

CITY OF ALBUQUERQUE

Planning Department
Alan Varela, Interim Director



Mayor Timothy M. Keller

August 25, 2021

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
3rd Revised Grading and Drainage Plan
Engineer's Stamp Date: 07/08/21
Hydrology File: H10D030**

Dear Mr. Arfman:

PO Box 1293 Based upon the information provided in your submittal received 08/03/2021, the Third Revised Grading & Drainage Plan is approved for Building Permit and SO-19 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.

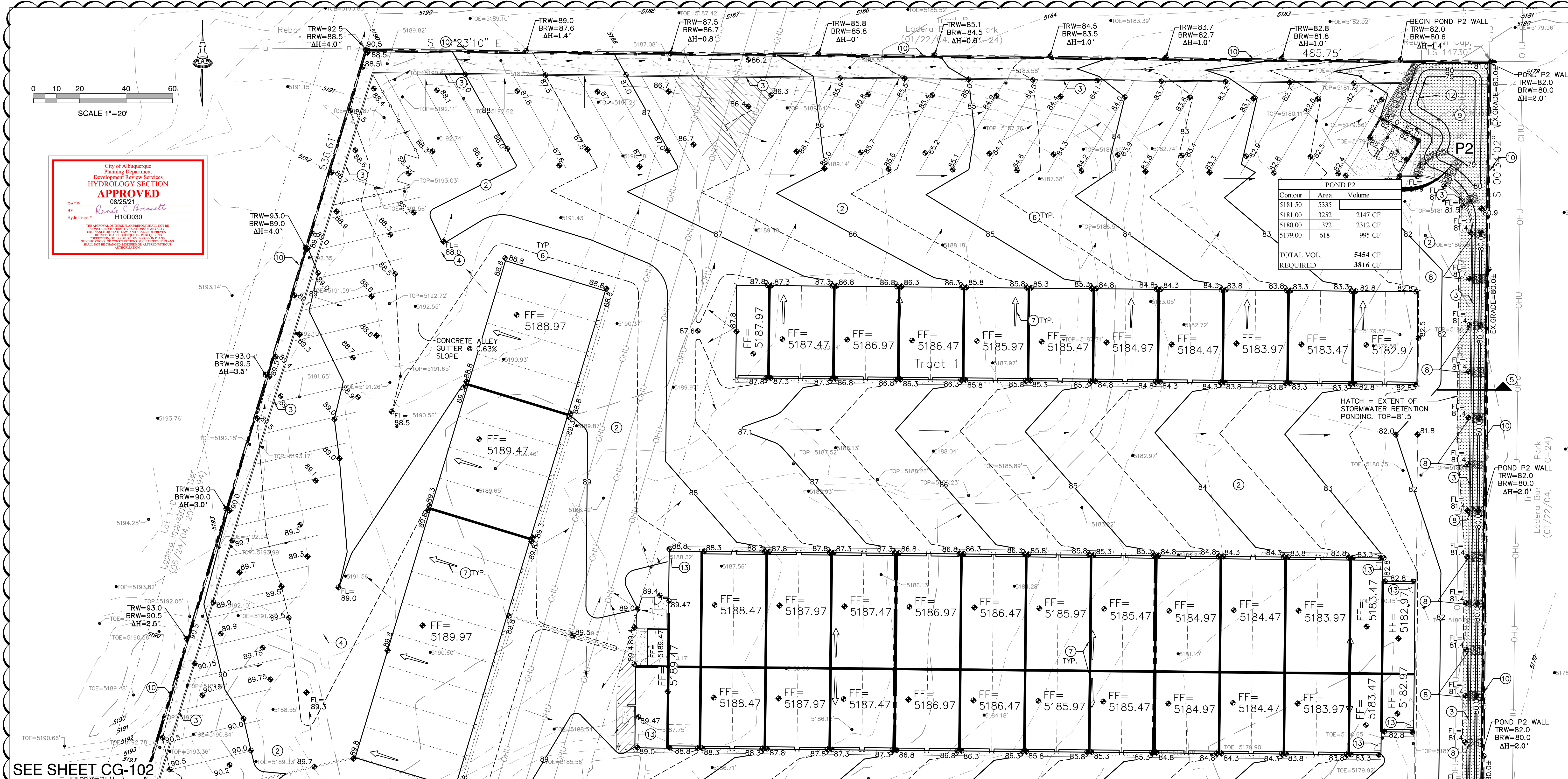
NM 87103 As a reminder, if the project total area of disturbance (including the staging area and any work within the adjacent Right-of-Way) is 1 acre or more, then an Erosion and Sediment Control (ESC) Plan and Owner's certified Notice of Intent (NOI) is required to be submitted to the Stormwater Quality Engineer (Doug Hughes, PE, jhughes@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



SEE SHEET CG-102

S.O.19 : NOTICE TO CONTRACTORS

PRIVATE DRAINAGE FACILITIES WITHIN CITY RIGHT-OF-WAY

- Build sidewalk culvert per COA STD DWG 2236.
- Contact Storm Drain Maintenance at (505) 857-8033 to schedule a meeting prior to forming.
- An excavation permit will be required before beginning any work within City Right-Of-Way.
- All work on this project shall be performed in accordance with applicable federal, state and local laws, rules and regulations concerning construction safety and health.
- 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.
- 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.
- Backfill compaction shall be according to traffic/street use.
- Maintenance of the facility shall be the responsibility of the owner of the property being served.
- Work on arterial streets may be required on a 24-hour basis.
- Contractor must contact Storm Drain Maintenance at (505) 857-8033 to schedule a construction inspection. For excavating and barricading inspections, contact Construction Coordination at (505) 924-3416.

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 RAMPS 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 PROPERTY LINE.
- 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.

LEGEND

- 5105.85' 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)

TRW=HIGH SIDE GRADE + 6" OR AS NOTED

ADDITIONAL WALL. SEE ARCHITECTURAL

BRW=LOW SIDE GRADE OR AS NOTED

11. SEE CG-102 FOR ENLARGED PLAN OF OUTFALL TO VISTA ORIENTE STREET NW.

12. SEE CG-501 FOR ROCK EROSION PROTECTION DETAIL.

13. UNIT SIDE DOOR. COORDINATE GRADE TRANSITION WITH OWNER.

VICINITY MAP

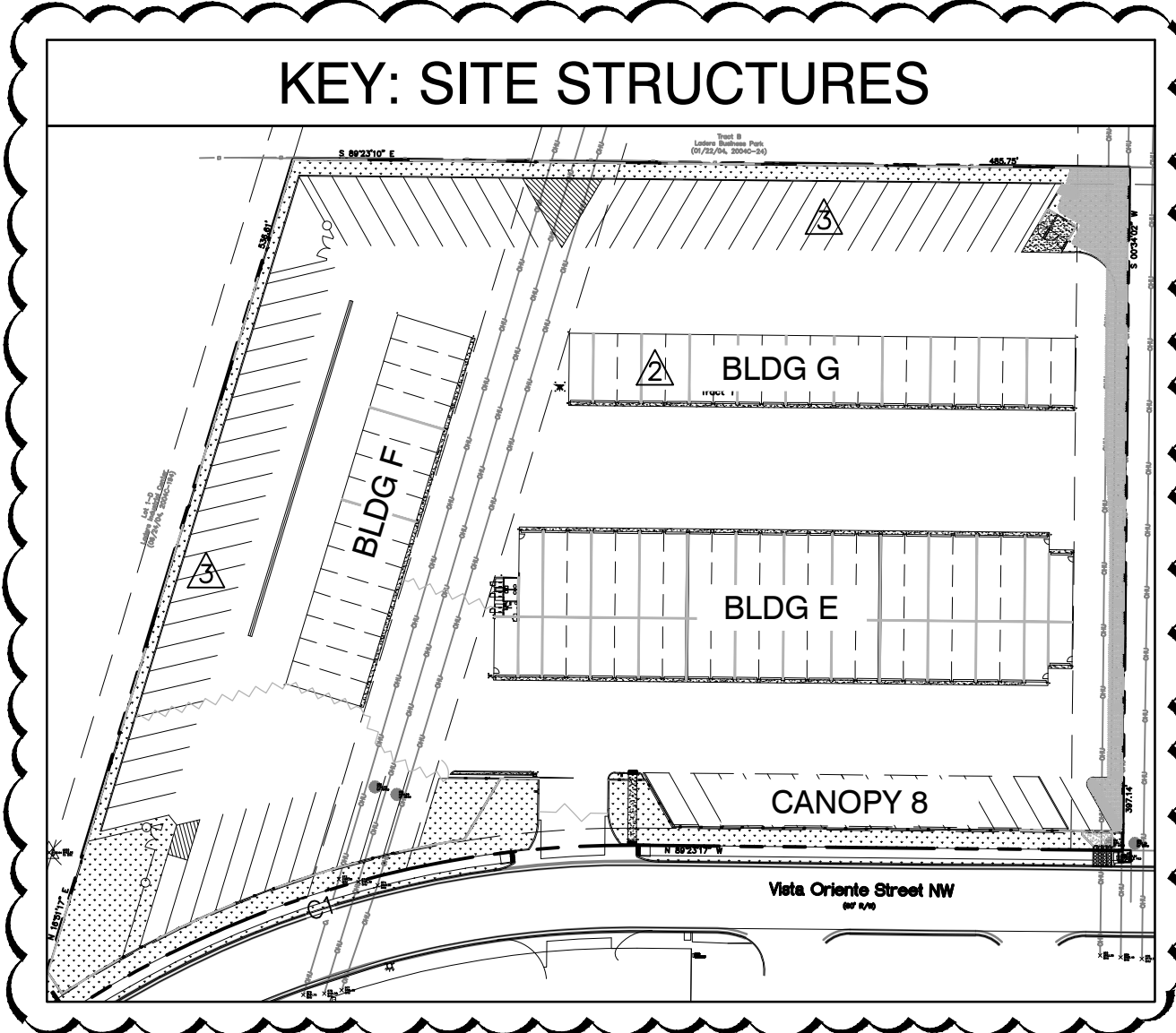
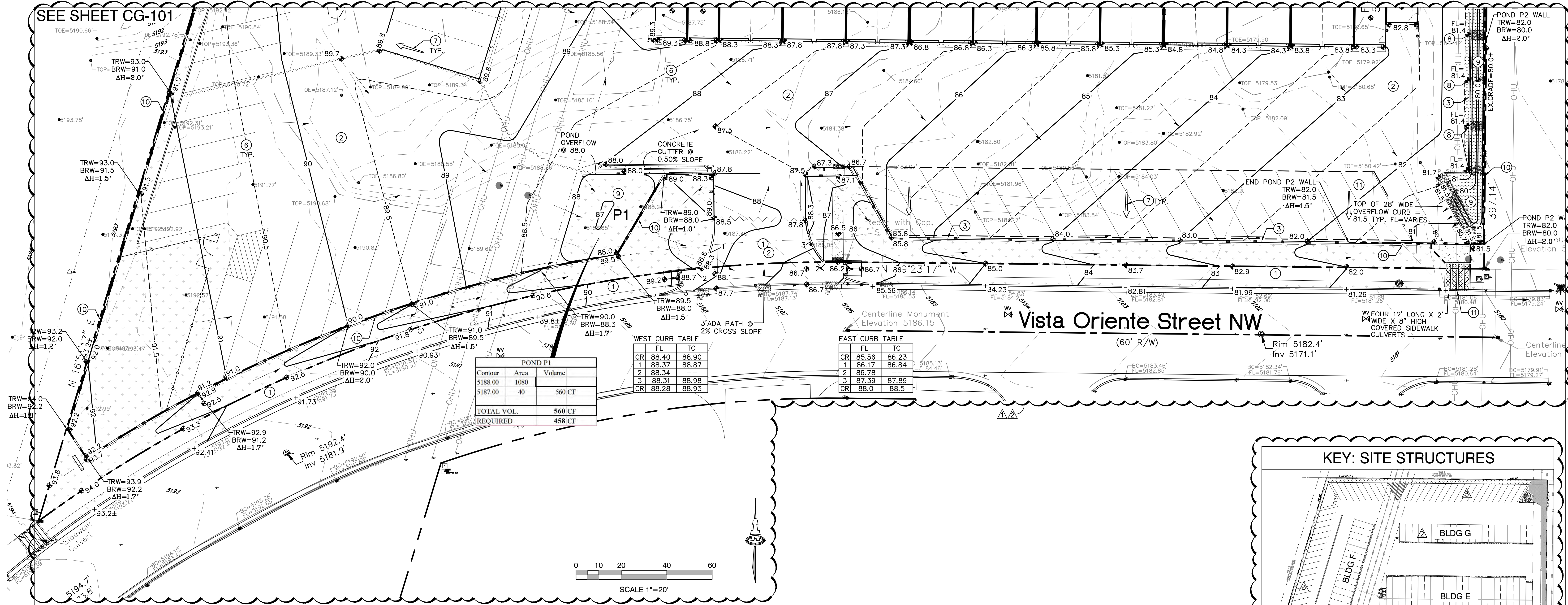
ISAACSON & ARFMAN, P.A.
Consulting Engineering Associates
128 Monroe Street N.E.
Albuquerque, New Mexico 87108
Ph. 505-268-8828 www.isaacson.com

2278 CG-101.dwg Jul 09,2021

ABQ RV & BOAT STORAGE
LADERA ENTERPRISES LLC

GRADING & DRAINAGE PLAN 1 OF 2

Date: 05-17-19	No. Revision: 1	Date: 04/20/20	Job No. 2278
Drawn By: BJB	2	12/02/20	CG-101
Ckd By: FCA	3	07/08/21	
			SH. OF



City of Albuquerque
Planning Department
Development Review Services
HYDROLOGY SECTION
APPROVED
DATE: 08/25/21
BY: *Isaac C. Brissett*
HydroTrans # H10D030

LEGEND	KEYED NOTES	PROJECT DATA
• 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 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 RAMPS 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 PROPERTY LINE. 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. 9. 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. 10. CONSTRUCT PERIMETER RETAINING/PRIVACY WALLS TO ACHIEVE GRADE DIFFERENCE SHOWN. SEE ARCHITECTURAL FOR DETAILS, ADDITIONAL WALL HEIGHT, FOOTING, GUARDRAIL, REINFORCING, ETC. NO STRUCTURE OR FOOTING MAY BE CONSTRUCTED ON ADJACENT PROPERTIES WITHOUT ADJACENT PROPERTY OWNER PERMISSION. 11. SEE CG-102 FOR ENLARGED PLAN OF OUTFALL TO VISTA ORIENTE STREET NW. 12. SEE CG-501 FOR ROCK EROSION PROTECTION DETAIL. 13. UNIT SIDE DOOR. COORDINATE GRADE TRANSITION WITH OWNER.	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.
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2278 CG-101.dwg Jul 08, 2021

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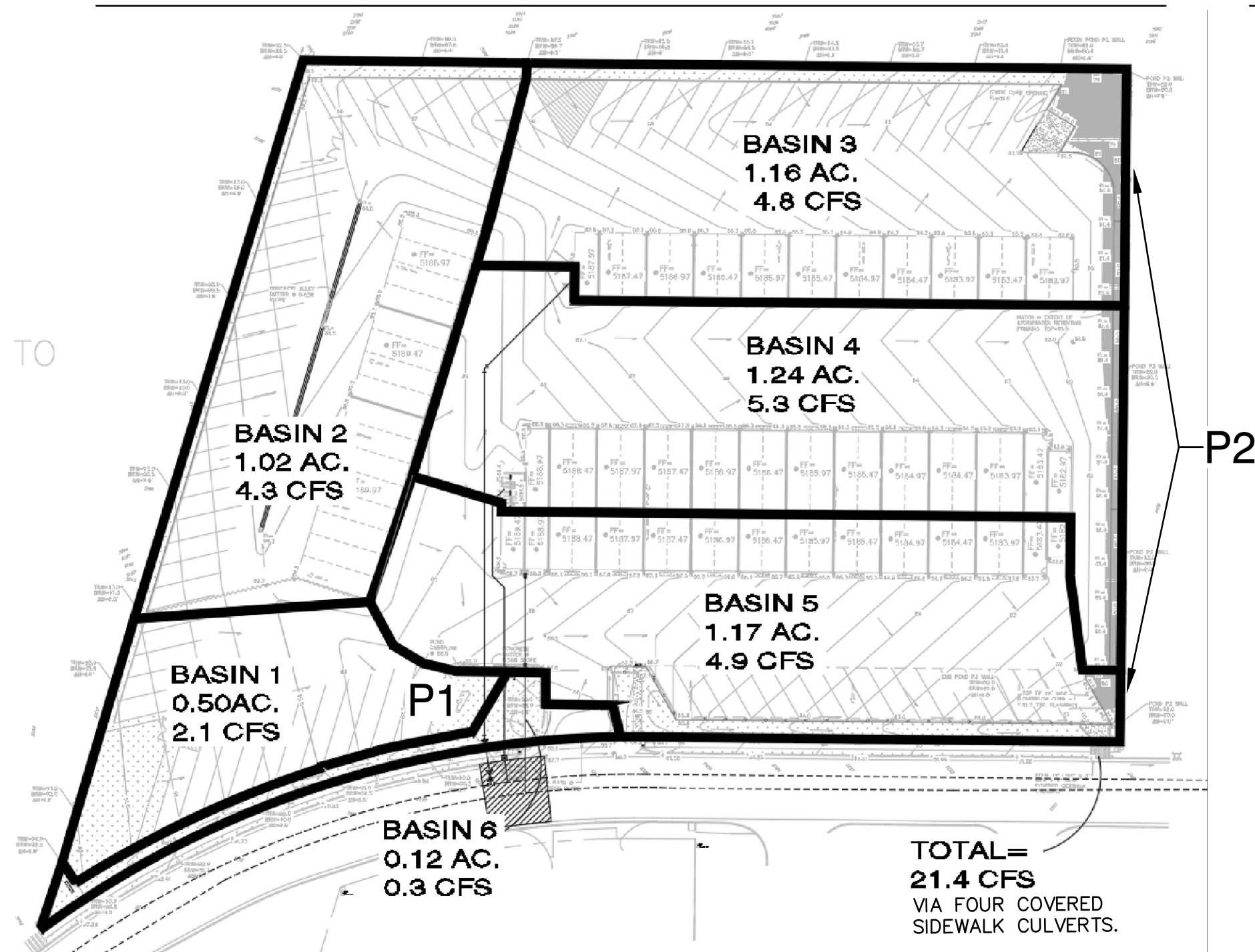
ABQ RV & BOAT STORAGE
LADERA ENTERPRISES LLC

GRADING & DRAINAGE PLAN 2 OF 2

Date: 05-17-19	No. Revision: 1	Date: 04/20/20	Job No. 2278
Drawn By: BJB	2 SITE PLAN REVISIONS	12/02/20	CG-102
Ckd By: FCA	3 GRADE / SITE REVISIONS	07/08/21	
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DRAINAGE BASINS



BASIN CALCULATIONS

BASIN NO.	DESCRIPTION	Area of basin flows =	Weighted I =	Sub-basin Volume of Runoff (see formula above)	Sub-basin Peak Discharge Rate (see formula above)	First Flush Vol.
1		21877 SF = 0.50 Ac.	184 in.	7348 CF	2.1 cfs	557 CF
2		4094 SF = 1.02 Ac.	188 in.	6983 CF	4.3 cfs	1775 CF
3		30135 SF = 1.16 Ac.	184 in.	7733 CF	4.8 cfs	1296 CF
4		28281 SF = 1.24 Ac.	154 in.	8729 CF	5.3 cfs	1495 CF
5		51025 SF = 1.17 Ac.	188 in.	7967 CF	4.9 cfs	1344 CF
6		5568 SF = 0.12 Ac.	181 in.	354 CF	0.3 cfs	15 CF

BASIN 1 DISCHARGES THROUGH STORMWATER QUALITY POND P1 WITH EXCESS FLOW PASSING TO THE SOUTHEAST COVERED SIDEWALK CULVERTS. 557 CF REQUIRED.

BASINS 2, 3 AND 4 DISCHARGE THROUGH STORMWATER QUALITY POND P2 BEFORE FREE DISCHARGING TO VISTA ORIENTE STREET. 3,956 CF REQUIRED.

TOTAL SITE STORMWATER QUALITY POND VOLUME REQUIRED = 5,872 CF.
TOTAL STORMWATER QUALITY POND VOLUME PROVIDED = 5,990 CF.

BASINS 5 AND 6 FREE DISCHARGE TO VISTA ORIENTE STREET. 1,359 CF REQUIRED.

COVERED SIDEWALK CULVERT CALCULATIONS

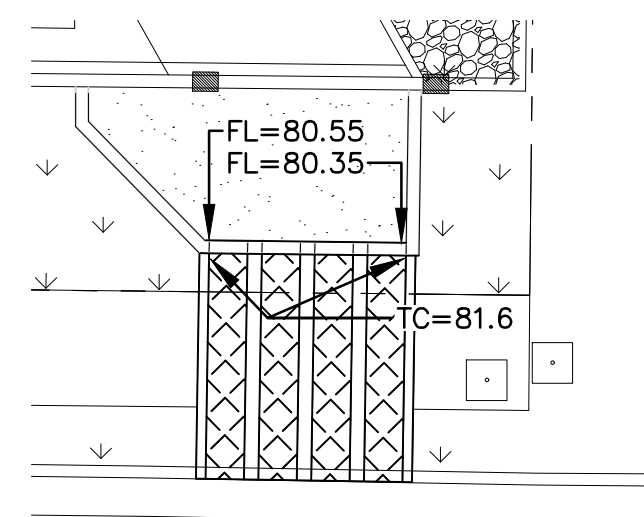
ORIFICE EQUATION - SIDEWALK CULVERT

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	Water Surface =	81.6
	C	=	0.6		Flowline =	80.45
	A	=	1.24	sq.ft.	h =	0.84
	g	=	32.2	ft/sec^2		
	h	=	0.84	ft	depth of flow at opening from the center of culvert	

COVERED SIDEWALK CULVERT CAPACITY = 5.5 CFS EACH
FOUR REQUIRED: 4 * 5.5 CFS = 22.0 CFS > REQUIRED



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:
	Treatment SF	%		Treatment SF	%
Area A	0	0%	Area A	0	0%
Area B	113581.5	50%	Area B	12239	5.4%
Area C	113581.5	50%	Area C	12119	5.3%
Area D	0.0	0%	Area D	202805	89.3%
Total Area	227163	100%	Total Area	227163	100%
On-Site Weighted Excess Precipitation (100-Year, 6-Hour Storm)					
Weighted E = $\frac{E_A A_A + E_B A_B + E_C A_C + E_D A_D}{A_A + A_B + A_C + A_D}$					
Historic E	0.83 in.		Developed E	1.85 in.	
On-Site Volume of Runoff: V360 = $\frac{E * A}{12}$					
Historic V360	15712	CF	Developed V360	34977	CF
On-Site Peak Discharge Rate: Qp = $\frac{Q_{pA} A_A + Q_{pB} A_B + Q_{pC} A_C + Q_{pD} A_D}{43,560}$					
For Precipitation Zone: 1					
QpA	1.29		QpC	2.87	
QpB	2.03		QpD	4.37	
Historic Qp	12.78	CFS	Developed Qp	21.7	CFS

WEIR CALCULATIONS

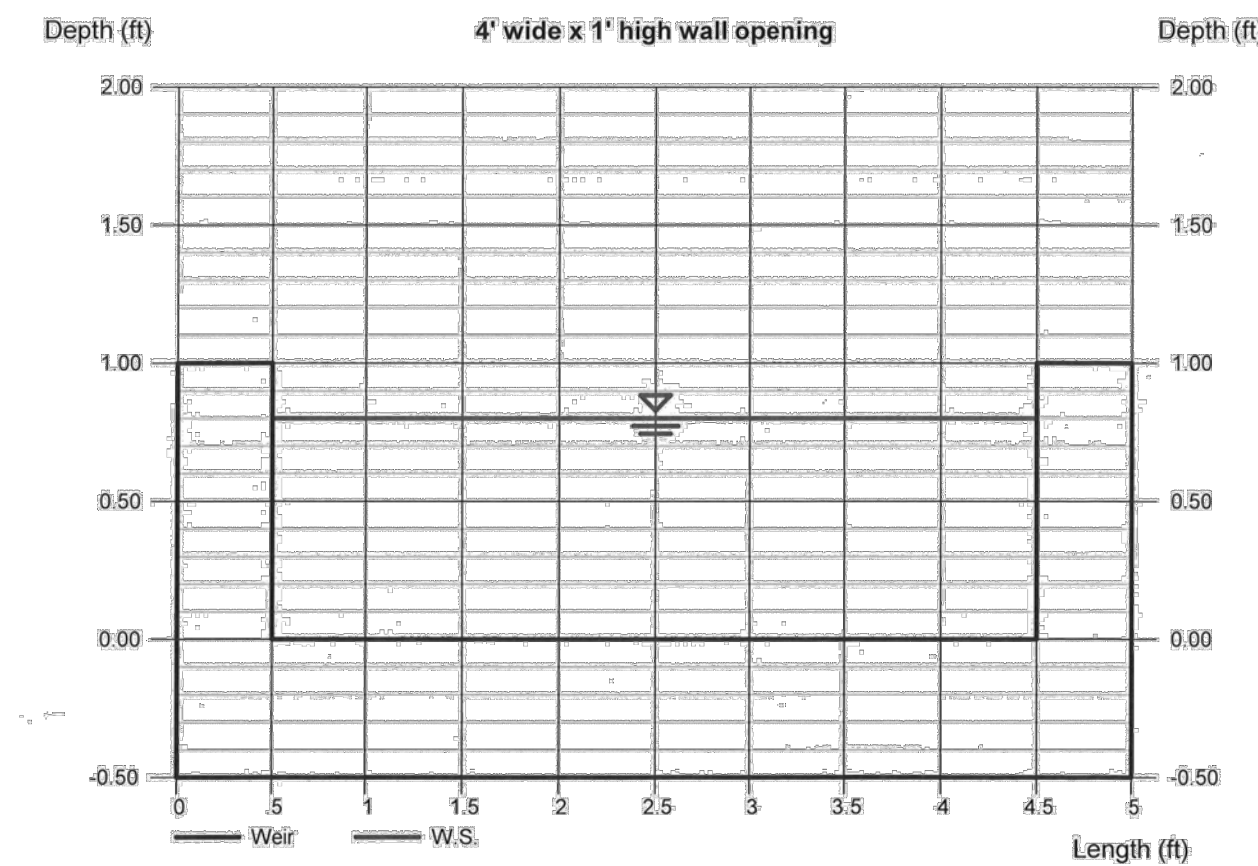
Weir Report

Hydraflo Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Friday, Jun 7 2019

4' wide x 1' high wall opening

Rectangular Weir	= Broad	Highlighted	= 0.80
Crest	= 4.00	Depth (ft)	= 7.442
Bottom Length (ft)	= 1.00	Q (cfs)	= 3.20
Total Depth (ft)		Area (sqft)	= 2.33
		Velocity (ft/s)	= 4.00
Calculations	= 2.60	Top Width (ft)	
Weir Coeff. Cw	= Q vs Depth		
Compute by:	= 5		
No. Increments			

THREE 4' WIDE X 1.0' HIGH OPENINGS IN WALL. SEE ARCHITECTURAL FOR WALL DETAILS. AT 0.8' DEEP, CAPACITY = 7.4 CFS. THREE @ 7.4 = 22.2 > REQUIRED



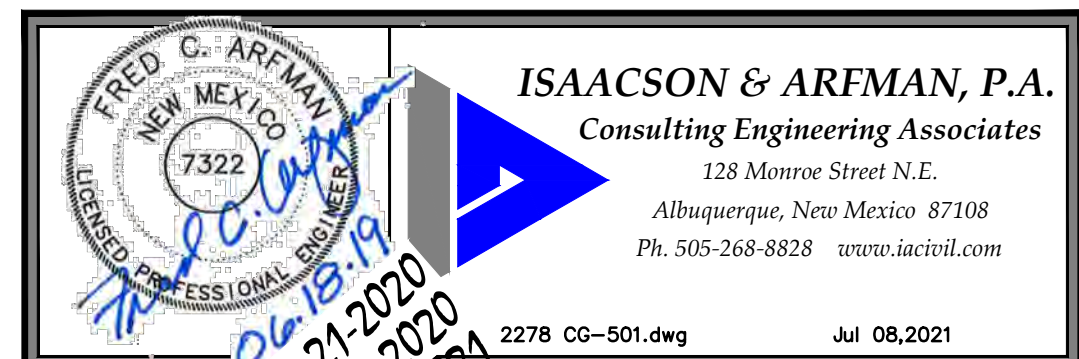
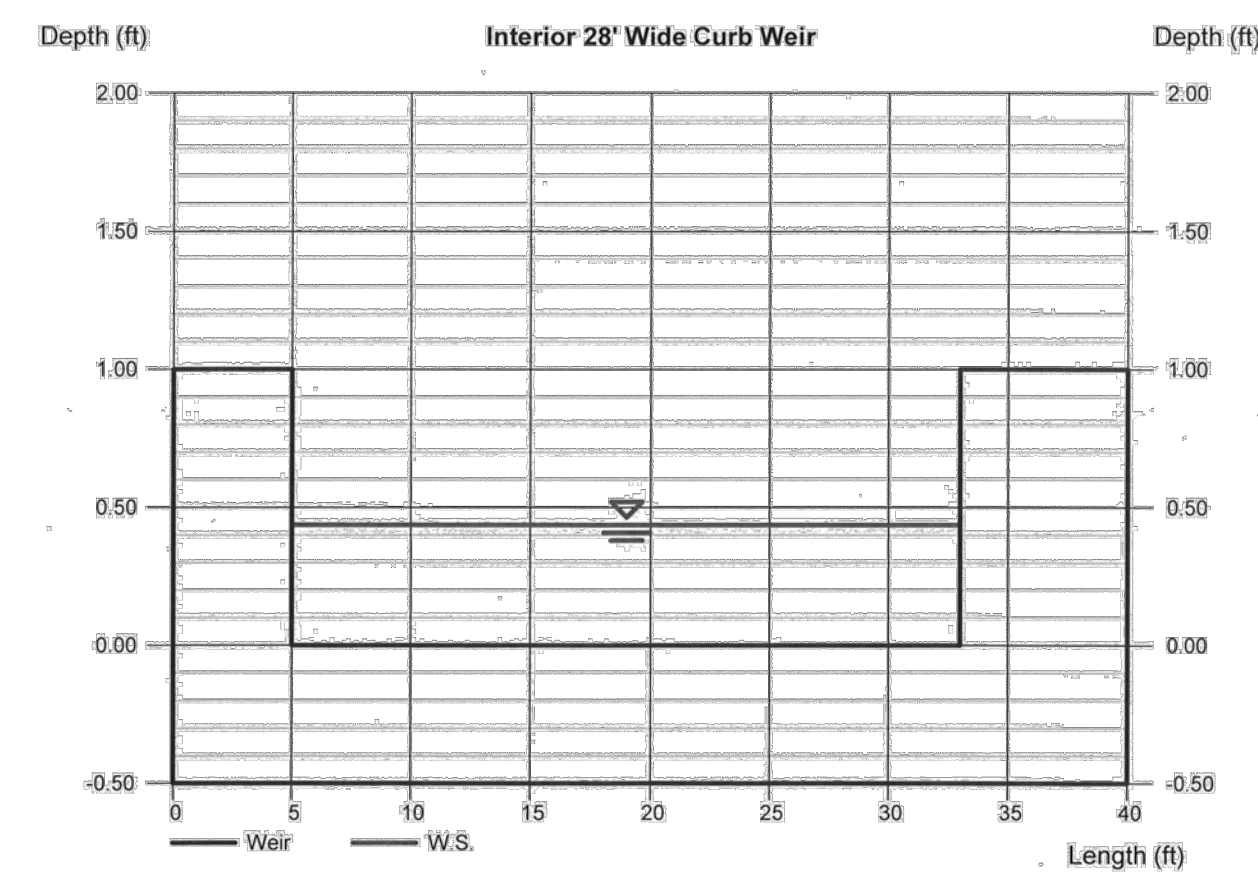
Weir Report

Hydraflo Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Friday, Jun 7 2019

Interior 28' Wide Curb Weir

Rectangular Weir	= Broad	Highlighted	= 0.44
Crest	= 28.00	Depth (ft)	= 21.00
Bottom Length (ft)	= 1.00	Q (cfs)	= 12.22
Total Depth (ft)		Area (sqft)	= 1.72
		Velocity (ft/s)	= 28.00
Calculations	= 2.60	Top Width (ft)	
Weir Coeff. Cw	= Known Q		
Compute by:	= 21.00		
Known Q (cfs)			

TOP OF 28' OVERFLOW WEIR ELEVATION = 81.5. AT 81.6, ADDITIONAL FLOW WILL BYPASS THE STORMWATER QUALITY PONDING AND DISCHARGE DIRECTLY.



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ABQ RV & BOAT STORAGE			
LADERA ENTERPRISES LLC			
DRAINAGE CALCULATIONS			
Date:	No. Revision:	Date:	Job No.
05-17-19	1 SITE PLAN REVISIONS	04/20/20	2278
Drawn By:	2 SITE PLAN REVISIONS	12/02/20	CG-502
BJB	3 GRADE / SITE REVISIONS	07/08/21	
Ckd By:			SH. OF
FCA			