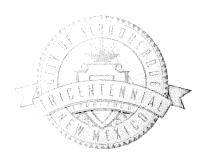
# CITY OF ALBUQUERQUE



March 30, 2007

Arthur Blessen, PE J. Arthur Blessen Engineering 11930 Menaul Blvd. NE Suite 104 Albuquerque, NM 87112

Re: OGB Architectural Millwork TI and Improvement 3711 Paseo Del Norte Grading and Drainage Plan

Engineer's Stamp dated 1/23/07 (C17/D019)

Dear Mr. Blessen,

P.O.Box 1293

Based upon the information provided in your submittal dated 3-19-07, the above referenced plan is approved for Building Permit. Please attach a copy of this approved plan to the construction sets prior to sign-off by Hydrology. Also, prior to Certificate of Occupancy release, Engineer Certification of the grading plan per the DPM checklist will be required.

Albuquerque

If you have any questions, you can contact me at 924-3977.

New Mexico 87103

www.cabq.gov

Rudy E. Rael, Associate Engineer

Planning Department.

Building and Development Services

C: file

Tim Eichenberg - Chair Danny Hernandez - Vice Chair Daniel F. Lyon - Secretary - Treasurer Ronald D. Brown - Assistant Secretary -Treasurer Janet Salers - Director

> John P. Kelly, P.E. **Executive Engineer**

Albuquerque **M**etropolitan Arroyo Flood Control

Date 7671 Post-it® Fax Note TO JEREMY MAZUR HOOVER Co. Co./Dept. Phone # Fax # Fax #

**A**uthority

2600 Prospect N.E., Albuquerque, NM 87107 Phone: (505) 884-2215 Fax: (505) 884-0214

August 15, 2006

Mr. Verlyn A. Miller, P.E. Miller Engineering Consultants P.O. Box 520 Edgewood, NM 87015

Re:

C17/D19 DRT3 1000057 Bradbury Stamm Construction Headquarters, ZAP C-17

Engineer's Stamp Dated July 28, 2006

Dear Mr. Miller:

I received the Grading & Drainage Plan for the referenced property and the comment letter from the City of Albuquerque dated August 9, 2006. I would like to clarify some points in comment number 7 in the City letter. AMAFCA received several calls from Western Assurance after the recent rains that their parking lot was flooded. AMAFCA engineers determined that the ditch adjacent to Paseo del Norte was causing the problem. This ditch is in New Mexico Department of Transportation (NMDOT) right-of-way and is their maintenance responsibility, unless there is an agreement or permit for private maintenance. AMAFCA staff has contacted the NMDOT regarding the drainage issues with the ditch. If this site discharges to it, it will require some improvements. Any work in the ditch will require a permit from NMDOT.

I have reviewed the plan with respect to drainage to the existing rundown on the North Diversion Channel (NDC) and offer the following comments:

- 1. Identify the 10-foot Drainage Easement onsite as "Private Drainage Easement". Is this easement existing, or will the property be replatted?
- 2. Provide a riprap detail for the NDC inlet with appropriate dimensions.

If you have any questions, please call me at 884-2215.

Sincerely, **AMAFCA** 

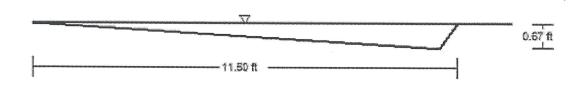
Lynn M. Mazur, P.E., C.F.M.

Development Review Engineer

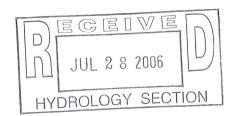
Cc: Jeremy Hoover, City Hydrology Kathy Trujillo, NMDOT, District 3

# Parking Lot Flowline Cross Section for Irregular Section - 1

Project Description Flow Element: Irregular Section Friction Method: Manning Formula Solve For: Discharge Section Data Roughness Coefficient: 0.013 Channel Slope: 0.00500 ft/ft Normal Depth: 0.67 ft Elevation Range: 0.00 to 0.67 ft Discharge: 13.59 ft³/s



V:1 \( \sum\_{H:1} \)



#### Worksheet for Irregular Section - 1

Project Description

Flow Element:

Irregular Section

Friction Method:

Manning Formula

Solve For:

Discharge

Input Data

Channel Slope:

0.00500

ft/ft

Water Surface Elevation:

0.67

ft

Options

Current Roughness Weighted Metho

ImprovedLotters

Open Channel Weighted Roughnes:

ImprovedLotters

Closed Channel Weighted Roughne

Hortons

Results

Roughness Coefficient:

0.013

Discharge:

Flow Area:

13.59

ft3/s

Elevation Range:

0.00 to 0.67 ft

3.85

ft²

Wetted Perimeter:

13.36

Top Width:

11.50

ft ft

Normal Depth:

0.67

ft

Critical Depth:

0.70

Critical Slope:

0.00374

ft/ft

Velocity:

3.53

ft/s

Velocity Head:

0.19

ft ft

Specific Energy: Froude Number:

0.86

1.07

Flow Type:

Supercritical

#### Segment Roughness

Start Station

**End Station** 

Roughness Coefficient

(0+00, 0.67) (0+13, 0.67)

0.013

#### Section Geometry

	0	

Elevation

0+00

0.67

0+11

0.00

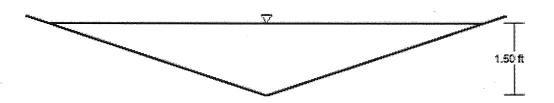
### Worksheet for Irregular Section - 1

Station	Elevation
0+12	√0,67
0+13	0.67

#### V-Ditch

# **Cross Section for Triangular Channel - 1**

Flow Element:	Triangular Channel	
Friction Method:	Manning Formula	
Solve For:	Discharge	
Section Data		
Roughness Coefficient:	0.020	
Channel Slope:	0.00700	ft/ft
Normal Depth:	1.50	ft
Left Side Slope:	3.00	ft/ft (H:V)
Right Side Slope:	3.00	ft/ft (H:V)
Discharge:	33.44	ft³/s



#### **Worksheet for Triangular Channel - 1**

Project Description

ASSUME, 26 FOR
DIRTU/SOME
VECSETATION

Flow Element:	Triangular Channel	
Friction Method:	Manning Formula	
Solve For:	Discharge	
Input Data		
Roughness Coefficient:	0.020 - GRAVEL LINE	D
Channel Slope:	0.00700	ft/ft
Normal Depth:	1.50	ft
Left Side Slope:	3.00	ft/ft (H:V)
Right Side Slope:	3.00	ft/ft (H:V)
Results		
Discharge:	33.44	ft³/s
Flow Area:	6.75	ft²
Wetted Perimeter:	9.49	ft
Top Width:	9.00	ft
Critical Depth:	1.51	ft
Critical Slope:	0.00687	ft/ft
Velocity:	4.95	ft/s
Velocity Head:	0.38	ft
Specific Energy:	1.88	ft
Froude Number:	1.01	
Flow Type:	Supercritical	
GVF Input Data		
Downstream Depth:	0.00	ft
Length:	0.00	ft
Number Of Steps:	0	
GVF Output Data		
Upstream Depth:	0.00	ft
Profile Description:	N/A	
Profile Headloss:	0.00	ft
Downstream Velocity:	0.00	ft/s
Upstream Velocity:	0.00	ft/s
Normal Depth:	1.50	ft
Critical Depth:	1.51	ft
Channel Slope:	0.00700	ft/ft
Critical Slope:	0.00687	ft/ft

1.49 (Q6.75) = 25.8CFS

# PEAK DISCHARGE (cfs/acre)

#### **CURRENT CONDITIONS**

										Q(100-YR)
BASIN	AREA		% LAND TE	REATMENT*		PEAK	UNDEVELOPE			
DASIN	(ACRES)	Δ	В	С	D	Α	В	C	D	(CFS)
	9.60	85.00	15.00	0.00	0.00	1.56	2.28	3.14	4.7	16.01
1	4.10	85.00	15.00	0.00	0.00	1.56	2.28	3.14	4.7	6.84
	1.68	85.00	15.00	0.00	0.00	1.56	2.28	3.14	4.7	2.80
. 3	2.94	85.00	15.00	0.00	0.00	1.56	2.28	3.14	4.7	4.90
4 5	2.94	85.00	15.00	0.00	0.00	1.56	2.28	3.14	4.7	4.94
										35.50

#### PHASE I CONDITIONS

Construction of Office/Warehoue Only

							DICCUADO	E (CES/AC	DE\**	Q(100-YR) DEVELOPED
BASIN	AREA (ACRES)	Α	% LAND TF B	REATMENT* C	D	A PEAK	B	E - (CFS/AC C	D	(CFS)
	9.60	85.00	15.00	0.00	0.00	1.56 ,	2.28	3.14	4.7	16.01
2	4.10	85.00	15.00	0.00	0.00	1.56	2.28	3.14	4.7	6.84
	1.68	0.00	15.00	15.00	70.00	1.56	2.28	3.14	4.7	6.89
4	2.94	0.00	10.00	30.00	60.00	1.56	2.28	3.14	4.7	11.73
5	2.96	0.00	20.00	30.00	50.00	1.56	2.28	3.14	4.7	11.09
										52.57

#### FULLY DEVELOPED CONDITIONS

Construction of Office Building and East Side Development

										Q(100-YR)
BASIN	AREA		% LAND TF	REATMENT*		PEAK	DISCHARG	E - (CFS/AC	HE)**	DEVELOPED
DASIN	(ACRES)	Δ	В	С	D	Α	В	C	D	(CFS)
	9.60	85.00	15.00	0.00	0.00	1.56	2.28	3.14	4.7	16.01
- 1	4.10	0.00	10.00	15.00	75,00	1.56	2.28	3.14	4.7	(17.32)
<u>B-2</u>	1.68	0.00	15.00	15.00	70.00	1.56	2.28	3.14	4.7	6.89
3		0.00	10.00	30.00	60.00	1.56	2.28	3.14	4.7	11.73
4 5	2.94 2.96	0.00	15.00	15.00	70.00	1.56	2.28	3.14	4.7	12.14
J	2.00									64.10

#### NOTES:

Obtained from Section 22.2, Hydrology of the Development Process Manual, Volume 2, Design Criteria for the City of Albuquerque, Jan. 1993

<sup>\*</sup> Table A-4 \*\* Table A-9

# **CULVERT CALCULATIONS**

#### FLOW CAPACITY

Manning's Coefficient

0.022 (corrugated steel)

Slope

0.01

Section

43" x 27" pipe-arch

Area

6.4 sf

Perimeter

Equivalent to a 36" circular pipe, or 9.42 ft

Hydraulic Radius (R)

Area/Perimeter = 6.4/9.42 = 0.68

Manning's Equation

 $Q_{cfs} = (1.49/n) A x R^{2/3} x S^{1/2}$ 

=  $(1.49/.022) 6.4 \times 0.68^{2/3} \times 0.01^{1/2}$ =  $(67.73) 6.4 \times 0.7723 \times 0.1$ 

 $= (67.73) 6.4 \times 0.7723 \times 0.1$ 

= 33.48 cfs 🗸

Velocity Equation

= Q/A

= 33.48/6.4

= 5.23 fps

#### 100-YEAR STORM FLOW

BASINS B-1 (Phase III)

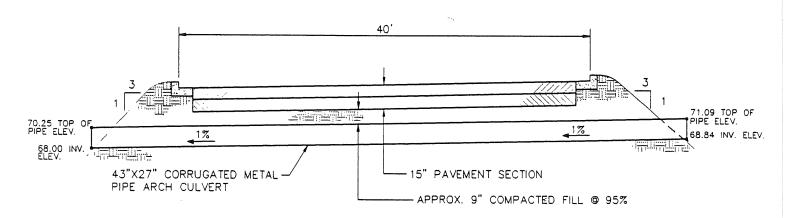
16.01 CFS

B-2 (Phase III)

17.32

**TOTAL FLOW** 

33.33 CFS



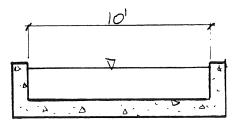
# SECTION G

### **RUNDOWN STREAM CALCULATIONS**

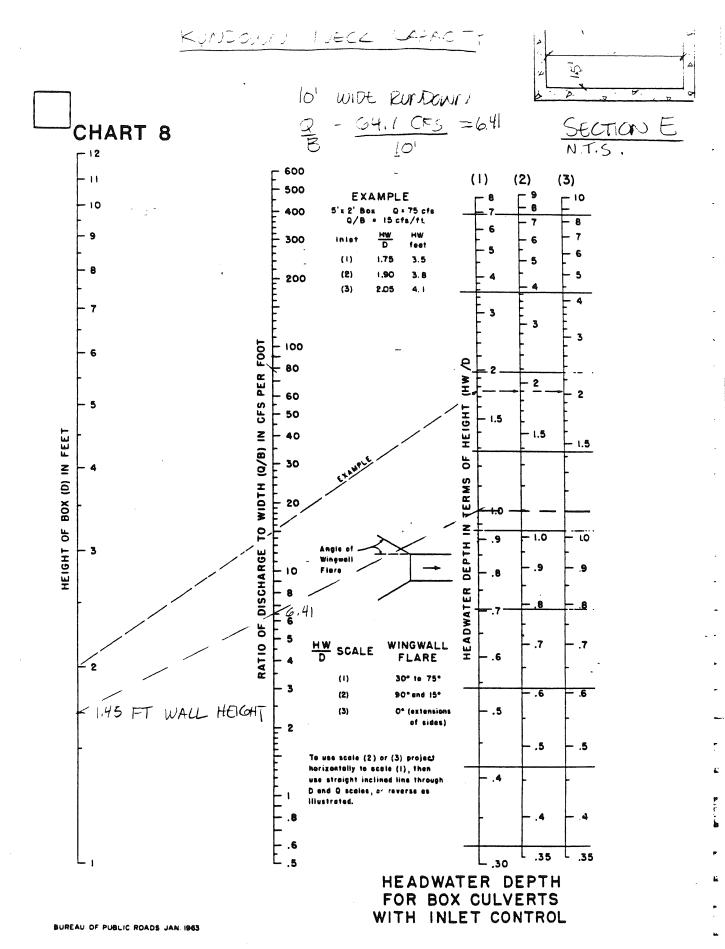
Manning's Co Slope	efficient	0.013 0.0122	(concrete)			
Section Coord	linates (ft.)	1.5,0 0,0 0,10 1.5,10				
DEPTH	FLOW AREA		FLOW RATE	WETTED PERIMETER	FLOW VELOCITY	TOP WIDTH
INC	(SF)		(CFS)	(FT)	(FPS)	(FT)
0.10	1.00	<del></del>	2.70	10.20	2.70	10.00
0.20	2.00		8.40	10.40	4.20	10.00
0.30	3.00		16.30	10.60	5.40	10.00
0.40	4.00		26.00	10.80	6.50	10.00
0.50	5.00		37.30	11.00	7.50	10.00
0.60	6.00		50.00	11.20	8.30	10.00
0.90	9.00		94.90	11.80	10.50	10.00
1.00	10.00		111.80	12.00	11.20	10.00
1.10	11.00		129.60	12.20	11.80	10.00
1.20	12.00		148.20	12.40	12.40	10.00
1.30	13.00		167.60	12.60	12.90	10.00
1.40	14.00		187.60	12.80	13.40	10.00
1.50	15.00		208.30	13.00	13.90	10.00

#### 100-YEAR STORM FLOW

BASINS	B-2 B-3 B-4	(Phase III) (Phase III) (Phase III) (Phase III)	16.01 17.32 6.89 11.73 12.14	CFS		
TOTAL FL	.ow		64.09	CFS	DEPTH = VELOCITY =	0.702 FT 9.12 FPS



SECTION F



1.5 FT WILL HE G-T ACCOMMODATES FLOW OF 64,10 CFS IN THE 10' WIDE NECK.

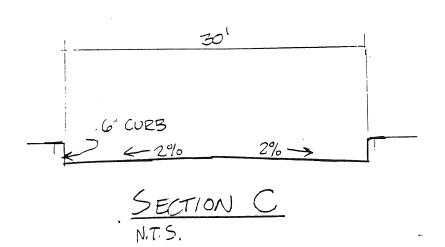
### **ACCESS STREET HYDRAULICS**

t 0.017 0.010 (ft.) .5,0 0,0 .3,15 0,30				
(ft.) .5,0 0,0 .3,15				
0,0 .3,15				
.3,15				
0,30				
.5,30				
LOW	FLOW	WETTED	FLOW	TOP
REA	RATE	PERIMETER	VELOCITY	WIDTH
(SF)	(CFS)	(FT)	(FPS)	(FT)
0.50	0.60	10.20	1.20	10.00
4,1 (1)	3701	262.10		20,00
<b>77</b> )	ំ តែ 🕮 🔧	ेंद्र(क)(होंक"	2010	(\$[0](\$[0]
7.50	25.60	30.80 31.00	3.40	30.00
(	REA (SF) 0.50 450	REA RATE (SF) (CFS) 0.50 0.60	REA RATE PERIMETER (SF) (CFS) (FT) 0.50 0.60 10.20 -91 370 29-10 -50 0.60 0.60	REA         RATE         PERIMETER         VELOCITY           (SF)         (CFS)         (FT)         (FPS)           0.50         0.60         10.20         1.20           20         20         20         20           850         16:10         20         20

#### 100-YEAR STORM FLOW

BASINS B-3 (Phase III) 6.89 CFS

TOTAL FLOW 6.89 CFS DEPTH = 0.25 FT VELOCITY = 2.13 FPS

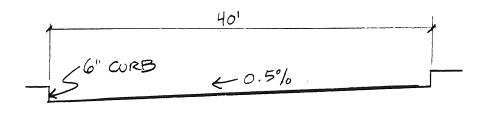


# **CUL-DE-SAC STREET HYDRAULICS**

Manning's Coe	efficient	0.017	(street)			
Slope		0.017	(minimum)			
Section Coord	inates (ft.).	.5,0 0,0 .2,40 .7,40				
DEPTH	FLOW AREA		FLOW RATE	WETTED PERIMETER	FLOW VELOCITY	TOP WIDTH
INC	(SF)		(CFS)	(FT)	(FPS)	(FT)
0.10	1.00		1.20	20.10	1.20	20.00
0.20	4.00		7.50	40.20	1.90	40.00
						4
0.50	16.00	- 100 m	74.90	40.80	4.70	40.00

#### 100-YEAR STORM FLOW

BASINS	B-2	(Phase III) (Phase III) (Phase III)	16.01 17.32 6.89	CFS =		
TOTAL FL	.ow		40.22	CFS	DEPTH = VELOCITY =	0.37 FT 3.65 FPS



SECTION B

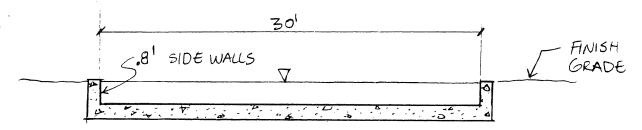
#### **RUNDOWN WEIR OPENING**

WEIR CAPAC	CITY				
Weir Coefficient		3.000			
Section Coord	finates (ft.)	0,0 0,0 0,30 08, 3.			
DEPTH	FLOW AREA		FLOW RATE	FLOW VELOCITY	TOP WIDTH
INC	(SF)		(CFS)	(FPS)	(FT)
0.10	3.00		2.85	0.95	30.00
0.20	6.00		8.05	1.34	30.00
0.30	9.00		14.79	1.64	30.00
0.40	12.00		22.77	1.90	30.00
0.50	15.00		31.82	2.12	30.00
0.60	18.00		41.83	2.32	30.00
				-	

#### 100-YEAR STORM FLOW

BASINS	B-1 (Phase III)	16.01 CFS	
	B-2 (Phase III)	17.32	
	B-3 (Phase III)	6.89	
	B-4 (Phase III)	11.73	
	B-5 (Phase III)	12.14	

TOTAL FLOW 64.09 CFS DEPTH = 0.797 FT VELOCITY = 2.68 FPS



SECTION D N.T.S. FACILITY ACCESSIBILITY

ALL SURFACES ALONG THE ACCESSIBLE ROUTE SHALL COMPLY WITH ANSI A117-1998.

WALKING SURFACES SHALL BE STABLE, FIRM, AND SLIP RESISTANT. THE RUNNING SLOPE OF WALKING SURFACES SHALL NOT BE STEEPER THAN 1:20 WITH A CROSS SLOPE NOT STEEPER THAN 1:48.

CURB RAMP AND RAMP RUNS SHALL HAVE A RUNNING SLOPE NOT STEEPER THAN 1:12 WITH A CROSS SLOPE NOT STEEPER THAN 1:48. COUNTER SLOPES OF ADJOINING GUTTERS AND ROAD SURFACES IMMEDIATELY ADJACENT TO THE CURB RAMP OR ACCESSIBLE ROUTE SHALL NOT BE STEEPER THAN 1:20. TRANSITIONS FROM RAMPS TO WALKS, GUTTERS OR STREETS SHALL BE AT THE SAME LEVEL. WHERE PEDESTRIANS MUST WALK ACROSS A CURB RAMP, THE RAMP SHALL HAVE FLARED SIDES WITH SLOPES NOT STEEPER THAN 1:10: WHERE THE TOP OF THE RAMP PARALLEL TO THE RUN OF THE RAMP IS LESS THAN 48 INCHES WIDE, THE FLARED SIDES SHALL HAVE A SLOPE NOT STEEPER THAN 1:12.

HANDICAP PARKING SPACES AND ACCESS AISLES SHALL HAVE SURFACE SLOPES NOT STEEPER THAN 1:48. ACCESS AISLES SHALL BE AT THE SAME LEVEL AS THE PARKING SPACES THEY SERVE.

# TRAFFIC CONTROL

THE CONTRACTOR SHALL PROVIDE ALL REQUIRED TRAFFIC CONTROL PLANS AND DEVICES. ALL SIGNS, BARRICADES, CHANNELIZATION DEVICES, SIGN FRAMES AND ERECTION OF SUCH DEVICES SHALL CONFORM THE THE REQUIREMENTS OF THE "MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS" LATEST EDITION. PRIOR TO CONSTRUCTION PRIOR TO CONSTRUCTION, THE TRAFFIC CONTROL PLAN SHALL BE SUBMITTED AND APPROVED BY THE GOVERNING AUTHORITY.

# CONSTRUCTION NOTES

**EXISTING** GRAVEL

- 1. TWO WORKING DAYS PRIOR TO ANY EXCAVATION, THE CONTRACTOR SHALL CALL FOR LOCATION OF EXISTING UTILITIES.
- 2. ALL WORK WITHIN THE CITY RIGHT-OF-WAY SHALL BE PERFORMED IN ACCORDANCE
- WITH THE APPLICABLE CITY OF ALBUQUERQUE STANDARDS AND PROCEDURES. 3. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE APPLICABLE FEDERAL, STATE, AND LOCAL REGULATIONS, LAWS, AND RULES CONCERNING SAFETY AND
- 4. PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL VERITY THE EXISTING SITE CONDITIONS AND INFORM THE ARCHITECT/ ENGINEER OF ANY DISCREPANCY BETWEEN THE INFORMATION SHOWN ON THE PLANS AND THOSE OF THE EXISTING
- 5. THE CONTRACTOR SHALL PROVIDE THE ARCHITECT / ENGINEER WITH AN AS BUILT SURVEY FOR ENGINEER'S CERTIFICATION.
- 6. THE CONTRACTOR SHALL MAINTAIN A RECORD DRAWING SET OF PLANS AND PROMPTLY LOCATE EXISTING AND NEW ELEVATIONS (FINISH FLOORS, TOPS OF CURBS AND ASPHALT, FLOW LINE, PIPE INVERTS, ETC.), ON THE RECORD SET. THE RECORD SET SHALL BE MAINTAINED ON THE PROJECT SITE AND SHALL BE AVAILABLE TO THE OWNER AND ARCHITECT AT ANY TIME DURING CONSTRUCTION. UPON COMPLETION OF THE PROJECT, THE RECORD SET SHALL BE TURNED OVER TO THE OWNER.
- 7. THE OWNER / CONTRACTOR SHALL SUBMIT A NOTICE OF INTENT (NOI) TO THE EPA PRIOR TO BEGINNING OF CONSTRUCTION.
- 8. CONTRACTOR SHALL COMPLY WITH STORM WATER POLLUTION PREVENTION PLAN (SWPPP) SPECIFIC TO THIS PROJECT.

# DRAINAGE PLAN

THE PROPOSED IMPROVEMENTS AS SHOWN BY THE VICINITY MAP, ARE LOCATED ON THE NORTH SIDE OF PASEO DEL NORTE WEST OF JEFFERSON. THE SITE IS DEVELOPED AND SLOPES TO THE EAST TO THE EXISTING DRAINAGE INLET TO THE NORTH DIVERSION CHANNEL. ACCORDING TO FIRM PANEL 136F THE SITE DOES NOT LIE WITHIN A FLOOD HAZARD ZONE.

THE SITE IS PART OF THE BRADBURY STAM HEIGHTS MASTER DRAINAGE PLAN PREPARED BY BOHANNAN HOUSTON. THE PROPOSED ADDITION IS LOCATED WITH IN BASIN B4 OF THE MASTER PLAN, AND IS LOCATED OVER THE EXISTING PAVED AREA, THEREFORE NO SIGNIFICANT CHANGE IN RUNOFF ARE ANTICIPATED

THE NORTH DIVERSION CHANNEL IS LOCATED ALONG THE NORTH AND WEST PROPERTY LINES, AND THE EXISTING CURB AND GUTTER ALONG PASEO DEL NORTE TO THE SOUTH BLOCK FLOWS FROM THOSE DIRECTIONS. THE SITE IS HIGHER THAN THE LAND TO THE EAST, THEREFORE OFFSITE FLOWS ARE CONSIDERED INSIGNIFICANT.

THE PROPOSED IMPROVEMENTS CONSIST OF A 1553 SF ADDITION TO THE EXISTING SHOP FACILITY LOCATED ALONG THE NORTH PROPERTY LINE. NO ADDITIONAL PARKING NOR LANDSCAPING ARE ANTICIPATED. AS SHOWN BY THE CALCULATION THE PROPOSED DEVELOPMENT WILL INCREASE THE RATE AND VOLUME OF RUNOFF. THE EXISTING RATE OF DISCHARGE IS 25.31 CFS (4.03 CFS/ACRE). NO PONDING IS ANTICIPATED FOR THE SITE.

THE CALCULATIONS ANALYZE THE EXISTING AND PROPOSED CONDITIONS FOR 6-HOUR, 100 YEAR RAINFALL EVENT. THE ANALYSIS IS IN ACCORDANCE WITH THE CITY OF ALBUQUERQUE DEVELOPMENT PROCESS MANUAL VOLUME II.

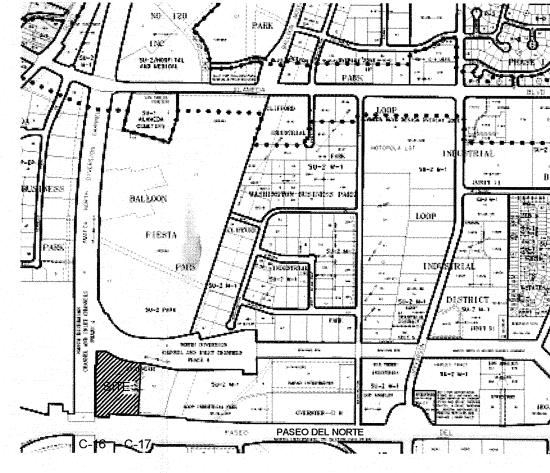
# CALCULATIONS PRECIPITATION ZONE = 2

TOTAL SITE AREA = 6.279 ACRES

AMAFCA NORTH DIVERSION CHANNEL

**EXISTING CONDITIONS** LAND TREATMENT

- B=15% C=20% D=65% E = 0.78(0.14)+1.13(0.20)+2.12(0.65) = 1.72 INCHES V = 1.72(6.279) / 12 = 0.902 ACRE FEET
- Q = (2.28(0.14)+3.14(0.20)+4.70(0.65)) (6.279) = 25.3 CFS
- INCREASE IN VOLUME OF RUNOFF = 0.0 ACRE FT INCREASE IN RATE OF RUNOFF = 0.0 CFS





TRACK F1A & F1B, LAND OF SPRINGIER CORPORATION

3711 PASEO DEL NORTE, ALBUQUERQUE, NM

LEGEND: EXISTING SPOT ELEVATION • 51.00 NEW SPOT ELEVATION 51 EXISTING CONTOUR ---- NEW CONTOUR VERIFIED ELEVATION -51.0 AS BUILT ELEVATION BASIN BOUNDARY — PROPERTY LINE

FLOW LINE GROUND GND INVERT TOP OF CURB TOP OF WALL GRAVEL

TOP OF ASPHALT TOP OF GRATE TOP OF CONCRETE SLAB TEMPORARY BENCH MARK ASPHALT PAVING

C16 & C17

FILE C17/D019

CONCRETE

PROJECT

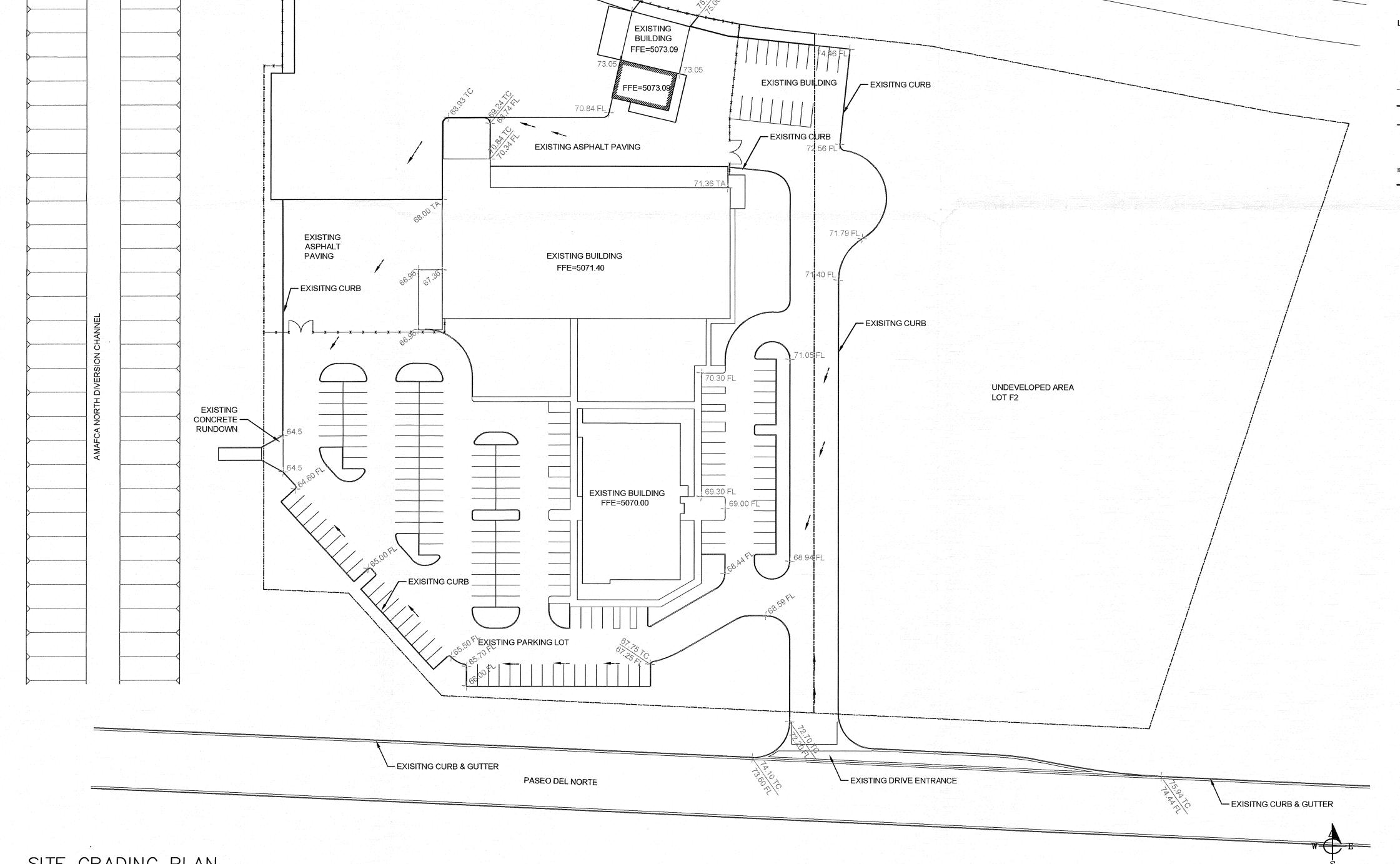
REVISIONS

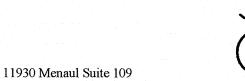
JANUARY 23, 2007

DRAWING NAME

GRADING PLAN

HYDROLOGY SECTION





j arthur blessen engineering

SITE GRADING PLAN

Albuquerque, NM 87112 (505) 293-1477

ENGINEER SEAL

ARCHITECT SEAL