City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

February 16, 2001

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

K-10/D23F

RE: SANDIA DISTRIBUTION CENTER , ATRISCO BUSINESS PARK (~~K10-D23~~).
GRADING AND DRAINAGE PLAN FOR GRADING PERMIT AND PAVING PERMIT APPROVALS. ENGINEER'S STAMP DATED JANUARY 4, 2001,
(PARKING LOT MODIFICATIONS)

Dear Mr. MacKenzie:

Based on the information provided on your January 4, 2001 submittal, the above referenced project is approved for both Grading Permit and Paving Permit.

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

Prior to Certificate of Occupancy approval, an Engineer's Certification per the DPM will be required.

If I can be of further assistance, please feel free to contact me at 924-3984.

Sincerely,

John P. Murray, P.E.
Hydrology

c: Whitney Reierson
File

This approval is still valid
Brad Bingham, PE 8/29/02
City of Alb. - Hyd

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

K-10/D23F

(REV.1/11/2002)

PROJECT TITLE: Sandia Distributions Center – PARKING LOT MODIFICATIONS ZONE MAP/DRB.FILE#: K-10 D23F

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

LEGAL DESCRIPTION: Parcel A-1, Atrisco Business Park

CITY ADDRESS: _____

ENGINEERING FIRM: Mark Goodwin & Associates, PA CONTACT: John M. MacKenzie, PE

ADDRESS: P.O. Box 90606 Albuquerque NM 87119 PHONE: 828-2200

CITY, STATE: Albuquerque NM ZIP CODE: 87119

OWNER: RFG Management, Inc. CONTACT: Larry Moore

ADDRESS: 8400 East Cresent Parkway Suite 475 PHONE: 303-771-0321

CITY, STATE: Greenwood Village, CO ZIP CODE: 80111

ARCHITECT: Martin Design, Inc. CONTACT: Max Martin

ADDRESS: 1360 South Clarkson Sr. PHONE: 303-744-7839

CITY, STATE: Denver, Co ZIP CODE: 80210

SURVEYOR: Serv-TeK CONTACT: Gary Hugg

ADDRESS: 5643 Paradise Blvd. NW PHONE: 897-3366

CITY, STATE: Albuquerque NM ZIP CODE: 87114

CONTRACTOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

CITY, STATE: _____ ZIP CODE: _____

RECEIVED
AUG 22 2002
HYDROLOGY SECTION

TYPE OF SUBMITTAL:

____ DRAINAGE REPORT
X DRAINAGE PLAN
____ CONCEPTUAL GRADING & DRAINAGE PLAN
X GRADING PLAN
____ EROSION CONTROL PLAN
____ ENGINEER'S CERTIFICATION (HYDROLOGY)
____ CLOMR/LOMR
____ TRAFFIC CIRCULATION LAYOUT (TCL)
____ ENGINEER'S CERTIFICATION (TCL)
____ ENGINEER'S CERTIFICATION (DRB APPR. SITE PLAN)
____ OTHER

CHECK TYPE OF APPROVAL SOUGHT:

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

WAS A PRE-DESIGN CONFERENCE ATTENDED:

____ YES
X NO
____ COPY PROVIDED

DATE SUBMITTED: 8/22/02 BY: John M. MacKenzie
John M. MacKenzie, PE

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location and scope of the proposed development defines the degree of drainage detail. One or more of to 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).
2. **Drainage Plans:** Required for building permits, grading permits, paving permits and site plans less than five (5).
3. **Drainage Report:** Required for subdivisions containing more than ten (10) lots or constituting five (5) acres or more.

f:\\sandia distribution center\drainf.tbl

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

P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmg@swcp.com

August 22, 2002

City of Albuquerque
Public Works Department
Hydrology Division
P.O. Box 1293
Albuquerque, NM 87103

Re: Sandia Distribution Center Grading and Drainage Plan for Grading and paving Permit Approval
Engineer's Stamp Dated 8-16-02 (K-10/D23)

To whom it may concern: K-10/D23F

As shown on the attached original letter of approval, the subject request was approved by City Hydrology in February of 2001, but because it is more than one year old it has since expired. This a request to reapprove the original plan with an updated stamp. No other aspect of the original plan has changed.

Please contact me if I can be of further assistance.

Sincerely,

MARK GOODWIN & ASSOCIATES, PA

John M. MacKenzie

John M. MacKenzie, PE
Senior Engineer

JMM/jmm

f:\\sandia.dis\comments2.wpd

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

June 7, 2000

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

K-10/D23F

RE: SANDIA DISTRIBUTION CENTER , ATRISCO BUSINESS PARK (K10-D23).
ENGINEER'S CERTIFICATION FOR CERTIFICATE OF OCCUPANCY APPROVAL.
ENGINEER'S STAMP DATED MAY 31, 2000.

Dear Mr. MacKenzie:

Based on the information provided on your May 31, 2000 submittal, the above referenced project is approved for Certificate of Occupancy. A TEMPOARY (30-day) Certificate of Occupancy had been issued on June 5, 2000.

The project has been divided into two (2) phases. This approval is for Phase I.. Phase II construction is to follow shortly. When completed, an Engineer's Certification for the entire project will ensue.

If I can be of further assistance, please feel free to contact me at 924-3984.

Sincerely,

John P. Murray, P.E.
Hydrology

c: Whitney Reierson
File

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

February 16, 2001

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

K-10/D23F

RE: SANDIA DISTRIBUTION CENTER , ATRISCO BUSINESS PARK (~~K10-D23~~).
GRADING AND DRAINAGE PLAN FOR GRADING PERMIT AND PAVING PERMIT APPROVALS. ENGINEER'S STAMP DATED JANUARY 4, 2001,
(PARKING LOT MODIFICATIONS)

Dear Mr. MacKenzie:

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

Prior to Certificate of Occupancy approval, an Engineer's Certification per the DPM will be required.

If I can be of further assistance, please feel free to contact me at 924-3984.

Sincerely,

John P. Murray, P.E.
Hydrology

c: Whitney Reierson
File

This approval is still Valid
Brad Bingham, PE 8/29/02
City of Alb. - Hyd

DRAINAGE INFORMATION SHEET

K-10/D023F

PROJECT TITLE: Sandia Distribution Center ZONE ATLAS#: ~~K-1/D-23~~

DRB#: _____ EPC# _____ WORKORDER#: _____

LEGAL DESCRIPTION: Parcel A-1, Atrisco Business Park

CITY ADDRESS: _____

ENGINEERING FIRM:	Mark Goodwin & Associates, PA	CONTACT:	John M. MacKenzie, PE
ADDRESS:	P.O. Box 90606, Albuquerque, NM 87199	PHONE:	828-2200
OWNER:		CONTACT:	
ADDRESS:		PHONE:	
ARCHITECT:	MARTIN DESIGN, INC.	CONTACT:	Max Martin
ADDRESS:	1360 South Clarkson Sr., Denver, CO 80210	PHONE:	303-744-7839
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
- ____ ENGINEER'S CERTIFICATION
- ____ OTHER
- ____ EASEMENT VACATION

PRE-DESIGN MEETING:

- ____ YES
- ____ NO
- ____ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

- ____ SKETCH PLAT APRROVAL
- ____ PRELIMINARY PLAT APRROVAL
- ____ S. DEV. PLAN FOR SUB'D APPROVAL
- ____ S. DEV. PLAN FOR BLDG PERMIT APPROVAL
- ____ SECTOR PLAN APPROVAL
- ____ FINAL PLAT APPROVAL
- ____ FOUNDATION PERMIT APPROVAL
- ____ BUILDING PERMIT APPROVAL
- ____ CERTIFICATION OF OCCUPANCY APPROVAL
- X GRADING PERMIT APPROVAL
- X PAVING PERMIT APPROVAL
- ____ S.A.D. DRAINAGE REPORT
- ____ DRAINAGE REQUIREMENTS
- ____ OTHER - TCL Certification
- ____ RELEASE OF FINANCIAL GUARANTY
- ____ TRAFFIC CIRCULATION LAYOUT

RECEIVED
JAN 04 2001
HYDROLOGY SECTION

DATE SUBMITTED: 01/04/01

BY: John M. MacKenzie

John M. MacKenzie, PE

Phone Call

~~856-4089~~

1/5/01

Greg ~~Jeffries~~

(M) 303-944-2658

2658

Saudia Dist

1/5/01

Contractor - Greg Jeffries called Saudia Distribution Grad & Pav Permits

(M) 303-944-2658

10:40AM Left Msg

Will be several weeks

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

P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmg@swcp.com

January 4, 2001

Mr. John Murray, PE
City of Albuquerque
Public Works Department
Hydrology Division
P.O. Box 1293
Albuquerque, NM 87103

K-10/D23F

Re: Sandia Distribution Center - Parking Lot Modifications (Previous File K-10/D23)

Dear Mr. Murray:

The reference plan was approved in 1999 and certified last year (see attached approval letter and certified plan). From the previously approved plan you can see the north pond embankment was removed (approximately 5000 yards - see attached earthwork calculations) during the first stage of construction, solely for the purpose of increasing the volume of cut material that could be utilized for on-site construction of the building pad. A by-product of this action was the unnecessary increase in pond storage volume.

This grading plan amendment proposes to recapture that excess storage capacity provided with the original plan and occupy it with new parking. The volume of embankment reconstruction does not exceed what was previously removed during initial construction. The Atrisco Business Park Master Plan allows for the free discharge from the subject property into the south detention pond, so the incidental increase in runoff generated by this additional parking area (16.79 cfs for Basin C compared to 14.72 cfs previously - see attached AHYMO run - revised) can be easily accepted relative to the condition existing prior to the original construction of the building in the year 1999.

The west drop inlet and its outfall have been repositioned about 10' southwest of their former locations to allow for placement of the new parking lot access drive. Pipe slope has been increased due to the shortening of pipe length from inlet to outfall (1.0% vs. 0.7% previously). Other grades remained the same.

With this plan submittal we are requesting grading and paving permit approved. Construction will be limited to the parking lot addition.

Please contact me if I can be of further assistance.

Sincerely,

MARK GOODWIN & ASSOCIATES, PA

John M. MacKenzie, PE
Vice President

JMM/sw

f:\\sandia.dis\comments.no2

RECEIVED
JAN 04 2001
HYDROLOGY SECTION

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

June 7, 2000

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

K-10/D23F

RE: SANDIA DISTRIBUTION CENTER , ATRISCO BUSINESS PARK (~~K-10-D23~~).
ENGINEER'S CERTIFICATION FOR CERTIFICATE OF OCCUPANCY APPROVAL.
ENGINEER'S STAMP DATED MAY 31, 2000.

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If I can be of further assistance, please feel free to contact me at 924-3984.

Sincerely,

John P. Murray, P.E.
Hydrology

c: Whitney Reierson
File

RECEIVED
JAN 04 2001
HYDROLOGY SECTION

(1)

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
RUN DATE (MON/DAY/YR) = 01/04/2001
START TIME (HR:MIN:SEC) = 07:26:15 USER NO.= M_GOODWN.I01
INPUT FILE = RFG01-01.DAT

see sht. 3

START TIME=0.0

***** HYDROGRAPH FOR RFG MANAGEMENT WHAREHOUSE AT UNSER & BLUEWATER.
***** ONLY DEVELOPED CONDITIONS WILL BE EVALUATED BECAUSE THE
***** SITE IS ALLOWED FREE DISCHARGE PER THE ATRISCO BUSINESS PARK
***** MASTER DRAINAGE PLAN FOR THE FULLY DEVELOPED CONDITION, BY
***** EASTERLING & ASSOCIATES, INC., (REVISED)WITH ENGINEER'S STAMP
***** DATED 10/22/93

******** THIS RUN, PERFORMED IN JANUARY 2001, INCORPORATES AN ADDITIONAL
******** 22,350 SF(0.0008 SQ. MI.) OF PARKING AREA (15% B AND 85% D)THAT
******** WAS ADDED TO BASIN C. THE ADDITIONAL RUNOFF WILL THEN BE CON-
******** VEYED TO THE REPOSITIONEDSTORM DRAIN PREVIOUSLY SERVING BOTH

******** BASINS A AND C

RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
RAIN ONE=1.89 IN RAIN SIX=2.23 IN
RAIN DAY=2.67 IN DT=0.033 HR

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

DT = .033000 HOURS END TIME = 5.973000 HOURS

.0000	.0017	.0034	.0052	.0070	.0088	.0107
.0126	.0146	.0166	.0187	.0208	.0230	.0252
.0275	.0299	.0323	.0349	.0375	.0402	.0429
.0458	.0488	.0519	.0552	.0586	.0621	.0658
.0697	.0738	.0781	.0830	.0884	.0942	.1022
.1262	.1641	.2195	.2962	.3981	.5290	.6932
.8946	1.1376	1.2463	1.3225	1.3892	1.4494	1.5046
1.5558	1.6034	1.6481	1.6901	1.7296	1.7670	1.8024
1.8359	1.8677	1.8978	1.9264	1.9536	1.9719	1.9779
1.9836	1.9890	1.9942	1.9991	2.0039	2.0084	2.0128
2.0171	2.0212	2.0251	2.0290	2.0327	2.0364	2.0399
2.0433	2.0467	2.0500	2.0532	2.0563	2.0594	2.0624
2.0653	2.0682	2.0710	2.0738	2.0765	2.0791	2.0817
2.0843	2.0868	2.0893	2.0918	2.0942	2.0965	2.0989
2.1012	2.1034	2.1057	2.1079	2.1101	2.1122	2.1143
2.1164	2.1185	2.1205	2.1225	2.1245	2.1265	2.1284
2.1303	2.1322	2.1341	2.1359	2.1378	2.1396	2.1414
2.1432	2.1449	2.1467	2.1484	2.1501	2.1518	2.1535
2.1551	2.1568	2.1584	2.1600	2.1616	2.1632	2.1648
2.1663	2.1679	2.1694	2.1709	2.1724	2.1739	2.1754
2.1769	2.1783	2.1798	2.1812	2.1826	2.1840	2.1854
2.1868	2.1882	2.1896	2.1910	2.1923	2.1936	2.1950
2.1963	2.1976	2.1989	2.2002	2.2015	2.2028	2.2041
2.2053	2.2066	2.2078	2.2091	2.2103	2.2115	2.2128
2.2140	2.2152	2.2164	2.2176	2.2187	2.2199	2.2211
2.2223	2.2234	2.2246	2.2257	2.2268	2.2280	2.2291

*THE PROPOSED STRUCTURE IS POSITIONED ON THE NORTHERN SIDE OF PARCEL A-1,ATRISCO
*BUSINESS PARK, WHICH COMPRISES A TOTAL OF 21.63 ACRES. BECAUSE THE SOUTHERLY

*4.80 ACRES IS COVERED BY A PERMANENT CITY OF ALBUQUERQUE DETENTION POND, THE

*FOLLOWING HYDROGRAPH WILL COVER ONLY THE NORTHERN 16.82 ACRES PLAN FOR DEVELOPMENT (AMENDED THIS WITH THE ADDITION OF 0.0008 SM TO BASIN C)

*HYDROGRAPH FOR THE ON-SITE DEVELOPED CONDITION
*SITE WILL BE DIVIDED INTO 4 SUBBASINS

*BASIN A
COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.0081 SQ MI
PER A=0.0 PER B=15.0 PER C=0.0 PER D=85.0
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 27.182 CFS UNIT VOLUME = .9990 B = 526.28 P60 = 1.8900
AREA = .006885 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033000

K = .130640HR TP = .133300HR K/TP RATIO = .980045 SHAPE CONSTANT, N = 3.603328
UNIT PEAK = 2.9878 CFS UNIT VOLUME = .9959 B = 327.79 P60 = 1.8900
AREA = .001215 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033000

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.10

RUNOFF VOLUME = 1.79900 INCHES = .7772 ACRE-FEET
PEAK DISCHARGE RATE = 20.91 CFS AT 1.518 HOURS BASIN AREA = .0081 SQ. MI.

*BASIN B DISCHARGES DIRECTLY INTO THE SOUTH PONDING AREA VIA A STORM DRAIN
COMPUTE NM HYD ID=2 HYD NO=101.2 AREA=0.0110 SQ MI
PER A=0.0 PER B=15.0 PER C=0.0 PER D=85.0
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 36.914 CFS UNIT VOLUME = .9992 B = 526.28 P60 = 1.8900
AREA = .009350 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033000

K = .130640HR TP = .133300HR K/TP RATIO = .980045 SHAPE CONSTANT, N = 3.603328
UNIT PEAK = 4.0575 CFS UNIT VOLUME = .9969 B = 327.79 P60 = 1.8900

AREA = .001650 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033000

PRINT HYD ID=2 CODE=1

PARTIAL HYDROGRAPH 101.20

RUNOFF VOLUME = 1.79900 INCHES = 1.0554 ACRE-FEET
PEAK DISCHARGE RATE = 28.40 CFS AT 1.518 HOURS BASIN AREA = .0110 SQ. MI.

*BASIN C (FORMERLY 0.0057 SQ. MI. IN SIZE)
COMPUTE NM HYD ID=3 HYD NO=101.3 AREA=0.0065 SQ MI
PER A=0.0 PER B=15.0 PER C=0.0 PER D=85.0
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 21.813 CFS UNIT VOLUME = .9990 B = 526.28 P60 = 1.8900
AREA = .005525 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033000

K = .130640HR TP = .133300HR K/TP RATIO = .980045 SHAPE CONSTANT, N = 3.603328
UNIT PEAK = 2.3976 CFS UNIT VOLUME = .9946 B = 327.79 P60 = 1.8900
AREA = .000975 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033000

PRINT HYD ID=3 CODE=1

PARTIAL HYDROGRAPH 101.30

RUNOFF VOLUME = 1.79900 INCHES = .6236 ACRE-FEET
PEAK DISCHARGE RATE = 16.79 CFS AT 1.518 HOURS BASIN AREA = .0065 SQ. MI.

FORMERLY 14.72 cfs FOR BASIN C

*BASIN D
COMPUTE NM HYD ID=4 HYD NO=101.4 AREA=0.0014 SQ MI
PER A=0.0 PER B=0.0 PER C=0.0 PER D=100.0
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 5.5273 CFS UNIT VOLUME = .9972 B = 526.28 P60 = 1.8900
AREA = .001400 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033000

PRINT HYD ID=4 CODE=1

PARTIAL HYDROGRAPH 101.40

RUNOFF VOLUME = 1.99542 INCHES = .1490 ACRE-FEET
PEAK DISCHARGE RATE = 3.93 CFS AT 1.518 HOURS BASIN AREA = .0014 SQ. MI.

*BASINS A AND C WILL BE JOINED SINCE THEIR FLOWS ARE COMBINED AT AN INLET LOCATE
*ALONG THE SOUTH SIDE OF THE PARKING LOT WITHIN BASIN C.

ADD HYD ID=1 HYD NO=102.1 ID=1 ID=3
PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 102.10

RUNOFF VOLUME = 1.79896 INCHES = 1.4008 ACRE-FEET
PEAK DISCHARGE RATE = 37.70 CFS AT 1.518 HOURS BASIN AREA = .0146 SQ. MI.

*BASINS B AND D WILL ALSO BE COMBINED SINCE THEIR FLOWS DISCHARGE INTO AN INLET
*JUST OFF THE SOUTHEAST CORNER OF THE BUILDING WITHIN BASIN B.

ADD HYD ID=2 HYD NO=102.2 ID=2 ID=4
PRINT HYD ID=2 CODE=1

PARTIAL HYDROGRAPH 102.20

RUNOFF VOLUME = 1.82113 INCHES = 1.2044 ACRE-FEET
PEAK DISCHARGE RATE = 32.32 CFS AT 1.518 HOURS BASIN AREA = .0124 SQ. MI.

*ALL BASINS WILL THEN BE ADDED TO REPRESENT THE TOTAL DISCHARGE
*FROM THE SITE INTO THE SOUTH PONDING AREA

ADD HYD ID=1 HYD NO=102.2 ID=1 ID=2
PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 102.20

RUNOFF VOLUME = 1.80914 INCHES = 2.6051 ACRE-FEET
PEAK DISCHARGE RATE = 70.02 CFS AT 1.518 HOURS BASIN AREA = .0270 SQ. MI.

FINISH

Sandia Distribution Center - Jan. 3, 2001

EARTHWORK VOLUME CALCULATIONS

PREVIOUSLY EXCAVATED

ELEVATION (FT)	AREA (SQ. FT.)	AREA (ACRES)	A1+A2+SQR(A1*A2) (ACRES)	VOLUME (ACRE-FT)	VOLUME SUM (ACRE-FT)	VOLUME SUM (CY)
SOUTH POND						
94.00	0	0.000				
95.00	15625	0.359	0.359	0.120	0.120	193.600
96.00	26550	0.610	1.436	0.479	0.598	964.773
98.00	24300	0.558	1.750	1.167	1.765	2847.533
99.00	23500	0.539	1.646	0.549	2.314	3733.253
100.00	18750	0.430	1.452	0.484	2.798	4514.107
101.00	19100	0.438	1.303	0.434	3.232	5214.293
102.00	19500	0.448	1.329	0.443	3.675	5929.000

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Sandia Distribution Center - Jan. 3, 2001

EARTHWORK VOLUME CALCULATIONS

PROPOSED FILL FOR NEW PARKING AREA

ELEVATION (FT)	AREA (SQ. FT.)	AREA (ACRES)	A1+A2+SQR(A1*A2) (ACRES)	VOLUME (ACRE-FT)	VOLUME SUM (ACRE-FT)	VOLUME SUM (CY)
SOUTH POND						
94.00	0	0.000				
95.00	7950	0.183	0.183	0.061	0.061	98.413
96.00	16750	0.385	0.832	0.277	0.338	545.307
98.00	16975	0.390	1.161	0.774	1.112	1794.030
99.00	16375	0.376	1.148	0.383	1.495	2411.933
100.00	17950	0.412	1.182	0.394	1.889	3047.587
101.00	17050	0.391	1.205	0.402	2.291	3696.146
102.00	12275	0.282	1.005	0.335	2.626	4236.613

f:\\sandiadist.ponda1.pro

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

June 7, 2000

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

K-10/D23F

RE: SANDIA DISTRIBUTION CENTER , ATRISCO BUSINESS PARK (~~K10-D23~~).
ENGINEER'S CERTIFICATION FOR CERTIFICATE OF OCCUPANCY APPROVAL.
ENGINEER'S STAMP DATED MAY 31, 2000.

Dear Mr. MacKenzie: (For Building)

Based on the information provided on your May 31, 2000 submittal, the above referenced project is approved for Certificate of Occupancy. A TEMPOARY (30-day) Certificate of Occupancy had been issued on June 5, 2000.

The project has been divided into two (2) phases. This approval is for Phase I. Phase II construction is to follow shortly. When completed, an Engineer's Certification for the entire project will ensue.

If I can be of further assistance, please feel free to contact me at 924-3984.

Sincerely,

John P. Murray, P.E.
Hydrology

c: Whitney Reierson
File

DRAINAGE INFORMATION SHEET

K-10/D23A
K-10/D023 ✓

PROJECT TITLE: Sandia Distribution Center
ZONE ATLAS#: ~~K-10/D23~~

DRB#: 99-31 EPC#
WORKORDER#:

LEGAL DESCRIPTION: Parcel A-1, Atrisco Business Park

CITY ADDRESS:

ENGINEERING FIRM:	Mark Goodwin & Associates, PA	CONTACT:	John M. MacKenzie, PE
ADDRESS:	P.O. Box 90606, Albuquerque, NM 87199	PHONE:	828-2200
OWNER:		CONTACT:	
ADDRESS:		PHONE:	
ARCHITECT:	Claudio Vigil Architects	CONTACT:	Claudio Vigil
ADDRESS:	1305 Tijeras NW, Albuquerque, NM 87102	PHONE:	842-1113
SURVEYOR:		CONTACT:	
ADDRESS:		PHONE:	
CONTRACTOR:		CONTACT:	
ADDRESS:		PHONE:	

TYPE OF SUBMITTAL:

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

PRE-DESIGN MEETING:

- ____ YES
- ____ NO
- ____ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

- ____ SKETCH PLAT APRROVAL
- ____ PRELIMINARY PLAT APRROVAL
- ____ S. DEV. PLAN FOR SUB'D APPROVAL
- ____ S. DEV. PLAN FOR BLDG PERMIT APPROVAL
- ____ SECTOR PLAN APPROVAL
- ____ FINAL PLAT APPROVAL
- ____ FOUNDATION PERMIT APPROVAL
- ____ BUILDING PERMIT APPROVAL
- X CERTIFICATION OF OCCUPANCY APPROVAL
- ____ GRADING PERMIT APPROVAL
- ____ PAVING PERMIT APPROVAL
- ____ S.A.D. DRAINAGE REPORT
- ____ DRAINAGE REQUIREMENTS
- X OTHER - TCL Certification
- ____ RELEASE OF FINANCIAL GUARANTY
- ____ TRAFFIC CIRCULATION LAYOUT

DATE SUBMITTED: 5-31-00

BY: John M. MacKenzie

John M. MacKenzie, PE

RECEIVED
MAY 31 2000
HYDROLOGY SECTION

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

July 29, 1999

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

K-10/D23F

RE: SANDIA DISTRIBUTION CENTER, ATRISCO BUSINESS PARK (~~K10-D23~~).
GRADING AND DRAINAGE PLAN FOR BUILDING PERMIT APPROVAL.
ENGINEER'S STAMP DATED MARCH 31, 1999.

Dear Mr. MacKenzie:

Based on the information provided on your May 28, 1999 resubmittal, the above referenced project is approved for Building Permit. This updates the approval of February 19, 1999.

The T.C.L., which was submitted on June 7, 1999, will be covered in the DRB process.

If I can be of further assistance, please feel free to contact me at 924-3984.

Sincerely,

John P. Murray, P.E.
Hydrology

c: File

facsimile
TRANSMITTAL

to: John Murray
fax #: 924-3864
re: Sandia Distribution
date: June 7, 2000
pages: 2, including this cover sheet.

From the desk of...

JOHN M. MacKENZIE, PE
Senior Engineer
Mark Goodwin & Associates, PA
PO Box 90606
Albuquerque, NM 87199

(505) 828-2200
Fax: (505) 797-9539

K-10/D23F

DRAINAGE INFORMATION SHEET

PROJECT TITLE: Sandia Distribution Ctr ZONE ATLAS/DRNG.FILE#: ~~K-10/#23~~

DRB #: 99-31 EPC #: _____ WORK ORDER #: _____

LEGAL DESCRIPTION: Parcel A-1, Atrisco Business Park

CITY ADDRESS: _____

ENGINEERING FIRM: Mark Goodwin & Assoc. CONTACT: J. MacKenzie

ADDRESS: Box 90606 PHONE: 828 2200

OWNER: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

ARCHITECT: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

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

___ NO

___ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

___ SKETCH PLAT APPROVAL

___ PRELIMINARY PLAT APPROVAL

___ S. DEV. PLAN FOR SUB'D APPROVAL

___ 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)

RECEIVED
APR 2 1999
HYDROLOGY SECTION

DATE SUBMITTED: 4-1-99

BY: John M. MacKenzie

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

P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmg@swcp.com

April 1, 1999

Mr. John Murray, PE
City of Albuquerque
Public Works Department
Hydrology Division
P.O. Box 1293
Albuquerque, NM 87103

Re: Sandia Distribution Center Grading and Drainage Plan for Building Permit Approval - Engineer's Stamp Dated 3-31-99 (K-10/D23)

K-10/D23F

Dear Mr. Murray:

I thank you for your favorable review of the first submittal of this plan. The plan is now being resubmitted to address the items identified in your approval letter to me, dated 2/19/99, and other various minor items.

The word "conceptual" has been removed from the title of the plan.

The requested information regarding inlet capacity has been addressed by supplemental calculations and nomographs attached hereto.

Because the earthwork take-off indicated a substantial amount of fill material would be necessary to build the site according to the previous plan, it became necessary for me to slightly lower the site and obtain more fill from the adjoining "proposed future building" pad. Additional material will also be acquired form the north embankment of the existing on-site detention pond. This proposed embankment excavation was cleared by Glenn Jurgensen of Storm Drain Maintenance, conditioned upon installation of a new access gate at the southwest corner of the pond and construction of a new ramp into the ponding area down the south embankment. A copy of the plan will be furnished to Mr. Jurgensen for his concurrence.

As you can see, more detail and contours have also been presented on the drawing. Otherwise, the plan remains the same as previously approved.

Please contact me if I can be of further assistance.

Sincerely,

MARK GOODWIN & ASSOCIATES, PA

John M. MacKenzie, PE
Senior Engineer

JMM/st

xc: Glenn Jurgensen

f:\\sandia.dis\comments.wpd

```
   AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
         RUN DATE (MON/DAY/YR) = 03/31/1999
         START TIME (HR:MIN:SEC) = 07:55:00     USER NO.= M_GOODWN.I01
         INPUT FILE = RFG.DAT

START                  TIME=0.0

*****   HYDROGRAPH FOR RFG MANAGEMENT WHAREHOUSE AT UNSER & BLUEWATER.
*****   ONLY DEVELOPED CONDITIONS WILL BE EVALUATED BECAUSE THE
*****   SITE IS ALLOWED FREE DISCHARGE PER THE ATRISCO BUSINESS PARK
*****   MASTER DRAINAGE PLAN FOR THE FULLY DEVELOPED CONDITION, BY EASTERLING
*****   & ASSOCIATES, INC., (REVISED)WITH ENGINEER'S STAMP DATED 10/22/93 (K-10/

RAINFALL               TYPE=1 RAIN QUARTER=0.0 IN
                       RAIN ONE=1.89 IN RAIN SIX=2.23 IN
                       RAIN DAY=2.67 IN DT=0.033 HR

                       COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 H
                       DT =     .033000 HOURS        END TIME =     5.973000 HOURS
                          .0000   .0017   .0034   .0052   .0070   .0088   .0107
                          .0126   .0146   .0166   .0187   .0208   .0230   .0252
                          .0275   .0299   .0323   .0349   .0375   .0402   .0429
                          .0458   .0488   .0519   .0552   .0586   .0621   .0658
                          .0697   .0738   .0781   .0830   .0884   .0942   .1022
                          .1262   .1641   .2195   .2962   .3981   .5290   .6932
                          .8946  1.1376  1.2463  1.3225  1.3892  1.4494  1.5046
                         1.5558  1.6034  1.6481  1.6901  1.7296  1.7670  1.8024
                         1.8359  1.8677  1.8978  1.9264  1.9536  1.9719  1.9779
                         1.9836  1.9890  1.9942  1.9991  2.0039  2.0084  2.0128
                         2.0171  2.0212  2.0251  2.0290  2.0327  2.0364  2.0399
                         2.0433  2.0467  2.0500  2.0532  2.0563  2.0594  2.0624
                         2.0653  2.0682  2.0710  2.0738  2.0765  2.0791  2.0817
                         2.0843  2.0868  2.0893  2.0918  2.0942  2.0965  2.0989
                         2.1012  2.1034  2.1057  2.1079  2.1101  2.1122  2.1143
                         2.1164  2.1185  2.1205  2.1225  2.1245  2.1265  2.1284
                         2.1303  2.1322  2.1341  2.1359  2.1378  2.1396  2.1414
                         2.1432  2.1449  2.1467  2.1484  2.1501  2.1518  2.1535
                         2.1551  2.1568  2.1584  2.1600  2.1616  2.1632  2.1648
                         2.1663  2.1679  2.1694  2.1709  2.1724  2.1739  2.1754
                         2.1769  2.1783  2.1798  2.1812  2.1826  2.1840  2.1854
                         2.1868  2.1882  2.1896  2.1910  2.1923  2.1936  2.1950
                         2.1963  2.1976  2.1989  2.2002  2.2015  2.2028  2.2041
                         2.2053  2.2066  2.2078  2.2091  2.2103  2.2115  2.2128
                         2.2140  2.2152  2.2164  2.2176  2.2187  2.2199  2.2211
                         2.2223  2.2234  2.2246  2.2257  2.2268  2.2280  2.2291

*THE PROPOSED STRUCTURE IS POSITIONED ON THE NORTHERN SIDE OF PARCEL A-1,ATRISCO
*BUSINESS PARK, WHICH COMPRISES A TOTAL OF 21.63 ACRES.  BECAUSE THE SOUTHERLY
*4.80 ACRES IS COVERED BY A PERMANENT CITY OF ALBUQUERQUE DETENTION POND, THE
*FOLLOWING HYDROGRAPH WILL COVER ONLY THE NORTHERN 16.82 ACRES PLAN FOR DEVELOPM

*HYDROGRAPH FOR THE ON-SITE DEVELOPED CONDITION
*SITE WILL BE DIVIDED INTO 4 SUBBASINS

*BASIN A
COMPUTE NM HYD         ID=1 HYD NO=101.1 AREA=0.0081 SQ MI
                       PER A=0.0 PER B=15.0 PER C=0.0 PER D=85.0
                       TP=0.1333 HR MASS RAINFALL=-1
```

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N =
UNIT PEAK = 27.182 CFS UNIT VOLUME = .9990 B = 526.28 P60 = 1.89
AREA = .006885 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033000

K = .130640HR TP = .133300HR K/TP RATIO = .980045 SHAPE CONSTANT, N =
UNIT PEAK = 2.9878 CFS UNIT VOLUME = .9959 B = 327.79 P60 = 1.89
AREA = .001215 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033000

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.10

RUNOFF VOLUME = 1.79900 INCHES = .7772 ACRE-FEET
PEAK DISCHARGE RATE = 20.91 CFS AT 1.518 HOURS BASIN AREA = .0081 SQ. MI.

Basin "A"

*BASIN B DISCHARGES DIRECTLY INTO THE SOUTH PONDING AREA VIA A STORM DRAIN
COMPUTE NM HYD ID=2 HYD NO=101.2 AREA=0.0110 SQ MI
PER A=0.0 PER B=15.0 PER C=0.0 PER D=85.0
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N =
UNIT PEAK = 36.914 CFS UNIT VOLUME = .9992 B = 526.28 P60 = 1.89
AREA = .009350 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033000

K = .130640HR TP = .133300HR K/TP RATIO = .980045 SHAPE CONSTANT, N =
UNIT PEAK = 4.0575 CFS UNIT VOLUME = .9969 B = 327.79 P60 = 1.89
AREA = .001650 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033000

PRINT HYD ID=2 CODE=1

PARTIAL HYDROGRAPH 101.20

RUNOFF VOLUME = 1.79900 INCHES = 1.0554 ACRE-FEET
PEAK DISCHARGE RATE = 28.40 CFS AT 1.518 HOURS BASIN AREA = .0110 SQ. MI.

Basin "B"

*BASIN C
COMPUTE NM HYD ID=3 HYD NO=101.3 AREA=0.0057 SQ MI
PER A=0.0 PER B=15.0 PER C=0.0 PER D=85.0
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N =
UNIT PEAK = 19.128 CFS UNIT VOLUME = .9989 B = 526.28 P60 = 1.89
AREA = .004845 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033000

K = .130640HR TP = .133300HR K/TP RATIO = .980045 SHAPE CONSTANT, N =
UNIT PEAK = 2.1025 CFS UNIT VOLUME = .9935 B = 327.79 P60 = 1.89
AREA = .000855 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033000

PRINT HYD ID=3 CODE=1

PARTIAL HYDROGRAPH 101.30

RUNOFF VOLUME = 1.79900 INCHES = .5469 ACRE-FEET
PEAK DISCHARGE RATE = 14.72 CFS AT 1.518 HOURS BASIN AREA = .0057 SQ. MI.

Basin "C"

*BASIN D
COMPUTE NM HYD ID=4 HYD NO=101.4 AREA=0.0014 SQ MI
PER A=0.0 PER B=0.0 PER C=0.0 PER D=100.0
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N =
UNIT PEAK = 5.5273 CFS UNIT VOLUME = .9972 B = 526.28 P60 = 1.89
AREA = .001400 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033000

PRINT HYD ID=4 CODE=1

PARTIAL HYDROGRAPH 101.40

RUNOFF VOLUME = 1.99542 INCHES = .1490 ACRE-FEET
PEAK DISCHARGE RATE = 3.93 CFS AT 1.518 HOURS BASIN AREA = .0014 SQ. MI.

Basin "D"

*BASINS A AND C WILL BE JOINED SINCE THEIR FLOWS ARE COMBINED AT AN INLET LOCATED
*ALONG THE SOUTH SIDE OF THE PARKING LOT WITHIN BASIN C.

ADD HYD ID=1 HYD NO=102.1 ID=1 ID=3
PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 102.10

RUNOFF VOLUME = 1.79896 INCHES = 1.3240 ACRE-FEET
PEAK DISCHARGE RATE = 35.64 CFS AT 1.518 HOURS BASIN AREA = .0138 SQ. MI.

Basins "A" & "C"

*BASINS B AND D WILL ALSO BE COMBINED SINCE THEIR FLOWS DISCHARGE INTO AN INLET
*JUST OFF THE SOUTHEAST CORNER OF THE BUILDING WITHIN BASIN B.

ADD HYD ID=2 HYD NO=102.2 ID=2 ID=4
PRINT HYD ID=2 CODE=1

PARTIAL HYDROGRAPH 102.20

RUNOFF VOLUME = 1.82113 INCHES = 1.2044 ACRE-FEET
PEAK DISCHARGE RATE = 32.32 CFS AT 1.518 HOURS BASIN AREA = .0124 SQ. MI.

Basins "B" & "D"

*ALL BASINS WILL THEN BE ADDED TO REPRESENT THE TOTAL DISCHARGE
*FROM THE SITE INTO THE SOUTH PONDING AREA

ADD HYD ID=1 HYD NO=102.2 ID=1 ID=2
PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 102.20

RUNOFF VOLUME = 1.80945 INCHES = 2.5284 ACRE-FEET
PEAK DISCHARGE RATE = 67.96 CFS AT 1.518 HOURS BASIN AREA = .0262 SQ. MI.

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 07:55:00

D. MARK GOODWIN & ASSOCIATES, P.A.
CONSULTING ENGINEERS & SURVEYORS

PROJECT SANDIA DISTRIBUTION
SUBJECT
BY JMM DATE 3.31.99
CHECKED DATE
SHEET 1 OF 2

BASINS A&C COMBINED - DOUBLE "C" DROP INLET

Perimeter Determination:

6.4'
GRATE
Std. Dwg 2206
2.13'

SUMP CONDITION

$P_{net} = 17.1'$

$Q = 35.6$ cfs

$\frac{Q}{P}_{ratio} = \frac{35.6}{17.1} = \boxed{2.1}$

20" = 5.9' (net length)

GRATE
Std. Dwg. 2220

26" 1.54' (net opening width)

Area Determination:

$A_{net} = 9.1$ ft^2

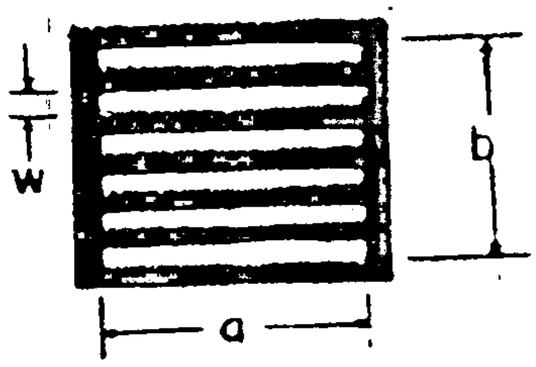
$Q = 35.6$ cfs

$\frac{Q}{A} = \frac{35.6}{9.1} = \boxed{3.9}$

According to the attached nomograph, the double "C" drop inlet will function within a transition zone between a weir and an orifice at a head ranging from 0.5 ft and 0.8 ft.

BASIN A & C 3/31/99 Sandia Distribution

1073.02



P = 2 (a + b)

A = 6 a w

0.7

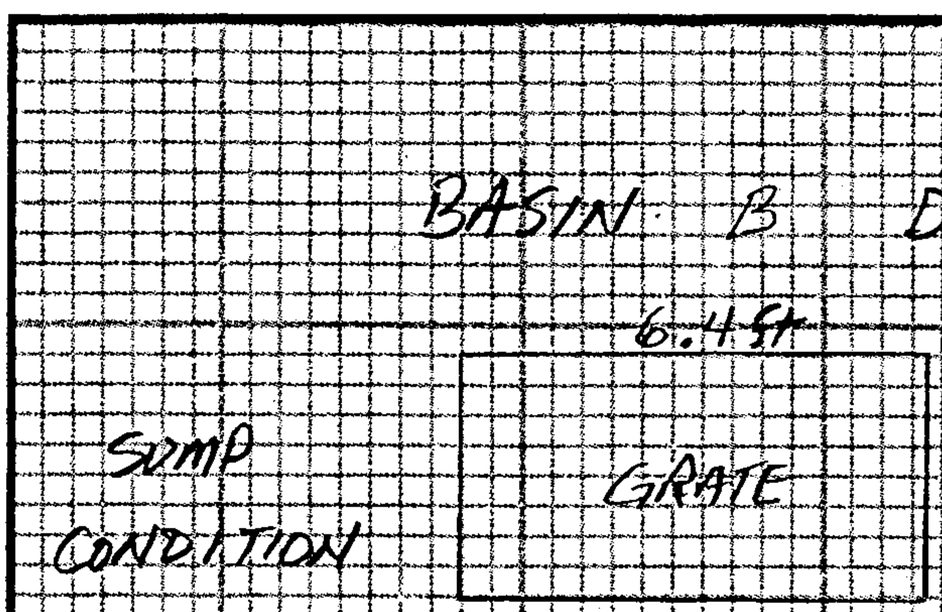
BUREAU OF PUBLIC ROADS
DIVISION TWO WASH, D.C.

CAPACITY OF GRATE INLET IN SUMP
WATER PONDED ON GRATE

D. MARK GOODWIN & ASSOCIATES, P.A.
CONSULTING ENGINEERS & SURVEYORS

PROJECT SANDIA DISTRIBUTION CTR
SUBJECT
BY JMM DATE 3-31-99
CHECKED DATE
SHEET 2 OF 2

BASIN B DOUBLE "C" DROP INLET (with curb face open)

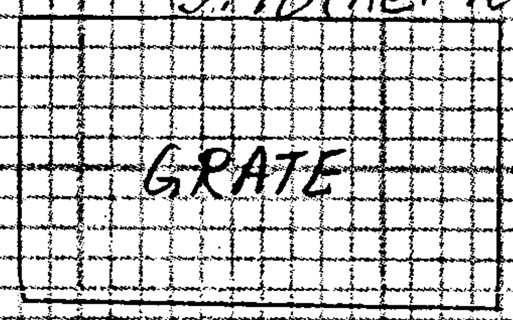


Perimeter Determination

P_{net} = 17.1 ft

Q = 28.4 cfs

$\frac{Q}{P}$ ratio = $\frac{28.4}{17.1}$ = 1.7



Area Determination

A_{net} = 9.1 SF

Q = 28.4

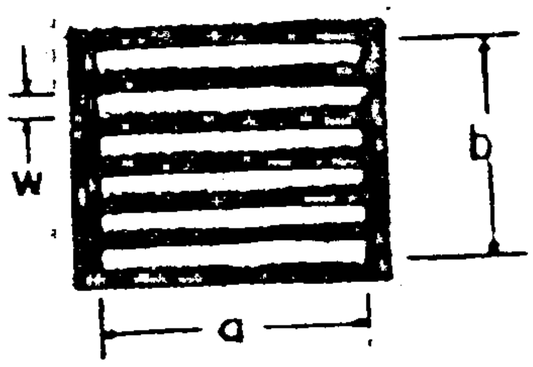
$\frac{Q}{A} = \frac{28.4}{9.1} = 3.1$

According to the attached nomograph, the inlet will act as a weir and reach a maximum backwater depth of 0.7 ft.

BASIN B

3/31/99 Sandia Distribution

1073.02



$P = 2(a+b)$

$A = 6aw$

0.8 ft.

0.5 ft.

(b)

$Q/L = 5.37 H^{1/2}$

(a)

$Q/P = 3.0 H^{1/2}$

HEAD (H) IN FEET

1.0
.8
.6
.4
.2
0.1

HEADS UP TO 0.4, CURVE (a) APPLIES
HEADS ABOVE 1.4, CURVE (b) APPLIES
HEADS BETWEEN 0.4 & 1.4, TRANSITION
SECTOR & OPERATION IS INDEFINITE

DISCHARGE PER FOOT OF PERIMETER (Q/P)

0.1 .2 .3 .4 .5 .6 .7 .8 .9 1.0

DISCHARGE PER FOOT OF AREA Q/A

2 3 4 5 6 7 8 9 10 20

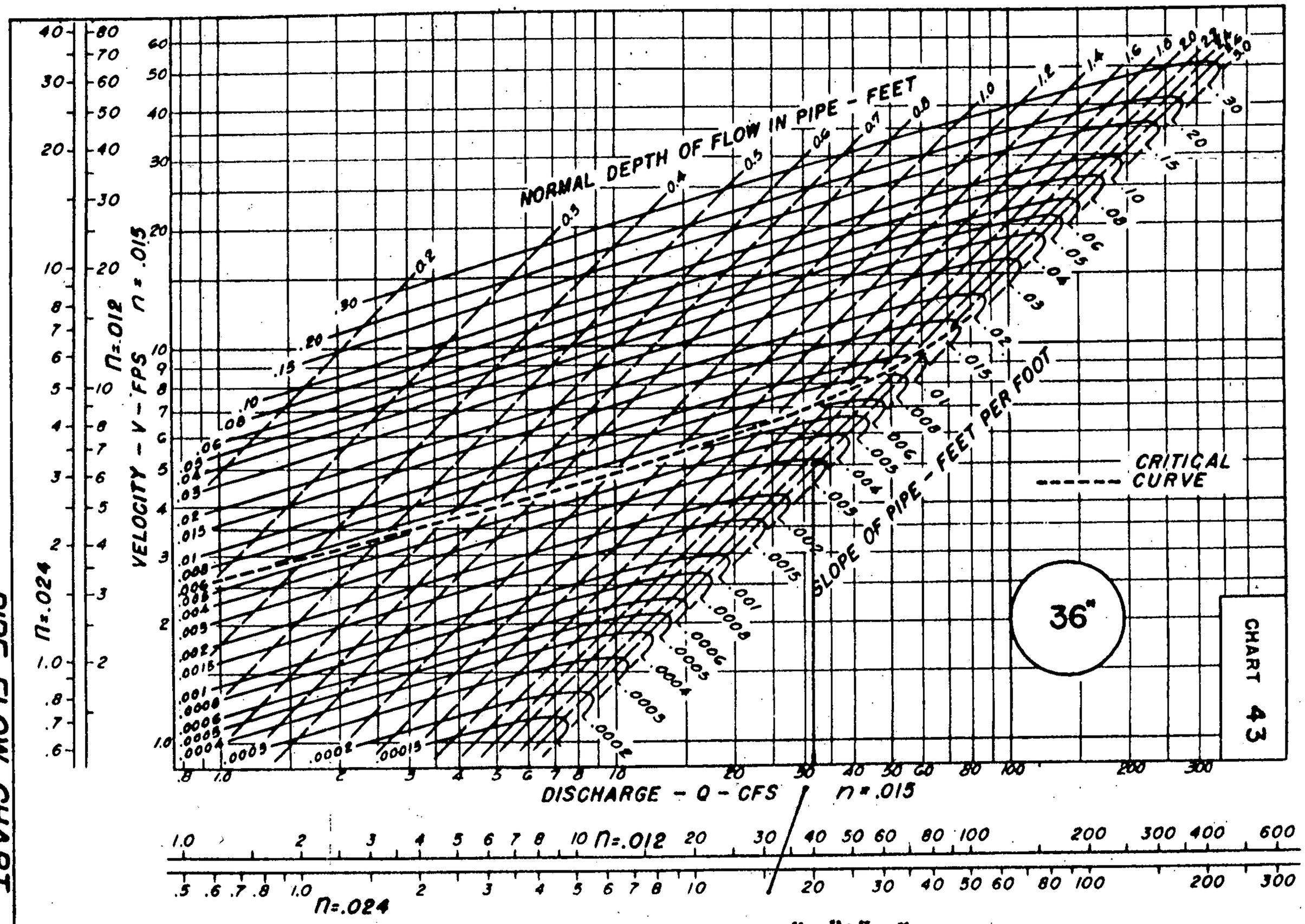
2.1 3.9

REV. MAR. 1951

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

CAPACITY OF GRATE INLET IN SUMP
WATER PONDED ON GRATE

Sandia Distribution
3/31/99

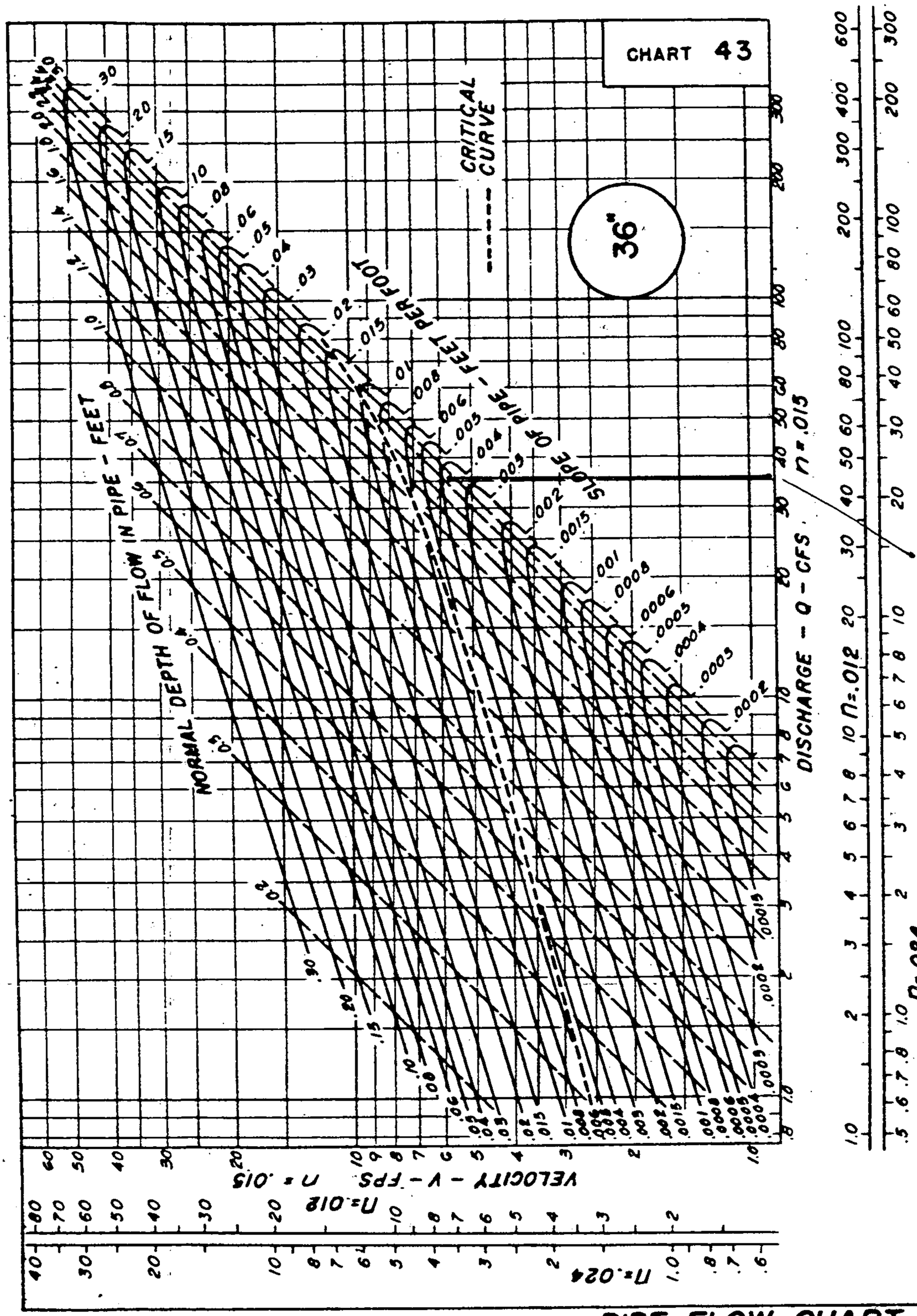


PIPE FLOW CHART
36-INCH DIAMETER

Basins "B" & "D"

Q_{total} = 32.32 cfs

Proposed Slope = 0.34%



Basins "A & C"

$Q_{Total} = 35.64$ cfs

Proposed Slope = 0.7 %

PIPE FLOW CHART
36-INCH DIAMETER

Sandia Distribution

3/31/99

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

July 29, 1999

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

K-10/D23F

RE: SANDIA DISTRIBUTION CENTER, ATRISCO BUSINESS PARK (~~K10-D23~~).
GRADING AND DRAINAGE PLAN FOR BUILDING PERMIT APPROVAL.
ENGINEER'S STAMP DATED MARCH 31, 1999.

Dear Mr. MacKenzie:

Based on the information provided on your May 28, 1999 resubmittal, the above referenced project is approved for Building Permit. This updates the approval of February 19, 1999.

The T.C.L., which was submitted on June 7, 1999, will be covered in the DRB process.

If I can be of further assistance, please feel free to contact me at 924-3984.

Sincerely,

John P. Murray, P.E.
Hydrology

c: File

LETTER OF TRANSMITTAL

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

P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmg@swcp.com

DATE 5/27/99 JOB NO.

ATTENTION John Murray

RE: Sandia Distribution

TO Hydrology

One Stop

WE ARE SENDING YOU ☐ Attached ☐ Under separate cover via _____ the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications

☐ Copy of letter ☐ Change order ☐ _____

COPIES	DATE	NO.	DESCRIPTION
1			G & D Plan
1			Supplemental Attachments

THESE ARE TRANSMITTED as checked below:

☐ For approval ☐ Approved as submitted ☐ Resubmit_____copies for approval

☐ For your use ☐ Approved as noted ☐ Submit_____copies for distribution

☐ As requested ☐ Returned for corrections ☐ Return_____corrected prints

☐ For review and comment ☐ _____

☐ FOR BIDS DUE _____ 19_____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS do not log-in / Deliver directly to J. Murray.

COPY TO _____

SIGNED: J MacKenzie

If enclosures are not as noted, kindly notify us at once.

K-10/D23F

DRAINAGE INFORMATION SHEET

PROJECT TITLE: Sandia Distribution Ctr ZONE ATLAS/DRNG.FILE#: ~~K-10/D23~~

DRB #: 99-31 EPC #: _____ WORK ORDER #: _____

LEGAL DESCRIPTION: Parcel A-1, Atrisco Business Park

CITY ADDRESS: _____

ENGINEERING FIRM: Mark Goodwin & Assoc. CONTACT: J. MacKenzie

ADDRESS: Box 90606 PHONE: 828 2200

OWNER: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

ARCHITECT: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

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
____ NO
____ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

____ SKETCH PLAT APPROVAL
____ PRELIMINARY PLAT APPROVAL
____ S. DEV. PLAN FOR SUB'D APPROVAL
____ 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: 4-1-99

BY: John M. MacKenzie

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

P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmg@swcp.com

April 1, 1999

Mr. John Murray, PE
City of Albuquerque
Public Works Department
Hydrology Division
P.O. Box 1293
Albuquerque, NM 87103

Re: Sandia Distribution Center Grading and Drainage Plan for Building Permit Approval - Engineer's Stamp Dated 3-31-99 ~~(K-10/D-23)~~ K-10/0235F

Dear Mr. Murray:

I thank you for your favorable review of the first submittal of this plan. The plan is now being resubmitted to address the items identified in your approval letter to me, dated 2/19/99, and other various minor items.

The word "conceptual" has been removed from the title of the plan.

The requested information regarding inlet capacity has been addressed by supplemental calculations and nomographs attached hereto.

Because the earthwork take-off indicated a substantial amount of fill material would be necessary to build the site according to the previous plan, it became necessary for me to slightly lower the site and obtain more fill from the adjoining "proposed future building" pad. Additional material will also be acquired form the north embankment of the existing on-site detention pond. This proposed embankment excavation was cleared by Glenn Jurgensen of Storm Drain Maintenance, conditioned upon installation of a new access gate at the southwest corner of the pond and construction of a new ramp into the ponding area down the south embankment. A copy of the plan will be furnished to Mr. Jurgensen for his concurrence.

As you can see, more detail and contours have also been presented on the drawing. Otherwise, the plan remains the same as previously approved.

Please contact me if I can be of further assistance.

Sincerely,

MARK GOODWIN & ASSOCIATES, PA

John M. MacKenzie, PE
Senior Engineer

JMM/st

xc: Glenn Jurgensen

f:\\sandia.dis\comments.wpd

```
   AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
        RUN DATE (MON/DAY/YR) = 03/31/1999
        START TIME (HR:MIN:SEC) = 07:55:00     USER NO.= M_GOODWN.I01
        INPUT FILE = RFG.DAT

START                 TIME=0.0

*****   HYDROGRAPH FOR RFG MANAGEMENT WHAREHOUSE AT UNSER & BLUEWATER.
*****   ONLY DEVELOPED CONDITIONS WILL BE EVALUATED BECAUSE THE
*****   SITE IS ALLOWED FREE DISCHARGE PER THE ATRISCO BUSINESS PARK
*****   MASTER DRAINAGE PLAN FOR THE FULLY DEVELOPED CONDITION, BY EASTERLING
*****   & ASSOCIATES, INC., (REVISED)WITH ENGINEER'S STAMP DATED 10/22/93 (K-10/

RAINFALL              TYPE=1 RAIN QUARTER=0.0 IN
                      RAIN ONE=1.89 IN RAIN SIX=2.23 IN
                      RAIN DAY=2.67 IN DT=0.033 HR

      COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 H
      DT =     .033000 HOURS        END TIME =     5.973000 HOURS
         .0000   .0017   .0034   .0052   .0070   .0088   .0107
         .0126   .0146   .0166   .0187   .0208   .0230   .0252
         .0275   .0299   .0323   .0349   .0375   .0402   .0429
         .0458   .0488   .0519   .0552   .0586   .0621   .0658
         .0697   .0738   .0781   .0830   .0884   .0942   .1022
         .1262   .1641   .2195   .2962   .3981   .5290   .6932
         .8946  1.1376  1.2463  1.3225  1.3892  1.4494  1.5046
        1.5558  1.6034  1.6481  1.6901  1.7296  1.7670  1.8024
        1.8359  1.8677  1.8978  1.9264  1.9536  1.9719  1.9779
        1.9836  1.9890  1.9942  1.9991  2.0039  2.0084  2.0128
        2.0171  2.0212  2.0251  2.0290  2.0327  2.0364  2.0399
        2.0433  2.0467  2.0500  2.0532  2.0563  2.0594  2.0624
        2.0653  2.0682  2.0710  2.0738  2.0765  2.0791  2.0817
        2.0843  2.0868  2.0893  2.0918  2.0942  2.0965  2.0989
        2.1012  2.1034  2.1057  2.1079  2.1101  2.1122  2.1143
        2.1164  2.1185  2.1205  2.1225  2.1245  2.1265  2.1284
        2.1303  2.1322  2.1341  2.1359  2.1378  2.1396  2.1414
        2.1432  2.1449  2.1467  2.1484  2.1501  2.1518  2.1535
        2.1551  2.1568  2.1584  2.1600  2.1616  2.1632  2.1648
        2.1663  2.1679  2.1694  2.1709  2.1724  2.1739  2.1754
        2.1769  2.1783  2.1798  2.1812  2.1826  2.1840  2.1854
        2.1868  2.1882  2.1896  2.1910  2.1923  2.1936  2.1950
        2.1963  2.1976  2.1989  2.2002  2.2015  2.2028  2.2041
        2.2053  2.2066  2.2078  2.2091  2.2103  2.2115  2.2128
        2.2140  2.2152  2.2164  2.2176  2.2187  2.2199  2.2211
        2.2223  2.2234  2.2246  2.2257  2.2268  2.2280  2.2291

*THE PROPOSED STRUCTURE IS POSITIONED ON THE NORTHERN SIDE OF PARCEL A-1,ATRISCO
*BUSINESS PARK, WHICH COMPRISES A TOTAL OF 21.63 ACRES.  BECAUSE THE SOUTHERLY
*4.80 ACRES IS COVERED BY A PERMANENT CITY OF ALBUQUERQUE DETENTION POND, THE
*FOLLOWING HYDROGRAPH WILL COVER ONLY THE NORTHERN 16.82 ACRES PLAN FOR DEVELOPM

*HYDROGRAPH FOR THE ON-SITE DEVELOPED CONDITION
*SITE WILL BE DIVIDED INTO 4 SUBBASINS

*BASIN A
COMPUTE NM HYD        ID=1 HYD NO=101.1 AREA=0.0081 SQ MI
                      PER A=0.0 PER B=15.0 PER C=0.0 PER D=85.0
                      TP=0.1333 HR MASS RAINFALL=-1
```

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N =
UNIT PEAK = 27.182 CFS UNIT VOLUME = .9990 B = 526.28 P60 = 1.89
AREA = .006885 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033000

K = .130640HR TP = .133300HR K/TP RATIO = .980045 SHAPE CONSTANT, N =
UNIT PEAK = 2.9878 CFS UNIT VOLUME = .9959 B = 327.79 P60 = 1.89
AREA = .001215 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033000

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.10

RUNOFF VOLUME = 1.79900 INCHES = .7772 ACRE-FEET
PEAK DISCHARGE RATE = 20.91 CFS AT 1.518 HOURS BASIN AREA = .0081 SQ. MI.

Basin "A"

*BASIN B DISCHARGES DIRECTLY INTO THE SOUTH PONDING AREA VIA A STORM DRAIN
COMPUTE NM HYD ID=2 HYD NO=101.2 AREA=0.0110 SQ MI
PER A=0.0 PER B=15.0 PER C=0.0 PER D=85.0
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N =
UNIT PEAK = 36.914 CFS UNIT VOLUME = .9992 B = 526.28 P60 = 1.89
AREA = .009350 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033000

K = .130640HR TP = .133300HR K/TP RATIO = .980045 SHAPE CONSTANT, N =
UNIT PEAK = 4.0575 CFS UNIT VOLUME = .9969 B = 327.79 P60 = 1.89
AREA = .001650 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033000

PRINT HYD ID=2 CODE=1

PARTIAL HYDROGRAPH 101.20

RUNOFF VOLUME = 1.79900 INCHES = 1.0554 ACRE-FEET
PEAK DISCHARGE RATE = 28.40 CFS AT 1.518 HOURS BASIN AREA = .0110 SQ. MI.

Basin "B"

*BASIN C
COMPUTE NM HYD ID=3 HYD NO=101.3 AREA=0.0057 SQ MI
PER A=0.0 PER B=15.0 PER C=0.0 PER D=85.0
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N =
UNIT PEAK = 19.128 CFS UNIT VOLUME = .9989 B = 526.28 P60 = 1.89
AREA = .004845 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033000

K = .130640HR TP = .133300HR K/TP RATIO = .980045 SHAPE CONSTANT, N =
UNIT PEAK = 2.1025 CFS UNIT VOLUME = .9935 B = 327.79 P60 = 1.89
AREA = .000855 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033000

PRINT HYD ID=3 CODE=1

PARTIAL HYDROGRAPH 101.30

RUNOFF VOLUME = 1.79900 INCHES = .5469 ACRE-FEET
PEAK DISCHARGE RATE = 14.72 CFS AT 1.518 HOURS BASIN AREA = .0057 SQ. MI.

Basin "C"

*BASIN D
COMPUTE NM HYD ID=4 HYD NO=101.4 AREA=0.0014 SQ MI
PER A=0.0 PER B=0.0 PER C=0.0 PER D=100.0
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N =
UNIT PEAK = 5.5273 CFS UNIT VOLUME = .9972 B = 526.28 P60 = 1.89
AREA = .001400 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033000

PRINT HYD ID=4 CODE=1

PARTIAL HYDROGRAPH 101.40

RUNOFF VOLUME = 1.99542 INCHES = .1490 ACRE-FEET
PEAK DISCHARGE RATE = 3.93 CFS AT 1.518 HOURS BASIN AREA = .0014 SQ. MI.

Basin "D"

*BASINS A AND C WILL BE JOINED SINCE THEIR FLOWS ARE COMBINED AT AN INLET LOCATED
*ALONG THE SOUTH SIDE OF THE PARKING LOT WITHIN BASIN C.

ADD HYD ID=1 HYD NO=102.1 ID=1 ID=3
PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 102.10

RUNOFF VOLUME = 1.79896 INCHES = 1.3240 ACRE-FEET
PEAK DISCHARGE RATE = 35.64 CFS AT 1.518 HOURS BASIN AREA = .0138 SQ. MI.

Basins "A" & "C"

*BASINS B AND D WILL ALSO BE COMBINED SINCE THEIR FLOWS DISCHARGE INTO AN INLET
*JUST OFF THE SOUTHEAST CORNER OF THE BUILDING WITHIN BASIN B.

ADD HYD ID=2 HYD NO=102.2 ID=2 ID=4
PRINT HYD ID=2 CODE=1

PARTIAL HYDROGRAPH 102.20

RUNOFF VOLUME = 1.82113 INCHES = 1.2044 ACRE-FEET
PEAK DISCHARGE RATE = 32.32 CFS AT 1.518 HOURS BASIN AREA = .0124 SQ. MI.

Basins "B" & "D"

*ALL BASINS WILL THEN BE ADDED TO REPRESENT THE TOTAL DISCHARGE
*FROM THE SITE INTO THE SOUTH PONDING AREA

ADD HYD ID=1 HYD NO=102.2 ID=1 ID=2
PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 102.20

RUNOFF VOLUME = 1.80945 INCHES = 2.5284 ACRE-FEET
PEAK DISCHARGE RATE = 67.96 CFS AT 1.518 HOURS BASIN AREA = .0262 SQ. MI.

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 07:55:00

D. MARK GOODWIN & ASSOCIATES, P.A.
CONSULTING ENGINEERS & SURVEYORS

PROJECT SANDIA DISTRIBUTION
SUBJECT
BY JMM DATE 3.31.99
CHECKED DATE
SHEET 1 OF 2

BASINS A&C COMBINED - DOUBLE "C" DROP INLET

Perimeter Determination:

6.4'
GRATE
Std. Dwg 2206
2.13'

SUMP CONDITION

$P_{net} = 17.1'$

$Q = 35.6$ cfs

$\frac{Q}{P_{ratio}} = \frac{35.6}{17.1} = \boxed{2.1}$

Area Determination:

80" - 5.9' (net length)

GRATE
Std. Dwg 2220

25" - 1.54' (net opening width)

$A_{net} = 9.1$ ft^2

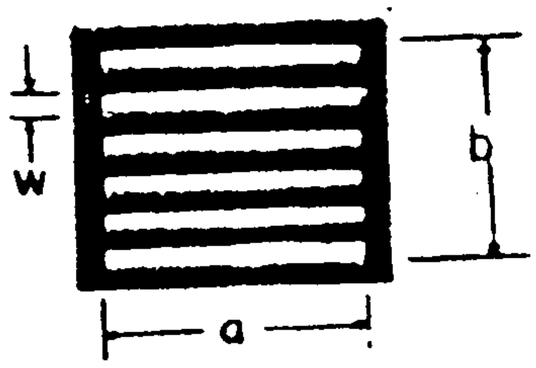
$Q = 35.6$ cfs

$\frac{Q}{A} = \frac{35.6}{9.1} = \boxed{3.9}$

According to the attached nomograph, the double "C" drop inlet will function within a transition zone between a weir and an orifice at a head ranging from 0.5 ft and 0.8 ft.

BASIN A & C 3/31/99 Sandia Distribution

1073.02



$P = 2(a+b)$

$A = 6aw$

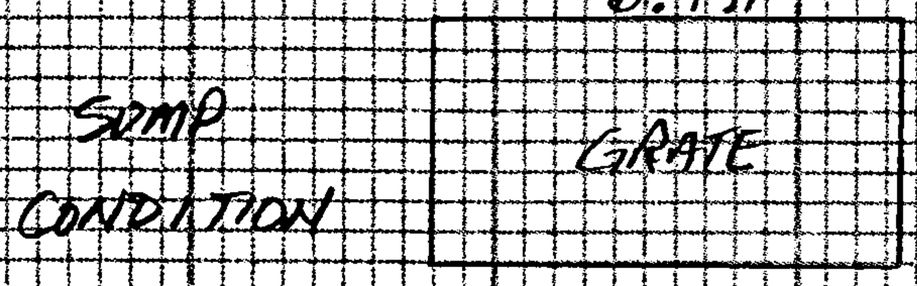
BUREAU OF PUBLIC ROADS
DIVISION TWO WASH, D.C.

CAPACITY OF GRATE INLET IN SUMP
WATER PONDED ON GRATE

D. MARK GOODWIN & ASSOCIATES, P.A.
CONSULTING ENGINEERS & SURVEYORS

PROJECT SANDIA DISTRIBUTION CTR
SUBJECT
BY JMM DATE 3-31-99
CHECKED DATE
SHEET 2 OF 2

BASIN B DOUBLE "C" DROP INLET
(with curb face open)

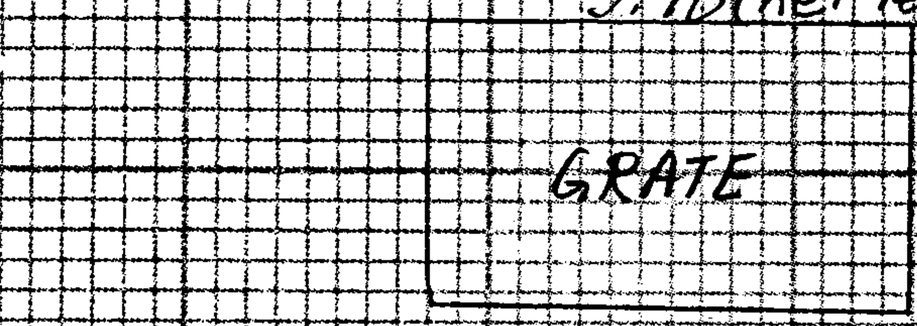


Perimeter Determination

P_{net} = 17.1 ft

Q = 28.4 cfs

$\frac{Q}{P}$ ratio = $\frac{28.4}{17.1}$ = 1.7



Area Determination

A_{net} = 9.1 SF

Q = 28.4

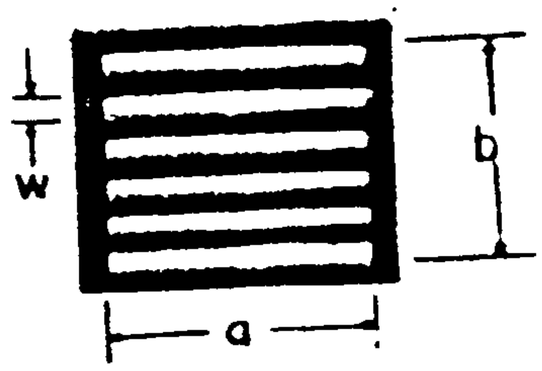
$\frac{Q}{A}$ = $\frac{28.4}{9.1}$ = 3.1

According to the attached nomograph, the inlet will act as a weir and reach a maximum backwater depth of 0.7 ft.

BASIN B

3/31/99 Sandia Distribution

1073.02



$P = 2(a+b)$

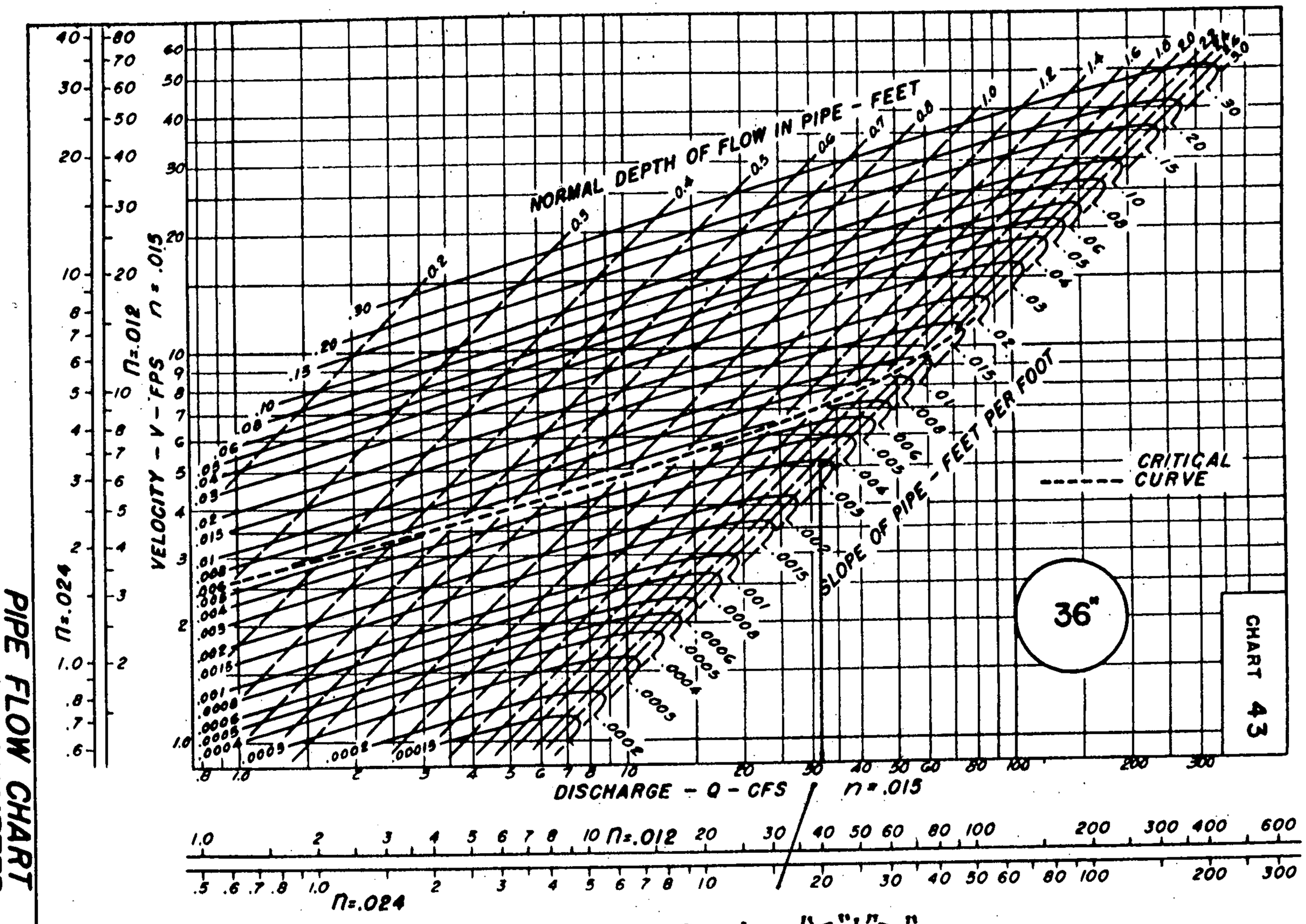
$A = 6aw$

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

CAPACITY OF GRATE INLET IN SUMP
WATER PONDED ON GRATE

Sandia Distribution

3/31/99



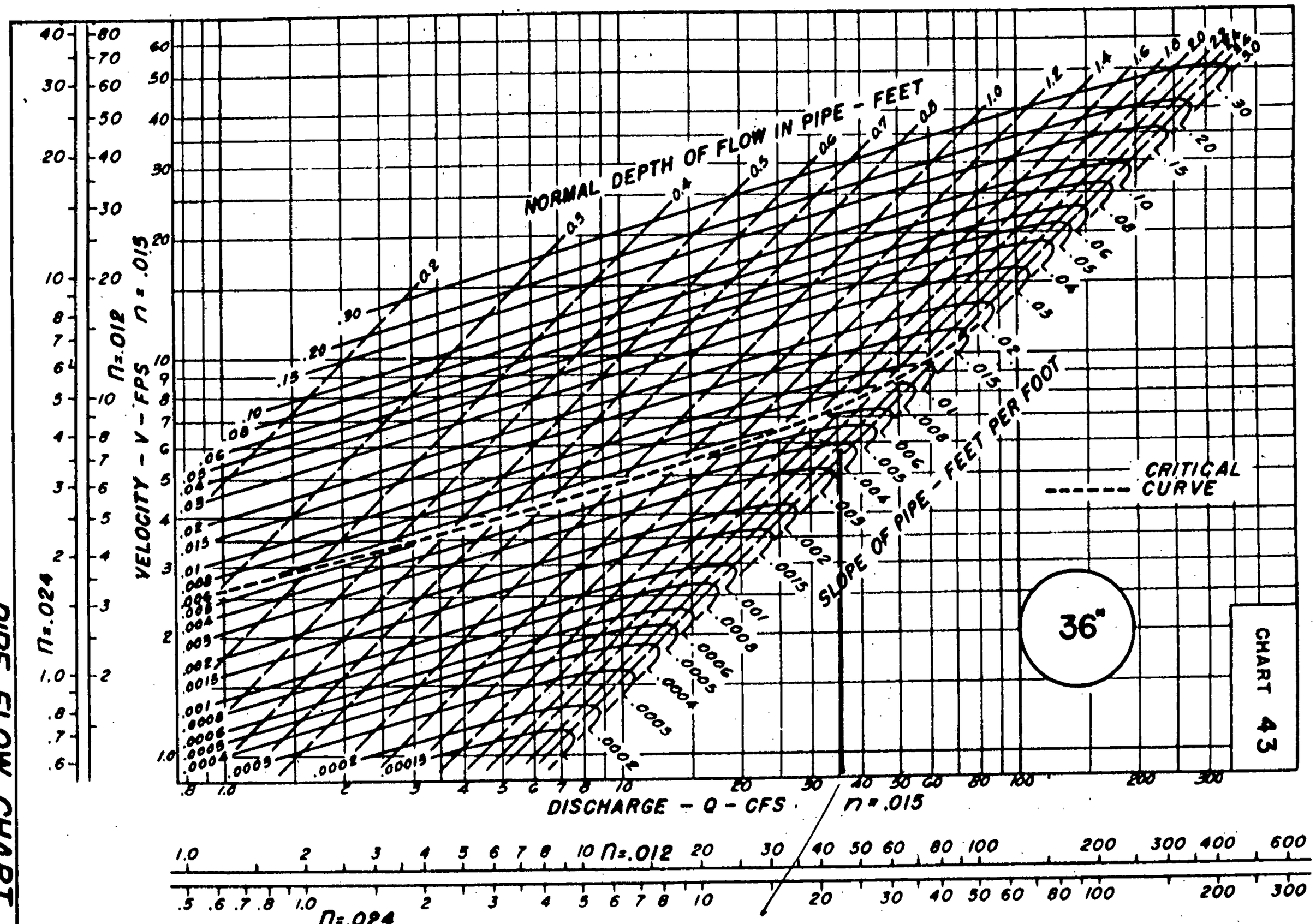
PIPE FLOW CHART
36-INCH DIAMETER

Basins "B" & "D"

Q_{total} = 32.32 cfs

Proposed Slope = 0.34%

Sandia Distribution
3/31/99



PIPE FLOW CHART
36-INCH DIAMETER

Basins "A" & "C"

$Q_{total} = 35.64$ cfs

Proposed Slope = 0.7 %

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

February 19, 1999

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

K-10 D23F

RE: SANDIA DISTRIBUTION CENTER, ATRISCO BUSINESS PARK (K10-D23).
GRADING AND DRAINAGE PLAN FOR SITE DEVELOPMENT PLAN FOR BUILDING PERMIT APPROVAL, AND FOR BUILDING PERMIT APPROVAL. ENGINEER'S STAMP DATED JANUARY 22, 1999.

Dear Mr. MacKenzie:

Based on the information provided on your January 25, 1999 submittal, the above referenced project is approved for both Site Development Plan for Building Permit and Building Permit. See also City Consultant"s letter dated 2/8/99 (copy enclosed).

"Conceptual" G&D cannot be used for Building Permit approval. Please correct title when attaching a copy of this approved plan to the construction sets prior to sign-off by Hydrology.

Prior to Certificate of Occupancy approval, an Engineer's Certification per the DPM will be required.

Please provide the data noted in Consultant's Comment No. 2 for the record.

If I can be of further assistance, please feel free to contact me at 924-3984.

Sincerely,

John P. Murray, P.E.
Hydrology

c: Andrew Garcia
√ File

SMITH ENGINEERING COMPANY
A Full Service Engineering Company

February 8, 1999

Mr. Fred Aguirre, P.E.
Hydrologist
City of Albuquerque
Public Works Department
P.O. Box 1293
Albuquerque, NM 87103

RE: Conceptual Grading and Drainage Plan for :
Sandia Distribution Center
(Mark Goodwin & Associates, John MacKenzie, P.E. stamped 1-22-99)

Request Approvals for:
Site Development Plan for Building Permit Approval,
Building Permit

Drainage File K-10 / D-23 F SEC Job No. #198624.b30

Dear Mr. Aguirre,

Smith Engineering Company (SEC) is please to review the reference submittal. The scope of the project includes a grading and drainage plan for a commercial development within the Atrisco Business Park.

My Comments are as follows:

1. The site is allowed free discharge per the "Master Drainage Plan for the Atrisco Business Park, October 1993, Easterling & Associates, October 22, 1993". Free discharge is allowed to the existing detention pond that is located on this site. Plate 2 of the referenced master plan indicates this lot was assumed to be zoned IP and allows free discharge into the existing detention pond.

2. The engineer did not provide any inlet calculations for the "private" on-site storm drain inlets shown on sheet 1 of 1. Other than not providing those calculations, the plan looks fine.

Sincerely,
Pat Stovall, P.E.

O:\100\198624B\b30.

1316 Jackie Rd. Suite 850 Rio Rancho, NM 87124 Telephone 505 994-1902 FAX 505 994-1921
E-mail SECRR@worldnet.att.net

DRAINAGE INFORMATION SHEET

PROJECT TITLE: Sandia Distribution Ctr ZONE ATLAS/DRNG.FILE#: K-10/D-23F

DRB #: 99-31 EPC #: _____ WORK ORDER #: _____

LEGAL DESCRIPTION: Parcel A-1, Atrisco Business Park

CITY ADDRESS: _____

ENGINEERING FIRM: Mark Goodwin & Assoc. CONTACT: J. MacKenzie

ADDRESS: Box 90606 PHONE: 828 2200

OWNER: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

ARCHITECT: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

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
___ 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: 1-22-99

BY: John M. MacKenzie

RECEIVED
JAN 25 1999
HYDROLOGY SECTION

```
     AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
          RUN DATE (MON/DAY/YR) = 01/22/1999
          START TIME (HR:MIN:SEC) = 13:10:11      USER NO.= M_GOODWN.I01
          INPUT FILE = RFG.DAT

START                    TIME=0.0

*****    HYDROGRAPH FOR RFG MANAGEMENT WHAREHOUSE AT UNSER & BLUEWATER.
*****    ONLY DEVELOPED CONDITIONS WILL BE EVALUATED BECAUSE THE
*****    SITE IS ALLOWED FREE DISCHARGE PER THE ATRISCO BUSINESS PARK
*****    MASTER DRAINAGE PLAN FOR THE FULLY DEVELOPED CONDITION, BY EASTERLING
*****    & ASSOCIATES, INC., (REVISED)WITH ENGINEER'S STAMP DATED 10/22/93 (K-10/

RAINFALL                 TYPE=1 RAIN QUARTER=0.0 IN
                         RAIN ONE=1.89 IN RAIN SIX=2.23 IN
                         RAIN DAY=2.67 IN DT=0.033 HR

     COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 H
     DT =     .033000 HOURS          END TIME =     5.973000 HOURS
        .0000   .0017   .0034   .0052   .0070   .0088   .0107
        .0126   .0146   .0166   .0187   .0208   .0230   .0252
        .0275   .0299   .0323   .0349   .0375   .0402   .0429
        .0458   .0488   .0519   .0552   .0586   .0621   .0658
        .0697   .0738   .0781   .0830   .0884   .0942   .1022
        .1262   .1641   .2195   .2962   .3981   .5290   .6932
        .8946  1.1376  1.2463  1.3225  1.3892  1.4494  1.5046
       1.5558  1.6034  1.6481  1.6901  1.7296  1.7670  1.8024
       1.8359  1.8677  1.8978  1.9264  1.9536  1.9719  1.9779
       1.9836  1.9890  1.9942  1.9991  2.0039  2.0084  2.0128
       2.0171  2.0212  2.0251  2.0290  2.0327  2.0364  2.0399
       2.0433  2.0467  2.0500  2.0532  2.0563  2.0594  2.0624
       2.0653  2.0682  2.0710  2.0738  2.0765  2.0791  2.0817
       2.0843  2.0868  2.0893  2.0918  2.0942  2.0965  2.0989
       2.1012  2.1034  2.1057  2.1079  2.1101  2.1122  2.1143
       2.1164  2.1185  2.1205  2.1225  2.1245  2.1265  2.1284
       2.1303  2.1322  2.1341  2.1359  2.1378  2.1396  2.1414
       2.1432  2.1449  2.1467  2.1484  2.1501  2.1518  2.1535
       2.1551  2.1568  2.1584  2.1600  2.1616  2.1632  2.1648
       2.1663  2.1679  2.1694  2.1709  2.1724  2.1739  2.1754
       2.1769  2.1783  2.1798  2.1812  2.1826  2.1840  2.1854
       2.1868  2.1882  2.1896  2.1910  2.1923  2.1936  2.1950
       2.1963  2.1976  2.1989  2.2002  2.2015  2.2028  2.2041
       2.2053  2.2066  2.2078  2.2091  2.2103  2.2115  2.2128
       2.2140  2.2152  2.2164  2.2176  2.2187  2.2199  2.2211
       2.2223  2.2234  2.2246  2.2257  2.2268  2.2280  2.2291

*THE PROPOSED STRUCTURE IS POSITIONED ON THE NORTHERN SIDE OF PARCEL A-1,ATRISCO
*BUSINESS PARK, WHICH COMPRISES A TOTAL OF 21.63 ACRES.  BECAUSE THE SOUTHERLY
*4.69 ACRES IS COVERED BY A PERMANENT CITY OF ALBUQUERQUE DETENTION POND, THE
*FOLLOWING HYDROGRAPH WILL COVER ONLY THE NORTHERN 16.94 ACRES PLAN FOR DEVELOPM

*HYDROGRAPH FOR THE ON-SITE DEVELOPED CONDITION
*SITE WILL BE DIVIDED INTO 3 SUBBASINS

*BASIN A
COMPUTE NM HYD           ID=1 HYD NO=101.1 AREA=0.0131 SQ MI
                         PER A=0.0 PER B=15.0 PER C=0.0 PER D=85.0
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HYDROLOGY SECTION

TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N =
UNIT PEAK = 43.962 CFS UNIT VOLUME = .9992 B = 526.28 P60 = 1.89
AREA = .011135 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033000

K = .130640HR TP = .133300HR K/TP RATIO = .980045 SHAPE CONSTANT, N =
UNIT PEAK = 4.8321 CFS UNIT VOLUME = .9974 B = 327.79 P60 = 1.89
AREA = .001965 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033000

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.10

RUNOFF VOLUME = 1.79900 INCHES = 1.2569 ACRE-FEET
PEAK DISCHARGE RATE = 33.81 CFS AT 1.518 HOURS BASIN AREA = .0131 SQ. MI.

Basin A

*BASIN B DISCHARGES DIRECTLY INTO THE SOUTH PONDING AREA VIA A STORM DRAIN
COMPUTE NM HYD ID=2 HYD NO=101.2 AREA=0.0096 SQ MI
PER A=0.0 PER B=15.0 PER C=0.0 PER D=85.0
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N =
UNIT PEAK = 32.216 CFS UNIT VOLUME = .9991 B = 526.28 P60 = 1.89
AREA = .008160 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033000

K = .130640HR TP = .133300HR K/TP RATIO = .980045 SHAPE CONSTANT, N =
UNIT PEAK = 3.5411 CFS UNIT VOLUME = .9966 B = 327.79 P60 = 1.89
AREA = .001440 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033000

PRINT HYD ID=2 CODE=1

PARTIAL HYDROGRAPH 101.20

RUNOFF VOLUME = 1.79900 INCHES = .9211 ACRE-FEET
PEAK DISCHARGE RATE = 24.78 CFS AT 1.518 HOURS BASIN AREA = .0096 SQ. MI.

Basin B

*BASIN C
COMPUTE NM HYD ID=3 HYD NO=101.3 AREA=0.0035 SQ MI
PER A=0.0 PER B=15.0 PER C=0.0 PER D=85.0
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N =
UNIT PEAK = 11.745 CFS UNIT VOLUME = .9984 B = 526.28 P60 = 1.89
AREA = .002975 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033000

K = .130640HR TP = .133300HR K/TP RATIO = .980045 SHAPE CONSTANT, N =
UNIT PEAK = 1.2910 CFS UNIT VOLUME = .9900 B = 327.79 P60 = 1.89
AREA = .000525 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033000

PRINT HYD ID=3 CODE=1

PARTIAL HYDROGRAPH 101.30

RUNOFF VOLUME = 1.79900 INCHES = .3358 ACRE-FEET
PEAK DISCHARGE RATE = 9.05 CFS AT 1.518 HOURS BASIN AREA = .0035 SQ. MI.

Basin C

*BASINS A AND C WILL BE COMBINED SINCE THEY SEQUENTIALLY CONTRIBUTED TO THE PRIV
*ON-SITE STORM DRAIN SYSTEM RUNNING NORTH TO SOUTH IN THE SOUTH-CENTRAL PORTION
*THE SITE

ADD HYD ID=1 HYD NO=102.1 ID=1 ID=3
PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 102.10

RUNOFF VOLUME = 1.79896 INCHES = 1.5927 ACRE-FEET
PEAK DISCHARGE RATE = 42.86 CFS AT 1.518 HOURS BASIN AREA = .0166 SQ. MI.

Basin A & C

*ALL BASINS WITHIN THE SITE WILL BE COMBINED TO REPRESENT THE TOTAL DISCHARGE IN
*FROM THE SITE INTO THE SOUTH PONDING AREA

ADD HYD ID=2 HYD NO=102.2 ID=1 ID=2
PRINT HYD ID=2 CODE=1

PARTIAL HYDROGRAPH 102.20

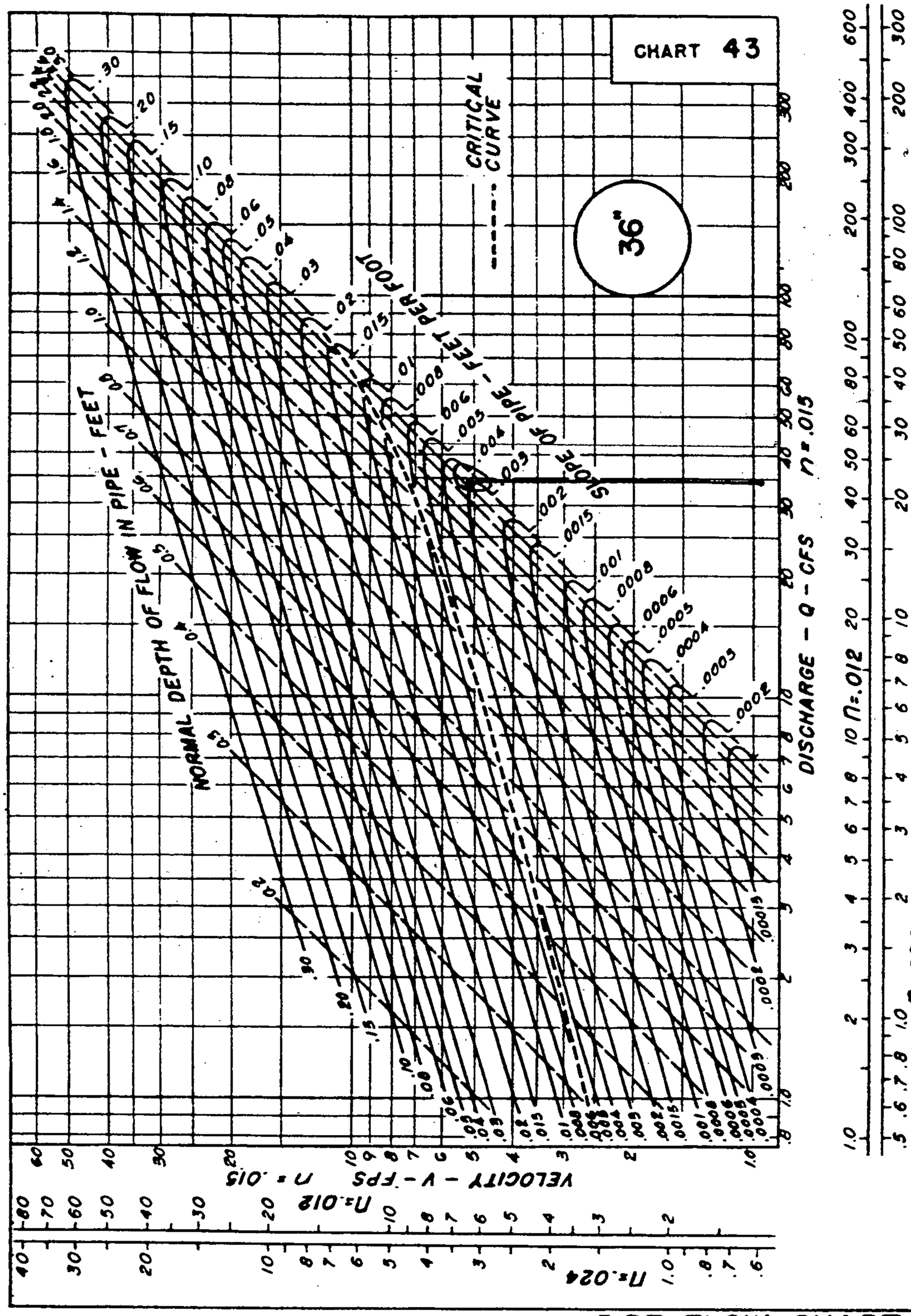
RUNOFF VOLUME = 1.79897 INCHES = 2.5137 ACRE-FEET
PEAK DISCHARGE RATE = 67.64 CFS AT 1.518 HOURS BASIN AREA = .0262 SQ. MI.

= 16.768 acres

BASIN A+B+C → $\frac{67.64\ CFS}{16.768\ acres} = 4.03\ CFS/acre$

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 13:10:11

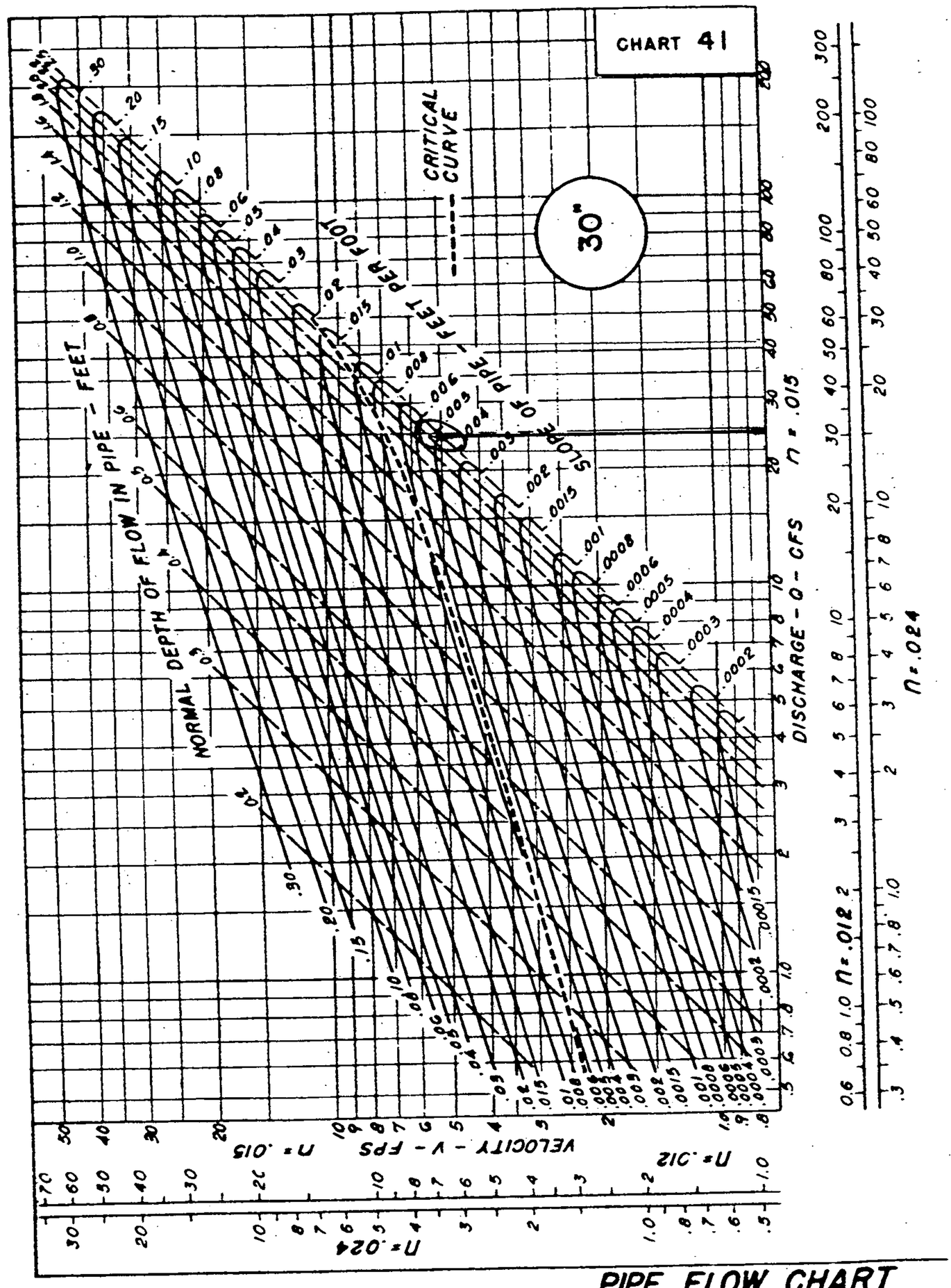


PIPE FLOW CHART
36-INCH DIAMETER

DRAINAGE BASIN A

Q = 34 cfs

S = 0.4%

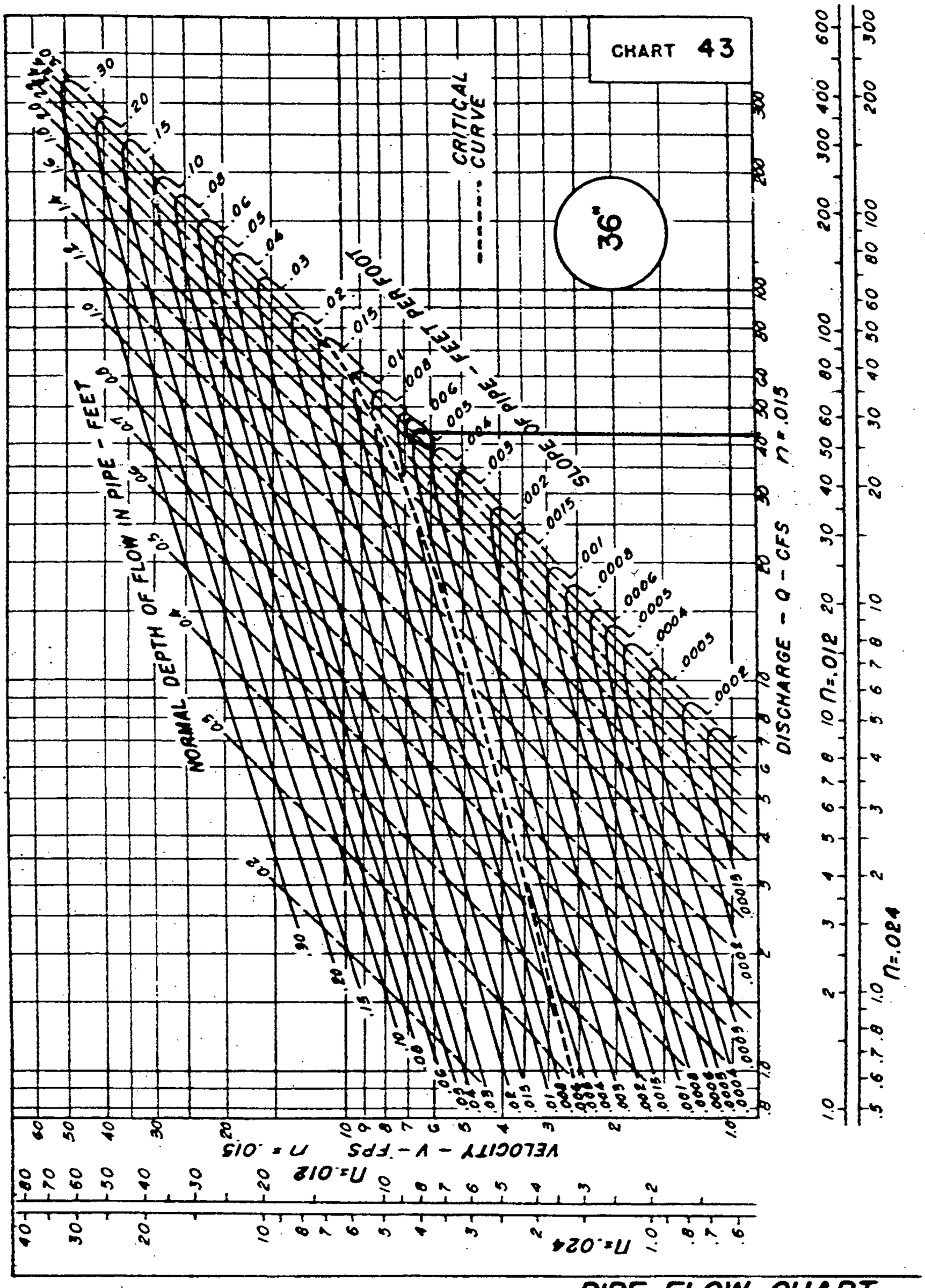


PIPE FLOW CHART
30-INCH DIAMETER

DRAINAGE BASIN B

Q = 25 cfs

S = 0.9%



PIPE FLOW CHART
36-INCH DIAMETER

DRAINAGE BASIN A & C

Q = 42.86 cfs

S = 0.5 %

LETTER OF TRANSMITTAL

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

P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmg@swcp.com

DATE 6-3-99 JOB NO.

ATTENTION Mike Zamora

RE: Sandia Distribution Center

TO Transportation - Bldg Permits

WE ARE SENDING YOU ☐ Attached ☐ Under separate cover via _____ the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications

☐ Copy of letter ☐ Change order ☐ _____

COPIES	DATE	NO.	DESCRIPTION
1			Site Plan @ DRB

THESE ARE TRANSMITTED as checked below:

☐ For approval ☐ Approved as submitted ☐ Resubmit_____copies for approval

☐ For your use ☐ Approved as noted ☐ Submit_____copies for distribution

☐ As requested ☐ Returned for corrections ☐ Return_____corrected prints

☐ For review and comment ☐ _____

☐ FOR BIDS DUE _____ 19_____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS This site plan has already been through DRB and has been signed off by Richard

RECEIVED
JUN 7 1999
HYDROLOGY SECTION

COPY TO _____

SIGNED: John MacKenzie

If enclosures are not as noted, kl[illegible]ly us at once.