

# CITY OF ALBUQUERQUE

Planning Department

Suzanne Lubar, Director



Mayor Richard J. Berry

February 11, 2016

Mike Walla, P.E.  
Walla Engineering  
6501 Americas Parkway NE Suite 301  
Albuquerque, New Mexico 87110

RE: **Kinesio Headquarters  
Grading and Drainage Plan  
Engineers Stamp Date 2/5/16 (D17-D103)**

Dear Mr. Walla,

Based upon the information provided in your submittal received 2/5/2016, the above referenced Grading and Drainage Plan is approved for Building Permit and Grading Permit.

PO Box 1293

Please inform the Architect/Owner or the contractor to attach a copy of this approved plan dated 2/5/16 to the construction sets in the permitting process prior to sign-off by Hydrology. If this plan is not with the construction plan sets the permitting process will be held up until the plan is provided.

Albuquerque

Prior to Certificate of Occupancy release, Engineer Certification per the DPM checklist will be required and an approval from AMAFCA for the drainage outlet into their right of way.

New Mexico 87103

If you have any questions please contact me at 924-3986 or Rudy Rael at 924-3977.

www.cabq.gov

Sincerely,

Abiel Carrillo, P.E.  
Principal Engineer, Hydrology  
Planning Department

RR/AC  
C: File

## ROOF DRAIN OUTLET CHANNEL:

- Slope 1.33%
- N VALUE 0.014 ROUGH CONCRETE
- $R_p = 3'-0"$

ASSUME FULL DEPTH: MAX CAPACITY = 5.9 CFS

### Open-Channel Flow

This calculator uses Chézy and Manning's formula to calculate the wetted perimeter, hydraulic radius, flow area, Chézy coefficient and flow velocity.

For experimental values of Manning's n factor, [click here](#)

#### Required Information

Enter the Slope:	.0133	Enter the Channel Top Width (ft):	2
Enter the Channel Bottom Width (ft):	2	Enter the Channel Height (ft):	.5
Enter the Flow Depth (ft):	.5	Enter the n value:	.014

#### Results

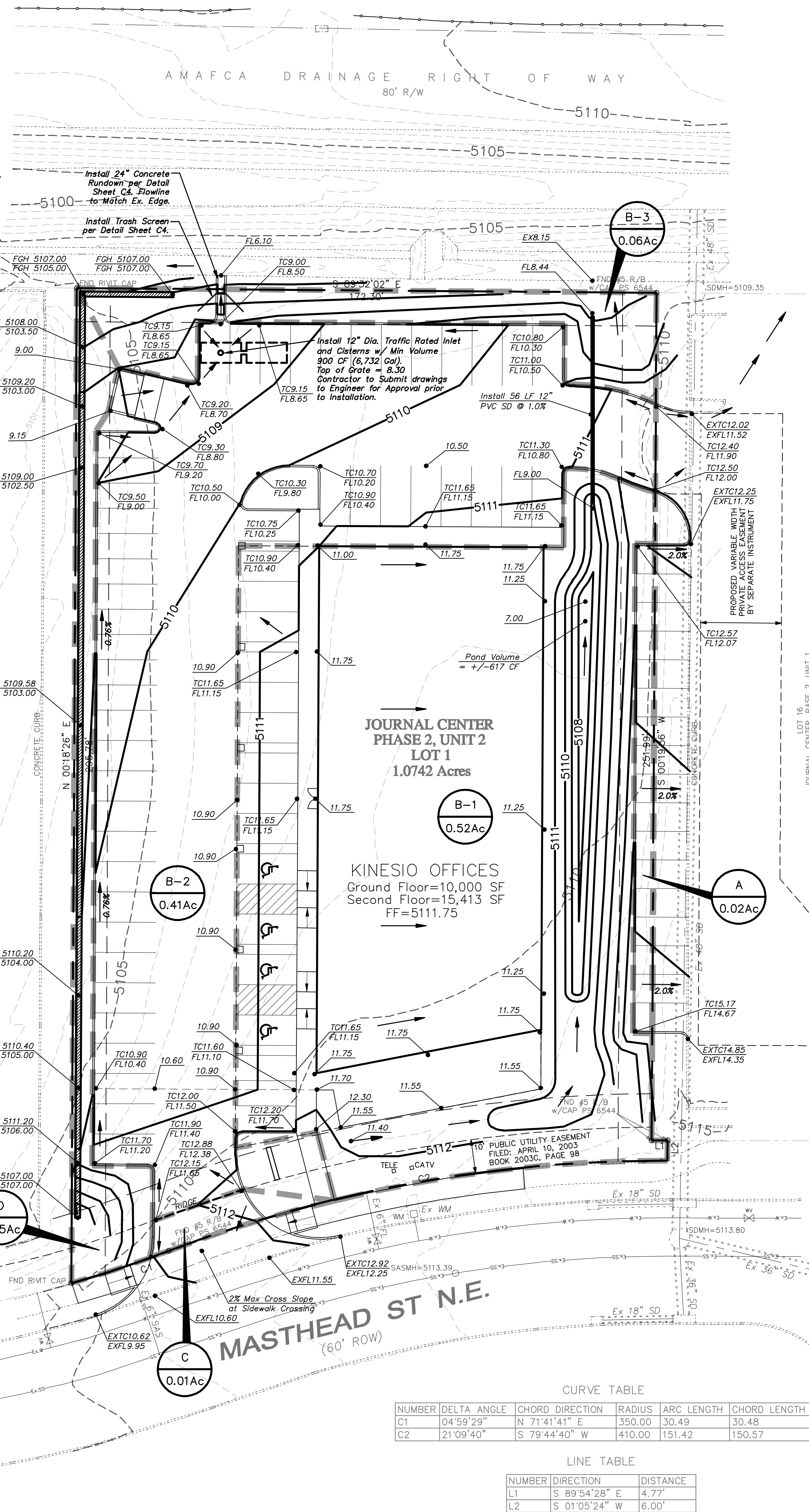
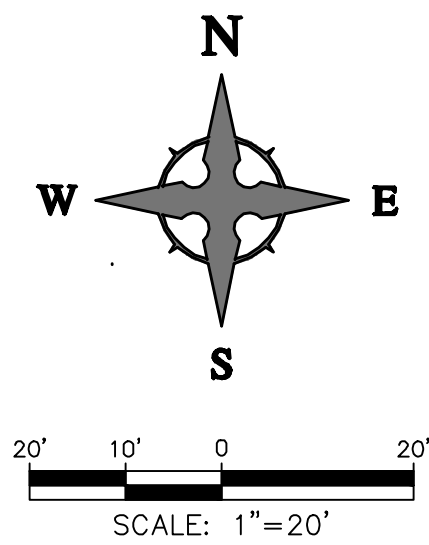
The wetted perimeter is 3 ft	The flow is 5.90069 ft <sup>3</sup> /s
The flow area is 1 ft <sup>2</sup>	The flow is 2648.2322 gal/min
The hydraulic radius is 0.3333 ft	The velocity is 5.90069 ft/s
The C value is 88.6212	

Calculate

Reset

REQ'D FLOW = 2.0 CFS < 5.9 CFS





**LEGEND**

- ← FLOW ARROW
- EX27.8 EXISTING SPOT ELEVATION (TOP OF PAVEMENT)
- 27.8 PROPOSED TOP OF GRADE/PVMT ELEVATIONS
- TC27.8 PROPOSED TOP OF CURB ELEVATIONS
- FL27.8 PROPOSED FLOW LINE / GUTTER ELEVATIONS
- FGH27.8 PROPOSED GRADE AT TOP OF WALL
- FGL27.8 PROPOSED GRADE AT BOTTOM OF WALL
- 515 - EXISTING CONTOUR
- 515 - PROPOSED CONTOUR
- EXISTING STORM DRAIN
- FLOW LINE
- RIDGE LINE
- DRAINAGE BASIN LINE

**POND VOLUME CALCULATIONS**

CONTOUR ELEVATION	AREA (SF)	VOLUME (CF)
5107.00	0 SF	115.5 CF
5108.00	231 SF	501.5 CF
5109.00	772 SF	617 CF
<b>TOTAL</b>		<b>617 CF</b>

NOTE: THE ABOVE POND VOLUMES SHALL BE VERIFIED AS PART OF THE DRAINAGE CERTIFICATION AND WILL BE REQUIRED PRIOR TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY.

**CAUTION - NOTICE TO CONTRACTOR**

THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 48 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.

**DRAINAGE MANAGEMENT PLAN**

**INTRODUCTION**

The purpose of this submittal is to provide a final drainage management plan for the proposed Kinesio International Headquarters, which includes a new +/- 25,413 square foot office building, as well as associated parking, ponding, and landscaping areas. The site is located at 4001 Masthead St NE in Albuquerque, NM. The site contains approximately 1.07 acres.

**EXISTING HYDROLOGIC CONDITIONS**

The site is currently undeveloped. Surrounding streets and infrastructure are in place. The site drains from east to west in a sheet flow condition. Per the approved Drainage Plan of Journal Center - Phase 2 located in file number D17/D3/A, this site has been proposed as a fully developed site and can drain to the secondary concrete lined channel of the North Pino Arroyo as currently constructed along the north property line of this site and drains west to the North Diversion Channel. For the basin calculations table adjacent, the site currently discharges 3.37 cfs (4,408 CF) onto the adjacent property to the west during the 100-Yr, 6-Hr Storm. Analysis for all drainage calculations were performed using the COA DPM Section 22.2, released June 1997.

**PROPOSED HYDROLOGIC CONDITIONS**

As mentioned above, the North Pino Arroyo as well as the North Diversion Channel have been sized to handle the developed flows for this site. A majority of the site will drain north to the North Pino Arroyo and a few smaller basins will drain to the west or the south to Masthead St. Basin A consists of some new shared parking to be constructed on the existing parking lot to our east, which is owned by the same landowner as this site (Kinesio Holdings) and a shared parking agreement will be executed between the two properties. This small basin will drain to the northeast and only increases the flow on that site by 0.09 cfs. This will not negatively impact the drainage from this site. Basins B-1, B-2, and B-3 will drain north directly into the North Pino Arroyo and total 4.32 cfs. Basin B-1 consists of all roof drainage (including the overhang over the parking lot), landscaping, and a new pond for the purpose of routing the first flush through the landscaping. This area will drain north through a 12" pipe under the driveway connection and the pond is +/- 2' deep. Basin B-2 drains the parking lot and the first flush will be routed into a cistern system, which will be utilized for irrigation purposes. Basin B-3 consists on the northern landscape area which will direct discharge to the North Pino Arroyo. Basin C consists of the driveway along Masthead St and will discharge 0.05 cfs directly to Masthead. Basin D consists of the west property line landscape area, which will discharge 0.17 cfs onto the adjacent property to the west, which is significantly lower than the current condition.

**FIRST FLUSH CALCULATIONS**

Basin A is a minor drainage area and only requires 31 cubic feet of volume for the first flush. Treating the first flush for this area is impractical and is not being provided. This area drains to the adjacent property to the east.

Basin B-1 consists of the roof drainage, all of which will be routed through the landscaping. The first flush volume impervious area is 15,413 SF (Impervious Area) \* 0.44" / 12" = 565 cubic feet. The pond provided contains +/- 617 cubic feet below the invert of the outlet pipe which is sufficient to contain the first flush.

Basin B-2 consists of the parking lot, all of which will be routed into a below grade cistern system. Water collected in the cisterns will be reused for irrigation purposes. The first flush volume is 17,983 SF (Impervious Area) \* 0.44" / 12" = 659 cubic feet. There will be two cisterns provided that will capture and contain a minimum volume of 900 cubic feet.

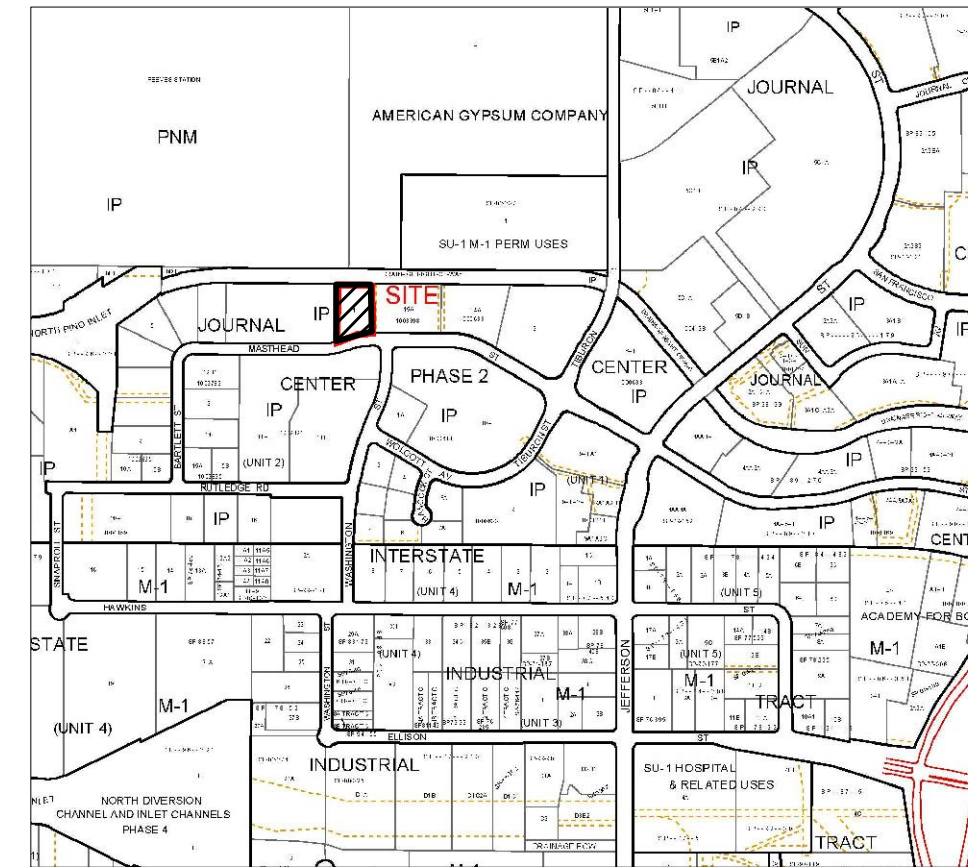
Basin B-3 is 100% landscape area. No first flush treatment required.

Basin C is a minor drainage area and only requires 16 cubic feet of volume for the first flush. Treating the first flush for this area is impractical and is not being provided.

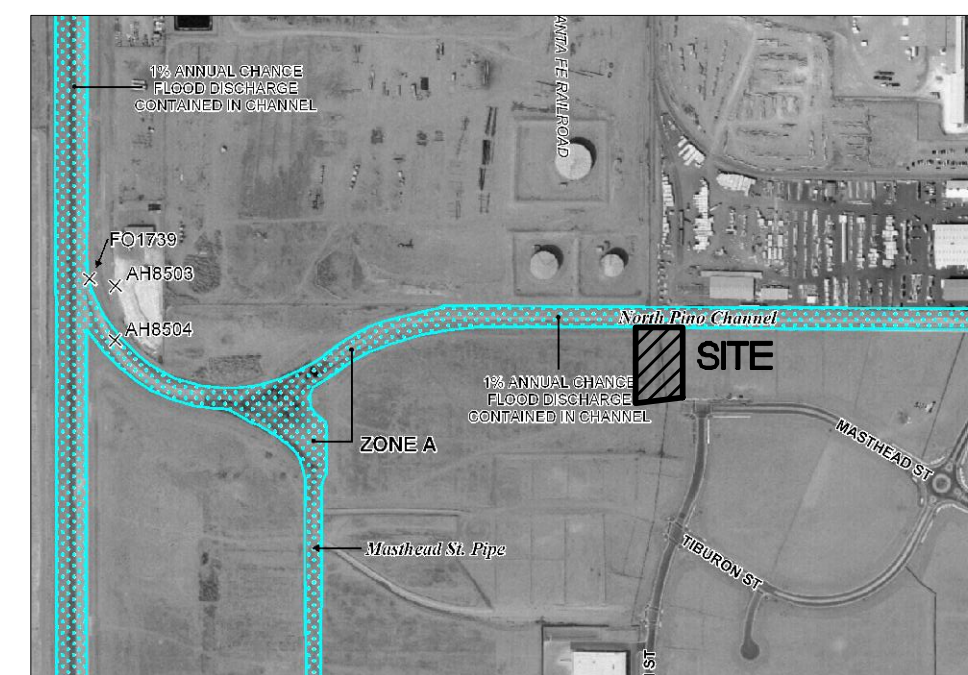
Basin D is 100% landscape area. No first flush treatment required.

**CONCLUSION**

This drainage management plan provides for grading and drainage elements which are capable of safely passing the 100 year storm and meets city requirements. With this submittal, we are requesting approval of this plan for Grading Permit, Building Permit, and Site Plan for Building Permit.



VICINITY MAP - ZONE ATLAS PAGE D-17-Z



FIRM MAP FM35001C0136G

Per Firm Map 35001C0136G, dated Sep 26, 2008, the site is located adjacent to Zone A 1% Annual Chance Flood Discharge, Contained in Channel. The site itself is not located in the floodplain.

**NOTICE TO CONTRACTORS**

- AN EXCAVATION/CONSTRUCTION PERMIT WILL BE REQUIRED BEFORE BEGINNING ANY WORK WITHIN CITY RIGHT-OF-WAY.
- ALL WORK DETAILED ON THESE PLANS TO BE PERFORMED, EXCEPT AS OTHERWISE STATED OR PROVIDED HEREON, SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF ALBUQUERQUE INTERIM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 1986 UPDATE NO. 8.
- TWO WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT NM ONE CALL FOR LOCATION OF EXISTING UTILITIES. (NM ONE CALL = "811")
- PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL CONSTRUCTIONS. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY THE ENGINEER SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT OF DELAY.
- BACKFILL COMPACTION SHALL BE ACCORDING TO TRAFFIC/STREET USE.
- MAINTENANCE OF THESE FACILITIES SHALL BE THE RESPONSIBILITY OF THE OWNER OF THE PROPERTY SERVED.
- WORK ON ARTERIAL STREETS SHALL BE PERFORMED ON A 24-HOUR BASIS.

**GRADING NOTES**

- EXCEPT AS PROVIDED HEREIN, GRADING SHALL BE PERFORMED AT THE ELEVATIONS AND IN ACCORDANCE WITH THE DETAILS SHOWN ON THIS PLAN.
- THE COST FOR REQUIRED CONSTRUCTION DUST AND EROSION CONTROL MEASURES SHALL BE INCIDENTAL TO THE PROJECT COST.
- ALL WORK RELATIVE TO FOUNDATION CONSTRUCTION, SITE PREPARATION, AND PAVEMENT INSTALLATION, AS SHOWN ON THIS PLAN, SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE "GEOTECHNICAL INVESTIGATION," AS PROVIDED BY THE ARCHITECT OR OWNER. ALL OTHER WORK SHALL UNLESS OTHERWISE STATED OR PROVIDED FOR HEREON, BE CONSTRUCTED IN ACCORDANCE WITH THE PROJECT, (FIRST PRIORITY) SPECIFICATIONS, AND/OR THE CITY OF ALBUQUERQUE (COA) STANDARD SPECIFICATIONS FOR PUBLIC WORKS (SECOND PRIORITY).
- EARTH SLOPES SHALL NOT EXCEED 3 HORIZONTAL TO 1 VERTICAL UNLESS SHOWN OTHERWISE.
- IT IS THE INTENT OF THESE PLANS THAT THIS CONTRACTOR SHALL NOT PERFORM ANY WORK OUTSIDE OF THE PROPERTY BOUNDARIES EXCEPT AS REQUIRED BY THIS PLAN.
- THE CONTRACTOR IS TO ENSURE THAT NO SOIL ERODES FROM THE SITE ONTO ADJACENT PROPERTY OR PUBLIC RIGHT-OF-WAY. THIS SHOULD BE ACHIEVED BY CONSTRUCTING TEMPORARY BERMS OR SILT FENCE AT THE PROPERTY LINES AND WETTING THE SOIL TO PROTECT IT FROM WIND EROSION.
- A DISPOSAL SITE FOR ANY & ALL EXCESS EXCAVATION MATERIAL, AND UNSUITABLE MATERIAL AND/OR A BORROW SITE CONTAINING ACCEPTABLE FILL MATERIAL SHALL BE OBTAINED BY THE CONTRACTOR IN COMPLIANCE WITH APPLICABLE ENVIRONMENTAL REGULATIONS AND APPROVED BY THE OBSERVER. ALL COSTS INCURRED IN OBTAINING A DISPOSAL OR BORROW SITE AND HAUL TO OR FROM SHALL BE CONSIDERED INCIDENTAL TO THE PROJECT AND NO SEPARATE MEASUREMENT OR PAYMENT SHALL BE MADE.
- PAVING AND ROADWAY GRADES SHALL BE +/- 0.05' FROM PLAN ELEVATIONS. PAD ELEVATION SHALL BE +/- 0.05' FROM BUILDING PLAN ELEVATION.
- ALL PROPOSED CONTOURS AND SPOT ELEVATIONS REFLECT TOP OF PAVEMENT ELEVATIONS IN THE PARKING AREA AND MUST BE ADJUSTED FOR PAVEMENT, MEDIANS, AND ISLANDS.
- VERIFY ALL ELEVATIONS SHOWN ON PLAN FROM BASIS OF ELEVATION CONTROL STATION (IF APPLICABLE) PRIOR TO BEGINNING CONSTRUCTION.
- THE CONTRACTOR SHALL PROVIDE THE SWPPP DOCUMENT (IF NECESSARY) AND SHALL ABIDE BY ALL LOCAL, STATE, AND FEDERAL LAWS, RULES AND REGULATIONS WHICH APPLY TO THE CONSTRUCTION OF THESE IMPROVEMENTS, INCLUDING EPA REQUIREMENTS WITH RESPECT TO STORM WATER DISCHARGE.

Existing Kinesio Drainage Calculations												
This table is based on the COA DPM Section 22.2, Zone: 2												
BASIN	Area (SQ FT)	Area (AC)	Land Treatment Percentages				Q(100)	Q(10)	WTE	V(100)200	V(100)1400	V(100)10day
			A	B	C	D	(dfs/ac)	(CF/S)	(inches)	(CF)	(CF)	(CF)
Overall Site	46808	1.07	0.0%	0.0%	100.0%	0.0%	3.14	3.37	1.13	4408	4408	4408
TOTAL	46808	1.07						3.37		4408	4408	4408

Proposed Kinesio Drainage Calculations												
Ultimate Development Conditions Basin Data Table												
BASIN	Area (SQ FT)	Area (AC)	Land Treatment Percentages				Q(100)	Q(10)	WTE	V(100)200	V(100)1400	V(100)10day
			A	B	C	D	(dfs/ac)	(CF/S)	(inches)	(CF)	(CF)	(CF)
A	850	0.02	0.0%	0.0%	0.0%	100.0%	4.70	0.09	2.12	150	179	264
B-1	22563	0.52	0.0%	0.0%	30.0%	70.0%	4.23	2.19	1.82	3428	3954	5534
B-2	17983	0.41	0.0%	0.0%	0.0%	100.0%	4.70	1.94	2.12	3177	3776	5575
B-3	2591	0.06	0.0%	0.0%	100.0%	0.0%	3.14	0.19	1.13	244	244	244
C	429	0.01	0.0%	0.0%	0.0%	100.0%	4.70	0.05	2.12	76	90	133
D	2392	0.05	0.0%	0.0%	100.0%	0.0%	3.14	0.17	1.13	225	225	225
TOTAL	46808	1.07						4.63		7300	8468	11974

**CURVE TABLE**

NUMBER	DELTA ANGLE	CHORD DIRECTION	RADIUS	ARC LENGTH	CHORD LENGTH
C1	04°59'29"	N 71°41'41" E	350.00	30.49	30.48
C2	21°09'40"	S 79°44'40" W	410.00	151.42	150.57

**LINE TABLE**

NUMBER	DIRECTION	DISTANCE
L1	S 89°54'28" E	4.77'
L2	S 01°05'24" W	6.00'

