

CITY OF ALBUQUERQUE

Planning Department
Alan Varela, Director



Mayor Timothy M. Keller

March 9, 2023

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
5th Revised Grading and Drainage Plans
Engineer's Stamp Date: 02/27/23
Hydrology File: H10D030**

Dear Mr. Arfman:

PO Box 1293

Based upon the information provided in your submittal received 03/01/2023, the Fifth Revised Grading & Drainage Plans are approved for Building Permit and for action by the Development Facilitation Team (DFT) for Site Plan 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.

Albuquerque

PRIOR TO CERTIFICATE OF OCCUPANCY:

NM 87103

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

www.cabq.gov

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.

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

Sincerely,

Renée C. Brissette

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

Project Title: Albuquerque RV & Boat Storage **Building Permit #** _____ **Hydrology File #** H09D030
DRB# _____ **EPC#** _____
Legal Description: Tract 1, Ladera Business Park, Unit 2 **City Address OR Parcel** 2201 Vista Oriente Street NW - Albuquerque, NM 87129
Applicant/Agent: Isaacson & Arfman **Contact:** Fred C. Arfman or Bryan J. Bobrick
Address: 128 Monroe Street NE - Albuquerque, NM 87108 **Phone:** (505) 268-8828
Email: freda@iacivil.com bryanb@iacivil.com

Applicant/Owner: Ladera Enterprises, LLC **Contact:** _____
Address: _____ **Phone:** _____
Email: _____

TYPE OF DEVELOPMENT: ___ PLAT (#of lots) ___ RESIDENCE ___ DRB SITE ___ X ADMIN SITE: ___
RE-SUBMITTAL: ___ X YES ___ NO

DEPARTMENT: ___ TRANSPORTATION ___ X HYDROLOGY/DRAINAGE
Check all that apply:

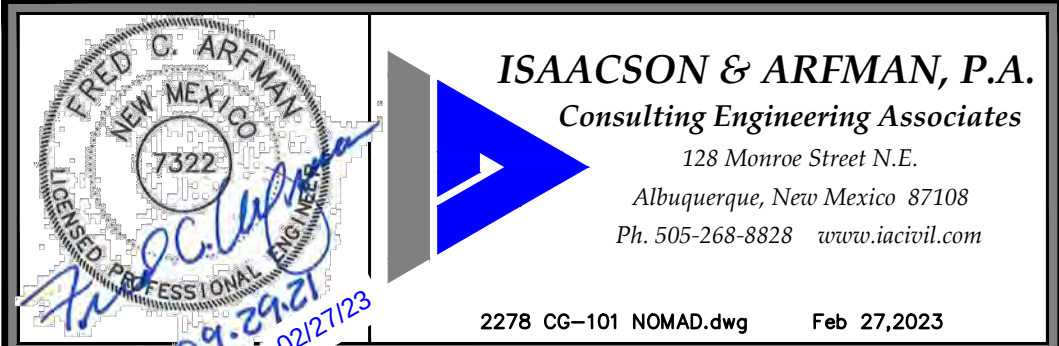
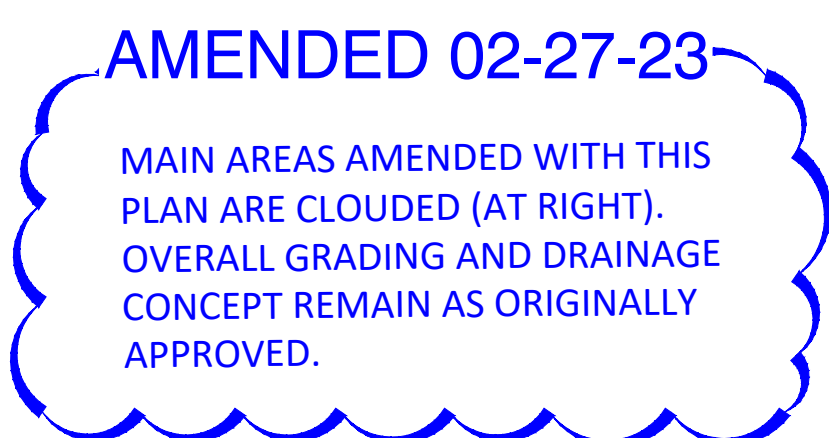
TYPE OF SUBMITTAL:

___ ENGINEER/ARCHITECT CERTIFICATION
___ PAD CERTIFICATION
___ CONCEPTUAL G&D PLAN
X GRADING PLAN
___ DRAINAGE REPORT
___ DRAINAGE MASTER PLAN
___ FLOOD PLAN DEVELOPMENT PERMIT APP.
___ ELEVATION CERTIFICATE
___ CLOMR/LOMR
___ TRAFFIC CIRCULATION LAYOUT (TCL) ADMINISTRATIVE
___ TRAFFIC CIRCULATION LAYOUT FOR DRB APPROVAL
___ TRAFFIC IMPACT STUDY (TIS)
___ STREET LIGHT LAYOUT
___ OTHER (SPECIFY) _____
___ PRE-DESIGN MEETING?

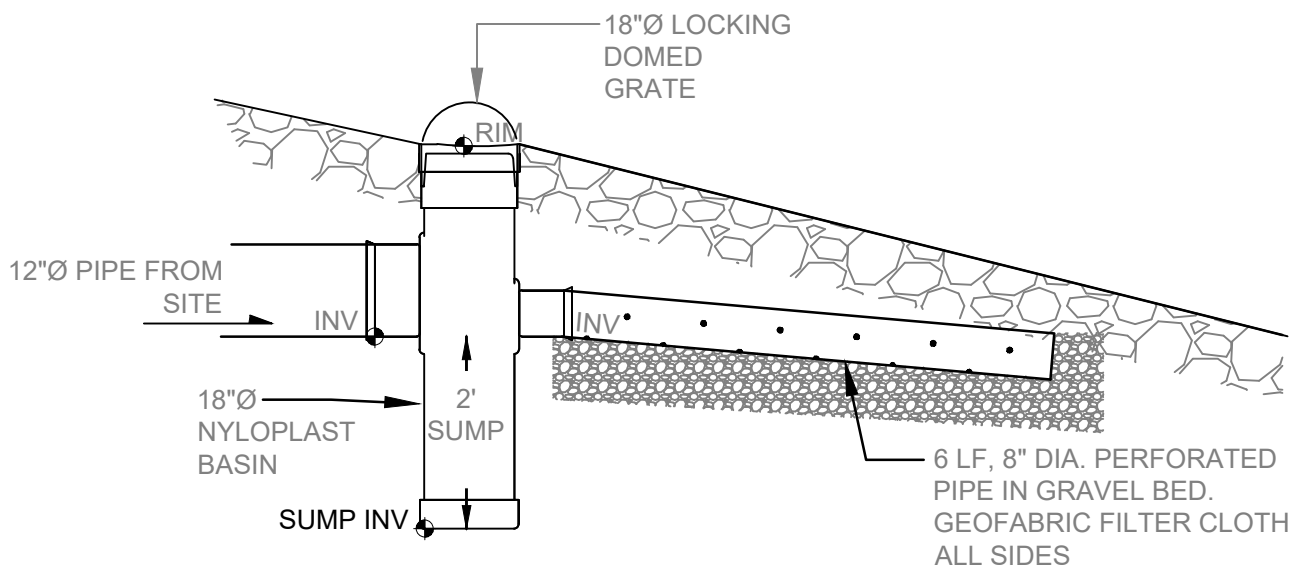
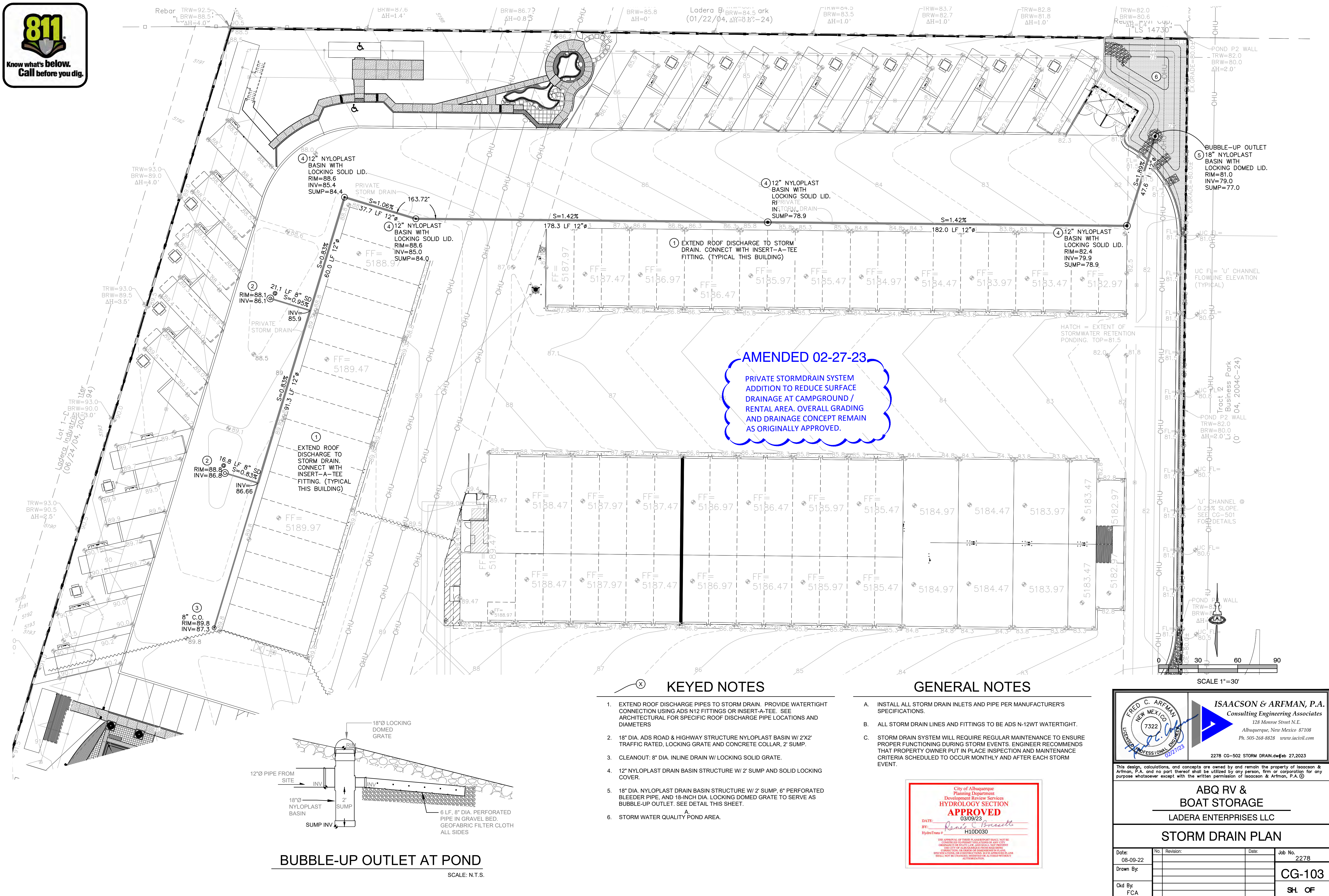
TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

X BUILDING PERMIT APPROVAL
___ CERTIFICATE OF OCCUPANCY
___ CONCEPTUAL TCL DRB APPROVAL
___ 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
___ FLOOD PLAN DEVELOPMENT PERMIT
___ OTHER (SPECIFY) _____

DATE SUBMITTED: 03/01/2023



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ABQ RV & BOAT STORAGE			
LADERA ENTERPRISES LLC			
GRADING & DRAINAGE PLAN 2 OF 2			
Date:	No. Revision:	Date:	Job No.
09-09-21			2278
Drawn By:	3 SITE PLAN REVISIONS	07/08/21	CG-102
	4 ADD RV DUMP	07/12/21	
	5 REROUTE WTR LINES	08/10/21	
Ckd By:	6 REVISE SAS INV / ALIGN	08/24/21	SH. OF
FCA	7 SITE PLAN REVISIONS	02/24/22	



BUBBLE-UP OUTLET AT POND
SCALE: N.T.S.

KEYED NOTES

1. EXTEND ROOF DISCHARGE PIPES TO STORM DRAIN. PROVIDE WATERTIGHT CONNECTION USING ADS N12 FITTINGS OR INSERT-A-TEE. SEE ARCHITECTURAL FOR SPECIFIC ROOF DISCHARGE PIPE LOCATIONS AND DIAMETERS
2. 18" DIA. ADS ROAD & HIGHWAY STRUCTURE NYLOPLAST BASIN W/ 2'X2' TRAFFIC RATED, LOCKING GRATE AND CONCRETE COLLAR, 2' SUMP.
3. CLEANOUT: 8" DIA. INLINE DRAIN W/ LOCKING SOLID GRATE.
4. 12" NYLOPLAST DRAIN BASIN STRUCTURE W/ 2' SUMP AND SOLID LOCKING COVER.
5. 18" DIA. NYLOPLAST DRAIN BASIN STRUCTURE W/ 2' SUMP, 6" PERFORATED BLEEDER PIPE, AND 18-INCH DIA. LOCKING DOMED GRATE TO SERVE AS BUBBLE-UP OUTLET. SEE DETAIL THIS SHEET.
6. STORM WATER QUALITY POND AREA.

GENERAL NOTES

- A. INSTALL ALL STORM DRAIN INLETS AND PIPE PER MANUFACTURER'S SPECIFICATIONS.
- B. ALL STORM DRAIN LINES AND FITTINGS TO BE ADS N-12WT WATERTIGHT.
- C. STORM DRAIN SYSTEM WILL REQUIRE REGULAR MAINTENANCE TO ENSURE PROPER FUNCTIONING DURING STORM EVENTS. ENGINEER RECOMMENDS THAT PROPERTY OWNER PUT IN PLACE INSPECTION AND MAINTENANCE CRITERIA SCHEDULED TO OCCUR MONTHLY AND AFTER EACH STORM EVENT.



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

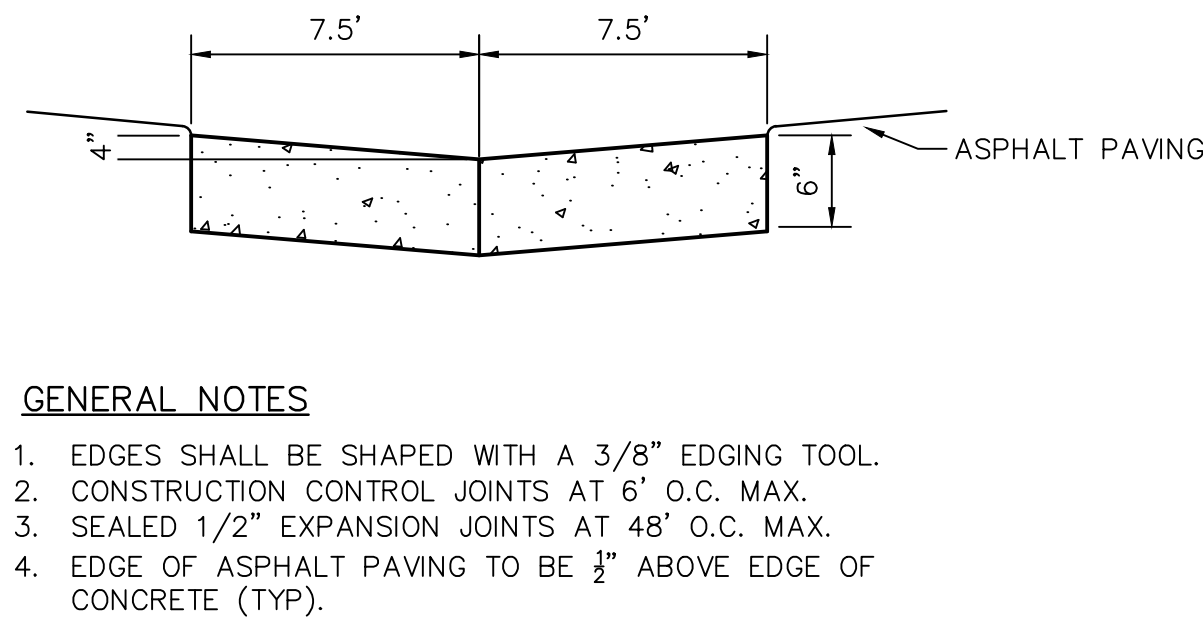
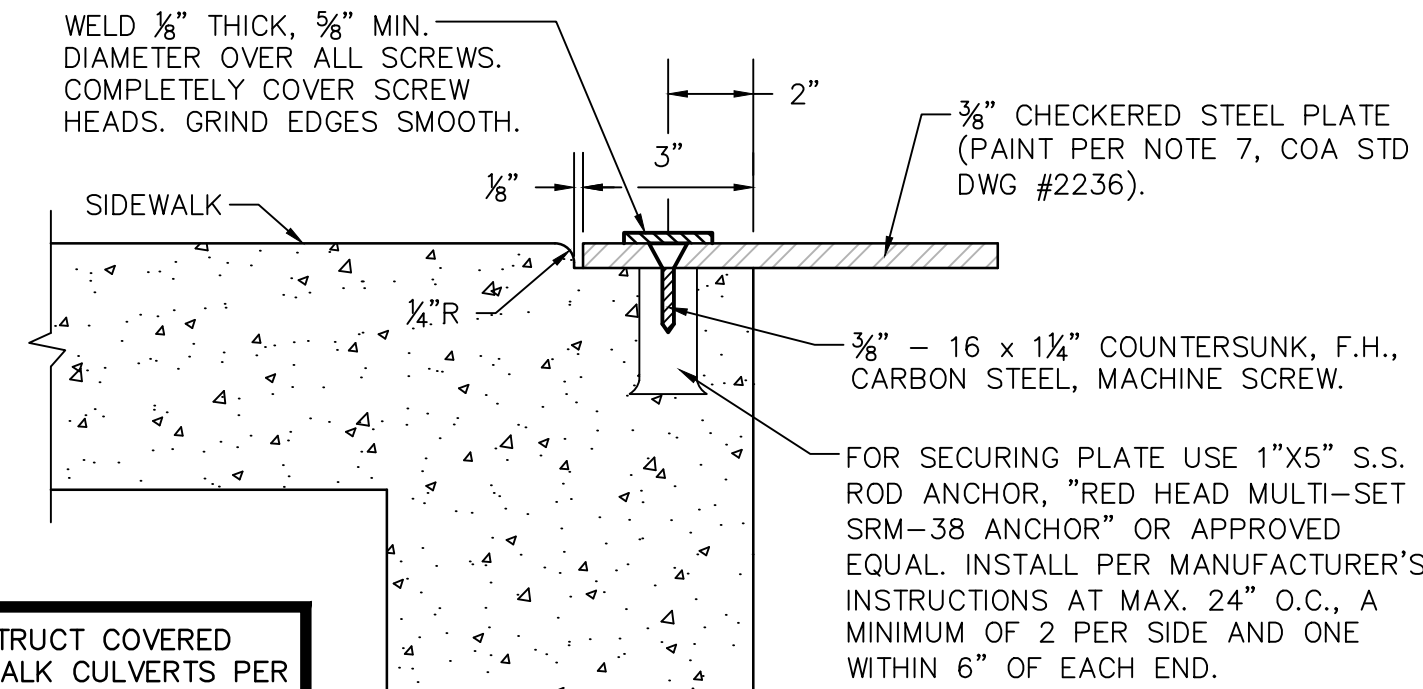
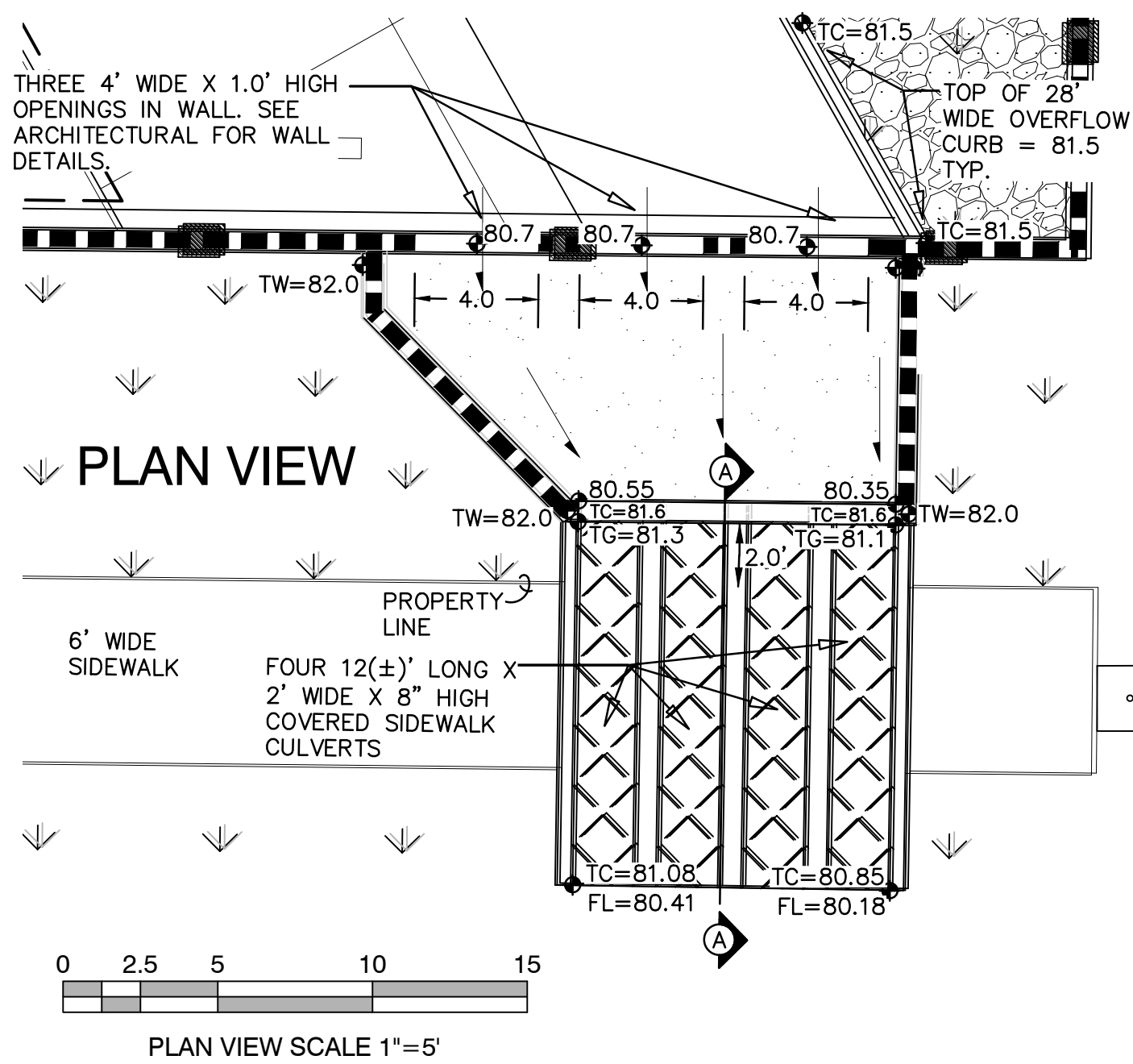
2278 CG-502 STORM DRAIN.dwg 27.2023

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ABQ RV & BOAT STORAGE
LADERA ENTERPRISES LLC

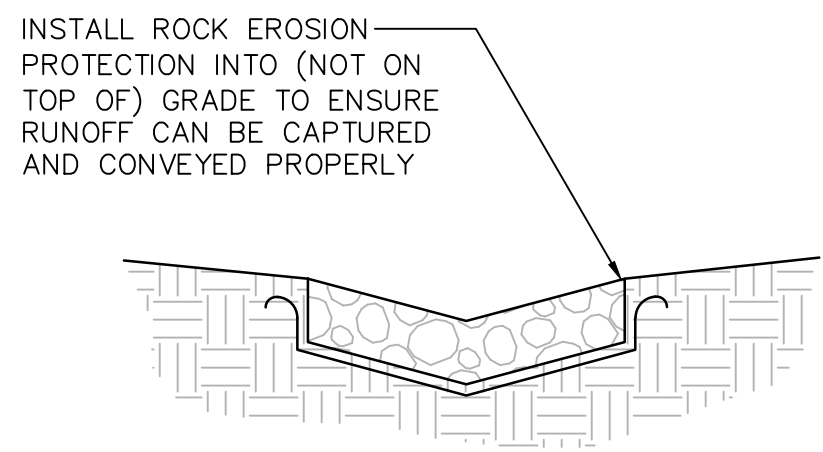
STORM DRAIN PLAN

Date:	No.	Revision:	Date:	Job No.
08-09-22				2278
Drawn By:				CG-103
Ckd By:				SH OF
FCA				



CONCRETE ALLEY GUTTER

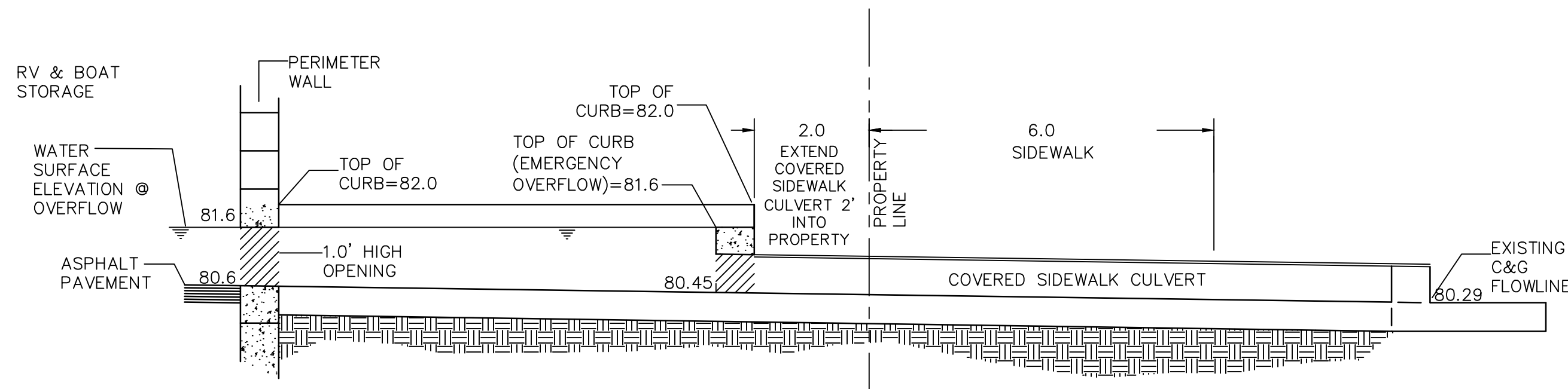
SCALE: N.T.S.



- ALL EROSION PROTECTION TO BE 8" DEEP, 4" AVG. DIA. ANGULAR FACED ROCK.
- PLACE GEOTEX 501 NON-WOVEN GEOTEXTILE (O.E.) BENEATH ALL EROSION PROTECTION
- ROCK SWALES TO BE 3' WIDE, 6" DEPRESSED

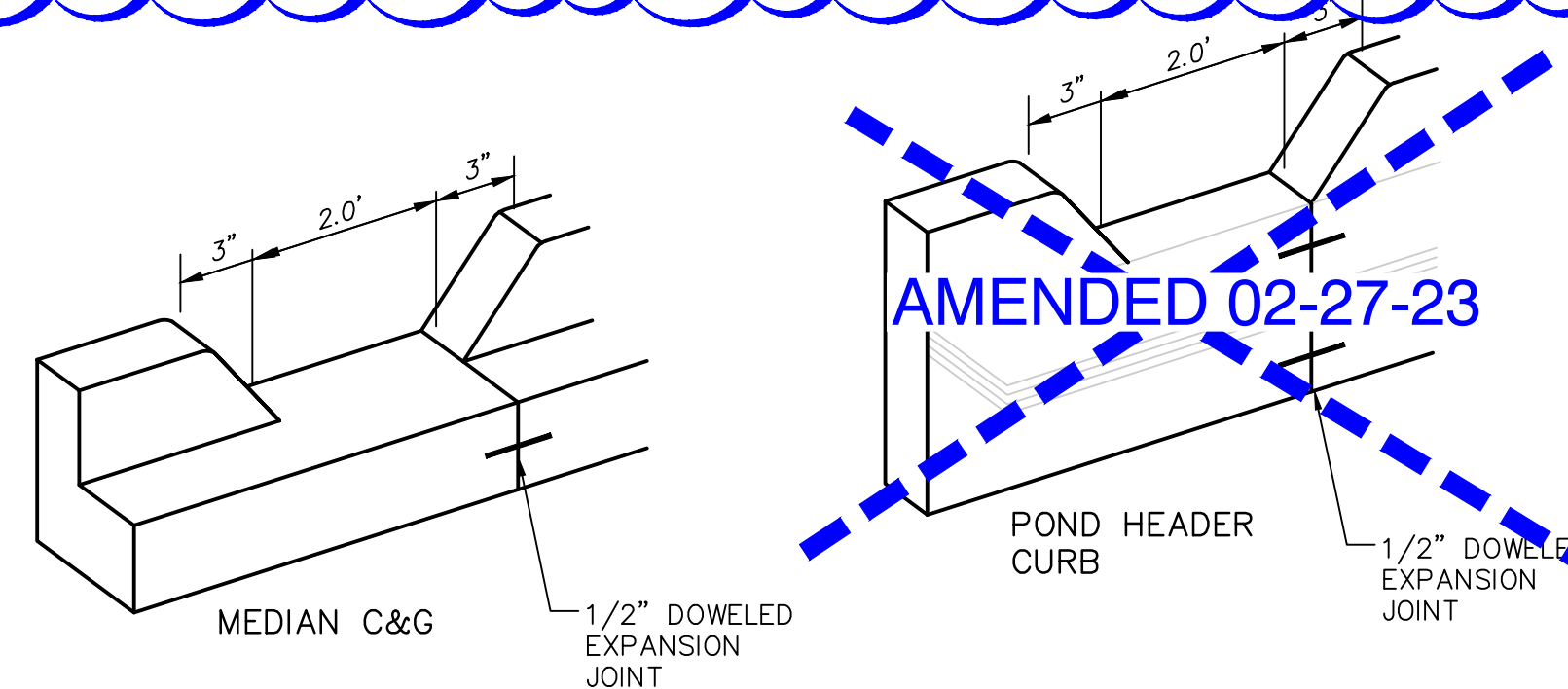
ROCK EROSION PROTECTION

SCALE: N.T.S.



STORMWATER OUTFALL STRUCTURE TO VISTA ORIENTE

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

$$Q = C^* A * (2 * g * h)^{0.5}$$

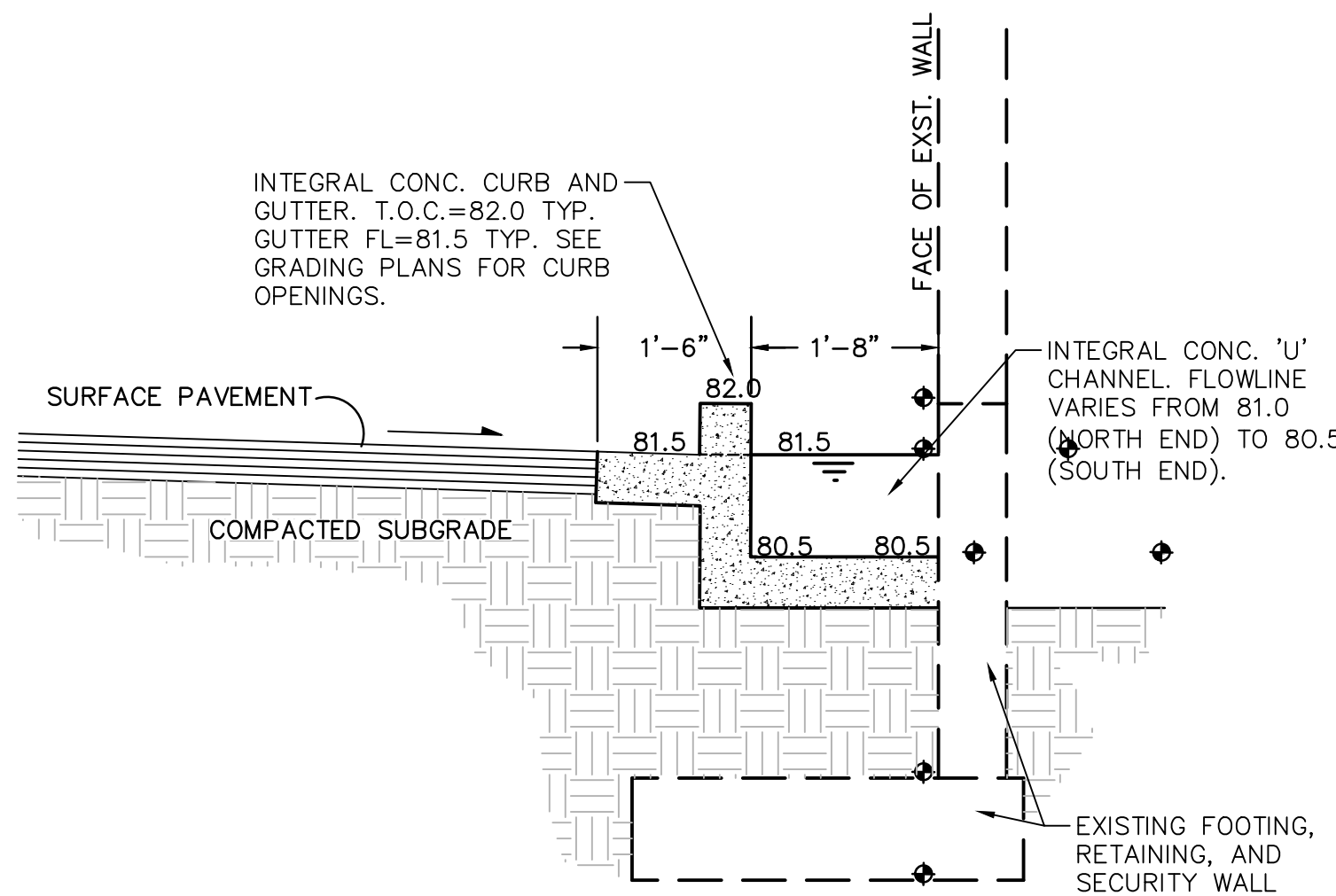
Where	Q	=	2.71	cfs	Curb Height	0.5
	C	=	0.6		Opening area	1.125
	A	=	1.125	sq.ft.		
	g	=	32.2	ft/sec ²		
	h	=	0.25	ft	depth of flow at opening from the center of culvert	

TYPICAL CURB OPENING

SCALE: N.T.S.

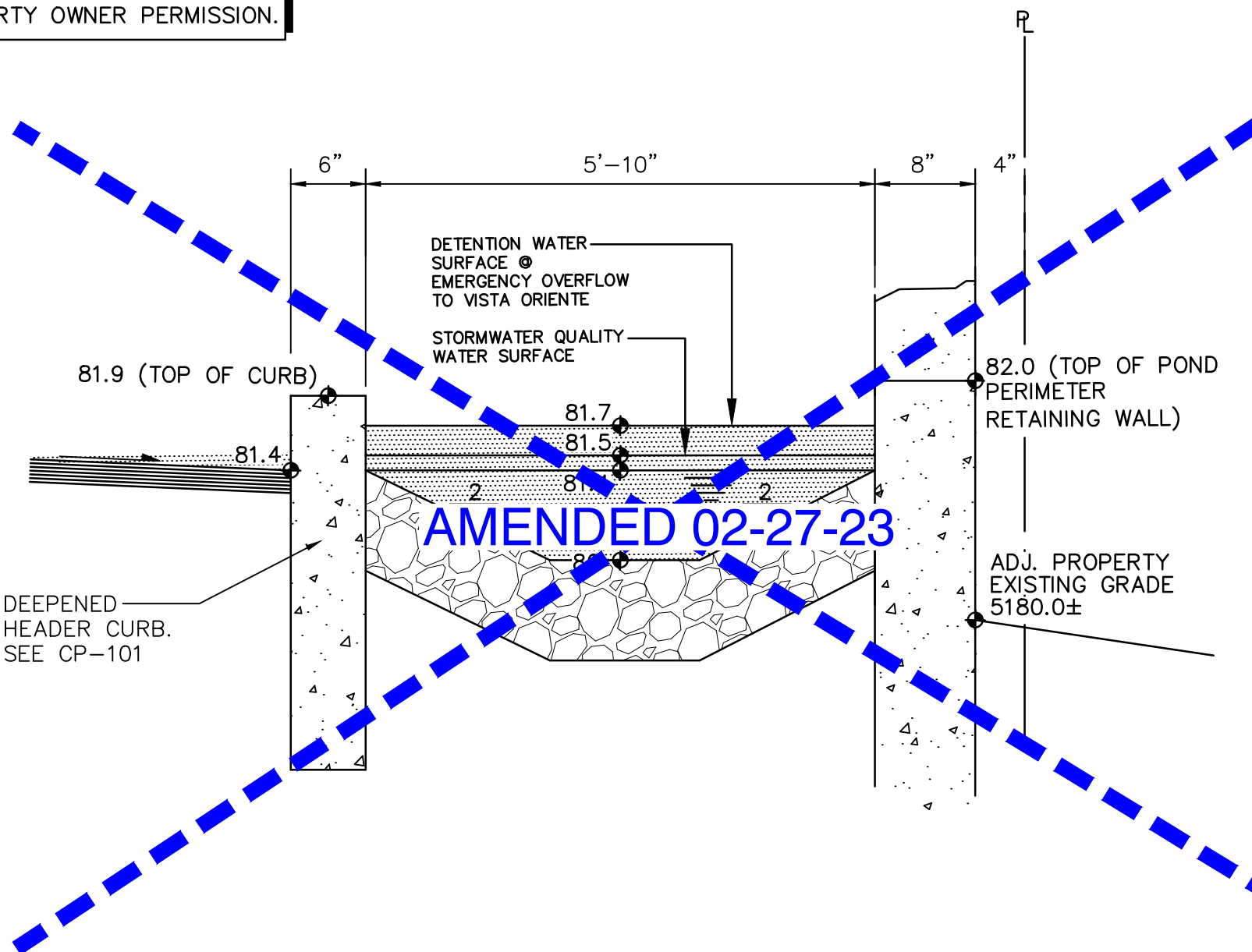
CONSTRUCT ALL PERIMETER RETAINING WALLS TO ACHIEVE GRADE DIFFERENCES SHOWN. SEE ARCHITECTURAL FOR DETAILS INCLUDING STRUCTURAL SECTIONS, ADDITIONAL WALL HEIGHT, FOOTING, GUARDRAIL, WATERPROOFING, REINFORCING, ETC. NO STRUCTURE OR FOOTING MAY BE CONSTRUCTED ON ADJACENT PROPERTIES WITHOUT ADJACENT PROPERTY OWNER PERMISSION.

SECTION: EAST STORMWATER QUALITY POND



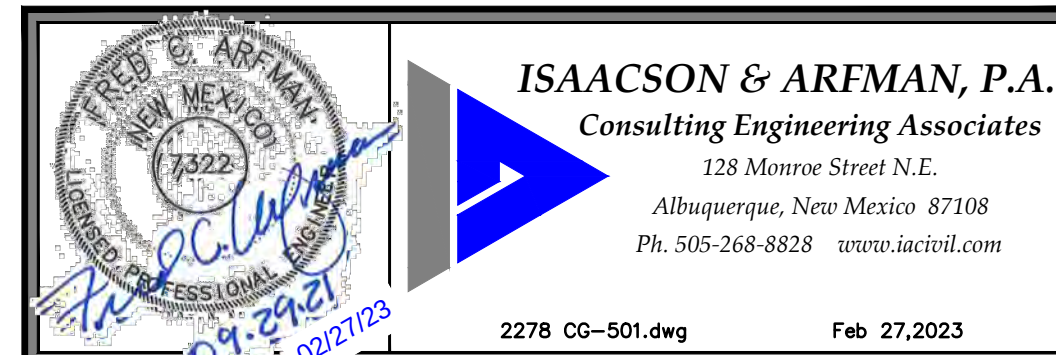
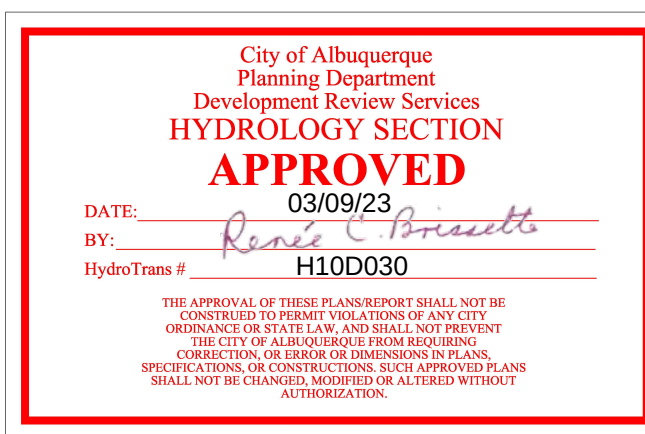
SECTION: EAST STORMWATER QUALITY POND

SCALE: N.T.S.



SECTION: EAST STORMWATER QUALITY POND

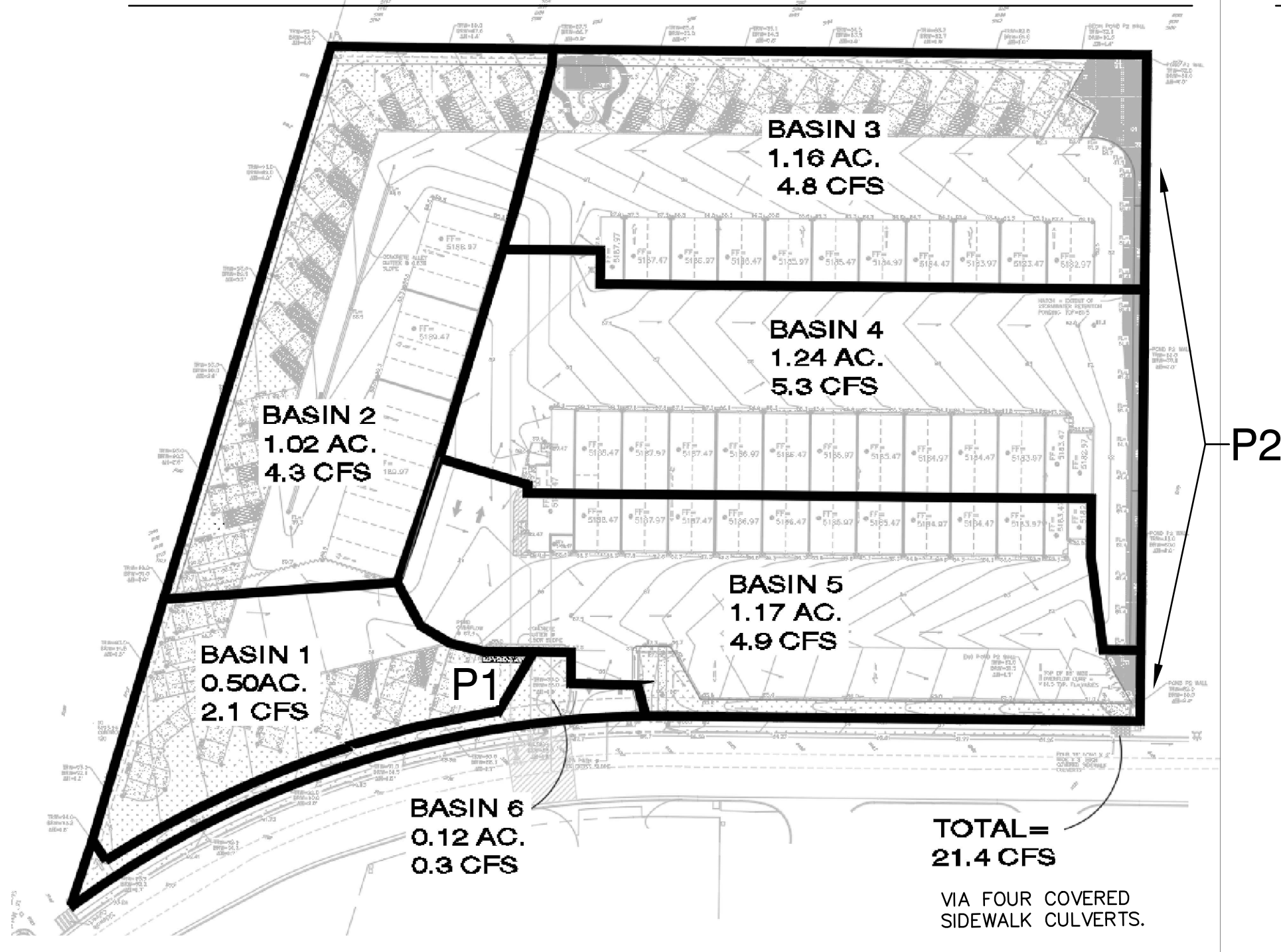
SCALE: N.T.S.



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GRADING & DRAINAGE DETAILS			
Date:	No. Revision:	Date:	Job No.
09-29-21	3 SITE PLAN REVISIONS	07/08/21	2278
Drawn By:	4 ADD RV DUMP	07/12/21	CG-501
BJB	5 REROUTE WTR LINES	08/10/21	
Ckd By:	6 REVISE SAS INV / ALIGN	08/24/21	SH OF
FCA	7 SITE PLAN REVISIONS	02/24/22	

DRAINAGE BASINS



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: Precip. Zone 1					
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 = $E * A / 12$					
Historic V360 =	15712	CF	Developed V360 =	34977	CF
On-Site Peak Discharge Rate: Qp = QpA A_A + QpB A_B + QpC A_C + QpD 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

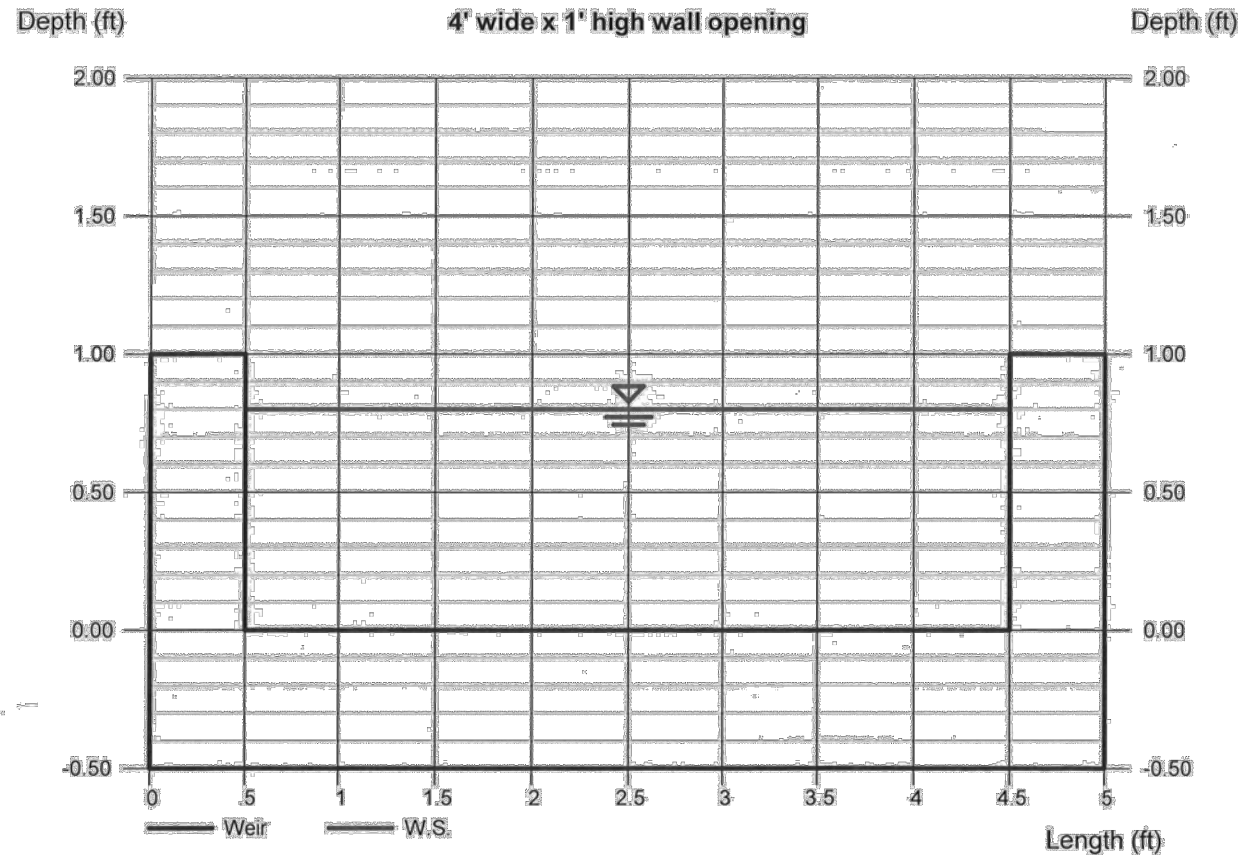
Weir Report

Hydroware 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
Calculations		Velocity (ft/s)	= 4.00
Weir Coeff. Cw	= 2.60	Top Width (ft)	
Compute by:	Q vs Depth		
No. Increments	= 5		

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



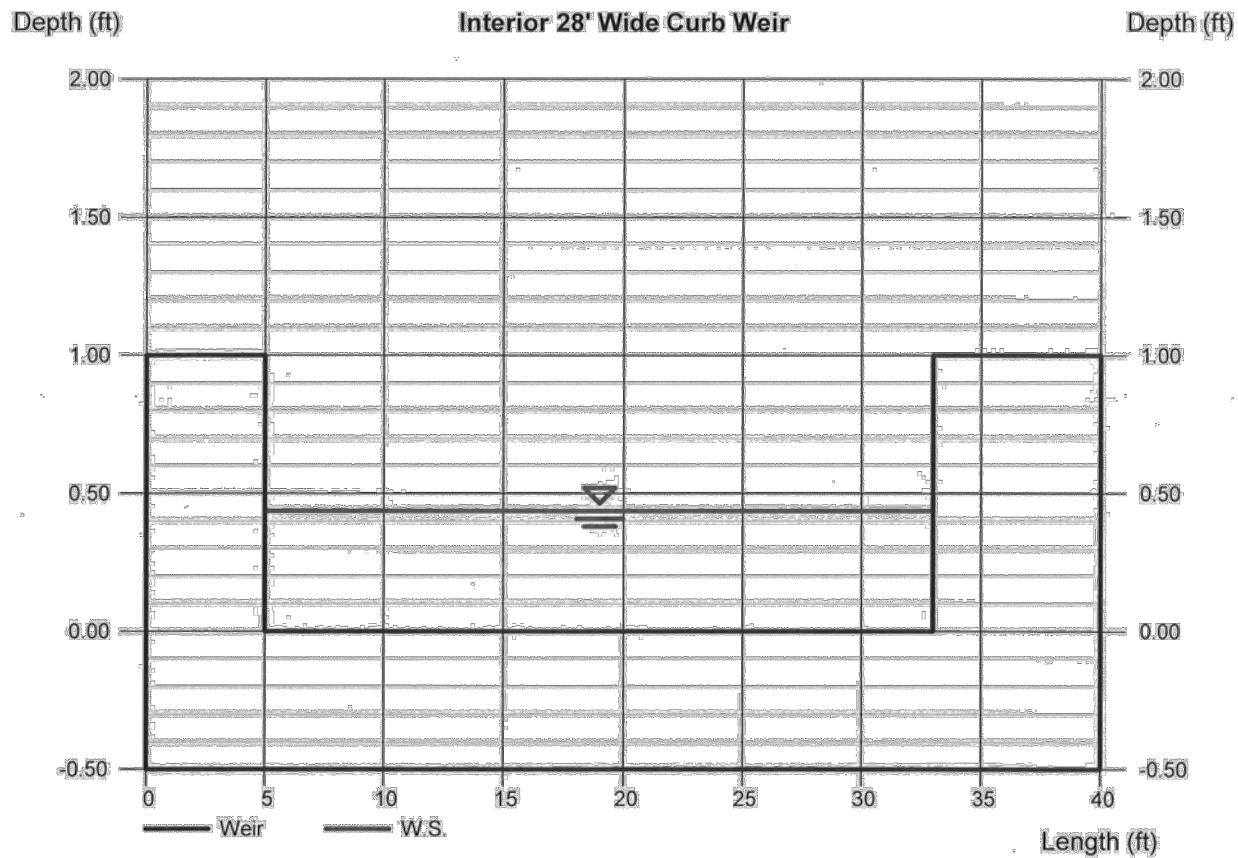
Weir Report

Hydroware 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
Calculations		Velocity (ft/s)	= 28.00
Weir Coeff. Cw	= 2.60	Top Width (ft)	
Compute by:	Known Q		
Known Q (cfs)	= 21.00		

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



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		21837 SF	0.80 Ac	1348 CF	2.1 cfs	557 CF
2		4094 SF	1.02 Ac	188 in	4.3 cfs	175 CF
3		30135 SF	1.16 Ac	1348 in	4.8 cfs	1296 CF
4		28280 SF	1.24 Ac	1348 in	5.3 cfs	1495 CF
5		51025 SF	1.17 Ac	1348 in	4.9 cfs	1344 CF
6		5580 SF	0.12 Ac	1348 in	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.

AMENDED 02-27-23

PROPOSED IMPERVIOUS AREA IS REDUCED WITH THIS AMENDED PLAN BUT BASIN AND OVERALL CALCULATIONS REMAIN UNCHANGED TO ENSURE THE REQUIRED ON-SITE PONDING VOLUME IS AVAILABLE IN THE EVENT THE OWNER CHOOSES TO REPLACE PERVIOUS WITH IMPERVIOUS PAVEMENT IN THE FUTURE.

COVERED SIDEWALK CULVERT CALCULATIONS

ORIFICE EQUATION - SIDEWALK CULVERT

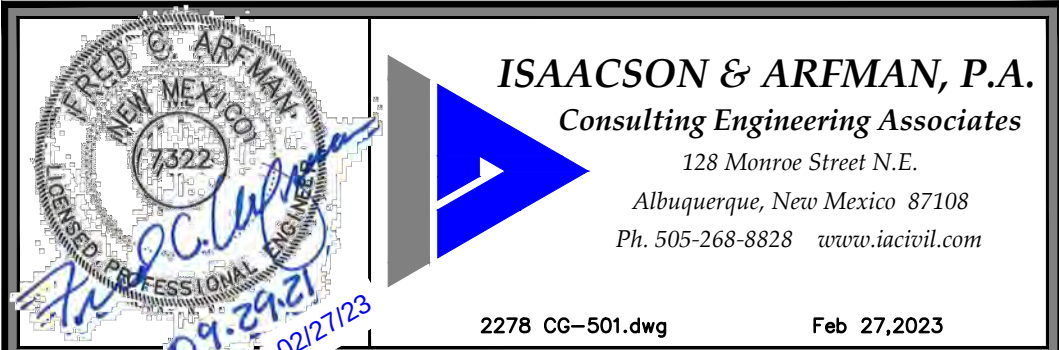
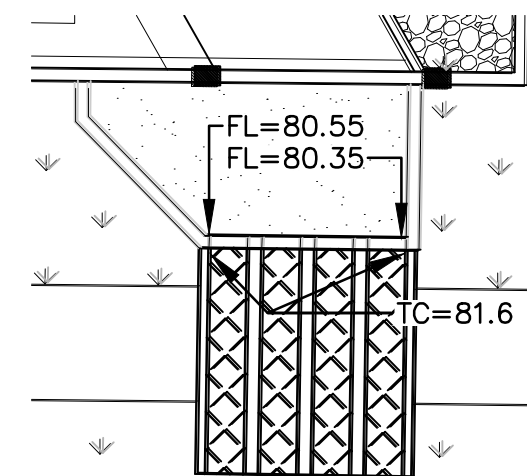
The Orifice Equation is used to calculate the Flow at the opening of a Channel

$$Q = C * A * (2 * g * h)^{0.5}$$

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



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ABQ RV & BOAT STORAGE			
LADERA ENTERPRISES LLC			
DRAINAGE CALCULATIONS			
Date:	No. Revision:	Date:	Job No.
09-29-21	3	07/08/21	2278
Drawn By:	4	07/12/21	CG-502
BJB	5	08/10/21	
Ckd By:	6	08/24/21	SH OF
FCA	7	02/24/22	