

CITY OF ALBUQUERQUE

Planning Department
Brennon Williams, Director



Mayor Timothy M. Keller

November 4, 2020

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

**RE: Bosque Escondido – 8 Lot Subdivision
Revised Roadway Grading & Drainage Plan and Revised Drainage Report
Engineer's Stamp Date: 10/20/20
Hydrology File: F14D076**

Dear Mr. Arfman:

PO Box 1293
Albuquerque
NM 87103

Based upon the information provided in your submittal received 10/20/2020, the Revised Grading & Drainage Plan and Revised Drainage Report are approved for Grading Permit, Work Order and for action by the DRB on Platting.

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.

Prior to Building Permit (For Information):

www.cabq.gov

Each individual Lot will have to submit a Grading & Drainage Plan to Hydrology for Building Permit approval. The plan must follow the Revised Drainage Report for this subdivision.

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: Bosque Escondido Building Permit #: _____ Hydrology File #: F-14
DRB#: PR-2018-001501 (1010023) EPC#: _____ Work Order#: _____
Legal Description: Tract 6-A-2, North Fourth Street Homesites Addition
City Address: _____

Applicant: Isaacson & Arfman, Inc. Contact: Åsa Nilsson-Weber
Address: 128 Monroe Street NE - Albuquerque, NM 87108
Phone#: (505) 268-8828 Fax#: _____ E-mail: asaw@iacivil.com
Owner: Montano Family Homes, LLC Contact: Tim Nisly
Address: 607 Atlantic Ave. SW - Albuquerque, NM 87102
Phone#: (505) 362-6824 Fax#: _____ E-mail: _____

TYPE OF SUBMITTAL: ☒ PLAT (8 # 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:

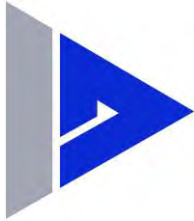
☐ BUILDING PERMIT APPROVAL
☐ CERTIFICATE OF OCCUPANCY
☐ PRELIMINARY PLAT APPROVAL
☐ SITE PLAN FOR SUB'D APPROVAL
☐ SITE PLAN FOR BLDG. PERMIT APPROVAL
☒ FINAL PLAT APPROVAL
☐ SIA/ RELEASE OF FINANCIAL GUARANTEE
☐ FOUNDATION PERMIT APPROVAL
☒ GRADING PERMIT APPROVAL
☐ SO-19 APPROVAL
☐ PAVING PERMIT APPROVAL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

DATE SUBMITTED: October 20, 2020 By: Åsa Nilsson-Weber

COA STAFF:

ELECTRONIC SUBMITTAL RECEIVED: _____

FEE PAID: _____



A Transmittal From

Isaacson & Arfman, Inc. Consulting Engineering Associates

TO: Renée Brissette
City of Albuquerque

DATE: 10/20/20
JOB NO: 2252

FROM: Åsa Nilsson-Weber

REFERENCE: F14D076 - Bosque Escondido

WE ARE SENDING YOU ATTACHED THE FOLLOWING ITEMS:

Revised drainage report including grading and drainage plans.

The developers are subdividing an additional 3 lots for a total of 8 lots. The flat grading criteria are still applied with calculations and references to the 2020 DPM.

Thank you.

THIS INFORMATION IS TRANSMITTED:

- | | |
|--|---|
| ☐ As per your request | ☐ For your files |
| ☒ For your review and approval | ☐ For your use |
| ☐ For your information | ☐ Please review and return |
| ☐ For your attention | ☐ For return to your files |
| ☐ | ☐ Please advise |
| ☐ For routing of signatures | ☐ |

COMMENTS

RECEIVED BY: _____

DATE: _____ **TIME:** _____

COPIES TO: _____

OCTOBER 20, 2020

DRAINAGE REPORT

FOR
BOSQUE ESCONDIDO

**AN 8-LOT DWELLING UNIT
SINGLE-DETACHED RESIDENTIAL
PRIVATE DEVELOPMENT**

ALBUQUERQUE, NEW MEXICO

BY



Isaacson &
Arfman, Inc.
Civil Engineering Consultants



128 Monroe Street NE
Albuquerque, NM 87108
505-268-8828 | www.iacivil.com

I&A Project No. 2352

TABLE OF CONTENTS

VICINITY MAP

FIRM MAP

I. PROJECT INFORMATION

II. INTRODUCTION

III. EXISTING CONDITIONS

IV. PROPOSED CONDITIONS

V. SUMMARY & CONCLUSIONS

APPENDICES

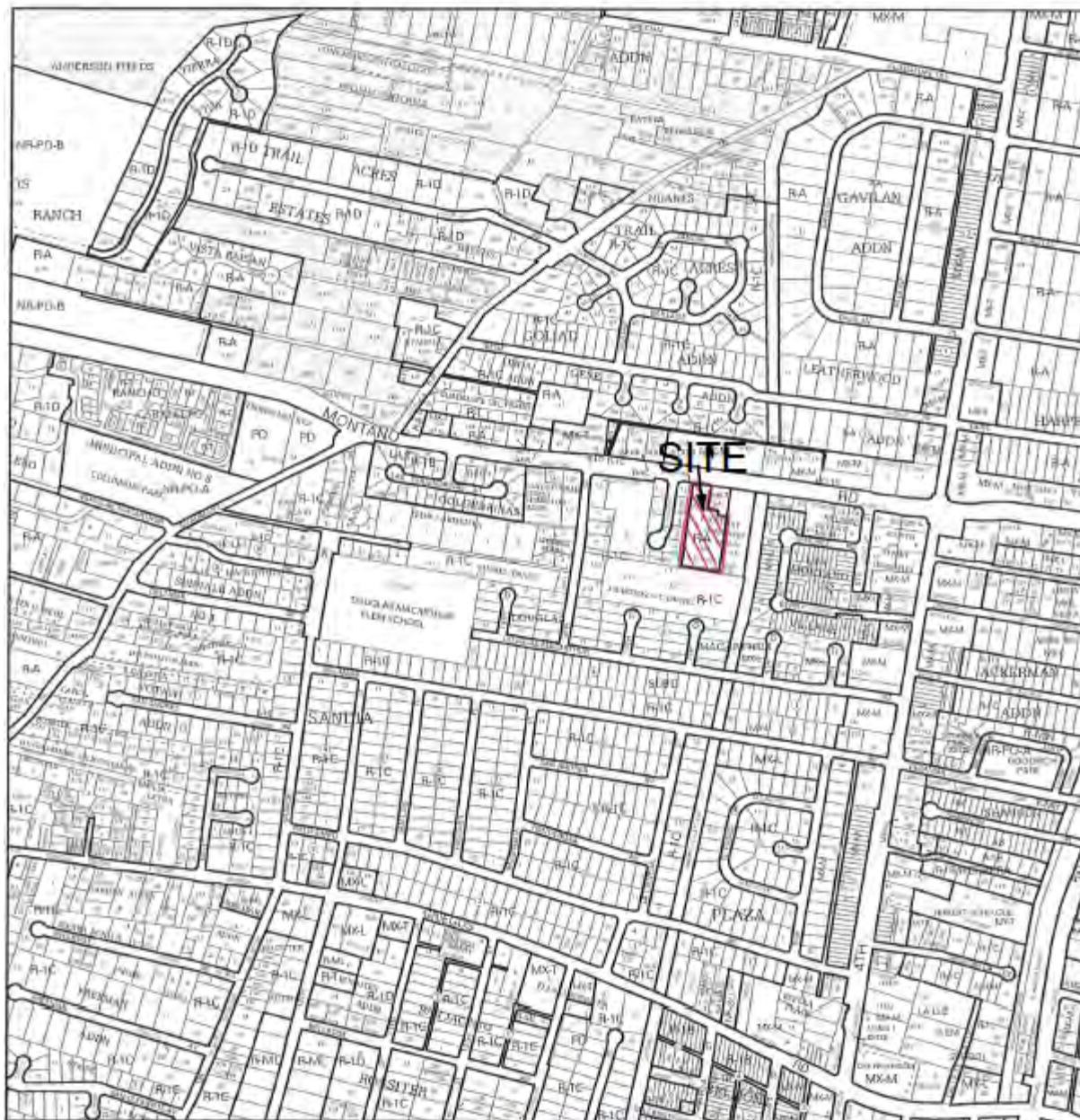
APPENDIX A: **Drainage Basin Map**
 Drainage Calculations

APPENDIX B: **Excerpts from *Drainage Report for Phase 1 of Montano Corridor***
 from Rio Grande to Edith by Wilson & Co.

POCKET

Roadway Grading Plan

Master Lot Drainage Plan



For more details about the Integrated Development Ordinance visit: <http://www.cabq.gov/planning/codes-policies-regulations/integrated-development-ordinance>



National Flood Hazard Layer FIRMette



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AD, AH, VE, AR
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee. See Notes, Zone X
		Area with Flood Risk due to Levee Zone D
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective LOMRs
GENERAL STRUCTURES		Area of Undetermined Flood Hazard Zone D
		Channel, Culvert, or Storm Sewer
OTHER FEATURES		Levee, Dike, or Floodwall
		Cross Sections with 1% Annual Chance Water Surface Elevation
OTHER FEATURES		Coastal Transect
		Base Flood Elevation Line (BFE)
OTHER FEATURES		Limit of Study
		Jurisdiction Boundary
OTHER FEATURES		Coastal Transect Baseline
		Profile Baseline
OTHER FEATURES		Hydrographic Feature
MAP PANELS		Digital Data Available
		No Digital Data Available
MAP PANELS		Unmapped
		Unmapped



This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards.

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 8/28/2019 at 6:36:16 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

I. PROJECT INFORMATION

PROPOSED LEGAL DESCRIPTION:

Bosque Escondido

EXISTING LEGAL DESCRIPTION:

Tract 6-A-2, Fourth Street Homesites Addition

ENGINEER:

Isaacson & Arfman, Inc.
128 Monroe Street NE
Albuquerque, NM 87108
(505) 268-8828
Attn: Åsa Nilsson-Weber

SURVEYOR:

Cartesian Surveys, Inc.
(505) 896-3050
Attn: Will Plotner

DEVELOPER:

Montano Family Homes, LLC
(505) 362-6824
Attn: Tim Nisly

NUMBER OF PROPOSED DWELLING UNITS: 8

TOTAL AREA:

1.7468 Ac.

FLOOD PLAIN:

This property lies within Flood Zone X Shaded which is defined as an area with reduced flood risk due to levee. As determined by FEMA and shown on Flood Insurance Rate Map dated September 26, 2008, Map No. 35001C0119G.

II. INTRODUCTION

This site is comprised of a vacant lot located south of Montano Rd. NW, west of 4th St. and east of 9th St. and is bound on the west by a residential subdivision, on the northeast by a commercial property (beauty salon), on the southeast by a single residence and on the south by a tract with agricultural use. The site will be developed as a private development with 8 detached residential homes. The flat land grading scheme will be applied so that each lot provides ponding for the 100-year, 10-day storm.

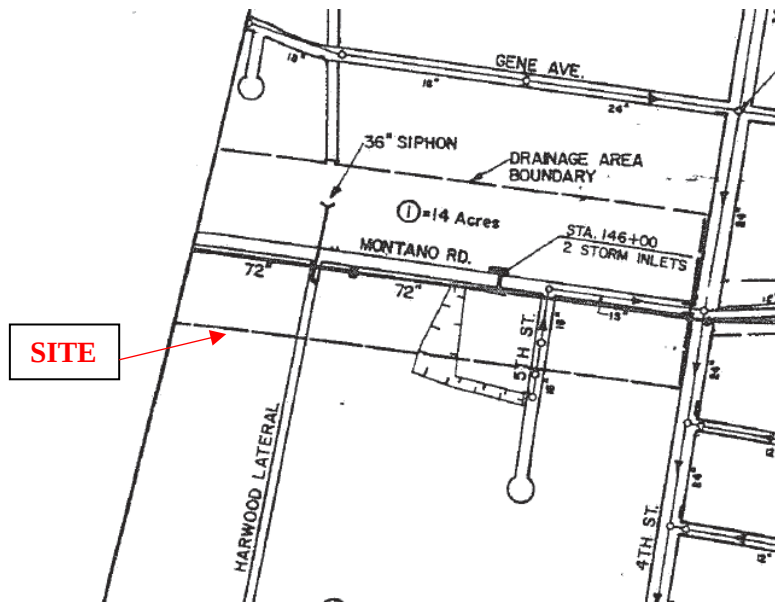
III. EXISTING CONDITIONS

The majority of the site is undeveloped. A portion in the front has been graded with dirt access roads and the remaining consists of trees and vegetation.

AERIAL VIEW OF PROPERTY



The site is flat, and except for the graded portion at the north end that drains to Montano Rd., the majority of the site ponds on the property. Montano Rd. is a 4-lane road with a center turn lane, bike lanes and curb and gutter and sidewalks on both sides. There is a 66-inch storm drain in Montano Road that has limited capacity. Appendix B shows excerpts from the Drainage Report for Phase 1 of Montano Corridor from Rio Grande to Edith by Wilson & Co, dated August 1985. This report indicates that a 0.35-acre± portion of this site is allowed to drain to the Montano Rd. storm drain at a rate of 1.4 cfs/acre for a total discharge of 0.5 cfs. See below for an enlarged exhibit from the basin map in the Wilson & Co. report—this property is located in Basin 1.



IV. PROPOSED CONDITIONS

The site will be developed as a private development using a flat grading scheme per DPM Article 6-5, “Valley Drainage Criteria”, dated June 26, 2020, as follows:

- The street must drain into the adjacent lots, except Basin 1B located on Lot 1 which is permitted to drain to Montano Rd.
- The 100-year 10-day water surface elevation shall be at or below 4976.67.
- The maximum percent impervious of each lot and the contributing area may not be greater than 45%, including roadway, driveways, walks, roof area, patios, etc.
- Each lot must provide retention ponding around the perimeter of each residence to store the 100-year, 10-day storm volume for the fully developed lot.

- Perimeter and side yard walls must be constructed along the lot lines to contain the required 100-year, 10-day volume within the associated lot limits.
- The pad elevation shall be a minimum of one (1) foot above the 100-year 10-day stormwater surface elevation. Therefore, all pad elevations must be at elevation 4977.7 or greater.
- The flow between the front yard and back yard cannot be obstructed. Stormwater must be allowed to equalize to the same level between the front and back yards (using wall openings, swales, equalizer pipes, etc.)

This report stipulates the general criteria for ponding based on an assumed 45 percent Type D land treatment. The road and utility infrastructure will be constructed as part of the initial construction. Upon development of each lot, a grading plan will need to be submitted for building permit approval. These grading plans shall adhere to the criteria established in this report and on the approved grading plan.

The private road, Escondida Ln., will be graded at the same elevation throughout and be crowned so that the flows drain to each future lot. The road will be aggregate base course (Type C land treatment) with sidewalks (deferred) adjacent to Lots 1-3. The initial grading will be contained to the roadway and across the utility easement with catch slopes tying to existing grade both sides. The site will continue to pond the roadway and undeveloped lots until the lots are developed.

The existing perimeter walls will remain. New perimeter walls will need to be constructed with the development of each lot to contain the 100-year, 10-day storm.

Basins A and 1B (Tract A and the east half of the street within Lot 1) will drain approximately 0.2 cfs to Montano Rd. The remaining basins will provide on-lot ponding for the 100-year, 10-day storm.

The roadway grading plan and the master lot drainage plan are included in the back pocket of this report.

LAND TREATMENTS AND HYDROLOGY

Hydrology calculations assume the 45% max. impervious area for each lot which would include the residence, private walk, patios, paved driveway, etc. The remaining area is designated as 35% land treatment B and 20% land treatment C.

Appendix A includes a Drainage Basin Exhibit and the 100-year, 10-day pond volume calculations based on City of Albuquerque DMP, Article 6-2 Hydrology dated June 26, 2020.

WATER QUALITY REQUIREMENTS

The water quality requirement will be met since the lots will have on-lot ponding.

V. SUMMARY & CONCLUSIONS

The site will be developed with 8 detached residential homes and an aggregate base course road with a sidewalk adjacent to Lots 1-3 (sidewalk deferred until homes are constructed). Each lot shall provide the required 100-yr, 10-day retention ponding areas.

Based on this report, it is recommended that the following improvements be constructed initially:

- Aggregate base course crowned street.
- Utility infrastructure.
- Transition grading at road/utility easement edge to match existing elevations.

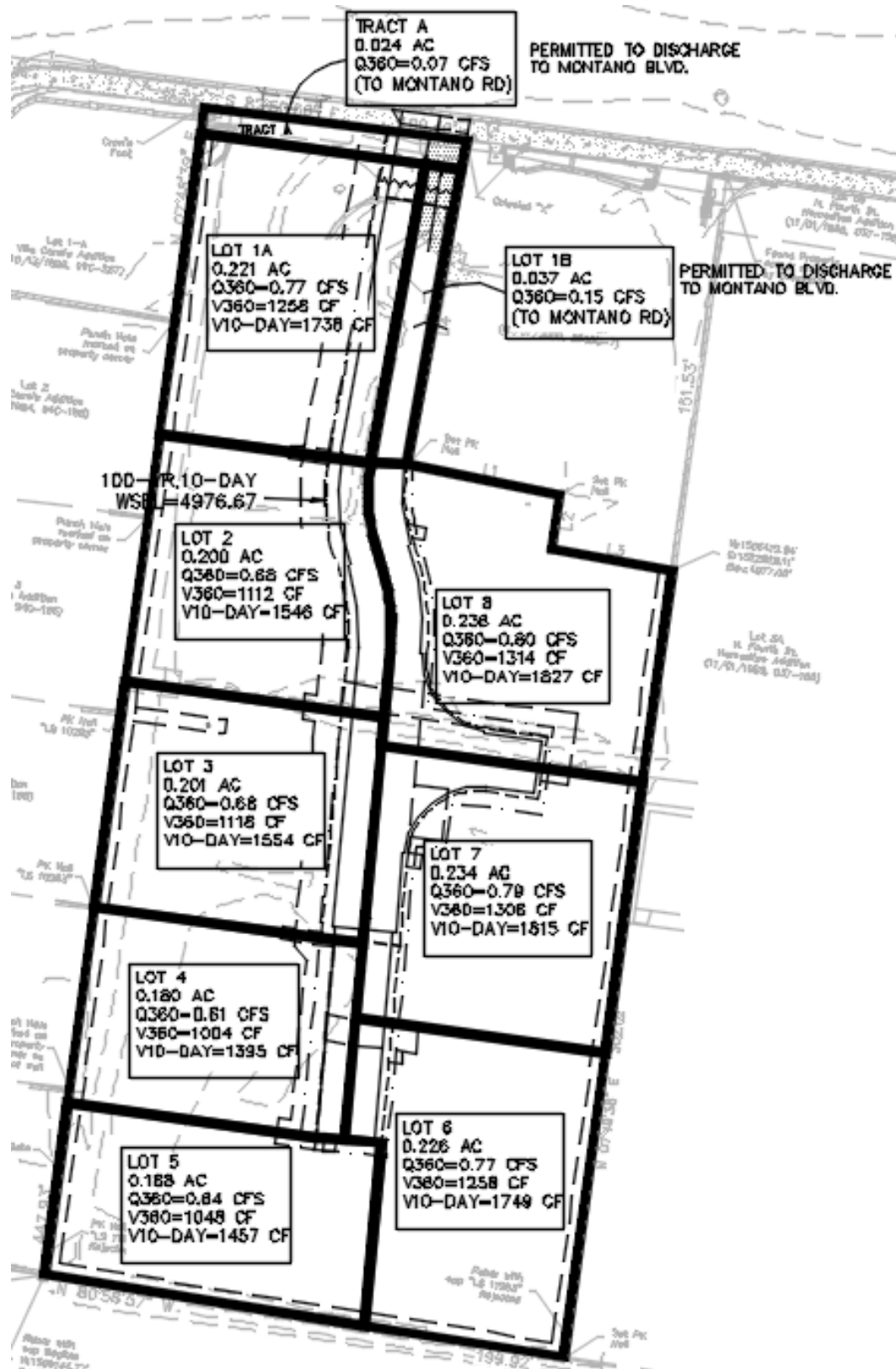
As each lot develops, a detailed grading plan shall be submitted along with calculations for ponding volumes. The individual grading plans shall adhere to the following criteria:

- The maximum impervious area of each lot may not be greater than 45%.
- The building pad elevation will be at 4977.7 minimum (1' minimum above the 100-year 10-day water surface elevation.)
- The 100-year 10-day storm (developed condition) will be at or below 4976.67 and will be outside of the roadway.
- The flow between front, back and side yard ponds must be interconnected to permit stormwater to equalize to the same level using swales, equalizer pipes, wall openings, etc.
- Perimeter and side yard walls shall be constructed around lot to contain the lots 100-year 10-day developed runoff.

APPENDIX A

**Drainage Basin Exhibit
Drainage Calculations**

DRAINAGE BASIN EXHIBIT



The following calculations provide the base 100-year 6 hour design storm calculations.

The 100-year 10-day volume (V10-day) required to be ponded within each lot is shown in the lower right corner of each lot calculation (in BOLD).

$V_{10\text{-day}} = V_{360} + (\text{Area Land Treatment D} * (P_{10\text{-day}} - P_{360}) / 12'' \text{ per foot})$

For Zone 2, $P_{360} = 2.29$, $P_{10\text{-day}} = 3.62$

LOT	1-A	DESCRIPTION			
Area of basin flows =	9622	SF	=	0.221	Ac.
The following calculations are based on Treatment %'s as shown in table to the right					
Sub-basin Weighted Excess Precipitation:				LAND TREATMENT	
Weighted E = 1.57 in.				A =	0%
Sub-basin Volume of Runoff:				B =	20%
V ₃₆₀ = 1258 CF				C =	35%
Sub-basin Peak Discharge Rate:				D =	45%
Q _p = 0.77 cfs				100-YEAR 10-DAY VOLUME	
				V10-DAY	1738 CF
LOT	1-B	DESCRIPTION			
Area of basin flows =	1604	SF	=	0.037	Ac.
The following calculations are based on Treatment %'s as shown in table to the right					
Sub-basin Weighted Excess Precipitation:				LAND TREATMENT	
Weighted E = 2.15 in.				A =	0%
Sub-basin Volume of Runoff:				B =	10%
V ₃₆₀ = 288 CF				C =	2%
Sub-basin Peak Discharge Rate:				D =	88%
Q _p = 0.15 cfs				Discharge to Montano	
LOT	2	DESCRIPTION			
Area of basin flows =	8699	SF	=	0.200	Ac.
The following calculations are based on Treatment %'s as shown in table to the right					
Sub-basin Weighted Excess Precipitation:				LAND TREATMENT	
Weighted E = 1.53 in.				A =	0%
Sub-basin Volume of Runoff:				B =	35%
V ₃₆₀ = 1112 CF				C =	20%
Sub-basin Peak Discharge Rate:				D =	45%
Q _p = 0.68 cfs				100-YEAR 10-DAY VOLUME	
				V10-DAY	1546 CF
LOT	3	DESCRIPTION			
Area of basin flows =	8741	SF	=	0.201	Ac.
The following calculations are based on Treatment %'s as shown in table to the right					
Sub-basin Weighted Excess Precipitation:				LAND TREATMENT	
Weighted E = 1.53 in.				A =	0%
Sub-basin Volume of Runoff:				B =	35%
V ₃₆₀ = 1118 CF				C =	20%
Sub-basin Peak Discharge Rate:				D =	45%
Q _p = 0.68 cfs				100-YEAR 10-DAY VOLUME	
				V10-DAY	1554 CF
LOT	4	DESCRIPTION			
Area of basin flows =	7849	SF	=	0.180	Ac.
The following calculations are based on Treatment %'s as shown in table to the right					
Sub-basin Weighted Excess Precipitation:				LAND TREATMENT	
Weighted E = 1.53 in.				A =	0%
Sub-basin Volume of Runoff:				B =	35%
V ₃₆₀ = 1004 CF				C =	20%
Sub-basin Peak Discharge Rate:				D =	45%
Q _p = 0.61 cfs				100-YEAR 10-DAY VOLUME	
				V10-DAY	1395 CF

LOT	5	DE Scription			
Area of basin flows =	8197	SF	=	0.188	Ac.
The following calculations are based on Treatment %'s as shown in table to the right					
Sub-basin Weighted Excess Precipitation:				LAND TREATMENT	
Weighted E = 1.53 in.				A =	0%
Sub-basin Volume of Runoff:				B =	35%
V ₃₆₀ = 1048 CF				C =	20%
Sub-basin Peak Discharge Rate:				D =	45%
Q _p = 0.64 cfs				100-YEAR 10-DAY VOLUME	
				V10-DAY	1457 CF
LOT	6	DE Scription			
Area of basin flows =	9841	SF	=	0.226	Ac.
The following calculations are based on Treatment %'s as shown in table to the right					
Sub-basin Weighted Excess Precipitation:				LAND TREATMENT	
Weighted E = 1.53 in.				A =	0%
Sub-basin Volume of Runoff:				B =	35%
V ₃₆₀ = 1258 CF				C =	20%
Sub-basin Peak Discharge Rate:				D =	45%
Q _p = 0.77 cfs				100-YEAR 10-DAY VOLUME	
				V10-DAY	1749 CF
LOT	7	DE Scription			
Area of basin flows =	10212	SF	=	0.234	Ac.
The following calculations are based on Treatment %'s as shown in table to the right					
Sub-basin Weighted Excess Precipitation:				LAND TREATMENT	
Weighted E = 1.53 in.				A =	0%
Sub-basin Volume of Runoff:				B =	35%
V ₃₆₀ = 1306 CF				C =	20%
Sub-basin Peak Discharge Rate:				D =	45%
Q _p = 0.79 cfs				100-YEAR 10-DAY VOLUME	
				V10-DAY	1815 CF
LOT	8	DE Scription			
Area of basin flows =	10276	SF	=	0.236	Ac.
The following calculations are based on Treatment %'s as shown in table to the right					
Sub-basin Weighted Excess Precipitation:				LAND TREATMENT	
Weighted E = 1.53 in.				A =	0%
Sub-basin Volume of Runoff:				B =	35%
V ₃₆₀ = 1314 CF				C =	20%
Sub-basin Peak Discharge Rate:				D =	45%
Q _p = 0.80 cfs				100-YEAR 10-DAY VOLUME	
				V10-DAY	1827 CF
TRACT	A	DE Scription			
Area of basin flows =	1060	SF	=	0.024	Ac.
The following calculations are based on Treatment %'s as shown in table to the right					
Sub-basin Weighted Excess Precipitation:				LAND TREATMENT	
Weighted E = 1.27 in.				A =	0%
Sub-basin Volume of Runoff:				B =	50%
V ₃₆₀ = 112 CF				C =	23%
Sub-basin Peak Discharge Rate:				D =	27%
Q _p = 0.07 cfs				Discharge to Montano	

APPENDIX B

**Excerpts from *Drainage Report for
Phase 1 of Montano Corridor from
Rio Grande to Edith* by Wilson & Co**

1055

DRAINAGE REPORT

Phase 1 of the Montano Corridor
From Rio Grande Boulevard to Edith

Prepared By:

WILSON & COMPANY, ENGINEERS & ARCHITECTS



AUGUST 1985
(85-517)
REVISED MARCH 1986

WILSON
& COMPANY
ENGINEERS &
ARCHITECTS

INTRODUCTION

This report outlines the storm water drainage plan for the Montano Corridor from Rio Grande Boulevard to 2nd Street (see Phase 1 on the Location Map). This corridor is in the North Valley where the existing drainage is sheet flow with no defined drainage paths. The major outlets for drainage through this area are the Alameda Drain, the Rio Grande and, to a limited extent, the riverside drains. There are existing storm drains at the 4th Street and 2nd Street intersections. West of 5th Street there are no storm drains with the rainfall runoff ponding in many low areas and sheet flow generally to the river. Several irrigation laterals and drains cross the proposed roadway corridor. The area is currently developed east of Guadalupe, primarily residential with scattered churches and commercial buildings at the 4th Street and 2nd Street intersections. A small shopping center has been constructed in the northeast quadrant of the 4th Street intersection. The area in this phase of the project west of Guadalupe is in the process of being developed with plans for residential, multi-family and commercial development.

The drainage area to the Montano corridor is primarily a strip adjacent to the roadway with a wide sheet flow area to the northeast of Rio Grande Boulevard approximately 3,000 feet (see Figure 3-5). The City's Master Drainage Plan shows an 18-inch storm drain from a low area south of Guadalupe Trail to the Griegos Drain. The proposed drainage plan consists of a storm drain from Rio Grande Boulevard to the Alameda Drain with a pumping station at Rio Grande Boulevard to discharge the storm runoff to the Rio Grande. A tee will be provided at the Guadalupe Trail to receive a sewer draining the low area south of Montano. Approximately 130 cfs will be discharged from the Alameda Drain to the proposed system during high flows in the drain (see attached Plans and Profiles).

HYDROLOGY & HYDRAULICS

The design criteria, hydrologic methods and hydraulic computations were in accordance with the City of Albuquerque "Development Process Manual," with Montano a minor arterial. Calculations for the project drainage are included in the Appendix and the results summarized in the following table.

DRAINAGE SUMMARY

Segment Sta. to Sta.	Area No(s).	Drainage Area (Ac.)	Time of Concen- tration (Min.)	Design Flow Without Alameda Drain Flow (cfs) (100-year)	Design Flow With Alameda Drain Flow of 130 cfs (peak) 100- Year (cfs)	Storm Drain Size (Dia. in inches)
156+00 - 164+00	0	3.0(3)**	39	7.7(7)	130	60(-)
136+00 - 156+00	0-1	14.0(3)	39	15.1(8)	130	72(24)
120+00 - 136+00	0-2	15.0(3)	39	24.9(10)	130	72(24)
105+00 - 120+00	0-3	22.0(3)	39	38.6(13)	130	72(30)
76+00 - 105+00	0-4	79.0(3)	39	43.6(18)	130	72(30)
*68+00 - 76+00	5	7.5(3)	9	37.8(29)	130	72(24)
		140.5(18)				

*Segment to be added in Phase 2 of project with the Rio Grande Boulevard overpass.

**Numbers in parentheses reflect areas, flows and pipe sizes considering Roadway only.

Due to the "flat" grades and the sump conditions of the inlets, the 100-year design storm runoff maximum depth of 0.87 foot within the street right-of-way controlled the storm sewer pipe sizes.

RECOMMENDED PLAN

The recommended plan is to provide a storm drain from Rio Grande Boulevard to the Alameda Drain with a pumping station to collect and pump the storm water from Rio Grande Boulevard to the Rio Grande. Approximately 130 cfs will be discharged from the Alameda Drain to the proposed system during high flows. The Montano grade will be "rolled" to obtain minimum grades with inlets constructed in the low points. (See the Plans and Profiles for details of the recommended plan.) The estimated construction cost for the storm drain system for Montano Corridor Phase 1 from Rio Grande to 2nd Street is \$2.96 million (see Appendix A).

Detention ponding to control the discharges was not feasible for this project due to: 1) lack of suitable right-of-way, 2) the lack of relief, and 3) the depressed roadway for Montano under Rio Grande Boulevard. Any alternate using detention ponding would require pumps to lift the storm water runoff to the pond. However, approximately five acre-feet of storage in the 72"/60" storm drain was used in the pump station hydraulics to reduce the peak flow for the pump station. The flow was reduced from 130 cfs to 95 cfs - see Appendix E for calculations.

HYDROGRAPH COMPUTATION WORKSHEET

DATE 27 July 85
 COMPUTED BY WPR
 CHECK BY SM

PROJECT	N	(t/T_p)	t (min.)	y	Q (cfs)
LOCATION <u>Montano 85-517</u>	1	0	0	0	0
ANALYSIS POINT # <u>1</u> <u>100 YR</u>	2	.1	1.6	.03	0.6
(DR. AREA) $A =$ <u>19</u> ACRES	3	.2	3.2	.10	2.0
T_c <u>16</u> MIN	4	.3	4.8	.190	3.8
POINT RAINFALL <u>2.2</u> IN. FROM PLATE 22.2 D-1	5	.4	6.4	.310	6.2
CN = <u>75</u> FROM PLATES 22.2 C-2, 22.2 C-3	6	.5	8.0	.470	9.3
RUNOFF VOLUME $R =$ <u>0.5</u> IN. FROM PLATE 22.2 C-4	7	.6	9.6	.660	13.1
COMPUTED $T_p =$ <u>16</u> MIN. $T_p = T_c$ (Rounded to even minute)	8	.7	11.2	.820	16.3
$q_p = \frac{45.4A}{T_p} =$ <u>39.7</u> CFS./INCH OF RUNOFF	9	.8	12.8	.930	18.5
$(R \times q_p) = Q_{peak} =$ <u>19.9</u> CFS	10	.9	14.4	.990	19.7
$t(COLUMN) = (t/T_p) \quad t = T_p(t/T_p)$	11	1.0	16.0	1.00	19.9
$y = \frac{Q}{Q_{peak}} \quad Q = y(Q_{peak})$	12	1.1	17.6	.990	19.7
	13	1.2	19.2	.930	18.5
	14	1.3	20.8	.860	17.1
	15	1.4	22.4	.780	15.5
	16	1.5	24.0	.680	13.5
	17	1.6	25.6	.560	11.1
	18	1.7	27.2	.460	9.1
	19	1.8	28.8	.390	7.7
	20	1.9	30.4	.330	6.6
	21	2.0	32.0	.280	5.6
	22	2.2	35.2	.207	4.1
	23	2.4	38.4	.147	2.9
	24	2.6	41.6	.107	2.1
	25	2.8	44.8	.077	1.5
	26	3.0	48.0	.055	1.1
	27	3.2	51.2	.040	0.8
	28	3.4	54.4	.029	0.6
	29	3.6	57.6	.021	0.4
	30	3.8	60.8	.015	0.3
	31	4.0	64.0	.011	0.2
	32	4.5	72.0	.005	0.10
	33	5.0	80.0	.000	0.0

PLATE 22.2 F-1

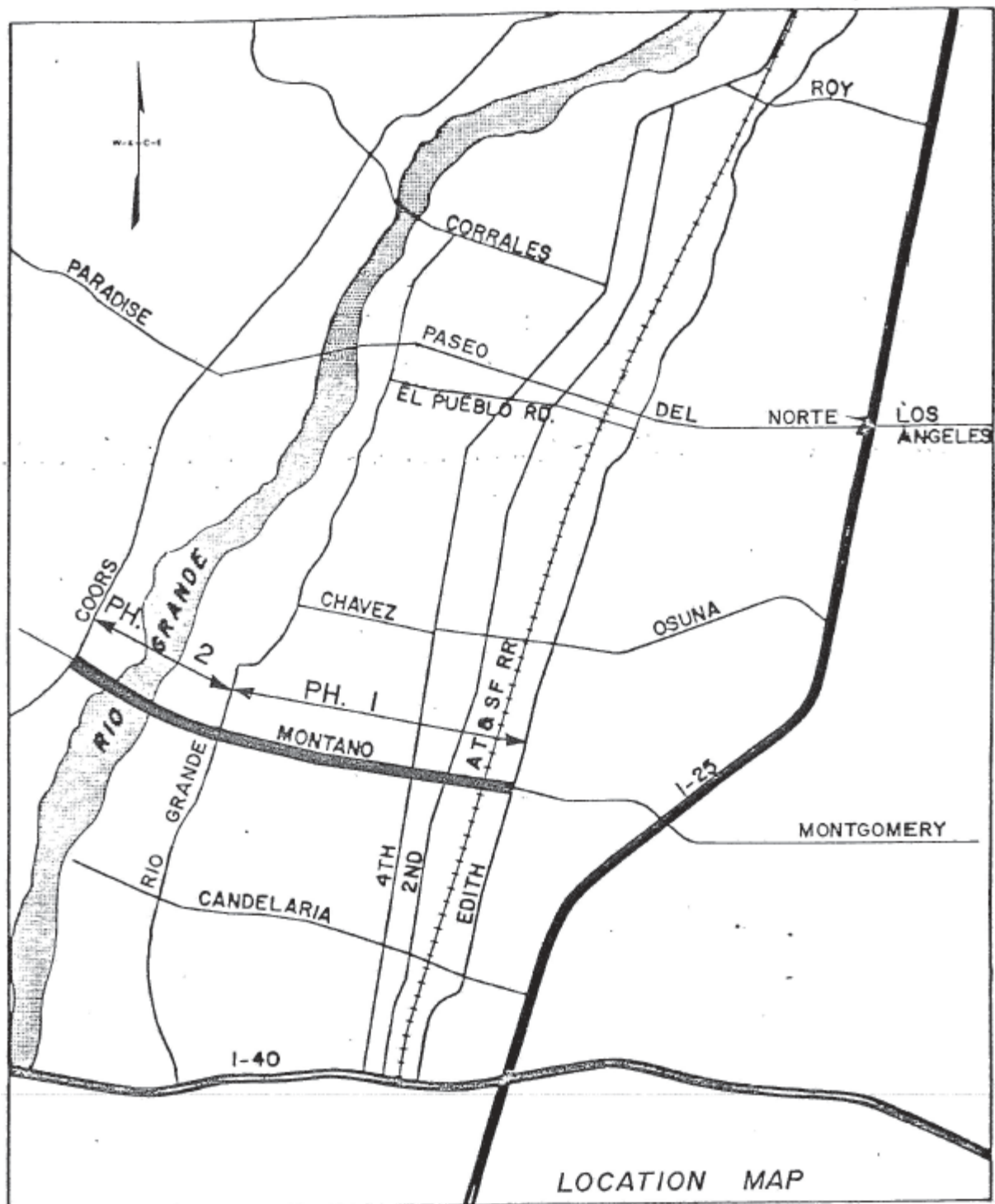


FIGURE 1

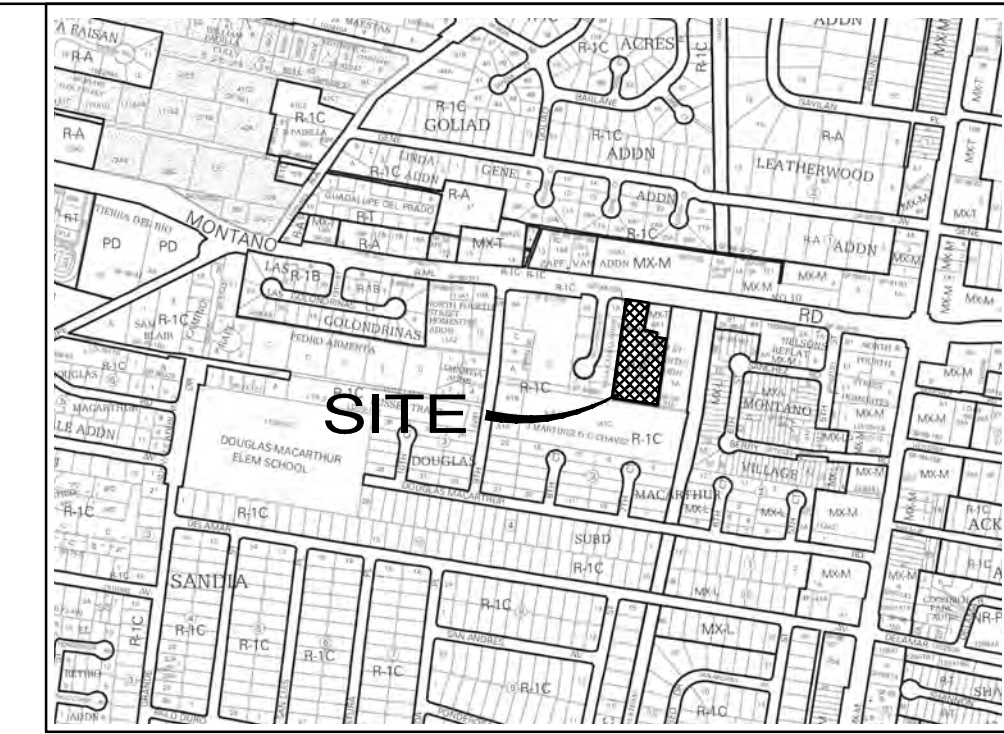
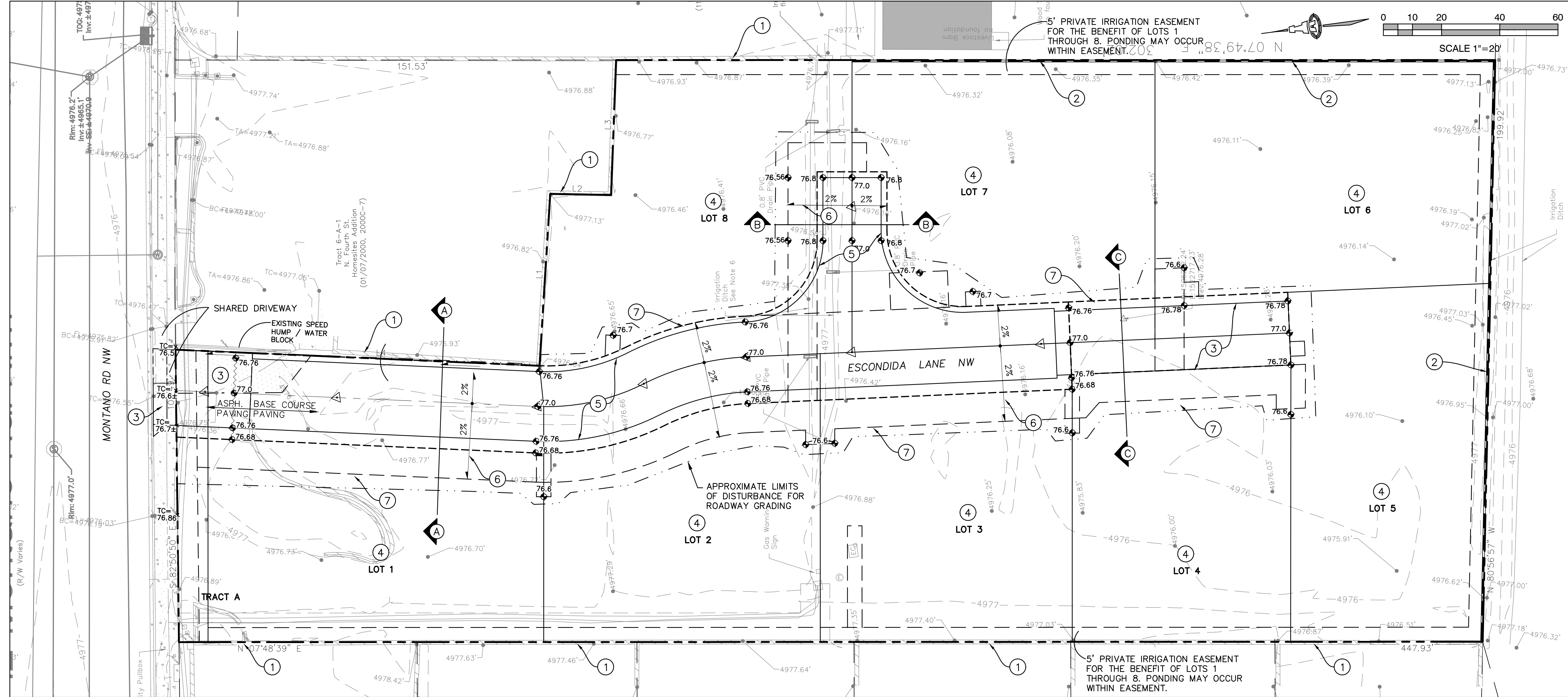


APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
City Engineer			Liquid Waste		
A.C.E. - Design			Traffic		
A.C.E. - Hydrology			Water		

DRAWING NO.	MAP NO.	SHEET	OF
		3	3

[illegible]

N:\PROJECTS\2000-2009\2002\BOSQUE ESCONDIDO\BUILDING PERMIT PLANS\2002 CG-101.dwg App: 10/20/2020 12:24 PM



ZONE ATLAS F-14-Z

PROJECT DATA

LEGAL DESCRIPTION: TRACT 6-A-2, FOURTH STREET HOMESITES ADDISON

SITE AREA: 1.7468 ACRES

DISTURBED AREA: 0.488± ACRES

FLOOD ZONE: BASED UPON SCALING, THIS PROPERTY LIES WITHIN SHADED FLOOD ZONE X WHICH IS DEFINED AS AN AREA WITH REDUCED FLOOD RISK DUE TO LEVEE. AS DETERMINED BY F.E.M.A. AND SHOWN ON FLOOD INSURANCE RATE MAP DATE SEPTEMBER 26, 2008, MAP NO. 35001C01190.

ENGINEER: ASA NILSSON-WEBER
ISAACSON & ARFMAN, P.A.
128 MONROE ST NE, ABQ. NM 87108
PHONE: (505) 268-8828

SURVEYOR: WILL PLOTNER
CARTESIAN SURVEYS INC.
P.O. BOX 44414, RIO RANCHO, N.M. 87174
PHONE: (505) 896-3050

BENCHMARK: ACS MONUMENT "DOUGLAS" NAD 1983 (CENTRAL ZONE)
N=1520286.421*, E=1505417.495*,
G-G=0.999682452, DA=-00°13'52.53"
ELEVATION, IN FEET (NAVD 1988) = 4975.078' (US SURVEY FEET)

ROADWAY GRADING NOTES

INITIAL GRADING OF THIS PROPERTY INCLUDES THE FOLLOWING:

- CLEARING AND GRUBBING, INCLUDING TREE REMOVAL AND DISPOSAL, FOR ROADWAY GRADING.
- GRADING OF ROADWAY TO EDGE OF UTILITY EASEMENTS WITH 6:1 CATCH SLOPES TO EXISTING.

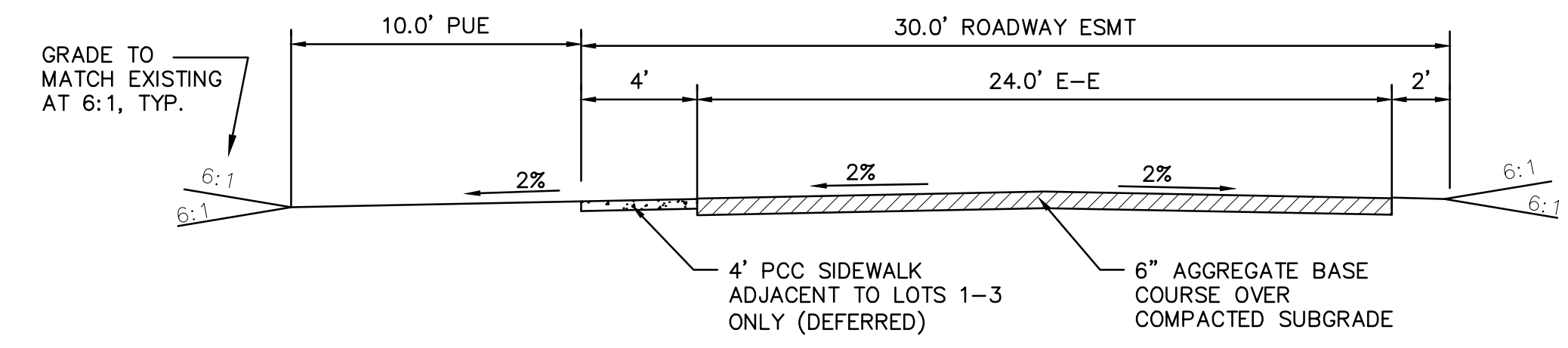
GRADING OF THE LOTS WILL TAKE PLACE UPON DEVELOPMENT OF EACH LOT. A GRADING PLAN FOR EACH LOT SHALL BE SUBMITTED FOR APPROVAL TO THE CITY OF ALBUQUERQUE PRIOR TO LOT GRADING.

KEYED NOTES

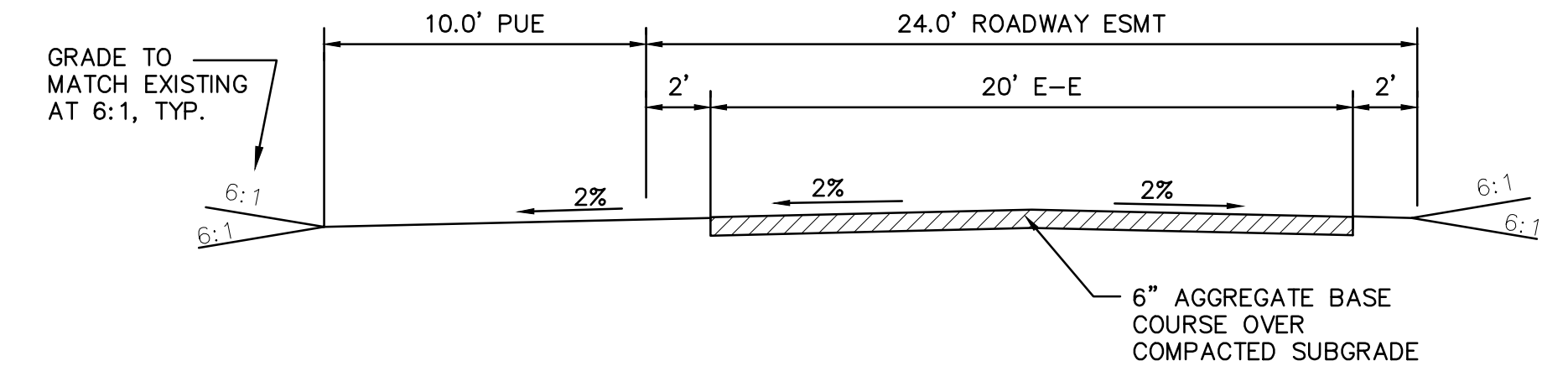
- EXISTING PERIMETER WALLS TO REMAIN.
- BY HOME BUILDER (NIC): NEW PERIMETER WALLS SHALL BE CONSTRUCTED TO CONTAIN THE 100-YEAR, 10-DAY ELEVATION.
- BY PUBLIC WORK ORDER (NIC): EXPANDED CONCRETE DRIVEPAD AND 3" ASPHALT PAVED ENTRY AND 6" COMPACTED AGGREGATE BASE COURSE ROAD.
- BY HOME BUILDER (NIC): EACH LOT SHALL REQUIRE A GRADING/DRAINAGE PLAN. SEE SHEET CG-501 FOR ADDITIONAL INFORMATION INCLUDING LOT CONSTRUCTION NOTES AND POND VOLUME REQUIREMENTS.
- ROADWAY SHALL BE GRADED WITH 2% CROSS SLOPES AT ELEVATIONS SHOWN. SEE THIS SHEET FOR ROADWAY CROSS SECTIONS.
- CONTINUE 2% CROSS-SLOPE GRADING ACROSS ALL UTILITY EASEMENTS.
- TRANSITION GRADES AT MAX. 6:1 TO EXISTING GRADES (TYPICAL).

GRADING NOTES:

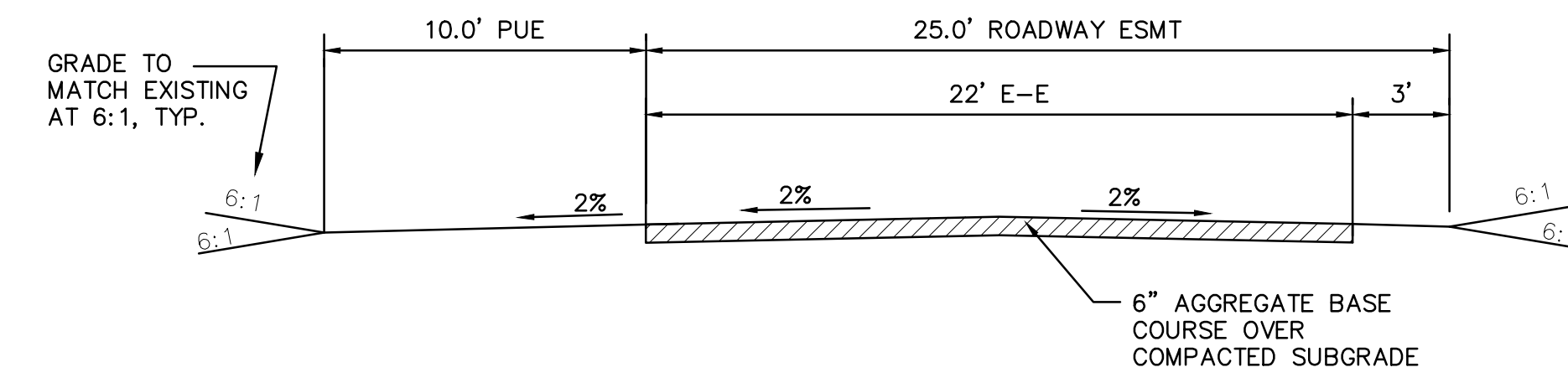
- ALL TRASH, DEBRIS, & SURFACE VEGETATION SHALL BE CLEARED AND LEGALLY DISPOSED OF OFFSITE.
- ALL SUBGRADE, OVEREXCAVATION, AND FILL SHALL BE PLACED AND COMPACTED PER THE GEOTECHNICAL REPORT AND CITY OF ALBUQUERQUE SPECIFICATIONS.
- EXCAVATION IS UNCLASSIFIED AND INCLUDES EXCAVATION TO SUBGRADE ELEVATIONS.
- FINAL GRADES SHOWN REPRESENT TOP OF FINISH MATERIAL (I.E. TOP OF CONCRETE, TOP OF PAVEMENT MATERIAL, TOP OF LANDSCAPING MATERIAL, ETC.). CONTRACTOR SHALL GRADE, COMPACT SUBGRADE AND DETERMINE EARTHWORK ESTIMATES BASED ON ELEVATIONS SHOWN MINUS MATERIAL THICKNESSES.
- UNIFORMLY GRADE AREAS WITHIN LIMITS OF GRADING AS SHOWN ON PLAN. SMOOTH FINISHED SURFACE WITHIN SPECIFIED TOLERANCE, COMPACT WITH UNIFORM SLOPES BETWEEN POINTS WHERE ELEVATIONS ARE INDICATED.
- MAXIMUM SLOPES SHALL BE 3:1. MINIMUM SLOPES SHALL BE 1% UNLESS OTHERWISE NOTED.
- FIVE (5) WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT NEW MEXICO ONE CALL SYSTEM, 260-1990, FOR LOCATION OF EXISTING UTILITIES.
- IF ANY UTILITY LINES, PIPELINES, OR UNDERGROUND UTILITY LINES ARE SHOWN ON THESE DRAWINGS, THEY ARE SHOWN IN AN APPROXIMATE MANNER ONLY, AND SUCH LINES MAY EXIST WHERE NONE ARE SHOWN. IF ANY SUCH EXISTING LINES ARE SHOWN, THE LOCATION IS BASED UPON INFORMATION PROVIDED BY THE OWNER OF SAID UTILITY, AND THE INFORMATION MAY BE INCOMPLETE, OR MAY BE OBSOLETE BY THE TIME CONSTRUCTION COMMENCES. THE ENGINEER HAS CONDUCTED ONLY PRELIMINARY INVESTIGATION OF THE LOCATION, DEPTH, SIZE OR TYPE OF EXISTING UTILITY LINES, PIPELINES, OR UNDERGROUND UTILITY LINES. THIS INVESTIGATION IS NOT CONCLUSIVE, AND MAY NOT BE COMPLETE. THEREFORE, MAKES NO REPRESENTATION PERTAINING THERETO, AND ASSUMES NO RESPONSIBILITY OR LIABILITY THEREFORE. THE CONTRACTOR SHALL INFORM ITSELF OF THE LOCATION OF ANY UTILITY LINE, PIPELINE, OR UNDERGROUND UTILITY LINE IN OR NEAR THE AREA OF THE WORK IN ADVANCE OF AND DURING EXCAVATION WORK. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY AND ALL DAMAGE CAUSED BY ITS FAILURE TO LOCATE, IDENTIFY AND PRESERVE ANY AND ALL EXISTING UTILITIES, PIPELINES, AND UNDERGROUND UTILITY LINES. IN PLANNING AND CONDUCTING EXCAVATION, THE CONTRACTOR SHALL COMPLY WITH STATE STATUTES, MUNICIPAL AND LOCAL ORDINANCES, RULES AND REGULATIONS, IF ANY, PERTAINING TO THE LOCATION OF THESE LINES AND FACILITIES.
- OWNER WILL PROVIDE SOIL TESTING AND INSPECTION SERVICES DURING EARTHWORK OPERATIONS. CONTRACTOR SHALL ALLOW TESTING LABS TO INSPECT AND APPROVE COMPACTED SUBGRADES AND FILL LAYERS BEFORE FURTHER CONSTRUCTION WORK IS DONE. SHOULD COMPACTION TESTS INDICATE INADEQUATE DENSITY, CONTRACTOR SHALL PROVIDE ADDITIONAL COMPACTION AND TESTING AT THE CONTRACTOR'S SOLE EXPENSE.
- OWNER HAS ESTABLISHED SUBDIVISION BOUNDARY CORNERS. CONTRACTOR SHALL PROVIDE ALL OTHER CONSTRUCTION STAKING INCLUDING TRACT CORNERS. CONTRACTOR SHALL LOCATE AND PRESERVE ALL BOUNDARY CORNERS AND REPLACE ANY LOST OR DISTURBED CORNERS AT THE CONTRACTOR'S SOLE EXPENSE.
- IF REQUIRED, THE OWNER WILL PROVIDE A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) AND INSPECTION. CONTRACTOR SHALL COMPLY WITH THE BEST MANAGEMENT PRACTICES (BMP'S) AS SPECIFIED IN THE SWPPP, AND WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY EXISTING CONDITIONS PRIOR TO CONSTRUCTION. REPORT ALL DISCREPANCIES TO THE ENGINEER AND VERIFY THE ENGINEER'S INTENT BEFORE PROCEEDING.
- ALL NEW PAVEMENT GRADES ARE SHOWN AS 'MATCH' OR '±', TRANSITIONS SHALL BE SMOOTH AND LEVEL.
- SIDESLOPES STEEPER THAN 3:1 BUT LESS THAN 2:1 MUST HAVE PERMANENT EROSION CONTROL (FRACTURED FACE ROCK [F.F. ROCK] OR LANDLOK TRM 450 O.E.) INSTALLED, TYPICAL. NO SLOPE SHALL BE STEEPER THAN 2:1.
- OWNER SHALL MAINTAIN EROSION PROTECTION ELEMENTS. OWNER SHALL INSPECT SITE YEARLY AND AFTER EACH RAINFALL TO IDENTIFY NEW AREAS OF EROSION AND INSTALL ADDITIONAL EROSION PROTECTION AS NEEDED BASED ON ACTUAL OCCURRENCES.



ROADWAY SECTION A-A
SCALE: 1"=5'



ROADWAY SECTION B-B
SCALE: 1"=5'



ROADWAY SECTION C-C
SCALE: 1"=5'

Isaacson & Arfman, Inc.
Civil Engineering Consultants

128 Monroe Street NE
Albuquerque, NM 87108
505-268-8828 | www.iacivil.com

© 2020 Isaacson & Arfman, Inc. This design, calculations, and concepts are owned by and remain the property of Isaacson & Arfman, Inc. 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, Inc.

W. NILSSON-WEBER
NEW MEXICO
1983
Professional Engineer
10/20/20

BOSQUE ESCONDIDO
Albuquerque, New Mexico
a development of
MONTANO FAMILY HOMES, LLC

ISSUE:	PROJECT NUMBER: IA 2352
FILE:	B/B
DRAWN BY:	ANW
CHECKED BY:	ANW
DATE:	10-08-2020

Description	Date	No

SHEET TITLE

ROADWAY GRADING PLAN

SHEET NUMBER

CG-101

POND VOLUMES

THE FOLLOWING TABLE PROVIDES THE RETENTION POND VOLUME REQUIRED FOR EACH LOT BASED ON THE FOLLOWING LAND TREATMENT CRITERIA.

45% IMPERVIOUS - LAND TREATMENT D (MAXIMUM PERMITTED)
20% LAND TREATMENT C - COMPACTED SOIL, GRAVEL.
35% LAND TREATMENT B - LAWNS, NATIVE GRASSES.

NOTE: MAXIMUM IMPERVIOUS AREA (LAND TREATMENT 'D') FOR EACH INDIVIDUAL LOT INCLUDES ENTIRE PROPERTY BOUNDARY (WITH THE EXCEPTION OF LOT 1 BASIN 1B WHICH IS PERMITTED TO DISCHARGE TO MONTANO DEB. INITIAL SHARED ROADWAY IS TO BE COMPACTED AND GRADED TO BASE COURSE WHICH IS CONSIDERED LAND TREATMENT 'C'. IF THIS ROADWAY IS PAVED IN THE FUTURE, THE AREA PAVED WOULD NEED TO BE INCLUDED IN THE MAXIMUM IMPERVIOUS CALCULATIONS FOR EACH LOT. FOR THIS REASON, AS EACH LOT DEVELOPS, THE MAXIMUM IMPERVIOUS AREA SHOULD SUBTRACT OUT THE LOT ROAD AREA FROM THE TOTAL LOT AREA. THIS AREA WILL BE USED FOR CONSTRUCTION OF THE RESIDENCE, WALKS, PATIOS, DRIVES AND OTHER IMPERVIOUS FEATURES.

AS EACH PROPERTY DEVELOPS, ON-SITE RETENTION PONDING MAY BE BASED ON A MAXIMUM 45% IMPERVIOUS AREA TO ALLOW FOR FUTURE IMPROVEMENTS OR MAY BE BASED ON ACTUAL SITE IMPERVIOUS AREA.

PROVIDE LOT SPECIFIC CALCULATIONS AS PART OF EACH INDIVIDUAL LOT GRADING & DRAINAGE PLAN.

NOTE: MAXIMUM WATER SURFACE ELEVATION OF 100-YEAR 10-DAY STORM VOLUME = 4976.67. NO PONDING IS PERMITTED ABOVE THIS ELEVATION.

LOT #	LOT AREA (SF)	MAX. IMPERVIOUS	POND AREA (V10-DAY)
1	*11,226	4,330 SF	1,738 CF
2	8,699	3,915 SF	1,546 CF
3	8,741	3,933 SF	1,554 CF
4	7,849	3,532 SF	1,395 CF
5	8,197	3,689 SF	1,457 CF
6	9,841	4,428 SF	1,749 CF
7	10,212	4,595 SF	1,815 CF
8	10,276	4,624 SF	1,827 CF

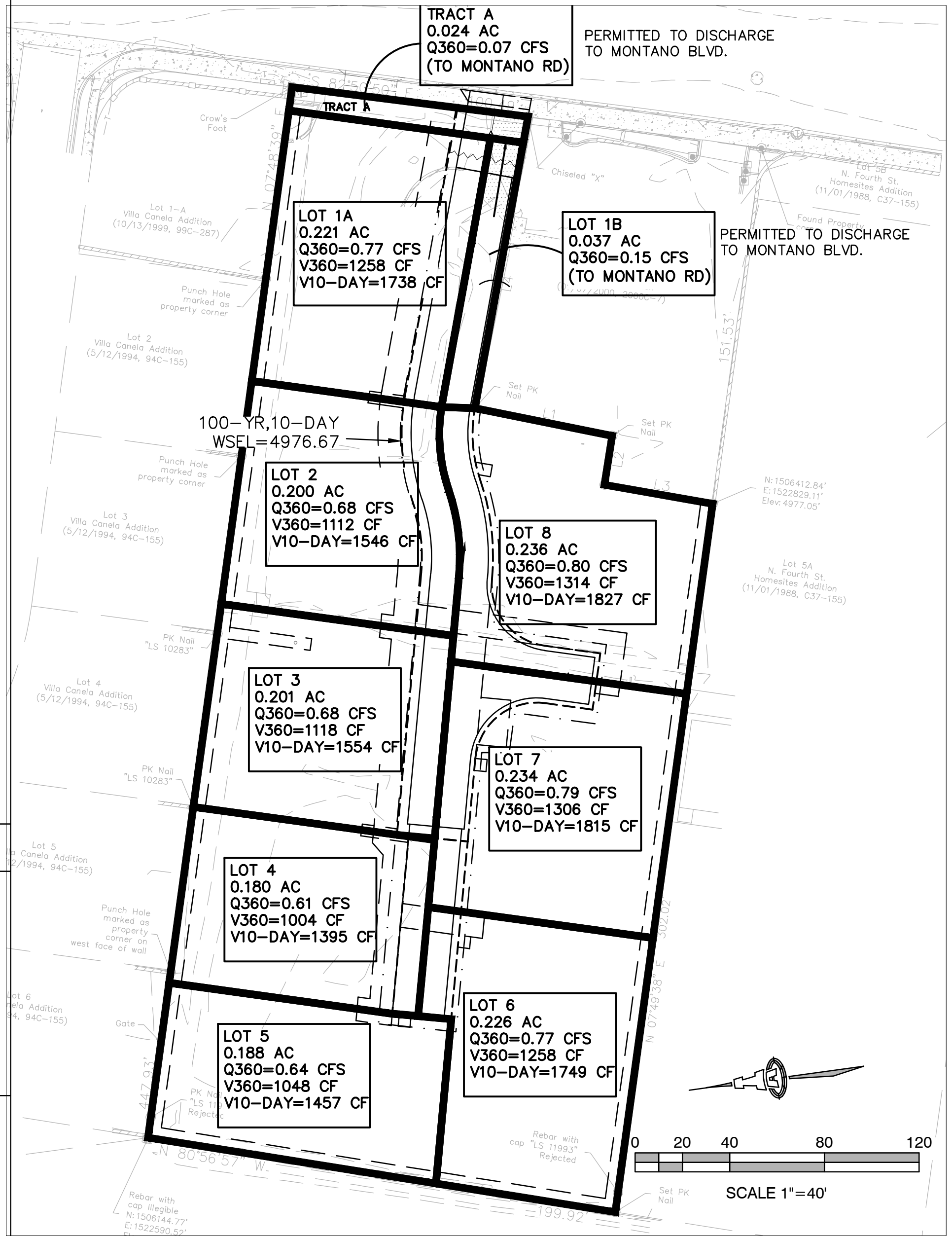
*MAX. IMPERVIOUS AND POND VOLUME IS BASED ON BASIN 1A AREA

LEGEND

LOT X ←
 --- AC
 Q360=--- CFS
 V360=--- CF
 V10-DAY=--- CF

LOT NUMBER
 LOT AREA REQUIRING PONDING
 100-YEAR 6-HOUR DISCHARGE
 BASED ON LAND TREATMENT RATIO
 OF 0%: 35%: 20%: 45%
 100-YEAR 6-HOUR VOLUME
 GENERATED
 100-YEAR 10-DAY VOLUME =
 MAXIMUM REQUIRED ON-SITE
 RETENTION POND VOLUME

LOT CALCULATIONS

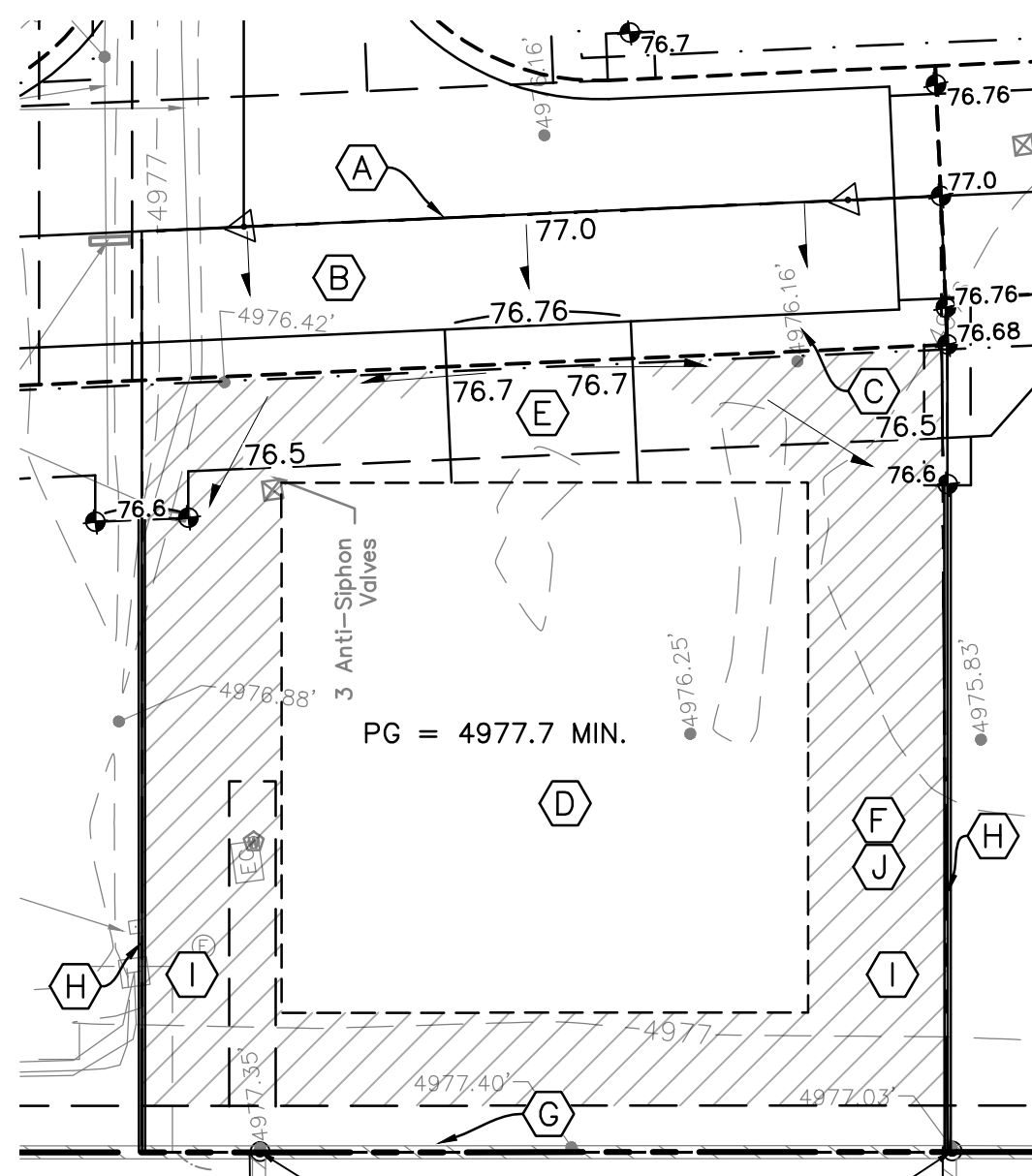


TYPICAL LOT GRADING

- A. PROPERTY BOUNDARY.
- B. COMPACTED 6" BASE COURSE SHARED ROADWAY TO BE CONSTRUCTED AS PART OF INITIAL SITE DEVELOPMENT.
- C. 4' PCC SIDEWALK (TO BE CONSTRUCTED BY HOME BUILDER) ON LOTS 1, 2 AND 3 WITHIN ROADWAY EASEMENT SHOWN. NO PONDING SHALL OCCUR WITHIN ROADWAY.
- D. PAD GRADE = 4977.7 (MINIMUM). FINAL SITE DESIGN INCLUDING PLACEMENT OF RESIDENCE, DRIVES, WALKS, PATIOS, ETC. BY OWNER.
- E. DRIVE CONNECTION TO PAD (LOCATION VARIES). SLOPE TO DRAIN.
- F. RETENTION POND AREA OUTSIDE OF ALL EASEMENTS BASED ON MAXIMUM 100-YEAR 10-DAY WSEL = 4976.67. ALL SITE PONDS MUST BE ABLE TO EQUALIZE WITHIN THE PROPERTY. TRANSITIONS AND EXTENTS OF PONDING MAY VARY AS LONG AS:
 - F.A. MAXIMUM WATER SURFACE ELEVATION = 4976.67;
 - F.B. REQUIRED POND VOLUME IS ACHIEVED;
 - F.C. ALL PONDS EQUALIZE WITHIN LOT BOUNDARY.
- G. EXISTING / NEW PERIMETER WALL. MAX. 3:1 TRANSITION FROM WALL TO BOTTOM OF POND.
- H. SIDE YARD WALLS SHALL BE CONSTRUCTED TO CONTAIN REQUIRED VOLUME BASED ON THE 100-YEAR 10-DAY STORM. WALL DESIGN BY OTHERS.
- I. CITY OF ALBUQUERQUE MAY REQUIRE THAT A DRAINAGE COVENANT BE RECORDED FOR EACH LOT TO ENSURE COMPLIANCE.

LEGEND

---	---	---	---	---	EXISTING CONTOUR
		56.6 *			EXISTING SPOT ELEVATION
		76.7			PROPOSED SPOT ELEVATION
		PG=			PROPOSED PAD GRADE
		4977.7			



DRAINAGE NARRATIVE

THIS SITE IS COMPRISED OF A VACANT LOT LOCATED SOUTH OF MONTANO RD. NW, WEST OF 4TH ST. AND EAST OF 9TH ST. AND IS BOUND ON THE WEST BY A RESIDENTIAL SUBDIVISION, ON THE NORTHEAST BY A COMMERCIAL PROPERTY (BEAUTY SALON), ON THE SOUTHEAST BY A SINGLE RESIDENCE AND ON THE SOUTH BY A TRACT WITH AGRICULTURAL USE. THE SITE WILL BE RE-DEVELOPED AS A PRIVATE DEVELOPMENT WITH 8 DETACHED RESIDENTIAL HOMES.

THE SUBDIVISION WILL BE DEVELOPED WITH A FLAT GRADING SCHEME PER DPM ARTICLE 6-5 "VALLEY DRAINAGE CRITERIA" WITH THE FOLLOWING CRITERIA:

- THE STREET MUST DRAIN INTO THE ADJACENT LOTS, EXCEPT BASIN 'LOT 1B' WHICH IS PERMITTED TO DRAIN TO MONTANO RD.
- THE 100-YEAR 10-DAY WATER SURFACE ELEVATION SHALL BE AT OR BELOW 4976.67. A PERMANENT PERIMETER WALL AROUND THE DEVELOPMENT SHALL CONTAIN THE 100-YEAR 10-DAY DEVELOPED RUNOFF.

THE INITIAL PHASE OF THE PROJECT WILL CONSTRUCT:

- THE BACKBONE UTILITY MAINS AND INFRASTRUCTURE
- ACCESS AND ROADWAY PAVING

DEVELOPMENT OF EACH LOT WILL REQUIRE A GRADING AND DRAINAGE PLAN SUBMITTED TO CITY OF ALBUQUERQUE HYDROLOGY FOR BUILDING PERMIT APPROVAL.

WALL NOTES

- A. EXISTING PERIMETER WALLS SHALL REMAIN.
- B. FUTURE RETAINING AND PERIMETER/SIDEYARD WALL DESIGN(S) SHALL BE BY STRUCTURAL ENGINEER AND SHALL BE CONSTRUCTED AS INDIVIDUAL LOTS DEVELOP.

SHEET TITLE				ISSUE: PROJECT NUMBER: IA 2352 FILE: - DRAWN BY: BJB CHECKED BY: ANW DATE: 10-08-2020	
MASTER LOT DRAINAGE PLAN				Description	
SHEET NUMBER				CG-501	