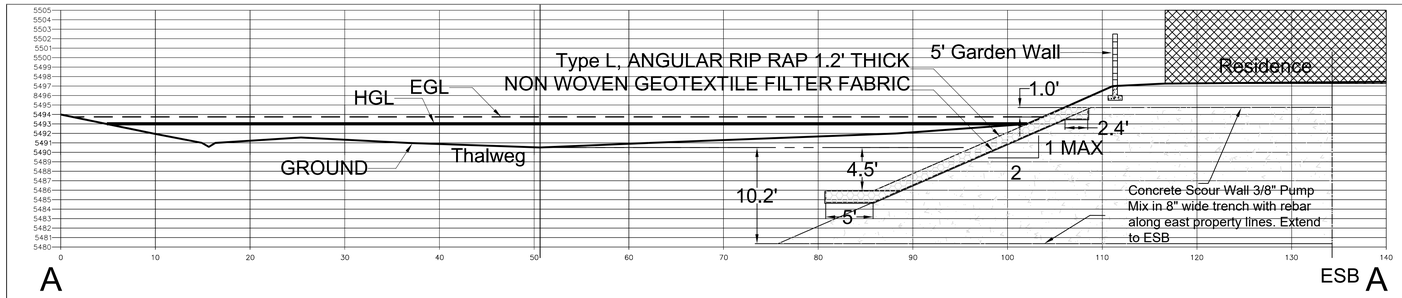
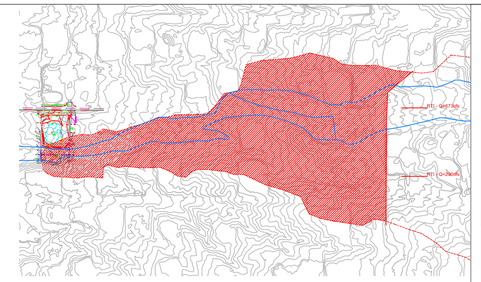
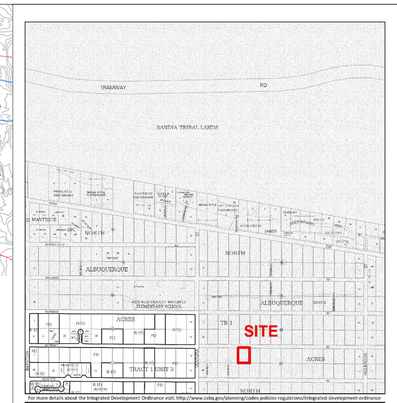
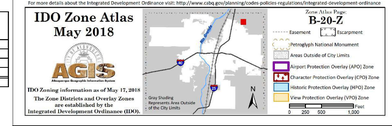
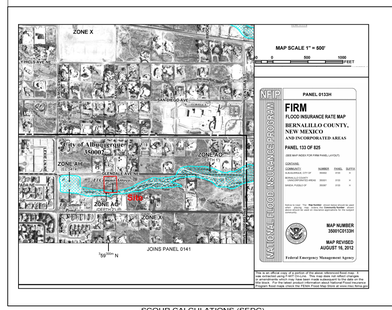


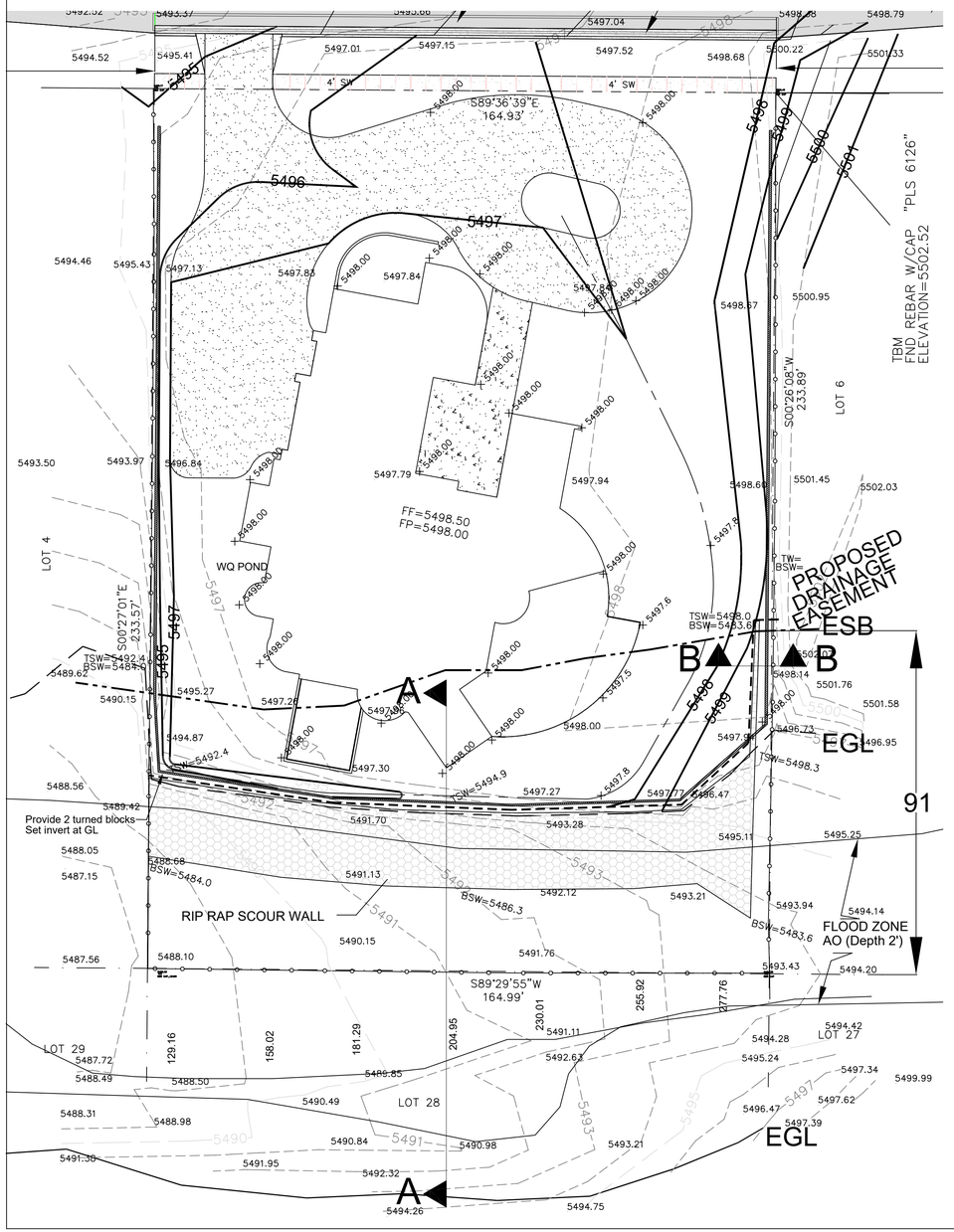


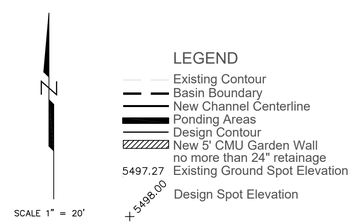
ADDITIONAL OFFSITE BASIN AREA

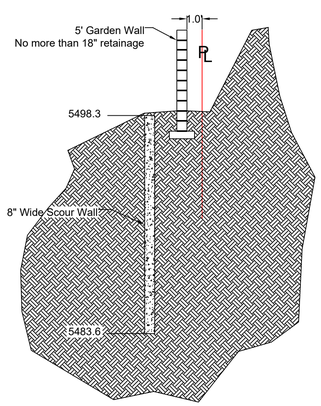












WALL CROSS SECTION B-B

Hydrology Calculations
8500 Glendale NE

Precipitation Zone 3
100 yr 6 hr Storm
Basin D1 Area = 0.89 ac. 38768.4 sq ft Determined by DB
Historic (Allowable)

Land Treatment	Percent	Area (ac.)	Excess Precipitation (in.)	Unit Peak Discharge (cfs/ac.)	Runoff Volume (ac. Ft.)	Peak Discharge (cfs)	Comments
A	20.00%	0.18	0.66	1.87	0.01	0.33	Natural Ground
B	20.00%	0.18	0.92	2.60	0.01	0.46	Landscaped Areas
C	34.00%	0.30	1.29	3.45	0.03	1.04	Compacted earth
D	26.00%	0.23	2.36	5.02	0.05	1.16	Impervious Areas
TOTAL	100.00%	0.89	1.37		0.10	3.00	
					4420.24	cu ft	

Proposed 0.89 ac. 38768.4 sq ft Determined by DB

Land Treatment	Percent	Area (ac.)	Excess Precipitation (in.)	Unit Peak Discharge (cfs/ac.)	Runoff Volume (ac. Ft.)	Peak Discharge (cfs)	Comments
A	10.00%	0.09	0.66	1.87	0.00	0.17	Natural Ground
B	36.00%	0.32	0.92	2.60	0.02	0.83	Landscaped Areas
C	30.00%	0.27	1.29	3.45	0.03	0.92	Compacted earth
D	24.00%	0.21	2.36	5.02	0.04	1.07	Impervious Areas
TOTAL	100.00%	0.89	1.35		0.10	2.99	
					4363.38	cu ft	

Water Quality Retention Volume = 0.42" x 9304.416 sq ft 325.65 cu ft.

% Change -1% 0%

DIFFERENCE Runoff Volume (ac. ft.) Peak Discharge (cfs)
0.00 -0.01
-57 (cu. ft.)

Pond only Water Quality Volume

Hydrology Calculations
Additional Offsite Watershed Assuming Full Development

Precipitation Zone 3
100 yr 6 hr Storm
Offsite Basin 24.6124 ac. 1072117.1 sq ft Determined by DB
Historic (Allowable)

Land Treatment	Percent	Area (ac.)	Excess Precipitation (in.)	Unit Peak Discharge (cfs/ac.)	Runoff Volume (ac. Ft.)	Peak Discharge (cfs)	Comments
A	20.00%	4.92	0.66	1.87	0.27	9.21	Natural Ground
B	20.00%	4.92	0.92	2.60	0.38	12.80	Landscaped Areas
C	34.00%	8.37	1.29	3.45	0.90	28.87	Compacted earth
D	26.00%	6.40	2.36	5.02	1.26	32.12	Impervious Areas
TOTAL	100.00%	24.61	1.37		2.81	83.00	

RTI Flows at Ventura (Camino Arroyo) 290
673
Total 1046.00

DRAINAGE NARRATIVE

This grading & drainage plan was prepared to support a building permit application for a new residence located at 8500 Glendale NE (Lot 5, Block 17, Tract 1, Unit 3, NAA) in North Albuquerque Acres. The plan was prepared using allowable discharge rates based on land treatment percentages of A=20%, B=20%. C=34%, and D=26% and the hydrology methodology presented in Chapter 22.2 of the City of Albuquerque's Development Process Manual (abbreviated method).

The site is a 0.89 acre parcel located in Precipitation Zone 3. The site is impacted by the Camino Arroyo with an estimated flow rate of 1046cfs (RTI Flows @ Ventura + additional developed basin flow) at the property. The property is partially located in FEMA Flood Zone AO (Depth 2') as shown on panel 35001C0133H. Sewer and water service is available from ABCWUA.

Stormwater impacts and mitigation requirements are determined by comparing runoff from the proposed developed conditions to the NAA allowable conditions (see Site Hydrology on this plan). Mitigation measures are designed to reduce developed runoff to at or below the NAA allowable.

This analysis indicates that the site developed runoff will not exceed the allowable runoff in a 100yr. 6hr. rainfall event so ponding is not required.

The offsite Camino Arroyo flow is passed through the property in its natural channel location. A hydraulic analysis of the Camino Arroyo was performed using the US Army's HEC RAS software to determine the Hydraulic Grade Line, Energy Grade Line and flow velocity. The results of the analysis indicated the developed lot will have a minimum 2' freeboard above the water surface and a 1' freeboard above the Energy Grade Line at the South East corner. A Drainage Easement that encompasses the Energy Grade Line is proposed. The HEC RAS analysis is presented on Sheet 2 of 2.

Due to the proximity of the home to the Camino Arroyo a scour analysis is required. Scour calculations were performed using the equations presented in AMAFCA's Sediment and Erosion Design Guide. The Erosion Setback is calculated at 98' and the parallel scour depth at 4.5' (3.5' + 1' Safety Factor) and 10.2' (9.2' + 1') for the perpendicular scour depth.. As the home will be located within the Erosion Setback a scour wall is required for this development. The scour wall design is presented on this plan.

Construction of public infrastructure is required with this development. This infrastructure is shown on Sheet 3 of 3 and will be completed through the Development Review Board process.

GENERAL NOTES

Contractor is responsible for utility spots and controlling sediment deposition and erosion during construction.

A concrete washout bin must be provided as per Bernalillo County MS4 Permit requirements.

All disturbed area due to construction must be reseeded or landscaped following construction.

SCOUR CALCULATIONS (SEDG)
CROSS SECTION 204.95

Q100 =	1033 cfs		
SLOPE	0.01587 ft/ft		
THALWEG ELEVATION	5490.8 ft		
HGL DEPTH = D100	2.28 ft		
HGL ELEVATION	5493.08 ft		
EGL ELEVATION	5493.84 ft		
AREA =	147.73 sq ft		
VELOCITY =	6.99 fps		
VELOCITY HEAD =	0.76 ft		
FROUDE#	1.01		
LATERAL EROSION (Erosion Setback)	206.6 cfs	(Dominant Discharge)	
Qd = 0.2(Q100)			
ESB=(0.92+4.6*log(Qd)Qd^0.4 =		98 ft	(EQ 3.81b)
VERTICAL EROSION (Scour Depth)			
PARALLEL			
Vs = Hv+(.73+(.14*3.14159*Fr^2)D100 =		3.45 ft	(EQ 3.89)
SAFETY FACTOR		1.00 ft	
REQUIRED SCOUR DEPTH		4.45 ft	
PERPINDICULAR	(Θ = 90)		
Vs = ((.73+(.14*3.14159*Fr^2)COS(Θ) +(4*Fr^0.33)SIN(Θ))D100		9.15 ft	(EQ 3.90)
REQUIRED SCOUR DEPTH ELEVATION =		5486.35	
TOP OF SCOUR WALL = EGL +1' =		5494.84	
SCOUR WALL ROCK SIZING		(Denver Urban Drainage Design Manual)	
MINIMUM d50=	0.59 ft	V(S)^.17/5.88 2:1 SS Max.	
N for Riprap	0.036	N=0.0395(D50^1/6)	
Riprap Layer Thickness	1.2 ft	2(d50)	

SCOUR WALL CALCULATIONS

Scour Depth 4.5

X Section	Thalweg	Btm SW	EGL	Top SW
129.16	5488.5	5484.0	5491.42	5492.42
158.02	5489.3	5484.8	5492.29	5493.29
181.29	5489.9	5485.4	5493.15	5494.15
204.95	5490.8	5486.3	5493.86	5494.86
230.01	5491.4	5486.9	5494.76	5495.76
255.92	5492.8	5488.3	5496.01	5497.01
277.76	5493.5	5489.0	5496.97	5497.97

AS BUILT INFORMATION
CONTRACTOR
WORK STAKED BY
INSPECTOR'S ACCEPTANCE BY
FIELD VERIFICATION BY
DRAWINGS CORRECTED BY
RECORDING INFORMATION
RECORDED BY
NO.
DATE

BENCHMARKS

SURVEY INFORMATION
FIELD NOTES
NO. BY DATE

ENGINEER'S SEAL

DONALD B. BRIGGS NEW MEXICO 14912 REGISTERED PROFESSIONAL ENGINEER 5/28/19

NO.	DATE	REMARKS	BY
1	5/28/2019	Address Comments	DB

REVISIONS

DESIGN

DESIGNED BY	DB	DATE 4/25/2019
DRAWN BY	DB	DATE 4/25/2019
CHECKED BY		DATE

DON BRIGGS Engineering LLC
505-249-4843
donbriggsengineering@gmail.com
5324 Oakledge Ct. NW, Albuquerque, NM 87120

TITLE:

8500 Glendale Grading & Drainage Plan

Design Review Committee	City Engineer Approval	Last Design Update	Mo. / Day / Yr.	Mo. / Day / Yr.

City Project No. B20D067 | Zone Map No. | Sheet 1 Of 3