAMAGED FACILITIES AND CLEANUP OF SEDIMENT ACCUMULATIONS ON ADJACENT PROPERTIES AND IN PUBLIC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR.
- ALL EXPOSED EARTH SURFACES MUST BE PROTECTED FROM WIND AND WATER EROSION PRIOR TO FINAL ACCEPTANCE OF ANY PROJECT.

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ARCO
MURRAY
DESIGN BUILD



TOPGOLF
ALBUQUERQUE, NM

GRADING PLAN 1

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

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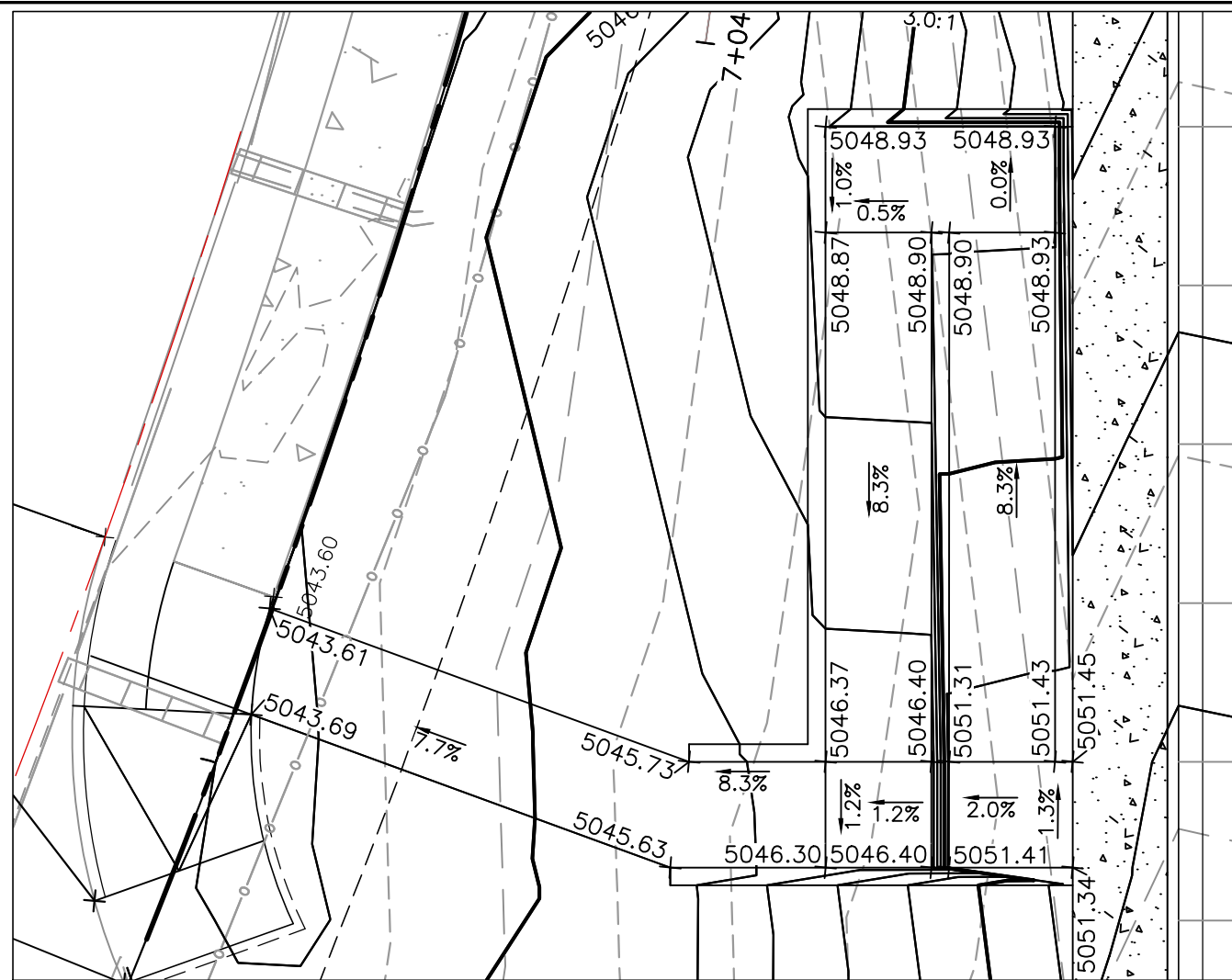
DATE
02/12/19

2017035_GRB-3

SHEET #

C4.1

JOB #
2017065



PEDESTRIAN HC RAMP
SCALE=1"=10'

MATCHLINE B - SEE SHEET C4.1

LEGEND

- CURB & GUTTER
- BOUNDARY LINE
- EASEMENT
- CENTERLINE
- RIGHT-OF-WAY
- BUILDING
- SIDEWALK
- 5010 --- CONTOUR MAJOR
- 5011 --- CONTOUR MINOR
- x 5048.25 SPOT ELEVATION
- FLOW ARROW
- EXISTING CURB & GUTTER
- EXISTING RETAINING WALL
- EXISTING SIDEWALK
- EXISTING BOUNDARY LINE
- 5010 --- PROPOSED CONTOUR MAJOR
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- (D) EXISTING SD MANHOLE
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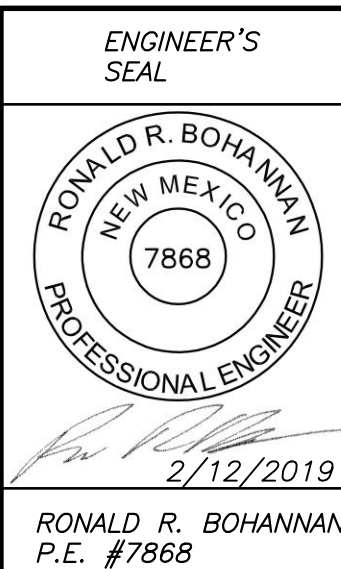
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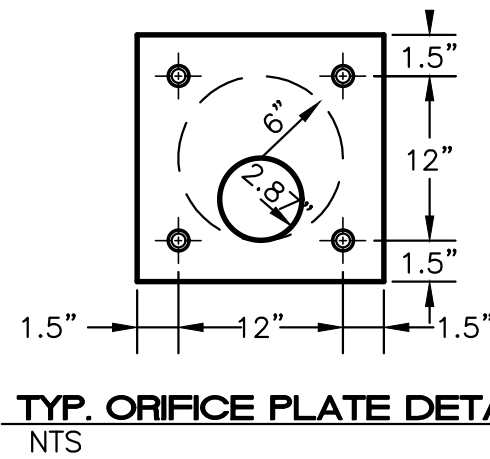
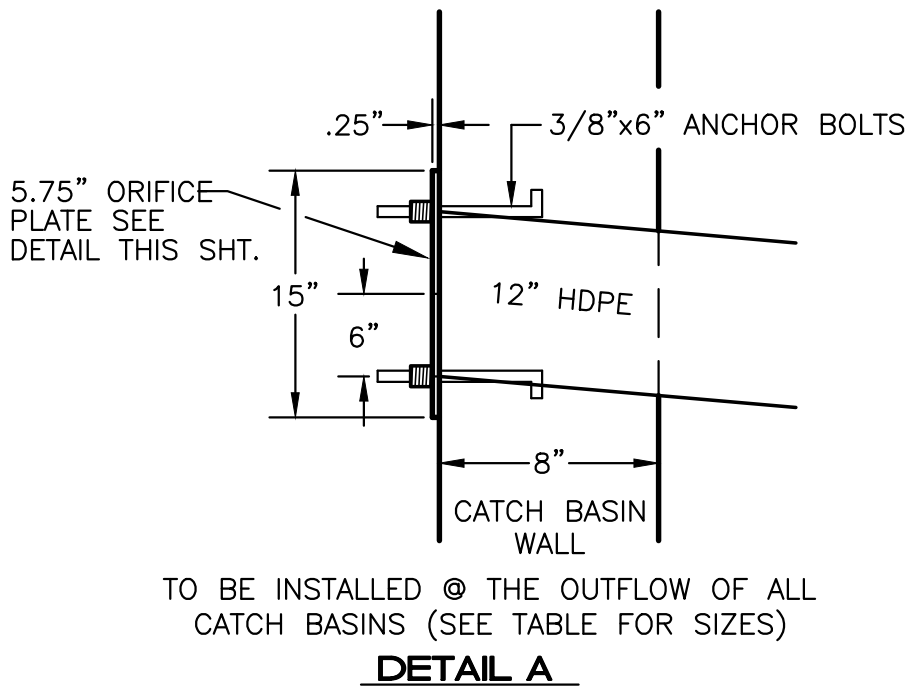
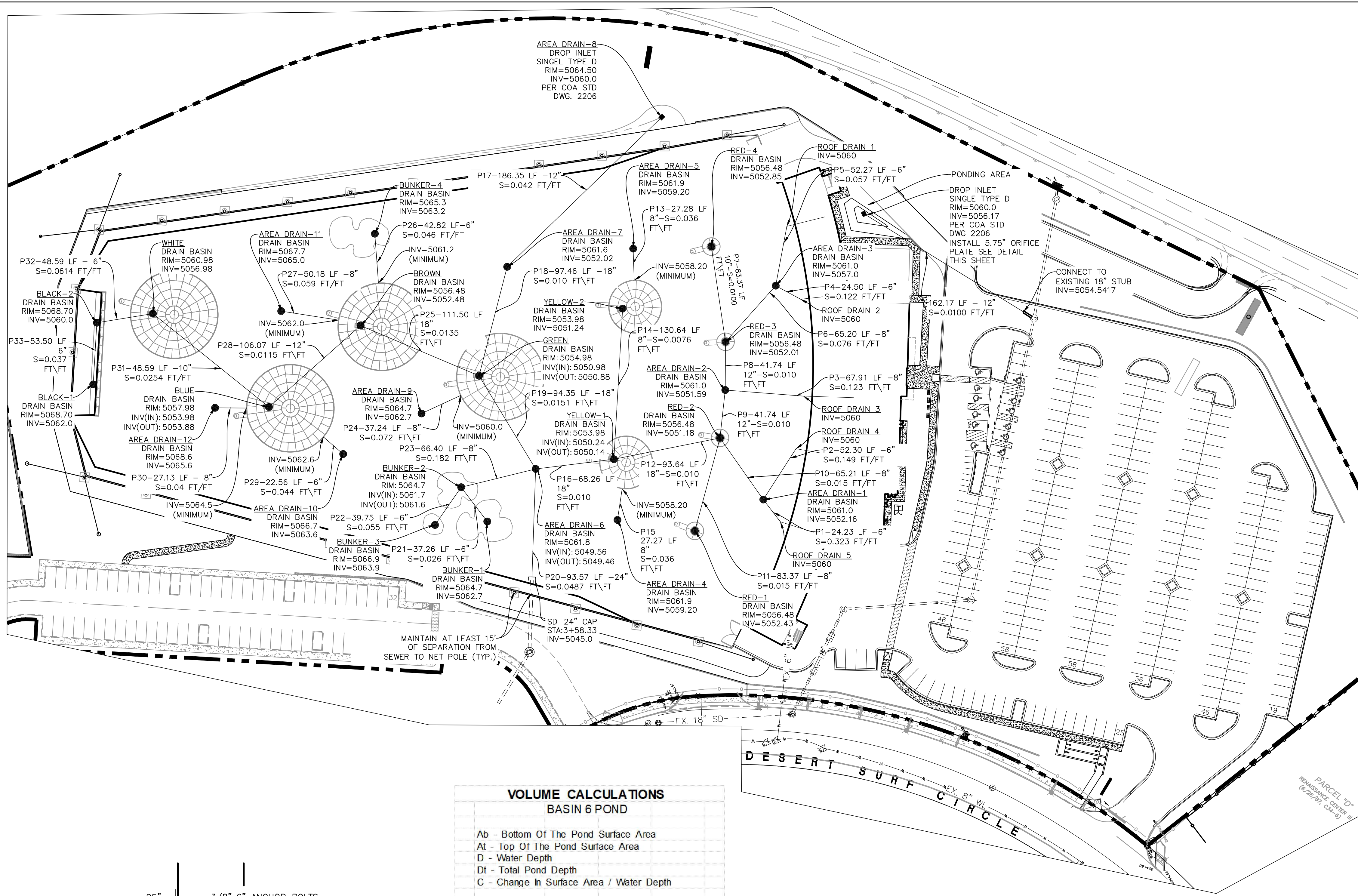


TOPGOLF
ALBUQUERQUE, NM
GRADING PLAN 2

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

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2017065

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VOLUME CALCULATIONS BASIN 6 POND

Ab - Bottom Of The Pond Surface Area
At - Top Of The Pond Surface Area
D - Water Depth
Dt - Total Pond Depth
C - Change In Surface Area / Water Depth

$$\text{Volume} = \text{Ab} \cdot \text{D} + 0.5 \cdot \text{C} \cdot \text{D}^2$$
$$\text{C} = (\text{At} - \text{Ab}) / \text{Dt}$$

Ab =	7.00
At =	1,700.00
Dt =	6.00
C =	282.17

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
5056.00	0.00	0.00	0.0000
5057.00	1.00	0.0002	0.7572
5058.00	2.00	0.0036	1.1520
5059.00	3.00	0.0134	1.4426
5060.00	4.00	0.0298	1.6837
5060.50	4.50	0.0404	1.7922
5061.00	5.00	0.0526	1.8944
5061.50	5.50	0.0665	1.9914
5062.00	6.00	0.0819	2.0839

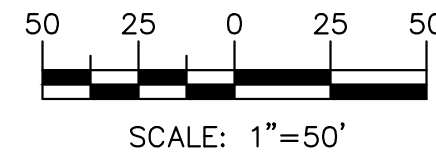
Orifice Equation
 $Q = \text{CA} \sqrt{2gH}$

C =	0.6
Diameter (in)	5.75
Area (ft ²) =	0.180
g =	32.2
H (ft) =	Depth of water above center of orifice
Q (CFS) =	Flow

LEGEND

- CURB & GUTTER
- BOUNDARY LINE
- EASEMENT
- BUILDING
- SIDEWALK
- EXISTING RETAINING WALL
- EXISTING CURB & GUTTER
- STORM DRAIN LINE
- EX. 18" SD
- STORM DRAIN MANHOLE
- EXISTING STORM DRAIN MANHOLE

GRAPHIC SCALE



NOTE:

PIPES 6"-10" ARE SCHEDULE 40 PVC AND ALL PIPE SIZES LARGER THAN 10" MAY BE HDPE OR EQUIVALENT.

Pipe Capacity

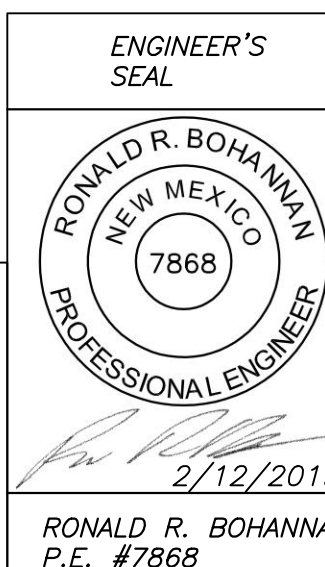
Pipe	D (in)	Slope (%)	Area (ft ²)	R	Q Provided (cfs)	Q Required (cfs)	Velocity (ft/s)
1	6	1.08	0.20	0.125	0.69	0.59	3.00
2	6	1.08	0.20	0.125	0.69	0.40	2.04
3	8	1.00	0.35	0.167	1.43	0.87	2.49
4	6	1.08	0.20	0.125	0.69	0.43	2.19
5	6	1.08	0.20	0.125	0.69	0.32	1.63
6	8	1.08	0.35	0.167	1.49	0.75	2.15
7	10	1.00	0.55	0.208	2.60	2.04	3.74
8	12	1.00	0.79	0.250	4.22	2.79	3.55
9	12	2.00	0.79	0.250	5.97	5.62	7.16
10	8	1.08	0.35	0.167	1.49	1.09	3.12
11	8	1.08	0.35	0.167	1.49	1.50	4.30
12	18	1.00	1.77	0.375	12.45	8.61	4.87
13	8	1.00	0.35	0.167	1.43	1.09	3.12
14	8	1.00	0.35	0.167	1.43	1.09	3.12
15	8	1.00	0.35	0.167	1.43	1.33	3.81
16	18	1.00	1.77	0.375	12.45	11.03	6.24
17	12	1.08	0.79	0.250	4.39	4.06	5.17
18	18	1.00	1.77	0.375	12.45	6.28	3.55
19	18	1.51	1.77	0.375	15.30	14.72	8.33
20	24	4.87	3.14	0.500	59.16	27.57	8.78
21	6	1.00	0.20	0.125	0.66	0.40	2.04
22	6	1.00	0.20	0.125	0.66	0.40	2.04
23	8	1.00	0.35	0.167	1.43	1.16	3.32
24	8	1.00	0.35	0.167	1.43	1.80	5.16
25	18	1.35	1.77	0.375	14.46	6.64	3.76
26	6	1.00	0.20	0.125	0.66	0.48	2.44
27	8	2.00	0.35	0.167	2.03	2.00	5.73
28	12	1.15	0.79	0.250	4.53	4.16	5.30
29	6	1.00	0.20	0.125	0.66	0.50	2.55
30	8	2.00	0.35	0.167	2.03	1.57	4.50
31	10	2.54	0.55	0.208	4.14	2.09	3.83
32	6	6.14	0.20	0.125	1.65	0.25	1.27
33	6	1.00	0.20	0.125	0.66	0.50	2.55

Manning's Equation:

$$Q = 1.49/n \cdot A \cdot R^{2/3} \cdot S^{1/2}$$

A = Area
R = D/4
S = Slope
n = 0.011

**ARCO
MURRAY**
DESIGN BUILD



**TOPGOLF
ALBUQUERQUE, NM**
STORM SEWER PLAN

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