

CITY OF ALBUQUERQUE

Planning Department
David Campbell, Director



Mayor Timothy M. Keller

May 30, 2019

Fred C. Arfman, P.E.
Isaacson & Arfman, P.A.
128 Monroe St. N.E
Albuquerque, NM, 87108

**RE: Albuquerque RV & Boat Storage
2201 Vista Oriente St. NW
Grading and Drainage Plan
Engineer's Stamp Date: 05/20/19
Hydrology File: H09D030**

Dear Mr. Arfman:

PO Box 1293

Based upon the information provided in your submittal received 05/20/19, the Grading and Drainage Plan **is not** approved for Building Permit and SO19 Permit. The following comments need to be addressed for approval of the above referenced project:

Albuquerque

NM 87103

www.cabq.gov

1. Please add sections of the proposed perimeter wall on the West and North property lines. This section should include the proposed perimeter wall along the property line, the proposed gravel swale, the location of the wall's footer (this needs to stay within the property) and the proposed grades on the other side of the wall.
2. Please add the reference to the City of Albuquerque standard detail No. 2236 for the sidewalk culverts.
3. Please correct the boarder on Sheet CG-101. It seems a little off.
4. Please place a note stating; "The total site required stormwater quality pond volume is 5,747 CF and the provided stormwater quality pond volume is 6,502 CF." (Please note that since the provided volume is greater than the required, no additional fee-in-lieu is required.)
5. For the sidewalk culverts, instead of the orifice equation which was used, the broad crest weir equation ($Q = CLH^{2/3}$) with coefficient "C" =3 for a broad-crested weir must be used, not the orifice equation. Running both formulas reveals that the weir equation is the controlling equation for this application. Per, Handbook of Hydraulics, Brater and King, 6th Edition (1976), Table 5-5(a), a C coefficient of 3.06 is the most appropriate value, but anything in the 2.95 to 3.09 range would be reasonable. Even if the orifice equation governed, this application of the orifice equation erroneously uses h ranging from 0.74'

CITY OF ALBUQUERQUE

Planning Department
David Campbell, Director



Mayor Timothy M. Keller

to 0.89'; per the DPM Ch.22, section 3, part A: h = Depth of water measured from the center of the opening, so h should be 0.292'. So if you use the weir equation, $Q = 4.19$ cfs per sidewalk culvert. If you use the orifice equation with the correct height, $Q = 3.23$ cfs per sidewalk culvert. So the site has a flow of 20.4 cfs, so you would need 5 – 2 ft sidewalk culverts. Please correct.

6. Please add the weir equation for the 28' emergency overflow spillway.
7. 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.
8. As a reminder, please provide a Drainage Covenant per Chapter 17 of the DPM for water quality ponds prior to Permanent Release of Occupancy. Please submit this on the 4th floor of Plaza de Sol. A \$25 fee will be required.
9. Standard review fee of \$150 will be required at the time of resubmittal.

PO Box 1293

Albuquerque

NM 87103

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



City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 11/2018)

Project Title: Albuquerque RV & Boat Storage **Building Permit #:** _____ **Hydrology File #:** H09
DRB#: _____ **EPC#:** _____ **Work Order#:** _____
Legal Description: Tract 1, Ladera Business Park, Unit 2
City Address: 2201 Vista Oriente Street NW - Albuquerque, NM 87129

Applicant: Isaacson & Arfman, PA **Contact:** Fred C. Arfman or
Bryan J. Bobrick
Address: 128 Monroe Street NE - Albuquerque, NM 87108
Phone#: (505) 268-8828 **Fax#:** _____ **E-mail:** freda@iacivil.com
bryanb@iacivil.com
Owner: Ladera Enterprises, LLC **Contact:** _____
Address: _____
Phone#: _____ **Fax#:** _____ **E-mail:** _____

TYPE OF SUBMITTAL: _____ PLAT (____ # OF LOTS) _____ RESIDENCE _____ DRB SITE ☒ ADMIN SITE

IS THIS A RESUBMITTAL?: _____ Yes ☒ No

DEPARTMENT: _____ TRAFFIC/ TRANSPORTATION ☒ HYDROLOGY/ DRAINAGE

Check all that Apply:

TYPE OF SUBMITTAL:

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

TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

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

DATE SUBMITTED: May 20, 2019 **By:** Fred C. Arfman

COA STAFF:

ELECTRONIC SUBMITTAL RECEIVED: _____

FEE PAID: _____

PROJECT INFORMATION

Property Address: 2201 Vista Oriente St. NW, Albuquerque, NM 87120

Property Acreage: 5.2172 acres

Proposed Improvements: The proposed improvements include self-storage with associated asphalt paved access, parking and landscaping.

Legal: Tract 1, Ladera Business Park, Unit 2, City of Albuquerque, Bernalillo County, NM.

Benchmark: Brass cap stamped "2-H9, 1980", on the west mesa under power lines running NE/SW, 0.2 mi. North of Ladera Dr. NW, 111ft. west of the centerline of Unser Blvd., in the middle of a set of powerpoles.

Off-site Flow: No off-site drainage affects this Property.

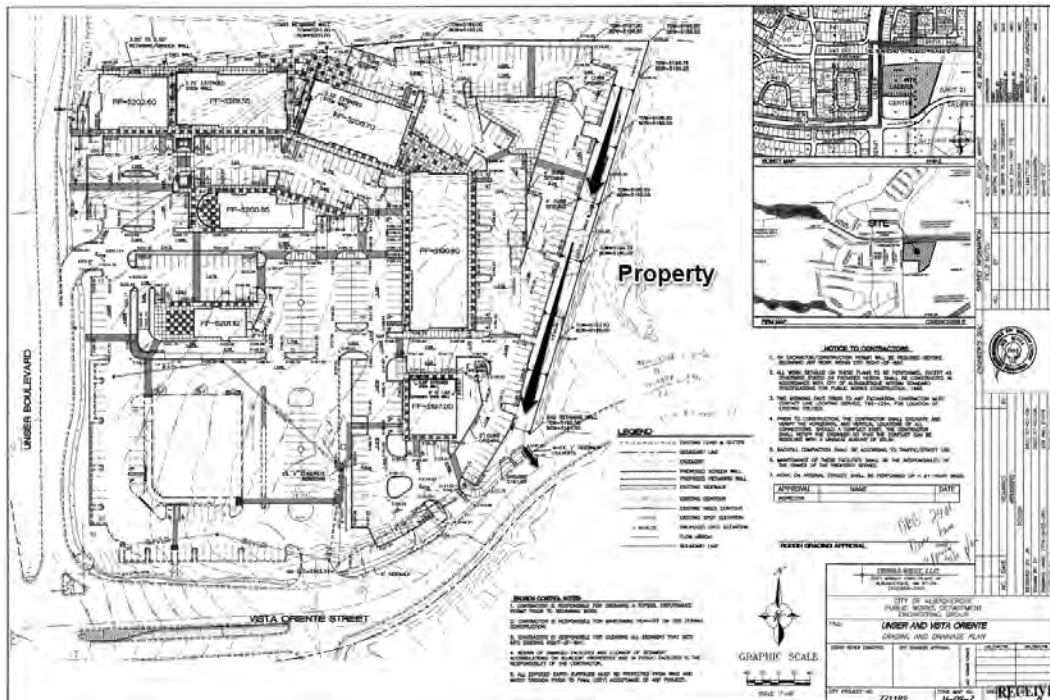
Flood Hazard: Per Bernalillo County Firm Map #35001C0326J, the site is located within Floodzone 'X' designated as areas determined to be outside 500-year floodplain.

INTRODUCTION:

The information included in this packet is provided to clarify the drainage analysis and support the proposed drainage management plan for the development of an RV / self-storage facility planned for Tract 1, Ladera Business Park (LDP), Unit 2 (Property).

The property is an undeveloped 5.2172 acre tract of land located at east of the intersection of Unser Boulevard and Vista Oriente Street (Zone Atlas H-9). Currently, the site drains from west to east following the historic drainage pattern. Drainage for this tract was included in the Ladera Business Park Master Drainage Report (MDP) by Mark Goodwin & Associates dated 11-21-02 which modified the previously approved Ladera Industrial Center Master Drainage Plan, dated September 28, 1988.





MASTER DRAINAGE REPORT for LADERA BUSINESS PARK – EXCERPTS

MASTER DRAINAGE REPORT for LADERA BUSINESS PARK

Prepared for:

Unser - 98th Street Partnership
8900 Washington, NE
Albuquerque, NM 87113

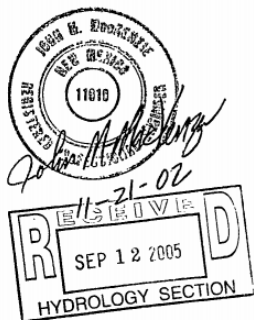
Prepared by:

John M. MacKenzie, PE
Mark Goodwin & Associates, PA
PO Box 90606
Albuquerque, NM 87199

April 5, 2002

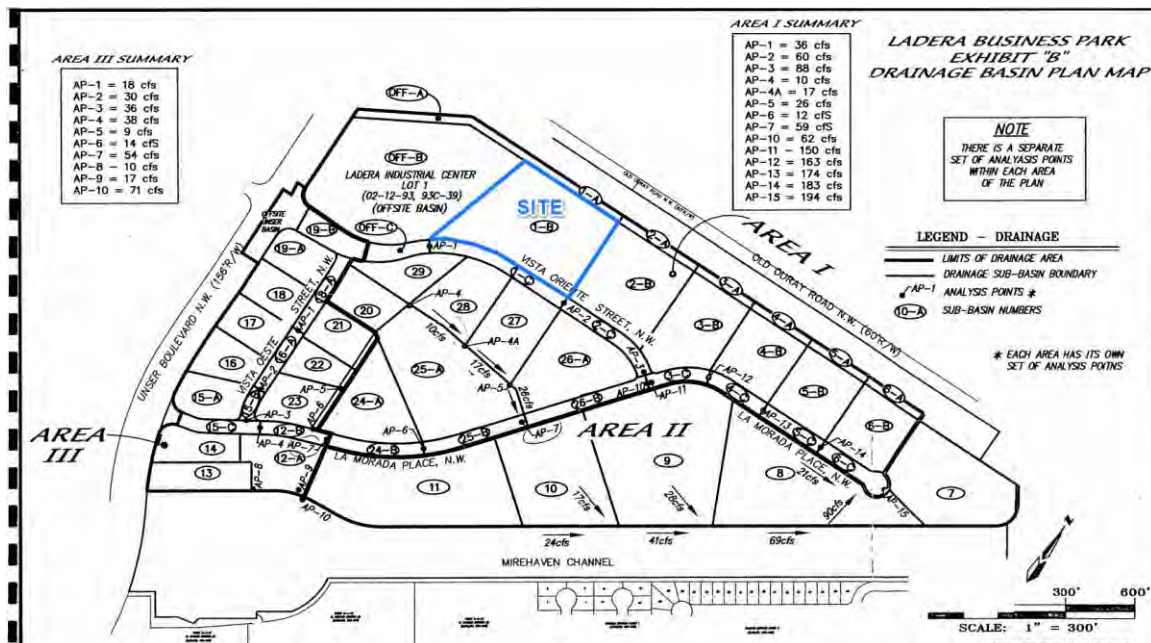
Revised May 24, 2002

Revised November 21, 2002

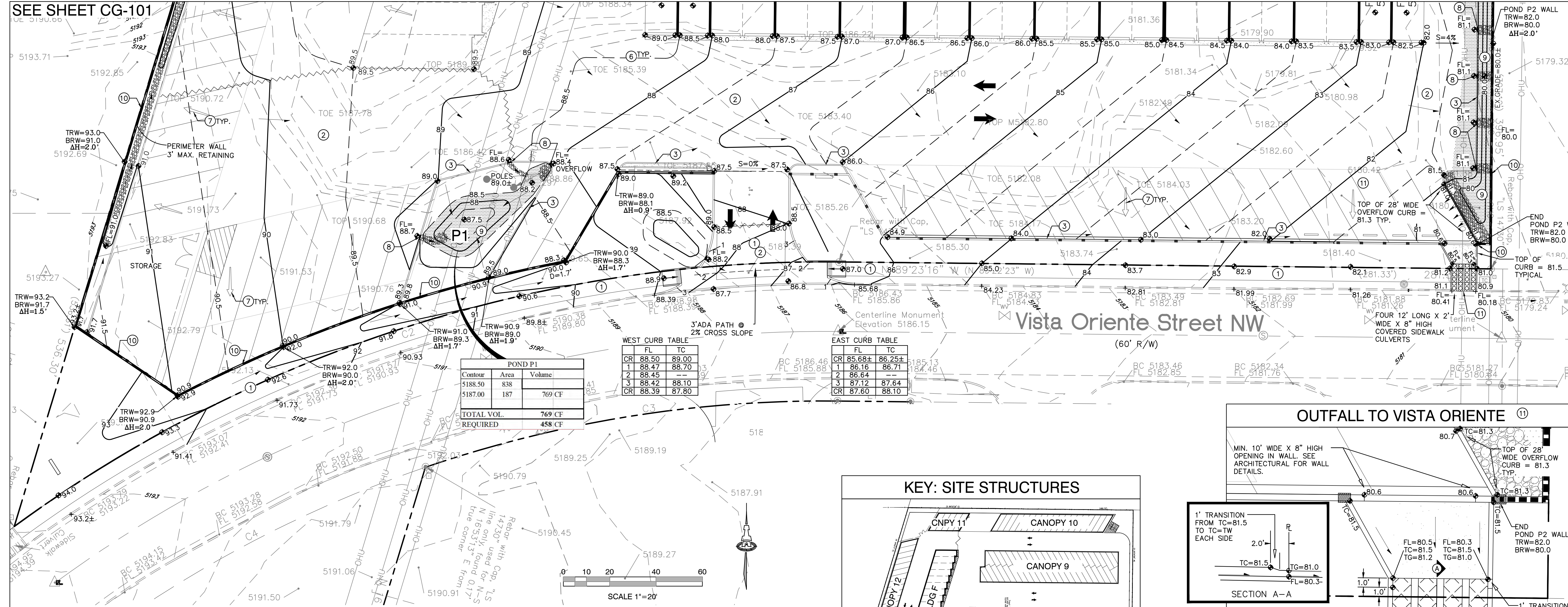


Per DMP Section IV: Proposed Drainage Concept, "Each of the individual tracts will be required to develop a site-specific grading and drainage plan that allows free discharge to either a street, an underground pipe, or a paved private swale in accordance with this plan". Per the DMP drainage basin map, the Property is designated as Basin 1-B.

— D. MARK GOODWIN & ASSOCIATES



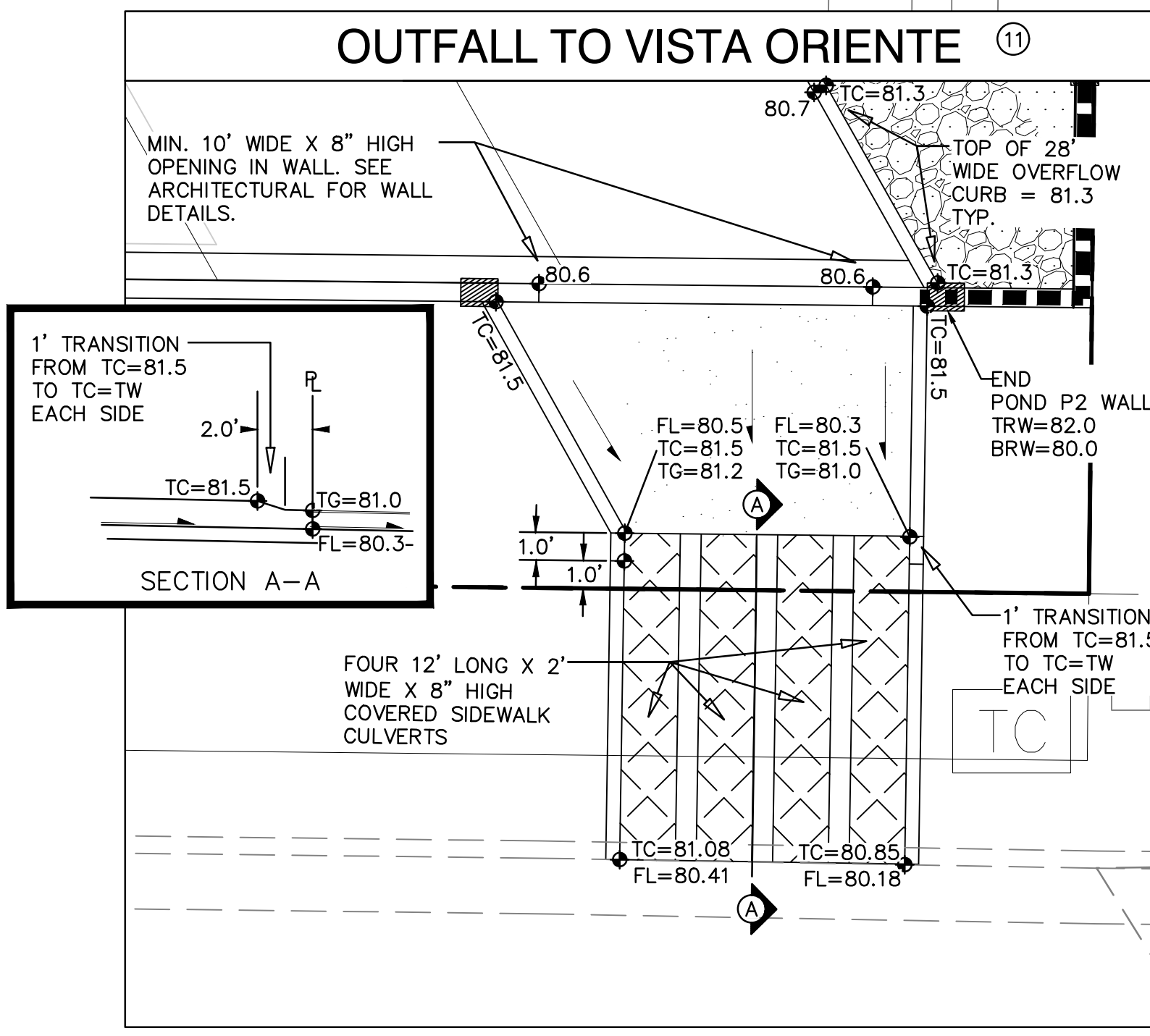
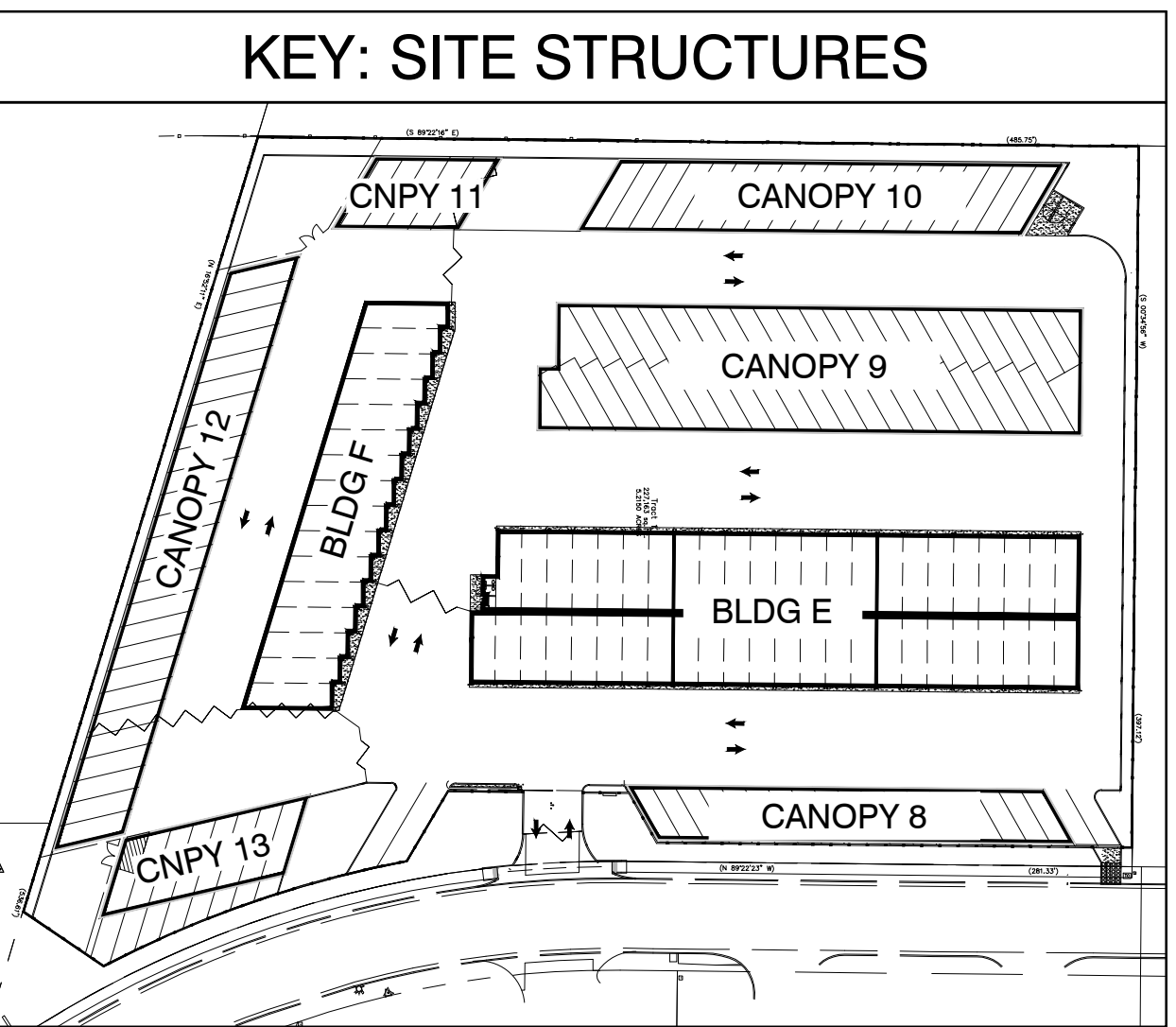
SEE SHEET CG-101



POND P1		
Contour	Area	Volume
5188.50	838	
5187.00	187	769 CF
TOTAL VOL.		769 CF
REQUIRED		458 CF

WEST CURB TABLE		
	FL	TC
CR	88.50	89.00
1	88.47	88.70
2	88.45	
3	88.42	88.10
CR	88.39	87.80

EAST CURB TABLE		
	FL	TC
CR	85.68±	86.25±
1	86.16	86.71
2	86.64	
3	87.12	87.64
CR	87.60	88.10

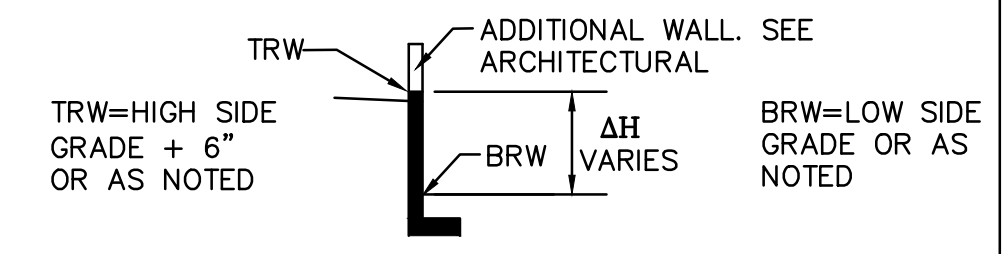


LEGEND

- 5105.65' EXISTING SPOT ELEVATION
- - - 5110 - - - EXISTING CONTOUR
- - - 12 - - - PROPOSED CONTOUR (1' INCREMENT)
- - - 10.5 - - - PROPOSED CONTOUR (0.5' INCREMENT)
- ◆ 08.9 PROPOSED SPOT ELEVATION
- FLOW ARROW
- PROPOSED STORMWATER QUALITY RETENTION POND LIMITS
- ← ROOF / CANOPY DISCHARGE DIRECTION
- GRADE BREAK
- EROSION CONTROL (TO EXTENTS SHOWN)
- PERIMETER RETAINING WALL (>16" RETAINING)
- PERIMETER WALL (<16" RETAINING)

KEYED NOTES

- KEYED NOTES ARE REFERENCED ON SHEETS CG-101 AND CG-102. NOT ALL NOTES ARE USED ON EACH SHEET.
- CONSTRUCT ENTRANCE DRIVES, CONCRETE VALLEY GUTTER, PUBLIC SIDEWALK, AND ADA COMPLIANT RAMP PER COA STD. DETAILS AND SPECIFICATIONS. SEE CP-101 FOR ADDITIONAL INFORMATION.
- CONSTRUCT NEW PAVING AT ELEVATIONS SHOWN. SEE CP-101 FOR ADDITIONAL INFORMATION FOR MATERIAL, EXTENTS, JOINTS, AND PAVING SECTIONS.
- CONSTRUCT 6" HIGH CURB (HEADER OR MEDIAN CURB AND GUTTER - OWNER'S OPTION). NOTE: ENGINEER RECOMMENDS MEDIAN CURB AND GUTTER FOR CONCENTRATED FLOWPATHS.
- CONSTRUCT 2' WIDE CONC. ALLEY GUTTER. SEE CG-501 FOR SECTION.
- SEE CG-501 FOR SECTION THROUGH EAST POND.
- 0.5' DESIGN CONTOURS ARE SHOWN DASHED WHERE NECESSARY TO CLARIFY GRADING CONCEPT.
- BUILDING AND OVERHEAD CANOPY ROOF DISCHARGE DIRECTION. (OWNER'S OPTION - ENGINEER RECOMMENDS CONCRETE SPLASHPAD FOR CONCENTRATED ROOF DISCHARGE TO ASPHALT PAVEMENT.) SEE BUILDING PLANS FOR SPECIFIC ROOF DISCHARGE INFORMATION.
- PROVIDE 2' WIDE OPENING(S) IN CURB TO PASS FLOW. INSTALL 4"x4"x8" DEEP ROCK EROSION PROTECTION AT CURB OPENINGS.
- CONSTRUCT STORMWATER QUALITY RETENTION POND AT ELEVATIONS AND VOLUMES SHOWN. ALL STORMWATER QUALITY PONDING VOLUMES REQUIRE VERIFICATION AS PART OF AS-BUILT ENGINEER'S CERTIFICATION PROCEDURE. PONDS WHICH DO NOT PROVIDE THE REQUIRED VOLUME WILL BE CORRECTED AT CONTRACTOR'S EXPENSE.
- CONSTRUCT PERIMETER RETAINING/PRIVACY WALLS TO ACHIEVE GRADE DIFFERENCE SHOWN. SEE ARCHITECTURAL FOR DETAILS, ADDITIONAL WALL HEIGHT, FOOTING, GUARDRAIL, REINFORCING, ETC. NO GRADING / FOOTING MAY OCCUR ON ADJACENT PROPERTIES WITHOUT ADJACENT PROPERTY OWNER PERMISSION.



PROJECT DATA

PROPERTY: THE SITE IS A 5.22 ACRE, UNDEVELOPED PROPERTY LOCATED WITHIN C.O.A. VICINITY MAP H-09. THE SITE IS BOUND TO THE LADERA CHANNEL, TO THE WEST AND EAST BY UNDEVELOPED LAND, AND TO THE SOUTH BY VISTA ORIENTE ST NW.

PROPOSED IMPROVEMENTS: THE PROPOSED IMPROVEMENTS INCLUDE SELF STORAGE BUILDINGS AND OUTDOOR RV STORAGE WITH ASSOCIATED ASPHALT PAVED ACCESS, PARKING AND LANDSCAPING.

PROPERTY ADDRESS: 2201 VISTA ORIENTE ST. NW, ALBUQUERQUE, 87120

LEGAL: TRACT 1, LADERA BUSINESS PARK, UNIT 2, CITY OF ALBUQUERQUE, BERNALILLO CNTY, NM.

BENCHMARK: BRASS CAP STAMPED "2-H9, 1980", ON THE WEST MESA UNDER POWER LINES RUNNING NE/SW, 0.2 MI. NORTH OF LADERA DR. NW, 111FT. WEST OF THE CENTERLINE OF UNSER BLVD., IN THE MIDDLE OF A SET OF POWERPOLES.

OFF-SITE FLOW: NO OFF-SITE DRAINAGE IMPACTS THIS PROPERTY.

FLOOD HAZARD: PER BERNALILLO COUNTY FIRM MAP #35001C0326J, THE SITE IS LOCATED WITHIN FLOODZONE "X" DESIGNATED AS AREAS DETERMINED TO BE OUTSIDE 500-YEAR FLOODPLAIN.

DRAINAGE FOR THIS TRACT WAS INCLUDED IN THE LADERA BUSINESS PARK MASTER DRAINAGE REPORT (MDR) BY MARK GOODWIN & ASSOCIATES DATED 11-21-02. PER THE MDR, THIS PROPERTY (DESIGNATED AS BASIN B-1) IS PERMITTED FREE DISCHARGE.

ENGINEER: FRED C. ARFMAN: NMPE 7322 - ISAACSON & ARFMAN, P.A. 128 MONROE NE 87108 - (505) 268-8828

SURVEYOR: WILL PLOTNER JR: NMPS NO. 14271 - CARTESIAN SURVEYS INC P.O. BOX 44414 RIO RANCHO, NM 87174 - (505) 891-0244

ISAACSON & ARFMAN, P.A.
Consulting Engineering Associates
128 Monroe Street N.E.
Albuquerque, New Mexico 87108
Ph. 505-268-8828 www.isaacson.com

2278 CG-101.dwg May 20, 2019

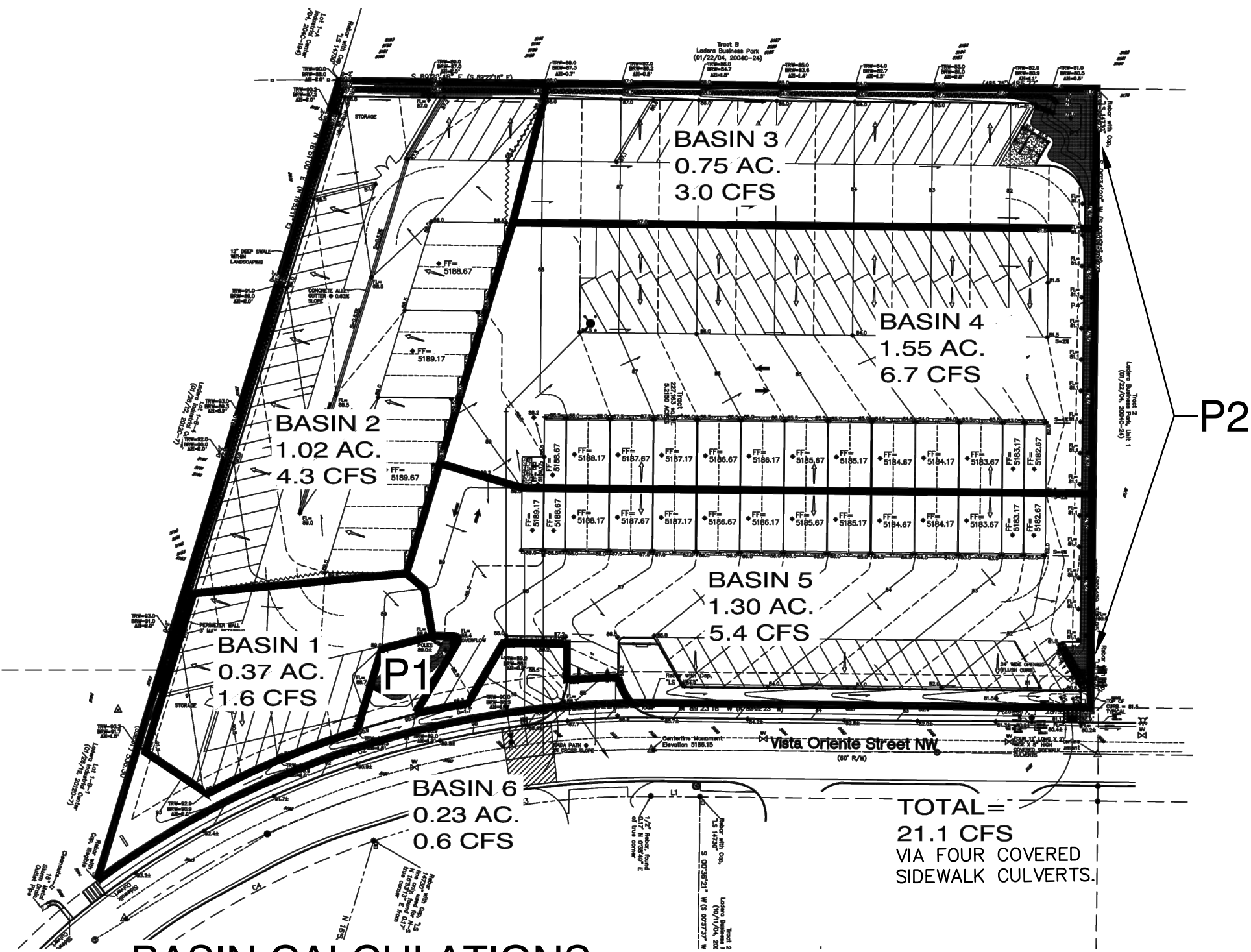
This design, calculations, and concepts are owned by and remain the property of Isaacson & Arfman, P.A. and no part thereof shall be utilized by any person, firm or corporation for any purpose whatsoever except with the written permission of Isaacson & Arfman, P.A. ©

ABQ RV & BOAT STORAGE
LADERA ENTERPRISES LLC

GRADING & DRAINAGE PLAN 2 OF 2

Date: 05-17-19	No. Revision:	Date:	Job No. 2278
Drawn By: BJB			CG-102
Ckd By: FCA			SH. OF

DRAINAGE BASINS



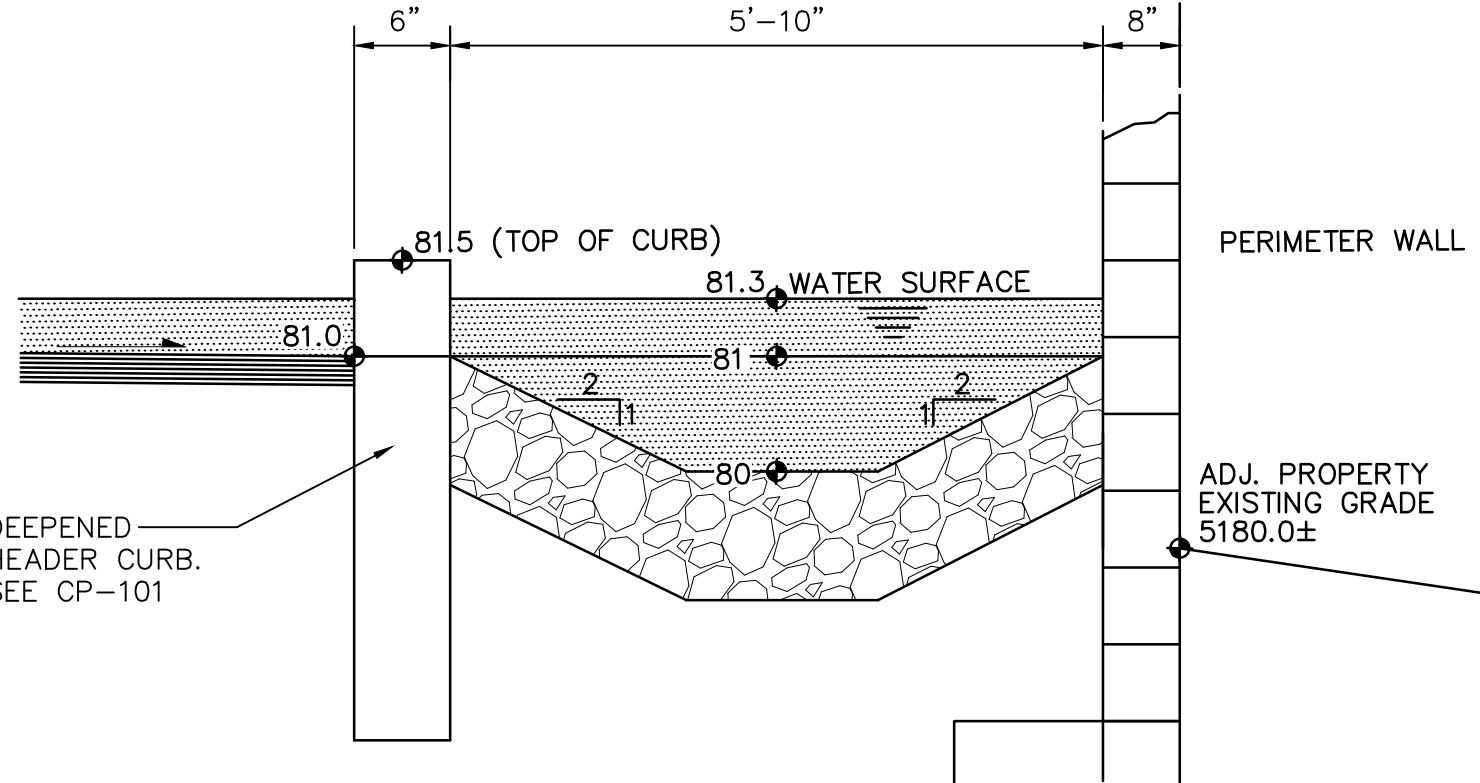
BASIN CALCULATIONS

BASIN NO.	DESCRIPTION	Area of basin flows =	Weighted E	Sub-basin Volume of Runoff (see formula above)	Sub-basin Peak Discharge Rate (see formula above)	First Flush VOL
1	0.37 AC. 1.6 CFS	16168 SF	1.97 in	2654 CF	1.6 cfs	458 CF
2	1.02 AC. 4.3 CFS	44466 SF	1.89 in	7010 CF	4.3 cfs	1172 CF
3	0.75 AC. 3.0 CFS	32547 SF	1.79 in	4848 CF	3.0 cfs	775 CF
4	1.55 AC. 6.7 CFS	67211 SF	1.95 in	10922 CF	6.7 cfs	1869 CF
5	1.30 AC. 5.4 CFS	56453 SF	1.87 in	8778 CF	5.4 cfs	1456 CF
6	0.23 AC. 0.6 CFS	10113 SF	0.90 in	757 CF	0.6 cfs	17 CF

BASIN 1 DISCHARGES THROUGH STORMWATER QUALITY POND P1 WITH EXCESS FLOW PASSING EAST TO THE SOUTHEAST COVERED SIDEWALK CULVERTS. 458 CF REQUIRED.

BASINS 2, 3 AND 4 DISCHARGE THROUGH STORMWATER QUALITY POND P2 BEFORE FREE DISCHARGING TO VISTA ORIENTE STREET. 3,816 CF REQUIRED.

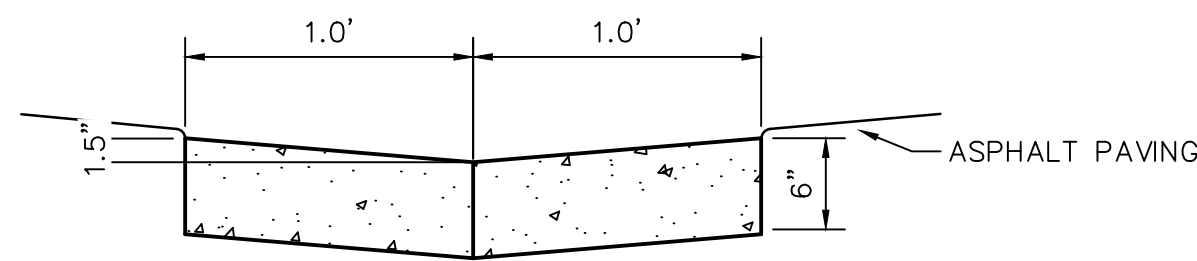
BASINS 5 AND 6 FREE DISCHARGE TO VISTA ORIENTE STREET. IN-LIEU FEE REQUIRED. 1,473 CF REQUIRED.



CONSTRUCT PERIMETER RETAINING WALL TO ACHIEVE GRADE DIFFERENCE SHOWN. SEE ARCHITECTURAL FOR DETAILS INCLUDING STRUCTURAL SECTIONS, ADDITIONAL WALL HEIGHT, FOOTING, GUARDRAIL, REINFORCING, ETC. NO GRADING / FOOTING MAY OCCUR ON ADJACENT PROPERTIES WITHOUT ADJACENT PROPERTY OWNER PERMISSION.

SECTION: EAST STORMWATER QUALITY POND

SCALE: N.T.S.

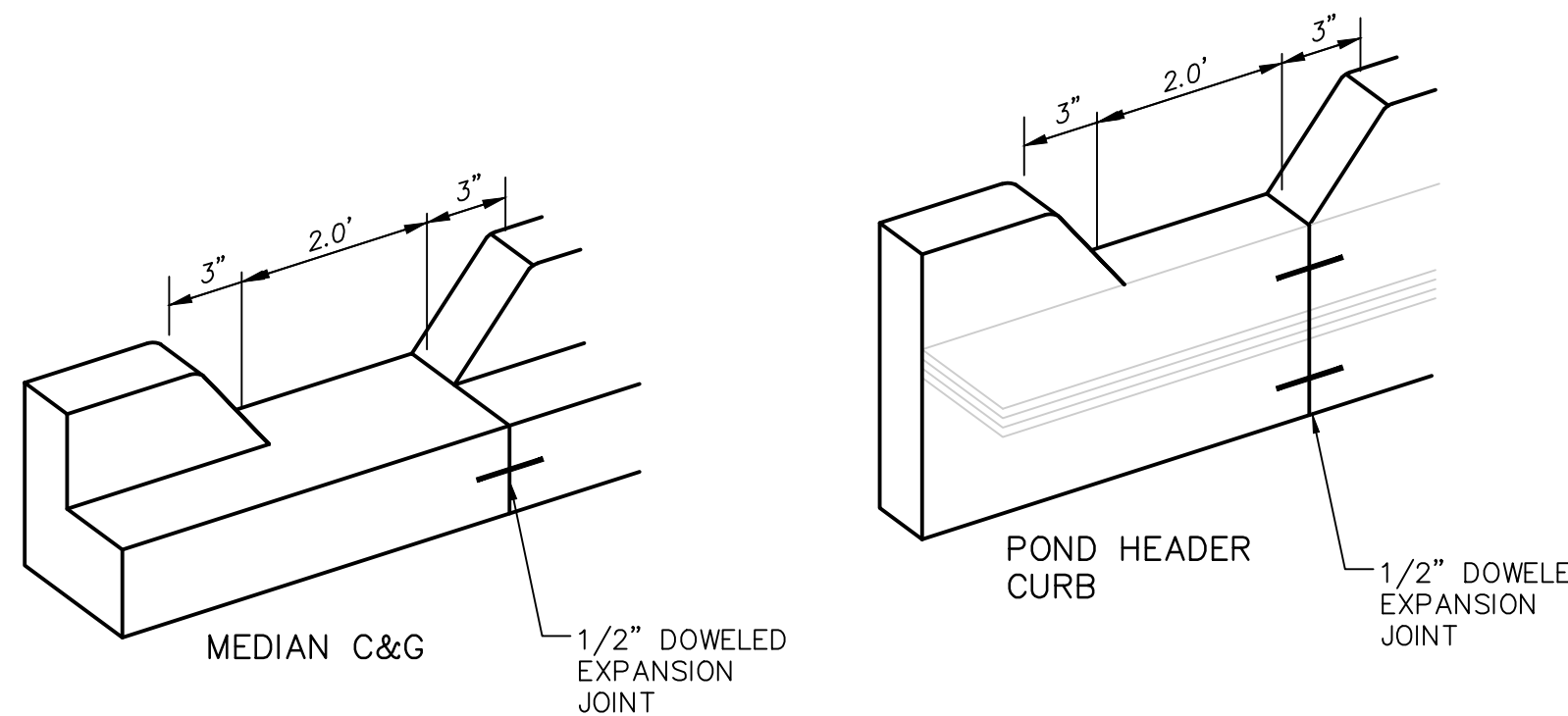


GENERAL NOTES

- EDGES SHALL BE SHAPED WITH A 3/8" EDGING TOOL.
- CONSTRUCTION CONTROL JOINTS AT 6' O.C. MAX.
- SEALED 1/2" EXPANSION JOINTS AT 48' O.C. MAX.
- EDGE OF ASPHALT PAVING TO BE 1/2" ABOVE EDGE OF CONCRETE (TYP).

CONCRETE ALLEY GUTTER

SCALE: N.T.S.



GENERAL NOTES

- EDGES NOT SPECIFICALLY DIMENSIONED SHALL BE SHAPED WITH A 3/8" EDGING TOOL.

ORIFICE EQUATION - 2' WIDE CURB OPENING

The Orifice Equation is used to calculate the Flow at the opening of a Channel			
$Q = C^*A * (2^*g^*h)^{0.5}$			
Where	Q	=	2.71 cfs
	C	=	0.6
	A	=	1.125 sq.ft.
	g	=	32.2 ft/sec^2
	h	=	0.25 ft
depth of flow at opening from the center of culvert			

TYPICAL CURB OPENING

SCALE: N.T.S.

COVERED SIDEWALK CULVERT CALCULATIONS

ORIFICE EQUATION - SIDEWALK CULVERT - 1			
The Orifice Equation is used to calculate the Flow at the opening of a Channel			
$Q = C^*A * (2^*g^*h)^{0.5}$			
Where	Q	=	5.63 cfs
	C	=	0.6
	A	=	1.24 sq.ft.
	g	=	32.2 ft/sec^2
	h	=	0.89 ft
depth of flow at opening from the center of culvert			
ORIFICE EQUATION - SIDEWALK CULVERT - 2			
The Orifice Equation is used to calculate the Flow at the opening of a Channel			
$Q = C^*A * (2^*g^*h)^{0.5}$			
Where	Q	=	5.47 cfs
	C	=	0.6
	A	=	1.24 sq.ft.
	g	=	32.2 ft/sec^2
	h	=	0.84 ft
depth of flow at opening from the center of culvert			
ORIFICE EQUATION - SIDEWALK CULVERT - 3			
The Orifice Equation is used to calculate the Flow at the opening of a Channel			
$Q = C^*A * (2^*g^*h)^{0.5}$			
Where	Q	=	5.31 cfs
	C	=	0.6
	A	=	1.24 sq.ft.
	g	=	32.2 ft/sec^2
	h	=	0.79 ft
depth of flow at opening from the center of culvert			
ORIFICE EQUATION - SIDEWALK CULVERT - 4			
The Orifice Equation is used to calculate the Flow at the opening of a Channel			
$Q = C^*A * (2^*g^*h)^{0.5}$			
Where	Q	=	5.14 cfs
	C	=	0.6
	A	=	1.24 sq.ft.
	g	=	32.2 ft/sec^2
	h	=	0.74 ft
depth of flow at opening from the center of culvert			
TOTAL 1-4 = 21.55 cfs			

DISCHARGE TO VISTA ORIENTE VIA COVERED SIDEWALK CULVERTS:

BASINS 1, 2, 3, 4 AND 5 DISCHARGE 21.1 CFS TO VISTA ORIENTE STREET VIA FOUR COVERED SIDEWALK CULVERTS.

HEAD VARIES DUE TO SLOPING OUTFALL ELEVATIONS.

OVERALL CALCULATIONS

CALCULATIONS: 2278 - ABQ RV & BOAT STORAGE : May 17, 2019			
Based on Drainage Design Criteria for City of Albuquerque Section 22.2, DPM, Vol 2, dated Jan., 1993			
ON-SITE			
AREA OF SITE:	227163 SF	=	5.2
100-year, 6-hour			
PREVIOUS DEVELOPED FLOWS: DEVELOPED FLOWS: EXCESS PRECIP:			
Area A	=	0	0%
Area B	=	113581.5	50%
Area C	=	113581.5	50%
Area D	=	0.0	0%
Total Area	=	227163	100%
Area A	=	0	0%
Area B	=	11358	5%
Area C	=	22716	10%
Area D	=	193089	85%
Total Area	=	227163	100%
On-Site Weighted Excess Precipitation (100-Year, 6-Hour Storm)			
Weighted E = $E_A \Delta A + E_B \Delta B + E_C \Delta C + E_D \Delta D$			
$A_A + A_B + A_C + A_D$			
Historic E	=	0.83 in.	Developed E = 1.81 in.
On-Site Volume of Runoff: V360 = E*A / 12			
Historic V360	=	15712 CF	Developed V360 = 34207 CF
On-Site Peak Discharge Rate: Qp = QpA*AA+QpB*AB+QpC*AC+QpD*AD / 43.560			
For Precipitation Zone 1			
QpA	=	1.29	QpC = 2.87
QpB	=	2.03	QpD = 4.37
Historic Qp	=	12.78 CFS	Developed Qp = 21.40 CFS

FRED C. ARFMAN
NEW MEXICO
7322
LICENSED PROFESSIONAL ENGINEER

ISAACSON & ARFMAN, P.A.
Consulting Engineering Associates
128 Monroe Street N.E.
Albuquerque, New Mexico 87108
Ph: 505-268-8828 www.iacivil.com

2278 CG-501.dwg May 17, 2019

This design, calculations, and concepts are owned by and remain the property of Isaacson & Arfman, P.A. and no part thereof shall be utilized by any person, firm or corporation for any purpose whatsoever except with the written permission of Isaacson & Arfman, P.A. ©

ABQ RV &
BOAT STORAGE
LADERA ENTERPRISES LLC

DETAILS & CALCULATIONS

Date: 05-17-19
Drawn By: BJB
Ckd By: FCA

No. Revision:

Date:

Job No. 2278
CG-501
SH. OF

\\s:\projects\2278-2278\2278.dwg 2278 BUILDING PERMIT 2278 CG-501.dwg BJB 5/17/2019 2:32 PM