

CITY OF ALBUQUERQUE

Planning Department
Alan Varela, Director



Mayor Timothy M. Keller

March 31, 2022

Jeremy Shell, P.E.
Respec
5971 Jefferson St. NE
Albuquerque, NM 8710

**RE: The Peaks by Markana Phase II
Conceptual Grading & Drainage Plans
Engineer's Stamp Date: 03/2022
Hydrology File: B18D029**

Dear Mr. Shell:

Based upon the information provided in your submittal received 03/24/2022, the Conceptual Grading & Drainage Plan is approved for action by the DRB on Site Plan for Building Permit and Site Plan for Subdivision.

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



The Peaks By Markana - Phase II Hydraulic Analysis of Downstream Capacity

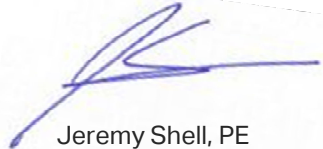
March 30, 2022

This document as well as the following supporting calculations are intended to demonstrate that downstream capacity is available for The Peaks By Markana - Phase II. The developed rate of discharge for the subject site is 15.2 cfs. Please reference the Drainage Plan for more information. Per the Drainage Management Plan for the Glendesto Subdivision by Mark Goodwin & Associates dated January 23, 2018, the peak flow rate in Glendale Avenue at it's intersection with San Pedro Drive is 30.4 cfs. Therefore, the flow rate to be used for this analysis is 45.6 cfs.

The capacity of the existing section of Glendale Avenue was analyzed and determined to be sufficient. The HGL does not exceed curb height and the EGL is contained within the right-of-way. The Manning's calculation for the capacity of Glendale Avenue is included. The existing roadway section that was built with the Glendesto Subdivision is also included. Before runoff reaches San Pedro, flows in Glendale Avenue enter a roadside channel. From there it is collected in a catch basin, routed through a 36" storm drain, and ultimately outfalls into the La Cueva Arroyo. Calculations for the capacity of the catch basin and storm drain are also included herein.

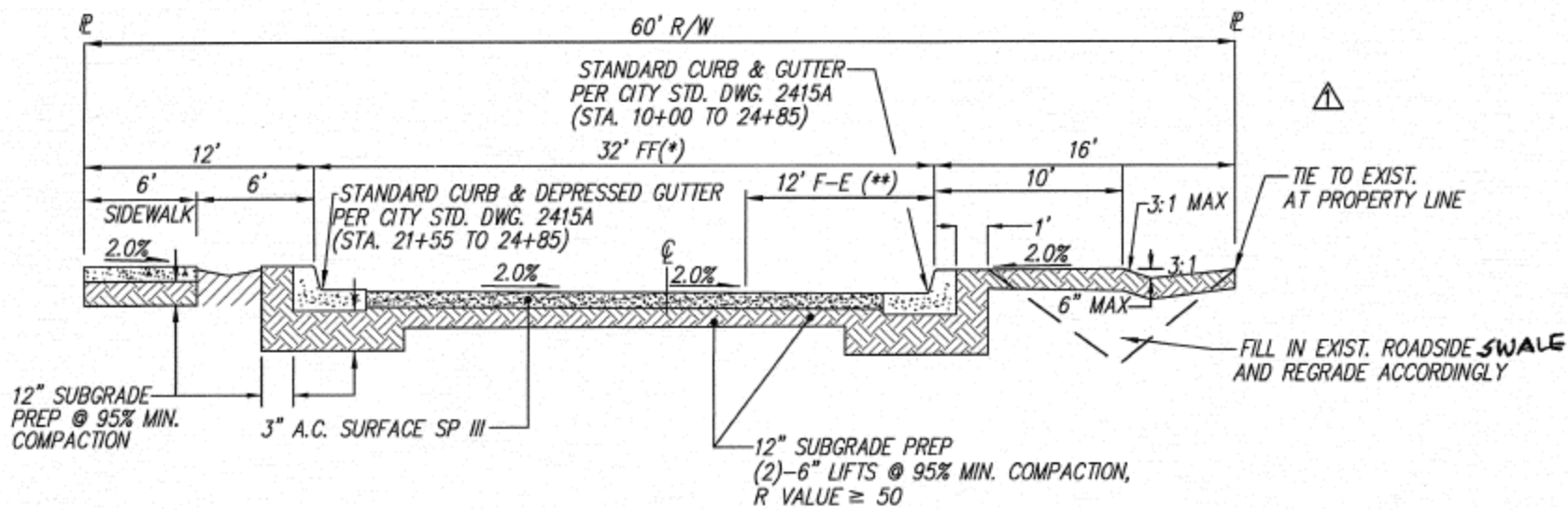
Should you have any questions, comments, concerns, or require additional information upon your review of the calculations provided, please contact me at your convenience.

Sincerely,



Jeremy Shell, PE
Project Manager
Community Design Solutions

7770 JEFFERSON ST., NE
SUITE 200
ALBUQUERQUE, NM 87109
505.268.2661



TYPICAL 60' R/W STREET SECTION

(GLENDALE AVENUE N.E.)

NTS

(*) 32' F-F (STA 21+55 TO 24+85)

(**) 12' F-E (STA 10+00 TO 21+55)

Manning Formula: Glendale Avenue Capacity

Irregular Section

Input

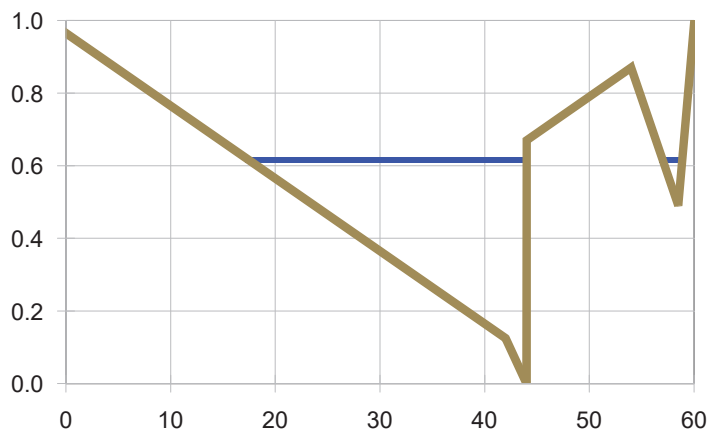
Flow 45.6 cfs
Slope 0.0277 ft/ft

Sta	Elev	n	Sta	Elev	n	Sta	Elev	n	Sta	Elev	n
0	0.965	0.017	42	0.125	0.017	44	0	0.017	44.01	0.67	0.017
54	0.87	0.017	58.5	0.49	0.017	60	0.99	0.017			

Output

WSElev 0.617 ft
Flow Area 7.27 sf
Velocity 6.27 fps
Velocity Head 0.612 ft
Top Width 28.5 ft

Critical WSElev 0.813 ft
Critical Slope ft/ft



Froude Number Calculation

$$F_1 = v_1 / (g y_1)^{1/2}$$

$$F_1 = 6.27 / (32.2 * .617)^{1/2}$$

$$F_1 = 1.41$$

Sequent Depth Calculation

$$y_2 = (y_1 / 2) [(1 + 8 F_1^2)^{1/2} - 1]$$

$$y_2 = (.617 / 2) [(1 + 8 * 1.41^2)^{1/2} - 1]$$

$$y_2 = 0.960 \text{ ft} < 0.965 \text{ ft}$$

F_1 : Froude Number

v_1 : Velocity (fps)

g : Gravity (32.2 ft/s²)

$y_{1/2}$: Depth (ft)

PROFILE VIEW

SCALE: 1"=5'

DOUBLE D INLET
SUMP CONDITION
CAPACITY

As ORIFICE

As WEIR

$$H = 2.0'$$

$$AREA = 9.12 \text{ SQ. FT.}$$

$$Q = 62.3 \text{ cfs}$$

$$L = 16.6'$$

$$H = 1.16'$$

$$C = 3$$

$$Q = 62.3 \text{ cfs}$$

$$Q_{100} = 25.47 \text{ cfs}$$

$$Q_{10} = 13.46 \text{ cfs}$$

Manning Formula: San Pedro Storm Drain

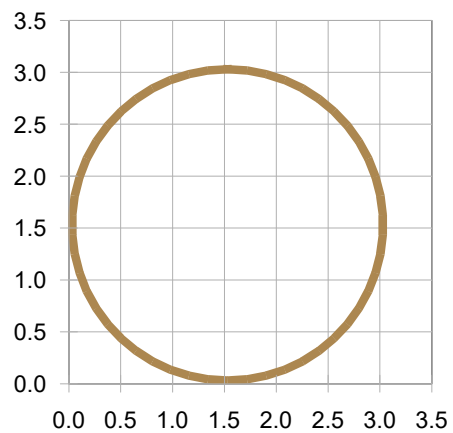
Circular Channel

Input

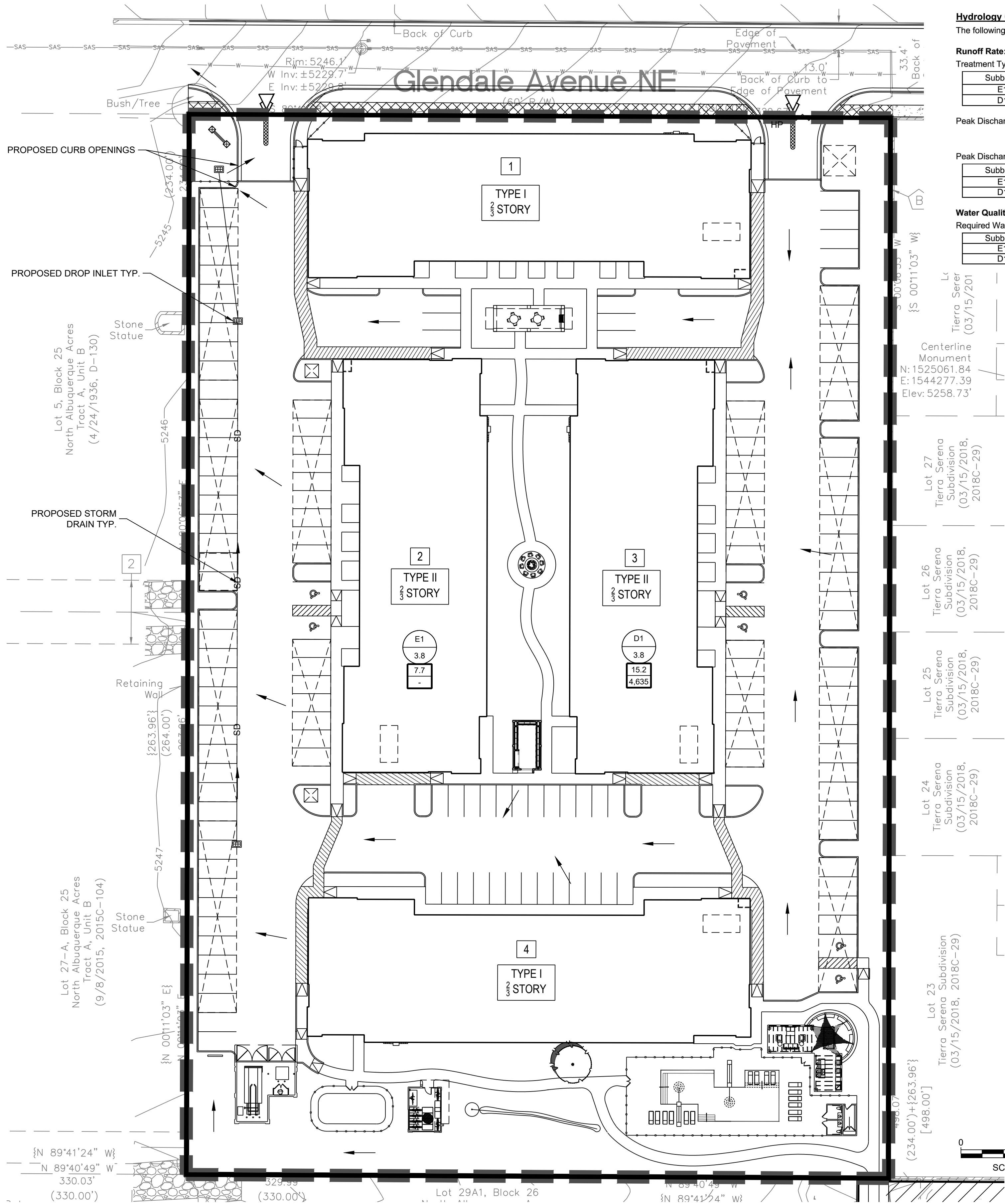
Depth	3 ft
Slope	0.0089 ft/ft
Manning's n	0.013
Diameter	36 in

Output

Flow	62.9 cfs
Flow Area	7.07 sf
Velocity	8.90 fps
Velocity Head	1.23 ft
Top Width	0.00 ft
Froude Number	0.00
Critical Depth	2.552 ft
Critical Slope	0.00837 ft/ft



NAME: N:\Projects\04-266.0006-Legacy Peaks Phase 2\3.DWG\Streets\4266.06 Drainage.dwg PLOT DATE: Mar 30, 2022 12:44pm



Hydrology Calculations

The following calculations are based on Albuquerque's Development Process Manual, Article 6-2

Runoff Rate:

Treatment Type Areas

Subbasin	Area _A (ac)	Area _B (ac)	Area _C (ac)	Area _D (ac)	Total (ac)
E1	1.90	1.90	0.00	0.00	3.80
D1	0.00	0.38	0.38	3.04	3.80

Peak Discharge values based on Zone 2 from Table 6.2.14

$Q_A = 1.71 \text{ cfs/ac}$ $Q_B = 2.36 \text{ cfs/ac}$ $Q_C = 3.05 \text{ cfs/ac}$ $Q_D = 4.34 \text{ cfs/ac}$

Peak Discharge calculation for a 100-yr, 24-hr storm event from equation 6.6

Subbasin	Discharge (cfs)
E1	7.7
D1	15.2

Water Quality:

Required Water Quality volume for first flush of 0.42"

Subbasin	Req Volume (cu. ft.)	Provided Volume (cu. ft.)	Net Volume (cu. ft.)
E1	-	-	-
D1	4,635	4,635	0

BACKGROUND

LOTS 6, 7, AND 26-A, BLOCK 25, NORTH ALBUQUERQUE ACRES, TRACT A, UNIT B CONTAINS APPROXIMATELY 3.8 ACRES IN THE CITY OF ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO. THE PROPERTY IS BOUNDED BY GLENDALE AVENUE TO THE NORTH, THE GLENDESTO RESIDENTIAL SUBDIVISION TO THE EAST, THE SANDIA MEMORIAL GARDENS CEMETERY TO THE WEST, AND THE EAGLE ROCK CONVENIENCE CENTER TO THE SOUTH. SEE VICINITY MAP ABOVE. THE PROPOSED DEVELOPMENT IS A 120 UNIT MULT-FAMILY APARTMENT COMPLEX. THIS WILL BE PHASE II OF THE PEAKS BY MARKANA LOCATED TO THE SOUTHEAST OF THE SUBJECT PROPERTY. THE NORTH ALBUQUERQUE ACRES DRAINAGE MANAGEMENT PLAN RESTRICTS THE DISCHARGE FROM THIS SITE TO 4.06 CFS/AC. THEREFORE, THE ALLOWABLE DISCHARGE FOR THIS DEVELOPMENT IS 15.4 CFS.

METHODOLOGY

HYDROLOGY CALCULATIONS FOR THE SITE ARE PERFORMED IN ACCORDANCE WITH THE ALBUQUERQUE DEVELOPMENT PROCESS MANUAL (DPM) ARTICLE 6.2 USING THE RATIONAL METHOD TO CALCULATE PEAK FLOW RATES TO ENSURE ALL FLOW PATHS ARE SUFFICIENT TO CARRY FLOWS. THE REQUIRED WATER QUALITY VOLUME WAS CALCULATED BY MULTIPLYING THE IMPERVIOUS AREA BY THE FIRST FLUSH RUNOFF VALUE OF 0.42" FOR NEW DEVELOPMENT. ALL HYDROLOGIC AND HYDRAULIC CALCULATIONS CAN BE FOUND ON THIS SHEET.

EXISTING CONDITIONS

THE LOT IS CURRENTLY UNDEVELOPED. THE EXISTING SITE TERRAIN GENERALLY SHEET DRAINS FROM EAST TO WEST AT VARYING SLOPES BETWEEN 2%-3%. THERE IS NO DESIGNATED 100-YEAR FLOODPLAIN SHOWN ON THE SITE. THE SITE HAS ONE SUB-BASIN DESCRIBED BELOW.

SUB-BASIN E1 CONTAINS 3.8 ACRES. THIS BASIN HAS HISTORICALLY DRAINED TO THE WEST ACROSS THE CEMETERY UNTIL EVENTUALLY REACHING SAN PEDRO DRIVE. 7.7 CFS IS GENERATED BY THIS BASIN.

DEVELOPED CONDITIONS

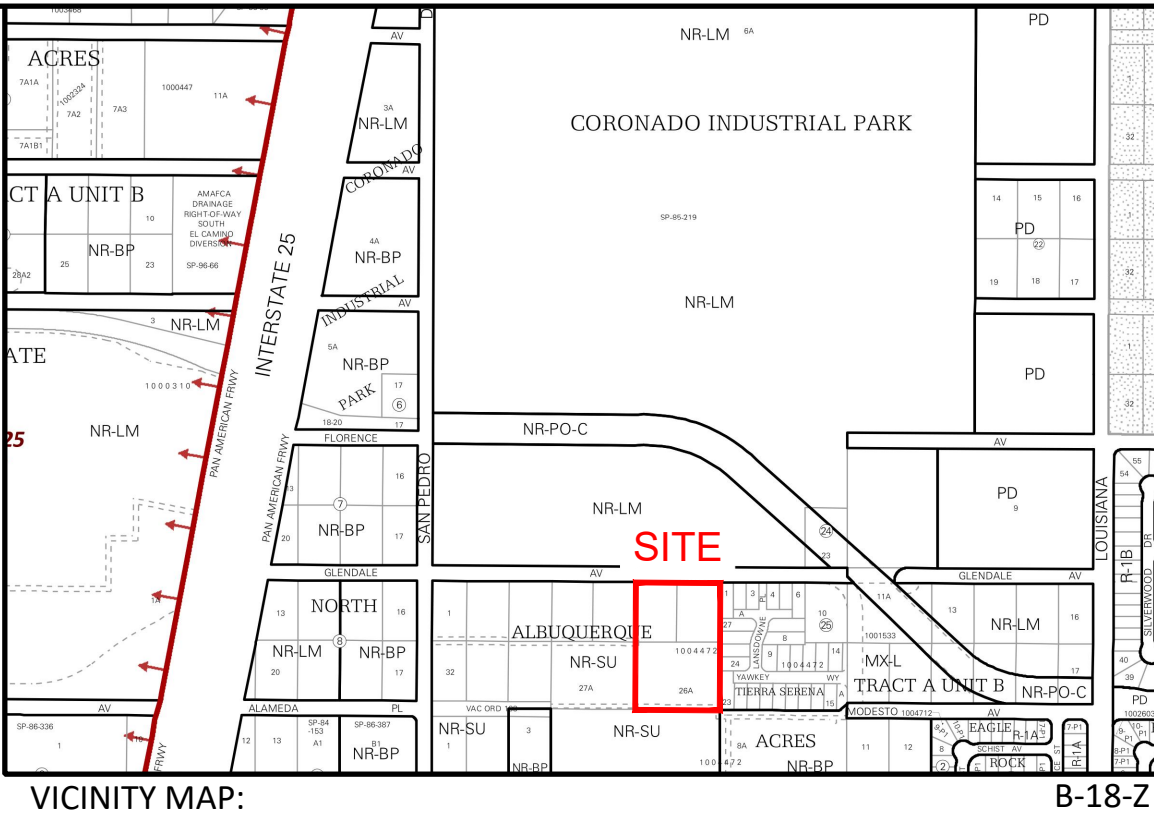
THE DRAINAGE INTENTION OF THE DEVELOPED CONDITIONS IS TO FREELY DISCHARGE DIRECTLY TO GLENDALE AVENUE AND EVENTUALLY TO SAN PEDRO DRIVE. THE SITE HAS ONE SUB-BASINS DESCRIBED BELOW.

SUB-BASIN D1 CONTAINS 3.8 ACRES AND GENERATES 15.2 CFS. THIS IS LESS THAN THE ALLOWABLE DISCHARGE RATE FOR THE PROPERTY. RUNOFF GENERALLY DRAINS FROM SOUTHEAST TO NORTHWEST VIA A COMBINATION OF SURFACE FLOWS IN THE PARKING LOT AND A STORM DRAIN SYSTEM. THE SITE DISCHARGES TO GLENDALE AVENUE AT THE NORTHWEST CORNER OF THE PROPERTY AFTER BEING ROUTED THROUGH AN UNDERGROUND STORM DRAIN THAT WILL SERVE AS THE WATER QUALITY RETENTION FOR THE DEVELOPMENT.

THE WATER QUALITY TABLE ON THIS SHEET UNDER "HYDROLOGY CALCULATIONS" SUMMARIZES THE WATER QUALITY VOLUMES REQUIRED FOR DEVELOPED CONDITIONS. IT IS ANTICIPATED THAT THE TOTAL REQUIRED VOLUME OF 4,365 CUBIC FEET CAN BE RETAINED ONSITE IN THE STORM DRAIN SYSTEM. THE STORM DRAIN WILL BE OWNED AND MAINTAINED BY THE PROPERTY OWNER.

LEGEND:

- BASIN DESIGNATION
- BASIN NAME AND AREA
- BASIN AREA, ACRES
- 100 YEAR STORM, CFS
- BASIN HYDROLOGIC RESULTS
- REQUIRED WATER QUALITY VOLUME, CUBIC FEET
- DEVELOPED SUB-BASIN BOUNDARY
- EXISTING SUB-BASIN BOUNDARY
- FLOW ARROW



DESIGNED JS
DRAWN JS
CHECKED JS
DATE 3/30/2022

REVISION

RESPEC
COMMUNITY DESIGN SOLUTIONS
7770 JEFFERSON STREET SUITE 200
ALBUQUERQUE, NM 87117
WWW.RESPEC.COM PHONE (505) 253-9718

RESPEC

STAMP

PRELIMINARY
NOT FOR CONSTRUCTION
3/2022

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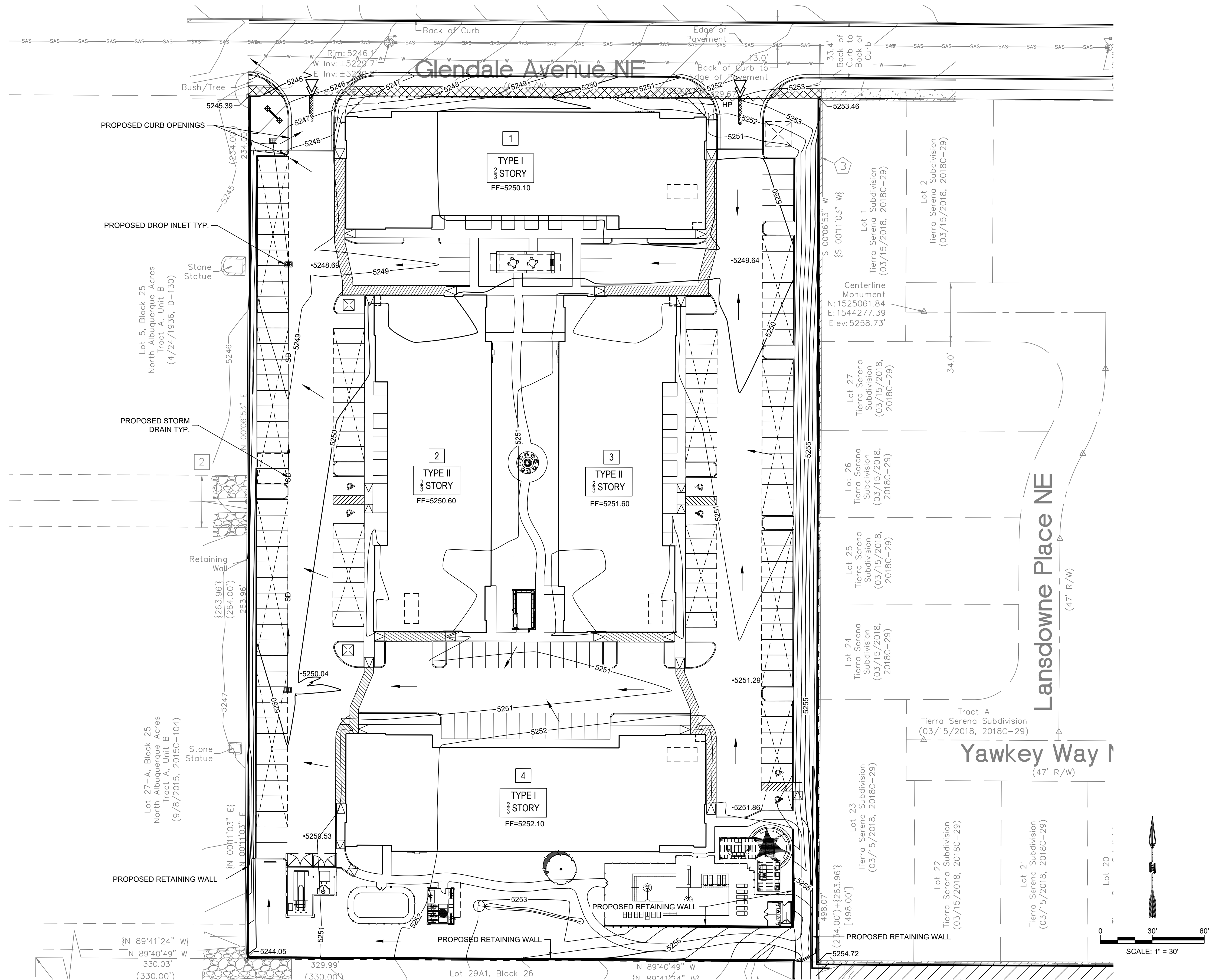
PROJECT NAME:
THE PEAKS BY MARKANA
PHASE II

SHEET TITLE:
CONCEPT DRAINAGE
PLAN

SUBMITTED FOR:
DRB SITE PLAN

SHEET NUMBER:
C-100

NAME: N:\Projects\04-266.0006-Legacy Peaks Phase 2\3. DWG\Sheets\4266.06 Grading.dwg PLOT DATE: Mar 30, 2022 12:45pm



- LEGEND:
- PROPERTY BOUNDARY
 - 5270— PROPOSED MAJOR CONTOUR
 - 5272— PROPOSED MINOR CONTOUR
 - - -5270- - - EXISTING MAJOR CONTOUR
 - - - EXISTING MINOR CONTOUR
 - ~~~~~ PROPOSED HIGH POINT
 - PROPOSED RETAINING WALL
 - SD — PROPOSED STORM DRAIN
 - PROPOSED DROP INLET
 - FLOW ARROW

City of Albuquerque
Planning Department
Development Review Services
PRELIMINARY APPROVED
DATE: 03/31/22
BY: *Renee C. Brissette*
HydroTrans # B18D029
THESE PLANS AND/OR REPORT ARE
CONCEPTUAL ONLY. MORE INFORMATION MAY
BE NEEDED IN THEM AND SUBMITTED TO
HYDROLOGY FOR BUILDING PERMIT APPROVAL.

DESIGNED JS	DRAWN JS	CHECKED JS	DATE 3.30.2022
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 PROJ. #: 4266.06			
PROJECT NAME: THE PEAKS BY MARKANA PHASE II			
SHEET TITLE: CONCEPT GRADING PLAN			
SUBMITTED FOR: DRB SITE PLAN			
SHEET NUMBER: C-101			