HYDROLOGY L15/D3 TWO PLANS

L15-D3

2 PLANS

11/7/80

To: Bruno Coneglano - Asst. City Eng / Hydrology
From: Dan Salo - AMAFCA
Subject: Western "6" Motel - Stadium Blvd at I-25

Review of the grading plan shows that grading is proposed on AMAFCA right of way.

AMAFCA has not been contacted for permission to work on AMAFCA R/W.

We request that before the drainage report is approval you have the owner or his agent contact AMAFCA for permission to work on our R/W and approval of grading work on AMAFCA R/W

06-10101

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

December 1, 1980

RECEIVED
DEC 3 1980
M.S.M., INC.

Mr. Jim Leyman
Meurer, Serafini & Meurer
2601 Wyoming Blvd. N.E., Suite F
Albuquerque, New Mexico 87110

Ref: Western 6 Motel

Dear Mr. Leyman:

This letter follows my conversation of November 24, 1980 regarding the referenced project. Your plan shows grading to be performed on AMAFCA right-of-way, New Mexico State Highway Department right-of-way and City right-of-way. Before any approval can be given to this project, letters of consent by the mentioned agencies must be supplied to this office.

Regarding the drainage report, I have found inconsistencies between the information shown in the Appendix and the data discussed in the text, more specifically, the required and the supplied detention volumes are not in agreement. Further, the grading plan does not demonstrate how the average depth of ponding of 0.75 ft. is going to be achieved. A similar deficiency is noted for the northernmost detention area for which an outlet is not provided.

Finally, I want to restate my disagreement with the choice of value of 0.4 for the coefficient of runoff under existing conditions. Such a choice is not appropriate for the existing sand and gravels of the alluvial terrace; the computations must be submitted using a value of C=0.2.

If you want to discuss this matter further, please don't hesitate to contact my office.

Very truly yours,

Bruno Conegliano
Assistant Hydrology Engineer

BC/fs
cc - Rich Leonard, AMAFCA
Dick Heller

0640101

RICHARD E. LEONARD
EXECUTIVE ENGINEER

B. H. SWINBURNE, CHAIRMAN
WILLIAM V. HEREFORD, VICE-CHAIRMAN
FRANCES MCCOY, SECRETARY-TREASURER
VERNON DOAK, DIRECTOR
KLESTON LAWS, DIRECTOR

Albuquerque Metropolitan Arroyo Flood Control Authority
2600 PROSPECT AVE. N.E.
P. O. BOX 25851 • ALBUQUERQUE, N. M. 87125
TELEPHONE 344-3516

RECEIVED
DEC 4 1980
M.S.M., INC.

December 3, 1980

Meurer, Serafini and Meurer, Inc.
2601 Wyoming Blvd. N. E.
Albuquerque, New Mexico 87112

Attn: Jim Leyman

Subject: Grading Plan - Western 6 Motel - Stadium Blvd.

Dear Sir:

We have reviewed the plat and grading plan as they pertain to AMAFCA requirements and have no objections to either.

This letter will be your authorization to perform the necessary grading on AMAFCA Right of Way.

Sincerely,

Dan Sabo

Dan Sabo
Engineer

cc: Bruno Conegliano - City of Albuquerque
Santiago Gallegos - AMAFCA

NEW MEXICO

STATE HIGHWAY DEPARTMENT

DISTRICT NO. 3

ADDRESS ALL CORRESPONDENCE
TO
DISTRICT ENGINEER
P. O. BOX 3768, STA. D

ALBUQUERQUE, NEW MEXICO 87190

January 15, 1981

Mr. Robert A. Fosnaugh
Traffic Engineer
City of Albuquerque
P. O. Box 1293
Albuquerque, New Mexico 87103

Dear Mr. Fosnaugh:

Subject: Grading Plan - Western 6 Motel at Stadium & I-25

Approval to excavate inside of the access control line and build a retaining wall at Stadium and I-25 per the Western 6 Motel grading plan is hereby granted.

This approval is contingent upon the following conditions: The top of the retaining wall will be a minimum of one foot above the paved parking lot, no equipment will be permitted to work off the paved streets, the graded area will be re-seeded in accordance with the attached seeding schedule, and any traffic control will be in accordance with the latest edition of the MUTCD.

It is my understanding that the grading along the I-25 NB off-ramp, which does not improve the line of sight from the driveway on Stadium to the ramp, will be deleted from the original grading plan.

If you have any questions, please contact this office.

Sincerely,

Tom H. Card, Jr.
District Highway Engineer

By: Dan L. Wheeler
Dan Wheeler
District Traffic Engineer

DW:cd
Attachment
cc: Al Baca
Larry Larranaga

STATE OF NEW MEXICO
HIGHWAY DEPARTMENT

JAN 06 1981

A	I	To	Init
		DA	
		ADA	
		PIO	
		FO	
		PP	
		RW	
		DR	
		AN	

January 5, 1981

BRUCE KING
GOVERNOR

COMMISSION

Louis M. Whitlock
Chairman, Carlsbad

James W. Chaney
Vice-Chairman, Moriarty

Sosimo Padilla
Secretary, Albuquerque

Albert N. Sanchez
Member, Santa Rosa

James T. Martin
Member, Las Cruces

DEPARTMENT

Chief Highway Administrator
J. J. Hewett

General Office
P.O. Box 1149
Santa Fe, NM 87503
505-983-0100

District One Office
P.O. Box 231
Deming, NM 88030
505-546-2603

District Two Office
P.O. Box 1457
Roswell, NM 88201
505-622-8441

District Three Office
P.O. Box 3769-Station D
Albuquerque, NM 87110
505-021-4051

District Four Office
P.O. Box 30
Las Vegas, NM 87701
505-425-7527

District Five Office
P.O. Box 4127-Corrales Sta.
Santa Fe, NM 87503
505-983-0221

AN EQUAL
OPPORTUNITY
EMPLOYER

Mr. Irwin C. Fox
Assistant Division Administrator
Federal Highway Administration
New Mexico Division
117 U.S. Court House
Santa Fe, N.M. 87501

Dear Mr. Fox:

Subject: Grading Plan - I-025-4(1)218

The Access Control Review Committee met December 31, 1980, to consider a request from the City of Albuquerque through District 3 for grading and construction of retaining walls along the access control and Right of Way line in the Southeast quadrant of the Stadium Blvd. Interchange on I-25.

There is no proposal to change or alter the Right of Way or Access Control Line in any way. Grading of the high fill area would greatly enhance the sight distance back along the off ramp to the continous lane.

Mr. Wilbur Jackson of your office was in attendance at this meeting and has full particulars. Dan Wheeler, Traffic Engineer from District 3 contacted Mr. Getchell, of your office on the same day concerning this request.

Since an undetermined amount of earth will be disturbed in this area it was the committee's desire that Milford Fleig our Landscape Architect prepare a seeding schedule, which will be a condition for this approval.

Your concurrence on the above request, subject to erosion control by seeding will be greatly appreciated.

Very truly yours,

Alfred A. Baca
Chairman Access Control
Review Committee

AAB/mag
cc: J.J. Hewett
R.P. Burns
Tom Card

First Endorsement

January 8, 1981
HPD-NM

Mr. J. J. Hewett
Chief Highway Administrator
Santa Fe, NM 87503

We have no objection to the grading and construction of retaining walls as proposed.

Sincerely,

R. G. GETCHELL
for Division Administrator

JAN 12 RECD

DISTRICT 3

MEURER, SERAFINI AND MEURER, INC.
CONSULTING ENGINEERS • SURVEYORS • PLANNERS
2601 WYOMING BLVD., N.E., SUITE F • ALBUQUERQUE, NEW MEXICO 87112 • (505) 292-1936

January 20, 1981

Dick Heller, City Engineer
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

RECEIVED
JAN 2 1981
CITY ENGINEER

Re: Western 6 Motel - grading and drainage plan

Dear Dick:

This letter follows your conversation with Carl concerning the drainage and grading as proposed for the above mentioned project. The drainage report is submitted at this time for your approval together with the following backup in response to your questions.

The depressed landscaped area within drainage area A-3 is not intended to be a pond as such. In effect, it is a non-contributing area intended to capture and retain all rain which falls within its reach as well as to capture a portion of runoff from a small upstream area (± 600 s.f.). The depressed landscaped area is intended to contain plant material to aid the infiltration rate and be depressed enough to retain, with no discharge, the rainfall which it captures.

Erosion control, for the area A-2 positive discharge, should be provided. A two foot wide concrete vee-ditch three inches in depth could be installed to carry the 0.8 cfs to the box culvert entrance (± 30').

Recommendation number 3, page 3 of the drainage report, concerning the construction of the pond within drainage area 1, should be modified as follows: All site grading as shown on the grading and drainage plan Shall be accomplished with development of the motel site to include the grading of the pond on the future restaurant site. This will serve to reduce silt deposits on the motel parking lot. At the time the restaurant site is developed, the positive discharge pipe and the emergency overspill shall be installed.

MEURER, SERAFINI, AND MEURER, INC.

Your expeditious review and approval will be greatly appreciated.

Sincerely,

MEURER, SERAFINI AND MEURER, INC.

Jim Leymon

Jim Leymon
Project Engineer

Enclosure

JL/lb

City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

file
cy R.F.

January 27, 1981

Mr. Jim Leymon
Meurer, Serafini & Meurer, Inc.
2601 Wyoming Blvd. NE Suite F
Albuquerque, N.M. 87112

L15-D3

RE: WESTERN "6" MOTEL

Dear Mr. Leymon:

Your drainage report for the subject "Western "6" Motel" site at Stadium Blvd. and I-25 is approved subject to the amendments made in your letter dated January 20, 1981. This is the revised drainage report which is dated December, 1980.

Very truly yours,

Richard S. Heller

Richard S. Heller
City Engineer

RSH/tsl

cc: Rich Leonard, AMAFCA
B. Conegliano, Asst. Hydrology Engineer

MSM CONSULTANTS, INC.

Engineering • Planning • Surveying/Energy Management

2601 WYOMING BLVD., N.E., SUITE F • ALBUQUERQUE, NEW MEXICO 87112 • (505) 292-1936

November 9, 1981

RECEIVED
NOV 10 1981
CITY ENGINEER

Fred Aguirre
Drainage Inspection
P.O. Box 1293
City of Albuquerque
Albuquerque, NM 87103

Re: Western 6 Motel, As-Built Drainage Improvements:

Dear Fred:

Pursuant to our conversation regarding acceptability of the drainage improvements at the above mentioned site, the enclosed flood routing computer print out should be helpful.

The inflow hydrograph imputed represents a 100 year rain fall over the entire developed site (i.e. the restaurant site developed including the pond described in the approved report dated December, 1980). A pond storage curve as well as outflow curves for the 4" pipe and weir were developed to represent the as-built conditions.

As you can see from the print out data the pond/discharge functions as designed. The water level never exceeds 23.4, the height of the curbing around the pond. All discharge is either through the 4" drain pipe or over the weir.

In my opinion, the as-built drainage improvements are acceptable as represented by this data. If there are any questions, please feel free to call me.

Sincerely,

MSM CONSULTANTS, INC.

Jim Leymon

Jim Leymon
Project Engineer

RECEIVED
NOV 16 1981
CITY ENGINEER

Enclosure

JL/lb

11-23-81 Asked Jim to submit the design storm they routed thru the pond.

FLOOD ROUTING PROGRAM *WESTERN 6 AS-BILT FLOOD ROUTING

FLOWS IN AC FT PER 4.00 MN

TIME (MN)	WATER LEVEL	COMPUTED OUTFLOW	CURRENT STORAGE (AC FT)	INFLOW	ELEV TABLE	STORAGE TABLE (AC FT,)	OUTFLOW CURVE TABLE	
0.000	21.400	0.000	0.000	0.000	21.400	0.000	0.000	0.000
4.000	21.449	0.000	0.006	0.012	22.000	0.071	0.000	0.071
8.000	21.595	0.000	0.023	0.023	22.500	0.130	0.000	0.130
12.000	21.838	0.000	0.052	0.035	23.000	0.190	0.000	0.190
16.000	22.171	0.001	0.091	0.045	23.200	0.213	0.000	0.213
20.000	22.522	0.002	0.132	0.040	23.400	0.237	0.044	0.259
24.000	22.822	0.002	0.168	0.035	0.000	0.000	0.000	0.000
28.000	23.072	0.003	0.197	0.029	0.000	0.000	0.000	0.000
32.000	23.238	0.012	0.216	0.024	0.000	0.000	0.000	0.000
36.000	23.282	0.021	0.221	0.019	0.000	0.000	0.000	0.000
40.000	23.260	0.016	0.219	0.014	0.000	0.000	0.000	0.000
44.000	23.237	0.011	0.216	0.009	0.000	0.000	0.000	0.000
48.000	23.214	0.006	0.214	0.003	0.000	0.000	0.000	0.000
52.000	23.195	0.003	0.211	0.002	0.000	0.000	0.000	0.000
56.000	23.182	0.003	0.210	0.002	0.000	0.000	0.000	0.000
60.000	23.169	0.003	0.208	0.002	0.000	0.000	0.000	0.000
64.000	23.157	0.003	0.207	0.002	0.000	0.000	0.000	0.000
68.000	23.145	0.003	0.205	0.002	0.000	0.000	0.000	0.000
72.000	23.133	0.003	0.204	0.002	0.000	0.000	0.000	0.000
76.000	23.122	0.003	0.203	0.002	0.000	0.000	0.000	0.000
80.000	23.110	0.003	0.201	0.002	0.000	0.000	0.000	0.000
84.000	23.099	0.003	0.200	0.002	0.000	0.000	0.000	0.000
88.000	23.089	0.003	0.199	0.002	0.000	0.000	0.000	0.000
92.000	23.078	0.003	0.198	0.002	0.000	0.000	0.000	0.000
96.000	23.061	0.003	0.196	0.000	0.000	0.000	0.000	0.000
100.000	23.037	0.003	0.193	0.000	0.000	0.000	0.000	0.000
104.000	23.013	0.003	0.190	0.000	0.000	0.000	0.000	0.000
108.000	22.991	0.003	0.187	0.000	0.000	0.000	0.000	0.000
112.000	22.968	0.003	0.185	0.000	0.000	0.000	0.000	0.000
116.000	22.946	0.003	0.182	0.000	0.000	0.000	0.000	0.000
120.000	22.925	0.002	0.180	0.000	0.000	0.000	0.000	0.000
124.000	22.904	0.002	0.177	0.000	0.000	0.000	0.000	0.000
128.000	22.883	0.002	0.175	0.000	0.000	0.000	0.000	0.000
132.000	22.863	0.002	0.172	0.000	0.000	0.000	0.000	0.000
136.000	22.843	0.002	0.170	0.000	0.000	0.000	0.000	0.000
140.000	22.824	0.002	0.168	0.000	0.000	0.000	0.000	0.000
144.000	22.805	0.002	0.166	0.000	0.000	0.000	0.000	0.000
148.000	22.786	0.002	0.163	0.000	0.000	0.000	0.000	0.000
152.000	22.768	0.002	0.161	0.000	0.000	0.000	0.000	0.000
156.000	22.750	0.002	0.159	0.000	0.000	0.000	0.000	0.000
160.000	22.733	0.002	0.157	0.000	0.000	0.000	0.000	0.000
164.000	22.716	0.002	0.155	0.000	0.000	0.000	0.000	0.000
168.000	22.699	0.002	0.153	0.000	0.000	0.000	0.000	0.000
172.000	22.682	0.002	0.151	0.000	0.000	0.000	0.000	0.000
176.000	22.666	0.002	0.149	0.000	0.000	0.000	0.000	0.000
180.000	22.650	0.002	0.147	0.000	0.000	0.000	0.000	0.000
184.000	22.635	0.002	0.146	0.000	0.000	0.000	0.000	0.000
188.000	22.619	0.002	0.144	0.000	0.000	0.000	0.000	0.000
192.000	22.604	0.002	0.142	0.000	0.000	0.000	0.000	0.000
196.000	22.590	0.002	0.140	0.000	0.000	0.000	0.000	0.000
200.000	22.575	0.002	0.139	0.000	0.000	0.000	0.000	0.000
204.000	22.561	0.002	0.137	0.000	0.000	0.000	0.000	0.000
208.000	22.547	0.002	0.135	0.000	0.000	0.000	0.000	0.000
212.000	22.533	0.002	0.134	0.000	0.000	0.000	0.000	0.000
216.000	22.520	0.002	0.132	0.000	0.000	0.000	0.000	0.000
220.000	22.507	0.002	0.130	0.000	0.000	0.000	0.000	0.000
224.000	22.494	0.002	0.129	0.000	0.000	0.000	0.000	0.000
228.000	22.481	0.001	0.127	0.000	0.000	0.000	0.000	0.000
232.000	22.468	0.001	0.126	0.000	0.000	0.000	0.000	0.000
236.000	22.456	0.001	0.125	0.000	0.000	0.000	0.000	0.000
240.000	22.444	0.001	0.123	0.000	0.000	0.000	0.000	0.000
244.000	22.432	0.001	0.122	0.000	0.000	0.000	0.000	0.000

TIME	INFLOW (CFS)	OUTFLOW (CFS)	ELEVATION
0.0	0.00	0.00	21.40
4.0	2.10	0.00	21.45
8.0	4.20	0.02	21.59
12.0	6.30	0.07	21.84
16.0	8.20	0.16	22.17
20.0	7.20	0.29	22.52
24.0	6.30	0.41	22.82
28.0	5.30	0.52	23.07
32.0	4.40	2.11	23.24
36.0	3.40	3.84	23.28
40.0	2.50	2.98	23.26
44.0	1.60	2.08	23.24
48.0	0.60	1.13	23.21
52.0	0.30	0.58	23.19
56.0	0.30	0.57	23.18
60.0	0.30	0.57	23.17
64.0	0.30	0.56	23.16
68.0	0.30	0.55	23.14
72.0	0.30	0.55	23.13
76.0	0.30	0.54	23.12
80.0	0.30	0.54	23.11
84.0	0.30	0.53	23.10
88.0	0.30	0.53	23.09
92.0	0.30	0.52	23.08
96.0	0.00	0.51	23.06
100.0	0.00	0.50	23.04
104.0	0.00	0.49	23.01
108.0	0.00	0.48	22.99
112.0	0.00	0.47	22.97
116.0	0.00	0.46	22.95
120.0	0.00	0.45	22.92
124.0	0.00	0.44	22.90
128.0	0.00	0.43	22.88
132.0	0.00	0.43	22.86
136.0	0.00	0.42	22.84
140.0	0.00	0.41	22.82
144.0	0.00	0.40	22.81
148.0	0.00	0.39	22.79
152.0	0.00	0.38	22.77
156.0	0.00	0.38	22.75
160.0	0.00	0.37	22.73
164.0	0.00	0.36	22.72
168.0	0.00	0.36	22.70
172.0	0.00	0.35	22.68
176.0	0.00	0.34	22.67
180.0	0.00	0.34	22.65
184.0	0.00	0.33	22.63
188.0	0.00	0.32	22.62
192.0	0.00	0.32	22.60
196.0	0.00	0.31	22.59
200.0	0.00	0.31	22.58
204.0	0.00	0.30	22.56
208.0	0.00	0.30	22.55
212.0	0.00	0.29	22.53
216.0	0.00	0.28	22.52
220.0	0.00	0.28	22.51
224.0	0.00	0.27	22.49
228.0	0.00	0.27	22.48
232.0	0.00	0.27	22.47
236.0	0.00	0.26	22.46
240.0	0.00	0.26	22.44
244.0	0.00	0.25	22.43

Ready

10/10/81

Chuck:

Found this in my "In" basket (Gotta' be yours .. or Fred's!)

Geo. Paul

City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

December 8, 1981

Mr. Jim Leymon
Meurer, Serafini & Meurer, Inc.
2601 Wyoming Blvd. NE, Suite F
Albuquerque, New Mexico 87112

RE: WESTERN "6" MOTEL POND ROUTING

Dear Jim:

In order to review the pond routing print-out provided with your letter of November 9, 1981, I will also need the supporting data and references used to compile said routing.

Sincerely,

Fred J. Aguirre, P.E.
Civil Engineer/Hydrology

FJA/el

cc: Drainage File
Reading File

MSM CONSULTANTS, INC.

Engineering • Planning • Surveying/Energy Management

2601 WYOMING BLVD., N.E., SUITE F • ALBUQUERQUE, NEW MEXICO 87112 • (505) 292-1936

December 14, 1981

Fred Aguirre
Drainage Inspection Department
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

Re: Western 6 Motel

Dear Fred,

Per our conversation this morning, enclosed is some additional data. Also, please find an update computer print out. Void the previous print out sent.

The inflow hydrograph peak was computed using the rational method (Q=CIA) where C was assumed to be 0.85 for the developed condition, I = 5.4 in/hr for a Tc = 10 min (assumed for this small site) and A = 1.73 acres. The peak was set at the time of concentration (10 min.). The volume of total runoff for the drainage area was fit under the curve using 2.2" as total rain fall for a 100 year - 6 hour storm (per interim drainage guide lines).

To this hydrograph the discharge from area A-2 was added. It was assumed that the pond/discharge system in A-2 was in place. A constant discharge of 0.20 cfs (Q,historic) was added.

As stated previously, a pond storage curve and out flows curves were developed for the as-built condition.

As may be seen from the print out, no discharge exits the site other than that which flows through the 4" pipe or over the weir. This is the result from routing the volume of a 100 year - 6 hour storm through the pond in just less than one hour.

I have stated in the past that I believe this method is very conservative. For a real storm event lasting much longer and being less intense, the pond should perform adequately.

I hope this additional data will clarify your questions and allow you to determine the acceptability of the as-built drainage systems.

Sincerely,

MSM CONSULTANTS, INC.

Jim Leymon

Jim Leymon
Project Manager

Enclosures

JL/lb

THIS MICROIMAGE IS THE BEST POSSIBLE REPRODUCTION DUE TO THE POOR QUALITY OF THE ORIGINAL DOCUMENT

I = 5.4"/HR @ TC = 10 min

MOTEL SITE

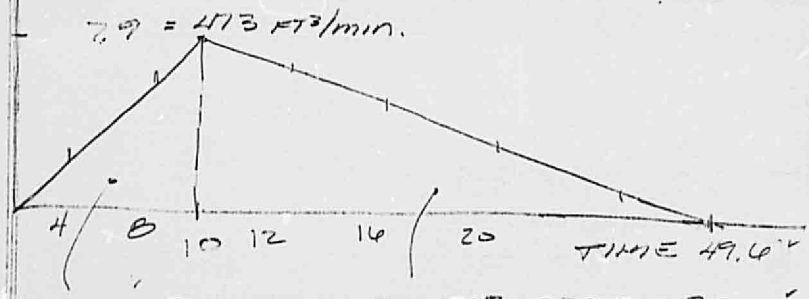
A = 1.73 ac C = 0.85

$Q_{100\,DEV.} = 1.73\,(0.85)\,5.4 = 7.9\,cfs$

$V_{OL} = 2.2/12\,(1.73)\,0.85 = 11{,}743'$

(SEE REPORT) 2.2" = TOTAL RAINFALL IN 100 YR. EVENT (FOR VALLEY AREA)

INFLOW CURVE



A = 2370 FT³

11,743 - 2370 = 9373'

$A = \frac{a \times b}{2}$

$b = A/a\,(2) = 39.6$ min.

INFLOW INPUT

TIME	0	4	8	10	12	16	20	24	28	32	36	40	44	48
CFS	0	3.2	6.4		7.1	6.3	5.5	4.7	3.9	3.1	2.3	1.5	0.7	0
POND 1		0.2							0.2	0.2				
TOTAL	0	3.4	6.4		7.3	6.5	5.7	4.9	4.1	3.3	2.5	1.7	0.9	0.2

TIME	52	56	60					
CFS								
POND 1			0.2					
TOTAL	0.2	0.2	0.2					

POND-1 DISCHARGE CONTINUES @ 0.2 CFS

- ASSUME POND-1 CONSTRUCTED PER APPROVED REPORT.
- ASSUME NO OVERSPILL FROM POND-1. ONLY CONSTANT DISCHARGE @ 0.20 CFS.

City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

January 18, 1982

Meurer, Serafini and Meurer, Inc.
C/O Jim Leymon
2601 Wyoming Boulevard NE, Suite F
Albuquerque, New Mexico 87110

REF: WESTERN 6 MOTEL - AS BUILT DRAINAGE PLAN (Revised plan received 10-15-82)

Dear Jim,

The flood routing provided for the referenced site indicates that the allowable discharge of 0.81 c.f.s. is exceeded by a factor of (3) three which in most cases would not be acceptable; however since you indicated this increase will not adversely affect the downstream condition we will accept your plan.

For future plans, please advise the contractor that compliance with drainage plans is mandatory and any deviations from said plans will not be accepted unless prior approval has been obtained from this office.

If you have any questions regarding this matter, please feel free to call me at 766-7644.

Sincerely,

Fred J. Aguirre

Fred J. Aguirre, P.E.
Civil Engineer/Hydrology

FJA/el

cc: Drainage File
Reading File

RECEIVED
JAN 26 1981
RECEIVED

DRAINAGE REPORT
WESTERN "6" MOTEL
STADIUM BLVD. AT I-25
ALBUQUERQUE, NEW MEXICO
REVISED DECEMBER, 1980

- Denver
- Albuquerque
- Tucson
- Casper
- Vicksburg
- New Orleans
- Grand Junction

MEURER, SERAFINI AND MEURER, INC.
Systems Planning Corporation

2601 Wyoming Boulevard, N.E.
Albuquerque, New Mexico 87112
(505) 292-1936

DRAINAGE REPORT
WESTERN "6" MOTEL
STADIUM BLVD. AT I-25
ALBUQUERQUE, NEW MEXICO
REVISED DECEMBER, 1980

PREPARED FOR:

WESTERN "6" MOTELS
1156 SOUTH 7th AVE.
HACIENDA HEIGHTS, CA. 91745
PHONE: 213-961-1681

PREPARED BY:

MEURER, SERAFINI AND MEURER, INC.
2601 WYOMING BLVD. N.E.
ALBUQUERQUE, NEW MEXICO
PHONE: 505-292-1936

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WESTERN 6 MOTEL

SCOPE

The scope of this report is to present the data, analysis, calculations, and a proposed plan for drainage management.

SITE LOCATION

The project site is bordered by the south diversion channel on the south and east, Stadium Boulevard on the north, and the Pan American Freeway on the west. (See site location map, Exhibit "A").

NATURAL DRAINAGE

The site, in its natural state, slopes at approximately 2.5% to the southwest corner. Natural flows consist of sheet flow and a few small swales which convey the water to three box culverts located at the southwest corner of the site. Approximately 0.6 acres of offsite flow is intercepted by the site along the border with the south diversion channel. (See topo Exhibit "B").

The soil at the site is generally comprised of fine sand and gravel and associated with the Bluepoint-Kokan series. It has a map symbol of BKD. (See soils map, Exhibit "C"). A copy of the portion of the soil survey of Bernalillo County by S.C.S. that applies to this site is included in Appendix 1. Both the Bluepoint and Kokan Series have a hydrologic classification of "A". This signifies high infiltration and transmission rates even when thoroughly wetted. An explanation of the hydrologic soil groups is also included in Appendix 1.

ESTIMATED RUNOFF UNDEVELOPED STATE

Drainage within the boundary of the site is basically overland flow with some small swales. The drainage naturally exits the site, in a concentrated discharge through the box culverts located at the southwest corner of the property. The box culverts convey the flows west, under the freeway, where the flows enter a storm drainage system located within Dan Street. (See site location map, Exhibit "A").

The historic one-year discharge from the site is 0.81 cfs. This is the maximum discharge allowed by the City of Albuquerque after development occurs, as the site is located west of the AMAFCA north-south diversion channel.

ESTIMATED RUNOFF DEVELOPED STATE

As development occurs, the impervious area increases and thereby the amount of runoff also increases. To offset this increase, onsite restrictions of flow must be incorporated into the development. While this can take different forms, the most practical solution for this type of development is to utilize onsite ponding.

The site is broken into 3 drainage areas. (Areas A-1, A-2 and A-3). Two major ponds should ultimately be incorporated into the development, a soft bottom pond in Area A-1 and a parking lot pond in Area A-2. Area A-3 should contain a depressed landscape area to capture and detain a portion of the runoff from that area. The depressed landscaped area should hold a minimum depth of 0.2 over its entire area. The unrestricted flows leaving Area A-3 are comparable with those which occur naturally.

The soft bottom pond in Area A-1 should be maximum depth of 2 feet with 4:1 side slopes and contain a volume of 3824 cubic feet. A 3" diameter pipe should be used as a positive discharge. The flow line elevation of the inlet should be a minimum of 3" above the pond bottom to allow for siltation. An emergency overspill weir shall be provided.(See drainage plan Exhibit "G"). All runoff from Area A-1 shall be routed through the pond. The expected average rate of discharge from the 3" pipe is 0.20 cfs. (Q_1 historic).

Area A-2 pond should be located within the paved parking lot area. It should include a 6" pipe to allow for positive drainage, a rectangular weir for emergency overspill and contain 10648 cubic feet. All runoff from within the drainage area, as well as Area A-1 should be routed through the pond before leaving the site. The expected average rate of discharge from the 6" pipe is 0.81 cfs. (Q_1 historic). Offsite flows will be accepted by the proposed drainage system and passed through the site unrestricted.

DESIGN CRITERIA

In analyzing the storm runoff, the rational formula, Q=CIA is used.
WHERE:

Q= Runoff Quantity in Cubic Feet/second.
A= Contributing Area in Acres.
I= Intensity in Inches/Hour for a Duration Equal to the Time of Accumulation (Duration) measured in minutes and obtained from Exhibit "D", intensity duration frequency curves, Albuquerque Area 1961. (Note: Where a time of concentration (Tc) is less than ten minutes from Exhibit "E", the intensity value derived from the Tc equal to ten minutes is employed).
C= Runoff Coefficient (No Unit). This coefficient represents the integrated effects of infiltration, detention storage, evaporation, retention, flow routing and interception which all affect the time distribution and peak rate of runoff (=0.2 pervious and 0.9 impervious)

In calculating the pond volumes and discharge rates, the Interim Drainage Guidelines, dated November 13, 1979 Valley criteria is used.
WHERE:

Required pond volume = 50 year developed runoff.
Positive discharge = Q_1 natural
Emergency overspill = Q_{100} developed

EXPLANATION OF RESULTS

1-Year Undeveloped Runoff:
Total Flow = 0.81 cfs = Positive discharge from Area A-2 (developed).

100-Year Developed Runoff:
Total Flow = 1.9 cfs = Sum of positive discharge and overspill from Area A-2.

As shown above, the development of this project, including onsite ponding remains within the required runoff criteria.

CONCLUSIONS AND RECOMMENDATIONS

In conclusion it is recommended that the concepts as outlined in this report be approved as they adhere strictly to the guidelines as set forth by the City of Albuquerque. The following is also recommended:

1. The site grading and drainage improvements be performed per attached plan.

2. Future site grading of the restaurant site be accomplished in a manner which conveys all flows into the pond before exiting the site.

3. The construction of the pond in drainage Area-1 take place at such time as development occurs on the restaurant site.

4. No building foundations be constructed closer than 15' from the top of pond A-1.

Prepared by:

Fred Haas
Design Engineer

Reviewed by:

Jim Leymon
Project Engineer

Approved for Meurer, Serafini & Meurer, Inc.
Carl Tebbens

CARL A. TEBBENS
STATE OF
6309
NEW MEXICO
REGISTERED PROFESSIONAL ENGINEER

APPENDIX I

CHAPTER 7. HYDROLOGIC SOIL GROUPS

This chapter gives definitions of four soil groups that are used in determining hydrologic soil-cover complexes (chap. 9), which are used in a method for estimating runoff from rainfall (chap. 10). A table gives the group-classifications of more than 4,000 soils in the United States and Puerto Rico. Methods of making and using the classifications are briefly discussed.

Watershed-Soils Classification

Soil properties influence the process of generation of runoff from rainfall and they must be considered, even if only indirectly, in methods of runoff estimation. When runoff from individual storms is the major concern, as in flood prevention work, the properties can be represented by a hydrologic parameter: the minimum rate of infiltration obtained for a bare soil after prolonged wetting. The influences of both the surface and the horizons of a soil are thereby included. The influence of ground cover is treated independently, as discussed in chapters 8, 9, and 10.

The parameter, which indicates the runoff potential of a soil, is the qualitative basis of the classification in this chapter of all soils into four groups. The classification is broad but the groups can be divided into subgroups, as shown in example 7.1, whenever such a refinement is justified. Chapter 9 describes how the groups are given quantitative significance in the runoff-estimation method of chapter 10.

DEFINITIONS

In the definitions to follow, the infiltration rate is the rate at which water enters the soil at the surface and which is controlled by surface conditions, and the transmission rate is the rate at which the water moves in the soil and which is controlled by the horizons. The hydrologic soil groups, as defined by SCS soil scientists, are:

A. (Low runoff potential). Soils having high infiltration rates even when thoroughly wetted and consisting chiefly of deep, well to excessively drained sands or gravels. These soils have a high rate of water transmission.

B. Soils having moderate infiltration rates when thoroughly wetted and consisting chiefly of moderately deep to deep, moderately well to well drained soils with moderately fine to moderately coarse textures. These soils have a moderate rate of water transmission.

C. Soils having slow infiltration rates when thoroughly wetted and consisting chiefly of soils with a layer that impedes downward movement of water, or soils with moderately fine to fine texture. These soils have a slow rate of water transmission.

D. (High runoff potential). Soils having very slow infiltration rates when thoroughly wetted and consisting chiefly of clay soils with a high swelling potential, soils with a permanent high water table, soils with a claypan or clay layer at or near the surface, and shallow soils over nearly impervious material. These soils have a very slow rate of water transmission.

The Soil List

The list at the end of this chapter contains the names of more than 4,000 soils in the United States and Puerto Rico. The capital letter following a name designates the hydrologic soil group classification.

The original classifications were based on the use of rainfall-runoff data from small watersheds or infiltrometer plots, but the majority are based on the judgments of soil scientists and correlators who used physical properties of the soil in making their decisions. They classified a soil in a particular group by comparing its profile with profiles of soils already classified. They assumed that the soil surfaces were bare, maximum swelling had taken place, and rainfall rates exceeded surface intake rates. Thus, most of the classifications are based on the premise that similar soils (similar in depth, organic-matter content, structure, and degree of swelling when saturated) will respond in an essentially similar manner during a rainstorm having excessive intensities.

The classification of a soil in the list can be checked by using the procedure of example 5.4. The soil in question must be the only one

APPENDIX II

MEURER - SERAFINI - MEURER, INC. ALBUQUERQUE, N.M.

By JLL Date 12-5 PROJECT VISTAVERDE "C" sheet No. 1 of

Checked By — Date UNDEVELOPED FLOWS Job No. 0104010101

DRAINAGE AREA = 2.5 ACRES
TIME OF CONCENTRATION = 10 MIN.

Q_1 HISTORIC
FOR A STORM DURATION = TIME OF CONCENTRATION
FROM WEATHER BUREAU DATA:

10 MIN. RAINFALL = 0.27 IN.
$\therefore$ $i = 0.27(60)/10 = 1.62$ IN/HR.

$C = 0.2$ (UNDEVELOPED)

$Q_1 = 0.2(1.62)2.5 = 0.81$ cfs

USE THIS Q_1 VALUE FOR POSITIVE DISCHARGE OF POND A-2.

Q_{100} HISTORIC
FOR $T_c = 10$ MIN., $i_{100} = 5.4$ IN/HR.

$Q_{100} = 0.2(5.4)2.5 = 2.7$ cfs

Q_{100} DEVELOPED

$Q_{100} = 0.85(5.4)2.5 = 11.48$ cfs

MEURER - SERAFINI - MEURER, INC. ALBUQUERQUE, N.M.

By J.L. Date 12-5 PROJECT WESTERN "6" sheet No. 2 of

Checked By ✓ Date AREA A-1 POND Job No. 0640101

AREA = 24,600 FT.² = 0.61 AC.
C = 0.85 (DEVELOPED) C = 0.20 (UNDEVELOPED)
Tc = 10 MIN. , i = 5.4 IN./HR.

VOLUME

V50 = 0.85 (2.0/12) 24,600 = 3768 FT.³
(2.0 = TOTAL RAINFALL 50 YR. STORM)

POSITIVE DISCHARGE

RATE = 0.20 (1.62) 0.61 = 0.20 cfs
ORIFICE FLOW $Q = CA\sqrt{2gh}$
C = 0.62 (SHARP EDGE)
h = 0.5'
$A = 0.20/0.62\sqrt{2(32.2)(0.5)}$
= 0.06 FT.²
USE 3" PIPE A = 0.05 FT.²

OVERSPILL

RATE = Q100 (DEVELOPED)
Q100 = 0.85(5.4) 0.61 = 2.8 cfs
RECTANGULAR WEIR $Q = CLH^{3/2}$
USE H = 0.2'
C = 3.36 (Hd = 2')
$L = 2.8/3.36(0.2)^{3/2} = 9.3$ FT.
USE 9'-6"

SEE DRAINAGE PLAN FOR DETAILS.

MEURER - SERAFINI - MEURER, INC. ALBUQUERQUE, N.M.

By J.L. Date 12-5 PROJECT WESTERN "6" sheet No. 3 of

Checked By Date AREA A-2 POND Job No.

AREA = 75159 FT² = 1.73 AC

C = 0.85 (DEVELOPED) C = 0.20 (UNDEVELOPED)

Tc = 10 MIN., i = 5.4 IN./HR.

VOLUME

V50 = 0.85 (2.0/12) 75159 = 10,648 FT³

POSITIVE DISCHARGE

RATE = 0.81 cfs (SEE SHT. 1, Q, HISTORIC)

ORIFICE FLOW $Q = CA\sqrt{2gh}$

C = 0.62 (SHARP EDGE)

h = 0.5'

$A = 0.81/0.62\sqrt{2(32.2)0.5}$

= 0.23 FT.²

USE 6" PIPE A = 0.20 FT.²

OVERSPILL

RATE = Q100 (DEVELOPED)

Q100 = 0.85(5.4) 1.73 = 7.94 cfs

RECTANGULAR WEIR EQUATION $Q = CL \cdot H^{3/2}$

USE H = 0.25'

: C = 4.10 (hd = 1.0')

$L = 7.94/4.10\,(0.25)^{3/2}$

L = 15.49

USE 15' 6"

SEE DRAINAGE PLAN FOR DETAILS

MEURER - SERAFINI - MEURER, INC. ALBUQUERQUE, N.M.

By J.L. Date 12-5 PROJECT WESTERN "6" sheet No. 4 of 4

Checked By____ Date_____ AREA A-3 RUNOFF Job No. 064010/

AREA A-3; TOTAL AREA ONSITE = 7675 S.F.

NATURAL STATE

AREA CONTRIBUTING TO OFFSITE = 3500 S.F.

VOLUME DISCHARGED OFFSITE:

$V = 0.20 (2.0/12) 3500 = 116.7$ CU. FT.

DEVELOPED SITE

AREA CONTRIBUTING TO OFFSITE:

AREA @ C = 0.20 = 1050 SF

AREA @ C = 0.90 = 650 S.F.

VOLUME DISCHARGED OFFSITE

$V = [(0.2) 1050 + (0.9) 750] 2.0/12 = 132.5$ CU. FT.

EXHIBITS

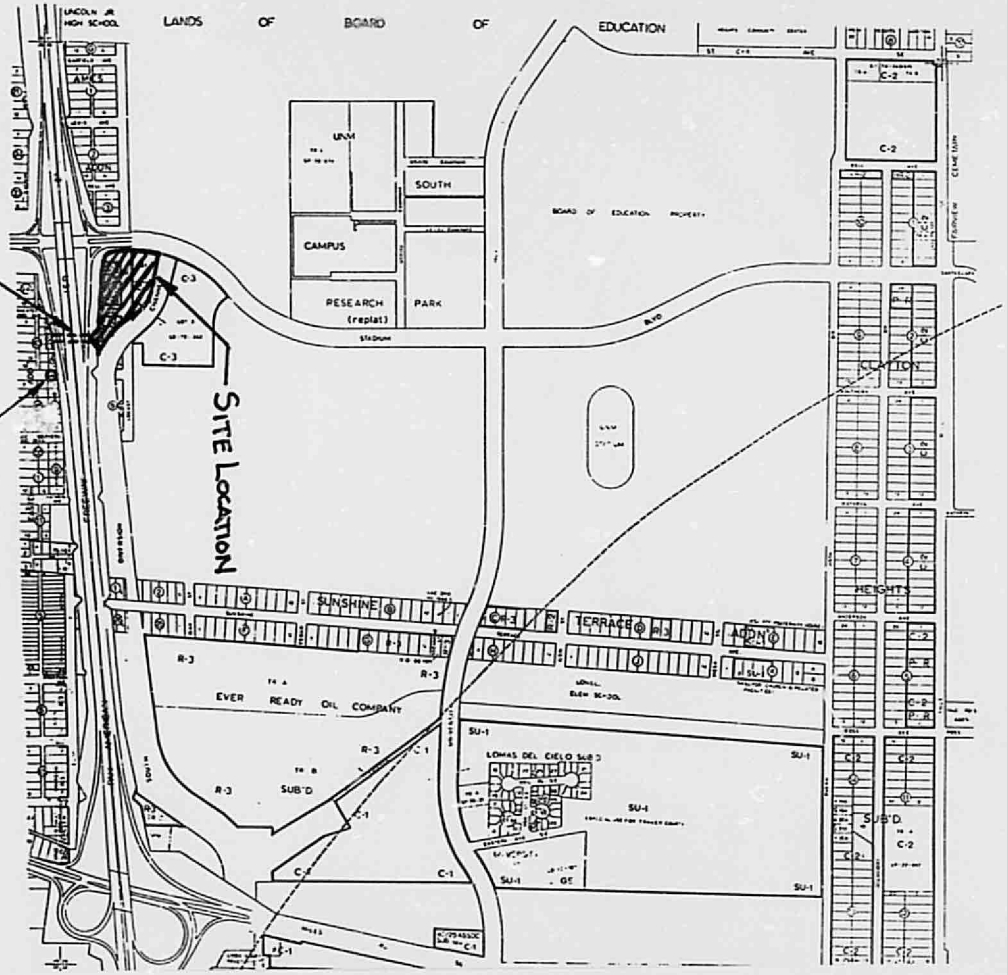
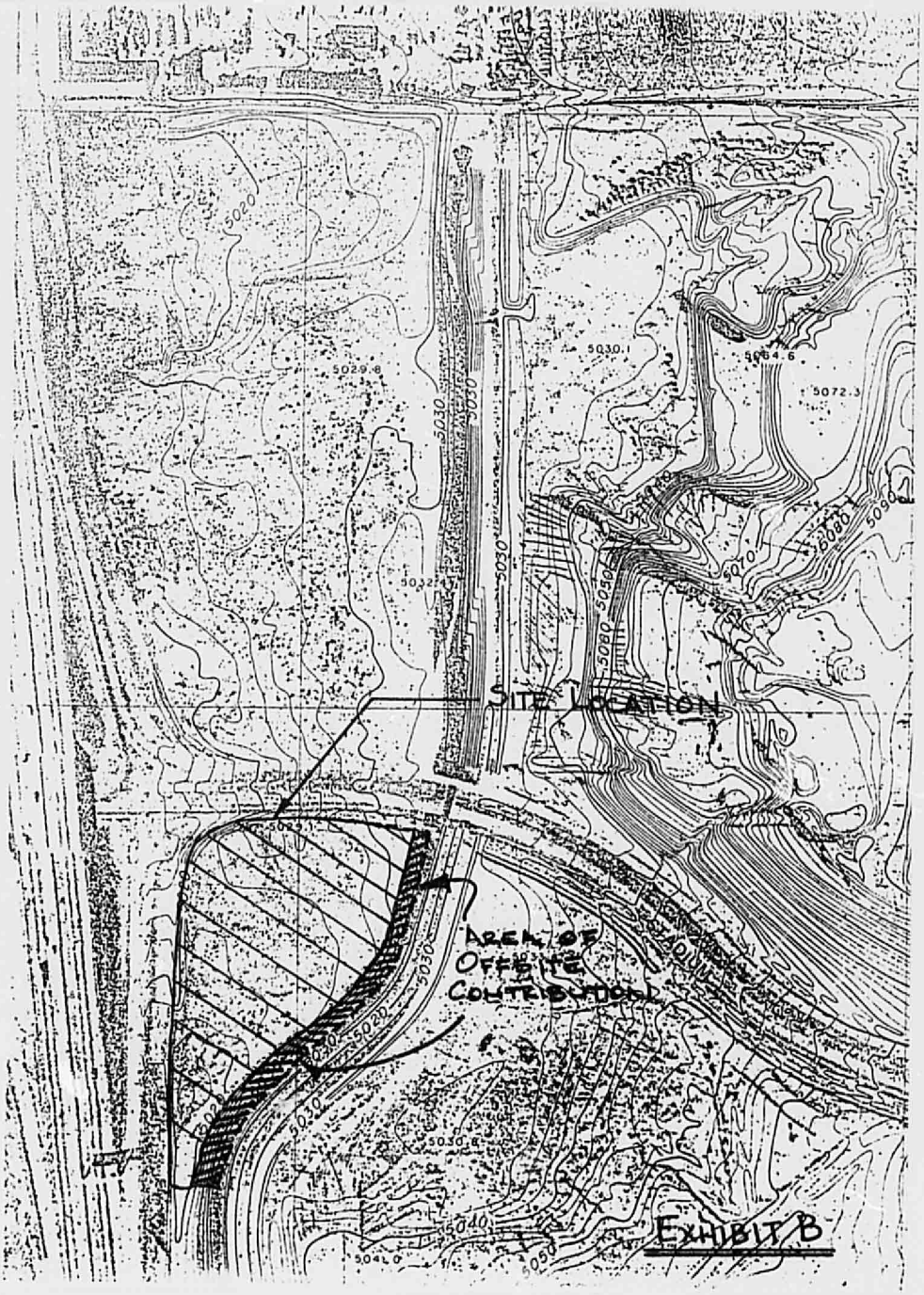
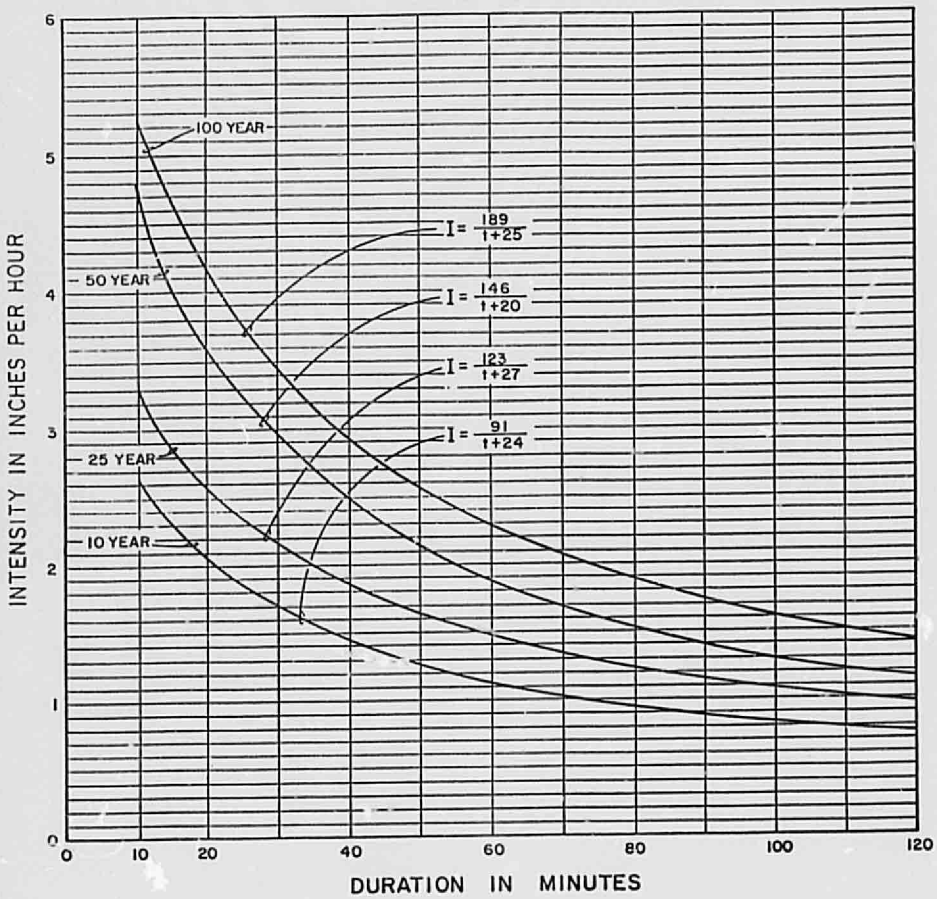


EXHIBIT A

1.15.7


SITE LOCATION
AREA OF OFFSITE CONTRIBUTION
EXHIBIT B

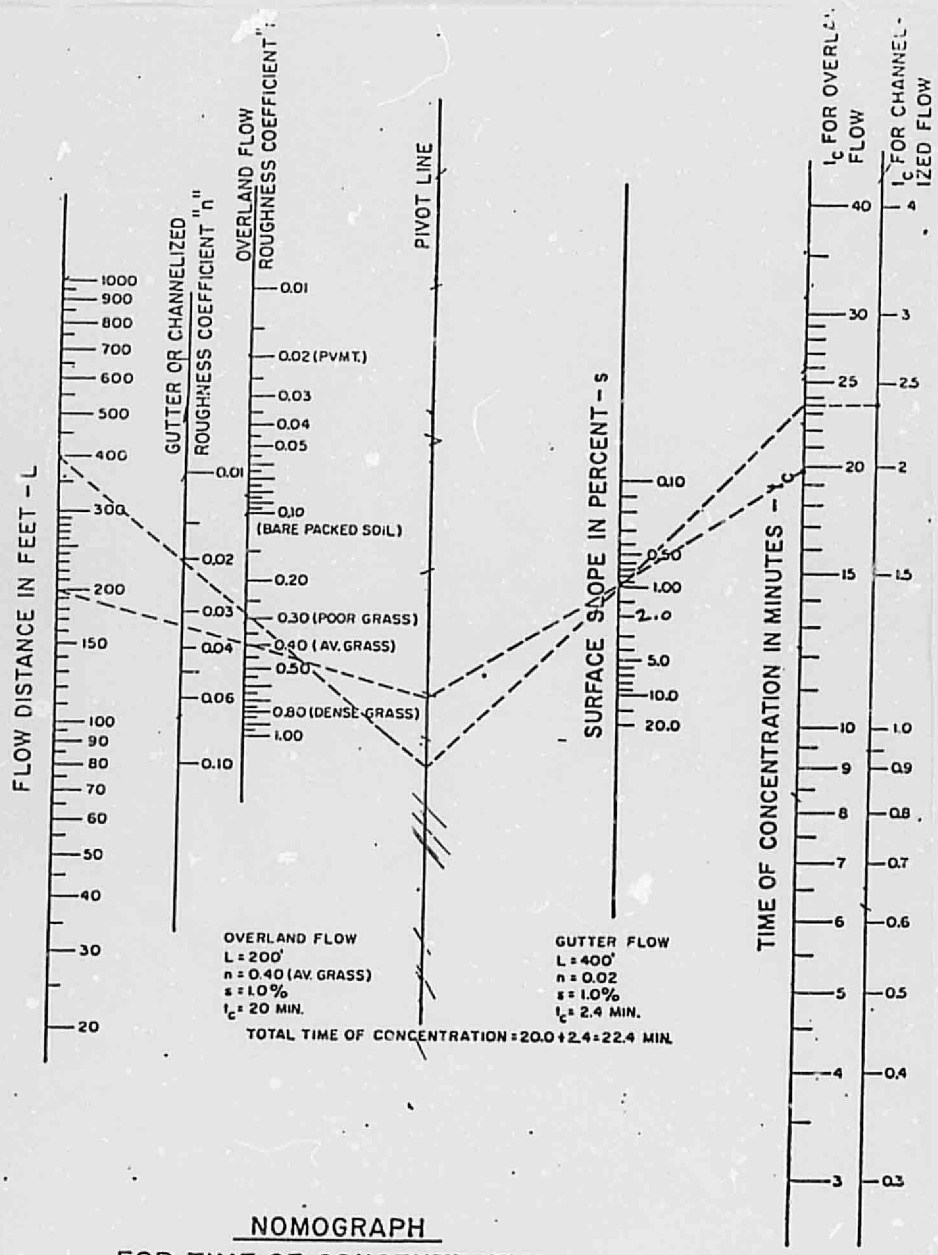


T = 10 MIN.
i = 5.4 IN./HR.

MASTER PLAN OF DRAINAGE
PREPARED BY:
GORDON HERKENHOFF & ASSOCIATES
ALBUQUERQUE, NEW MEXICO

INTENSITY DURATION FREQUENCY CURVES
(ALBUQUERQUE AREA, 1961)

EXHIBIT D



NOMOGRAPH

FOR TIME OF CONCENTRATION

EXHIBIT E

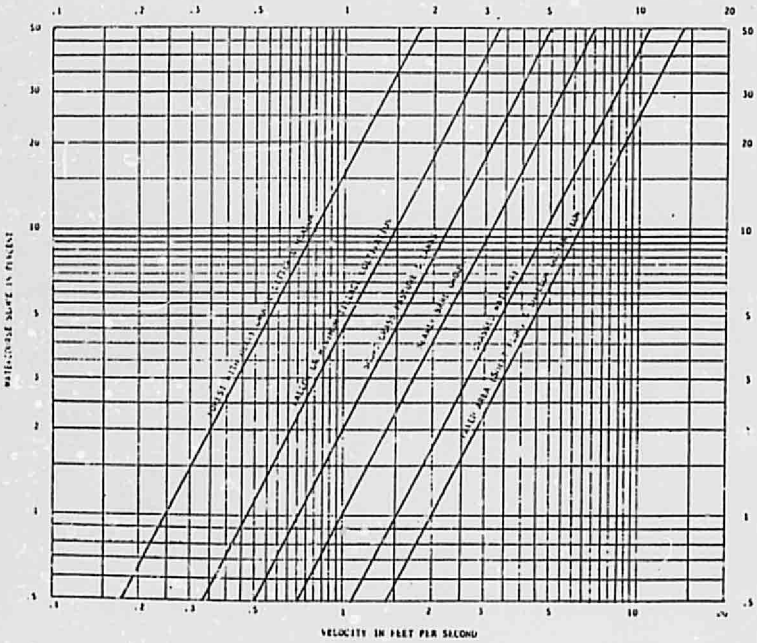


Figure 1.--Average velocities for estimating travel time for overland flow.

EXHIBIT F