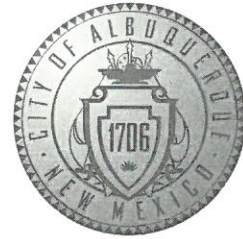


# CITY OF ALBUQUERQUE



June 13, 2016

Richard J. Berry, Mayor

J. Graeme Means, P.E.  
High Mesa Consulting Group  
4715 Moon St NE  
Albuquerque, NM, 87111

**RE: Loids Collision  
Conceptual Grading and Drainage Plan  
Engineer's Stamp Date 5-4-2016 (File:B18D010)**

Dear Mr. Means:

Based upon the information provided in your submittal received 5-10-2016, and the additional information provided on 6-29-2016, the above referenced Conceptual Grading and Drainage Plan is approved for Site Plan for Building Permit.

Please be aware that since it appears that the site is over 1-acre, an approved Erosion and Sediment Control Plan will be required prior to Hydrology's approval of the submittal for Building Permit approval.

If you have any questions, you can contact me at 924-3986.

PO Box 1293

Albuquerque

New Mexico 87103

[www.cabq.gov](http://www.cabq.gov)

Sincerely,

Abiel Carrillo, P.E.  
Principal Engineer, Planning Department  
Development Review Services

Orig: Drainage file



# City of Albuquerque

Planning Department  
Development & Building Services Division

## DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 09/2015)

Project Title: Loids Collision Building Permit #: \_\_\_\_\_ City Drainage #: B18D010

DRB#: \_\_\_\_\_ EPC#: \_\_\_\_\_ Work Order#: \_\_\_\_\_

Legal Description: Lots 29 and 30, Block 5, Tract A, Unit B, North Albuquerque Acres

City Address: 5401 San Diego Ave NE Albuquerque, NM 87113

Engineering Firm: High Mesa Consulting Group Contact: J. Graeme Means #13676

Address: 6010 - B Midway Park Blvd. NE, Albuquerque NM 87109

Phone#: (505) 345-4250 Fax#: (505) 345-4254 E-mail: gmeans@highmesacg.com

Owner: In care of architect Contact: \_\_\_\_\_

Address: \_\_\_\_\_

Phone#: \_\_\_\_\_ Fax#: \_\_\_\_\_ E-mail: \_\_\_\_\_

Architect: Jon Anderson Architecture Contact: Dean Cowdrey

Address: 912 Roma Ave NW Albuquerque, NM 87102

Phone#: (505) 764-8306 Fax#: (505) 764-2879 E-mail: dean@jonandersonarchitect.com

Other Contact: \_\_\_\_\_ Contact: \_\_\_\_\_

Address: \_\_\_\_\_

Phone#: \_\_\_\_\_ Fax#: \_\_\_\_\_ E-mail: \_\_\_\_\_

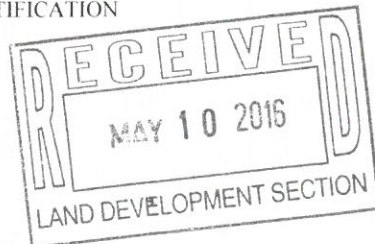
Check all that Apply:

### DEPARTMENT:

- ☒ HYDROLOGY/ DRAINAGE  
☐ TRAFFIC/ TRANSPORTATION  
☐ MS4/ EROSION & SEDIMENT CONTROL

### TYPE OF SUBMITTAL:

- ☐ ENGINEER/ ARCHITECT CERTIFICATION
- ☒ CONCEPTUAL G & D PLAN  
☐ GRADING PLAN  
☐ DRAINAGE MASTER PLAN  
☐ DRAINAGE REPORT  
☐ CLOMR/LOMR
- ☐ TRAFFIC CIRCULATION LAYOUT (TCL)  
☐ TRAFFIC IMPACT STUDY (TIS)  
☐ EROSION & SEDIMENT CONTROL PLAN (ESC)
- ☐ OTHER (SPECIFY) \_\_\_\_\_



### CHECK 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
- ☐ PRE-DESIGN MEETING  
☐ OTHER (SPECIFY) \_\_\_\_\_

IS THIS A RESUBMITTAL?: ☐ Yes ☒ No

DATE SUBMITTED: 05/10/2016 By: J. Graeme Means

COA STAFF: ELECTRONIC SUBMITTAL RECEIVED: \_\_\_\_\_

**From:** [Graeme Means](#)  
**To:** [Abiel X. Carrillo](#)  
**Cc:** [Mazur, Lynn](#); [Dean Cowdrey](#)  
**Subject:** RE: Loids Collision Site Plan for Building Permit  
**Date:** Wednesday, June 29, 2016 6:48:39 AM  
**Attachments:** [Drainage Report.pdf](#)  
[HPSCANNER7551.pdf](#)

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Abiel,

Sorry for not getting back to you sooner. We have reviewed the downstream drainage files and verified site conditions. As per the attached report, there is a double "A" inlet and a double "C" inlet at the intersection of San Diego and San Mateo. They connect to a 42" pipe that discharges to the channel. As shown by the report, this infrastructure was sized and designed to accept developed runoff from Lots 32-29, which includes our two lots (30 and 29). The two lots in the subject report (32 and 31) drain internally to the 42" outfall, and the two double inlets pick up the street flows and discharge from Lots 30 and 29).

We hope this addresses your question. Please let us know if there is any additional information we can provide.

Thank you,

Graeme



J. Graeme Means, P.E., LEED AP BD+C  
Principal

6010-B Midway Park Blvd. NE  
Albuquerque, NM 87109  
[www.highmesacg.com](http://www.highmesacg.com)

Phone: 505.345.4250  
Fax: 505.345.4254  
[gmeans@highmesacg.com](mailto:gmeans@highmesacg.com)

*We invite you to learn about our [subsurface utility department](#)*

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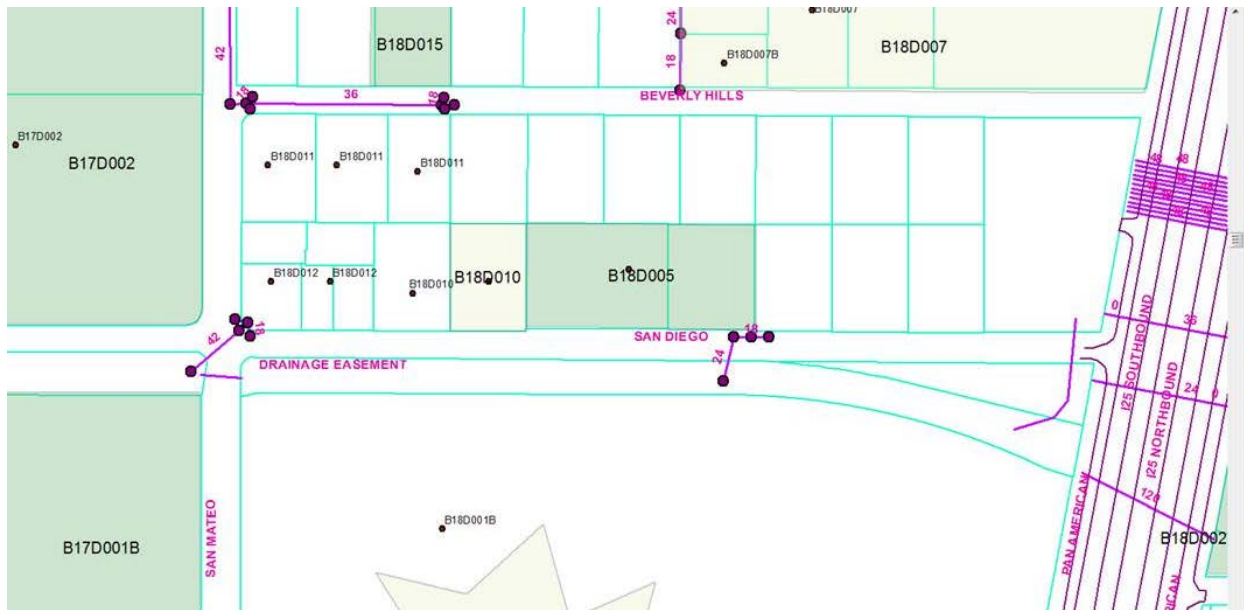
**From:** Abiel X. Carrillo [<mailto:acarrillo@cabq.gov>]  
**Sent:** Monday, June 13, 2016 3:24 PM  
**To:** Graeme Means <[GMeans@highmesacg.com](mailto:GMeans@highmesacg.com)>  
**Cc:** Mazur, Lynn <[lmazur@amafca.org](mailto:lmazur@amafca.org)>  
**Subject:** Loids Collision Site Plan for Building Permit

Graeme,

In reviewing the submittal for the above-referenced project, I just have one comment/question that will need to be resolved before being able to approve the Site Plan at DRB:

San Diego has been improved upstream and downstream of your site with inlets that tie directly into the North La Cueva hard channel. I would need to understand if any inlets need to be planned along the frontage of your site (B18D010). In the best case scenario, the inlets to the west have enough capacity (or capacity can be added) to accept the additional discharge (B18D012). I looked through the drainage report for the site to the west and it looks like that *may* be the case. However, if there is not capacity available (or not feasible to add capacity), then a direct connection to the channel might have to be planned and coordinated with AMAFCA.

Again, I think there is some capacity available, but I have not reviewed that file in depth to know for sure. I would need some preliminary evidence to be included in the submittal (you can just submit a DRB Supplement) prior to accepting the Infrastructure List. See below from our GIS for your reference/research:



Any question just let me know.

**Abiel Carrillo, PE, CFM**

**Principal Engineer - Hydrology**

**Planning Department**

Development Review Services Division

City of Albuquerque

505-924-3986

[acarrillo@cabq.gov](mailto:acarrillo@cabq.gov)

600 2<sup>nd</sup> Street NW

Albuquerque, NM 87102

Scanned  
8/14/14

# JC Engineering, LLC

1924 Roanoke Dr. NE Rio Rancho, NM 87144-5532  
Tel(505)263-9032 Fax (505)867-9304 www.jcengineering.com

## Drainage Report For Verano Plaza In Albuquerque, New Mexico



February 2004

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**Attachments (in Back Pocket)**

Grading Plan .....	Sheet C102
San Diego Infrastructure Plan and Profile .....	Sheet 2 of 5



### Purpose

This drainage report provides the hydrologic rationale for the development of Verano Plaza, and will accompany the DRC drawings for review and approval.

### Project Location

The project is comprised of lots 31 and 32, block 5 of Albuquerque Acres Tract B, Unit A, which is a developing commercial/industrial area within the City of Albuquerque. The site is on the northeast corner of San Mateo and San Diego, west of Sumitomo Silmax. It is bordered by the public rights-of-way of these two streets on the west and south, respectively. There is an undeveloped lot east of the site, with a newly-constructed commercial lot just east of that (drainage file B18010, dated 3/4/2003), and an older developed lot just east of that (Praxair drainage file B18005, dated 9/30/1996). Just north of the site is a new site that is under construction (Gateway Park Office/Warehouse Complex drainage file B18011, dated 7/3/2003), including adjacent public infrastructure in the San Mateo right-of-way.

### Related Reports

In a pre-design conference with City Hydrology on Dec. 10, 2003, it was stated that the City wished to use the Praxair drainage report referenced above as the framework for the development of this site. However, when doing the drainage research for this site, it was found that another drainage report may provide a more comprehensive framework for the development of this site (Citicorp drainage file B17003, dated 5/1/1996). So comparison is made to both of these reports in the hydrologic summary below.

#### Comparison of Developed Discharge from Lots 29-32

Description	Flow (cfs)
Basin 5A from Citicorp Report, with 10% B, 5% C, and 85% D (page A-14)	16.52
Basin C from Praxair Report (computed by rational method) (page A-15)	18.91
All the basins from this report, added manually (not routed)	16.81
All the basins from this report (routed)—page A-6	16.47

### Floodplain

Per FEMA FIRM Map 35001C0325 dated Sept., 1996, this site is located within an AO Flood Zone. Zone AO indicates "flood depths of 1 to 3 feet for 100-year flood (usually sheet flow on steep terrain)." *35001C0325 not located within a flood zone*

### Existing Conditions

The site is in a developing area, and there is some evidence of grading in, around, and on the site within the last few years. The source of the grading is not known, but the grading activities did not affect the existing drainage pattern. Vegetation is sparse, and consists of some desert brush.

The current drainage pattern is sheet flow from the east to the west. Some off-site flow from the west has been intercepted by the Praxair site, thus leaving only flows from off-site lots 29 and 30 to contend with.

**Developed Conditions**

The site is going to be developed as commercial office and warehouse buildings, with paved parking and some new landscaping.

The capacities of the proposed storm drain pipe, streets, and inlets were computed in the appendix, and are included in the summary below.

**Hydrologic and Hydraulic Summary**

<b>Description</b>	<b>Flow (cfs)</b>	<b>Capacity (cfs)</b>	<b>Page Reference</b>
Basin 101, discharging to the new northeast storm inlet	3.31	3.73	A-11
Basin 102, discharging to the exist. Beehive inlet	3.40	4.22	A-12
Pipe from on-site inlet (12" pipe at 1.0%)	3.31	3.83	A-2
Flow upstream of inlets in San Diego (half-street flow)	9.91	11.33	A-4/5
First inlet in San Diego (dble A)	7.10	7.10	A-10
Second inlet in San Diego (dble C)	2.81	7.10	A-10
Pipe from San Diego inlets (24" pipe at 0.50%)	9.91	17.21	A-5/6
Existing 42" pipe to channel	16.47	76.53	A-6/7

**Conclusion**

As the attached plan sheets indicate, there are two sets of plans that will construct the drainage infrastructure required for this site. Sheet C102, the Grading Plan, is part of the building permit set. This sheet also includes the details of some on-site private inlets. Sheet 2 of 5 covers the public infrastructure that will be built under a DRC-approved plan set. This includes the storm inlets, pipe, and paving in the San Diego right-of-way. It is anticipated that both of these construction projects will proceed forward now, and there will be no phasing.



1. Check the width of the 2' wide trough in the parking lot, to make sure the entrance is wide enough to accept the flow.

$$Q_{\text{actual}} = 1.10 \text{ cfs (approx. 1/3 of Basin 101)}$$

Use the weir equation for unsubmerged flows:

$$Q = C * L * (H)^{3/2} * C_f$$

Use the weir equation, with:

$$\begin{aligned} C &= \text{weir coefficient} = 3.00 \text{ for a broad-crested weir} \\ L &= \text{length of weir} = 2 \text{ feet (which is the width of the opening)} \\ \text{Clogging factor, } C_f &= 0.90 \text{ (10\% clogging)} \end{aligned}$$

Use the weir equation to compute the values in the table:

Water Depth (H) (ft)	Weir Flow (cfs)
0.00	0.00
0.50	1.91

>1.10, okay.

2. Flow into the new on-site storm inlet in a sump--use a 24" x 24" inlet.

$$Q_{\text{actual}} = 3.31 \text{ cfs (Basin 101)}$$

Because the curb height is short, the flow into the inlet will be weir flow around the edges.

Use the weir equation, with:

$$\begin{aligned} C &= \text{weir coefficient} = 3.30 \text{ for a sharp-crested weir} \\ L &= \text{length of weir} = 4.00 \text{ feet (for flow on two sides)} \\ \text{Clogging factor, } C_f &= 0.80 \text{ (20\% clogging)} \end{aligned}$$

Use the weir equation to compute the values in the table:

Water Depth (H) (ft)	Weir Flow (cfs)
0.00	0.00
0.50	3.73

>3.31, okay

3. Check the depth of the new on-site storm inlet to make sure it will be deep enough to get all the flow into the exit pipe (Albuquerque's "V" depth).

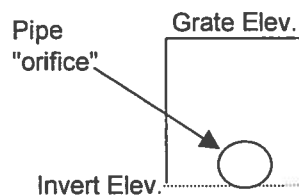
$$Q_{\text{actual}} = 3.31 \text{ cfs (Basins 101)}$$

Use the orifice equation for submerged flows:

$$Q = C * A * (2 * g * H)^{1/2}$$

Where:

$$\begin{aligned} C &= \text{orifice coefficient} = 0.60 \\ A &= \text{orifice size} = 0.79 \text{ sq. ft. (for a 12" dia. pipe)} \\ g &= \text{gravitational force} = 32.217 \text{ ft/sec}^2 \end{aligned}$$



H = water depth above centroid of orifice in feet (varies per table below).

Q = flow in cfs (varies per table below).

Centroid Depth (ft)	Inlet Depth (ft)	Pipe Flow (cfs)
NA	0.00	0.00
1.00	1.50	3.78
1.50	2.00	4.63
2.00	2.50	5.35
2.50	3.00	5.98

>3.31, okay

**4. Flow into the existing 12" dia. beehive inlet grate.**

Q actual = 3.40 cfs (Basin 102)

Install a curb around the inlet to give it enough depth to accept the flow.

**Use the orifice equation, with:**

C = orifice coefficient = 0.60 for a sharp-crested weir

A = orifice size = 0.79 sq. ft. (for a 12 " dia. pipe)

g = gravitational force = 32.217 ft/sec<sup>2</sup>

Clogging factor, Cf = 0.70 (30% clogging, and grate impedance)

H = water depth above centroid of orifice in feet (varies per table below).

Q = flow in cfs (varies per table below).

Centroid Depth (ft)	Pipe Flow (cfs)
0.00	0.00
1.00	2.65
1.50	3.24
2.00	3.74
2.54	4.22

&gt;3.40, okay

**5. Check the depth of the new street storm inlet to make sure it will be deep enough to get all the flow into the exit pipe (Albuquerque's "V" depth).**

Q actual = 10.1 cfs (Basins 103 and 201 combined)

**Use the orifice equation, with:**

C = orifice coefficient = 0.60

A = orifice size = 3.14 sq. ft. (for a 24 " dia. pipe)

g = gravitational force = 32.217 ft/sec<sup>2</sup>

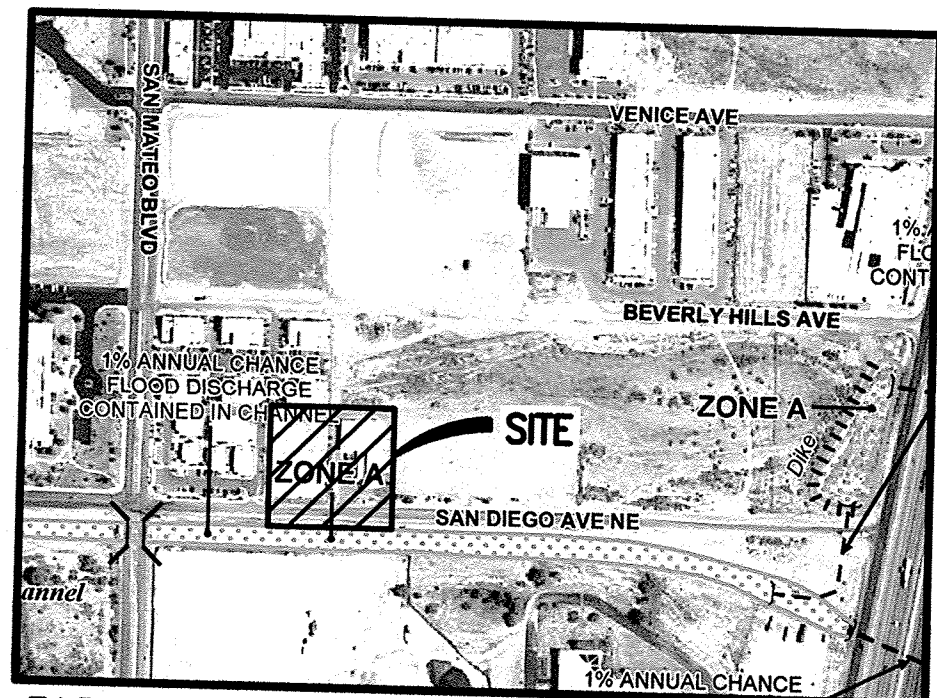
H = water depth above centroid of orifice in feet (varies per table below).

Q = flow in cfs (varies per table below).

Centroid Depth (ft)	Inlet Depth (ft)	Pipe Flow (cfs)
NA	0.00	0.00
1.00	2.00	15.12
2.00	3.00	21.38
3.00	4.00	26.19

&gt;10.1, okay





F.I.R.M. 129 OF 825  
SCALE: 1"=500'  
AUGUST 16, 2012

#### PROJECT BENCHMARK

A NMSHC BRASS DISK STAMPED "NMSHC 1-25-11" SET FLUSH IN THE TOP OF A CONCRETE POST 0.75 MILES NORTH ON THE EAST FRONTAGE ROAD FROM THE INTERSECTION OF I-25 AND ALAMEDA BOULEVARD N.E. ELEVATION = 5209.62 FEET (NAVD 1988)

#### TEMPORARY BENCHMARK #1 (T.B.M.)

A #5 REBAR W/CAP STAMPED "HMC CONTROL NMPS 11184" SET IN A GRADED VACANT LOT IN THE SOUTHERN PORTION OF LOT 30, AS SHOWN ON THIS SHEET. ELEVATION = 5161.51 FEET (NAVD 1988)

#### TEMPORARY BENCHMARK #2 (T.B.M.)

A MAG NAIL SET IN ASPHALT PARKING LOT ENTRANCE IN THE SOUTHEAST PORTION OF LOT 29, AS SHOWN ON THIS SHEET. ELEVATION = 5164.78 FEET (NAVD 1988)

#### TEMPORARY BENCHMARK #3 (T.B.M.)

A MAG NAIL SET IN ASPHALT PARKING LOT IN THE NORTHEAST PORTION OF LOT 29, AS SHOWN ON THIS SHEET. ELEVATION = 5164.73 FEET (NAVD 1988)

#### RECORD UTILITY KEYED NOTE

② APPROXIMATE LOCATION OF WATER VALVE BOX AS DEPICTED ON THE INFORMATION PROVIDED BY ABQWA FOR THIS PROJECT, NO SURFACE EVIDENCE FOUND.

#### CALCULATIONS

##### I. SITE CHARACTERISTICS

A. PRECIPITATION ZONE =	3
B. $P_{100, 6 HR} = P_{360} =$	2.6 IN
C. TOTAL PROJECT AREA ( $A_T$ ) =	77,284 SF
	1.77 AC

##### D. LAND TREATMENTS

1. EXISTING LAND TREATMENT		
TREATMENT	AREA (SF/AC)	%
A	38,638 SF 0.89 AC	50
B		
C	4,590 SF 0.11 AC	6
D	34,057 SF 0.78 AC	44

2. DEVELOPED LAND TREATMENT		
TREATMENT	AREA (SF/AC)	%
A		
B		
C	12,212 SF 0.28 AC	16
D	65,072 SF 1.49 AC	84

##### II. HYDROLOGY

##### A. EXISTING CONDITION 100 YEAR

##### 1. 100-YR STORM

##### a. VOLUME 100-YR, 6-HR

$$E_w = (E_{AA} + E_{AB} + E_{AC} + E_{AD}) / A_T$$
$$E_w = (0.66 \times 0.89) + (0.92 \times 0.00) + (1.29 \times 0.11) + (2.36 \times 0.78) / 1.77 = 1.45 \text{ IN}$$
$$V_{100, 6 HR} = (E_w / 12) A_T = (1.45 / 12) \times 77,284 = 0.2144 \text{ AC-FT} = 9,340 \text{ CF}$$

##### b. VOLUME 100-YR, 24-HR

$$V_{100, 24 HR} = V_{6 HR} \times A_T \times (P_{24 HR} - P_{6 HR}) / 12 \text{ in/ft}$$
$$= 0.21 + 0.78 \times (3.10 - 2.60) / 12 \text{ in/ft} = 0.2470 \text{ AC-FT} = 10,760 \text{ CF}$$

##### c. PEAK DISCHARGE

$$Q_p = Q_{pA} + Q_{pB} + Q_{pC} + Q_{pD}$$
$$Q_p = (1.87 \times 0.89) + (2.60 \times 0.00) + (3.45 \times 0.11) + (5.02 \times 0.78) = 5.9 \text{ CFS}$$

##### B. DEVELOPED CONDITION

##### 1. 100-YR STORM

##### a. VOLUME

$$E_w = (E_{AA} + E_{AB} + E_{AC} + E_{AD}) / A_T$$
$$E_w = (0.66 \times 0.00) + (0.92 \times 0.00) + (1.29 \times 0.28) + (2.36 \times 1.49) / 1.77 = 2.19 \text{ IN}$$
$$V_{100, 6 HR} = (E_w / 12) A_T = (2.19 / 12) \times 77,284 = 0.3238 \text{ AC-FT} = 14,100 \text{ CF}$$

##### b. VOLUME 100-YR, 24-HR

$$V_{100, 24 HR} = V_{6 HR} \times A_T \times (P_{24 HR} - P_{6 HR}) / 12 \text{ in/ft}$$
$$= 0.32 + 1.49 \times (3.10 - 2.60) / 12 \text{ in/ft} = 0.3860 \text{ AC-FT} = 16,820 \text{ CF}$$

##### c. PEAK DISCHARGE

$$Q_p = Q_{pA} + Q_{pB} + Q_{pC} + Q_{pD}$$
$$Q_p = (1.87 \times 0.00) + (2.60 \times 0.00) + (3.45 \times 0.28) + (5.02 \times 1.49) = 8.5 \text{ CFS}$$

##### C. COMPARISON 100 YEAR

##### 1. 100-YR STORM

##### a. VOLUME 100-YR, 6-HR

$$\Delta V_{100, 6 HR} = 14,100 - 9,340 = 4,760 \text{ CF (INCREASE)}$$

##### b. VOLUME 100-YR, 24-HR

$$\Delta V_{100, 24 HR} = 16,820 - 10,760 = 6,060 \text{ CF (INCREASE)}$$

##### c. PEAK DISCHARGE

$$\Delta Q_{100} = 8.5 - 5.9 = 2.6 \text{ CFS (INCREASE)}$$

##### D. FIRST FLUSH CALCULATIONS

##### 1. RETENTION REQUIREMENT

##### a. VOLUME

$$V_{RQ} = ((P_{6 HR} - P_{24 HR}) / 12) A_T$$
$$V_{RQ} = ((0.44 - 0.10) / 12) (65,072) = 1,840 \text{ CF}$$

#### CONCEPTUAL GRADING AND DRAINAGE PLAN NARRATIVE

THIS PROJECT, LOCATED IN THE NORTH ALBUQUERQUE ACRES PORTION OF THE I-25 SECTOR DEVELOPMENT PLAN, REPRESENTS A MODIFICATION TO AN EXISTING SITE WITHIN AN INFLUENCE AREA WITH. THE PROPOSED DEVELOPMENT IS UNDEVELOPED LOT TO THE WEST OF THE EXISTING SITE. THE TWO LOTS WILL BE COMBINED VIA FORTHCOMING PLATTING ACTION, AND PUBLIC STREET PAVING IMPROVEMENTS WILL BE CONSTRUCTED IN THE PROJECT FRONTAGE WHICH CURRENTLY HAS TEMPORARY PAVING IN THE FRONTAGE OF THE UNDEVELOPED LOT. THE UPSTREAM AND DOWNSTREAM PAVING AND PROJECTS. THE DRAINAGE CONCEPT FOR THIS PROJECT WILL BE THE CONTINUED FREE DISCHARGE OF DEVELOPED RUNOFF PLAN APPROVAL WITHIN THE JURISDICTION OF THE CITY OF ALBUQUERQUE.

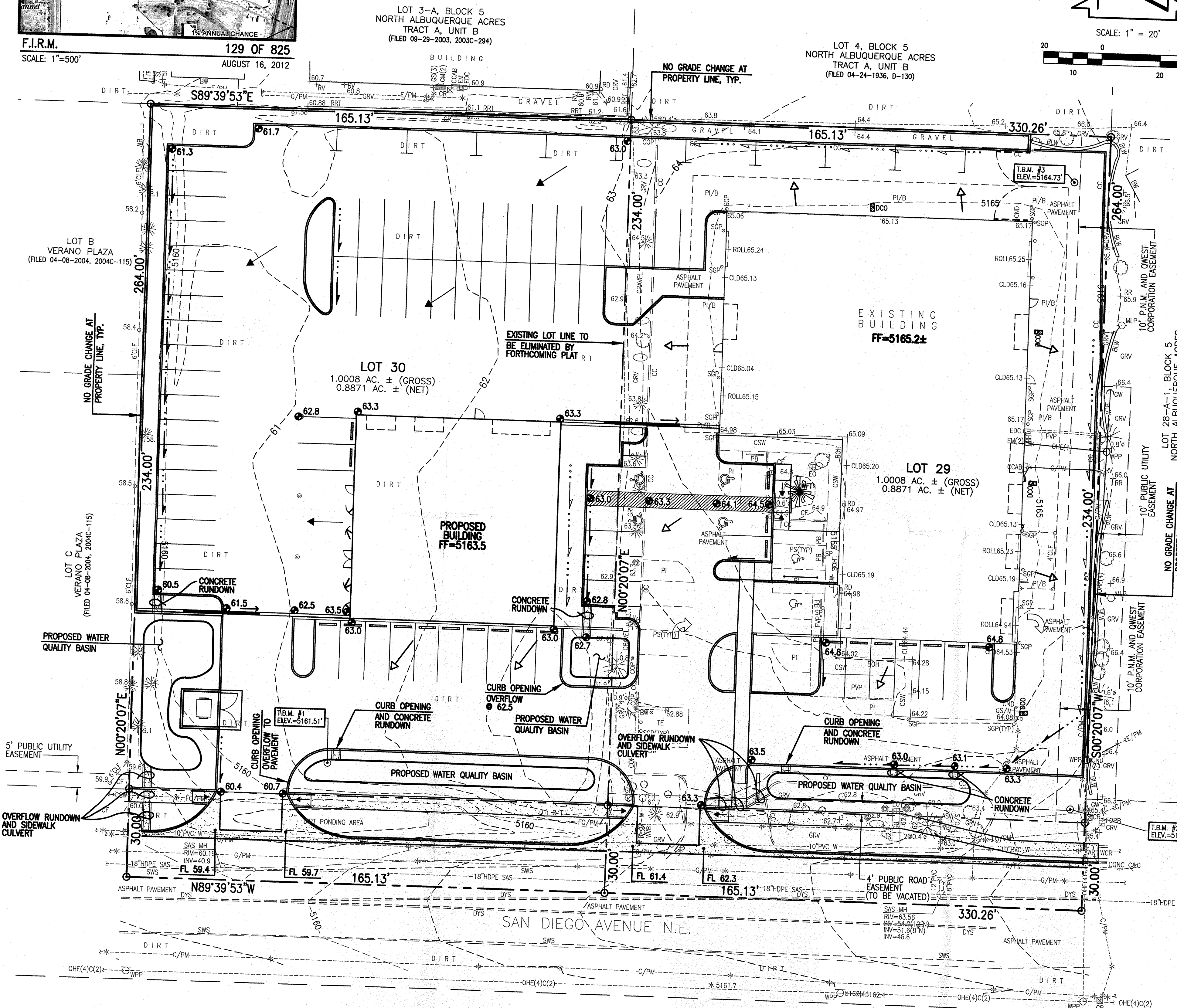
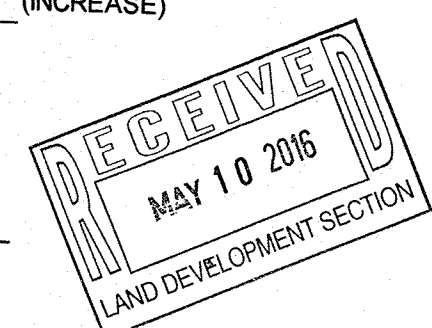
AS SHOWN BY PANEL 129 OF 825 OF THE NATIONAL FLOOD INSURANCE PROGRAM FLOOD INSURANCE RATE MAPS A DESIGNATED FLOOD HAZARD ZONE. THIS SITE IS SITUATED ACROSS THE STREET FROM THE AMFCA NORTH LA CUEVA CHANNEL WHERE ZONE "A" FLOODING IS CONFINED TO THE CONSTRUCTED CHANNEL.

THE EXISTING SITE GENERALLY SLOPES DOWNHILL FROM EAST TO WEST, WITH AN AVERAGE GRADE OF 1.5%. THERE ARE NO PROPOSED RETAINING WALLS OR GRADE CHANGES AT THE PERIMETER OF THE SITE. SURFACE RUNOFF FROM PAVED AREAS WILL BE DIRECTED TO DEPRESSED LANDSCAPING AREAS TO MEET CITY STORMWATER QUALITY REQUIREMENTS. ALL RUNOFF WILL BE MANAGED AS SURFACE FLOW, THERE WILL NOT BE ANY PRIVATE OR PUBLIC STORM DRAINS.

THE CALCULATIONS CONTAINED HEREON ANALYZE THE EXISTING AND DEVELOPED CONDITIONS FOR THE 100-YEAR, 6-HOUR RAINFALL EVENT. THE PROCEDURE FOR 40 ACRE AND SMALLER BASINS, AS SET FORTH IN THE REVISION OF SECTION 22.2, HYDROLOGY OF THE DEVELOPMENT PROCESS MANUAL, VOLUME 2, DESIGN CRITERIA, DATED JANUARY 1993, HAS BEEN USED TO QUANTIFY THE PEAK RATE OF DISCHARGE AND VOLUME OF RUNOFF GENERATED. AS DEMONSTRATED BY THESE CALCULATIONS, THE PROPOSED IMPROVEMENTS WILL RESULT IN AN INCREASE IN DEVELOPED RUNOFF ATTRIBUTABLE TO THE DEVELOPMENT OF THE CURRENTLY UNDEVELOPED PROPERTY.

#### LEGEND

AR	ASPHALT RAMP
ASV	ASPHALT
BLW	IRRIGATION ANTI-SIPHON VALVE
BOH	BUILDING OVERHANG
BW	CONCRETE BLOCK WALL
C&G	COMMUNICATION LINE BY PAINT MARK
C/PM	CONCRETE CURB
CCAB	COMMUNICATION CABINET
CF	LANDSCAPING CRUSHER FINES
CLD	CENTERLINE DOOR
CLF	CHAIN LINK FENCE
CND	ELECTRIC CONDUIT
CO	CLEANOUT
CONC	CONCRETE
COP	CONCRETE CURB OPENING
CR	COMMUNICATION RISER
CSW	CONCRETE SIDEWALK
DCO	DOUBLE CLEANOUT
DYS	PAINTED DOUBLE YELLOW TRAFFIC STRIPE
E/PM	ELECTRIC LINE BY PAINT MARK
EA	EDGE OF ASPHALT
EDC	ELECTRIC DISCONNECT BOX
EM	ELECTRIC METER
EO	ELECTRIC OUTLET
EP	ELECTRIC PANEL BOX
FL	FIRE HYDRANT
FLW	FLOWLINE
FO/PM	FIBER OPTIC LINE BY PAINT MARK
FO/S	FIBER OPTIC WARNING SIGN
FOPB	FIBER OPTIC PULLBOX
G/PM	GAS LINE BY PAINT MARK
GM	LANDSCAPING GRAVEL
GRV	GAS SERVICE
GS	GUY WIRE ANCHOR
GS/M	HIGH DENSITY POLYETHYLENE PIPE
GW	PIPE INVERT
HDPE	IRRIGATION VALVE BOX
INV	MANHOLE
IVB	METAL LIGHT POLE ON CONCRETE BASE
MHP	OVERHEAD COMMUNICATION (# OF LINES)
OH(2)	OVERHEAD ELECTRICAL (# OF LINES)
OH(4)	CONCRETE WHEEL STOP
PB	PAINTED PARKING LOT ISLAND
PI	PAINTED PARKING LOT ISLAND AT BUILDING
P/B	PAINTED PARKING SPACE
PS	POLYVINYL CHLORIDE PIPE
PVC	ASPHALT PAVING PATCH
PVP	ROLL UP GARAGE DOOR
RD	LANDSCAPING RIVER ROCK
ROLL	LANDSCAPING RIVER ROCK
RR	LANDSCAPING RIVER ROCK
RRT	LANDSCAPING RIVER ROCK
RS	ROCK SIGN
RV	POLYVINYL CHLORIDE PIPE RISER/VENT
SAS	SANITARY SEWER
SB	STEEL GUARD BAR
SBP	STEEL GUARD POST
SP	STEEL POST
SWS	PAINTED SINGLE WHITE TRAFFIC STRIPE
TA	TOP OF ASPHALT
TC	TOP OF CURB
TCO	TOP OF CONCRETE
TE	TRASH DUMPSTER ENCLOSURE
TP	TOP OF PIPE
TRN	ELECTRIC TRANSFORMER
TYP	TYPICAL
W	WATER LINE
WCR	CONCRETE WHEEL CHAIR RAMP
WFT	LANDSCAPING WATER FOUNTAIN
WPP	WOOD POWER POLE
WVB	WATER VALVE BOX
WV	WATER VALVE BOX
1.0"	TREE TRUNK DIAMETER
	CONIFEROUS TREE
	DECIDUOUS TREE
	SMALL DECIDUOUS TREE
	SHRUB
	SMALL SHRUB
	YUCCA
	LANDSCAPING BOULDER
	LANDSCAPING WATER FOUNTAIN
	PAINTED HANDICAPPED PARKING SPACE
	INVERT
	TOP OF ASPHALT PAVEMENT
	TOP OF CURB
	TOP OF GRADE
	EXISTING SPOT ELEVATION
	PROPOSED SPOT ELEVATION
	EXISTING FLOWLINE
	PROPOSED FLOWLINE
	EXISTING CONTOUR
	PROPOSED CONTOUR
	EXISTING DIRECTION OF FLOW
	PROPOSED DIRECTION OF FLOW
	RIGHT OF WAY LINE
	PUBLIC EASEMENT LINE
	HIGH POINT / DVIDE
	PROPOSED CONCRETE
	PROPOSED ASPHALT PAVING
	PROPOSED LANDSCAPE AREA



NOTE:  
THIS IS NOT A BOUNDARY SURVEY; DATA IS SHOWN FOR ORIENTATION ONLY.  
THE BOUNDARY INFORMATION DEPICTED BY THIS PLAN IS BASED UPON AN BOUNDARY SURVEY PREPARED BY HIGH MESA CONSULTING GROUP, NMPS 11184, DATED 03-10-2016 (2016.015.1). THE TOPOGRAPHIC INFORMATION DEPICTED HEREON IS BASED UPON THE TOPOGRAPHIC AND UTILITY SURVEY PREPARED BY HIGH MESA CONSULTING GROUP, NMPS NO. 11184, DATED 03-10-2016 (2016.015.1).

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2016.015.2  
13678  
05-04-2016  
CONCEPTUAL GRADING PLAN

04.29.16

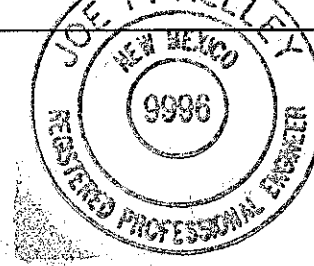
3



# ENGINEER'S CERTIFICATION

I HEREBY CERTIFY THAT THE GRADING AND DRAINAGE FOR THIS SITE WAS CONSTRUCTED IN SUBSTANTIAL COMPLIANCE WITH THE APPROVED PLAN.

Joe Kelly  
JOE P. KELLEY, N.M. P.E. NO. 9996 DATE 3/23/05



## LOCAL BENCH MARK

BOHANNON HUSTON & ASSOCIATES NO. 3  
ELEV. 5152.26 (AS SHOWN ON PLAN)

## LEGAL DESCRIPTION

LOTS 31 & 32, BLOCK 5, NORTH  
ALBUQUERQUE ACRES, TRACT A, UNIT B

## PROJECT BENCH MARK

NMHC MONUMENT "I-12-11"  
ELEV. 5206.94 (NAD27)

## SURVEY INFORMATION

SURVEY PERFORMED BY PRECISION SURVEYING,  
OCTOBER, 2003

## LEGEND

- TC65.80 RECORD ELEVATION (3/23/05)
- TC65.94 PROPOSED SPOT ELEVATION
- 5210 EXISTING CONTOUR
- DIRECTION OF FLOW
- WATER BLOCK
- TRACT BOUNDARY/R.O.W.
- NEW BUILDING
- EXISTING PAVEMENT EDGE
- NEW PAVEMENT EDGE
- 12"SD NEW STORM DRAIN

## ABBREVIATIONS

- FF FINISHED FLOOR (CONC.)
- FP FINISHED PAD (DIRT FOR SLAB ON GRADE)
- FAF FINISHED ACCESS FLOOR (ARCH. PANELS)
- FSG FINISHED SUBGRADE (1'-7" LOWER THAN FAF)
- FG FINISHED GROUND
- FL FLOW LINE
- TA TOP OF ASPHALT
- TC TOP OF CURB OR CONCRETE
- 4"C 4" SLANTED CURB
- 6"C 6" CURB FACE
- 0"C 0" CURB FACE (I.E., FLUSH W/PVMT)
- TR-C TRANSITION CURB FACE HEIGHT

## KEYED CONSTRUCTION NOTES

1. INSTALL PRIVATE ENTRANCE PER COA STD DWG 2426, WITH CONCRETE VALLEY GUTTER AND WITH HANDICAP RAMPS, EXCEPT CONCRETE SHALL EXTEND UP DRIVEWAY PAST HANDICAP RAMP.
2. INSTALL 4' WIDE MEANDERING SIDEWALK IN R.O.W.
3. INSTALL 2' WIDE CHANNEL, 6" DEEP.
4. REVISE EXISTING "BUBBLE" INLET TOP PER DETAIL A/C102. CONNECT NEW 12" PRIVATE STORM DRAIN TO EXISTING 42" VERTICAL RISER WITH WATERTIGHT CONNECTION (12" INV46.40). INTERIOR OF CONNECTION SHALL BE GROUTED SMOOTH WHEN DONE.
5. INSTALL 17OLF OF 12" PRIVATE STORM DRAIN AT 1% MIN. SLOPE. MATERIAL MAY BE HDPE, SDR-35 PVC, OR RCP(111). ALL BACKFILL SHALL BE AT 95% ASTM D-1557.
6. INSTALL PRIVATE STORM INLET PER DETAIL B/C102. TC60-62; INV48-12.
7. INSTALL STORM INLETS AND PIPE, CURB AND GUTTER, SIDEWALK, AND PAVING IN R.O.W. PER APPROVED CITY OF ALBUQUERQUE WORK ORDER DWGS.
8. SEE ARCHITECTURAL SITE PLAN AND DETAILS FOR LOCATIONS AND DETAILS OF ON-SITE PAVEMENT, CURB, AND SIDEWALK.
9. OVEREXCAVATE 4' BENEATH BOTTOM OF FOOTINGS, AND 1' BENEATH BOTTOM OF FLOOR SLABS. EXTEND EXCAVATION AT LEAST 4' LATERALLY BEYOND EDGE OF FOOTINGS.



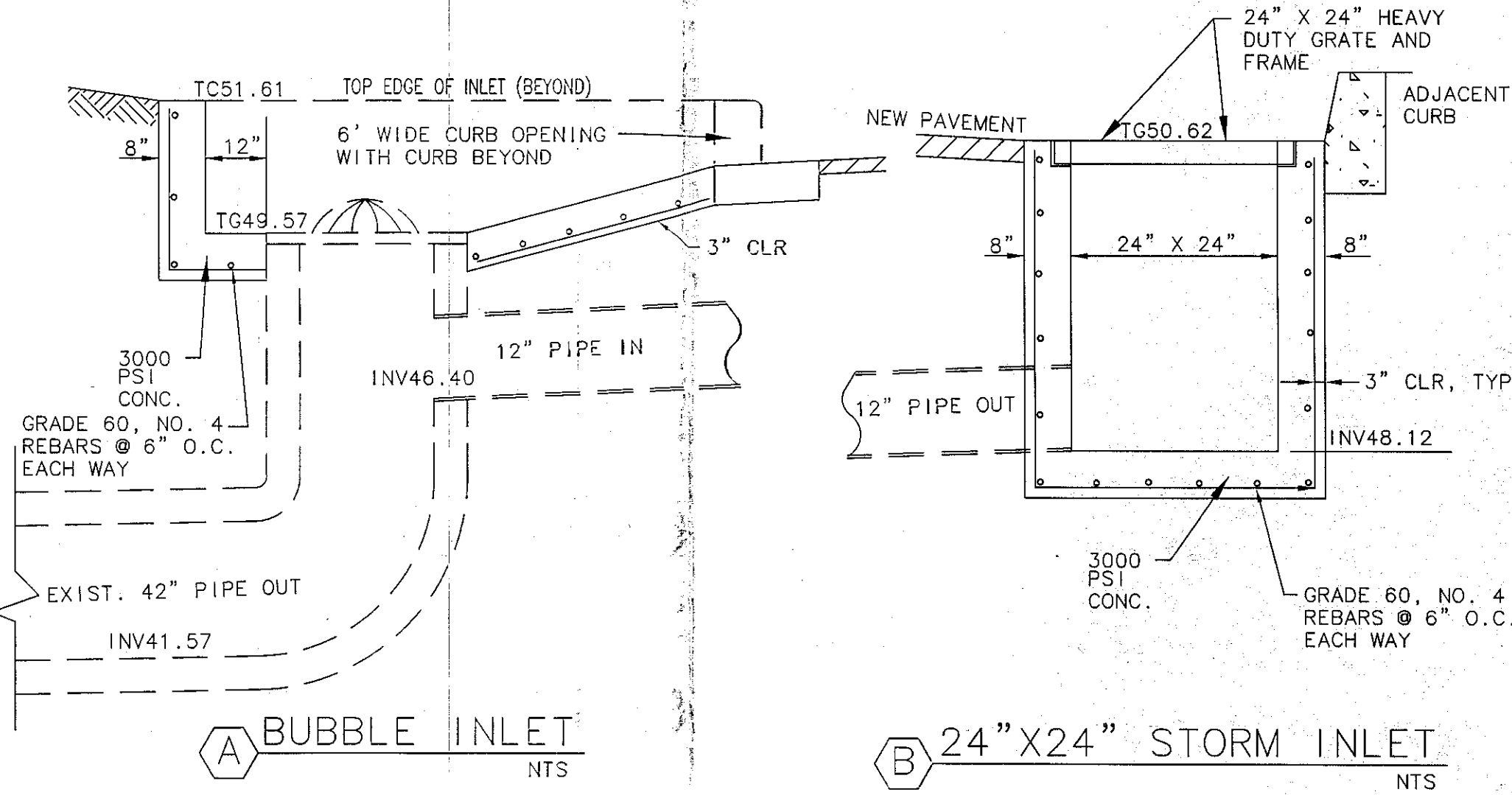
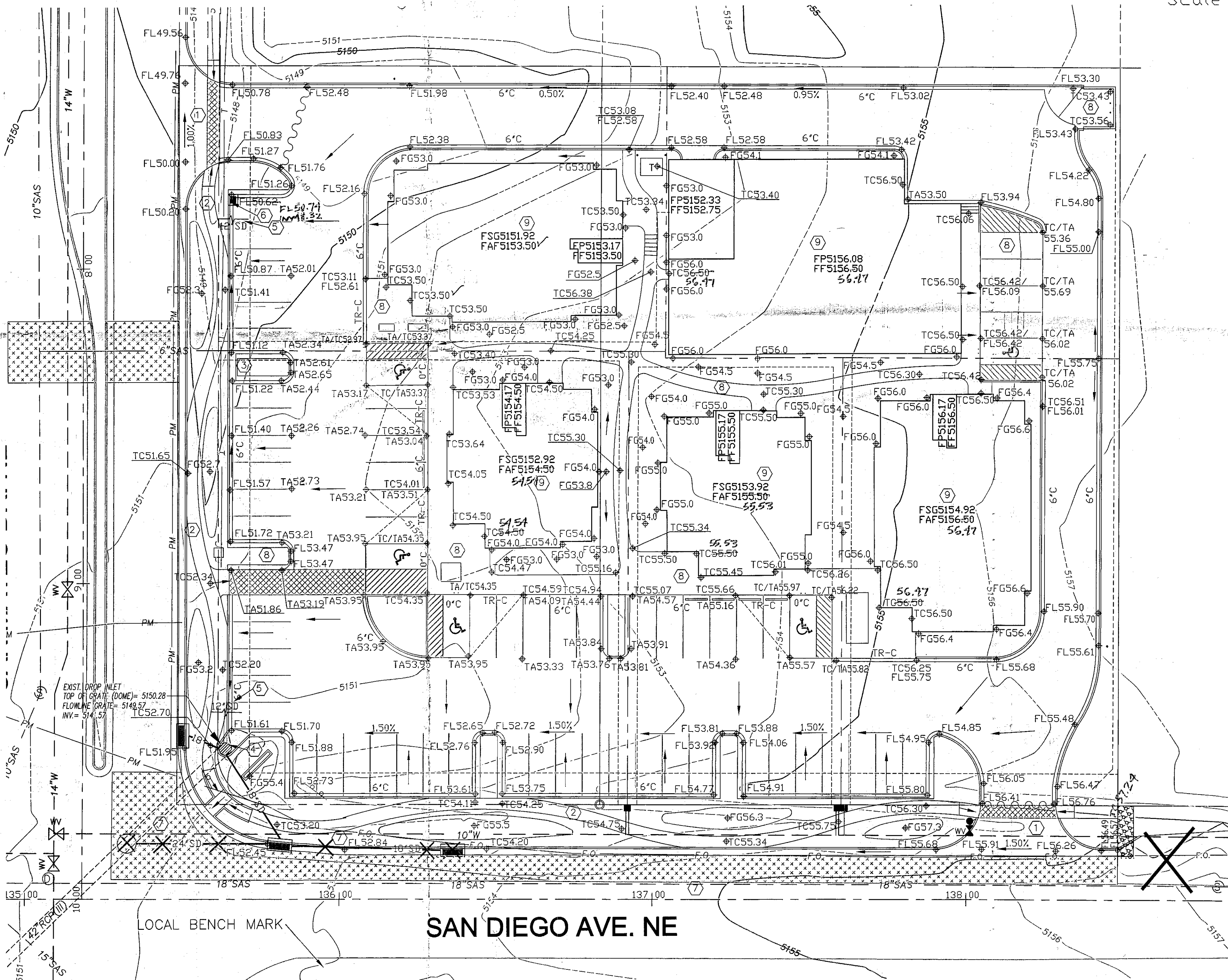
Scale 1" = 20'

## ENVIRONMENTAL GAS NOTE

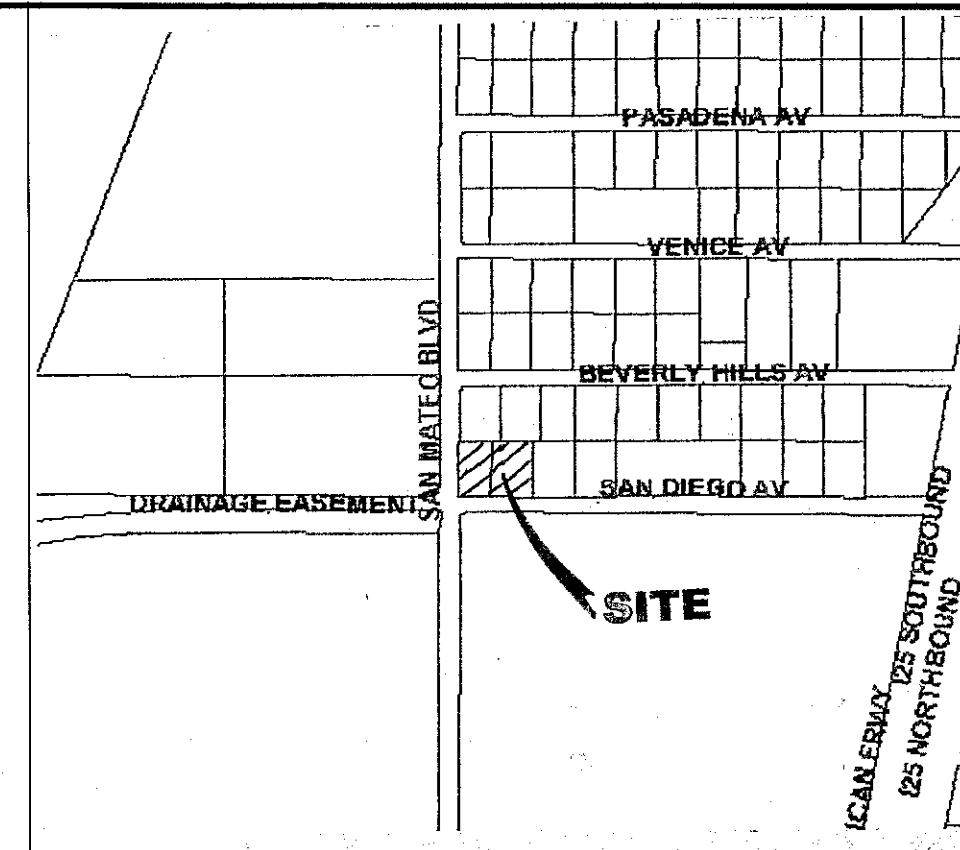
UTILITY VAULT AND GAS BARRIER INSTALLATION SHALL BE PERFORMED PER DETAILS ON SHEET LFG AS SPECIFIED BY A PROFESSIONAL ENGINEER WITH LANDFILL GAS EXPERTISE.

## EROSION CONTROL/ENVIRONMENTAL PROTECTION/STORM WATER POLLUTION PREVENTION PLAN

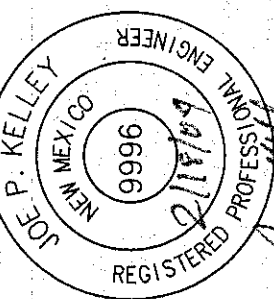
1. THE CONTRACTOR SHALL CONFORM TO ALL CITY, COUNTY, STATE AND FEDERAL DUST AND EROSION CONTROL REGULATIONS. THE CONTRACTOR SHALL PREPARE AND OBTAIN ANY NECESSARY DUST OR EROSION CONTROL PERMITS FROM REGULATORY AGENCIES.
2. THE CONTRACTOR SHALL COMPLY WITH THE STORM WATER POLLUTION PREVENTION PLAN PREPARED BY THE OWNER, AND SHALL SUBMIT AN NOI PER GOVERNMENT REQUIREMENTS PRIOR TO BEGINNING CONSTRUCTION.
3. THE CONTRACTOR SHALL PROMPTLY REMOVE ANY MATERIAL EXCAVATED WITHIN THE PUBLIC RIGHT-OF-WAY TO KEEP IT FROM WASHING OFF THE PROJECT SITE.
4. THE CONTRACTOR SHALL WET THE SOIL AS NEEDED TO KEEP IT FROM BLOWING. WATERING, AS REQUIRED FOR CONSTRUCTION AND DUST CONTROL, SHALL BE CONSIDERED INCIDENTAL TO CONSTRUCTION AND NO MEASUREMENT OR PAYMENT SHALL BE MADE THEREFOR. CONSTRUCTION AREAS SHALL BE WATERED FOR DUST CONTROL IN COMPLIANCE WITH GOVERNMENT ORDINANCES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND SUPPLYING WATER AS REQUIRED.
5. ALL WASTE PRODUCTS FROM THE CONSTRUCTION SITE, INCLUDING ITEMS DESIGNATED FOR REMOVAL CONSTRUCTION WASTE, CONSTRUCTION EQUIPMENT WASTE, PRODUCTS (OIL, GAS, TIRES, ETC.) GARBAGE, ETC. SHALL BE APPROPRIATELY DISPOSED OF OFF-SITE AT NO ADDITIONAL COST TO THE OWNER. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN PERMITS REQUIRED FOR HAUL OR DISPOSAL OF WASTE PRODUCTS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT THE WASTE DISPOSAL SITE COMPLIES WITH GOVERNMENT REGULATIONS REGARDING THE ENVIRONMENT, ENDANGERED SPECIES AND ARCHAEOLOGICAL RESOURCES.
6. GRUBBINGS AND VEGETATIVE DEBRIS MAY BE BURIED ON-SITE IN AREAS THAT ARE NOT GOING TO BE UNDER BUILDINGS OR PAVEMENT.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CLEANUP AND REPORTING OF SPILLS OF HAZARDOUS MATERIALS ASSOCIATED WITH THE CONSTRUCTION SITE. HAZARDOUS MATERIALS INCLUDE GASOLINE, DIESEL FUEL, MOTOR OIL, SOLVENTS, CHEMICALS, PAINTS, ETC. WHICH MAY BE A THREAT TO THE ENVIRONMENT. THE CONTRACTOR SHALL REPORT THE DISCOVERY OF PAST OR PRESENT SPILLS TO THE NEW MEXICO ENVIRONMENT DEPARTMENT EMERGENCY RESPONSE AT 1-505-822-1558 OR 1-800-219-6157.
8. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE REGULATIONS CONCERNING SURFACE AND UNDERGROUND WATER. CONTACT WITH SURFACE WATER BY CONSTRUCTION EQUIPMENT AND PERSONNEL SHALL BE MINIMIZED. EQUIPMENT MAINTENANCE AND REFUELING OPERATIONS SHALL BE PERFORMED IN AN ENVIRONMENTALLY SAFE MANNER IN COMPLIANCE WITH GOVERNMENT REGULATIONS.
9. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE REGULATIONS CONCERNING CONSTRUCTION NOISE AND HOURS OF OPERATION.



## LOCATION MAP B-17/18



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REVISIONS	NO.	DATE	BY	DESCRIPTION

VERANO PLAZA  
INSITEWORKS

## GRADING PLAN

SHEET NO. C-102

MARCH 17, 2004 VERANO-C102.dwg

