K18/D5

3 Plans

FILE COPY

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT

INTER-OFFICE CORRESPONDENCE October 7, 1987

ENGINEERING GROUP

TO: Tom Aragon, Transportation System Division

FROM: Fred J. Aguirre, Hydrologist; Engineering Group/PWD

SUBJECT: PRIVATE DRAINAGE FACILITIES WITHIN PUBLIC RIGHTS-OF-WAY/EASEMENT
ZUNI/SAN MATEO SHOPPING CENTER - (K-18/D5)

Transmitted herewith, is a copy of the approved drainage plan for the referenced project incorporating the S.O. #19 design.

In accordance with the new process, this plan is being submitted to you for permitting and inspection. Please provide this section with a signed-off copy per the signature block upon construction and acceptance by your office.

As you are aware, the signed-off S.O. #19 is required by this office for Certificate of Occupancy release; hence your expeditious processing of this plan would be greatly appreciated and would avoid any unnecessary delay in the release of the Certificate of Occupancy.

Thank you for your cooperation, and if you should have any questions and/or comments regarding the process, please feel free to call me at 768-2650.

FJA/bsj

Attachment

FILE COPY

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

Ken Schultz
Mayor

UTILITY DEVELOPMENT DIVISION
HYDROLOGY SECTION
(505) 768-2650

October 6, 1987

Jeff Mortensen, P.E.
Tom Mann & Associates, Inc.
811 Dallas, NE
Albuquerque, New Mexico 87110

RE: S.O. #19 FOR ZUNI/SAN MATEO SHOPPING CENTER
(K-18/D5) ENGINEER'S STAMP DATED SEPTEMBER 23, 1987

Dear Jeff:

Based on the information provided on your submittal of September 28, 1987, the above referenced plan is approved for S.O. #19.

Please advise your client that a separate permit is required for construction within City right-of-way.

If I can be of further assistance, please feel free to call me at 768-2650.

Cordially,

Bernie J. Montoya

Bernie J. Montoya, C.E.
Engineering Assistant

BJM/bsj

xc: Becky Sandoval

DRAINAGE INFORMATION SHEET 61281

PROJECT TITLE: ZUNI, SAN MATEO SHOPPING CENTER ZONE ATLAS/DRNG. FILE #: K-18 / D5

LEGAL DESCRIPTION: PARCELS 2A & 3A ALBERTSON'S REPLAT

CITY ADDRESS: ZUNI & SAN MATEO SE.

ENGINEERING FIRM: TOM MANN & ASSOC. CONTACT: J.G. MORTENSEN

ADDRESS: 811 DALLAS NE. PHONE: 265-5611

OWNER: CENTER WEST CONTACT: _____

ADDRESS: _____ PHONE: _____

ARCHITECT: HOLMES, SABATINI & EEDS CONTACT: SANDY EEDS

ADDRESS: _____ PHONE: 247-3705

SURVEYOR: TOM MANN & ASSOC. CONTACT: J.G. MORTENSEN

ADDRESS: 811 DALLAS NE PHONE: 265-5611

CONTRACTOR: NOT SELECTED. CONTACT: _____

ADDRESS: _____ PHONE: _____

RECEIVED
SEP 28 1987
HYDROLOGY SECTION

PRE-DESIGN MEETING:

___ YES
X NO
___ COPY OF CONFERENCE RECAP SHEET PROVIDED

DRB NO. _____
EPC NO. _____
PROJ. NO. _____

TYPE OF SUBMITTAL:

___ DRAINAGE REPORT
___ DRAINAGE PLAN
___ CONCEPTUAL GRADING & DRAINAGE PLAN
___ GRADING PLAN
___ EROSION CONTROL PLAN
___ ENGINEER'S CERTIFICATION
X SO #19

CHECK TYPE OF APPROVAL SOUGHT:

___ SKETCH PLAT APPROVAL
___ PRELIMINARY PLAT APPROVAL
___ SITE DEVELOPMENT PLAN APPROVAL
___ FINAL PLAT APPROVAL
___ BUILDING PERMIT APPROVAL
___ FOUNDATION PERMIT APPROVAL
___ CERTIFICATE OF OCCUPANCY APPROVAL
___ ROUGH GRADING PERMIT APPROVAL
___ GRADING/PAVING PERMIT APPROVAL
X OTHER SO #19 (SPECIFY)

DATE SUBMITTED: 09-28-87

BY: J.G. MORTENSEN

for the Shopping Center Zuni & San Mateo

FEBRUARY 4, 1980

Architecture
Planning
Urban Design

DYER / McCLERNON / BEEBE, P.A.

1401 Fifth Street N.W.
Albuquerque, New Mexico 87102
505 / 242 5219

RECEIVED
FEB 07 1980
CITY ENGINEER

CITY OF ALBUQUERQUE
P. O. BOX 1293
ENGINEERING DIVISION
ALBUQUERQUE, NEW MEXICO 87103
ATTN: MR. FRED AGUIREE,
CIVIL ENGINEER

RE: ARROWHEAD PLAZA SHOPPING CENTER
ZUNI AT SAN MATEO [5555 ZUNI], ALB. NM

DEAR FRED:

AS PER OUR TELEPHONE CONVERSATION, I AM SUBMITTING THIS LETTER CERTIFYING TO THE BEST OF MY KNOWLEDGE THE WORK AS DESCRIBED AND SHOWN ON OUR CONSTRUCTION DOCUMENTS TITLED SITE DEVELOPMENT DRAWINGS, SHEETS 1 THRU 8, DATED 17 APRIL 78, HAS BEEN COMPLETED. THIS IS BASED ON PERIODIC VISITS TO THE SITE BY PERSONNEL FROM OUR OFFICE WHICH WAS DONE TO CERTIFY TO THE PROPERTY OWNERS THAT THEIR INTERESTS WERE PROTECTED. THESE DRAWINGS ARE THE SAME AS THOSE WHICH WERE APPROVED BY THE CITY OF ALBUQUERQUE AND ARE ON FILE AT YOUR OFFICE.

SHOULD YOU HAVE ANY QUESTIONS, PLEASE ADVISE.

CORDIALLY,

PATRICK McCLERNON, AIA

PM/cm

CITY OF ALBUQUERQUE DRAINAGE REPORT

ZONE ATLAS NO.	NAME OF CONSTRUCTION	OBSERVER	DATE OBSERVED
	Albertsons	William R. Peguero	2-1-79

ADDRESS: 5555 ZUNI SE

Reason for Field Check: FOR THE DRAINAGE REPORT ON THIS SHOPPING CENTER.

FINDINGS AND CONCLUSION: ALL THE CARVE AND POND AREA ARE VERY GOOD. THE ALLEY ON THE NORTH SIDE AND THE PARKING LOT ON THE WEST SIDE AREN'T FINISHED SO I ONLY SIGN THE CO's FOR ALBERTSON AND NOT FOR GRAND CENTRAL.

FOLLOW UP ACTION REQUIRED: FOLLOW UP WILL BE NEEDED TILL THEY FINISH THOSE ALLEY.

SKETCH:

William R. Peguero
OBSERVER

Bruno

STORM DRAINAGE STUDY

SHOPPING CENTER AT ZUNI AND SAN MATEO

ALBUQUERQUE, NEW MEXICO

MARCH 27, 1978

RECEIVED
MAR 1 - 1979
CITY ENGINEERS

JACOB A. VIGIL
CONSULTING ENGINEER
ALBUQUERQUE, NEW MEXICO

Jacob A. Vigil
Consulting Engineers

SUITE 1206
FIRST NATIONAL BANK
BUILDING - EAST
ALBUQUERQUE,
NEW MEXICO, 87108
(505) 255-5186

March 27, 1978

Dyer-McClernon-Beebe
Architects-Planners, P.A.
1401 5th, N.W.
Albuquerque, New Mexico 87102

Dear Sirs:

Transmitted herewith is the Storm Drainage Study for the Shopping Center located on the Northeast Quadrant of the intersection of Zuni Boulevard and San Mateo Boulevard. The recommendations in this Study are in accordance with the requirements of the City of Albuquerque and the Albuquerque Metropolitan Arroyo Flood Control Authority.

Thank you for the opportunity of serving you.

Respectfully submitted,

Jacob A. Vigil

Jacob A. Vigil, P.E.
New Mexico Registration No. 4570

JAV/bvm

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1. Design Calculations. . . . . Page 1 - 11
2. Drainage Plan. . . . . Map "A"

STORM DRAINAGE STUDY

SHOPPING CENTER AT ZUNI AND SAN MATEO

I. PURPOSE: The purpose of this report is to formulate a comprehensive study of drainage affecting the site development and to show that the development does not restrict drainage in a manner to cause damage to adjacent land owners.

II. SCOPE: This report is limited to runoff originating within the development. General engineering procedures are presented for calculation of storm runoff and storage.

III. LOCATION: The site is located on the northeast quadrant of Zuni Boulevard and San Mateo Boulevard in Albuquerque, New Mexico and consists of 14.8 acres of sparse grass to bare soil. The tract consists of Blocks 47, 48, 49, 57, 58, 59 and 60 of the Tijeras Place Addition with the intermediate paved streets being vacated.

IV. EXISTING DRAINAGE: The existing paved streets with curb and gutter serve as water carrying improvement to handle existing runoff. Off-site drainage flowing west on Highland Avenue will be diverted north and south along Palomas Drive without any change to existing street profiles. The general slope of the land

is from east to west at approximately 1.5%. There are no significant geological or topographic features. There is an existing storm drain system on San Mateo Boulevard with existing drop inlets on the east side of the street. There is also an existing storm drain system on Zuni Boulevard extending east from San Mateo Boulevard to Madeira Drive with drop inlets on the north side of the street.

V. PROPOSED DEVELOPMENT: The proposed development will consist of commercial development with a Grand Central Store, an Albertson Food Center, and other miscellaneous commercial buildings. The coefficient of runoff "C" has be estimated at 0.90 for impervious pavement condition.

VI. PROPOSED DRAINAGE PLAN: The proposed drainage plan is to contain excess runoff after development by the use of dry wells with drop inlet structures. Additional surface detention storage will be provided at the location of the drop inlets. See Appendix "A" for location and size of dry wells, location of drop inlets, and for the related computations. Off-site drainage flowing west on Highland Avenue will be diverted north and south along the existing street improvements on Palomas Drive.

VII. CONCLUSIONS AND RECOMMENDATIONS: On the basis of this study the property under consideration can be adequately developed

as proposed, if the above mentioned design procedures and facilities are incorporated into the final construction phase.

N.E.C. @ SAN MATEO & ZUNI

JACOB A. VIGIL
MARCH 23, 1978
SHT. 1 OF 11

1. DRAINAGE AREA A-1

AREA = 3.35 ACRES
C = 0.45 UNDEVELOPED
C = 0.90 DEVELOPED
T_c = 10 MIN.

$Q_{100} = CiA$
= 0.45 x 5.2 x 3.35
= 7.84 CFS (UNDEVELOPED)
15.68 CFS (DEVELOPED)

VOLUME COMPUTATIONS:
P_{60} (100 YR) = 1.90 INCHES — 75% OF 24-HOR PRECIPITATION OCCURS WITHIN ONE-HOUR.

$Vol. = \frac{1.90}{12} \times 3.35 \times 43{,}560 \frac{FT^3}{AC.}$

= 23,105 FT^3 (100% RUNOFF)
OR
= 20,794 (90% RUNOFF)
OR
= 10,397 (45% RUNOFF)

DETERMINATION OF UNDERGROUND STORAGE:
UNIT DRY WT. OF MATERIAL = 100 #/FT^3 (DRY)

$G \cong 2.7$

$G = \frac{W_s}{V_s T_w}$

$V_s = \frac{100}{2.7 \times 62.4} = 0.593\ FT^3$

$V_v = 1.000 - 0.593$
$= 0.407\ FT^3$ USE 0.40 VOID RATIO

VOLUME OF DRY WELL:

$$V = \frac{10{,}397}{0.40}$$

$$= 25{,}993 \text{ FT}^3$$

AVERAGE DEPTH = 4.0 FT.
" WIDTH = 36 FT.
REQ'D LENGTH = $\frac{25{,}993}{4 \times 36}$

$$= 180.5 \text{ FT.}$$

2. DRAINAGE AREAS A-1 PLUS A-4:

AREA = 3.35 + 1.41 ACRES
= 4.76 ACRES
C = 0.45 UNDEVELOPED
C = 0.90 DEVELOPED
T_0 = 10 MIN.

$Q_{100} = 0.45 \times 52 \times 4.76$
= 11.1 CFS (UNDEVELOPED)
22.2 CFS (DEVELOPED)

VOLUME RUNOFF:

$$\text{VOL} = \frac{1.90}{12} \times 4.76 \times 43{,}560$$

= 32,830 FT^3 (100%)
29,547 FT^3 (90%)
14,774 FT^3 (45%)

VOLUME OF DRY WELL:

$$V = \frac{14{,}774}{0.40}$$

= 36,933 FT^3
AVERAGE DEPTH = 4.0 FT.
" WIDTH = 36.0 FT
REQ'D LENGTH = $\frac{36{,}933}{4 \times 36}$ = 256.5 FT.

N.E.C. @ SAN MATEO ZONE

JACOB & VIGIL
MARCH 24, 1978
SHT. 3 OF 11

3. DRAINAGE AREA A-2:

AREA = 3.62 ACRES
C = 0.45 UNDEVELOPED
C = 0.90 DEVELOPED
T_c = 10 MIN.

Q_{100} = 0.45 x 5.2 x 3.62
= 8.47 CFS (UNDEVELOPED)
16.94 (DEVELOPED)

VOLUME OF RUNOFF:

VOL = $\frac{1.9Q}{12}$ x 3.62 x 43,560

= 24,96 FT^3 (100%)
22,470 FT^3 (90%)
11,235 FT^3 (45% RUNOFF)

VOLUME OF DRY WELL:

V = $\frac{11,235 FT^3}{0.40}$ = 28,088 FT^3

AVERAGE DEPTH = 4.0 FT.
" WIDTH = 36.0 FT.
REQ'D LENGTH = $\frac{28,088}{4 \times 36}$
= 195 FT

4. DRAINAGE AREA A-3:

AREA = 2.05 ACRES
C = 0.45 (UNDEVELOPED)
C = 0.90 (DEVELOPED)
T_c = 10 MIN.

Q_{100} = 0.45 x 5.2 x 2.05
= 4.8 CFS (UNDEVELOPED)
9.6 CFS (DEVELOPED)

VOLUME OF RUNOFF:

$$VOL = \frac{1.90}{12} \times 2.05 \times 43,560$$

$$= 14,189 FT^3 \quad (100\%)$$
$$12,725 FT^3 \quad (90\%)$$
$$6,362 FT^3 \quad (45\%)$$

VOLUME OF DRYWELL.

$$V = \frac{6,362}{0.40} = 15,906 FT^3$$

AVERAGE DEPTH = 4.0 FT.
" WIDTH = 36.0 FT.
REQ'D LENGTH = 110.5 FT.

5. DRAINAGE AREA A-5:

AREA = 2.55 ACRES
C = 0.45 (UNDEVELOPED)
C = 0.90 (DEVELOPED)
T_C = 10 MIN.

$$Q_{100} = 0.45 \times 52 \times 2.55$$
$$= 5.97 CFS \ (UNDEVELOPED)$$
$$11.94 CFS \ (DEVELOPED)$$

VOLUME OF RUNOFF:

$$VOL = \frac{1.90}{12} \times 2.55 \times 43,560$$

$$= 17,587 FT^3 \quad (100\% \text{ RUNOFF})$$
$$15,828 FT^3 \quad (90\% \ " \ )$$
$$7,914 FT^3 \quad (45\% \ " \ )$$

VOLUME OF DRYWELL:

$$V = \frac{7,914 FT^3}{0.40} = 19,785 FT^3$$

AVERAGE DEPTH = 4.0 FT.
AVERAGE WIDTH = 36.0 FT.
REQ'D LENGTH = 137 FT.

6. DRAINAGE AREA A-2 PLUS A-4:

AREA = 3.62 Ac + 1.41 Ac.
= 5.03 Ac
C = 0.45 (UNDEVELOPED)
C = 0.90 (DEVELOPED)
T_C = 10 MIN.

Q_{100} = 0.45 x 5.2 x 5.03
= 11.77 CFS (UNDEVELOPED)
23.54 CFS (DEVELOPED)

VOLUME OF RUNOFF:

$$VOL = \frac{1.90}{12} \times 5.03 \times 43,560$$

= 34,692 FT^3 (100% RUNOFF)
31,222 FT^3 (90% RUNOFF)
15,611 FT^3 (45% RUNOFF)

VOLUME OF DRYWELL:

$$V = \frac{15,611}{0.40} = 39,028 \text{ FT}^3$$

AVERAGE DEPTH = 5.0'
AVERAGE WIDTH = 36.0'
REQ'D LENGTH = 217'

7. SURFACE STORAGE AT DROP INLET FOR AREA A-1.

VOLUME = $12880 FT^2 \times \frac{0.67}{3}$

= 2,876 FT^3 OR 0.07 ACRE-FT.

8. SURFACE STORAGE AT DROP INLET FOR AREA A-2.

VOLUME = $15,109 FT^2 \times \frac{0.67}{3}$

= 3,374 FT^3 OR 0.08 ACRE-FT.

9. SURFACE STORAGE AT DROP INLET FOR AREA A-3.

VOLUME = $13,648 \times \frac{0.67}{3}$

= 3,048 FT^3 OR 0.07 ACRE-FT.

10. SURFACE STORAGE AT DROP INLET FOR AREA A-4.

VOLUME = $6,480 FT^2 \times \frac{0.67}{3}$

= 1,447 FT^3 OR 0.03 ACRE-FT.

11. SURFACE STORAGE AT DROP INLET FOR AREA A-5.

VOLUME = $6,592 FT^2 \times \frac{0.67}{3}$

= 1472 FT^3 OR 0.03 ACRE-FT.

12. TOTAL SURFACE STORAGE = 2,876 FT^3 + 3,374 + 3,048 + 1,447 + 1,472

= 12,217 FT^3 OR 0.28 ACRE-FEET

M.C.I.C. OF SAN MATEO, CALIF.

SHEET A. HALL
MARCH 24, 1978
SHT. 1 OF 11

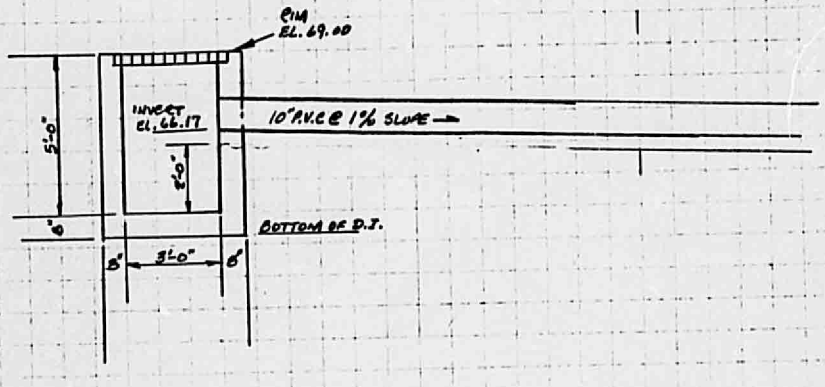
13. DESIGN OF DROP INLET FOR DRAINAGE AREA A-1.

DESIGN Q: AREA 1.41 Ac

$Q = 0.45 \times 1.41 \times 5.2$

$= 3.30$ CFS

SLOPE OF PIPE FOR 10" P.V.C = 1.0% (FLOWING FULL)



DATA ON DROP INLETS

#1 INVERT ELEV = 66.17, TOP OF D.I. = 69.00, BOTTOM OF D.I. = 63.50 BOTTOM OF DRYWELL = 62.50

#2 " " = 64.67, " " " = 71.00, " " " = 62.00 " " " = 62.50

#3 " " = 63.17, " " " = 69.50, " " " = 60.50 " " " = 61.00

#4 " " = 60.07, " " " = 65.50, " " " = 57.40 " " " 57.90

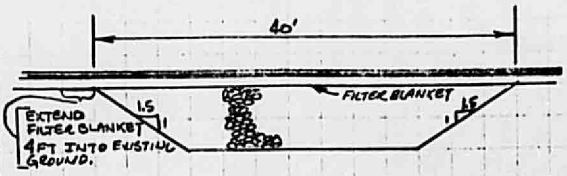
#5 INVERT ELEV. = 66.00, TOP OF D.I. = 69.00, BOTTOM OF D.I. = 63.33 " " " = 63.83

#6 " " = 61.83, " " " = 64.33, " " " = 58.66 " " " = 59.16

#7 " " = 60.33, " " " = 63.33, " " " = 57.66 " " " = 58.16

#4 " " = 62.00 " " " = 65.50 " " " = 57.40 " " " = 57.90

14. DESIGN OF DRY WELLS:



CONSTRUCTION DATA ON DRY WELLS:

	PAVEMENT ELEV.	FILTER BLKT ELEV.	BOTTOM OF WELL ELEV	AVERAGE WIDTH	AVERAGE LENGTH	VOLUME
A-1	69.00	68.00	62.50 (5.5')	31.75	188.75	32,960 FT³
A-2	65.50	64.50	57.90 (6.6')	30.10	193.10	38,861
A-3	64.33	63.33	59.16 (4.17)'	33.75	118.75	16,009
A-5	63.33	62.33	58.16 (4.17)'	33.75	135.75	19,105
						106,435 FT³

ALLOWABLE STORAGE = 106,435 FT³ x 0.40 = 42,574 FT³ OR 0.98 ACRE-FT.

15. TOTAL STORAGE:

DRY WELLS = 0.98 ACRE-FT.
SURFACE = 0.28
1.26 ACRE-FT.

16. ADDITIONAL STORAGE AND LOSSES WILL BE PROVIDED AT LANDSCAPED MEDIANS AND AT BANK.

N.E.C. @ SAN MATEO + ZUNI
(DUKE/MCCLENDON)

JACOB A. VIGIL
FEBRUARY 22, 1978
SHT. 9 OF 11

17. DESIGN OF DROP INLET FOR AREA A-1:

DESIGN Q = 8.73 CFS USE 9.0 CFS
@ 50% EFFICIENT

$Q = CLH^{3/2}$ $H = 0.67'$, $C = 3.34$

$L = \frac{Q}{CH^{3/2}} = \frac{9.0}{3.34(0.67)^{3/2}}$

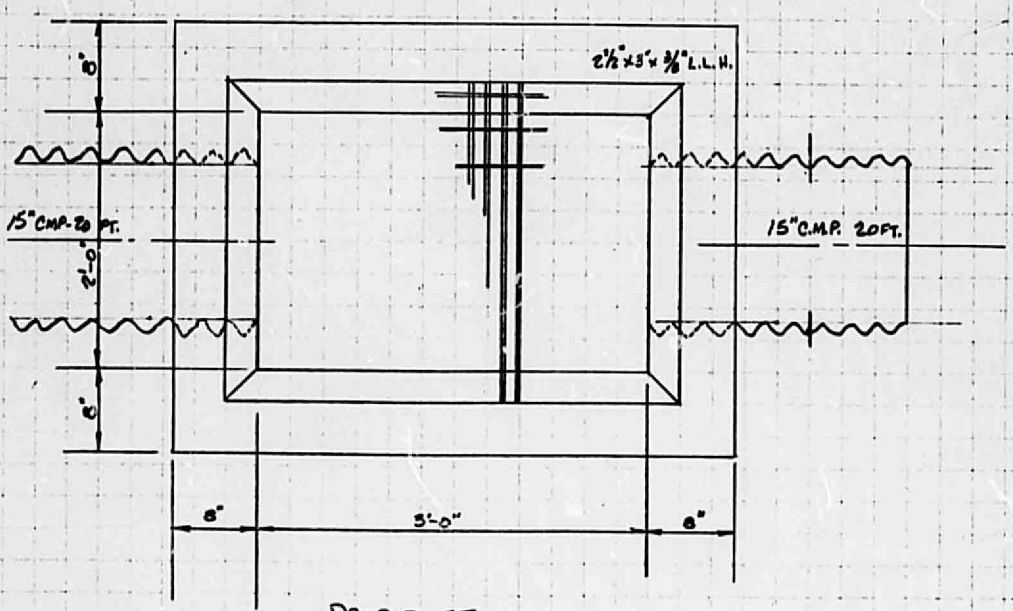
$L = 4.91$ FT.

$Q = CA\sqrt{2gh}$; $C = 0.7$

$Q = 0.7A\sqrt{2(32.2)(0.67)}$
$= 4.60A$

$A = \frac{9.0}{4.60} \times 2$ (50% EFFICIENT)

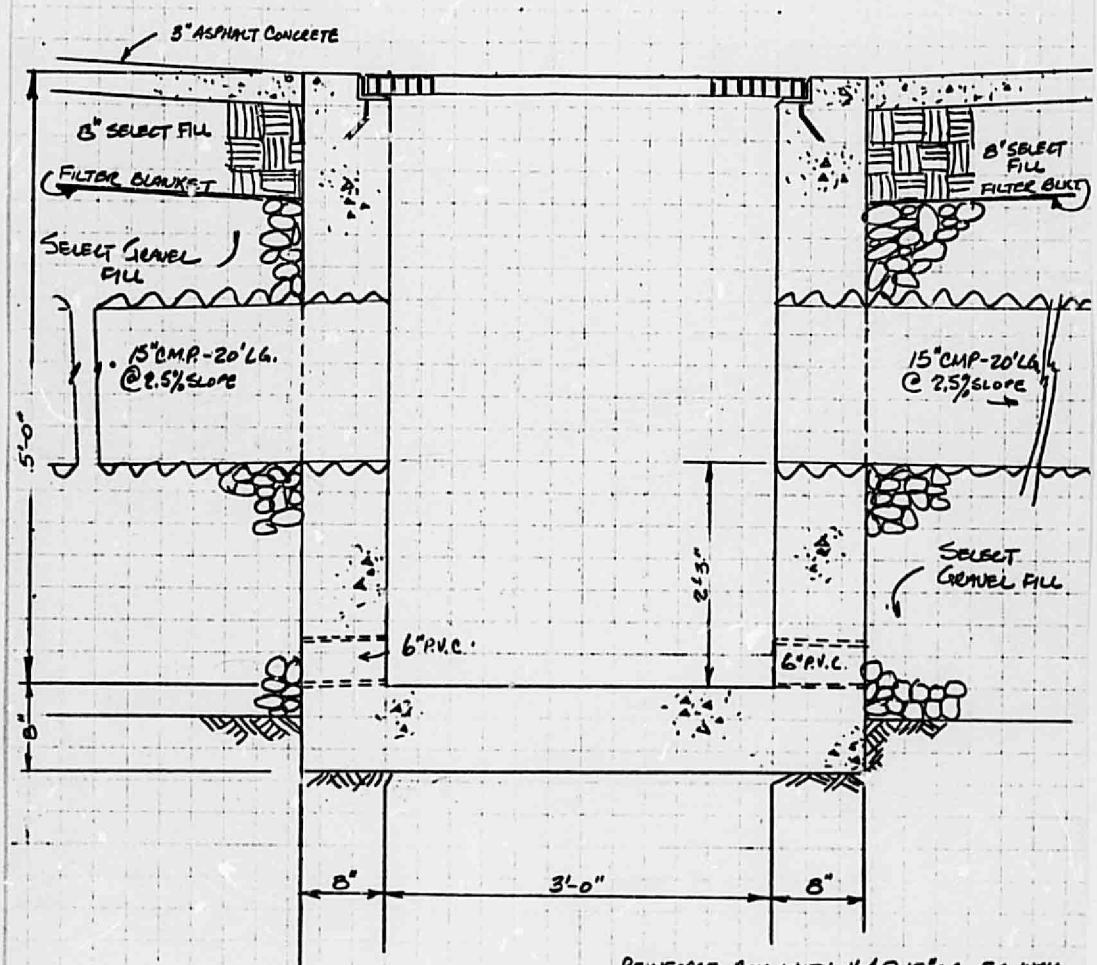
$A = 3.91$ FT^2 OR 563 in^2 USE: RECTANGULAR GRATE 2'x3'



DROP INLET
(PLAN)

REG. SOIL WATER + CONST.
(DYER/McCLENDON)

Grade 4 Nat.
FEBRUARY 22, 1978
SHT. 10 OF 11



REINFORCE BOX WITH #4@12"o.c. EA. WAY.
PROVIDE REBAR AROUND PIPE OPENINGS.

DROP INLET
(SECTION)

N.E.C. @ John Miller Drive
(Dyer/McClosky)

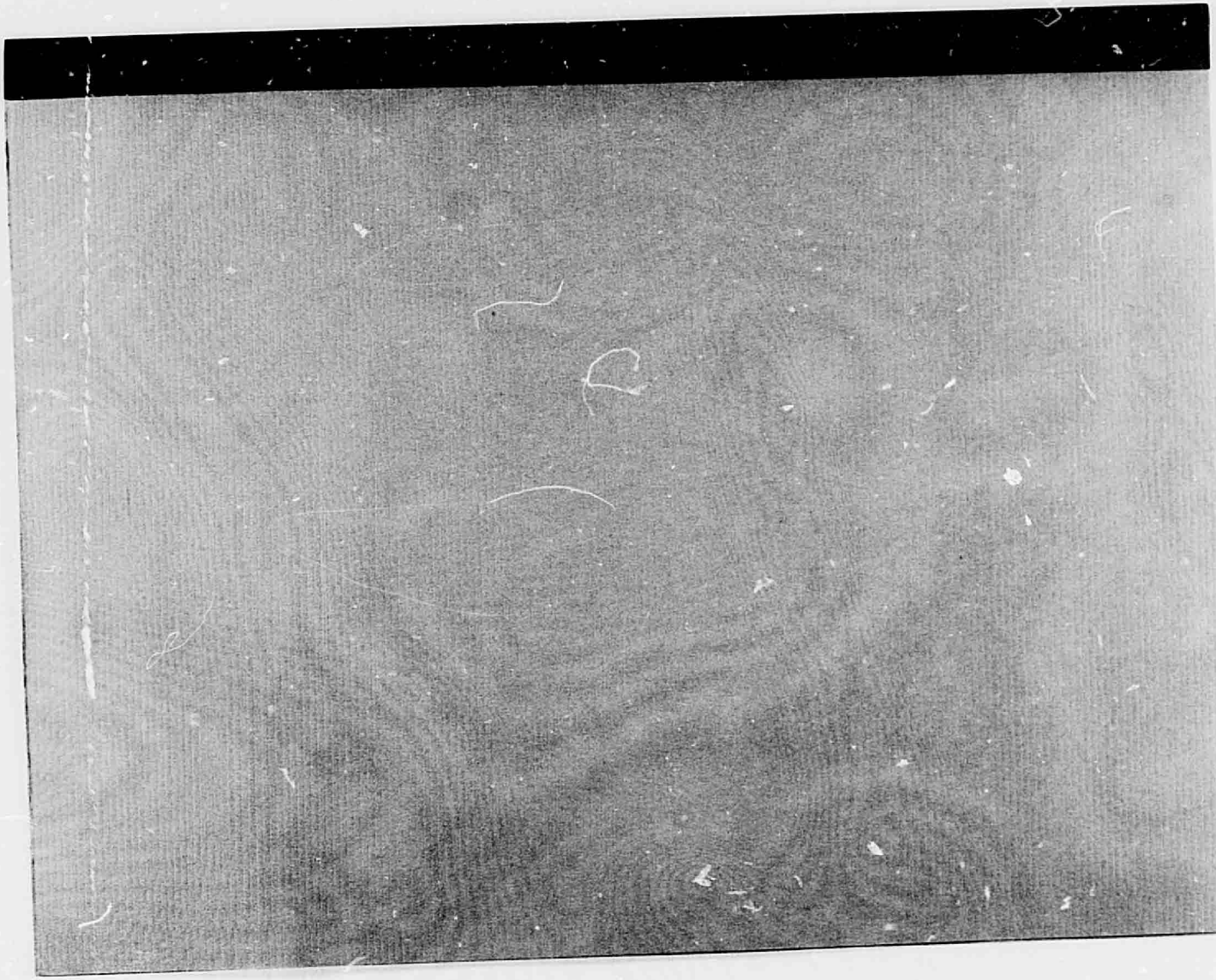
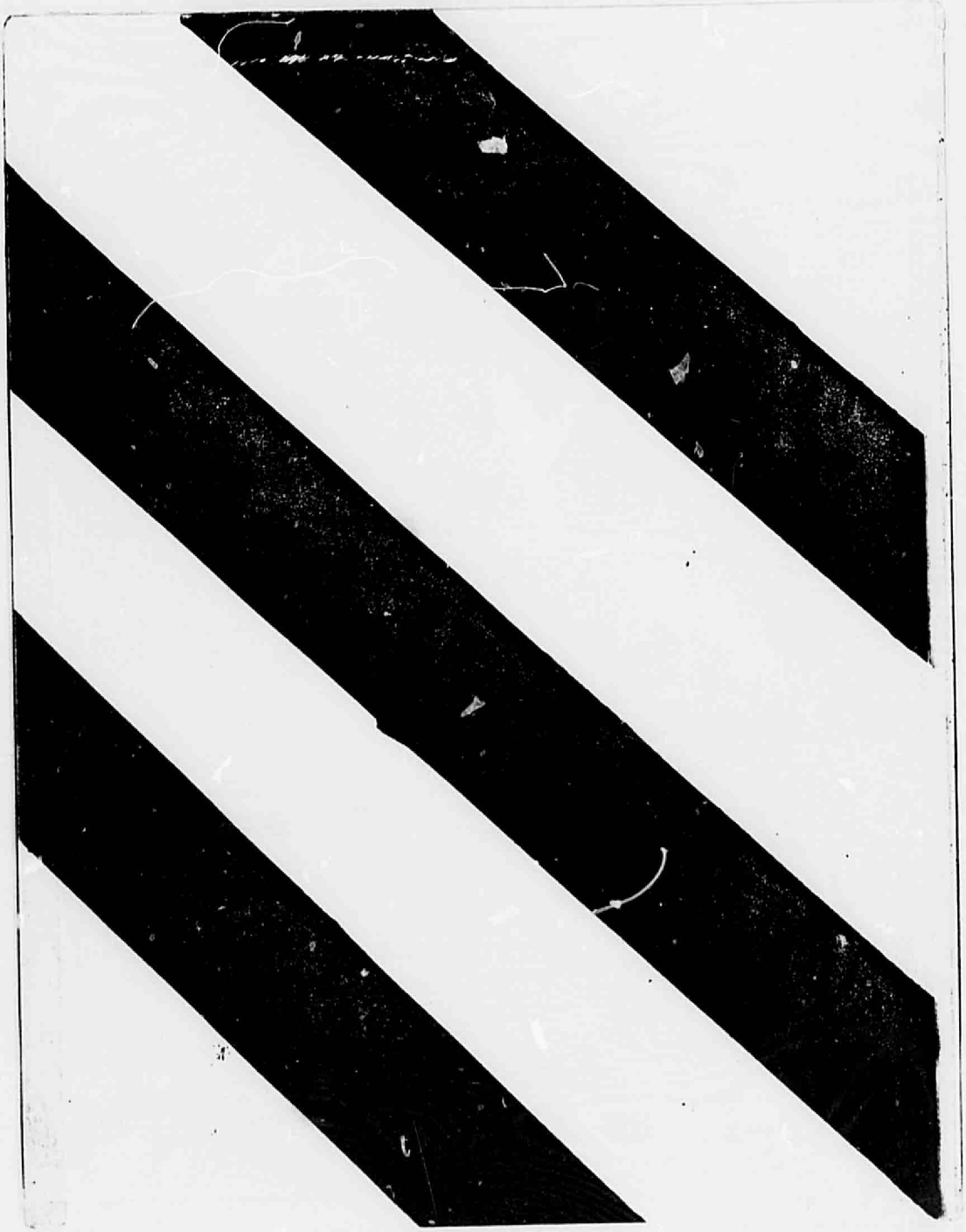
Jesse A. Vela
February 22, 1978
Sht. 11 of 11

18. Check to determine if 15"CMP has sufficient capacity.

Design Q = 10cfs or 5cfs per pipe

$\frac{HW}{D} = 1.2$ for 5cfs

$HW = 1.2 \times \frac{15"}{12}$

$HW = 1.5$ ft. O.K.

Slope = 2.50%