City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

March 8, 1999

Rick Beltramo, PE
Bohannan-Huston Inc.
7500 Jefferson NE
Albuquerque, NM 87109

RE: ENGINEER'S CERTIFICATION FOR OFFICE/WAREHOUSE (C-17/D19)
RECEIVED JAN 19, 1999 FOR CERTIFICATE OF OCCUPANCY
ENGINEER'S STAMP DATED 1/18/99

Dear Mr. Beltramo:

Based on the information included in the submittal referenced above, City Hydrology accepts the Engineer's Certification for Certificate of Occupancy. Contact Vicki Chavez at Code Administration to obtain the Certificate of Occupancy for 3711 Paseo del Norte NE.

If I can be of further assistance, You may contact me at 768-2727.

Sincerely,

John P. Curtin, P.E.
Project Manager, PWD/Hyd

Notified Vicki on 3-10-99

CITY OF
Albuquerque

March 5, 1998

Jean Swalley
Bohannan-Huston, Inc.
7500 Jefferson NE
Albuquerque, NM 87109

RE: OFFICE - WAREHOUSE (C17-D19). GRADING AND DRAINAGE PLAN FOR BUILDING AND GRADING PERMIT APPROVALS. ENGINEER'S STAMP DATED 1-7-98.

Dear Ms. Swalley:

Based on the information provided on your January 12, 1998 submittal, the above referenced project is approved for Building Permit.

Prior to Certificate of Occupancy, a Engineer's Certification will be required. If I can be of further assistance, please feel free to contact me at 924-3984.

Sincerely,

Lisa Ann Manwill, P.E.
Hydrology

c: Andrew Garcia
File

REVISED DRAINAGE REPORT
FOR
BRADBURY & STAMM CONSTRUCTION

OCTOBER 22, 1997

Prepared by:

BOHANNAN HUSTON
COURTYARD I
7500 JEFFERSON NE
ALBUQUERQUE, NEW MEXICO 87109

Prepared for:

BRADBURY & STAMM CONSTRUCTION
1217 1ST ST. NW
ALBUQUERQUE, NM 87102

PREPARED BY:

Jean Swalley 10.22.97

Jean Swalley, E.I. Date

UNDER THE SUPERVISION OF:

JAMES R. TOPMILLER
NEW MEXICO
9354
REGISTERED PROFESSIONAL ENGINEER

James R. Topmiller, P.E. Date
10/22/97

H:\97284\CDP\A01-GRADE PLN\REPORTS\REVISED DRNG RPT.DOC

PEAK DISCHARGE (cfs/acre)

CURRENT CONDITIONS

BASIN	AREA (ACRES)	% LAND TREATMENT* A	B	C	D	PEAK DISCHARGE - (CFS/ACRE)** A	B	C	D	Q(100-YR) UNDEVELOPED (CFS)
1	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
3	1.68	85.00	15.00	0.00	0.00	1.56	2.28	3.14	4.7	2.80
4	2.94	85.00	15.00	0.00	0.00	1.56	2.28	3.14	4.7	4.90
5	2.96	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

BASIN	AREA (ACRES)	% LAND TREATMENT* A	B	C	D	PEAK DISCHARGE - (CFS/ACRE)** A	B	C	D	Q(100-YR) DEVELOPED (CFS)
1	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
3	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

BASIN	AREA (ACRES)	% LAND TREATMENT* A	B	C	D	PEAK DISCHARGE - (CFS/ACRE)** A	B	C	D	Q(100-YR) DEVELOPED (CFS)
1	9.60	85.00	15.00	0.00	0.00	1.56	2.28	3.14	4.7	16.01
2	4.10	0.00	10.00	15.00	75.00	1.56	2.28	3.14	4.7	17.32
3	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	15.00	15.00	70.00	1.56	2.28	3.14	4.7	12.14
										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

* Table A-4

** Table A-9

CUL-DE-SAC STREET HYDRAULICS

FLOW CAPACITY

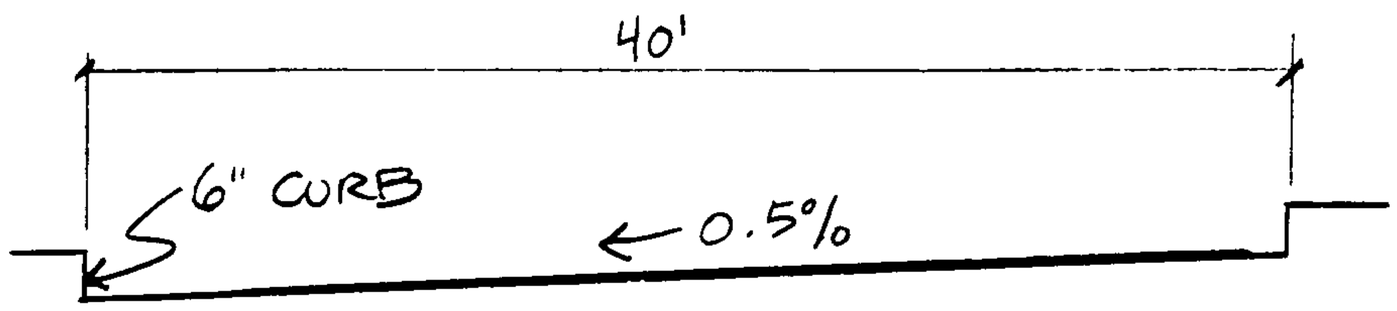
Manning's Coefficient	0.017	(street)
Slope	0.010	(minimum)
Section Coordinates (ft.)	.5,0	
	0,0	
	.2,40	
	.7,40	

DEPTH INC	FLOW AREA (SF)	FLOW RATE (CFS)	WETTED PERIMETER (FT)	FLOW VELOCITY (FPS)	TOP WIDTH (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
[redacted]					
0.50	16.00	74.90	40.80	4.70	40.00

100-YEAR STORM FLOW

BASINS	B-1 (Phase III)	16.01	CFS
	B-2 (Phase III)	17.32	
	B-3 (Phase III)	6.89	
TOTAL FLOW		40.22	CFS

DEPTH = 0.37 FT
VELOCITY = 3.65 FPS



SECTION B
N.T.S.

ACCESS STREET HYDRAULICS

FLOW CAPACITY

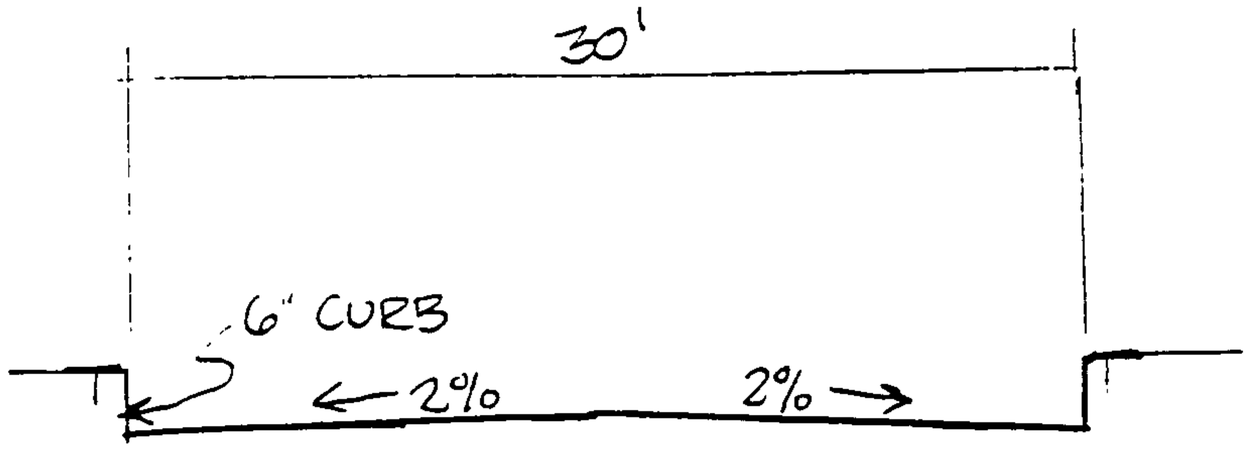
Manning's Coefficient	0.017
Slope	0.010
Section Coordinates (ft.)	.5,0
	0,0
	.3,15
	0,30
	.5,30

DEPTH INC	FLOW AREA (SF)	FLOW RATE (CFS)	WETTED PERIMETER (FT)	FLOW VELOCITY (FPS)	TOP WIDTH (FT)
0.10	0.50	0.60	10.20	1.20	10.00
0.20	2.00	3.70	20.40	1.80	20.00
0.30	4.50	11.40	30.60	2.40	30.00
0.40	7.50	25.60	30.80	3.40	30.00
0.50	10.50	44.60	31.00	4.20	30.00

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



SECTION C
N.T.S.

RUNDOWN WEIR OPENING

WEIR CAPACITY

Weir Coefficient 3.000

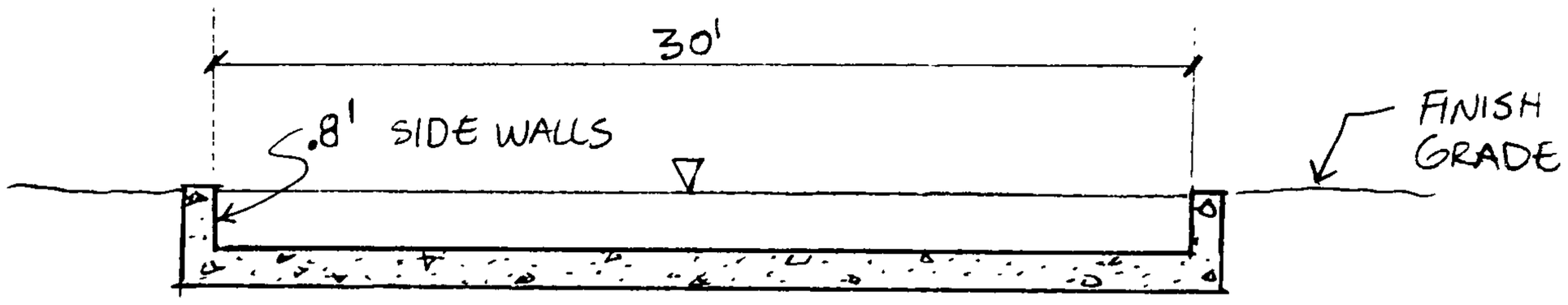
Section Coordinates (ft.) .8 ,0
0,0
0,30
.8 ,30

DEPTH INC	FLOW AREA (SF)	FLOW RATE (CFS)	FLOW VELOCITY (FPS)	TOP WIDTH (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

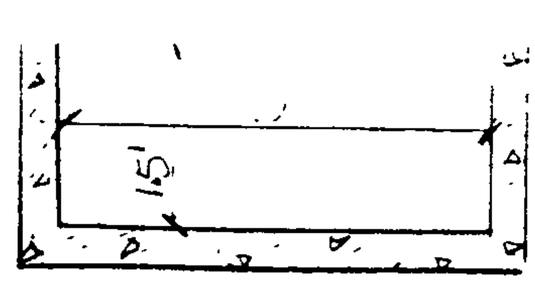
BASINS	B-1 (Phase III)	16.01	CFS
	B-2 (Phase III)	17.32	
	B-3 (Phase III)	6.89	
	B-4 (Phase III)	11.73	
	B-5 (Phase III)	12.14	
TOTAL FLOW		64.09	CFS

DEPTH = 0.797 FT
VELOCITY = 2.68 FPS



SECTION D
N.T.S.

KUNDOWN / WEIR CAPACITY

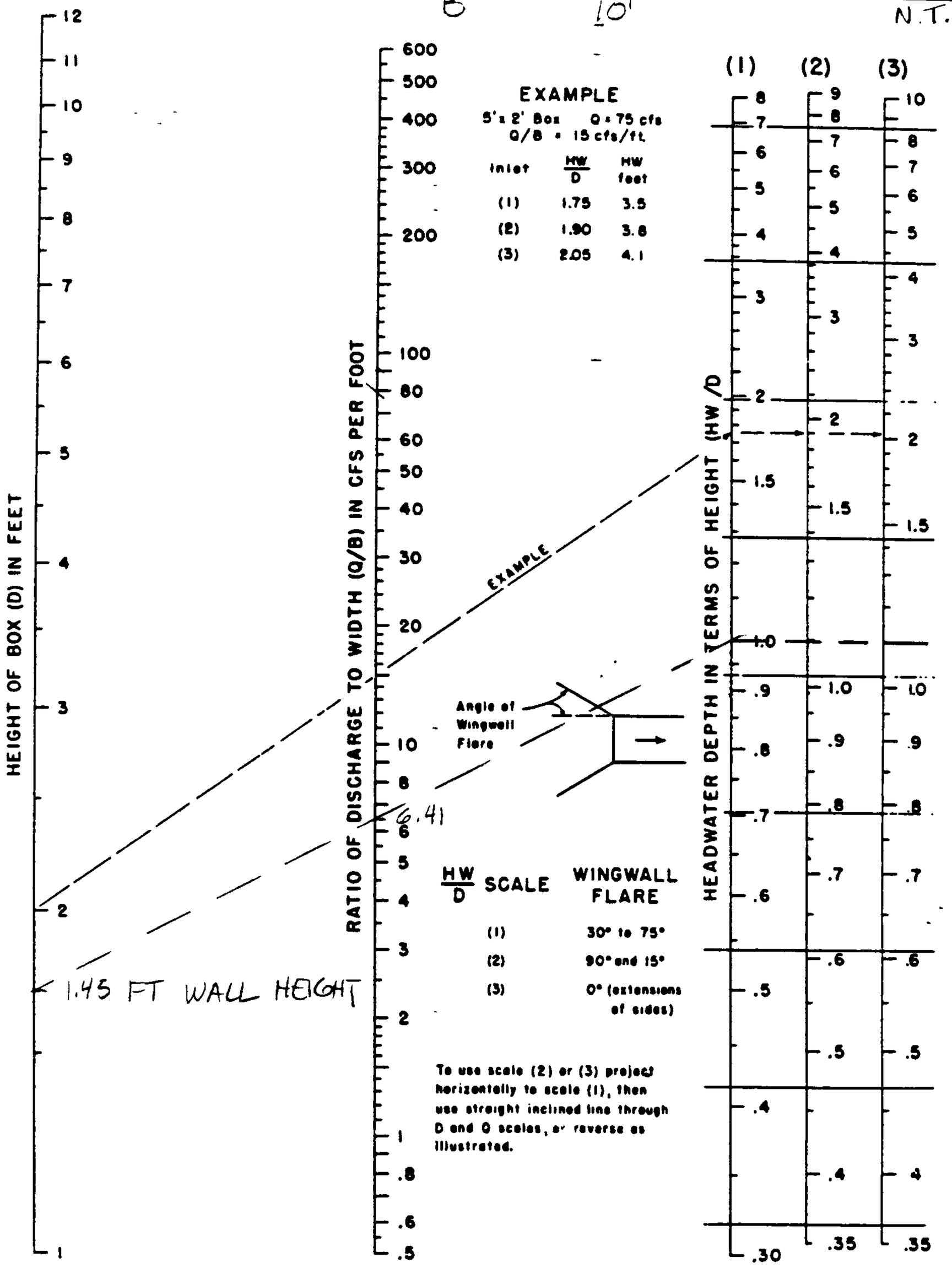


SECTION E
N.T.S.

10' WIDE RUNDOWN

$\frac{Q}{B} = \frac{64.1 \text{ CFS}}{10'} = 6.41$

CHART 8



HEADWATER DEPTH FOR BOX CULVERTS WITH INLET CONTROL

BUREAU OF PUBLIC ROADS JAN 1963

1.5 FT WALL HEIGHT ACCOMMODATES FLOW OF 64.10 CFS IN THE 10' WIDE NECK.

RUNDOWN STREAM CALCULATIONS

FLOW CAPACITY

Manning's Coefficient 0.013 (concrete)
Slope 0.0122

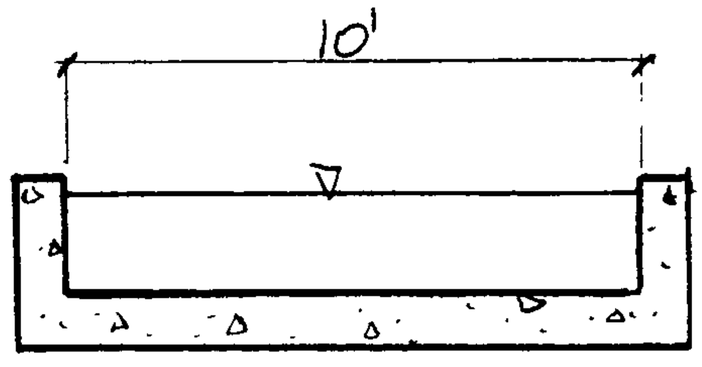
Section Coordinates (ft.) 1.5,0
0,0
0,10
1.5,10

DEPTH INC	FLOW AREA (SF)	FLOW RATE (CFS)	WETTED PERIMETER (FT)	FLOW VELOCITY (FPS)	TOP WIDTH (FT)
0.10	1.00	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-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 = 0.702 FT
VELOCITY = 9.12 FPS



SECTION F
N.T.S.

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

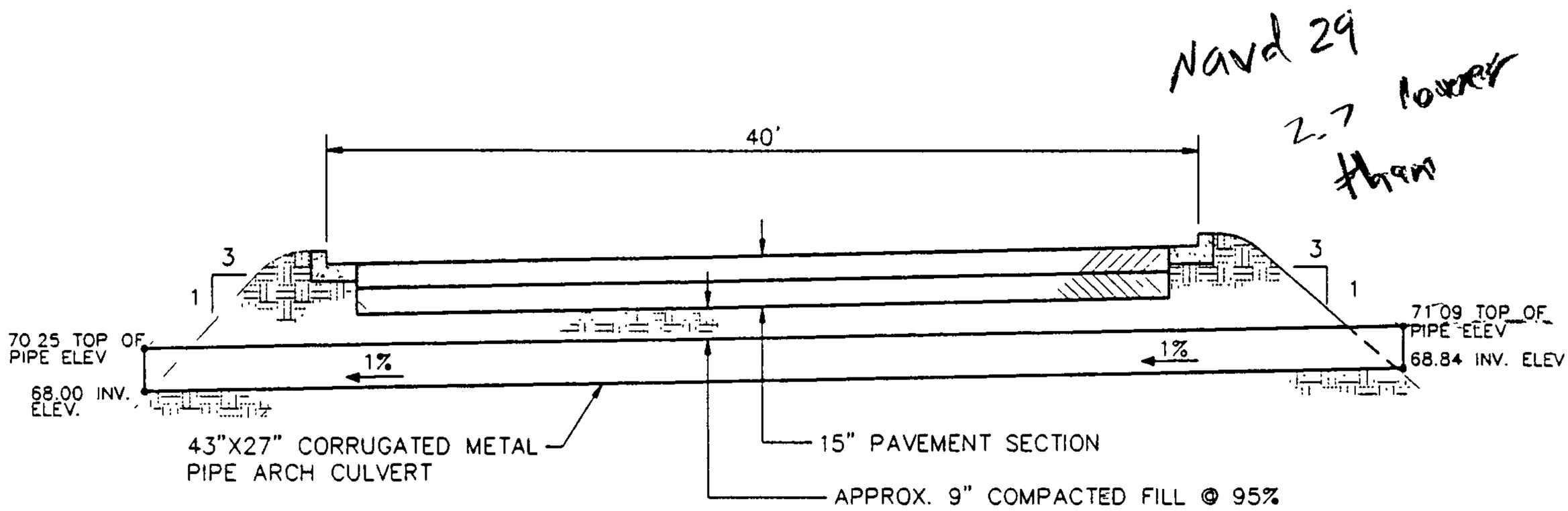
$Q_{cfs} = (1.49/n)\ A \times R^{2/3} \times S^{1/2}$
$= (1.49/.022)\ 6.4 \times 0.68^{2/3} \times 0.01^{1/2}$
$= (67.73)\ 6.4 \times 0.7723 \times 0.1$
$= (67.73)\ 6.4 \times 0.7723 \times 0.1$
$= 33.48$ cfs

Velocity Equation

$V = Q/A$
$= 33.48/6.4$
$= 5.23$ 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

N.T.S.

CITY OF ALBUQUERQUE
PLANNING DEPARTMENT
DEVELOPMENT SERVICE / HYDROLOGY SECTION

DATE: 10-13-10
CONFERENCE RECAP

ZONE ATLAS PAGE NO: C 17
DRAINAGE FILE: C17/D019
ZONING: _____
DRB:
SUBJECT: Calibers
STREET ADDRESS (IF KNOWN): _____
SUBDIVISION NAME: _____

APPROVAL REQUESTED:

ATTENDANCE: Fred Arfman, Curtis Cherne

FINDINGS:

Per Basin Mgt/Conceptual Grading Plan, BHI 10-22-97, the site can discharge up to 17.32 cfs to the Southwest corner of the site. Site must also accept 16 cfs undeveloped.

THE UNDERSIGNED AGREES THAT THE ABOVE FINDINGS ARE SUMMARIZED ACCURATELY AND ARE SUBJECT TO CHANGE IF FURTHER INVESTIGATION REVEALS THAT THEY ARE NOT REASONABLE OR THAT THEY ARE BASED ON INACCURATE INFORMATION.

SIGNED: Curtis A. Cherne
NAME (PRINT): Curtis A. Cherne

SIGNED: Fred C. Arfman
NAME (PRINT): FRED C. ARFMAN

NOTE PLEASE PROVIDE A COPY OF THIS RECAP WITH YOUR DRAINAGE SUBMITTAL.

Cherne, Curtis

From: Cherne, Curtis
Sent: Friday, May 11, 2012 12:25 PM
To: 'Emily Johnson'
Cc: 'lmazur@amafca.org'; Firth, Deirdre M.; Dourte, Richard H.
Subject: RE: Albuquerque- Warehouse at NWC of Paseo Del Norte and Washington St. NE

Emily,
I am going through the drainage files (C17/D008 and C-17/D019)
I found some calcs for the 43"x27" cmp. They did not assume any pressure flow, just did a Manning's on it and came up with 33.48 cfs.
I am generating almost more questions than I have answers.
The Drainage Master Plan was done by Bohannon Huston in 1997. It doesn't specify a developed flow for this tract. It states "It is anticipated that generated flows form future development of parcels in Basin B-1 will be diverted to the existing culvert on the north side of the PDN frontage road or to the channel on the north side of the property."
The 16.3 cfs I told you on the phone for offsite flows was for a proposed site that did not develop. I searched the microfiche and determined the site near the southeast corner of this site has a retention pond. I don't have any info on the site for the large building north of the retention site mentioned above. It appears to drain north to the channel. AMAFCA may have the drainage plan for it.

I found a letter dated 8-15-06 from AMAFCA to Verlyn Miller P.E. of Miller Engineering Consultants concerning the ditch in the Paseo Del Norte (PDN) ROW has not been maintained well and the parking lot is being flooded. I believe this is the site with the culvert.

In conclusion,
This site (4001 PDN), the site to the west at 3801 PDN, and any offsite flows should drain through the culvert at 3701 PDN to the North Diversion Channel or with AMAFCA approval drain to the north. Your Conceptual Drainage Plan should demonstrate how this is to happen. Gravity flow would be preferred to pumping. There appears to be capacity issues with the channel downstream of the culvert in the DOT ROW. This should be addressed. In addition you should consult with AMAFCA since the North Diversion Channel is their facility. I have copied Lynn Mazur with AMAFCA on this e-mail.

Curtis Cherne, P.E., CFM
Hydrology, COA
505-924-3986

From: Emily Johnson [mailto:ejohnson@colestl.com]
Sent: Thursday, May 03, 2012 8:19 AM
To: Cherne, Curtis
Subject: Albuquerque- Warehouse at NWC of Paseo Del Norte and Washington St. NE

Curtis-

Have you had a chance to review the attached property? We need to know if there are any detention requirements or water quality requirements.

Thanks,

Emily Johnson PE / LEED AP
Project Engineer III / *ejohnson@colestl.com*
cole

ST. LOUIS / ST. CHARLES / DALLAS
Cole / 10777 Sunset Office Dr / St. Louis / MO / 63127
314.984.9887 *tel* x126 / 314.984.0587 *fax* / *www.colestl.com*

From: Emily Johnson
Sent: Wednesday, April 25, 2012 4:51 PM
To: 'Cherne, Curtis '
Subject: Albuquerque- Warehouse at NWC of Paseo Del Norte and Washington St. NE

Thank you Curtis. Would you also be able to tell me the detention requirements and water quality requirements for a site located at the northwest corner of Paseo Del Norte and Washington St. NE? The property is shown on the attached drawing.

Thanks,

Emily Johnson PE / LEED AP
Project Engineer III / *ejohnson@colestl.com*

cole

ST. LOUIS / ST. CHARLES / DALLAS
Cole / 10777 Sunset Office Dr / St. Louis / MO / 63127
314.984.9887 *tel* x126 / 314.984.0587 *fax* / *www.colestl.com*

From: Cherne, Curtis [mailto:CCherne@cabq.gov]
Sent: Tuesday, April 24, 2012 9:31 AM
To: Emily Johnson
Subject: RE: Albuquerque- Warehouse at SEC of San Mateo and San Diego

Emily,
It means we still need a conceptual drainage plan for the area. The conceptual plan will include information whether detention is required or not.

Curtis

From: Emily Johnson [mailto:ejohnson@colestl.com]
Sent: Monday, April 23, 2012 2:39 PM
To: Cherne, Curtis
Subject: RE: Albuquerque- Warehouse at SEC of San Mateo and San Diego

Thank you Curtis. So does this mean that detention is required? Do you have any plans that you could send that go along with the letter?

Thanks,

Emily Johnson PE / LEED AP
Project Engineer III / *ejohnson@colestl.com*

cole

ST. LOUIS / ST. CHARLES / DALLAS
Cole / 10777 Sunset Office Dr / St. Louis / MO / 63127
314.984.9887 *tel* x126 / 314.984.0587 *fax* / *www.colestl.com*

From: Cherne, Curtis [mailto:CCherne@cabq.gov]
Sent: Monday, April 23, 2012 1:32 PM
To: Emily Johnson
Subject: RE: Albuquerque- Warehouse at SEC of San Mateo and San Diego

Emily,
Please see attached letter from April 2009. We are still trying to get a conceptual drainage plan for the area.

Curtis

From: Emily Johnson [mailto:ejohnson@colestl.com]
Sent: Monday, April 16, 2012 9:04 AM
To: Cherne, Curtis
Subject: Albuquerque- Warehouse at SEC of San Mateo and San Diego

Good Morning Curtis-

Per our phone conversation this morning, attached is a very conceptual site plan. We are just south of a large drainage ditch. If you could let me know if there will be any detention requirements and if so what they are, I'd appreciate it.

Thanks,

Emily Johnson PE / LEED AP
Project Engineer III / *ejohnson@colestl.com*

cole

ST. LOUIS / ST. CHARLES / DALLAS
Cole / 10777 Sunset Office Dr / St. Louis / MO / 63127
314.984.9887 *tel* x126 / 314.984.0587 *fax* / *www.colestl.com*

CITY OF ALBUQUERQUE

August 9, 2006

Verlyn A. Miller, P.E.
Miller Engineering Consultants
4800 Juan Tabo Blvd. NE Suite C
Albuquerque, NM 87106

Re: Bradbury Stamm Construction Headquarters, Engineer's Stamp dated 7-28-06
Tract F2 of the Lands of Springer Building Materials Corporation (C17/D19)

Dear Mr. Miller,

Based on the information contained in your submittal received on July 28, 2006, there are some issues that must be addressed prior to Building Permit approval. Those items are detailed below.

1. The date you cite for FIRM panel 136F says 11-16-06.
2. Please utilize a standard zone atlas page to highlight the precise site location and give the legal description of the subject property on the plan.
3. The benchmark to which you give reference, 13-C17, was not only destroyed in 2001, but referenced an entirely different elevation. Please revise the narrative to reflect the true monument utilized along with the elevation and datum type.
4. The narrative refers to a "small amount" of offsite runoff from the north but does not give the magnitude of the flow. Please revise the narrative to quantify this amount and include the offsite, undeveloped flows from the east. Those flows should be graphically depicted on the plan as well.
5. Your plan discusses the existing CMP culvert as being both a 30-inch and a 36-inch. The Master Plan calls this pipe out as a 43 x 27 arch.
6. A detail of the proposed drainage swale structural cross section is required.
7. The existing earth lined ditch that conveys runoff to the North Diversion Channel has not been maintained and, as a result, is in very poor condition. Based on a site reconnaissance and discussion with AMAFCA, that ditch is deficient in its capacity to handle the existing flows and is transporting sediment into the existing parking lot. Improvements must therefore be made to that facility. Coordination with and approval by AMAFCA will also be necessary.

If you have any questions or need additional information, feel free to contact me at 924-3990.

Sincerely,

Jeremy Hoover, P.E.
Senior Engineer
Hydrology Section
Development and Building Services

cc: file C17/D19
file DRB #1000057
Lynn Mazur, P.E., C.F.M., AMAFCA

P.O. Box 1293

Albuquerque

New Mexico 87103

www.cabq.gov

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,

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.

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

Sincerely,

Rudy E. Rael, Associate Engineer
Planning Department.
Building and Development Services

C: file

P.O.Box 1293

Albuquerque

New Mexico 87103

www.cabq.gov

Albuquerque
Metropolitan
Arroyo
Flood
Control
Authority

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

Post-it® Fax Note 7671	Date 8-15	# of pages ▶ 1
To JEREMY HOOVER	From LYNN MAZUR	
Co./Dept. HYDROLOGY	Co. AMAFCA	
Phone #	Phone #	
Fax #	Fax #	

August 15, 2006

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

C17/D19
DRB 1000057

Re: 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

Lynn M. Mazur, P.E., C.F.M.
Development Review Engineer

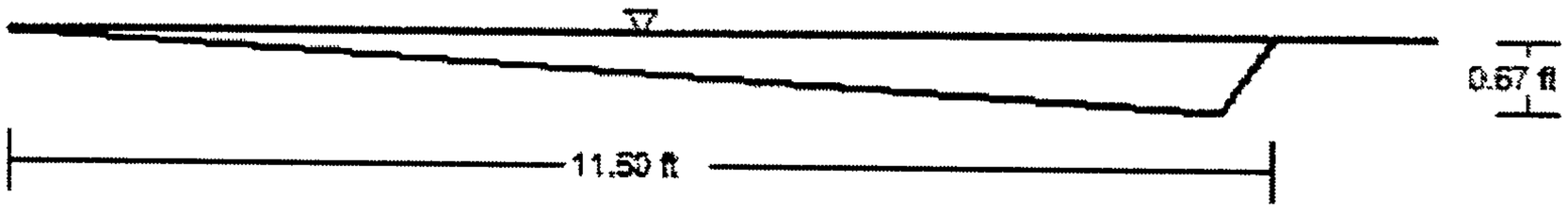
Cc: Jeremy Hoover, City Hydrology
Kathy Trujillo, NMDOT, District 3

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

ASPHALT



Worksheet for Irregular Section - 1

ProjectDescription		
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 Meth	ImprovedLotters	
Open Channel Weighted Roughnes	ImprovedLotters	
Closed Channel Weighted Roughne	Hortons	

Results		
Roughness Coefficient	0.013	
Discharge:	13.59	ft^3/s
Elevation Range:	0.00 to 0.67 ft	
Flow Area:	3.85	ft^2
Wetted Perimeter:	13.36	ft
Top Width	11.50	ft
Normal Depth:	0.67	ft
Critical Depth	0.70	ft
Critical Slope	0.00374	ft/ft
Velocity:	3.53	ft/s
Velocity Head:	0.19	ft
Specific Energy:	0.86	ft
Froude Number:	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

Station	Elevation
0+00	0.67
0+11	0.00

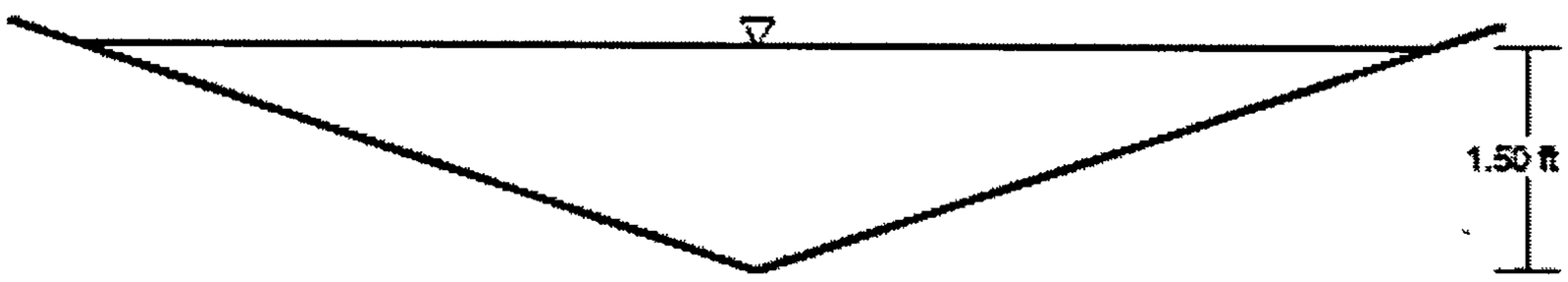
Worksheet for Irregular Section - 1

Station	Elevation
0+12	0.67
0+13	0.67

V-Ditch
Cross Section for Triangular Channel - 1

Project Description		
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	ft^3/s



Worksheet for Triangular Channel - 1

ASSUME .26 FOR DIRT W/ SOME VEGETATION

Project Description		
Flow Element:	Triangular Channel	
Friction Method:	Manning Formula	
Solve For:	Discharge	

Input Data		
Roughness Coefficient:	0.020 — GRAVEL LINED	
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	ft^3/s
Flow Area:	6.75	ft^2
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

$$\frac{1.49}{.026}\left(6.75\right)\left(\sqrt{.007}\right)\left(\frac{6.75}{9.49}\right) = 25.8\,CFS$$

PEAK DISCHARGE (cfs/acre)

CURRENT CONDITIONS

BASIN	AREA (ACRES)	% LAND TREATMENT* A	B	C	D	PEAK DISCHARGE - (CFS/ACRE)** A	B	C	D	Q(100-YR) UNDEVELOPED (CFS)
1	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
3	1.68	85.00	15.00	0.00	0.00	1.56	2.28	3.14	4.7	2.80
4	2.94	85.00	15.00	0.00	0.00	1.56	2.28	3.14	4.7	4 90
5	2.96	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

BASIN	AREA (ACRES)	% LAND TREATMENT* A	B	C	D	PEAK DISCHARGE - (CFS/ACRE)** A	B	C	D	Q(100-YR) DEVELOPED (CFS)
1	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
3	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

BASIN	AREA (ACRES)	% LAND TREATMENT* A	B	C	D	PEAK DISCHARGE - (CFS/ACRE)** A	B	C	D	Q(100-YR) DEVELOPED (CFS)
1	9.60	85.00	15.00	0.00	0.00	1.56	2.28	3.14	4.7	16.01
B- 2	4.10	0.00	10.00	15.00	75.00	1.56	2.28	3.14	4.7	17.32
3	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	15.00	15.00	70.00	1.56	2.28	3.14	4.7	12.14
										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

* 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}

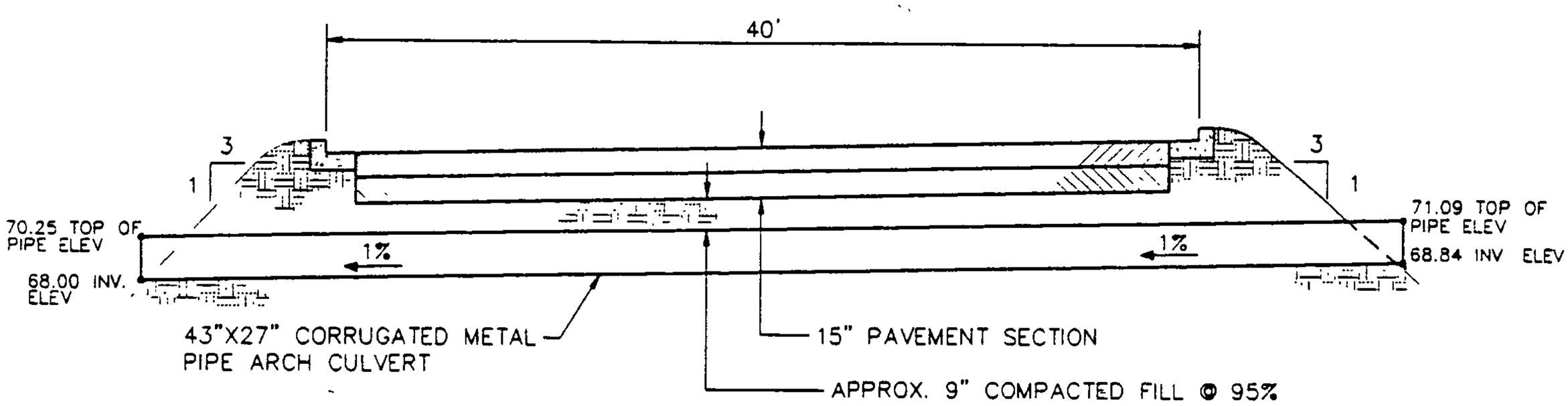
$= (1.49/n)\ A \times R^{2/3} \times S^{1/2}$
$= (1.49/.022)\ 6.4 \times 0.68^{2/3} \times 0.01^{1/2}$
$= (67.73)\ 6.4 \times 0.7723 \times 0.1$
$= (67.73)\ 6.4 \times 0.7723 \times 0.1$
$= 33.48$ cfs ✓

Velocity Equation V

$= Q/A$
$= 33.48/6.4$
$= 5.23$ 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

N.T.S.

RUNDOWN STREAM CALCULATIONS

FLOW CAPACITY

Manning's Coefficient 0.013 (concrete)
Slope 0.0122

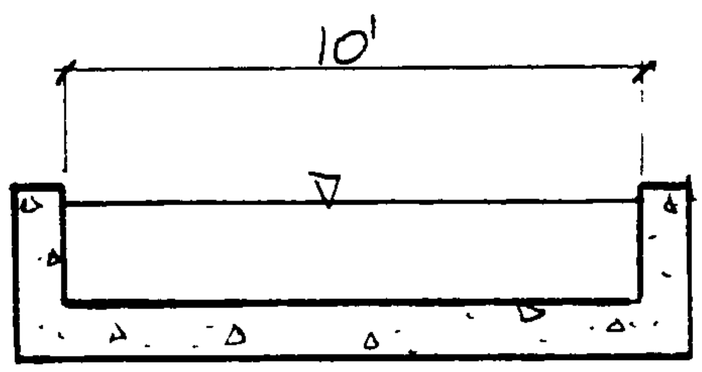
Section Coordinates (ft.) 1.5,0
0,0
0,10
1.5,10

DEPTH INC	FLOW AREA (SF)	FLOW RATE (CFS)	WETTED PERIMETER (FT)	FLOW VELOCITY (FPS)	TOP WIDTH (FT)
0.10	1.00	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

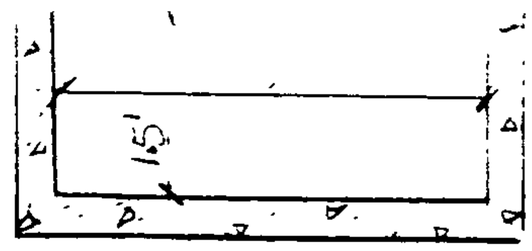
BASINS	B-1 (Phase III)	16.01	CFS
	B-2 (Phase III)	17.32	
	B-3 (Phase III)	6.89	
	B-4 (Phase III)	11.73	
	B-5 (Phase III)	12.14	
TOTAL FLOW		64.09	CFS

DEPTH = 0.702 FT
VELOCITY = 9.12 FPS



SECTION F
N.T.S.

KINGSMILL NECK CREEK

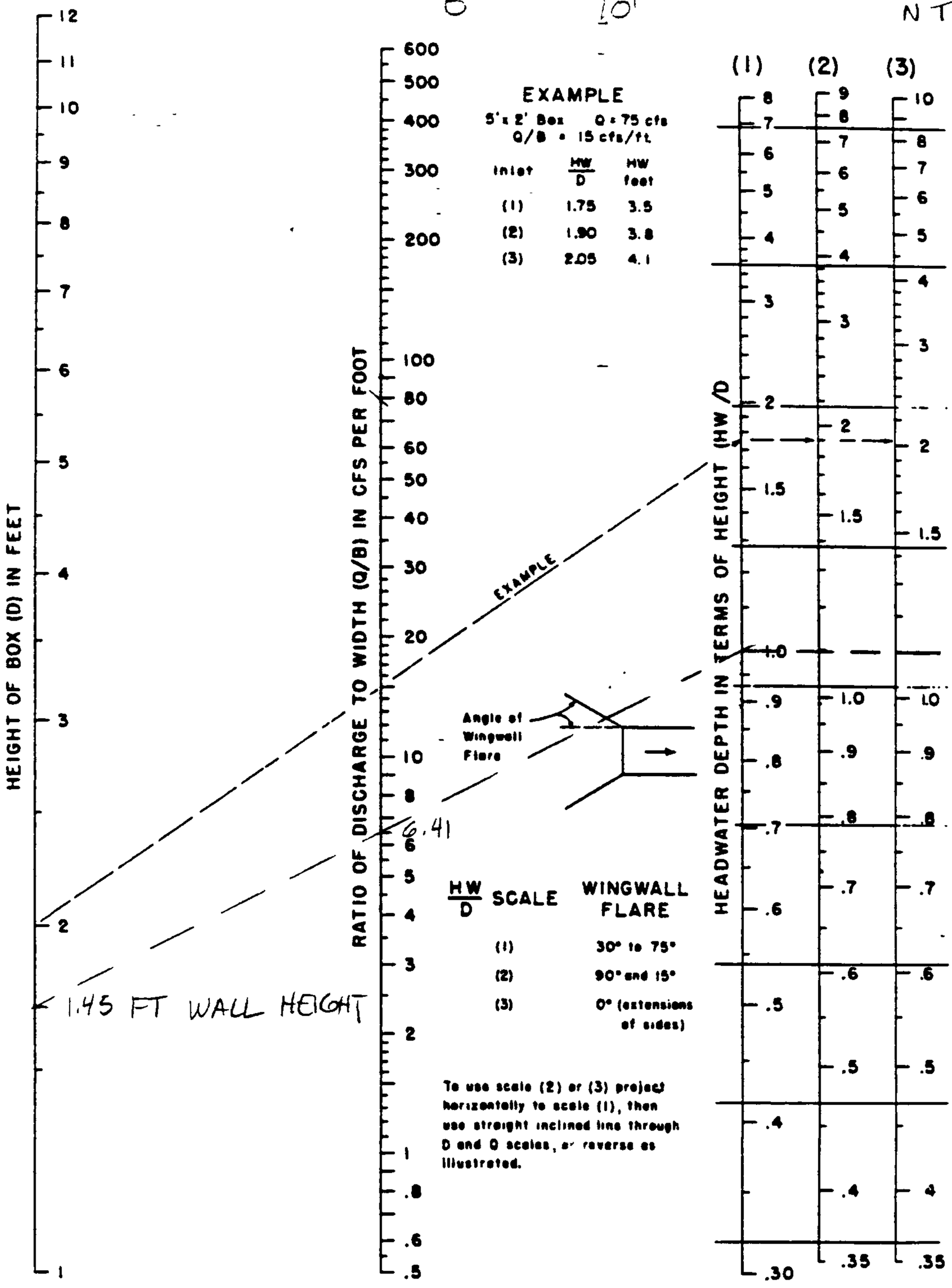


SECTION E
N.T.S.

10' WIDE RUNDOWN

$\frac{Q}{B} - \frac{34.1 \text{ CFS}}{10'} = 6.41$

CHART 8



HEADWATER DEPTH FOR BOX CULVERTS WITH INLET CONTROL

BUREAU OF PUBLIC ROADS JAN 1963

1.5 FT WALL HEIGHT ACCOMMODATES FLOW OF 34.10 CFS IN THE 10' WIDE NECK.

ACCESS STREET HYDRAULICS

FLOW CAPACITY

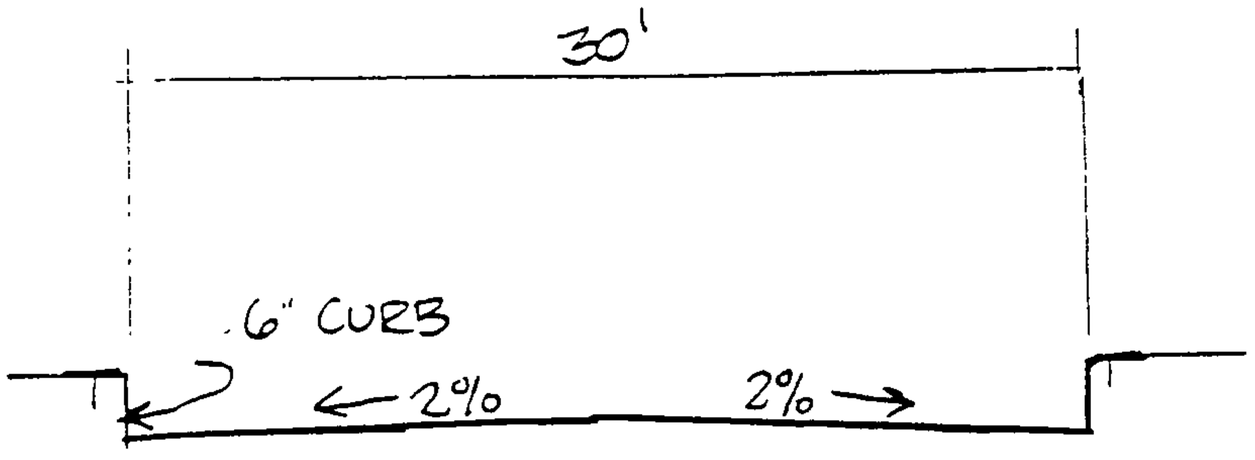
Manning's Coefficient	0.017
Slope	0.010
Section Coordinates (ft.)	.5,0
	0,0
	.3,15
	0,30
	.5,30

DEPTH INC	FLOW AREA (SF)	FLOW RATE (CFS)	WETTED PERIMETER (FT)	FLOW VELOCITY (FPS)	TOP WIDTH (FT)
0.10	0.50	0.60	10.20	1.20	10.00
[illegible]					
0.40	7.50	25.60	30.80	3.40	30.00
0.50	10.50	44.60	31.00	4.20	30.00

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



SECTION C
N.T.S.

CUL-DE-SAC STREET HYDRAULICS

FLOW CAPACITY

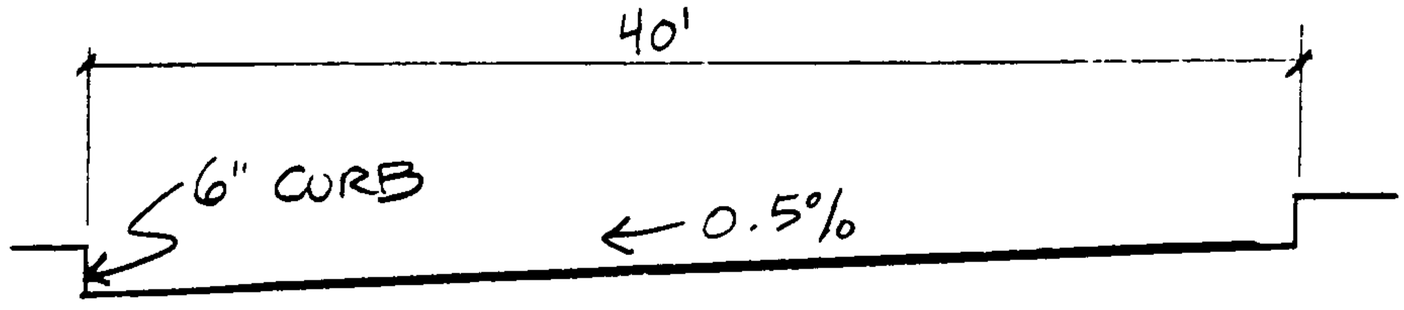
Manning's Coefficient	0.017	(street)
Slope	0.010	(minimum)
Section Coordinates (ft.).	.5,0	
	0,0	
	.2,40	
	.7,40	

DEPTH INC	FLOW AREA (SF)	FLOW RATE (CFS)	WETTED PERIMETER (FT)	FLOW VELOCITY (FPS)	TOP WIDTH (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
[illegible]					
0.50	16.00	74.90	40.80	4.70	40.00

100-YEAR STORM FLOW

BASINS	B-1 (Phase III)	16.01	CFS
	B-2 (Phase III)	17.32	
	B-3 (Phase III)	6.89	
TOTAL FLOW		40.22	CFS

DEPTH = 0.37 FT
VELOCITY = 3.65 FPS



SECTION B
N.T.S.

RUNDOWN WEIR OPENING

WEIR CAPACITY

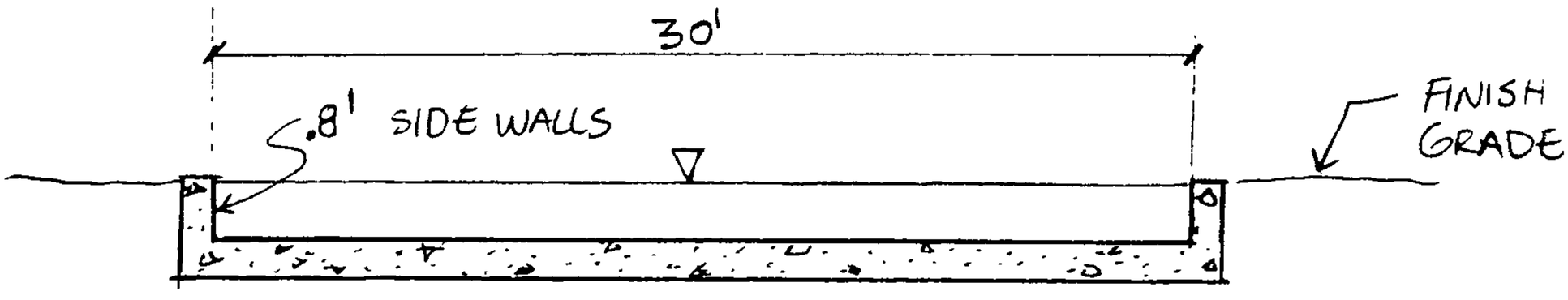
Weir Coefficient 3.000

Section Coordinates (ft.) .8 ,0
0,0
0,30
.6 ,30

DEPTH INC	FLOW AREA (SF)	FLOW RATE (CFS)	FLOW VELOCITY (FPS)	TOP WIDTH (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.

CITY OF ALBUQUERQUE

April 3, 2007

Tate Fishburn, R.A.
P.O. Box 2941
Corrales, NM 87048

Re: Office / Warehouse, 3711 Paseo del Norte Blvd NE, Traffic Circulation Layout
Architect's Stamp dated 4-3-07 (C17-D19)

Dear Mr. Fishburn,

The TCL submittal received 3-16-07 is approved for Building Permit. The plan is stamped and signed as approved. A copy of this plan will be needed for each of the building permit plans. Please keep the original to be used for certification of the site for final C.O. for Transportation. **Public infrastructure or work done within City Right-of-Way shown on these plans is for information only and is not part of approval. A separate DRC and/or other appropriate permits are required to construct these items.**

If a temporary CO is needed, a copy of the original TCL that was stamped as approved by the City will be needed. This plan must include a statement that identifies the outstanding items that need to be constructed or the items that have not been built in "substantial compliance," as well as the signed and dated stamp of a NM registered architect or engineer. Submit this TCL with a completed Drainage and Transportation Information Sheet to Hydrology at the Development Services Center of Plaza Del Sol Building.

When the site is completed and a final C.O. is requested, use the original City stamped approved TCL for certification. A NM registered architect or engineer must stamp, sign, and date the certification TCL along with indicating that the development was built in "substantial compliance" with the TCL. Submit this certification TCL with a completed Drainage and Transportation Information Sheet to Hydrology at the Development Services Center of Plaza Del Sol Building.

Once verification of certification is completed and approved, notification will be made to Building Safety to issue Final C.O. To confirm that a final C.O. has been issued, call Building Safety at 924-3306.

Sincerely,

Kristal D. Metro, P.E.
Senior Engineer, Planning Dept.
Development and Building Services

C: File

P.O. Box 1293
Albuquerque
New Mexico 87103
www.cabq.gov

CITY OF ALBUQUERQUE

April 2, 2007

Tate Fishburn, R.A.
Tate Fishburn Architect
P.O. Box 2941
Corrales, NM 87048

Re: 3711 Paseo Del Norte NE, Lot F-1-A Lands of Springer, Traffic Circulation Layout, Architect's Stamp dated ~~XXXXXX~~ (C17-D19)
4-3-07

Dear Mr. Fishburn,

Based upon the information provided in your submittal received 03-16-06, the above referenced plan cannot be approved for Building Permit until the following comments are addressed:

1. Sign and date the plans.

If you have any questions, you can contact me at 924-3981.

Sincerely,

Kristal Metro, P.E.
Senior Engineer
Development and Building Services
C: file

P.O. Box 1293

Albuquerque

New Mexico 87103

www.cabq.gov

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(Rev. 12/05)

PROJECT TITLE: ~~OGB OFFICE ADDN~~ OFFICE WARE House ~~[redacted]~~ TRF

ZONE MAP/DRG. FILE #: C-17/D-19

DRB#: _____ EPC#: _____ WORK ORDER#: _____

LEGAL DESCRIPTION: F-1-A LANDS OF SPRINGER

CITY ADDRESS: 3711 PASEO DEL NORTE, NE 87113

ENGINEERING FIRM: J. ARTHUR BLESSING — CONTACT: _____

ADDRESS: _____ PHONE: _____

CITY, STATE: _____ ZIP CODE: _____

OWNER: OGB ARCHITECTURAL MILLWORK — CONTACT: RICK THALER

ADDRESS: _____ PHONE: 998-0000

CITY, STATE: _____ ZIP CODE: _____

ARCHITECT: TATE FISHBURN ARCHITECT — CONTACT: TATE FISHBURN

ADDRESS: BOX 2941 PHONE: 899-9338

CITY, STATE: CORRALES, NM ZIP CODE: 87048

SURVEYOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

CITY, STATE: _____ ZIP CODE: _____

CONTRACTOR: HART CONSTRUCTION — CONTACT: _____

ADDRESS: _____ PHONE: _____

CITY, STATE: _____ ZIP CODE: _____

TYPE OF SUBMITTAL:

_____ DRAINAGE REPORT
_____ DRAINAGE PLAN 1st SUBMITTAL
_____ DRAINAGE PLAN RESUBMITTAL
_____ CONCEPTUAL G & D PLAN
_____ GRADING PLAN
_____ EROSION CONTROL PLAN
_____ ENGINEER'S CERT (HYDROLOGY)
_____ CLOMR/LOMR
__X__ TRAFFIC CIRCULATION LAYOUT
_____ ENGINEER/ARCHITECT CERT (TCL)
_____ ENGINEER/ARCHITECT CERT (DRB S.P.)
_____ ENGINEER/ARCHITECT CERT (AA)
_____ OTHER (SPECIFY)

CHECK TYPE OF APPROVAL SOUGHT:

_____ SIA/FINANCIAL GUARANTEE RELEASE
_____ PRELIMINARY PLAT APPROVAL
_____ S. DEV. PLAN FOR SUB'D APPROVAL
_____ S. DEV. FOR BLDG. PERMIT APPROVAL
_____ SECTOR PLAN APPROVAL
_____ FINAL PLAT APPROVAL
__X__ FOUNDATION PERMIT APPROVAL
__X__ BUILDING PERMIT APPROVAL
_____ CERTIFICATE OF OCCUPANCY (PERM)
_____ CERTIFICATE OF OCCUPANCY (TEMP)
_____ GRADING PERMIT APPROVAL
_____ PAVING PERMIT APPROVAL
_____ WORK ORDER APPROVAL
_____ OTHER (SPECIFY)

RECEIVED
MAR 16 2007
HYDROLOGY SECTION

WAS A PRE-DESIGN CONFERENCE ATTENDED:

_____ YES
__X__ NO
_____ COPY PROVIDED

PLEASE CALL WHEN READY.
cell - 463-6928 WENT OVER W/WILL FRED

SUBMITTED BY: TATE FISHBURN DATE: 3/16/07

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location and scope to the proposed development define the degree of drainage detail. One or more of the following levels of submittal may be required based on the following:

1. **Conceptual Grading and Drainage Plan**: Required for approval of Site Development Plans greater than five (5) acres and Sector Plans.

2. **Drainage Plans**: Required for building permits, grading permits, paving permits and site plans less than five (5) acres.

3. **Drainage Report**: Required for subdivision containing more than ten (10) lots or constituting five (5) acres or more.

T A T E F I S H B U R N A R C H I T E C T

March 16, 2007

Traffic Engineer
City of Albuquerque Planning Department
Plaza Del Sol Building
Albuquerque, NM

Ref: Traffic Circulation Layout

We are submitting a Traffic Circulation Layout for review. The project is an office addition to an existing building that produces architectural millwork. The site is existing and the new addition will have minimal impact on the existing conditions. We have added parking to accommodate the new addition including handicap parking spaces with striped accessible walkway to entrances and motorcycle parking with signage. All existing parking is to remain undisturbed. Please contact me with any questions or comments. We appreciate you assistance with this project.

Sincerely,

Tate Fishburn
Architect

B O X 2 9 4 1 C O R R A L E S N M 8 7 0 4 8 5 0 5 8 9 9 9 3 3 8 F A X 8 9 9 9 3 2 8