

CITY OF ALBUQUERQUE

Planning Department
Brennon Williams, Director



Mayor Timothy M. Keller

September 26, 2019

Mike Walla, P.E.
Walla Engineering
6501 Americas Pwky NE, Suite 301
Albuquerque, NM 87110

**RE: Stone Age Climbing Gym
6200 Alameda NE
Grading & Drainage Plan and Drainage Report
Engineer's Stamp Date: 09/05/19
Hydrology File: C18D086A**

Dear Mr. Walla:

PO Box 1293

Based upon the information provided in your resubmittal received 09/05/2019, the Grading and Drainage Plan is approved for Building 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

www.cabq.gov

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, P.E. CFM
Senior Engineer, Hydrology
Planning Department



City of Albuquerque

Planning Department
Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 6/2018)

Project Title: STONE AGE CLIMBING GYM **Building Permit #:** _____ **Hydrology File #:** _____
DRB#: 1000682 **EPC#:** _____ **Work Order#:** _____
Legal Description: REMAINING PORTIONS OF LOTS 1, 2 AND 3 AND ALL OF LOTS 4, 5, 6 AND 29 IN BLOCK 29, TRACT A, UNIT B, NORTH ALBUQUERQUE ACRES, CITY OF ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO, JUNE 2018
City Address: 6200 ALAMEDA NE, ALBUQUERQUE, NEW MEXICO 87113

Applicant: WALLA ENGINEERING **Contact:** MIKE WALLA
Address: 6501 AMERICAS PARKWAY NE, SUITE 301, ALBUQUERQUE, NM 87110
Phone#: 505-881-3008 **Fax#:** 505-881-4025 **E-mail:** mikew@wallaengineering.com

Other Contact: JOE SLAGLE ARCHITECT **Contact:** JOE SLAGLE
Address: 413 2ND ST. SW, ALBUQUERQUE, NM 87102
Phone#: 505-246-0870 **Fax#:** _____ **E-mail:** joe@slaglearchitect.com

TYPE OF DEVELOPMENT: _____ PLAT (# of lots) _____ RESIDENCE ☒ DRB SITE _____ ADMIN SITE

IS THIS A RESUBMITTAL? ☒ Yes _____ No

DEPARTMENT _____ TRANSPORTATION ☒ HYDROLOGY/DRAINAGE

Check all that Apply:

TYPE OF SUBMITTAL:

- ☐ ENGINEER/ARCHITECT CERTIFICATION
☐ PAD CERTIFICATION
☐ CONCEPTUAL G & D PLAN
☒ GRADING PLAN
☐ DRAINAGE REPORT
☐ DRAINAGE MASTER PLAN
☐ FLOODPLAIN DEVELOPMENT PERMIT APPLIC
☐ ELEVATION CERTIFICATE
☐ CLOMR/LOMR
☐ TRAFFIC CIRCULATION LAYOUT (TCL)
☐ TRAFFIC IMPACT STUDY (TIS)
☐ STREET LIGHT LAYOUT
☐ OTHER (SPECIFY) _____
☐ PRE-DESIGN MEETING?

TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

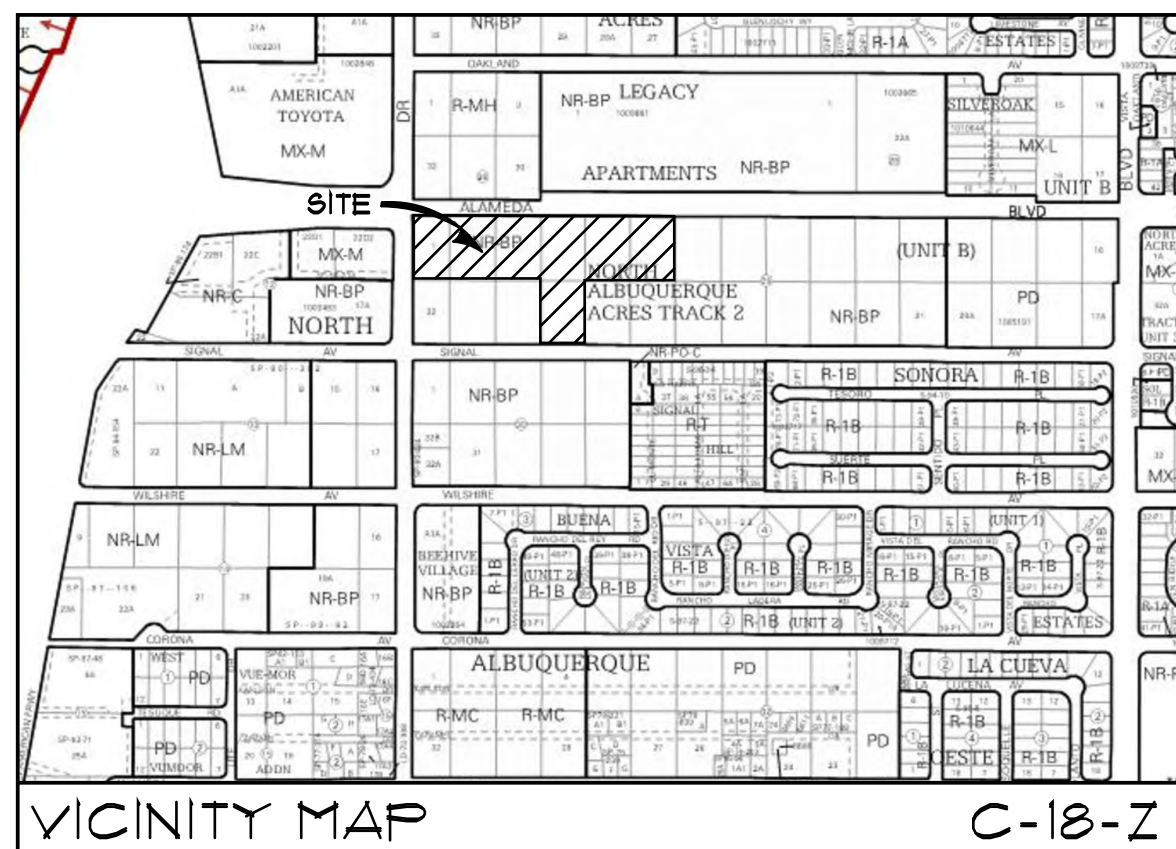
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☐ CERTIFICATE OF OCCUPANCY
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☐ FOUNDATION PERMIT APPROVAL
☐ GRADING PERMIT APPROVAL
☐ SO-19 APPROVAL
☐ PAVING PERMIT APPROVAL
☐ GRADING/ PAD CERTIFICATION
☐ WORK ORDER APPROVAL
☐ CLOMR/LOMR
☐ FLOODPLAIN DEVELOPMENT PERMIT
☐ OTHER (SPECIFY) _____

DATE SUBMITTED: 9-5-19 **By:** MIKE WALLA

COA STAFF:

ELECTRONIC SUBMITTAL RECEIVED: _____

FEE PAID: _____



DRAINAGE NOTES

- FLOOD PLAIN DESIGNATION ZONE X PER FIRM MAP 350002, OCTOBER 2011
- SUBJECT SITE IS WITHIN THE NORTH ALBUQUERQUE ACRES MASTER DRAINAGE PLAN - DESIGN ANALYSIS REPORT "ALAMEDA BLVD. - SAN PEDRO TO WYOMING, PROJECT #1663.91" BY THOMPSON ENGINEERING DATED JANUARY, 2012 - THE ALLOWABLE DISCHARGE FOR THIS SITE IS 3.02 CFS/AC

DRAINAGE POINTS

- A 4.31 CFS
- B 12.22 CFS
- C 4.02 CFS

LEGAL DESCRIPTION

REMAINING PORTIONS OF LOTS 1, 2 AND 3 AND ALL OF LOTS 4, 5, 6 AND 29 IN BLOCK 29 TRACT A UNIT B NORTH ALBUQUERQUE ACRES CITY OF ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO JUNE, 2018

BASIS OF ELEVATIONS

ELEVATIONS ARE BASED ON CITY OF ALBUQUERQUE STATION No. "5-C18 1988", HAVING AN ELEVATION OF 5232.41, NAVD 1988

GENERAL NOTES

- THE HATCHED AREAS OF THIS PLAN INDICATE FUTURE WORK ON THIS SITE NOT TO BE CONSTRUCTED THIS PERMIT
- ALL WORK INDICATED IN THE PUBLIC RIGHT-OF-WAY WILL BE CONSTRUCTED UNDER CFN #166382
- A DRAINAGE COVENANT REGARDING PROPOSED RETENTION POND, STORMWATER QUALITY PONDS AND PRIVATE STORM PIPES IS IN PROGRESS AND WILL BE RECORDED PRIOR TO CERTIFICATE OF OCCUPANCY APPROVAL. SIMILARLY, A SEPARATE DRAINAGE COVENANT FOR THE TEMPORARY RETENTION POND WILL BE RECORDED PRIOR TO CERTIFICATE OF OCCUPANCY PER CHAPTER 11 OF THE DFM

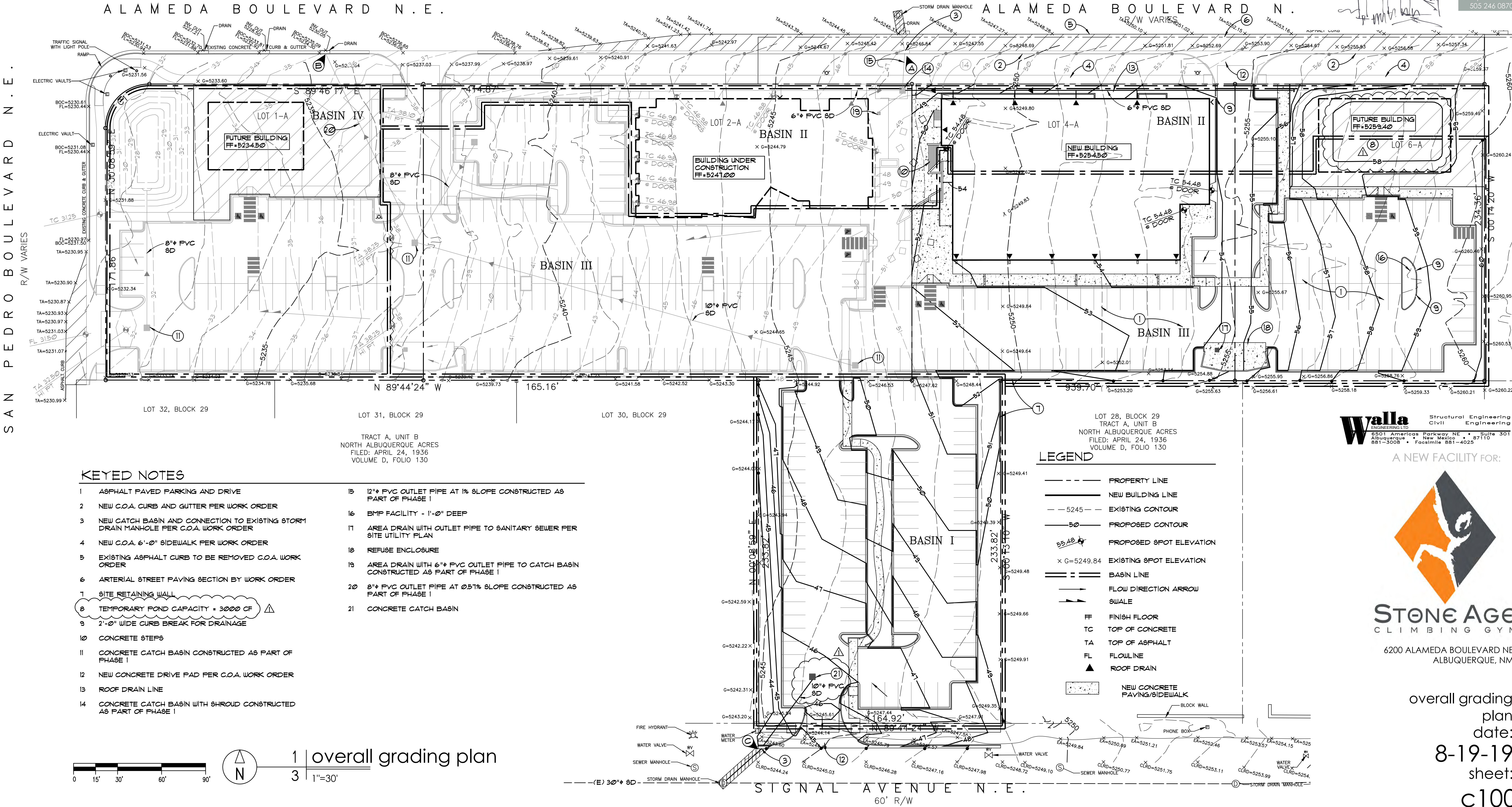
MAINTENANCE OF THE ONSITE DRAINAGE FACILITIES IS THE RESPONSIBILITY OF THE PROPERTY OWNER. THESE FACILITIES INCLUDE DRAINAGE POND(S), FIRST FLUSH POND(S), CATCH BASINS (INLETS), STORM DRAIN LINES, AND UNDERGROUND STORAGE TANKS. THE EXECUTED COVENANT FOR THIS PROPERTY DEFINES THESE RESPONSIBLE PARTIES.

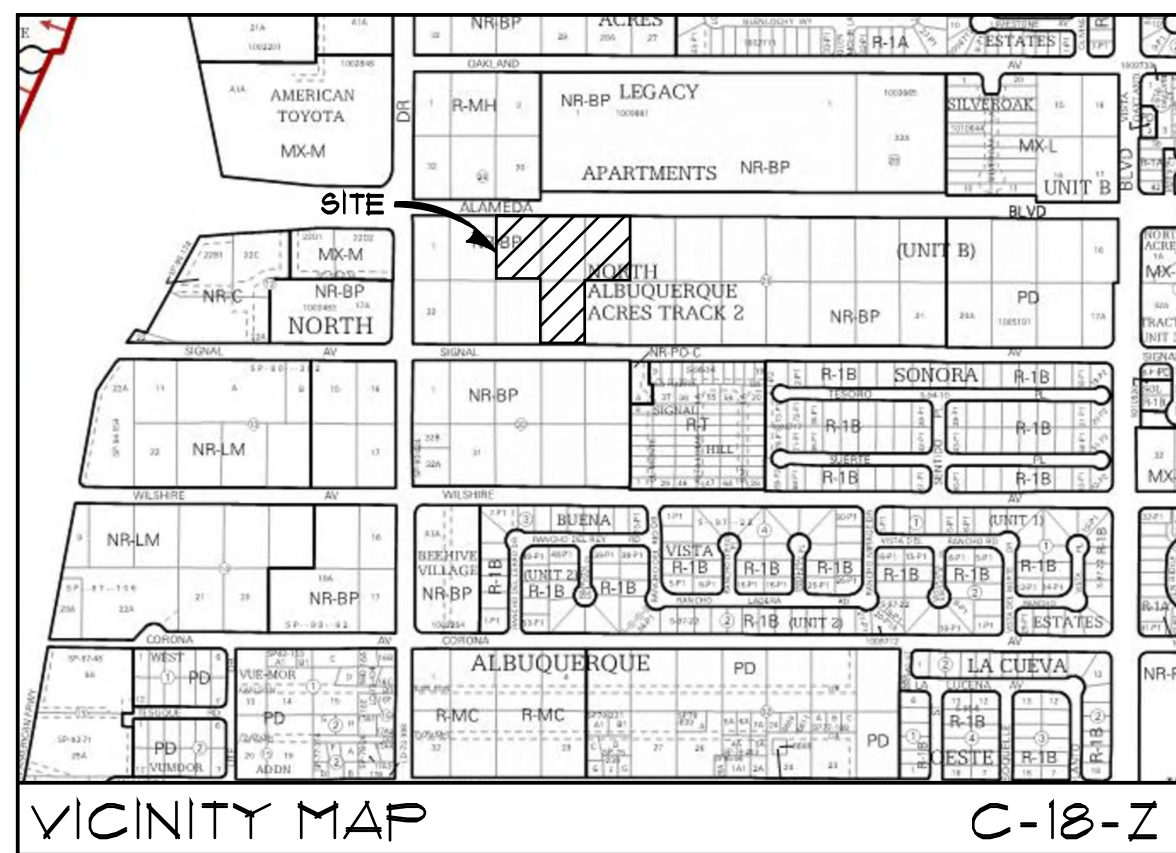


revisions:
C.O.A. COMMENTS 9-5-19

joe slagle architect

413 2nd st. sw
abq nm 87102
505 246 0870





DRAINAGE NOTES

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- THIS PLAN IS ONE PORTION OF THE OVERALL SITE GRADING AND DRAINAGE PLAN APPROVED BY C.O.A. HYDROLOGY AND DRB PREPARED BY WALLA ENGINEERING DATED 12/6/18

DRAINAGE POINTS

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B 12.22 CFS
C 4.02 CFS

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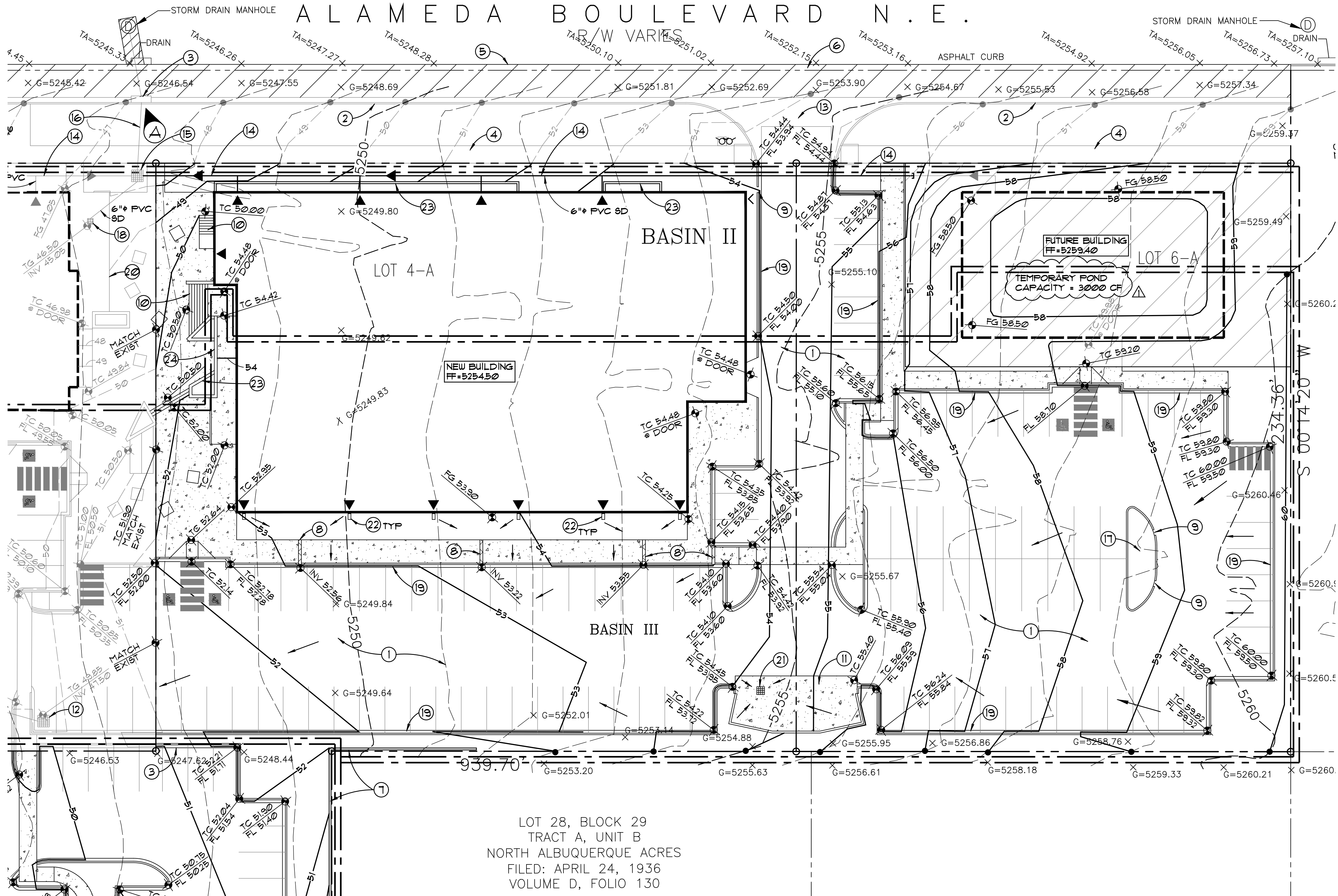
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KEYED NOTES

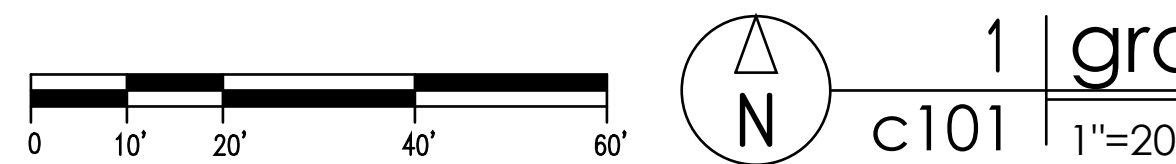
- ASPHALT PAVED PARKING AND DRIVE PER DETAIL 1/C301
- NEW C.O.A. CURB AND GUTTER PER WORK ORDER
- NEW CATCH BASIN AND CONNECTION TO EXISTING STORM DRAIN MANHOLE PER C.O.A. WORK ORDER
- NEW C.O.A. 6'-0" SIDEWALK BY WORK ORDER
- EXISTING ASPHALT CURB TO BE REMOVED BY WORK ORDER
- ARTERIAL STREET PAVING SECTION BY WORK ORDER
- SITE RETAINING WALL PER DETAIL 2/C301
- SIDEWALK CULVERT PER DETAIL 5/C301
- 2'-0" WIDE CURB BREAK FOR DRAINAGE
- CONCRETE STEPS PER DETAIL 3/C301
- REFUSE ENCLOSURE
- CONCRETE CATCH BASIN CONSTRUCTED AS PART OF PHASE I
- NEW CONCRETE DRIVE PAD PER C.O.A. WORK ORDER
- ROOF DRAIN LINE
- CONCRETE CATCH BASIN WITH SHROUD CONSTRUCTED AS PART OF PHASE I
- 12" PVC OUTLET PIPE AT 1% SLOPE CONNECT TO BACK OF CURB INLET BY WORK ORDER
- BMP FACILITY - 1'-0" DEEP - SEE DETAIL 6/C301 FOR HEADER CURB
- AREA DRAIN WITH 6" PVC OUTLET TO CATCH BASIN CONSTRUCTED AS PART OF PHASE I
- TYPICAL SITE CONCRETE CURB AND GUTTER PER DETAIL 1/C301
- SITE RETAINING WALL CONSTRUCTED AS PART OF PHASE I
- AREA DRAIN WITH OUTLET PIPE TO SANITARY SEWER PER SITE UTILITY PLAN - TOG EL.=53.15
- CONCRETE SPLASH BLOCK
- PLANTER WALL - SEE STRUCTURAL
- SITE RETAINING WALL - SEE STRUCTURAL

LEGEND

- PROPERTY LINE
- NEW BUILDING LINE
- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED SPOT ELEVATION
- EXISTING SPOT ELEVATION
- BASIN LINE
- FLOW DIRECTION ARROW
- SWALE
- FF FINISH FLOOR
- TC TOP OF CONCRETE
- TA TOP OF ASPHALT
- FL FLOWLINE
- INV INVERT
- SD STORM DRAIN
- TG TOP OF GRATE
- FG FINISH GRADE
- ROOF DRAIN LOCATION - CONNECT TO STORM DRAIN OR OUTLET TO SPLASH BLOCK
- NEW CONCRETE PAVING/SIDEWALK 4" THICK, 4000 PSI, AIR-ENTRAINED



LOT 28, BLOCK 29
TRACT A, UNIT B
NORTH ALBUQUERQUE ACRES
FILED: APRIL 24, 1936
VOLUME D, FOLIO 130



1 | grading and drainage plan

c101 1"=20'

joe slagle architect

413 2nd st. sw
albq nm 87102
505 246 0870

revisions:

COA COMMENTS 9-5-19



Walla Structural Engineering
Civil Engineering
ENGINEERING LTD
6501 Americas Parkway NE • Suite 301
Albuquerque • New Mexico • 87110
851-3508 • Facsimile 851-4025

A NEW FACILITY FOR:



STONE AGE
CLIMBING GYM

6200 ALAMEDA BOULEVARD NE
ALBUQUERQUE, NM

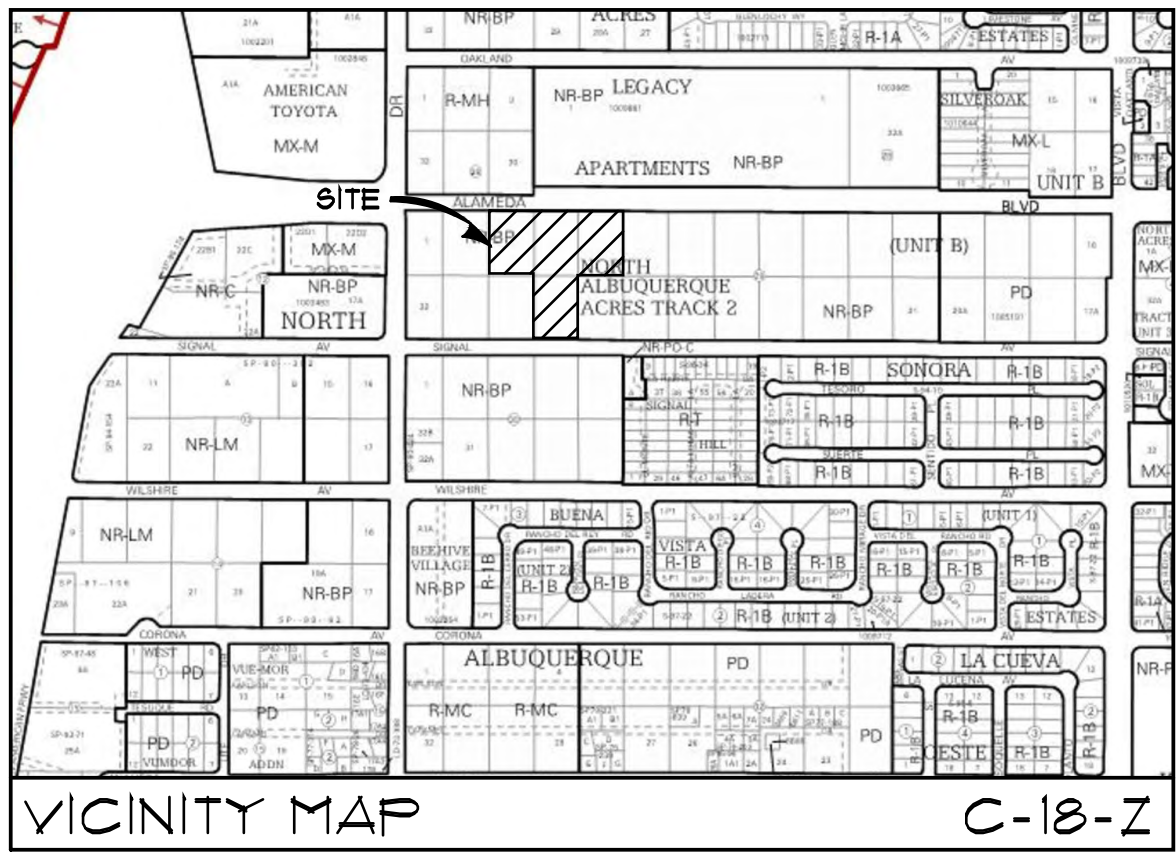
grading and
drainage plan

date:

8-19-19

sheet:

c101



DRAINAGE NOTES

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KEYED NOTES

- 1 ASPHALT PAVED PARKING AND DRIVE PER DETAIL 1/C301
- 2 NEW C.O.A. CURB AND GUTTER PER WORK ORDER
- 3 TYPICAL SITE CONCRETE CURB AND GUTTER PER DETAIL 7/C301
- 4 NEW C.O.A. 6'-0" SIDEWALK BY WORK ORDER
- 5 NEW CATCH BASIN AND CONNECTION TO EXISTING STORM DRAIN MANHOLE PER C.O.A. WORK ORDER
- 6 ARTERIAL STREET PAVING SECTION BY WORK ORDER
- 7 SITE RETAINING WALL PER DETAIL 2/C301
- 8 CONCRETE CATCH BASIN WITH SHROUD CONSTRUCTED AS PART OF PHASE I
- 9 CONCRETE CATCH BASIN PER DETAIL 4/C301
- 10 NEW CONCRETE DRIVE PAD PER C.O.A. WORK ORDER
- 11 SIDEWALK CULVERT PER DETAIL 5/C301
- 12 18" RCP STORM DRAIN PER C.O.A. WORK ORDER - SEE DETAIL 2/C102 THIS SHEET FOR RCP TO PVC CONNECTION

LEGEND

- PROPERTY LINE
- ===== NEW BUILDING LINE
- 5245 --- EXISTING CONTOUR
- PROPOSED CONTOUR
- 55.40 PROPOSED SPOT ELEVATION
- x G=5249.84 EXISTING SPOT ELEVATION
- ===== BASIN LINE
- FLOW DIRECTION ARROW
- SWALE
- FF FINISH FLOOR
- TC TOP OF CONCRETE
- TA TOP OF ASPHALT
- FL FLOWLINE
- INV INVERT
- SD STORM DRAIN
- TOG TOP OF GRATE
- FG FINISH GRADE

NEW CONCRETE PAVING/SIDEWALK 4" THICK, 4000 PSI, AIR-ENTRAINED

NON-WOVEN GEOTEXTILE TO BE WRAPPED AROUND CONNECTION

CAST IN PLACE CONCRETE ENCASMENT

10" PVC

18" RCP BY C.O.A. WORK ORDER

CLASS 1 BEDDING TO SUPPORT CONCRETE COLLAR

2

C102

3/4" = 1'-0"

joe slagle architect
413 2nd st sw
abq nm 87102
505 246 0870

revisions:
C.O.A. COMMENTS 9-5-19



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Civil Engineering
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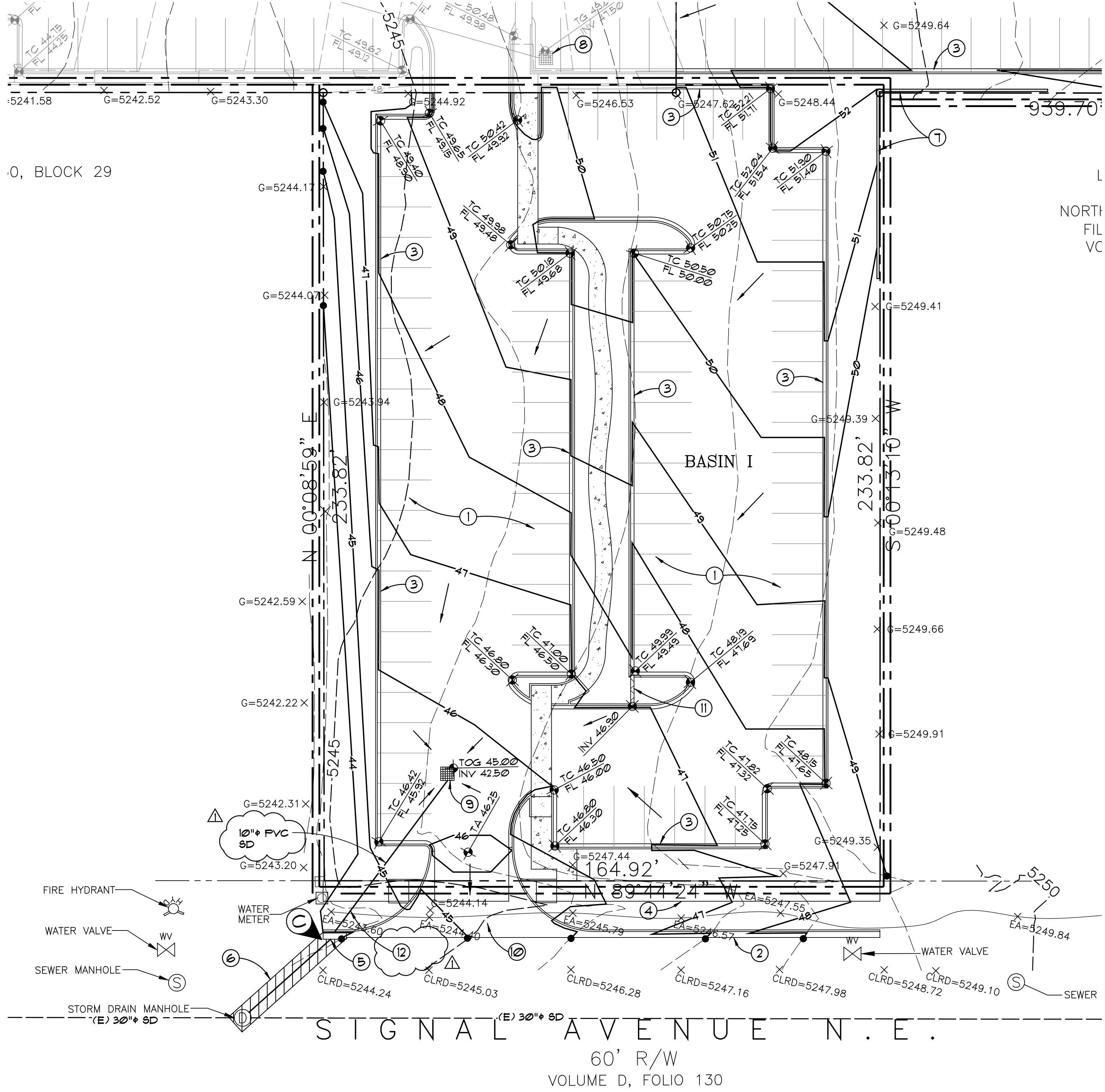
A NEW FACILITY FOR:



STONE AGE
CLIMBING GYM

6200 ALAMEDA BOULEVARD NE
ALBUQUERQUE, NM

grading and
drainage plan
date:
8-19-19
sheet:
c102



1
c102

grading and drainage plan

1"=20'



**Drainage Report
For**

**Alameda & San Pedro Mixed Use
Stone Age Climbing Gym**

Prepared by:

Walla Engineering, Ltd.
6501 Americas Parkway NE
Suite 301
Albuquerque, New Mexico 87110

Prepared for:
Joe Slagle Architects
413 2nd St. SW
Albuquerque, New Mexico 87109

September 5, 2019

I certify that this report was prepared under my supervision, and I am a registered professional engineer in the state of New Mexico in good standing.

A blue ink handwritten signature of Mike J. Walla is written over a circular professional seal. The seal contains the text "MIKE J. WALLA", "NEW MEXICO", and "REGISTERED PROFESSIONAL ENGINEER".

Mike J. Walla
PE No. 11030

Project # S48-0219

6 5 0 1 A m e r i c a s P a r k w a y N E • S u i t e 3 0 1
A l b u q u e r q u e • N e w M e x i c o • 8 7 1 1 0
(5 0 5) 8 8 1 - 3 0 0 8 • F a c s i m i l e (5 0 5) 8 8 1 - 4 0 2 5

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SECTION I

REPORT

Introduction

The subject site is located in North Albuquerque Acres at the southeast corner of the intersection of San Pedro Blvd. and Alameda Blvd. NE. The site is currently unimproved but is planned for development into a light commercial center. The site is made up of 7 original lots that total approximately 5.26 acres that will be replatted into 4 lots. The project will require public works improvements on Alameda to widen the road and add sidewalk and a bike lane. San Pedro will be widened as well as part of this work. The site is accessed from San Pedro Blvd. on the west, Signal Avenue on the south and there will be two north entrances off of Alameda Blvd. The attached City of Albuquerque Zone Atlas Map, C-18-Z indicates the site location. The purpose of this report is to describe existing and proposed onsite drainage conditions and how the new development will handle developed storm runoff flows. The Stone Age Climbing Gym project will occupy the Lot 4-A portion of the site and the site improvements associated with this project will extend those being constructed as part of the current Tin Can Alley project being constructed in this development. A Temporary Retention Pond will also be constructed on the east end of the development to hold runoff for the undeveloped portion of the site (the pad site on Lot 6-A). Drainage Covenants per Chapter 17 of the DPM for the Temporary Pond as well as the final drainage improvements on the Overall Site will be submitted prior to Certificate of Occupancy issuance.

National Flood Hazard Layer FIRMette



35°11'15.28"N



USGS The National Map - Orthoimagery Data refreshed October 2017 106°34'17.53"W 35°10'45.87"N

Legend

SEE HIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYER

SPECIAL FLOOD HAZARD AREAS

- Without Base Flood Elevation (BFE) Zone A, V, A99
- With BFE or Depth Zone AE, AO, AH, VE, A
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD

- 0.2% Annual Chance Flood Hazard, A, AH, VE, A
- 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 X

OTHER AREAS

- Area of Minimal Flood Hazard Zone X
- Effective LOMRs
- Area of Undetermined Flood Hazard

GENERAL STRUCTURES

- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES

- Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS

- Digital Data Available
- No Digital Data Available
- Unmapped

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

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 9/11/2018 at 10:27:43 AM 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.



City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 6/2018)

Project Title: STONE AGE CLIMBING GYM Building Permit #: _____ Hydrology File #: _____

DRB#: 1000682 EPC#: _____ Work Order#: _____

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Applicant: WALLA ENGINEERING Contact: MIKE WALLA

Address: 6501 AMERICAS PARKWAY NE, SUITE 301, ALBUQUERQUE, NM 87110

Phone#: 505-881-3008 Fax#: 505-881-4025 E-mail: mikew@wallaengineering.com

Other Contact: JOE SLAGLE ARCHITECT Contact: JOE SLAGLE

Address: 413 2ND ST. SW, ALBUQUERQUE, NM 87102

Phone#: 505-246-0870 Fax#: _____ E-mail: joe@slaglearchitect.com

TYPE OF DEVELOPMENT: _____ PLAT (# of lots) _____ RESIDENCE ☒ DRB SITE _____ ADMIN SITE

IS THIS A RESUBMITTAL? ☒ Yes _____ No

DEPARTMENT _____ TRANSPORTATION ☒ HYDROLOGY/DRAINAGE

Check all that Apply:

TYPE OF SUBMITTAL:

- ☐ ENGINEER/ARCHITECT CERTIFICATION
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- ☐ OTHER (SPECIFY) _____
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- ☐ PAVING PERMIT APPROVAL
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- ☐ WORK ORDER APPROVAL
- ☐ CLOMR/LOMR
- ☐ FLOODPLAIN DEVELOPMENT PERMIT
- ☐ OTHER (SPECIFY) _____

DATE SUBMITTED: 9-5-19 By: MIKE WALLA

COA STAFF:

ELECTRONIC SUBMITTAL RECEIVED: _____

FEE PAID: _____

LEGAL DESCRIPTION

The current legal description of the subject property is:

**Lots 1-A, 2-A, 4-A & 6-A, Block 29, Tract A, Unit B North Albuquerque Acres
within Projected Section 13, T.11N.,R.3E., NMPM Within the Elena Gallegos Grant,
City of Albuquerque, Bernalillo County, New Mexico, August 2018.**

Existing Drainage Conditions & Offsite Flows

The existing overall site is an unimproved property with a prevailing slope from east to west that varies from 2 to 5% (3.1% average). Any runoff currently developed on this site is conveyed to Alameda and San Pedro Blvd. NE. The site is bordered on the east by a residential development currently under construction with similar slopes. The adjacent properties to the south of the subject site are developed but do not appear to impact the subject site drainage. The portion of the subject site that borders Signal Blvd. also has an existing east to west slope with some small portion of storm runoff historically flowing into Signal Ave. or adjacent property west of this section of the site. No significant storm runoff developed offsite appears to be conveyed through the subject site.

Proposed Drainage Management

The proposed on-site drainage management plan will be based on the North Albuquerque Acres Master Drainage Plan as outlined in the design analysis report titled "Alameda Blvd. – San Pedro to Wyoming" Project #7663.91, by Thompson Engineering, dated January 2012. In this report the allowable storm runoff discharge to Alameda Blvd. is limited to 3.82 CFS per acre and runoff to San Pedro Blvd. is prohibited. The developed conditions on the subject site will create an increase in developed runoff discharge and a Retention Pond will be used to permanently store runoff developed at the west end of the site (Basin IV). Runoff developed from Basins II and III will be collected in an onsite storm drain system and released to Alameda meeting the requirements of the Master Drainage Plan limiting that released volume. Developed storm water from the southern end of the site (Basin I) will be directed to downstream facilities except under high flow rates where it will temporarily pond in the parking area on the west side of paved lot. The first flush volume will be retained prior to outlet to Signal Ave. from an onsite catch basin to a new city drop inlet in the new curb and gutter on Signal Ave. which will be constructed per COA Work Order. This will be tied into an existing manhole and 30" storm drain in Signal and the subsequent downstream facilities. Some first flush runoff will be directly released to public facilities and through shrouded inlets and this volume will be accounted for in a Fee-in-Lieu arrangement with the City of Albuquerque in order to allow direct discharge to downstream facilities.

Calculations

The weighted E method from the “City of Albuquerque Development Process Manual Volume 11 – Design Criteria, 1997 Revision” was used to calculate runoff volumes from the project site. The 6-hr, 100-yr developed storm runoff for the portion of the site fronting Alameda Blvd. was calculated to be a total of 20.36 CFS (Basins II, III and IV). The allowable discharge of storm runoff to Alameda Blvd. as defined by the NAA Master Drainage Plan, Project #7663.91, by Thompson engineering dated January 2012 is 3.82 CFS/acre and the area of the site affected by this limitation totals 4.342 acres. Therefore, the total allowable discharge to the Alameda storm drain facilities is 16.59 CFS from the developed site. Calculations for that runoff and controlled outlet are included in the Appendix of this report. The overall site was modelled using AHYMO software. The portion of the site that fronts on Signal Ave. (Basin I) will also be sloped to drain towards Signal but will be collected onsite and piped directly to the storm drain in Signal through a shrouded inlet with an orifice plate to restrict flow. The site will be required to hold a small amount of runoff in the parking area and this small ponding area is detailed in the Phase II drainage plan for this portion of the project.

Summary

The site will be developed to comply with requirements of the NAA Master Drainage Plan by not exceeding runoff limits to Alameda Blvd. and all but eliminating any runoff to San Pedro Blvd. from the developed site. As indicated on the Conceptual Grading & Drainage Plan approved by DRB, a series of catch basins will be constructed to collect storm runoff and direct it to a Retention Pond located on Lot 1-A of the development or directly to the public storm drain system in Alameda Blvd. per the restrictions of the Master Plan. As much as possible, the developed first flush storm volumes will be either retained in the pond or captured in smaller BMP facilities in the parking lot. Where runoff is released directly to downstream facilities it will be released through a shrouded orifice in an onsite catch basin.

CITY OF ALBUQUERQUE

Planning Department
David Campbell, Director



Mayor Timothy M. Keller

May 16, 2019

Mike Walla, P.E.
Walla Engineering
6501 Americas Pwky NE, Suite 301
Albuquerque, NM, 87110

**RE: Tin Can Alley
6100 Alameda NE
Grading & Drainage Plan and Drainage Report
Engineer's Stamp Date: 05/15/19
Hydrology File: C18D086**

Dear Mr. Walla:

Based upon the information provided in your resubmittal received 05/15/2019, the Grading & Drainage Plan and Drainage Report are approved for Building Permit and Grading Permit.

PO Box 1293

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.

Albuquerque

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 (Curtis Cherne, PE, ccherne@cabq.gov, 924-3420) 14 days prior to any earth disturbance.

www.cabq.gov

Also as a reminder, please provide a Drainage Covenant for the proposed retention pond, stormwater quality ponds, and private storm pipes per Chapter 17 of the DPM. Also a separate Drainage Covenant for the proposed temporary retention pond. **Both** covenants must be submitted prior to Certificate of Occupancy approval. Please submit this on the 4th floor of Plaza de Sol. A \$25 fee will be required.

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



September 4, 2019

Renee C. Brissette, P.E. CFM

Senior Engineer, Hydrology
Planning Department
City of Albuquerque
P.O. Box 1293
Albuquerque, New Mexico 87103

Project: **Alameda & San Pedro Mixed Use Development - Stone Age Climbing**
6100 Alameda NE
Albuquerque, New Mexico

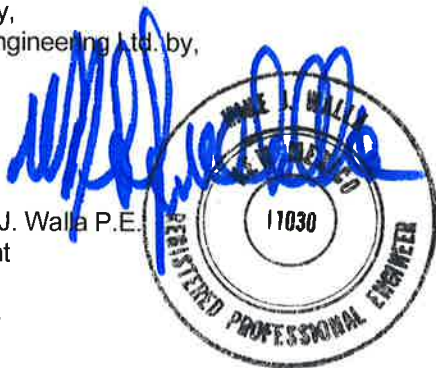
Ms. Brissette,

Walla Engineering has received your comments and incorporated them into our revised Grading & Drainage Plan for the above referenced project. Our response to each comment is listed below:

1. While we do not have a great deal of runoff directed toward the future building pad site on Lot 6-A there will still be some flow developed on this site and so the pond has been reduced but will stay to prevent erosion to Alameda Blvd.
2. Drainage Point 'C' was incorrectly noted and has been corrected to 4.02 cfs.
3. The Basin I grate has a top of grate elevation approximately 1.25 feet lower than the high point of the water block in the drive access to Signal. This was done to provide a small amount of ponding in that corner of the parking lot should the runoff directed that way momentarily overtax the catch basin and grate, or the storm drain outlet to the Signal Ave. storm drain.
4. The Phase II Calculations section do add very little to the clarity of the design intent and have been eliminated.
5. The outlet pipe calculation has been corrected for the full 4.02 cfs Basin I flow and did require an increase in pipe size to a 10" diameter.
6. A Weir-Orifice Capacity Chart has been added to indicate that the grate capacity for a Neenah R-1878 A6G will be adequate for a 4.02 cfs maximum flow under a foot of water.
7. A standard review fee of \$300.00 will be paid with this resubmittal.

Please contact me if you have questions regarding this information.

Sincerely,
Walla Engineering Ltd. by,



Michael J. Walla P.E.
President

MJW/Hs

6 5 0 1 A m e r i c a s P a r k w a y N E • S u i t e 3 0 1
A l b u q u e r q u e • N e w M e x i c o • 8 7 1 1 0
(5 0 5) 8 8 1 - 3 0 0 8 • F a c s i m i l e (5 0 5) 8 8 1 - 4 0 2 5

M i k e J . W a l l a P . E .

L a r r y E . K e n n e d y

CITY OF ALBUQUERQUE

Planning Department
Brennon Williams, Interim Director



Mayor Timothy M. Keller

August 27, 2019

Mike Walla, P.E.
Walla Engineering
6501 Americas Pwky NE, Suite 301
Albuquerque, NM 87110

**RE: Stone Age Climbing Gym
6200 Alameda NE
Grading & Drainage Plan and Drainage Report
Engineer's Stamp Date: 08/19/19
Hydrology File: C18D086A**

Dear Mr. Walla:

PO Box 1293

Based upon the information provided in your submittal received 08/19/2019, the Grading & Drainage Plan and Drainage Report **are not** approved for Building Permit. The following comments need to be addressed for approval of the above referenced project:

Albuquerque

NM 87103

www.cabq.gov

1. Grading & Drainage Plans. There is a temporary retention pond at the area of a future building near the northeast corner of the development. I do not see any purpose for the retention pond. There will be no drainage going into this pond. This area should just be graded for the future pad of the building.
2. Grading & Drainage Plan. Under the Drainage Points, "C" should be 4.02 cfs. This will match the drainage for Basin I in the Ultimate Development.
3. Grading & Drainage Plan. The proposed grate in Basin I is too high and needs to be at the southwest corner of the parking lot. This location is where all the drainage from Basin I is flowing towards. By leaving the inlet as shown, there will be pool of water collecting at the southwest corner of the parking lot. Please fix.
4. Drainage Report, The Phase II calculations. I do not see any use for this section. Phase II is the Ultimate design since 90% of the development is constructed with all the parking and two of the four buildings. This section should be removed.
5. Drainage Report. The Outlet Pipe calculation needs to use the Q 4.02 cfs and not 2.9266 cfs that was used in the calculations. This may increase the pipe size to 10 or 12 inches.
6. Drainage Report. Please add the calculations for the grate inlet in Basin I. This needs to collect 4.02 cfs.

CITY OF ALBUQUERQUE

Planning Department

Brennon Williams, Interim Director



Mayor Timothy M. Keller

7. Standard review fee of \$300 will be required at the time of resubmittal.

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

PO Box 1293

Albuquerque

NM 87103

www.cabq.gov

SECTION II

Runoff Calculations

AHYMO Model Input

AHYMO Model Output

Orifice Calculations

Pipe Calculations

Weir Calculation

Pond Calculations



RUNOFF CALCULATIONS

OVERALL SITE

6 5 0 1 A m e r i c a s P a r k w a y N E • S u i t e 3 0 1
A l b u q u e r q u e • N e w M e x i c o • 8 7 1 1 0
(5 0 5) 8 8 1 - 3 0 0 8 • F a c s i m i l e (5 0 5) 8 8 1 - 4 0 2 5

M i k e J . W a l l a P . E . •

L a r r y E . K e n n e d y

OVERALL SITE

PRECIPITATION ZONE 3

DESIGN STORM: (IN)

1hr

6hr

24hr

4day

10day

2.14

2.60

3.10

3.95

4.90

EXISTING CONDITIONS - ALAMEDA LOTS

LAND TRTMNT	AREA (ACRE)	AREA %	P6	Q (CFS/AC)	Q (CFS)	V6 (CF)	V24 (CF)	V4day (CF)	V10day (CF)
A	0.000	0%	0.66	1.87	0.00	0	0	0	0
B	4.342	100%	0.92	2.60	11.29	14,501	14,501	14,501	14,501
C	0.000	0%	1.29	3.45	0.00	0	0	0	0
D	0.000	0%	2.36	5.02	0.00	0	0	0	0
TOTALS	4.342	100%			11.29	14,501	14,501	14,501	14,501

EXISTING CONDITIONS - SIGNAL AVE. PORTION

LAND TRTMNT	AREA (ACRE)	AREA %	P6	Q (CFS/AC)	Q (CFS)	V6 (CF)	V24 (CF)	V4day (CF)	V10day (CF)
A	0.000	0%	0.66	1.87	0.00	0	0	0	0
B	0.915	100%	0.92	2.60	2.38	3,056	3,056	3,056	3,056
C	0.000	0%	1.29	3.45	0.00	0	0	0	0
D	0.000	0%	2.36	5.02	0.00	0	0	0	0
TOTALS	0.915	100%			2.38	3,056	3,056	3,056	3,056

PROPOSED CONDITIONS - BASIN I

LAND TRTMNT	AREA (ACRE)	AREA %	P6	Q (CFS/AC)	Q (CFS)	V6 (CF)	V24 (CF)	V4day (CF)	V10day (CF)
A	0.000	0%	0.66	1.87	0.00	0	0	0	0
B	0.238	26%	0.92	2.60	0.62	795	795	795	795
C	0.000	0%	1.29	3.45	0.00	0	0	0	0
D	0.677	74%	2.36	5.02	3.40	5,800	7,028	7,889	8,134
TOTALS	0.915	100%			4.02	6,595	7,823	8,683	8,929

PROPOSED CONDITIONS - BASIN II

LAND TRTMNT	AREA (ACRE)	AREA %	P6	Q (CFS/AC)	Q (CFS)	V6 (CF)	V24 (CF)	V4day (CF)	V10day (CF)
A	0.000	0%	0.66	1.87	0.00	0	0	0	0
B	0.185	19%	0.92	2.60	0.48	618	618	618	618
C	0.000	0%	1.29	3.45	0.00	0	0	0	0
D	0.770	81%	2.36	5.02	3.87	6,596	7,994	8,972	9,252
TOTALS	0.955	100%			4.35	7,214	8,612	9,590	9,870

PROPOSED CONDITIONS - BASIN III

LAND	AREA	AREA	P6	Q	Q	V6	V24	V4day	V10day
TRTMNT	(ACRE)	%		(CFS/AC)	(CFS)	(CF)	(CF)	(CF)	(CF)
A	0.000	0%	0.66	1.87	0.00	0	0	0	0
B	0.094	4%	0.92	2.60	0.24	314	314	314	314
C	0.000	0%	1.29	3.45	0.00	0	0	0	0
D	2.421	96%	2.36	5.02	12.15	20,740	25,134	28,210	29,089
TOTALS	2.515	100%			12.40	21,054	25,448	28,524	29,403

PROPOSED CONDITIONS - BASIN IV

LAND	AREA	AREA	P6	Q	Q	V6	V24	V4day	V10day
TRTMNT	(ACRE)	%		(CFS/AC)	(CFS)	(CF)	(CF)	(CF)	(CF)
A	0.000	0%	0.66	1.87	0.00	0	0	0	0
B	0.316	36%	0.92	2.60	0.82	1,055	1,055	1,055	1,055
C	0.000	0%	1.29	3.45	0.00	0	0	0	0
D	0.556	64%	2.36	5.02	2.79	4,763	5,772	6,479	6,681
TOTALS	0.872	100%			3.61	5,818	6,828	7,534	7,736

Allowable discharge to Alameda: 4.342 Acres X 3.82 CFS/AC = 16.59 CFS

Calculated direct discharge to Alameda: Basin II + Basin III = 4.35 CFS + 12.40 CFS = 16.75 CFS

Use 18" dia PVC discharge pipe installed at 1.2% slope - Capacity = 16.09 CFS

First Flush Calculations:

Basin I First Flush Pond Required: Trtmnt D Area = 0.677 AC x 0.34in = 835 CF

Total First Flush Required = 835 CF
No retention ponding provided - Fee-in-lieu

Basin II First Flush Pond Required: Trtmnt D Area = 0.770 AC x 0.34in = 950 CF

No ponding available - catch basin outlet is shrouded requires Fee-in-Lieu

Basin III First Flush Pond Required: Trtmnt D Area = 2.421 AC x 0.34in = 2988 CF

Ponding provided in parking islands:
3 each @ 210 SF x 1'-0" deep = 630 CF
3 each @ 63 SF x 1'-0" deep = 189 CF

Total ponding provided = 819 CF

Remaining required First Flush ponding (2169 CF) Discharged to downstream facilities via Fee-in-Lieu

Basin IV First Flush Pond Required: Trtmnt D Area = 0.566 AC x 0.34in = 699 CF

All First Flush volume directed to Retention Pond

Allowable Discharge per Basin to Alameda:

Rate = 3.82 CFS per Acre

Basin I	To Signal Ave. - N/A
Basin II	$0.955 \text{ AC} \times 3.82 \text{ CFS/AC} = 3.65 \text{ CFS}$
Basin III	$2.515 \text{ AC} \times 3.82 \text{ CFS/AC} = 9.61 \text{ CFS}$
Basin IV	$0.872 \text{ AC} \times 3.82 \text{ CFS/AC} = 3.33 \text{ CFS}$
	Total = 16.59 CFS

AHYMO MODEL

INPUT FILE

TCA190322

S PROJECT NAME: MIXED USE DEVELOPMENT AT ALAMEDA AND SAN PEDRO
S DATE: MARCH 22, 2019
S
S INPUT FILE NAME: TCA190322.hym
S OUTPUT FILE NAME: TCA190322.out
S

*

*

S

* 24-hr, 100 year storm event

RAINFALL TYPE=13 RAIN QUARTER=0.0 RAIN ONE=2.14
RAIN SIX=2.60 RAIN DAY=3.10 DT=0.05 HRS

*

*S**** COMPUTE ALLOWABLE FLOW RATE

*S**** BASIN 117.32

COMPUTE NM HYD ID=1 HYD NO=117.32 DA=0.00678 SQ MI
PER A=0 PER B=34 PER C=16 PER D=50
TP=0.1333 HR MASS RAIN=-1

PRINT HYD ID=1 CODE=20

*

*

*S**** BASIN 117.31

COMPUTE NM HYD ID=2 HYD NO=117.31 DA=0.00143 SQ MI
PER A=0 PER B=34 PER C=16 PER D=50
TP=0.1333 HR MASS RAIN=-1

PRINT HYD ID=2 CODE=20

*

*

*S****PROPOSED CONDITIONS

*S****SUBBASIN I

COMPUTE NM HYD ID=3 HYD NO=I DA=0.00143 SQ MI
PER A=0 PER B=13 PER C=13 PER D=74
TP=0.1333 HR MASS RAIN=-1

PRINT HYD ID=3 CODE=20

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*S**** SUBBASIN II

COMPUTE NM HYD ID=4 HYD NO=II DA=0.00149 SQ MI
PER A=0 PER B=9.5 PER C=9.5 PER D=81
TP=0.1333 HR MASS RAIN=-1

PRINT HYD ID=4 CODE=20

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*S**** SUBBASIN III

COMPUTE NM HYD ID=5 HYD NO=III DA=0.00477 SQ MI
PER A=0 PER B=3 PER C=3 PER D=94
TP=0.1333 HR MASS RAIN=-1

PRINT HYD ID=5 CODE=20

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*S**** SUBBASIN IV

COMPUTE NM HYD ID=6 HYD NO=IV DA=0.00052 SQ MI
PER A=0 PER B=35 PER C=35 PER D=30
TP=0.1333 HR MASS RAIN=-1

PRINT HYD ID=6 CODE=20

*

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*
*

*S SUBBASIN III UNDERGROUND STORAGE

ROUTE RESERVOIR	ID=9 HYD=STRG.III OUTFLOW(CFS)	INFLOW ID=5 STORAGE(AC FT)	CODE=1 ELEV(FT)
	0.01	0	0.0
	1.13	0	0.5
	3.73	0	1.0
	5.30	0	1.5
	6.50	0	2.0
	7.52	0	2.5
	8.41	0	3.0
	9.22	0	3.5
	9.96	0.0001	4.0
	10.65	0.0315	4.5
	11.29	0.0350	5.0

*
*
*
*
*
*

PRINT HYD ID=9 CODE=20

*S SUBBASIN I STORAGE

ROUTE RESERVOIR	ID=10 HYD=STRG.I OUTFLOW(CFS)	INFLOW ID=3 STORAGE(AC FT)	CODE=1 ELEV(FT)
	0.00	0	0
	0.83	0.00010	0.5
	1.59	0.00020	1.0
	2.08	0.00030	1.5
	2.47	0.00040	2.0
	2.81	0.00050	2.5
	3.11	0.00060	3.0
	3.28	0.00066	3.3
	3.39	0.00088	3.5
	3.54	0.00198	3.8

*
*

PRINT HYD ID=10 CODE=20



AHYMO OUTPUT

6 5 0 1 A m e r i c a s P a r k w a y N E S u i t e 3 0 1
A l b u q u e r q u e • N e w M e x i c o • 8 7 1 1 0
(5 0 5) 8 8 1 - 3 0 0 8 • F a c s i m i l e (5 0 5) 8 8 1 - 4 0 2 5

M i k e J . W a l l a P . E .

L a r r y E . K e n n e d y

AHYMO PROGRAM SUMMARY TABLE (AHYMO-S4)
 INPUT FILE = objects\03579 Solomon Alameda & San Pedro\4. ENG\Modeling\AHYMO\TCA190322.txt USER NO.= AHYMO-S4TempUser05901704
 - Ver. S4.02a, Rel: 02a RUN DATE (MON/DAY/YR) =03/22/2019

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE =
S										1
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S										
S										

PROJECT NAME: MIXED USE DEVELOPMENT AT ALAMEDA AND SAN PEDRO
 DATE: MARCH 22, 2019

INPUT FILE NAME: TCA190322.hym
 OUTPUT FILE NAME: TCA190322.out

RAINFALL TYPE=13										RAIN24=
***** COMPUTE ALLOWABLE FLOW RATE										
***** BASIN 117.32										
COMPUTE NM HYD	117.32	-	1	0.00678	16.88	0.702	1.94076	1.500	3.890 PER IMP=	50.00
***** BASIN 117.31										
COMPUTE NM HYD	117.31	-	2	0.00143	3.58	0.148	1.94076	1.500	3.906 PER IMP=	50.00
*****PROPOSED CONDITIONS										
*****SUBBASIN I										
COMPUTE NM HYD	I	-	3	0.00143	4.07	0.183	2.39737	1.500	4.447 PER IMP=	74.00
***** SUBBASIN II										
COMPUTE NM HYD	II	-	4	0.00149	4.37	0.200	2.52117	1.500	4.582 PER IMP=	81.00
***** SUBBASIN III										
COMPUTE NM HYD	III	-	5	0.00477	14.72	0.700	2.75109	1.500	4.823 PER IMP=	94.00
***** SUBBASIN IV										
COMPUTE NM HYD	IV	-	6	0.00052	1.21	0.045	1.61919	1.500	3.622 PER IMP=	30.00
***** SUBBASIN III UNDERGROUND STORAGE										
ROUTE RESERVOIR	STRG.III	5	9	0.00477	11.24	0.851	3.34507	1.600	3.683 AC-FT=	0.035
***** SUBBASIN I STORAGE										
ROUTE RESERVOIR	STRG.I	3	10	0.00143	3.38	0.183	2.39719	1.550	3.690 AC-FT=	0.014



ORIFICE CALCULATIONS

6 5 0 1 A m e r i c a s P a r k w a y N E S u i t e 3 0 1
A l b u q u e r q u e • N e w M e x i c o • 8 7 1 1 0
(5 0 5) 8 8 1 - 3 0 0 8 • F a c s i m i l e (5 0 5) 8 8 1 - 4 0 2 5

M i k e J . W a l l a P . E . •

L a r r y E . K e n n e d y

Orifice Calculations

$$Q = 0.6 \cdot A \cdot (2 \cdot g \cdot h)^{0.5}$$

Q: Flow Capacity (cfs)

A: Open Area (sq. ft.)

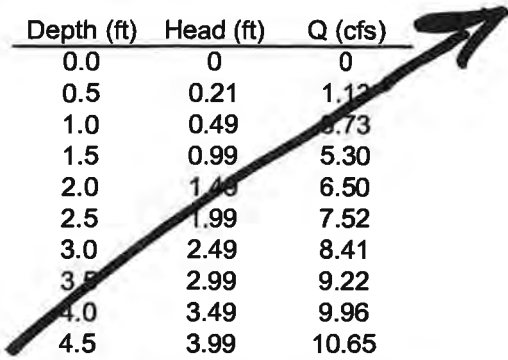
g: Gravity (ft / s²)

h: Head (ft) to Centroid of Orifice

Rating Curve for Subbasin III Storage

A = 1.1071 sq. ft.

N/A



Depth (ft)	Head (ft)	Q (cfs)
0.0	0	0
0.5	0.21	1.12
1.0	0.49	3.73
1.5	0.99	5.30
2.0	1.49	6.50
2.5	1.99	7.52
3.0	2.49	8.41
3.5	2.99	9.22
4.0	3.49	9.96
4.5	3.99	10.65
5.0	4.49	11.29

Rating Curve for Subbasin I Storage

A = 0.3927 sq. ft.

Depth (ft)	Head (ft)	Q (cfs)
0.0	0	0
0.5	0.26	0.83
1.0	0.71	1.59
1.5	1.21	2.08
2.0	1.71	2.47
2.5	2.21	2.81
3.0	2.71	3.11
3.3	3.01	3.28
3.5	3.21	3.39
3.8	3.51	3.54



PIPE CALCULATIONS

6 5 0 1 A m e r i c a s P a r k w a y N E S u i t e 3 0 1
A l b u q u e r q u e N e w M e x i c o 8 7 1 1 0
(5 0 5) 8 8 1 - 3 0 0 8 F a c s i m i l e (5 0 5) 8 8 1 - 4 0 2 5

M i k e J . W a l l a P . E .

L a r r y E . K e n n e d y



6501 Americas Parkway NE • Suite 301
Albuquerque • New Mexico • 87110
881-3008 • Facsimile 881-4025

SHEET NO. _____ OF _____
JOB ALAMEDA & SAN PEDRO
SUBJECT PHASE II
CLIENT SMAGUE JOB NO. _____
BY MSW DATE 9/4/19
CHECKED BY _____ DATE _____

Alameda & San Pedro Mixed Use

Basin I Outlet Pipe

Set units: ☐ m ☐ mm ☐ ft ☐ in

Pipe diameter, d_0	10 in ▼
Manning roughness, n ? (http://www.engineeringtoolbox.com/mannings-roughness-d_799.html)	.01
Pressure slope (possibly ? (../pressureslope.php) equal to pipe slope), S_0	3.5 % rise/run ▼
Percent of (or ratio to) full depth (100% or 1 if flowing full)	94 % ▼

Results

Flow, Q	5.7314	cfs ▼
Velocity, v	10.7725	ft/sec ▼
Velocity head, h_v	1.8036	ft ▼
Flow area	76.6160	sq. in. ▼
Wetted perimeter	26.4666	in ▼
Hydraulic radius	2.8948	in ▼
Top width, T	4.7497	in ▼
Froude number, F	1.64	
Shear stress (tractive force), τ	0.5272	psf ▼





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SHEET NO. _____ OF _____
JOB ALAMEDA MIXED USE
SUBJECT TIN CAN ALLEY
CLIENT SHAW JOB NO. _____
BY WTE DATE _____
CHECKED BY _____ DATE _____

Tin Can Alley

Pipe at Main outlet to Alameda

Set units: ☐ m ☐ mm ☐ ft ☐ in

Pipe diameter, d_0	18 in ▼
Manning roughness, n ? (http://www.engineeringtoolbox.com/mannings-roughness-d_799.html)	.01
Pressure slope (possibly ? (./pressureslope.php) equal to pipe slope), S_0	1.2 % rise/run ▼
Percent of (or ratio to) full depth (100% or 1 if flowing full)	94 % ▼

Results

Flow, Q	16.0895	cfs ▼
Velocity, v	9.3337	ft/sec ▼
Velocity head, h_v	16.2478	in ▼
Flow area	248.2360	sq. in. ▼
Wetted perimeter	47.6399	in ▼
Hydraulic radius	5.2107	in ▼
Top width, T	8.5495	in ▼
Froude number, F	1.06	
Shear stress (tractive force), τ	15.5740	N/m ² ▼

BASIN II OUTLET PIPE

Alameda & San Pedro Mixed Use

Outlet Pipe - Basin II

Set units: ☐ m ☐ mm ☐ ft ☐ in

Pipe diameter, d_0	12 in ▼
Manning roughness, n ? (http://www.engineeringtoolbox.com/mannings-roughness-d_799.html)	.01
Pressure slope (possibly ? (../pressureslope.php) equal to pipe slope), S_0	1.0 % rise/run ▼
Percent of (or ratio to) full depth (100% or 1 if flowing full)	94 % ▼

Results

Flow, Q	4.9817	cfs ▼
Velocity, v	6.5024	ft/sec ▼
Velocity head, h_v	0.6571	ft ▼
Flow area	110.3271	sq. in. ▼
Wetted perimeter	31.7599	in ▼
Hydraulic radius	3.4738	in ▼
Top width, T	5.6997	in ▼
Froude number, F	0.90	
Shear stress (tractive force), τ	0.5869	psf ▼



WIER CALCULATION

6 5 0 1 A m e r i c a s P a r k w a y N E S u i t e 3 0 1
A l b u q u e r q u e N e w M e x i c o 8 7 1 1 0
(5 0 5) 8 8 1 - 3 0 0 8 F a c s i m i l e (5 0 5) 8 8 1 - 4 0 2 5

M i k e J . W a l l a P . E .

L a r r y E . K e n n e d y

WEIR CALCULATION @ BMP

Rectangular Contracted Weir

This calculator finds the water flow rate for a rectangular contracted weir. A rectangular contracted weir has a rectangular opening where the sides are straight up and down. A contracted weir means that the ditch leading up to the weir is wider than the weir opening itself.

The length is found by measuring the bottom width of the weir and the height is determined from measuring the water height above the bottom of the weir.

Learn more about the units used on this page.

Length:

2

ft ▼

Height:

.5

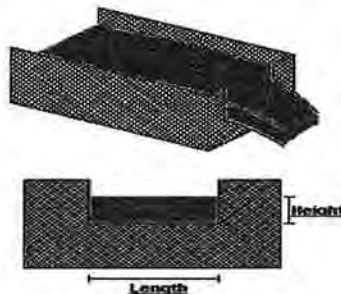
ft ▼

Calculate

Flow Rate:

2.26

cfs ▼



* Note: 1 point = 1/100 ft.

The Equation

The Equation used to determine the flow rate (Q) of a Rectangular Contracted Weir is:

$$Q = \frac{3.247 \cdot L \cdot H^{1.48} - 0.566 \cdot L^{1.9}}{1 + 2L^{1.87}} \cdot H^{1.9}$$

Where:

Q = Flow Rate in cfs.

L = Bottom width of the weir in feet.

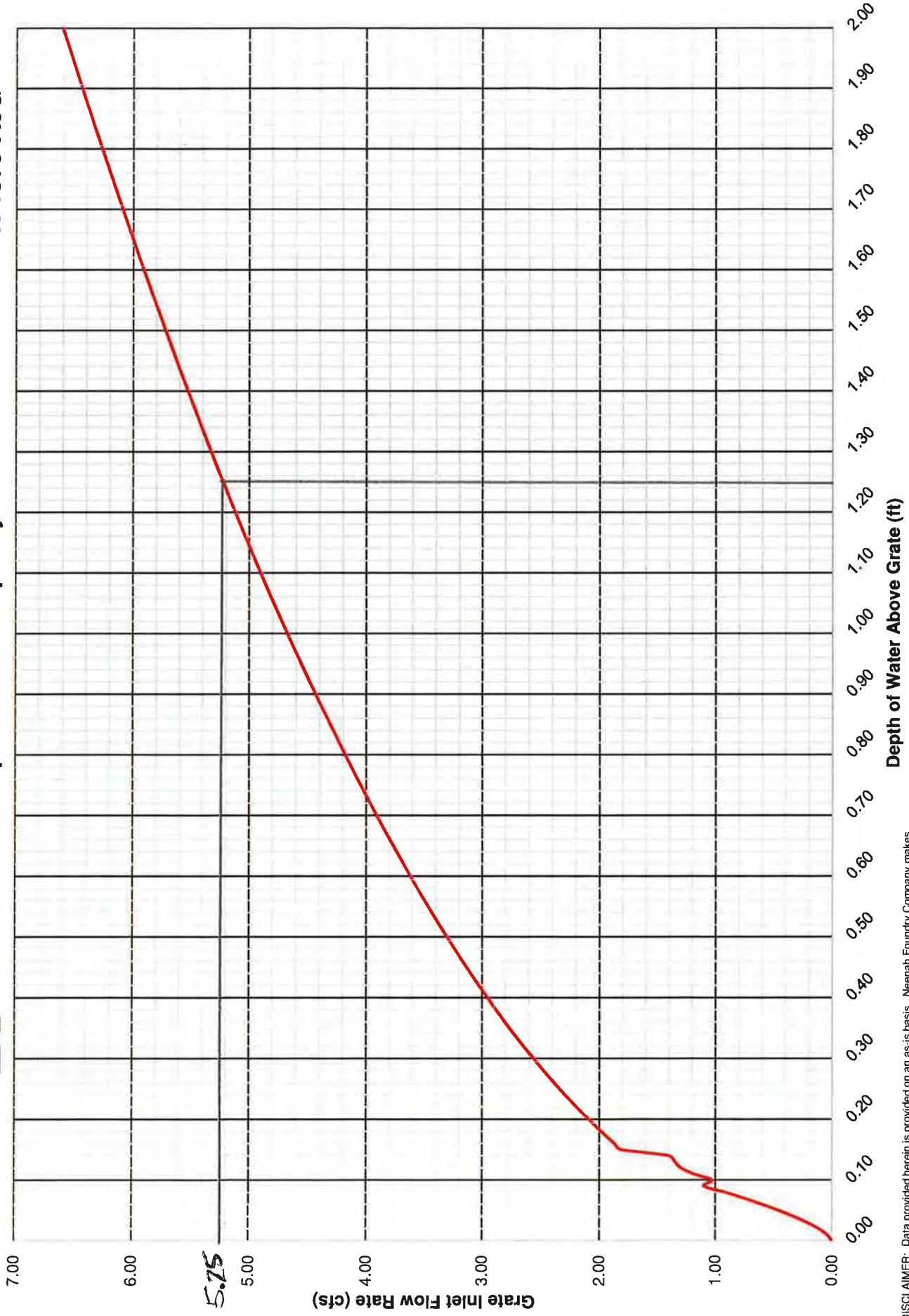
H = Height of the upstream water above the weir crest in feet.

2'-0" WIDE CURB OPENING IS CAPABLE OF
HANDLING ANTICIPATED FLOW AT ALL
LOCATIONS



Sump Condition Capacity Chart

— R-1879-A6G



DISCLAIMER: Data provided herein is provided on an as-is basis. Neenah Foundry Company makes every effort possible to ensure the accuracy of the data, however, Neenah Foundry Company does not warrant, guaranty or assume liability for the use of the data provided herein. A design professional familiar with all aspects of the project should review the data for accuracy and application purposes, and shall ultimately be responsible for application of the data.



POND CALCULATIONS

6 5 0 1 A m e r i c a s P a r k w a y N E • S u i t e 3 0 1
A l b u q u e r q u e • N e w M e x i c o • 8 7 1 1 0
(5 0 5) 8 8 1 - 3 0 0 8 • F a c s i m i l e (5 0 5) 8 8 1 - 4 0 2 5

M i k e J . W a l l a P . E . •

L a r r y E . K e n n e d y

RETENTION POND (BASIN II)

CONTOUR	SURFACE AREA	VOLUME
32	3440 SF	2998 CF
31	2555 SF	2202 CF
30	1848 SF	1565 CF
29	1281 SF	1012 CF
28	742 SF	
TOTAL		<u>7775 CF</u>

REQ'D ($V_{0.04}$) = 7736 CF < 7775 CF

OK

TEMPORARY POND (BASINS II + III)

PHASE I
ONLY

CONTOUR	SURFACE AREA	VOLUME
51.50	10400 SF	4538 CF
51.0	7750 SF	5375 CF
50.0	5000 SF	
TOTAL		9913 CF