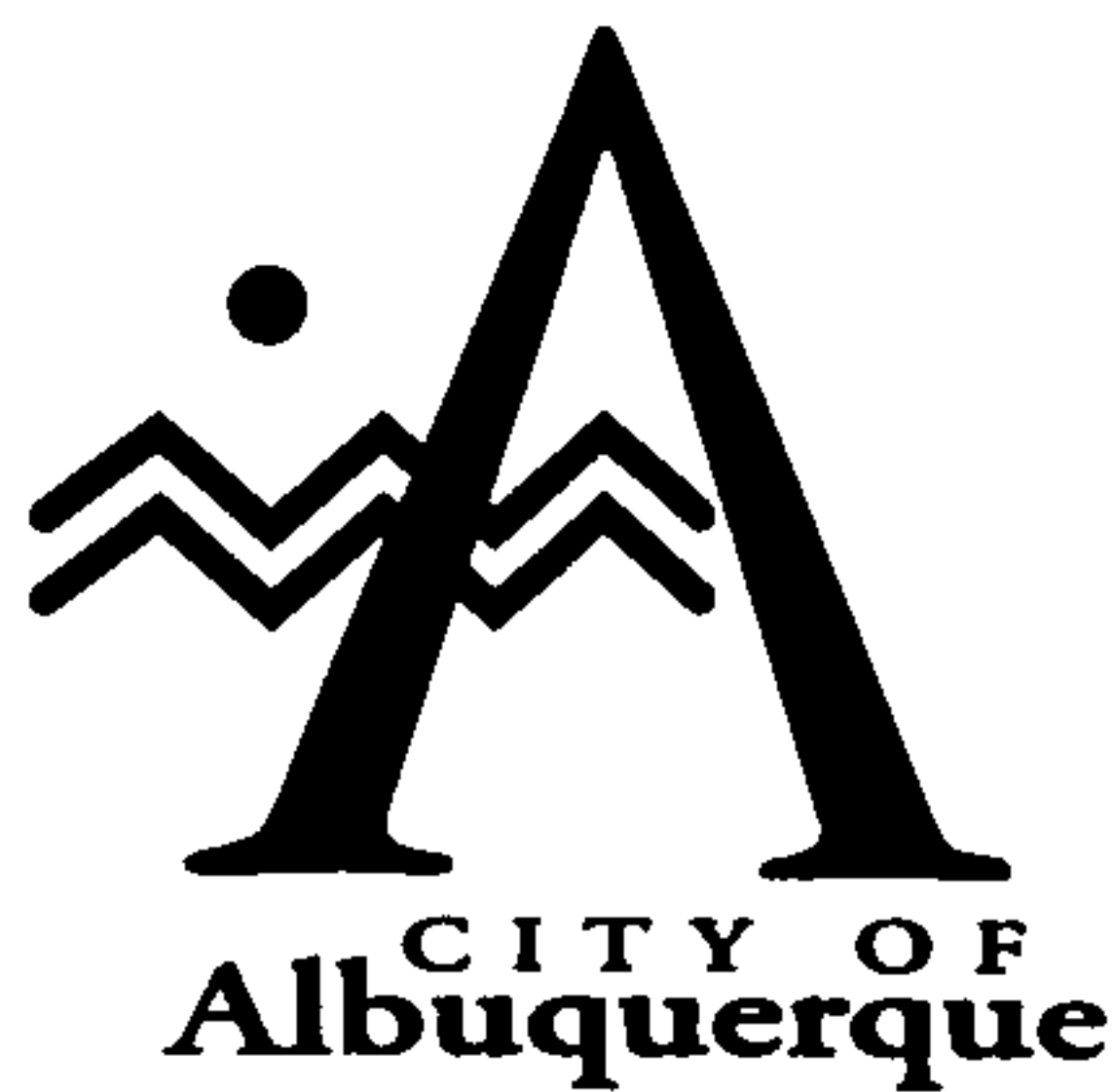




November 15, 1996

Martin J. Chávez, Mayor

John M. MacKenzie
Mark Goodwin & Associates
P.O. Box 90606
Albuquerque, NM 87199

**RE: REVISED DRAINAGE PLAN FOR CHALMER'S USED CAR SALES
(G11-D38) REVISION DATED 11/6/96.**

Dear Mr. MacKenzie:

Based on the information provided on your November 7, 1996 resubmittal, the above referenced site is approved for Site Development and Building Permit.

Please attach a copy of the approved plan to the construction sets prior to sign-off by Hydrology.

A separate permit is required for construction within the public Right-of-Way. A copy of this approval letter must be on hand when applying for the excavation permit.

Prior to Certificate of Occupancy release, Engineer Certification per the D.P.M. checklist will be required.

If I can be of further assistance, please feel free to contact me at 768-2667.

Sincerely,

Bernie J. Montoya, CE
Engineering Associate

BJM/dl

c: Andrew Garcia
Arlene Portillo
File

Good for You, Albuquerque!





D. Mark Goodwin & Associates, P.A.
Consulting Engineers and Surveyors

P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 345-2010

November 7, 1996

Mr. Bernie J. Montoya, CE
Hydrology Division
City of Albuquerque
PO Box 1293
Albuquerque, NM 87103

Re: Chalmer's Used Car Sales (G11-D38)

Dear Mr. Montoya:

The purpose of this letter is to address outstanding comments issued by your office on September 23, 1996, and to apply for final grading and drainage plan approval. I've addressed your previous comments as follows:

1. Detention Pond "A" has been redesigned to avoid the appearance of it having any retainage. The bottom is at elevation 02.78 and the maximum water surface is expected to reach 03.20 according to AHYMO's reservoir routing function. The peak discharge from Basin and Pond "A" into Coors Blvd. has now been reduced to 1.49 cfs under proposed conditions.
2. Additional spot elevations along the Basin "B" outfall path (improved City alley) have been identified on the plan.
3. Cross-lot drainage is being avoided to the extent possible. Prior to development of this property incidental cross-lot runoff due to recent construction of the access driveway between these two properties did occur. I attempted to divert developed flow into Pond "A" and into the public alley around the east side of Walgreen's from Basin "B."
4. As described in the original conceptual grading and drainage plan submittal, existing runoff from this property reached the drop inlet in Sequoia Road prior to construction of the new Walgreen's by draining along Coors Blvd. and overland when it was an auto-parts store. The current runoff rate is 6.24 cfs and we are reducing that to 4.10cfs (see AHYMO) with on-site ponding. I've obtained as-built drawings of the area's roads and determined that the existing inlet does have sufficient capacity to accept runoff from its entire basin. Your comment refers to the "additional" 3.17 cfs of runoff when in reality we are reducing runoff from the subject site by 1.58 cfs. In addition, runoff formerly discharging from the Walgreen's site reached the referenced drop inlet via Sequoia Road, but it is now conveyed subsurface through Walgreen's new on-site inlet, thereby reducing the impact on the public Sequoia Road inlet even further.

If I can be of further assistance please contact me.

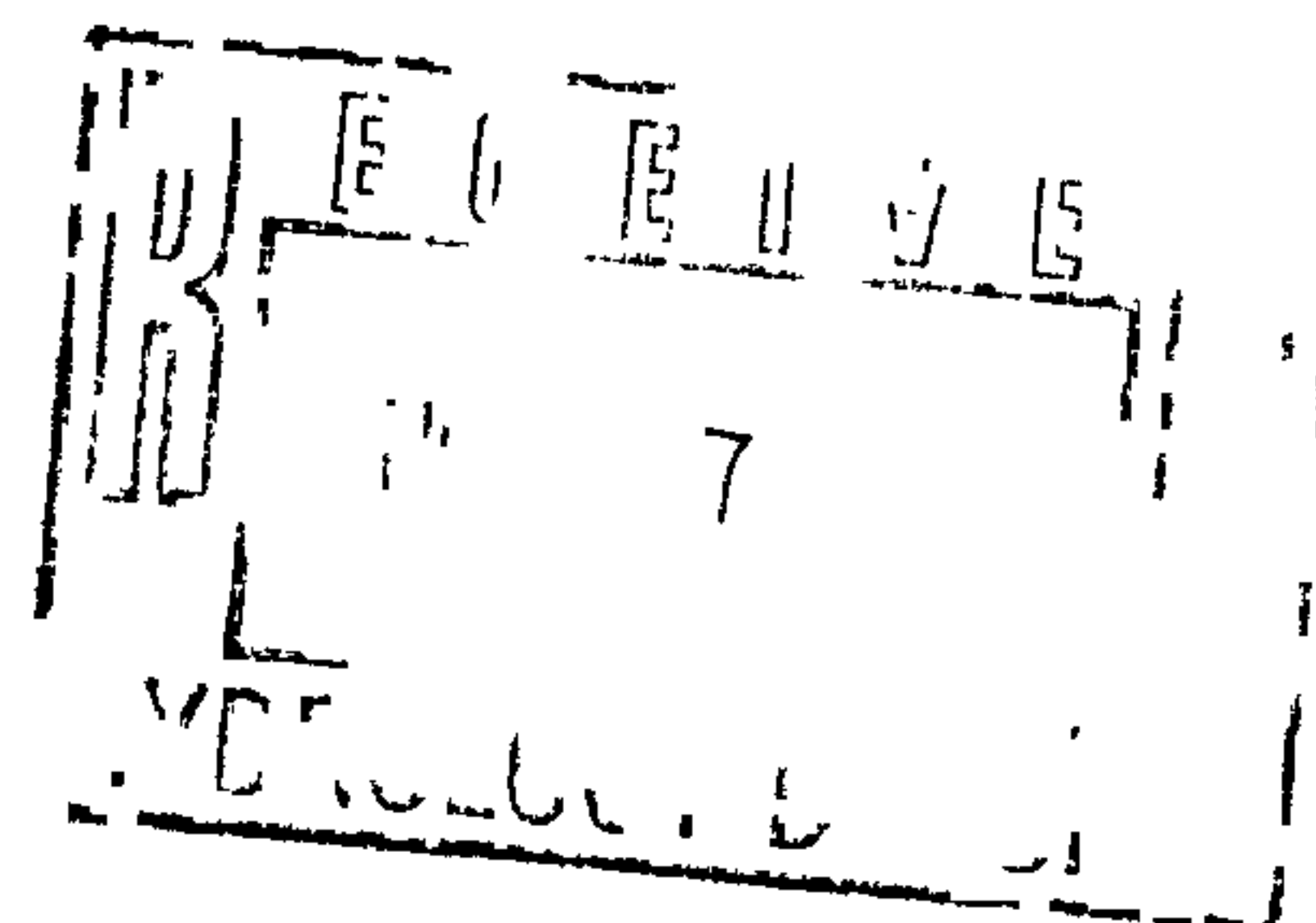
Sincerely,

MARK GOODWIN & ASSOCIATES, P.A.

John M. MacKenzie, PE

JMM/sb

b:\chalmers.use\comments



DRAINAGE INFORMATION SHEET

PROJECT TITLE: Chalmer's Used Car Sales ZONE ATLAS/DRNG, FILE#: G-11-~~7438~~
DRB #: DRB-96-541 EPC #: _____ WORK ORDER #: _____
LEGAL DESCRIPTION: Lot B-2-A
CITY ADDRESS: _____

ENGINEERING FIRM: Mark Goodwin & Associates, PA CONTACT: John M. MacKenzie, PE
ADDRESS: P.O. Box 90606 PHONE: (505) 345-2010
OWNER: Don Chalmers CONTACT: Don Chalmers
ADDRESS: _____ PHONE: _____
ARCHITECT: George Rainhart CONTACT: George Rainhart
ADDRESS: 2325 San Pedro NE., Ste 2B PHONE: (505) 884-9110
SURVEYOR: _____ CONTACT: _____
ADDRESS: _____ PHONE: _____
CONTRACTOR: _____ CONTACT: _____
ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL:

____ DRAINAGE REPORT
X DRAINAGE PLAN
____ CONCEPTUAL GRADING & DRAINAGE PLAN
X GRADING PLAN
____ EROSION CONTROL PLAN
____ ENGINEER'S CERTIFICATION
____ OTHER

PRE-DESIGN MEETING:

____ YES
X NO
____ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

____ SKETCH PLAT APPROVAL
____ PRELIMINARY PLAT APPROVAL
____ S. DEV. PLAN FOR SUB'D APPROVAL
X S. DEV. PLAN FOR BLDG PERMIT APPROVAL
____ SECTOR PLAN APPROVAL
____ FINAL PLAT APPROVAL
____ FOUNDATION PERMIT APPROVAL
X BUILDING PERMIT APPROVAL
____ CERTIFICATION OF OCCUPANCY APPROVAL
____ GRADING PERMIT APPROVAL
____ PAVING PERMIT APPROVAL
____ S.A.D. DRAINAGE REPORT
____ DRAINAGE REQUIREMENTS
____ OTHER _____ (Specify)

DATE SUBMITTED: 11-7-96
BY: John M. MacKenzie
John M. MacKenzie, PE

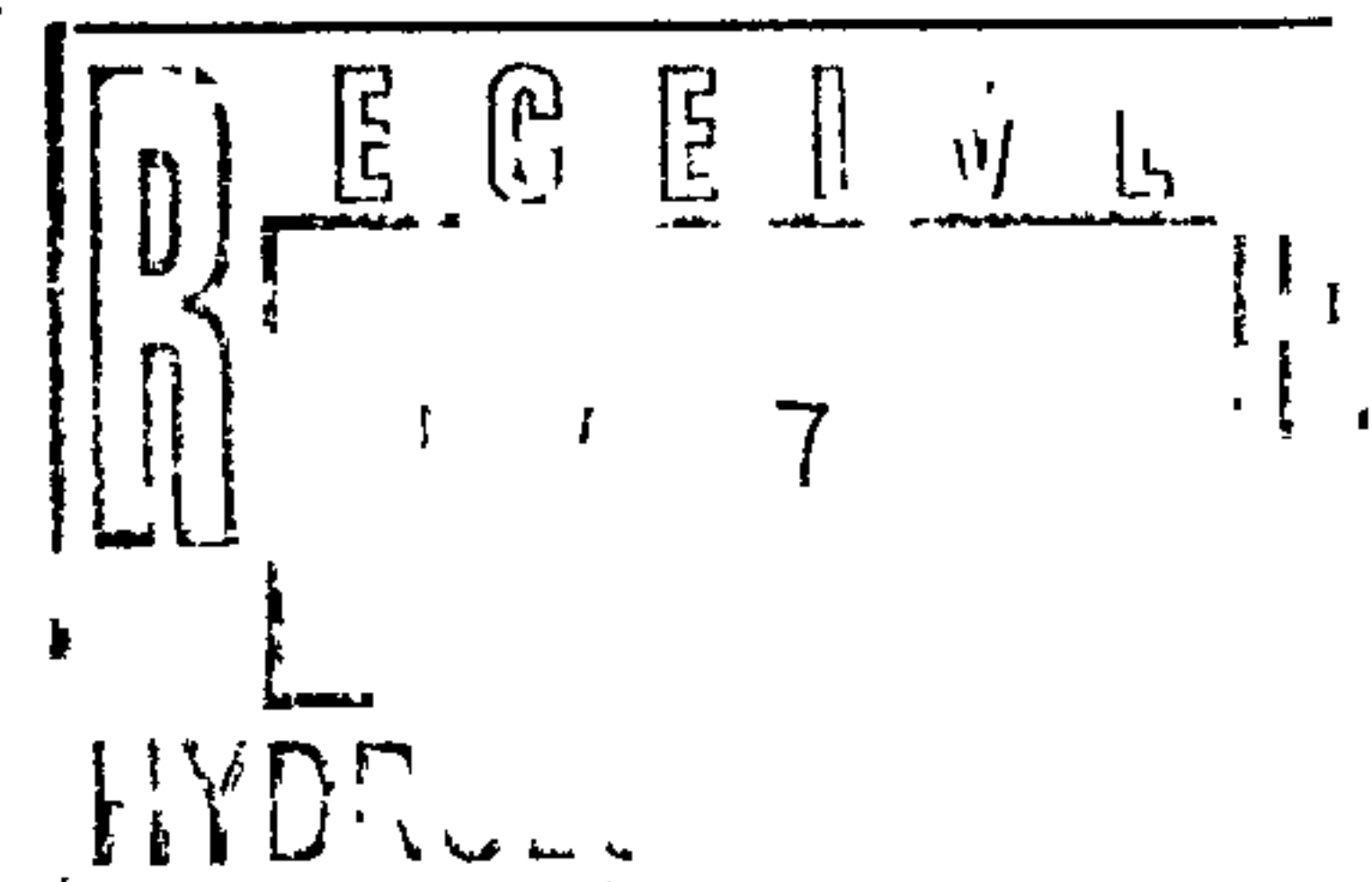


Figure 12

EXHIBIT "A"
To Subdivision Improvements Agreement
DEVELOPMENT REVIEW BOARD (DRB) REQUIRED INFRASTRUCTURE LISTING
for Walgreens - Coors & Sequoia

Following is a summary of Public/Private Infrastructure required to be constructed or financially guaranteed to be constructed for the above development. This summary is not necessarily a complete listing. During the design process, if the City determines that appurtenant items have not been included in the summary, those items will be included in the listing and related financial guarantee, if the items normally are the Subdivider responsibility. In addition, any unforeseen items which arise during construction which are necessary to complete the project and which normally are the Subdivider's responsibility are the responsibility of the Subdivider and will be included in the financial guarantee provided to the City.

Size	Type Improvement	Location	From	To
12' 8"	Permanent Pavement Std. Curb & Gutter	Sequoia road lane	SW corner of site	100' E of same corner
12' 8"	Permanent Pavement Std. Curb & Gutter	Coors Bus Bay	SW corner of tract B-2	150' N of same corner
20'	Perm Alley Pavement, and Curb	E side of site	Sequoia Road	NE corner of Tract B-2
8'	std. Curb & Gutter	West side of site	SW corner of site	NW corner of site
6'	Sidewalk	"	"	"
8"	STD	Sequoia	Aggregated Along Frontage	"
6'	SPWIK	"	"	"

Prepared By: John M. MacKenzie
Print Name: John M. MacKenzie, PE
Firm: Mark Goodwin and Associates, PA

7337
FIVE
Page 1 of 1

Development Review Board Member Approvals

<u>[Signature]</u> Transportation Dev.	<u>8-23-94</u> Date	<u>[Signature]</u> Utility Dev.	<u>23 Aug 94</u> Date
<u>Carmen Chavez</u> Parks & General Services	<u>8-23-94</u> Date	<u>[Signature]</u> Engineer/AMAFCA	<u>8/23/94</u> Date
<u>[Signature]</u> DRB Chairman	<u>8-23-94</u> Date	<u>N/A</u> NM Utilities, Inc.	<u> </u> Date

Post-It® Fax Note	7671	Date	# of pages
To	<u>[Signature]</u>	From	<u>[Signature]</u>
Co/Drop		Co.	



POND A OUTFALL CALC'S

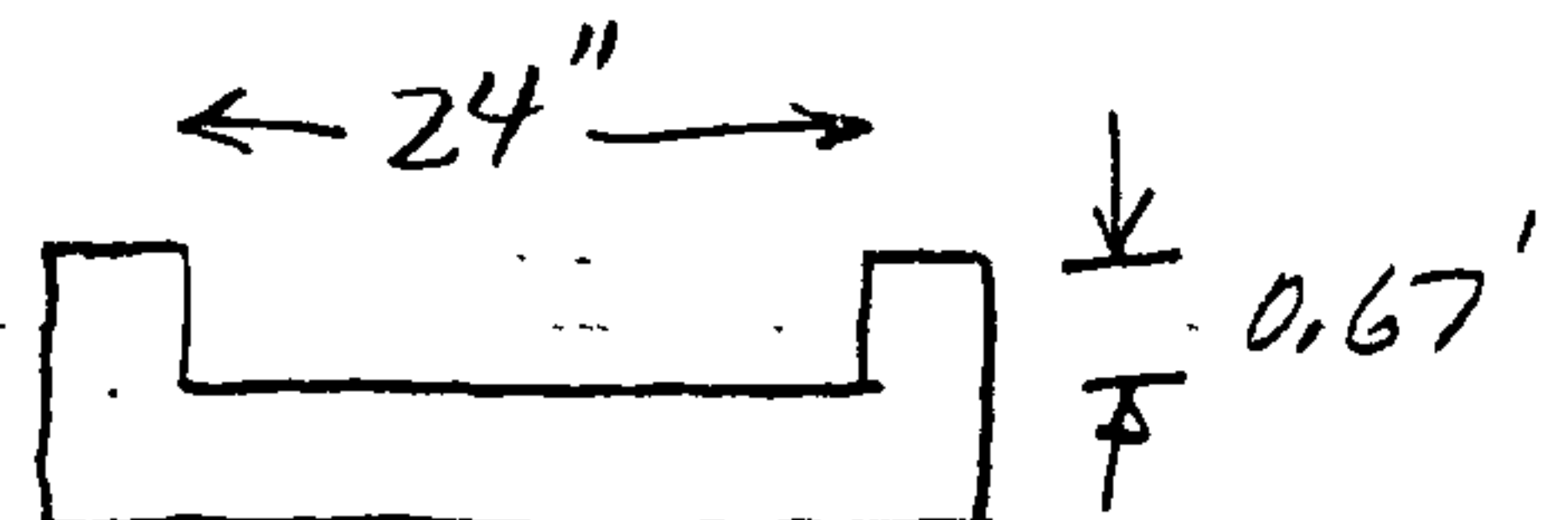
The discharge from Pond A is controlled by a weir (12" x 18") located in the pond embankment. At elev. 3.78 the depth of ponding would be 12".

$$Q = 2.9(1.5)(1)^{3/2} = 4.35 \text{ cfs}$$

The backwater created by this would extend back into the car parking area, covering approximately 32,400 S.F., resulting in a total storage of 0.311 ac. ft. (see pond calculations on plan).

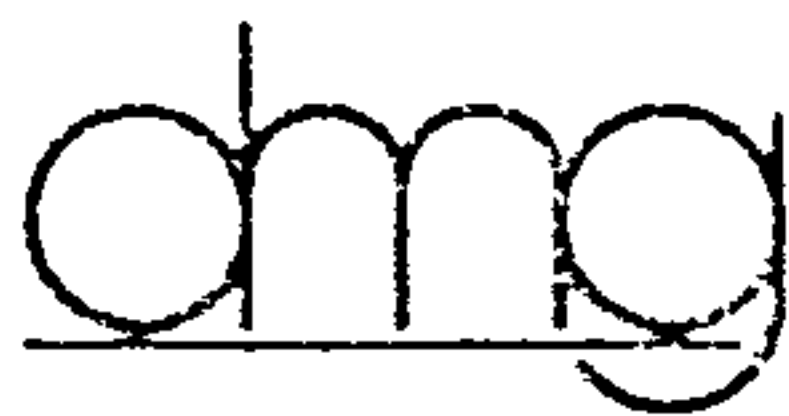
After passing the weir, a 24" concrete channel will convey runoff into the street via a sidewalk culvert to the existing flowline along Coors Blvd in front of the Walgreen's. The slope of this channel is 1.4%.

$$WP = 3.34' \quad \text{Area} = 1.34 \text{ SF}$$



$$Q = \frac{1.49}{0.014} (1.34) \left(\frac{1.34}{3.34} \right)^{0.67} (0.014)^{0.5}$$

$$Q = 9.15 \text{ cfs}$$



D. Mark Goodwin & Associates, P.A.
Consulting Engineers and Surveyors

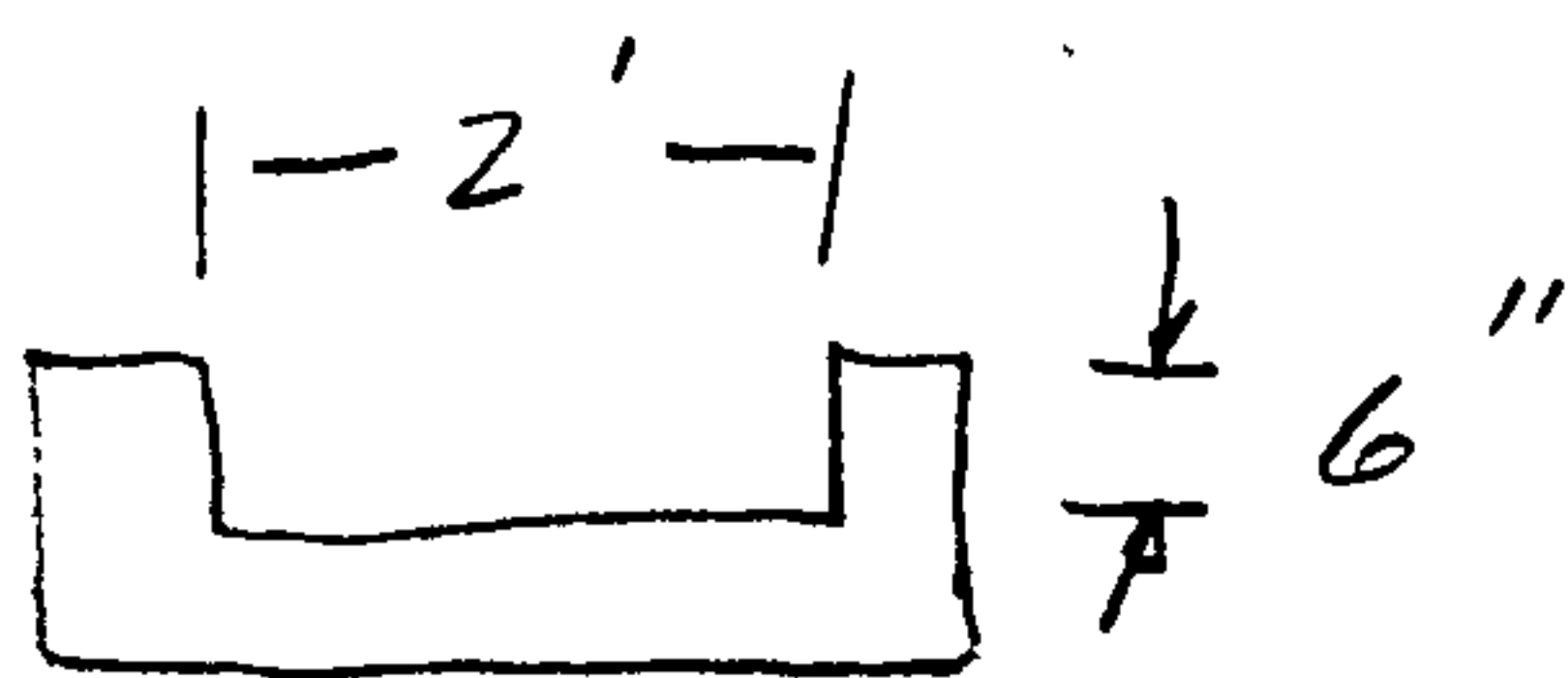
PROJECT Chalmer's Used Cars
SUBJECT Drainage
BY QMM DATE 11-5-96
CHECKED _____ DATE _____
SHEET 2 OF _____

BASIN "B" OUTFALL CALCS

The peak discharge from Basin "B" is
3.17 cfs. The discharge will flow in a 2' x 6"
channel with an opening of 3' and slope of 1%.

$$L = \frac{3.17}{2.9 (0.5)^{1.5}}$$

$$L = 3.09' \text{ use } 3' \text{ opening}$$



$$WP = 3'$$

$$Area = 1 \text{ SF}$$

$$Q = \frac{1.49}{.014} \left(1 \right) \left(\frac{1}{3} \right)^{0.67} (0.01)^{0.5} = 5.09 \text{ cfs}$$



Double "C" Drop Inlet Capacity Analysis

The inlet in question is a double "C" type located on the north side of Sequoia Rd approximately 230' east of the Coors Blvd. / Sequoia Rd. intersection. It is directly across the street from an identical double "C" inlet serving the south side of Sequoia Rd., both built under SAD 198 in 1988.

The attached annotated zone atlas map identifies the contributing basin based on As-Builts and field observations. The 2.2 Ac. basin generates 10 cfs ~~cfs~~ under existing conditions. This inlet functions in a sump condition. The total grate perimeter is 17.4 ft. Assuming a 50% clog factor and utilizing the attached Bureau of Public Roads nomograph the grate area will accept 14.3 cfs at a depth of 0.67 ft: $Q = 3PH^{3/2} = 3(17.4)(0.67)^{3/2}$

$$Q = (28.6)(50\%) = 14.3 \text{ cfs}$$

The total discharge reaching this inlet is:

$$Q_T = Q_{\text{sequoia basin}} + Q_{\text{chalmers}} = 10.1 + 4.1 = 14.2 \text{ cfs}$$

→ The 14.3 cfs does not take into account the curb face.

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
 RUN DATE (MON/DAY/YR) = 11/06/1996
 START TIME (HR:MIN:SEC) = 18:00:16 USER NO.= M_GOODWN.101
 INPUT FILE = CHALMERS.DAT

START TIME=0.0

*****CHALMERS USED CAR SALES

*****AUGUST 1996

RAINFALL TYPE=1 RAIN QUARTER=0.0 IN

RAIN ONE=1.95 IN RAIN SIX=2.20 IN

RAIN DAY=2.65 IN DT=0.0333 HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2

- PEAK AT 1.40 HR.

DT = .033300 HOURS			END TIME = 5.994000 HOURS			
.0000	.0009	.0018	.0028	.0037	.0047	.0057
.0068	.0078	.0089	.0100	.0112	.0124	.0136
.0148	.0161	.0175	.0188	.0202	.0217	.0232
.0248	.0265	.0282	.0299	.0318	.0338	.0358
.0380	.0403	.0427	.0480	.0537	.0599	.0726
.1017	.1466	.2112	.2996	.4157	.5640	.7487
.9742	1.1907	1.2796	1.3543	1.4207	1.4811	1.5366
1.5882	1.6364	1.6816	1.7241	1.7642	1.8020	1.8379
1.8718	1.9040	1.9346	1.9636	1.9911	1.9979	2.0030
2.0078	2.0124	2.0167	2.0209	2.0248	2.0286	2.0323
2.0358	2.0392	2.0425	2.0457	2.0487	2.0517	2.0546
2.0574	2.0602	2.0628	2.0654	2.0680	2.0704	2.0728
2.0752	2.0775	2.0798	2.0820	2.0841	2.0863	2.0883
2.0904	2.0924	2.0944	2.0963	2.0982	2.1001	2.1019
2.1037	2.1055	2.1072	2.1090	2.1107	2.1123	2.1140
2.1156	2.1172	2.1188	2.1204	2.1219	2.1234	2.1249
2.1264	2.1279	2.1293	2.1307	2.1321	2.1335	2.1349
2.1363	2.1376	2.1390	2.1403	2.1416	2.1429	2.1442
2.1454	2.1467	2.1479	2.1491	2.1503	2.1516	2.1527
2.1539	2.1551	2.1562	2.1574	2.1585	2.1597	2.1608
2.1619	2.1630	2.1641	2.1651	2.1662	2.1673	2.1683
2.1694	2.1704	2.1714	2.1725	2.1735	2.1745	2.1755
2.1765	2.1774	2.1784	2.1794	2.1803	2.1813	2.1822
2.1832	2.1841	2.1850	2.1859	2.1869	2.1878	2.1887
2.1896	2.1904	2.1913	2.1922	2.1931	2.1939	2.1948

***** EXISTING CONDITIONS ON-SITE

2 of 5

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.0031 SQ MI

PER A=0 PER B=0 PER C=89 PER D=11

TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
 CONSTANT, N = 7.106420
 UNIT PEAK = 1.3463 CFS UNIT VOLUME = .9910 B = 526.28
 P60 = 1.9500
 AREA = .000341 SQ MI IA = .10000 INCHES INF = .04000 I
 NCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
 = .033300

K = .106769HR TP = .133300HR K/TP RATIO = .800969 SHAPE
 CONSTANT, N = 4.472154
 UNIT PEAK = 7.9790 CFS UNIT VOLUME = .9989 B = 385.50
 P60 = 1.9500
 AREA = .002759 SQ MI IA = .35000 INCHES INF = .83000 I
 NCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
 = .033300

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.10

RUNOFF VOLUME = 1.14661 INCHES = .1896 ACRE-FEET
 PEAK DISCHARGE RATE = 6.24 CFS AT 1.499 HOURS BASIN AREA =
 .0031 SQ. MI.

***** PROPOSED CONDITIONS WITHIN ON-SITE BASIN A

COMPUTE NM HYD ID=2 HYD NO=101.2 AREA=0.0019 SQ MI

PER A=0 PER B=18 PER C=0 PER D=82

TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
 CONSTANT, N = 7.106420
 UNIT PEAK = 6.1511 CFS UNIT VOLUME = .9975 B = 526.28
 P60 = 1.9500
 AREA = .001558 SQ MI IA = .10000 INCHES INF = .04000 I
 NCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
 = .033300

K = .131364HR TP = .133300HR K/TP RATIO = .985475 SHAPE
 CONSTANT, N = 3.583083
 UNIT PEAK = 9.2728 CFS UNIT VOLUME = .9834 B = 326.34

P60 = 1.9500

AREA = .000342 SQ MI IA = .50000 INCHES INF = 1.25000 I
NCHES PER HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033300

PRINT HYD

ID=2 CODE=1

3 of 5

PARTIAL HYDROGRAPH 101.20

RUNOFF VOLUME = 1.74037 INCHES = .1764 ACRE-FEET

PEAK DISCHARGE RATE = 5.01 CFS AT 1.499 HOURS BASIN AREA =
.0019 SQ. MI.

***** RESERVOIR ROUTE THE PROPOSED CONDITIONS

ROUTE RESERVOIR

ID=3 HYD NO=104 INFLOW ID=2 CODE=24

OUTFLOW (CFS)	STORAGE (AC-FT)	ELEVATION (FT)
0.0	0.0	02.78
0.52	0.007	03.00
4.35	0.311	03.78

* * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	2.78	.000	.00
.80	.00	2.78	.000	.00
1.60	3.51	3.15	.067	1.27
2.40	.19	3.13	.057	1.14
3.20	.02	3.00	.008	.53
4.00	.01	2.79	.000	.02
4.80	.02	2.79	.000	.02
5.59	.02	2.79	.000	.02
6.39	.00	2.78	.000	.01

PEAK DISCHARGE = 1.488 CFS - PEAK OCCURS AT HOUR 1.86

MAXIMUM WATER SURFACE ELEVATION = 3.197

MAXIMUM STORAGE = .0839 AC-FT INCREMENTAL TIME = .033300HR

PRINT HYD

ID=3 CODE=1

PARTIAL HYDROGRAPH 104.00

RUNOFF VOLUME = 1.74022 INCHES = .1763 ACRE-FEET

PEAK DISCHARGE RATE = 1.49 CFS AT 1.865 HOURS BASIN AREA =
.0019 SQ. MI.

***** PROPOSED CONDITIONS WITHIN ON-SITE BASIN-B

COMPUTE NM HYD ID=4 HYD NO=101.3 AREA=0.0012 SQ MI

PER A=0 PER B=18 PER C=0 PER D=82

TP=0.1333 HR MASS RAINFALL=-1

4 of 5

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
CONSTANT, N = 7.106420
UNIT PEAK = 3.8849 CFS UNIT VOLUME = .9965 B = 526.28
P60 = 1.9500
AREA = .000984 SQ MI IA = .10000 INCHES INF = .04000 I
NCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033300

K = .131364HR TP = .133300HR K/TP RATIO = .985475 SHAPE
CONSTANT, N = 3.583083
UNIT PEAK = .52881 CFS UNIT VOLUME = .9745 B = 326.34
P60 = 1.9500
AREA = .000216 SQ MI IA = .50000 INCHES INF = 1.25000 I
NCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033300

PRINT HYD ID=4 CODE=1

PARTIAL HYDROGRAPH 101.30

RUNOFF VOLUME = 1.74037 INCHES = .1114 ACRE-FEET
PEAK DISCHARGE RATE = 3.17 CFS AT 1.499 HOURS BASIN AREA =
.0012 SQ. MI.

ADD HYD ID=5 HYD NO=102 ID=3 ID=4

PRINT HYD ID=5 CODE=1

PARTIAL HYDROGRAPH 102.00

RUNOFF VOLUME = 1.74010 INCHES = .2877 ACRE-FEET
PEAK DISCHARGE RATE = 4.10 CFS AT 1.532 HOURS BASIN AREA =
.0031 SQ. MI.

Total Developed

***** EXISTING CONDITIONS WITHIN NORTH SEQUOIA RD. BASIN

***** DISCHARGING INTO TYPE "C" DROP INLET SOUTH OF WALGREEN'S

COMPUTE NM HYD ID=6 HYD NO=101.4 AREA=0.0035 SQ MI

PER A=0 PER B=2 PER C=0 PER D=98

5 of 5

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
 CONSTANT, N = 7.106420
 UNIT PEAK = 13.542 CFS UNIT VOLUME = .9985 B = 526.28
 P60 = 1.9500
 AREA = .003430 SQ MI IA = .10000 INCHES INF = .04000 I
 NCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
 = .033300

K = .131364HR TP = .133300HR K/TP RATIO = .985475 SHAPE
 CONSTANT, N = 3.583083
 UNIT PEAK = .17137 CFS UNIT VOLUME = .9228 B = 326.34
 P60 = 1.9500
 AREA = .000070 SQ MI IA = .50000 INCHES INF = 1.25000 I
 NCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
 = .033300

PRINT HYD ID=6 CODE=1

PARTIAL HYDROGRAPH 101.40

RUNOFF VOLUME = 1.94207 INCHES = .3625 ACRE-FEET
 PEAK DISCHARGE RATE = 10.09 CFS AT 1.499 HOURS BASIN AREA =
 .0035 SQ. MI.

FINISH

NORMAL PROGRAM FINISH

END TIME (HR:MIN:SEC) = 18:00:23

SU-3

UNIVERSITY OF ALBUQUERQUE SECTOR DEV PLAN BOUNDARY

VILLA DE PAZ UNIT 1

SU-1 PRD

SU-1
PERMISSIVE & CONDITIONAL IN O-1

SU-1 C-1 USES

SU-1
O-1
USES

C-1

Area = 2.21 Ac

C-1

COORS

P
O-1
(B)

MESA R-2

R-2

R-3

WEST

R-2

R-2

CITY PARK /
PONDING AREA
CORONA

PLANDS
PARK

C-1
1.5 cfs
 $Q_{total} = 4.1 cfs$
3.17

SEDUOIA

DEL

SU-1
SENIOR
CITIZENS
HOUSING
(146 DU)

SU-1 PRD

R-3

SU-1
PRD
10
DUVA

SOL DEV

KATHERINE

(2)
SU-1
RT USE

(3)
SU-1
RT USE

(4)
SU-1
RT USE

GRANDE
SU-1

(6)
SU-1
RT USE

(5)
SU-1
RT USE

SHEIGHTS

NORT

8

H

DR

DR

DR

DR

DR

DR

DR

DR

DR

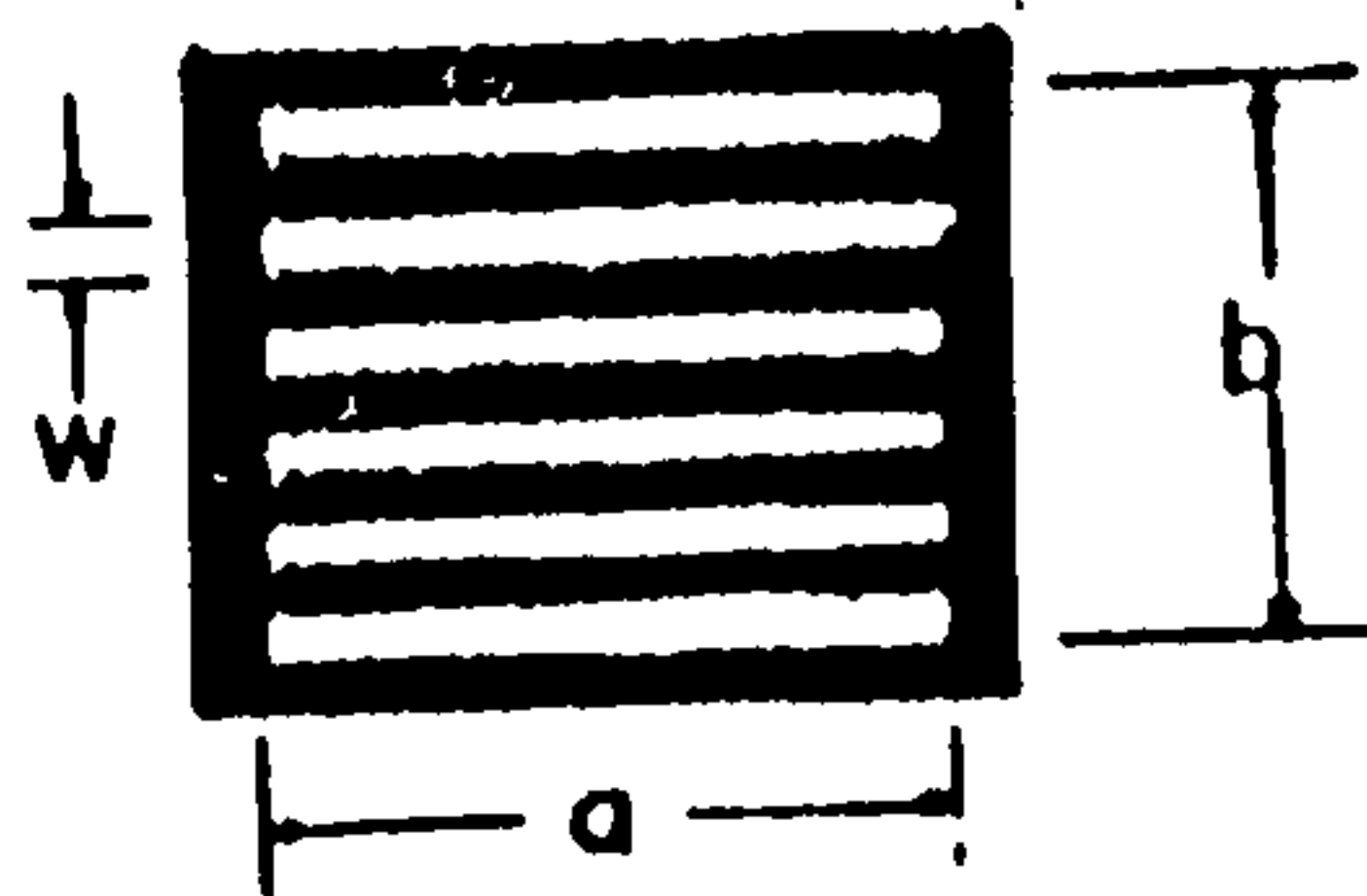
DR

DR

DR

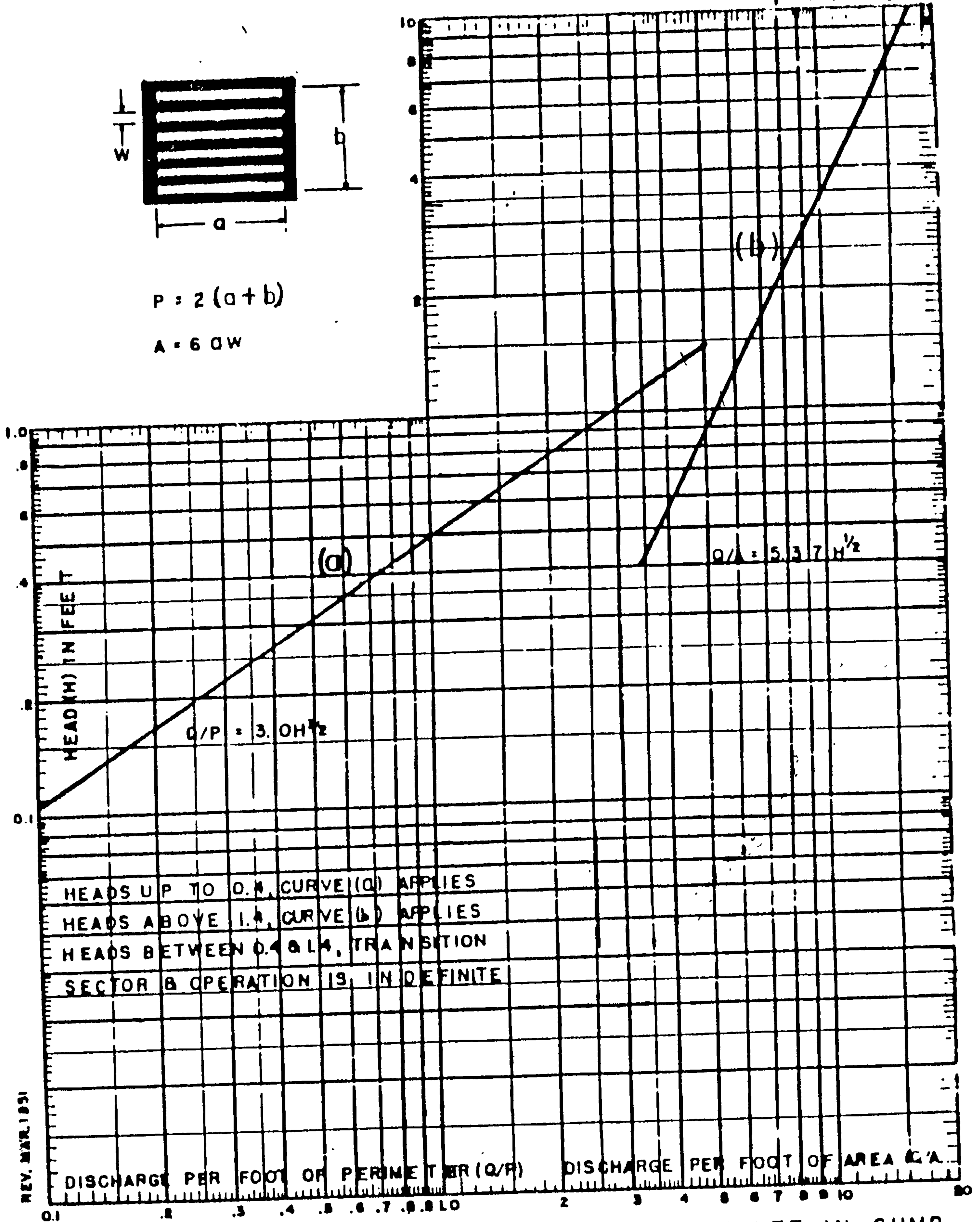
DR

1073.02



$$P = 2(a + b)$$

$$A = 6.0W$$



BUREAU OF PUBLIC ROADS
DIVISION TWO WASH, D.C.

CAPACITY OF GRATE INLET IN SUMP
WATER PONDED ON GRATE

DRAINAGE INFORMATION SHEET

PROJECT TITLE: Chalmer's Used Car Sales ZONE ATLAS/DRNG, FILE#: G-11-7/438
DRB #: _____ EPC #: _____ WORK ORDER #: _____
LEGAL DESCRIPTION: Lot B-2-A
CITY ADDRESS: _____

ENGINEERING FIRM: Mark Goodwin & Associates, PA CONTACT: John M. MacKenzie, PE
ADDRESS: P.O. Box 90606 PHONE: (505) 345-2010
OWNER: Don Chalmers CONTACT: Don Chalmers
ADDRESS: _____ PHONE: _____
ARCHITECT: George Rainhart CONTACT: George Rainhart
ADDRESS: 2325 San Pedro NE., Ste 2B PHONE: (505) 884-9110
SURVEYOR: _____ CONTACT: _____
ADDRESS: _____ PHONE: _____
CONTRACTOR: _____ CONTACT: _____
ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL:

____ DRAINAGE REPORT
____ DRAINAGE PLAN
X CONCEPTUAL GRADING & DRAINAGE PLAN
____ GRADING PLAN
____ EROSION CONTROL PLAN
____ ENGINEER'S CERTIFICATION
____ OTHER

PRE-DESIGN MEETING:

____ YES
X NO
____ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

____ SKETCH PLAT APPROVAL
____ PRELIMINARY PLAT APPROVAL
____ S. DEV. PLAN FOR SUB'D APPROVAL
X S. DEV. PLAN FOR BLDG PERMIT APPROVAL
____ SECTOR PLAN APPROVAL
____ FINAL PLAT APPROVAL
____ FOUNDATION PERMIT APPROVAL
____ BUILDING PERMIT APPROVAL
____ CERTIFICATION OF OCCUPANCY APPROVAL
____ GRADING PERMIT APPROVAL
____ PAVING PERMIT APPROVAL
____ S.A.D. DRAINAGE REPORT
____ DRAINAGE REQUIREMENTS
____ OTHER _____ (Specify)

DATE SUBMITTED: 8-29-96

BY: John M. MacKenzie

John M. MacKenzie, PE

AUG 29 1996

CHALMERS VEHICLE SALES
DRAINAGE SCHEME
TRACT B-2-A

This property was previously occupied by an auto parts store that straddled the lot line and covered a portion of the former tract to the south. At that time, developed runoff flowed onto and south along Coors Blvd. where it then drained east along Sequoia Rd. to an existing drop inlet approximately 230' east of the intersection. The property was replatted in 1994 and construction of the existing Walgreen's occurred shortly thereafter, resulting in the former parts store being razed. Walgreen's developed flow is now collected in an on-site storm drain before being piped subsurface into the existing inlet in Sequoia Rd.

From AHYMO, the existing 2.01 acre vacant site produces 6.24 cfs of runoff. Approximately 11 % of the site is covered by impervious surface related to the former parts store.

The approach taken in design of the drainage plan at this site attempts to reduce developed discharge to a rate less than what now exists. As identified on the plan, the site is split into two basins; one draining into Coors Blvd. and one draining into the public alley located east of the site. Undeveloped flow now drains along these two paths and into the existing storm drain in Sequoia Rd. With development of this property we will be reducing peak discharge from 6.24 cfs to 4.89 cfs with on-site ponding (see attached AHYMO).

AUG 29 1994

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
 RUN DATE (MON/DAY/YR) = 08/29/1996
 START TIME (HR:MIN:SEC) = 08:51:50 USER NO.= M_GOODWN.101
 INPUT FILE = CHALMERS.DAT

START TIME=0.0

*****CHALMERS USED CAR SALES

*****AUGUST 1996

RAINFALL TYPE=1 RAIN QUARTER=0.0 IN

RAIN ONE=1.95 IN RAIN SIX=2.20 IN

RAIN DAY=2.65 IN DT=0.0333 HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2
 - PEAK AT 1.40 HR.

DT = .033300 HOURS			END TIME = 5.994000 HOURS			
.0000	.0009	.0018	.0028	.0037	.0047	.0057
.0068	.0078	.0089	.0100	.0112	.0124	.0136
.0148	.0161	.0175	.0188	.0202	.0217	.0232
.0248	.0265	.0282	.0299	.0318	.0338	.0358
.0380	.0403	.0427	.0480	.0537	.0599	.0726
.1017	.1466	.2112	.2996	.4157	.5640	.7487
.9742	1.1907	1.2796	1.3543	1.4207	1.4811	1.5366
1.5882	1.6364	1.6816	1.7241	1.7642	1.8020	1.8379
1.8718	1.9040	1.9346	1.9636	1.9911	1.9979	2.0030
2.0078	2.0124	2.0167	2.0209	2.0248	2.0286	2.0323
2.0358	2.0392	2.0425	2.0457	2.0487	2.0517	2.0546
2.0574	2.0602	2.0628	2.0654	2.0680	2.0704	2.0728
2.0752	2.0775	2.0798	2.0820	2.0841	2.0863	2.0883
2.0904	2.0924	2.0944	2.0963	2.0982	2.1001	2.1019
2.1037	2.1055	2.1072	2.1090	2.1107	2.1123	2.1140
2.1156	2.1172	2.1188	2.1204	2.1219	2.1234	2.1249
2.1264	2.1279	2.1293	2.1307	2.1321	2.1335	2.1349
2.1363	2.1376	2.1390	2.1403	2.1416	2.1429	2.1442
2.1454	2.1467	2.1479	2.1491	2.1503	2.1516	2.1527
2.1539	2.1551	2.1562	2.1574	2.1585	2.1597	2.1608
2.1619	2.1630	2.1641	2.1651	2.1662	2.1673	2.1683
2.1694	2.1704	2.1714	2.1725	2.1735	2.1745	2.1755
2.1765	2.1774	2.1784	2.1794	2.1803	2.1813	2.1822
2.1832	2.1841	2.1850	2.1859	2.1869	2.1878	2.1887
2.1896	2.1904	2.1913	2.1922	2.1931	2.1939	2.1948
2.1957	2.1965	2.1974	2.1982	2.1990	2.1999	

***** EXISTING CONDITIONS ON-SITE

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.0031 SQ MI

PER A=0 PER B=0 PER C=89 PER D=11

TP=0.1333 HR MASS RAINFALL=-1

AUG 29 1996

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
 CONSTANT, N = 7.106420
 UNIT PEAK = 1.3463 CFS UNIT VOLUME = .9910 B = 526.28
 P60 = 1.9500
 AREA = .000341 SQ MI IA = .10000 INCHES INF = .04000 I

CHIEF PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033300

K = .106769HR TP = .133300HR K/TP RATIO = .800969 SHAPE
CONSTANT, N = 4.472154
UNIT PEAK = 7.9790 CFS UNIT VOLUME = .9989 B = 385.50
P60 = 1.9500
AREA = .002759 SQ MI IA = .35000 INCHES INF = .83000 I
NCHES PER HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033300

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.10

RUNOFF VOLUME = 1.14661 INCHES = .1896 ACRE-FEET
PEAK DISCHARGE RATE = 6.24 CFS AT 1.499 HOURS BASIN AREA =
.0031 SQ. MI.

***** PROPOSED CONDITIONS WITHIN ON-SITE BASIN A

COMPUTE NM HYD ID=2 HYD NO=101.2 AREA=0.0019 SQ MI

PER A=0 PER B=18 PER C=0 PER D=82

TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
CONSTANT, N = 7.106420
UNIT PEAK = 6.1511 CFS UNIT VOLUME = .9975 B = 526.28
P60 = 1.9500
AREA = .001558 SQ MI IA = .10000 INCHES INF = .04000 I
NCHES PER HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033300

K = .131364HR TP = .133300HR K/TP RATIO = .985475 SHAPE
CONSTANT, N = 3.583083
UNIT PEAK = .83728 CFS UNIT VOLUME = .9834 B = 326.34
P60 = 1.9500
AREA = .000342 SQ MI IA = .50000 INCHES INF = 1.25000 I
NCHES PER HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033300

PRINT HYD ID=2 CODE=1

PARTIAL HYDROGRAPH 101.20

RUNOFF VOLUME = 1.74037 INCHES = .1764 ACRE-FEET
PEAK DISCHARGE RATE = 5.01 CFS AT 1.499 HOURS BASIN AREA =
.0019 SQ. MI.

***** RESERVOIR ROUTE THE PROPOSED CONDITIONS

ROUTE RESERVOIR ID=3 HYD NO=104 INFLOW ID=2 CODE=24

OUTFLOW (CFS)	STORAGE (AC-FT)	ELEVATION (FT)
0.0	0.0	01.00
4.1	0.105	03.00

* * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
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.00	.00	1.00	.000	.00
.80	.00	1.00	.000	.00
1.60	3.51	2.12	.059	2.30
2.40	.19	1.41	.022	.84
3.20	.02	1.05	.003	.11
4.00	.01	1.01	.001	.02
4.80	.02	1.01	.000	.02
5.59	.02	1.01	.000	.02
6.39	.00	1.01	.000	.01

PEAK DISCHARGE = 2.433 CFS - PEAK OCCURS AT HOUR 1.67
 MAXIMUM WATER SURFACE ELEVATION = 2.187
 MAXIMUM STORAGE = .0623 AC-FT INCREMENTAL TIME = .033300HR

5

PRINT HYD ID=3 CODE=1

PARTIAL HYDROGRAPH 104.00

RUNOFF VOLUME = 1.74022 INCHES = .1763 ACRE-Feet
 PEAK DISCHARGE RATE = 2.43 CFS AT 1.665 HOURS BASIN AREA =
 .0019 SQ. MI.

***** PROPOSED CONDITIONS WITHIN ON-SITE BASIN B

COMPUTE NM HYD ID=4 HYD NO=101.3 AREA=0.0012 SQ MI

PER A=0 PER B=18 PER C=0 PER D=82

TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
 CONSTANT, N = 7.106420
 UNIT PEAK = 3.8849 CFS UNIT VOLUME = .9965 B = 526.28
 P60 = 1.9500
 AREA = .000984 SQ MI IA = .10000 INCHES INF = .04000 I
 NCHES PER HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .131364HR TP = .133300HR K/TP RATIO = .985475 SHAPE
CONSTANT, N = 3.583083
UNIT PEAK = .52881 CFS UNIT VOLUME = .9745 B = 326.34
P60 = 1.9500
AREA = .000216 SQ MI IA = .50000 INCHES INF = 1.25000 I
NCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033300

PRINT HYD ID=4 CODE=1

PARTIAL HYDROGRAPH 101.30

RUNOFF VOLUME = 1.74037 INCHES = .1114 ACRE-FEET
PEAK DISCHARGE RATE = 3.17 CFS AT 1.499 HOURS BASIN AREA =
.0012 SQ. MI.

ADD HYD ID=5 HYD NO=102 ID=3 ID=4

PRINT HYD ID=5 CODE=1

PARTIAL HYDROGRAPH 102.00

RUNOFF VOLUME = 1.74004 INCHES = .2877 ACRE-FEET
PEAK DISCHARGE RATE = 4.89 CFS AT 1.532 HOURS BASIN AREA =
.0031 SQ. MI.

FINISH

NORMAL PROGRAM FINISH

END TIME (HR:MIN:SEC) = 08:51:57