

DRAINAGE INFORMATION SHEET

PROJECT TITLE KRUZICH PRD

ZONE ATLAS/DRWG. FILE # F21-D53B

DRB#: 93-33 EPC # WORK ORDER # 4949.90

LEGAL DESCRIPTION: LOT C OF MONTGOMERY STEET PARTNERSHIP

CITY ADDRESS: 4211 PITT NE

ENGINEERING FIRM: BPLW CONTACT: Guy Jackson

ADDRESS: 2400 Louisiana Blvd. AFC#5, Suite 400 PHONE: 881-2759

OWNER: SKIP KRUZICH CONTACT: SKIP KRUZICH

ADDRESS: 237-A EUBANK NE PHONE: 299-1418

ARCHITECT: BPLW CONTACT: ED ARAGON

ADDRESS: 2400 LOUISIANA NE PHONE: 881-2759

SURVEYOR: JEFF MORTENSEN & ASSOCIATES CONTACT CHUCK CALA

ADDRESS: _____ PHONE: 345-4250

CONTRACTOR: --- CONTACT: ---

ADDRESS: --- PHONE: ---

TYPE OF SUBMITTAL:

CHECK TYPE OF APPROVAL SOUGHT:

☐ DRAINAGE REPORT
☐ DRAINAGE PLAN
☐ CONCEPTUAL GRADING & DRAINAGE PLAN
☒ GRADING PLAN
☐ EROSION CONTROL PLAN
☐ ENGINEER'S CERTIFICATION
☐ OTHER _____

- ☐ 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
- ☒ BUILDING PERMIT APPROVAL
- ☐ CERTIFICATE OF OCCUPANCY APPROVAL
- ☐ GRADING PERMIT APPROVALS
- ☐ PAVING PERMIT APPROVAL
- ☐ S.A.B. DRAINAGE REPORT
- ☐ DRAINAGE REQUIREMENTS
- ☐ OTHER _____ (SPECIFY)

PRE-DESIGN MEETING:

☒ YES
☐ NO
☒ COPY PROVIDED

DATE SUBMITTED: DECEMBER 20, 1996

BY: GUY JACKSON

TOXICOLOGY DIVISION

Architects & Engineers, Inc.

American Financial Center #5
2400 Louisiana Blvd. NE
Suite 400
Albuquerque, New Mexico 87110
(505) 881-8PLW (2759)
FAX (505) 881-1230

Officers

William L. Burns, AIA
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Joseph D. Long, Emeritus, AIA, PE
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Michael J. Melichar, PE
Maureen M. Walter, AIA, CCS
Jason M. Weaver, PE

December 19, 1996

Fred Aguirre, PE
Hydrology Chairman
COA - Public Works
PO Box 1293
Albuquerque, New Mexico 87103

Re: *Revisions to the Grading Plan for Kruzich PRD (FZ1-D53B) for Phased Construction. BPLW Project Number 96048*

Dear Fred:

Attached for your review and approval are the following:

One (1) Drainage Information Sheet

Two (2) sets of drawings

The attached drawings have been adjusted to reflect the comments received from Lisa Manwill in her December 16, 1996 letter to us for the referenced project.

In other matters, it is not BPLW's policy to have anyone other than the Engineer of Record to make changes on any plan for any reason without the consent of the said Engineer. Furthermore, any changes will be noted per the requirements set forth by the City of Albuquerque's Development Process Manual (DPM), which include re-sealing or re-dating the existing seal by the Engineer. We apologize for any misunderstanding or any inconvenience to you or your department.

Please contact me if you have any questions or comments.

Sincerely,

BPLW ARCHITECTS & ENGINEERS, INC.


Bruce Schneider, PE

Bruce Schneider, PE
Director of Civil/Structural Department

Attachments:

**xc: Lisa Manwill, COA Hydrology
Gene Valentine, BPLW
Guy Jackson, BPLW
Edward Aragon, BPLW**

100



Architects & Engineers, Inc.

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2400 Louisiana Blvd. NE
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December 19, 1996

Fred Aguirre, PE
Hydrology Chairman
COA - Public Works
PO Box 1293
Albuquerque, New Mexico 87103

**Re: Revisions to the Grading Plan for Kruzich PRD (FZ1-D53B) for
Phased Construction. BPLW Project Number 96048**

Dear Fred:

Attached for your review and approval are the following:

One (1) Drainage Information Sheet

Two (2) sets of drawings


The attached drawings have been adjusted to reflect the comments received from Lisa Manwill in her December 16, 1996 letter to us for the referenced project.

In other matters, it is not BPLW's policy to have anyone other than the Engineer of Record to make changes on any plan for any reason without the consent of the said Engineer. Furthermore, any changes will be noted per the requirements set forth by the City of Albuquerque's Development Process Manual (DPM), which include re-sealing or re-dating the existing seal by the Engineer. We apologize for any misunderstanding or any inconvenience to you or your department.

Please contact me if you have any questions or comments.

Sincerely,

BPLW ARCHITECTS & ENGINEERS, INC.


Bruce Schneider, PE
Director of Civil/Structural Department

Attachments:

**xc: Lisa Manwill, COA Hydrology
Gene Valentine, BPLW
Guy Jackson, BPLW
Edward Aragon, BPLW**

PROJECT DIVIS.





CITY OF
Albuquerque
December 20, 1996

Martin J. Chávez, Mayor

Guy Jackson, P.E.
BPLW Architects & Engineer's
2400 Louisiana Blvd. NE
AFC #5 - Suite 400
Albuquerque, NM 87110

**RE: KRUZICH PRD PHASE II (F21-D53B). GRADING PLAN SUBMITTAL FOR
BUILDING PERMIT APPROVAL. ENGINEER'S STAMP DATED DECEMBER 20,
1996.**

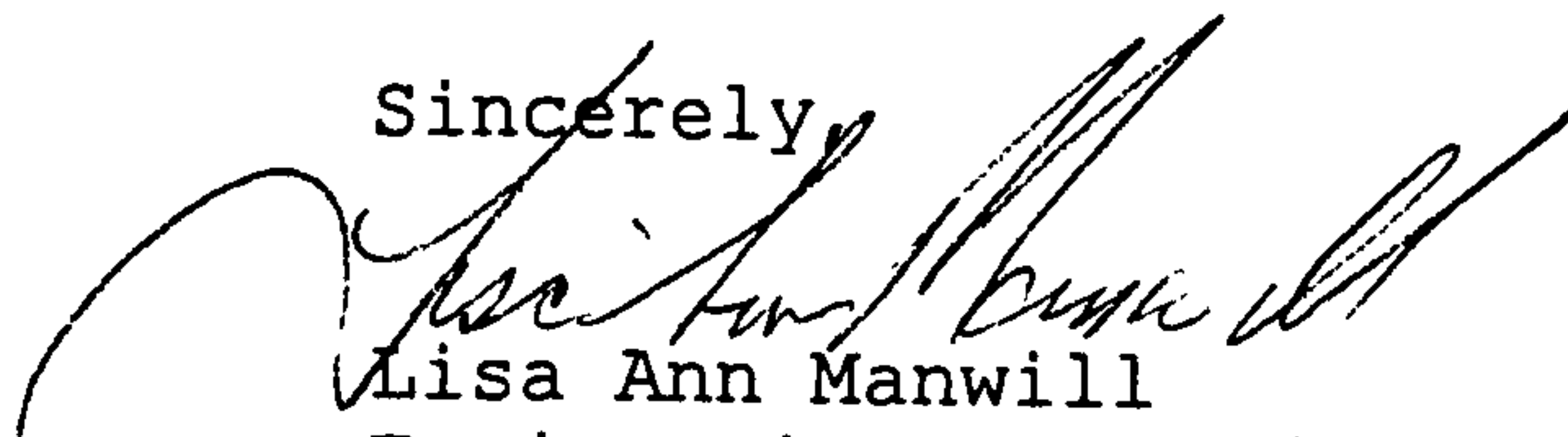
Dear Guy:

Based on the information provided on your December 20, 1996
submittal, the above referenced is approved for Building Permit.

Prior to Certificate of Occupancy approval, an Engineer's
Certification will be required for Phase 1 and 2.

If I can be of further assistance, please feel free to contact me at
768-3622.

Sincerely,

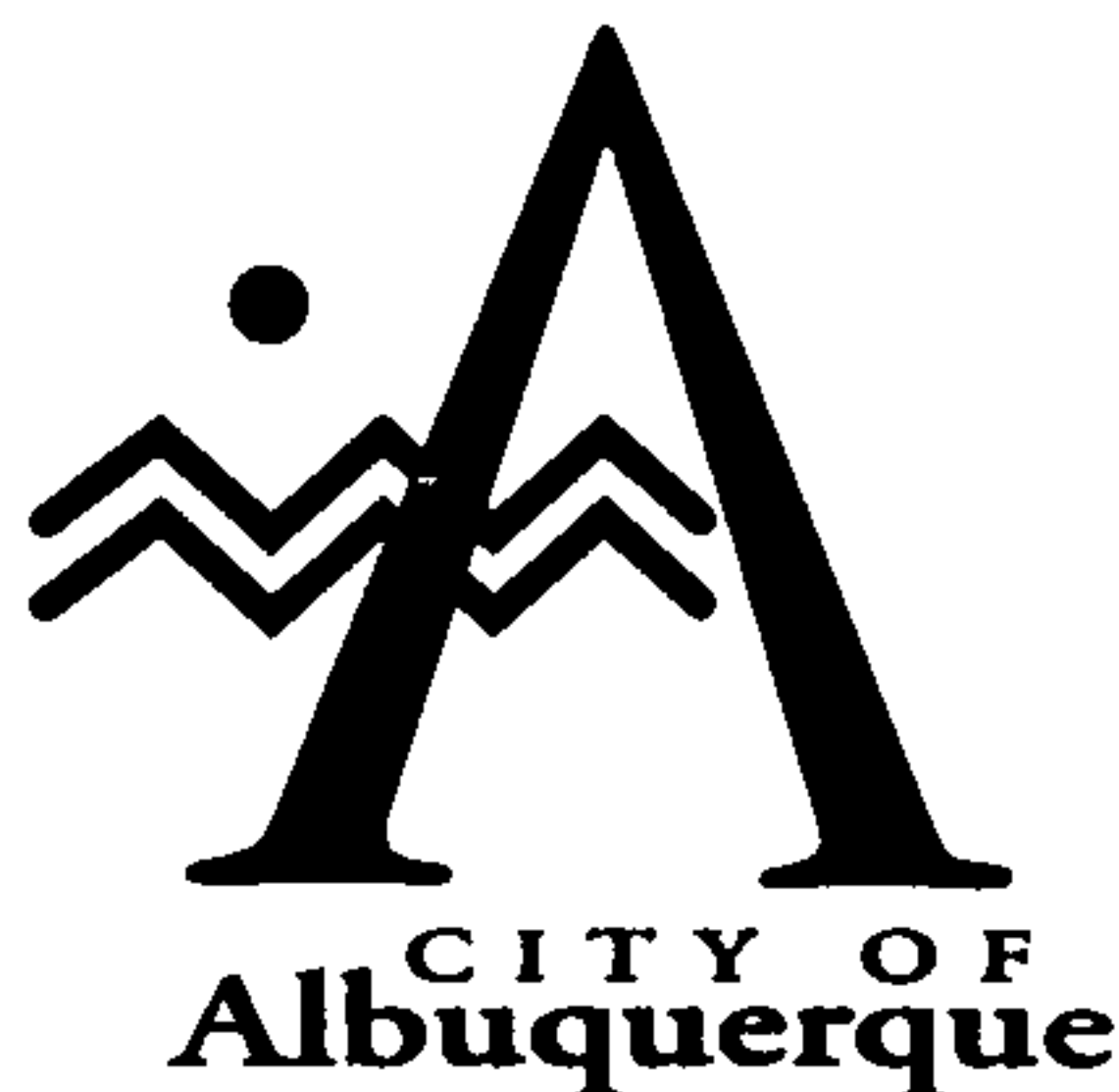


Lisa Ann Manwill
Engineering Assoc./Hyd.

c: Andrew Garcia
File

Good for You, Albuquerque!





December 16, 1996

Martin J. Chávez, Mayor

Guy Jackson, P.E.
BPLW Architects & Engineer's
2400 Louisiana Blvd. NE
AFC #5 - Suite 400
Albuquerque, NM 87110

**RE: KRUZICH PRD PHASE II (F21-D53B). GRADING PLAN SUBMITTAL FOR
BUILDING PERMIT APPROVAL. ENGINEER'S STAMP DATED DECEMBER 4,
1996.**

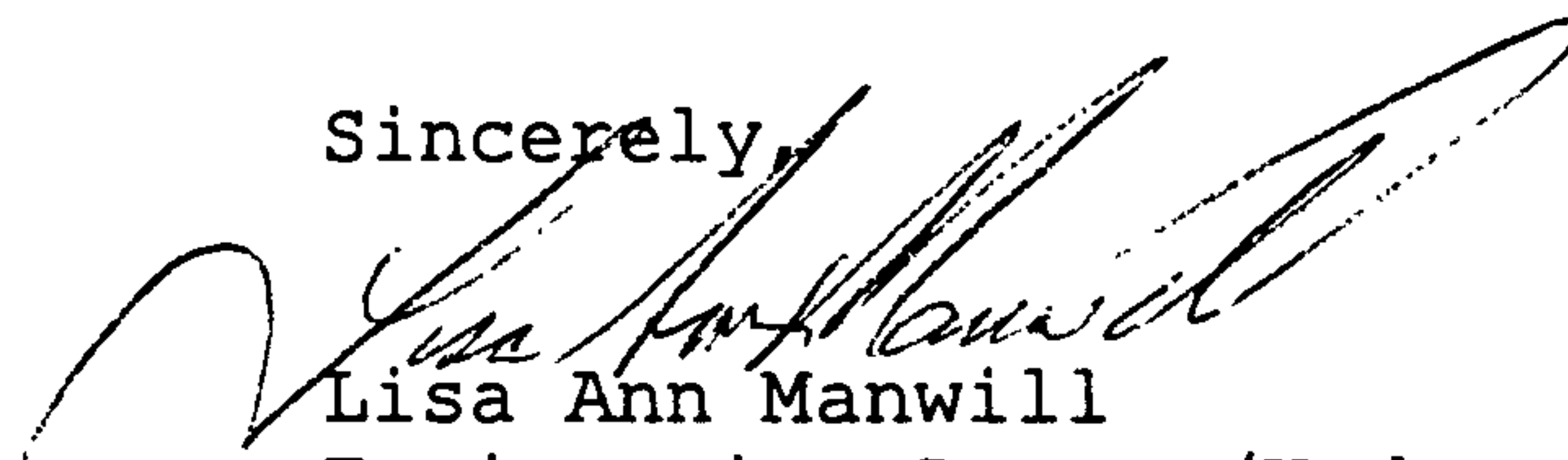
Dear Guy:

Based on the information provided on your December 12, 1996
submittal, City Hydrology has the following comments:

1. Show roof drain locations or direction of flow. It is
desirable to have the roof drain to the front yard.
2. Will cross lot drainage easements be required between the
units? Is there any verbiage in the condominium bylaws
that address cross lot drainage?

If I can be of further assistance, please feel free to contact me at
768-3622.

Sincerely,



Lisa Ann Manwill
Engineering Assoc./Hyd.

c: Andrew Garcia
File

Good for You, Albuquerque!



DRAINAGE INFORMATION SHEET

PROJECT TITLE KRUZICH PRD

ZONE ATLAS/DRWG. FILE # F21-D53B

DRB#: 93-33 EPC # WORK ORDER # 4949.90

LEGAL DESCRIPTION: LOT C OF MONTGOMERY STEET PARTNERSHIP

CITY ADDRESS: 4211 PITT NE

ENGINEERING FIRM: BPLW CONTACT: Guy Jackson

ADDRESS: 2400 Louisiana Blvd. AFC#5, Suite 400 PHONE: 881-2759

OWNER: SKIP KRUZICH CONTACT: SKIP KRUZICH
ADDRESS: 237-A EUBANK NE PHONE: 299-1418

ARCHITECT: BPLW CONTACT: ED ARAGON

ADDRESS: 2400 LOUISIANA NE PHONE: 881-2759

SURVEYOR: JEFF MORTENSEN & ASSOCIATES CONTACT CHUCK CALA

ADDRESS: _____ PHONE: 345-4250

CONTRACTOR: _____ **CONTACT:** _____

ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL: ☐ New ☐ Revision ☐ Extension

CHECK TYPE OF APPROVAL SOUGHT:

☐ DRAINAGE REPORT
☐ DRAINAGE PLAN
☐ CONCEPTUAL GRADING & DRAINAGE PLAN
☒ GRADING PLAN
☐ EROSION CONTROL PLAN
☐ ENGINEER'S CERTIFICATION
☐ OTHER _____

- ☐ SKETCH PLAT APPROVAL
- ☐ PRELIMINARY PLAT APPROVAL
- ☐ S. DEV. PLAN FOR SUB'D APPROVAL
- ☐ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
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- ☐ FOUNDATION PERMIT APPROVAL
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- ☐ CERTIFICATE OF OCCUPANCY APPROVAL
- ☐ GRADING PERMIT APPROVALS
- ☐ PAVING PERMIT APPROVAL
- ☐ S.A.B. DRAINAGE REPORT
- ☐ DRAINAGE REQUIREMENTS
- ☐ -OTHER _____ (SPECIFY)

PRE-DESIGN MEETING:

X YES
 _ NO
X COPY PROVIDED

DATE SUBMITTED: DECEMBER 3, 1996

BY: GUY JACKSON

TOPOLOGY DIV.

Mr Fred Aguirre
City of Albuquerque
Hydrology Department
P.O. Box 1293
Albuquerque New Mexico 87103

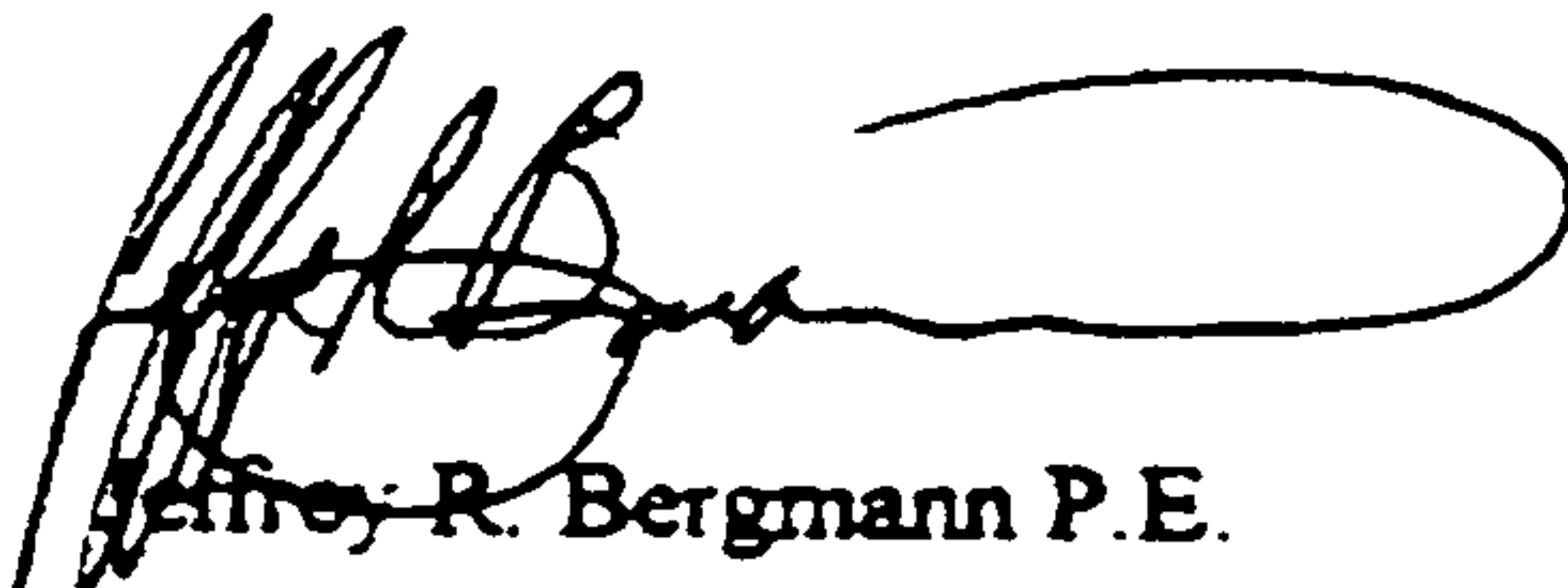
August 4, 1996

Subject Engineering Certification for Plans prepared by Jeffrey R. Bergmann P E

Dear Fred

As you may know, I have taken employment out of State and am no longer at BPLW Architects & Engineers Inc. However, a number of projects with approved drainage plans were bidding and the construction of several projects was on going at the time of my departure from Albuquerque. It is generally the engineer of record who completes the certification process or permission is granted to another engineer to use plans prepared under another's seal. Unfortunately, my move out of New Mexico prohibits an expedient and cost effective method in which to provide this certification. In order to fulfill the City of Albuquerque's Engineers Certification process I give permission to BPLW Architects & Engineers Inc. and in particular Guy Jackson, Jason Weaver or Bruce Schneider to use plans initially prepared and sealed under my name and registration to complete the certification process.

If you have any questions in regard to this letter please feel free to contact me either at home or at work.



Jeffrey R. Bergmann P.E.

14391 Blackberry Dr
Wellington, Florida 33414

Home Phone : (561) 798-4451
Home Fax : (561) 790-7253
Work Phone : (561) 683-3113 ext. 241

cc: Guy Jackson P.E. / BPLW
Jason Weaver P.E. / BPLW
Bruce Schneider P.E. / BPLW



Architects & Engineers, Inc.

American Financial Center #5
2400 Louisiana Blvd. NE
Suite 400
Albuquerque, New Mexico 87110
(505) 881-BPLW (2759)
FAX (505) 881-1230

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John I. Manzanares, AIA
Tyler M. Mason, AIA, CCS
Michael J. Melichar, PE
Maureen M. Walter, AIA, CCS
Jason M. Weaver, PE

December 3, 1996

Bernie J. Montoya, CE
City of Albuquerque Public Works
Hydrology Department
P. O. Box 1293
Albuquerque, New Mexico 87103

**Re: Revisions to the Grading Plan for Kruzich PRD (FZ1-D53B) for
Phased construction. BPLW Project Number 96048**

Dear Bernie,

Attached for your review and approval are the following:


- One (1) Drainage information sheet
- Two (2) Sets of drawings
- One (1) copy of letter to Fred Aguirre from Jeff Bergmann

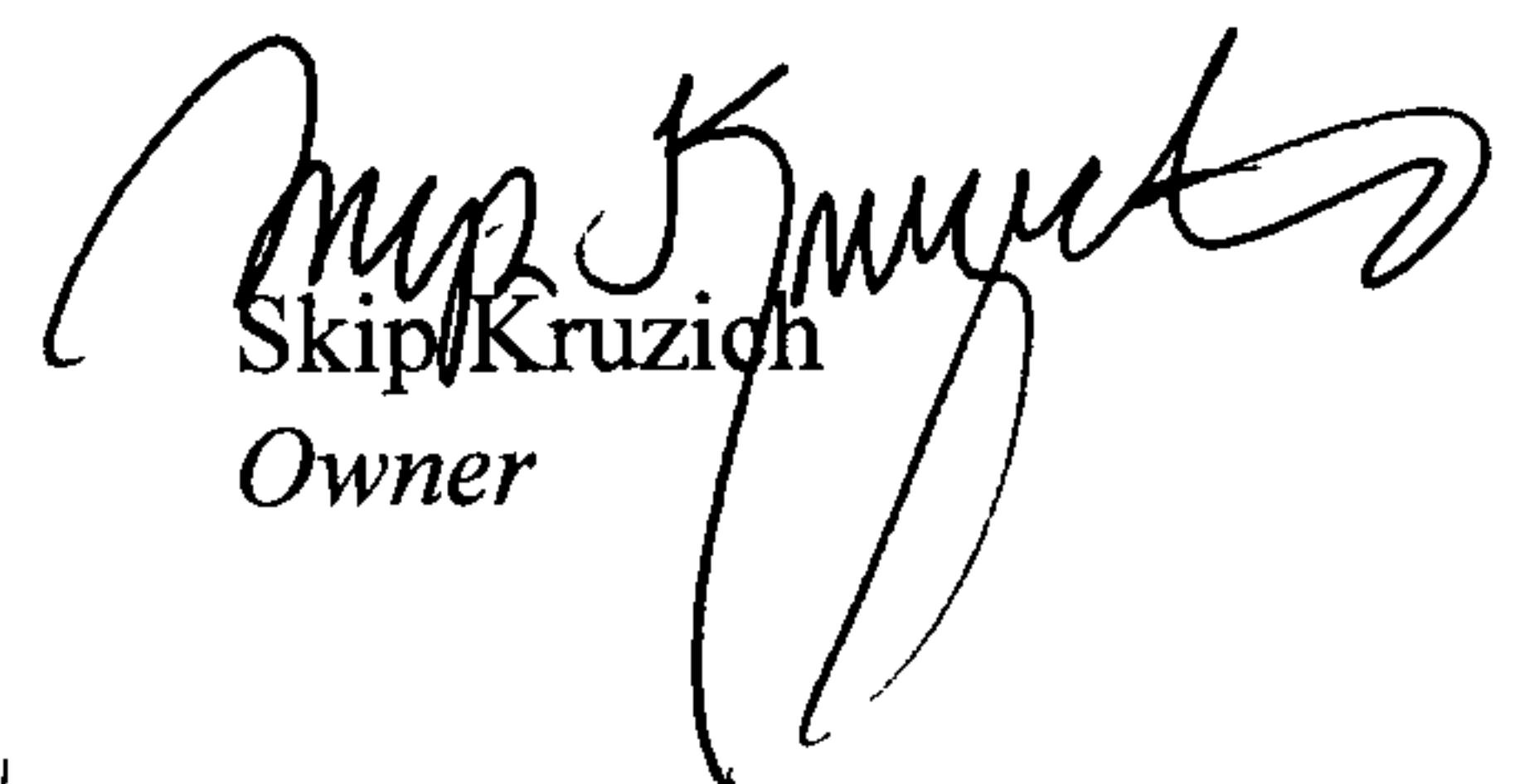
This submittal reflects the "Phasing" of the referenced project subsequent to our November 26, 1996 meeting at your office. As stated on the plans, the Phase I grades are not as-built elevations. Once Phase II is constructed, an Engineer's certification will be provided for both Phases I & II of construction in accordance with D.P.M. checklist as required for the Certificate of Occupancy. Prior to the Certification, the owner will make all modifications to either phase of construction to assure that the site meets the intended design of the approved Grading & Drainage Plan originally submitted to the City.

As shown by the signature below, the Owner agrees to these stated conditions

Please contact me if you have any questions.

Sincerely,


Guy Jackson, PE
Civil Engineering Department


Skip Kruzich
Owner

cc: EJA,EAV

12





City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

January 23, 1995

Jeffrey R. Bergmann
BPLW Architects & Engineers
2400 Louisiana NE
Albuquerque, NM 87110

RE: REVISED DRAINAGE/GRADING PLAN FOR KRUZICH P.R.D. (F21-D53B)
ENGINEER'S STAMP DATED 1/12/95.

Dear Mr. Bergmann:

Based on the information provided on your January 17, 1995 resubmittal, the above referenced site is approved for Building & Rough Grading Permit. Please be advised that 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
File

Date: 3-2-94

BPLW



Architects & Engineers, Inc.

American Financial Center #5
2400 Louisiana Blvd NE
Suite 400
Albuquerque, New Mexico 87110
(505) 881-2759 FAX (505) 881-1230

ATTN: BERNIE MONTTOYA, CE
COA PUBLIC WORKS
HYDROLOGY DEPT.
ALBQ. NM 87103

PROJECT: (name, address) KRUEKH - FRD

PROJECT NO: 92053

If checked below, please.

☐ Acknowledge receipt
of enclosures

☐ Return enclosures to us

We Transmit the Following:

Copies

Description

ONE (1) LETTER

ONE (1) DRAINAGE INFO SHT.

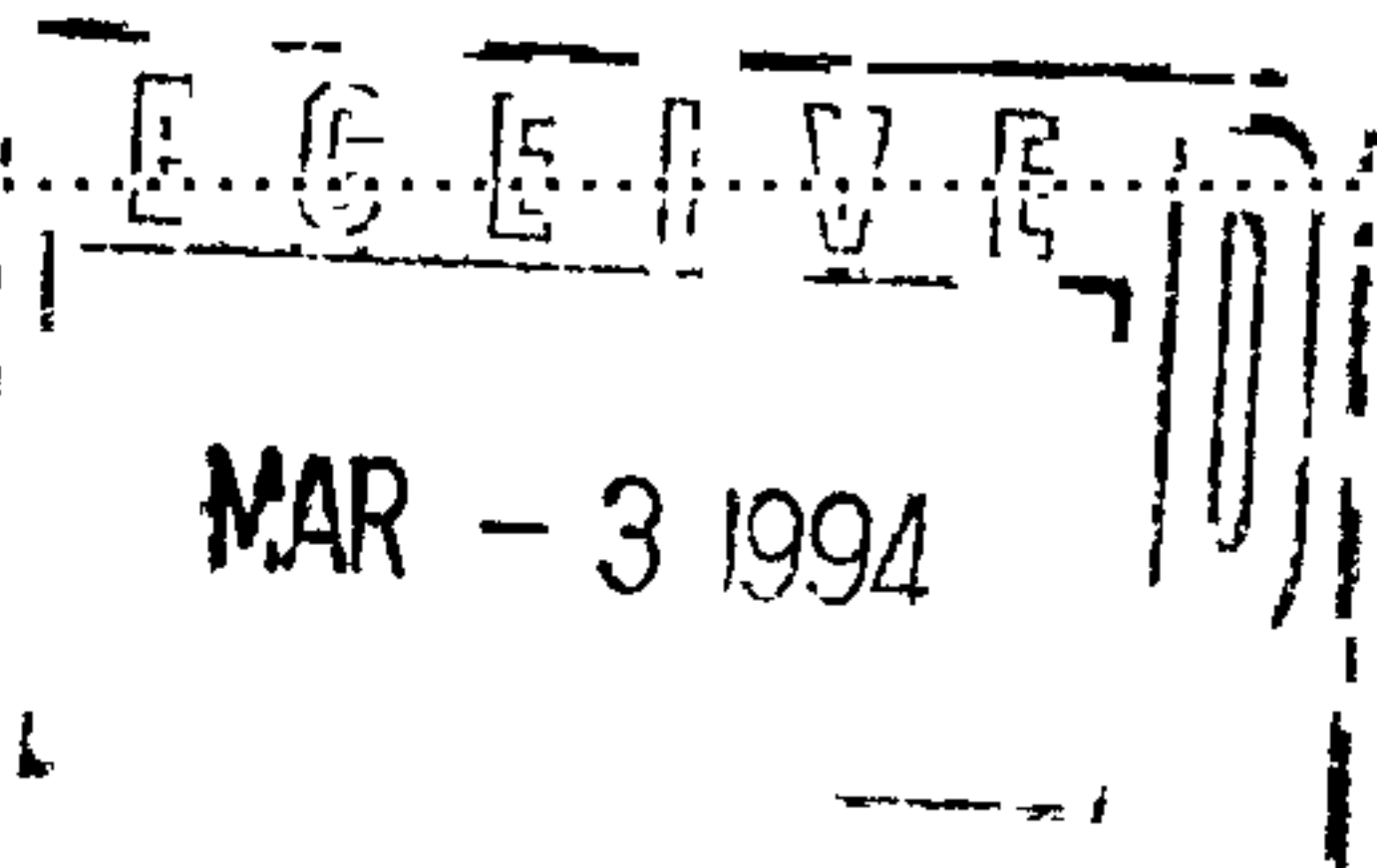
ONE (1) COPY OF DRAINAGE REPORT

TWO (2) SETS OF PLANS

If enclosures are not as noted, please inform us immediately.

Remarks: FOR YOUR REVIEW

Craig Calvert



Copies to:

By

DRAINAGE INFORMATION SHEET

PROJECT TITLE: Kruzich - PRD ZONE ATLAS/DRNG. FILE #: F-21/53B
DRB #: _____ EPC #: Z-93-33 WORK ORDER #: _____
LEGAL DESCRIPTION: Lot C, Montgomery Partners
CITY ADDRESS: West side Pitt Street, south of Laguna de Oro
ENGINEERING FIRM: BPLW Arch & Eng, Inc CONTACT: Steve Crawford
ADDRESS: 2400 Louisiana Blvd, Suite 400, NE PHONE: 881-2759
ABQ NM 87110
OWNER: _____ CONTACT: _____
ADDRESS: _____ PHONE: _____
ARCHITECT: _____ CONTACT: _____
ADDRESS: _____ PHONE: _____
SURVEYOR: _____ CONTACT: _____
ADDRESS: _____ PHONE: _____
CONTRACTOR: _____ CONTACT: _____
ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL:

- ☐ DRAINAGE REPORT
☐ DRAINAGE PLAN
☒ CONCEPTUAL GRADING & DRAINAGE PLAN
☐ 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
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☐ FINAL PLAT APPROVAL
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☐ BUILDING PERMIT APPROVAL
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☐ GRADING PERMIT APPROVAL
☐ PAVING PERMIT APPROVAL
☐ S.A.D. DRAINAGE REPORT
☐ DRAINAGE REQUIREMENTS
☐ OTHER _____ (SPECIFY)

DATE SUBMITTED:

Feb 26, 1993

BY:

[Signature]

DRAINAGE INFORMATION SHEET

PROJECT TITLE: KRUZICH PRD ZONE ATLAS/DRNG. FILE #: FZ1/D53B
DRB #: Z-93-33 EPC #: _____ WORK ORDER #: _____
LEGAL DESCRIPTION: Lot C, Montgomery Partners
CITY ADDRESS: SW corner Laguna de Oro Rd & Pitt Street NE
ENGINEERING FIRM: BPLW CONTACT: Guy Jackson
ADDRESS: 2400 Louisiana NE PHONE: 881-2759
OWNER: Montgomery Properties CONTACT: Skip Kruzich
ADDRESS: 237-A Eubank Blvd NE PHONE: 299-1418
ARCHITECT: _____ CONTACT: _____
ADDRESS: _____ PHONE: _____
SURVEYOR: _____ CONTACT: _____
ADDRESS: _____ PHONE: _____
CONTRACTOR: _____ CONTACT: _____
ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL:

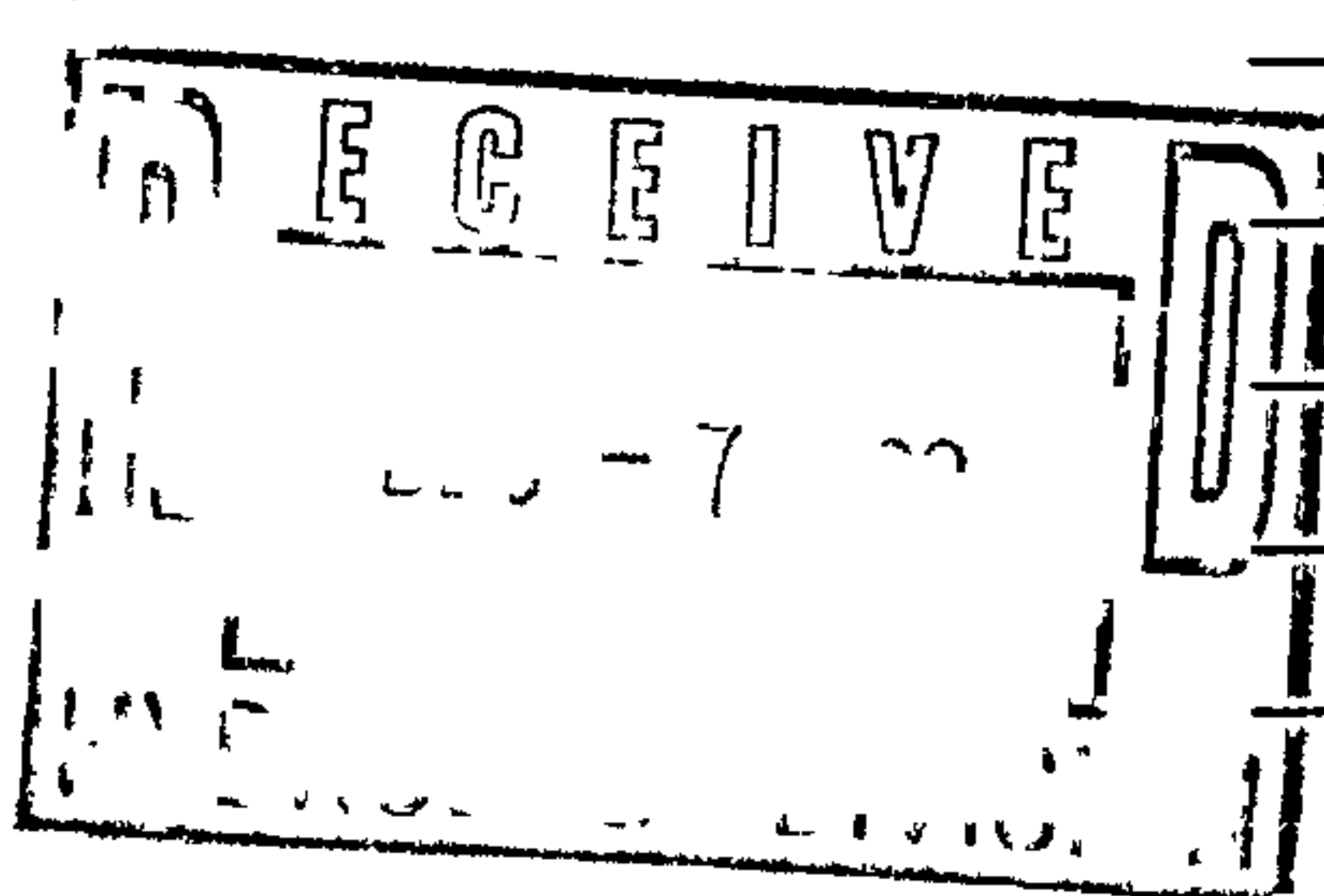
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☒ DRAINAGE PLAN
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☒ GRADING PLAN
☐ EROSION CONTROL PLAN
☐ ENGINEER'S CERTIFICATION
☐ OTHER _____

PRE-DESIGN MEETING:

- ☐ YES
☐ NO
☐ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

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☐ S.A.D. DRAINAGE REPORT
☐ DRAINAGE REQUIREMENTS
☐ OTHER _____ (SPECIFY)



DATE SUBMITTED: _____

BY: Guy Jackson

DRAINAGE INFORMATION SHEET

PROJECT TITLE: Kruzich - PRD ZONE ATLAS/DRNG. FILE #: F-21/D53b
 DRB #: _____ EPC #: Z 93-33 WORK ORDER #: _____
 LEGAL DESCRIPTION: Lot C, Montgomery Partners
 CITY ADDRESS: West side Pitt Street, south of Lagrima de Oro
 ENGINEERING FIRM: BPLW Arch & Eng, Inc CONTACT: Stere Crawford
2400 Louisiana Blvd, Suite 400, NE
 ADDRESS: ABQ, NM 87110 PHONE: 881-2759
 OWNER: _____ CONTACT: _____
 ADDRESS: _____ PHONE: _____
 ARCHITECT: _____ CONTACT: _____
 ADDRESS: _____ PHONE: _____
 SURVEYOR: _____ CONTACT: _____
 ADDRESS: _____ PHONE: _____
 CONTRACTOR: _____ CONTACT: _____
 ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL:

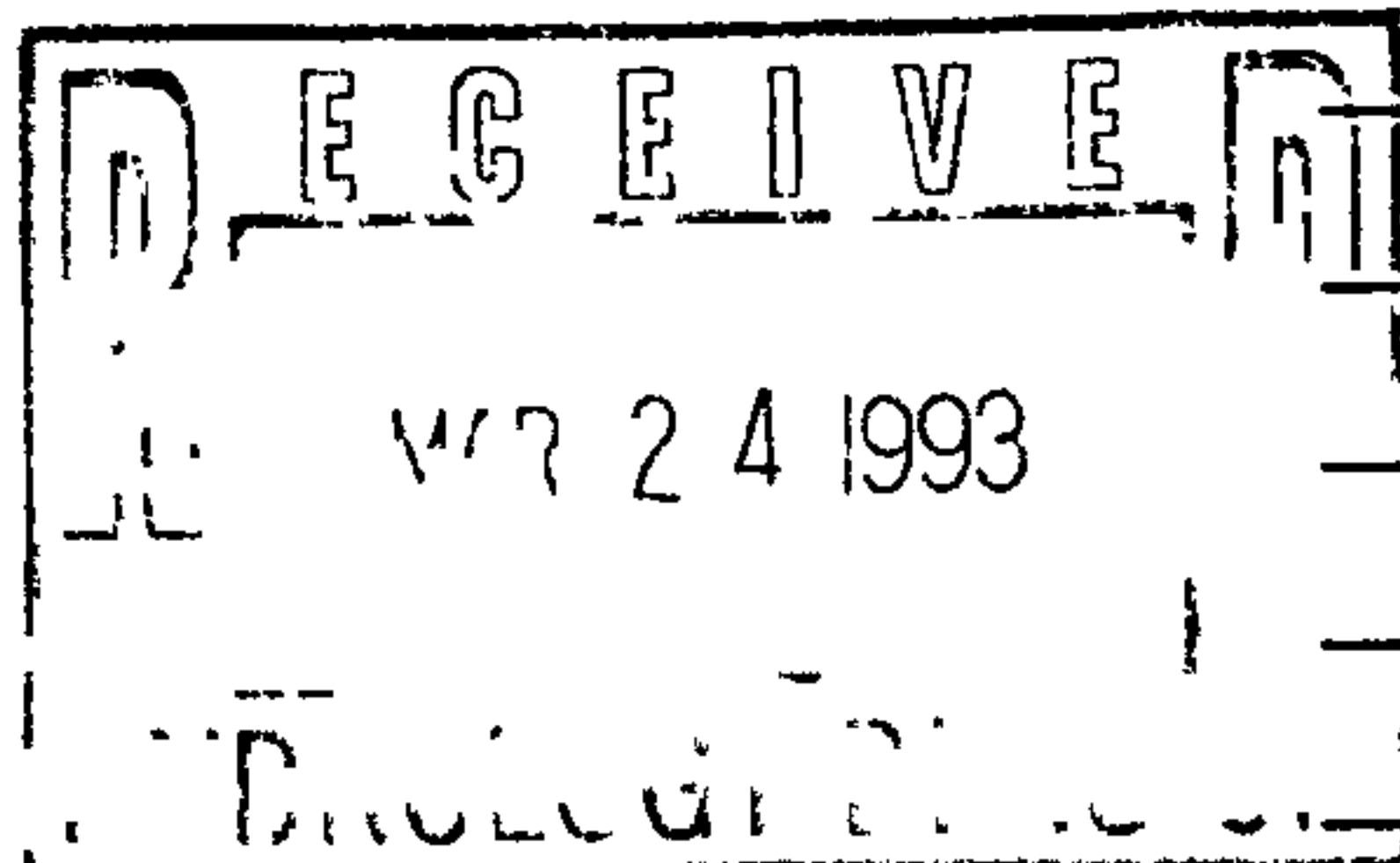
____ DRAINAGE REPORT
 ____ DRAINAGE PLAN
☒ CONCEPTUAL GRADING & DRAINAGE PLAN *(Resubmittal)*
 ____ GRADING PLAN
 ____ EROSION CONTROL PLAN
 ____ ENGINEER'S CERTIFICATION
 ____ OTHER _____

CHECK TYPE OF APPROVAL SOUGHT:

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☒ S. DEV. PLAN FOR SUB'D. APPROVAL
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 ____ GRADING PERMIT APPROVAL
 ____ PAVING PERMIT APPROVAL
 ____ S.A.D. DRAINAGE REPORT
 ____ DRAINAGE REQUIREMENTS
 ____ OTHER _____ (SPECIFY)

PRE-DESIGN MEETING:

☒ YES
☒ NO
 ____ COPY PROVIDED



DATE SUBMITTED: March 24, 1993
 BY: [Signature]



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

March 30, 1993

Steve Crawford
B.P.L.W. Architects & Engineer's Inc.
2400 Louisiana Blvd. NE Suite 400
Albuquerque, NM 87110

RE: REVISED CONCEPTUAL DRAINAGE PLAN FOR KRUZICH-PDR (F21-D53B) REVISION
DATED 3/24/93.

Dear Mr. Crawford:

Based on the information provided on your March 24, 1993 resubmittal, the above referenced site is approved for Site Development.

Please be advised that prior to Preliminary Plat, Final Plat, and Building Permit release, the additional comments on my March 10, 1993 correspondence to you are still valid and must be addressed.

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

Sincerely,

Bernie J. Montoya, CE
Engineering Assistant

BJM/d1/WPHYD/7647

xc: File

PUBLIC WORKS DEPARTMENT



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

March 10, 1993

Steve Crawford
B.P.L.W. Architects & Engineer's Inc.
2400 Louisiana Blvd. NE Suite 400
Albuquerque, NM 87110

RE: CONCEPTUAL DRAINAGE PLAN FOR KRUZICH-PDR (F21-D53B) ENGINEER'S STAMP
DATED 2/26/93.

Dear Mr. Crawford:

Based on the information provided on your March 1, 1993 submittal, listed are some concerns that will need to be addressed prior to final approval:

1. For Site Plan Approval:

- ✓ a. How do you propose to drain the ponds. All ponds must be drained within 24 hours by Ordinance.
- ✓ b. Your pond elevations are lower than the street grades. How will this impact the fact that you must drain the ponds?
- ✓ c. What areas will be paved?
- ✓ d. Finish floor elevations must be to full mean sea level.
- ✓ e. Is there a common access easement between the existing vet clinic and the proposed site?
- ✓ f. Drainage file No. F21-D53A will probably give you more insight as to how Lot C is supposed to drain.

2. Building Permit Approval:


- a. Finish floor elevations to full mean sea level.
- b. T.B.M. location, description and elevation must be permanently marked.

PUBLIC WORKS DEPARTMENT

- c. No ponding is allowed within 15' feet from planned or existing structure or closer than 15' feet from the property line minus the required setback on adjacent property. For ponds 18" deep or less, water may be impounded adjacent to street R.O.W. For ponds deeper than 18" , water shall not pond closer than 15' feet to the street pavement or curb and gutter. Ponds 18" or deeper will require fencing.
- d. Spot elevations to determine slopes and direction of flow.
- e. Typical ponding section with spot elevations and discharge inverts.
- f. Location and size of emergency spillways.
- g. Hydraulics for all pipes and spillways.
- h. Drainage basin divide location showing where each basin is draining to.
- i. All other applicable items from the D.P.M. Checklist.
- j. Elevation at property line adjacent to the street must be 1' foot above flowline.

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

Sincerely,


Bernie J. Montoya, CE
Engineering Assistant

BJM/d1/WPHYD/7594

xc: 'File'



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

March 7, 1994

Jeffrey R. Bergmann
BPLW Architects & Engineers
2400 Louisiana NE
Albuquerque, NM 87110

RE: REVISED DRAINAGE/GRADING PLAN FOR KRUZICH P.R.D. (F21-D53B)
ENGINEER'S STAMP DATED 3/2/94.

Dear Mr. Bergmann:

Based on the information provided on your March 3, 1994 resubmittal, the above referenced site is approved for Building & Rough Grading Permit.

Please be advised that 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/d1/WPHYD/7647

c: Andrew Garcia
File

DRAINAGE INFORMATION SHEET

PROJECT TITLE KRUZICH PRD ZONE ATLAS/DRWG. FILE # FZ1-D53B

DRB#: 2-93-33 EPC # _____ WORK ORDER # 4919.90

LEGAL DESCRIPTION: LOT C o S Montgomery Street Partnership

CITY ADDRESS: _____

ENGINEERING FIRM: BPLW

CONTACT: Guy Jackson

ADDRESS: 2400 Louisiana NE

PHONE: 881-2759

OWNER: Skip Kruzich

CONTACT: Skip Kruzich

ADDRESS: _____

PHONE: 207-1418

ARCHITECT: _____

CONTACT: _____

ADDRESS: _____

PHONE: _____

SURVEYOR: JMA

CONTACT: Chuck Cala

ADDRESS: _____

PHONE: 345-4250

CONTRACTOR: Dick Hofland

CONTACT: Dick Hofland

ADDRESS: _____

PHONE: 1-805-252-6037

TYPE OF SUBMITTAL:

- ☐ DRAINAGE REPORT
- ☒ DRAINAGE PLAN
- ☐ CONCEPTUAL GRADING & DRAINAGE PLAN
- ☒ GRADING PLAN
- ☐ EROSION CONTROL PLAN
- ☐ ENGINEER'S CERTIFICATION
- ☐ OTHER Revision

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
- ☒ BUILDING PERMIT APPROVAL
- ☐ CERTIFICATE OF OCCUPANCY APPROVAL
- ☒ GRADING PERMIT APPROVALS
- ☐ PAVING PERMIT APPROVAL
- ☐ S.A.B. DRAINAGE REPORT
- ☐ DRAINAGE REQUIREMENTS
- ☐ OTHER _____ (SPECIFY)

DATE SUBMITTED: 1/13/05

BY: Guy Jackson

BPLW

Architects & Engineers, Inc.

American Financial Center #5
2400 Louisiana Blvd. NE
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Albuquerque, New Mexico 87110
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W. Paul Waters, AIA

January 13, 1995

**Bernie J. Montoya, CE
City of Albuquerque Public Works
Hydrology Department
PO Box 1293
Albuquerque, NM 87103**

**Re: *Revisions to the Grading Plan for
Kruzich PRD (F21-D53B)
BPLW Project Number: 92053***

Dear Bernie:

Attached for your review and comment is the following:

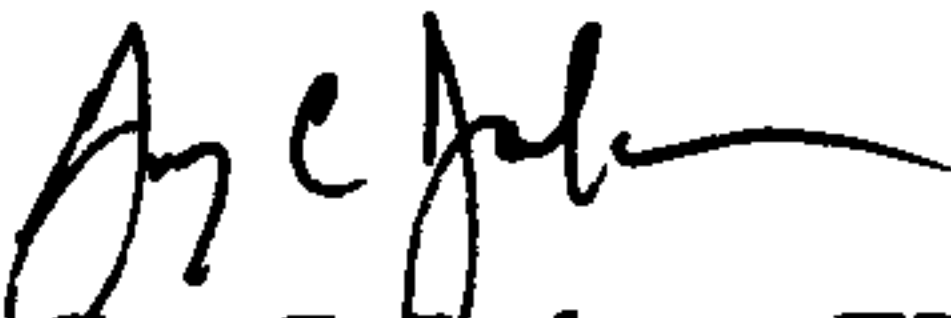
**One (1) Drainage Information Sheet
Two (2) Sets of Plans
One (1) Copy of the Revised COA Approved Letter Dated March 7, 1994.**

This submittal shows revisions to the Grading Plan due to architectural changes on the housing units. These changes required an entire re-grading of the site, but did not effect drainage basins or hydraulic calculations. Therefore, the revisions shown on the plan are in substantial accordance with the previously approved plan dated March 7, 1994. Concurrently, we are resubmitting the Site Development Plan to Planning for administration approval. In an earlier phone conversation with Richard Dineen, the Site Development Plan revisions are minor enough not to have a DRB meeting.

If you have any questions concerning this submittal, please contact me.

Sincerely,

BPLW ARCHITECTS & ENGINEERS, INC.



**Guy C. Jackson, EI
Civil Engineering Department**

Attachment

**xc: Skip Kruzich
Gene Valentine, BPLW Architects & Engineers, Inc.
Jeff Bergmann, BPLW Architects & Engineers, Inc.**

92053.014

117-5
1000
1000





City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

March 7, 1994

Jeffrey R. Bergmann
BPLW Architects & Engineers
2400 Louisiana NE
Albuquerque, NM 87110

RE: REVISED DRAINAGE/GRADING PLAN FOR KRUZICH P.R.D. (F21-D53B)
ENGINEER'S STAMP DATED 3/2/94.

Dear Mr. Bergmann:

Based on the information provided on your March 3, 1994 resubmittal, the above referenced site is approved for Building & Rough Grading Permit.

Please be advised that prior to Certificate of Occupancy release, Engineer Certification per the D.P.M. checklist will be required.

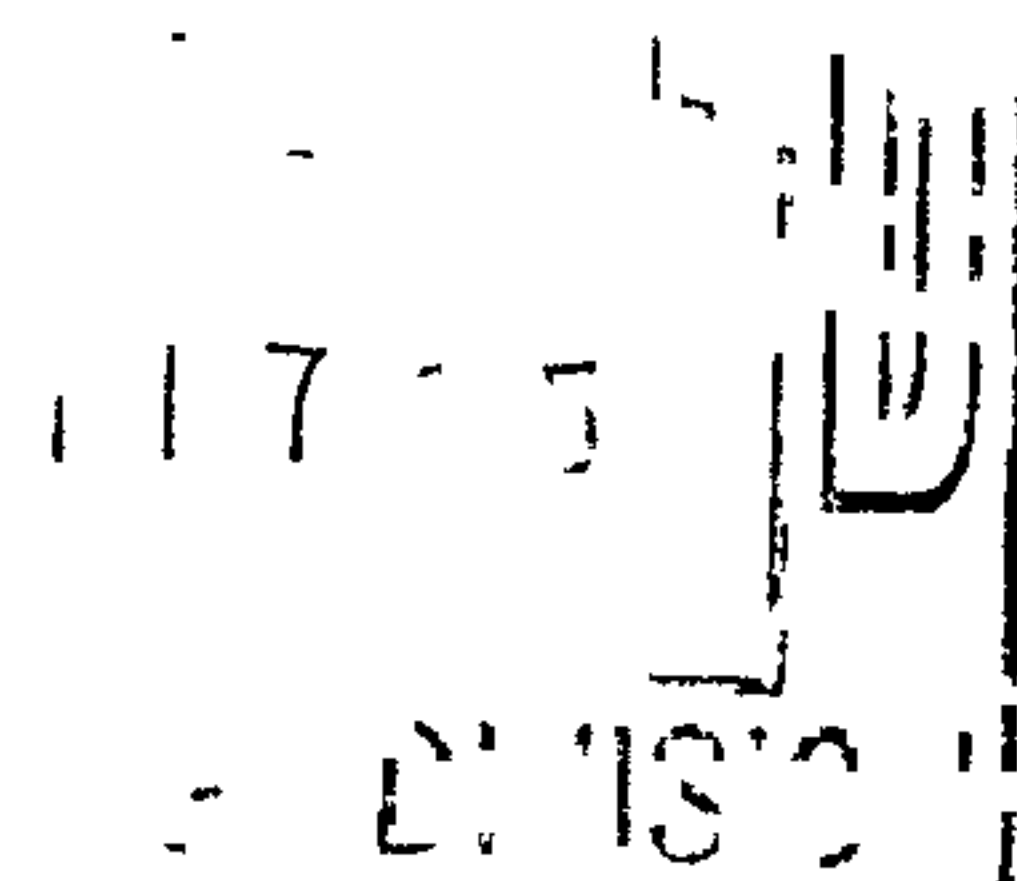
If I can be of further assistance, please feel free to contact me at 768-2667.

Sincerely,

Bernie J. Montoya, CE
Engineering Associate

BJM/d1/WPHYD/7647

c: Andrew Garcia
File



BPLW

Architects & Engineers, Inc.

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W. Paul Waters, AIA

March 1, 1994

Bernie J. Montoya, CE
City of Albuquerque Public Works
Hydrology Department
PO Box 1293
Albuquerque, NM 87103

**Re: Grading and Drainage Plan and Report for
Kruzich PRD (F21-D53B)
BPLW Project Number: 92053**

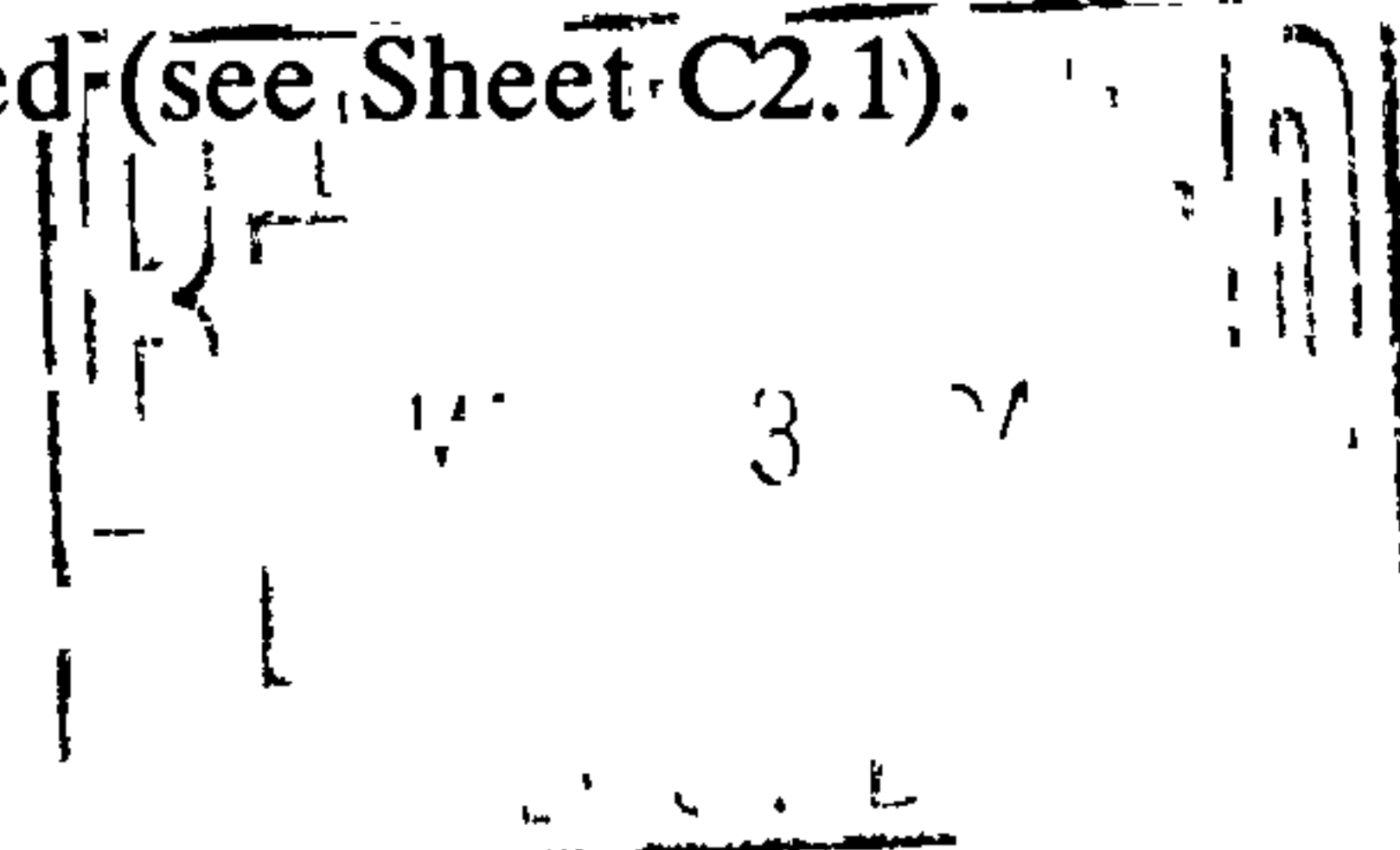
Dear Bernie:

Attached for your review and comment is the following:

One (1) Drainage Information Sheet
One (1) Copy of Drainage Report
Two (2) Sets of Plans (Drainage, Grading and Details)

This submittal is in reference to comments from your December 8, 1993 letter, which have been addressed as follows:

- 1) The 100 year water service elevations (WSEL) have been shown as required (see Sheet CD.1).
- 2) The direction and location of all roof drains have been shown as required (see Sheet CD.1)
- 3) Sediment control has been addressed by sizing the ponds up to an average of 28% of the required pond volumes. Also, the restrictive covenants for the condominium complex will require landscaping in all non-paving areas with sodding in all pond areas. In addition, the sump pump assembly has been designed with a 2" curb to trap any minor sedimentation (see sheet C5.1 - typical detail of pipe and pump).
- 4) Fencing/handrails have been indicated in areas where the ponds are deeper than 18" as required (see Sheet C2.1).



Mr. Bernie Montoya, CE
Grading and Drainage Plan Report for
Skip Kruzich
Page 2

- 5) Pond B will be gravity flow. The indication of a sump pump for this ponding was not needed (see Sheet C2.1).
- 6) The required water proofed cut-off walls in the ponding areas located within 15' of adjacent structures have been identified on the Grading Plan as required (see Sheet C2.1).

I hope that the above responses adequately satisfy your December 8, 1993 comments. If you have any questions concerning this project, please contact me.

Sincerely,

BPLW ARCHITECTS & ENGINEERS, INC.



Guy C. Jackson, E
Civil Engineering Department

Attachment

xc: Skip Kruzich
Gene Valentine
Jeff Bergmann



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

December 8, 1993

Jeffrey R. Bergmann
BPLW Architects & Engineers
2400 Louisiana NE
Albuquerque, NM 87110

RE: DRAINAGE PLAN FOR KRUZICH P.R.D. (F21-D53B) ENGINEER'S
STAMP DATED 12/6/93.

Dear Mr. Bergmann:

Based on the information provided on your December 7, 1993 submittal, listed are some concerns that will need to be addressed prior to final approval:

1. Indicate the 100-year water surface elevation at each pond within the plan drawing.
2. Direction & location of all roof drains.
3. type of sediment control at each pond and pipe, typical detail of pipe and pump.
4. Pond depths deeper than 18" require fencing. Please address.
5. On your narrative you indicate that pond B will have gravity flow, but the plan drawing indicates a sump pump. Please address.
6. Please identify on the plan drawing where water proofed cut off walls will be located

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

Sincerely,


Bernie J. Montoya, CE
Engineer Associate

BJM/d1/WPHYD/7647

xc: File

PUBLIC WORKS DEPARTMENT

PROJECT TITLE: KRUZICH PRD ZONE ATLAS/DRNG. FILE #: F21-D53B

DRB #: 93-343 EPC #: _____ WORK ORDER #: _____

LEGAL DESCRIPTION: Lot C Montgomery Partners

CITY ADDRESS: _____

ENGINEERING FIRM: BPLW CONTACT: Guy Jackson

ADDRESS: 2400 Louisiana NE PHONE: 881-2759

OWNER: Skip Kruzich CONTACT: Skip Kruzich

ADDRESS: _____ PHONE: 299-1418

ARCHITECT: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

SURVEYOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

CONTRACTOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL:

- ☒ DRAINAGE REPORT
☒ DRAINAGE PLAN
☐ CONCEPTUAL GRADING & DRAINAGE PLAN
☒ GRADING PLAN
☐ EROSION CONTROL PLAN
☐ ENGINEER'S CERTIFICATION
☐ OTHER _____

PRE-DESIGN MEETING:

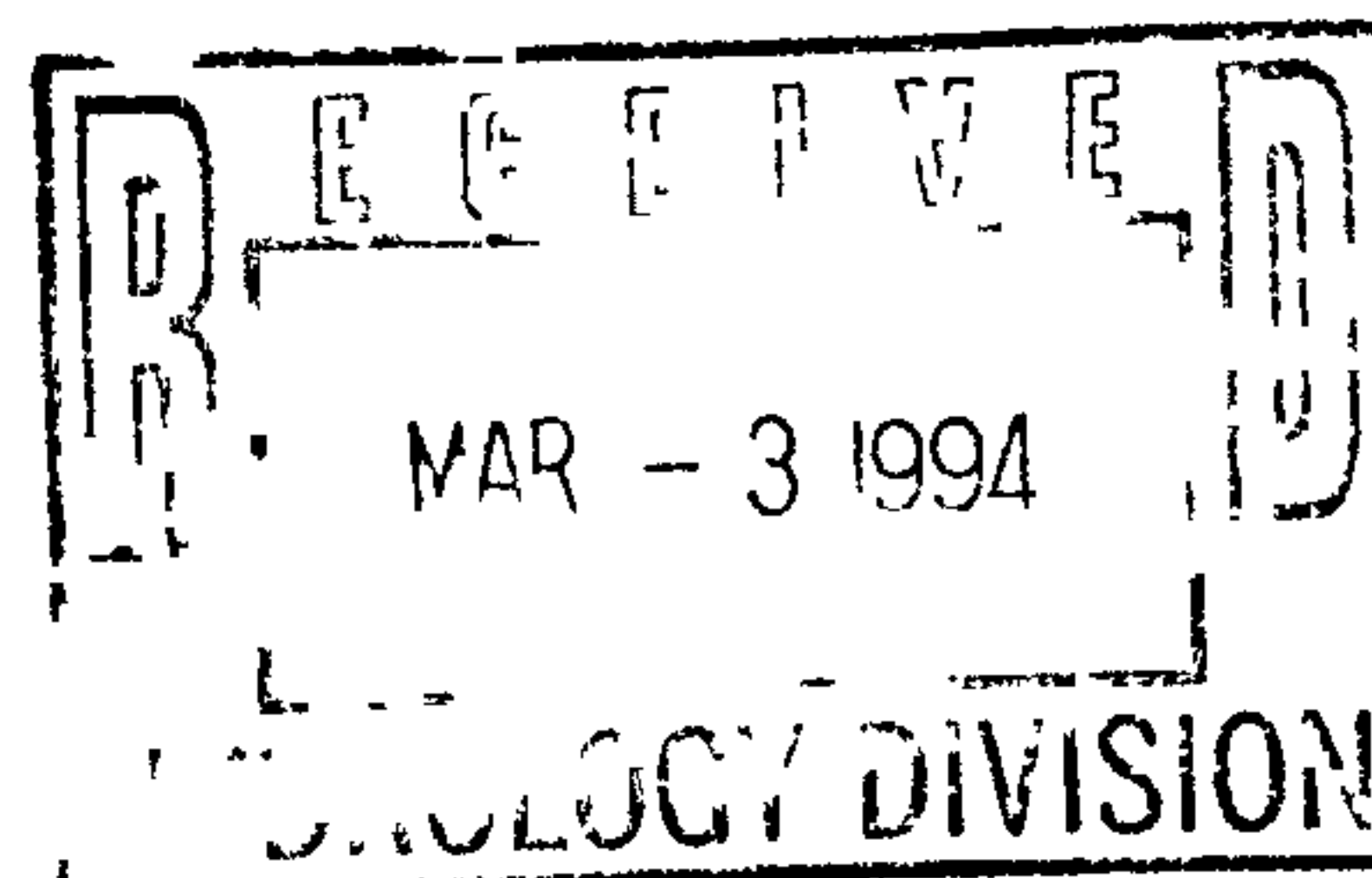
- ☐ YES
☐ NO
☐ COPY PROVIDED

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
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☐ FOUNDATION PERMIT APPROVAL
☒ BUILDING PERMIT APPROVAL
☐ CERTIFICATE OF OCCUPANCY APPROVAL
☒ GRADING PERMIT APPROVAL
☐ PAVING PERMIT APPROVAL
☐ S.A.D. DRAINAGE REPORT
☐ DRAINAGE REQUIREMENTS
☐ OTHER _____ (SPECIFY)

DATE SUBMITTED: 3/2/94

BY: GCS



BPLW

Architects & Engineers, Inc.

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Albuquerque, New Mexico 87110
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Jeffrey A. Stone, IES
Maureen M. Walter, AIA, CDT
W. Paul Waters, AIA

December 6, 1993

Bernie J. Montoya, CE
COA - Public Works
Hydrology Department
PO Box 1293
Albuquerque, NM 87103

Re: *Grading and Drainage Plan and Report*
for Kruzich PRD (F21-D53B)
BPLW Project Number: 92053

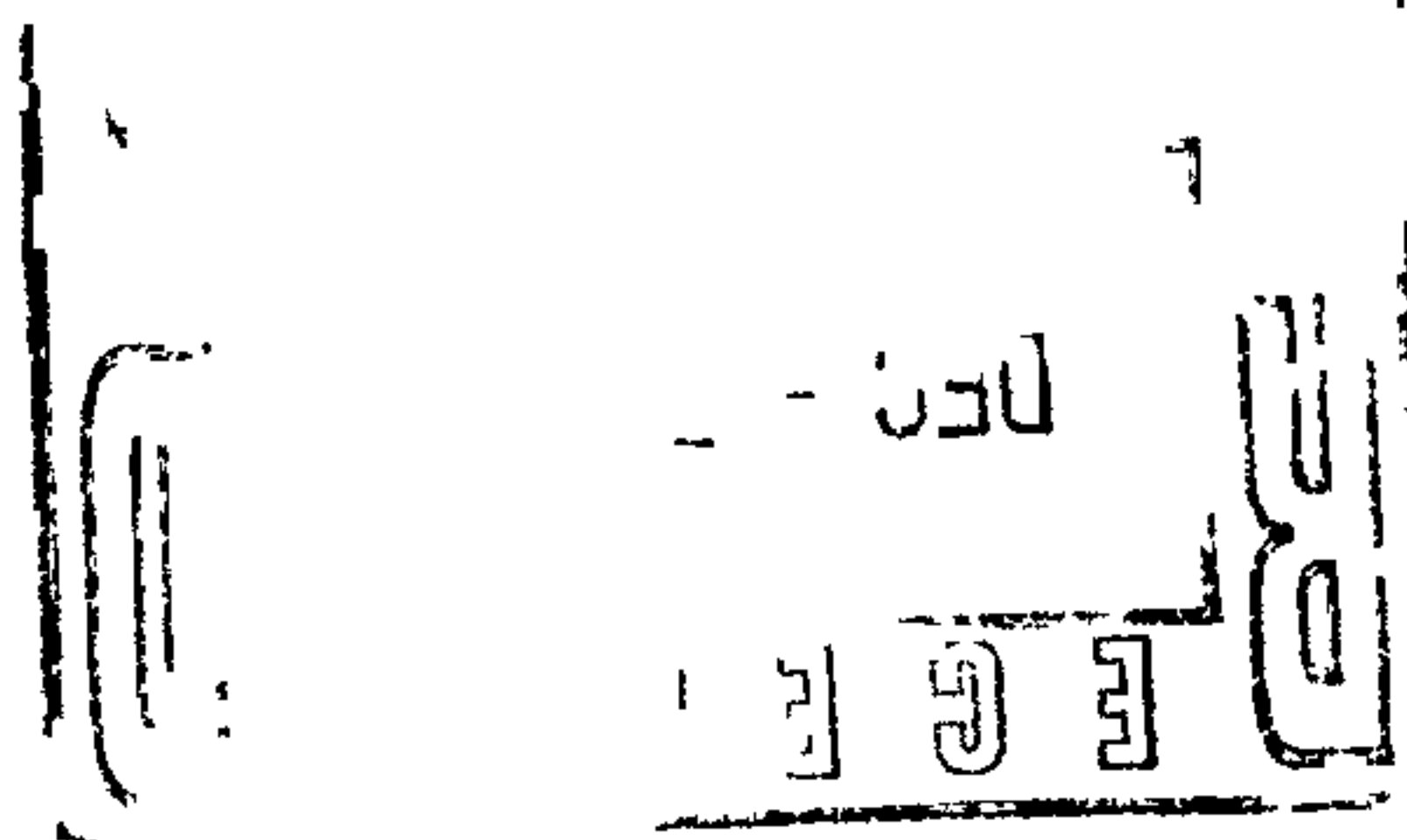
Dear Bernie:

Attached for your review and comment is the following:

One (1) Drainage Information Sheet
One (1) Copy of Drainage Report
Two (2) Sets of Plans (Grading, Drainage and Details)

This submittal is to incorporate the previously approved conceptual Drainage Plan for the referenced site for site plan approval, with a Grading and Drainage Plan for Building Permit and Rough Grading approval. The comments from your March 10, 1993, letter have been addressed as follows:

- ✓ 1) All finished floor elevations have been shown to mean sea level.
- ✓ 2) The T.B.M. location has been set, described and an elevation has been assigned to it.
- 3) Per our discussion in October, we have provided water proofed cut off walls to the proposed ponding areas where the points are within 15' of adjacent structures.
- ✓ 4) Spot elevations have been added to the Grading Plan as per DPM standards.
- ✓ 5) Typical ponding sections with spot elevations and inverts have been shown as required.
- ✓ 6) The location and sizing of emergency spillways have been shown as required.



Mr. Bernie J. Montoya, CE
Grading and Drainage Plan and Report
for Kruzich PRD (F21-D53B)


Page 2

- ✓ 7) All hydraulics for all pipes and spillways have been shown as required (see Drainage Report).
- ✓ 8) Drainage Basin have been identified as required (see the Drainage Plan).
- ✓ 9) The Grading/Drainage plan has been prepared per the DPM checklist.
- 10) The property line for the project site is located in the middle of the private street. The property has been graded with 1/2 of the new street (the north side) to not carry flows in the gutter, the developed runoff in the street will drain southwest as shown on the Drainage Plan. The 4' wide sidewalk is located behind the curb and set at 2% with no landscaped area. Roll type curb is used which will provide a total height of .41' at the back of the sidewalk. If the elevation of the back of the sidewalk is raised to 1', we will not be able to keep the ADA required 2% maximum cross slope on the sidewalk.

I hope that the above responses adequately satisfy your March 10 comments. If you have any questions concerning this project, please contact me.

Sincerely,

BPLW ARCHITECTS & ENGINEERS, INC.

 FOR GUY JACKSON

Guy Jackson, EI
Civil Engineering Department

Attachment

xc: Gene Valentine, BPLW Architects & Engineers, Inc.
Jeff Bergmann, BPLW Architects & Engineers, Inc.
Annie Manwill, BPLW Architects & Engineers, Inc.

**DRAINAGE PLAN
FOR
KRUZICH PRD
MONTGOMERY PROPERTIES
Albuquerque, New Mexico**

BPLW PROJECT NUMBER: 92053

March 1, 1994

Prepared By: Guy C. Jackson, EI

Reviewed By: Jeffrey R. Bergmann, PE # 10853

BPLW



Architects & Engineers, Inc.

Albuquerque, New Mexico

**DRAINAGE PLAN
FOR
KRZICH PRD
MONTGOMERY PROPERTIES
Albuquerque, New Mexico**

BPLW PROJECT NUMBER: 92053

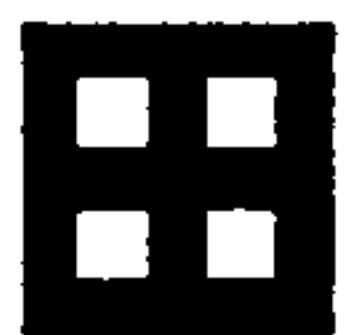
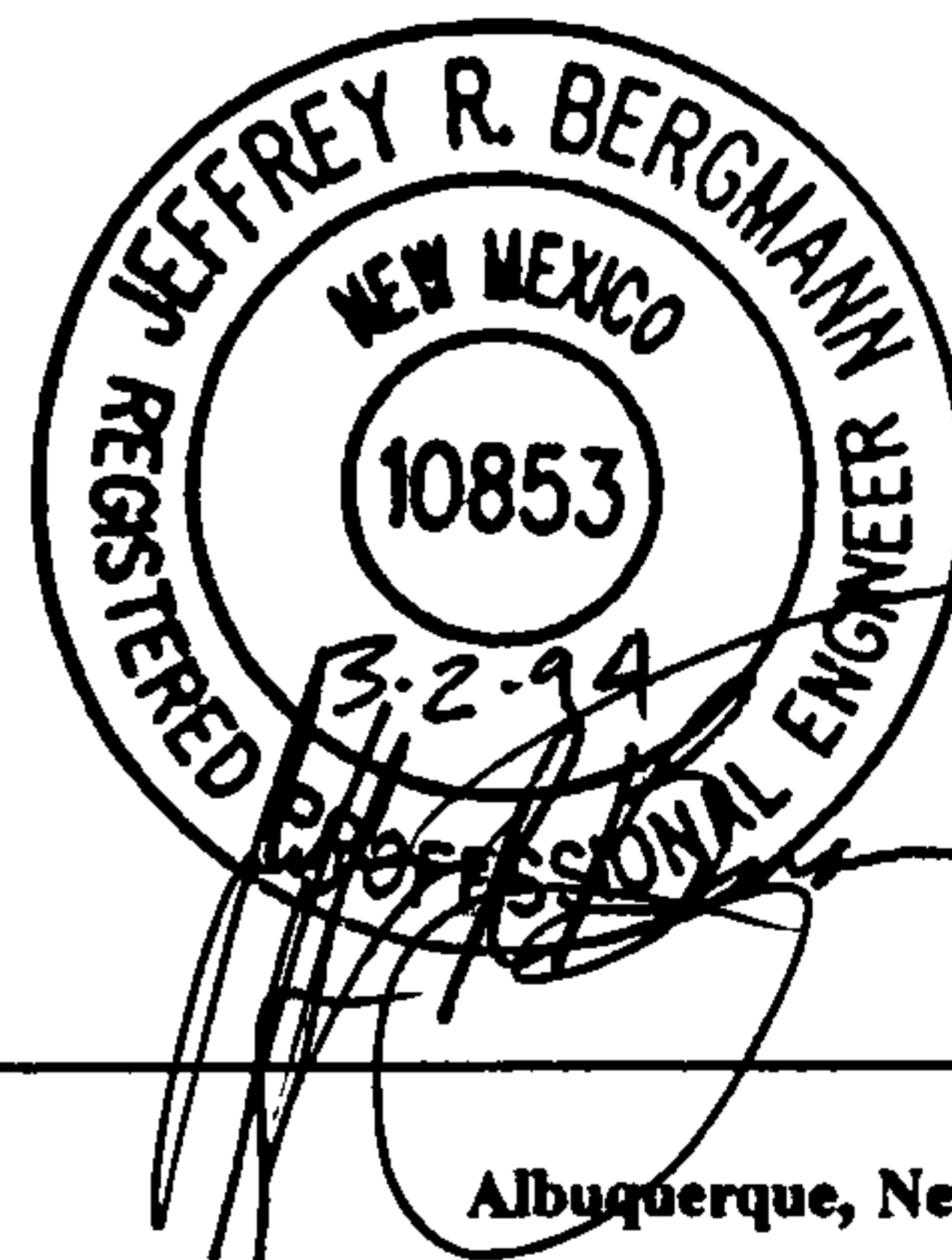
March 1, 1994

Prepared By: Guy C. Jackson, EI

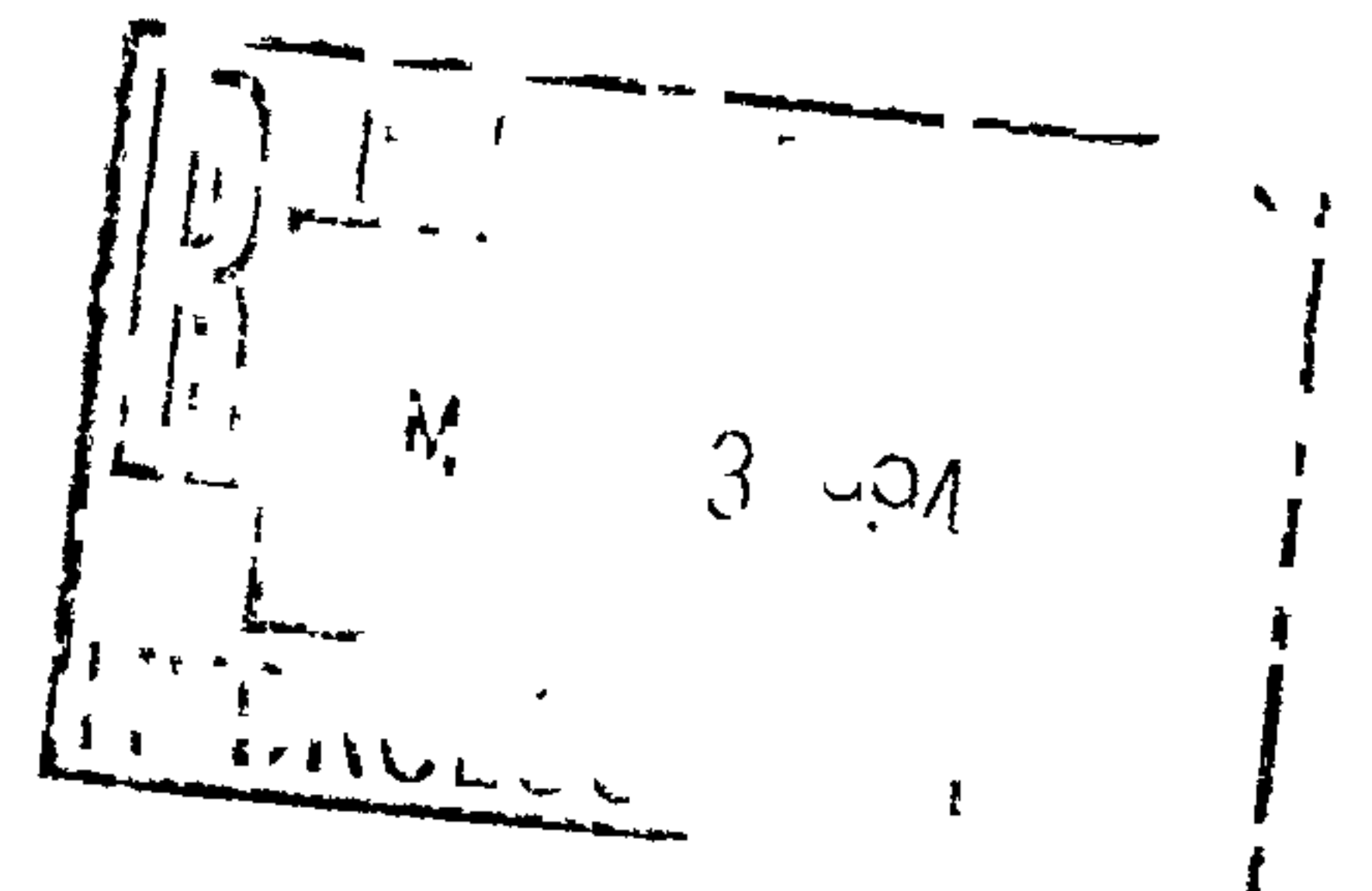
Reviewed By: Jeffrey R. Bergmann, PE # 10853

BPLW

Architects & Engineers, Inc.



Albuquerque, New Mexico



DRAINAGE PLAN
KRUZICH PRD
Albuquerque, New Mexico
BPLW PROJECT NUMBER: 92053

Table of Contents

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Plate I - Drainage Plan	
Plate II - Grading Plan	
Plate III - Details	

EXISTING CONDITIONS

The project is located on the southwest corner of the intersection of Lagrima De Oro Road, NE and Pitt Street NE. Currently, the site is undeveloped with natural vegetation consisting of weeds and grasses. The site slopes from northeast to southwest at an average slope of 4.2% to an existing site occupied by the Lagrima De Oro Veterinary Clinic at the south boundary of the site. Based on the SCS Soil Survey for Bernalillo County, Plate 22, reveals the site soils are of the Etc type which are classified as slightly silty sands with a hydrologic soil group of B. Historic flows for the 100 year storms are shown in Appendix A. No offsite flows drain onto the project site.

DEVELOPED CONDITIONS

The Drainage Plan shows:

- 1) **Drainage Basin Boundaries with developed flow rates from each basin.**
- 2) **Pond locations and volumes with their respective controlled discharge rates.**
- 3) **General flow direction arrows.**
- 4) **The proposed improvements with specific land treatment descriptions.**

The Grading Plan shows:

- 1) **Existing and proposed grades indicated by spot elevations and contours at 1'-0" intervals.**
- 2) **Continuity between existing and proposed grades.**
- 3) **The limit and character of the proposed improvements.**

As shown by this plan (see Appendix B - Plates I & II), the proposed improvements consist of the construction of 14 single family condominiums with adjacent paving and ponding areas. In the developed condition, runoff generated by the proposed construction will be collected into four ponds from their respective drainage basins, with a portion of the site (the proposed street and cul-de-sac) which will free discharge. The runoff collected by the ponds will drain onto the existing Lagrima De Oro Veterinary Clinic with a controlled release rate which will be combined with the free discharge generated from the street and cul-de-sac improvements to total a developed 100 year event runoff of 1.8 cfs at the southwest corner of the project site. Flows from this point will continue south to an existing detention pond at the south side of the Lagrima De Oro Veterinary Clinic which was designed to accommodate 1.8 cfs from the project site (see the approved Drainage Plan - Hydrology File # F21-053A for COA Project # 3698; Lagrima Del Oro Veterinary Clinic and Pitt Street NE).

HYDROLOGIC COMPUTATIONS

The calculations which appear in Appendix A analyze both the existing and developed conditions for the 100 year event. The new rational method hydrologic procedures identified in the proposed Chapter 22, Section 22.2 of the Development Process Manual (DPM, January 1993, Update) were utilized to determine the peak flowrates and volume quantities.

HYDROLOGIC DISCHARGE DATA (100 YEAR)						
Existing Conditions Zone 4						
Basin	Area	% Land Treatment				Discharge
		A	B	C	D	
A,B,C,D,E, & F	.9641AC	-	-	100	-	3.6 cfs

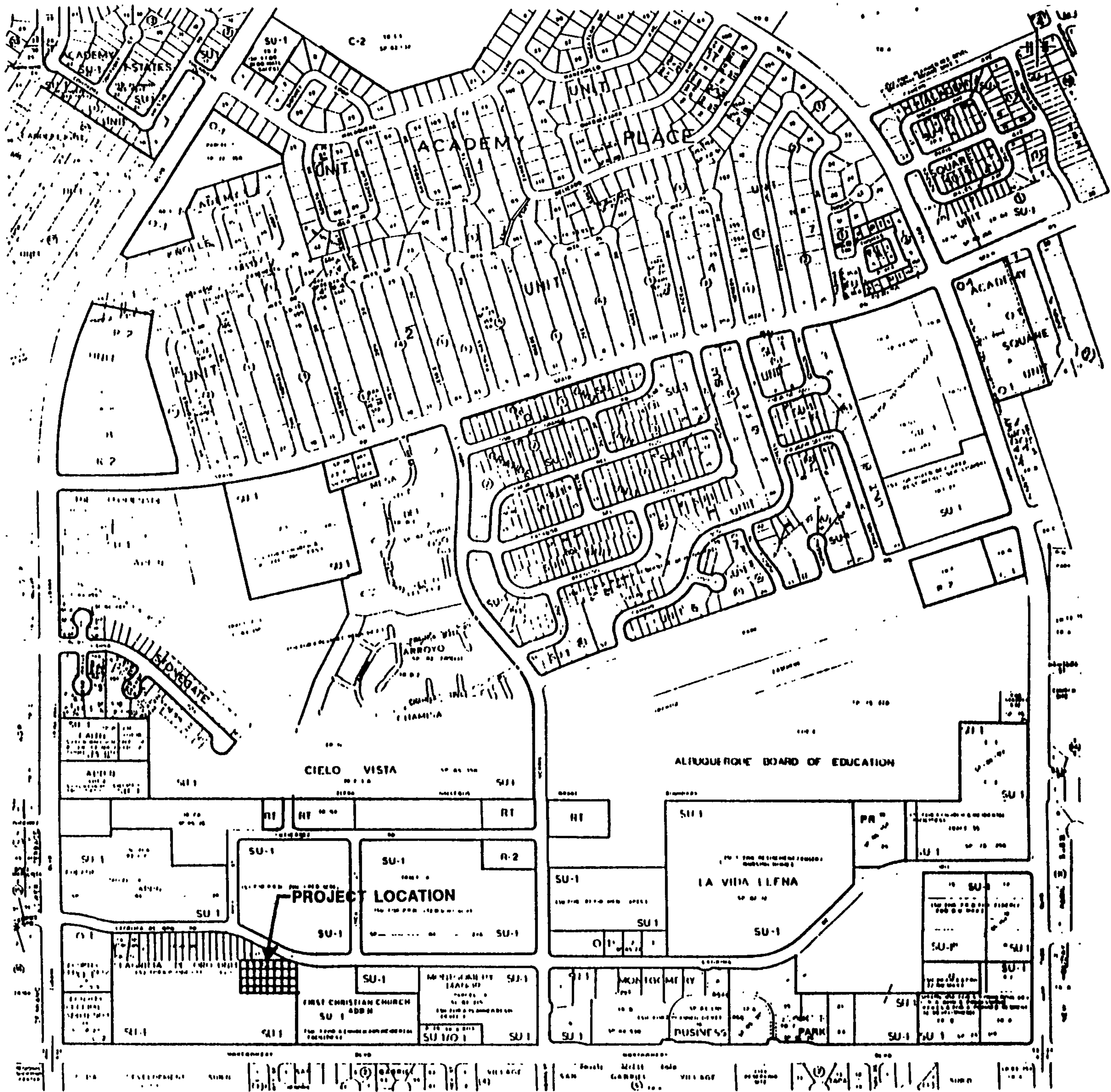
HYDROLOGIC DISCHARGE DATA (100 YEAR)						
Developed Conditions Zone 4						
Basin	Area	% Land Treatment				Discharge
		A	B	C	D	
A	.2645AC	-	30	-	70	1.2 cfs
B	.2047	-	30	-	70	.93 cfs
C	.1745	-	-	-	90	.82 cfs
D	.0399	-	40	-	60	.17 cfs
E	.1636	-	40	-	60	.71 cfs
F	.1169	-	4-	-	60	.50 cfs
.9641AC						4.3 cfs

ACTUAL BASIN DISCHARGE AND POND VOLUMES				
Basin	Pond Discharge	Free Discharge	Required Pond Volume	Pond Volume Provided
A	.17 cfs	-	1460 cf	1500
B	.24 cfs	-	1250 cf	1450
C	-	.82 cfs	-	-
D	-	.17 cfs	-	-
E	.10 cfs	-	850	1000
F	.30 cfs	-	206	350
TOTAL	.81 cfs	.99 cfs		

Total Discharge From Site = .81 + .99 = 1.8 cfs

See Basin Hydrograph Calculations on the following pages

APPENDIX A



1000' 0000000
1 0 0
0 0 0
000 00
1000000 000000 0000
0 001 001

1000' 0000000
1 0 0
0 0 0
000 00

F-21-7
1000' 0000000
1 0 0
0 0 0
000 00

HYDROLOGIC CALCULATIONS

Grand Cover Information

From SCS Bernalillo County Soil Survey
Plate 22: Etc - Hydrologic Soil Group: B

$$A_{TOTAL} = .9641 AC$$

$$Rainfall Zone = 4$$

1) Existing Conditions

$$A_{UNDEV} = A_{TOTAL} = .9641 AC$$

$$Surface Treatment = 100\% C$$

$$Q_{100} = \text{Peak Discharge} \times \text{Area}$$

$$= 3.73 \text{ cfs/AC} \times .9641 = 3.6 \text{ cfs}$$

$$E_{weighted} = 1.46 \text{ inches}$$

$$V_{100} = E \times A_{TOTAL} = 1.46 \times .9641 = 1.4076 \text{ in} \cdot \text{AC} = 5100 \text{ cfs}$$

2) Developed Conditions

$$Q_p = 2.92 (A_{Area B\%}) + 5.25 (A_{Area D\%})$$

% LAND TREATMENT

Basin	Area _T	Area B%	Area D%	A	B	C	D	Q _{peak}	EWT	Volume
A	.2645	.0794	.1852	-	30	-	70	1.2	1.85	1715
B	.2047	.0614	.1433	-	30	-	70	.93	2.17	1614
C	.1745	-	.1745	-	-	-	100	.82	2.38	1505
D	.0399	.0160	.0239	-	40	-	60	.17	2.02	292
E	.1636	.0654	.0982	-	40	-	60	.71	2.02	1197
F	.1169	.0468	.0701	-	40	-	60	.50	2.02	855

$$.9641 AC \quad .2690 AC \quad .6952 AC$$

$$4.3 \text{ cfs} \quad 7238 \text{ cfs}$$

$$\text{Copies to: } EWT = E_{BAR} + E_{DAD} = 1.08(1.2690) + 2.64(.6952) = 2.10 \text{ in (AVE)}$$



Project _____

Subject _____

Project No. _____

Date 12/2/93 By _____

- ☐ Memorandum
☐ Telephone record
☐ Note to the file
☐ Minutes of meeting
☐ To be typed
☐ _____

3) HYDROGRAPH (Total Site)

$$t_B (\text{base time}) = \frac{2.107 \times E \times A_{TOT}}{Q_P} - \frac{.25 \times A_D}{A_T}$$

$$= \frac{2.107 (2.20) (.9641)}{4.3} - \frac{.25 (.6952)}{.9641}$$

$$= .869 \text{ hrs} = 51 \text{ min}$$

$$t_c = .20 \text{ hrs}$$

$$\begin{aligned}
 t_p (\text{time to peak}) &= .7 \times t_c + \frac{1.6 - (A_D/A_T)}{12} \\
 &= .7 (.20) + \frac{1.6 - (.6778/.9641)}{12} \\
 &= .215 \text{ hr} \\
 &= 12.9 \text{ min} = 13 \text{ min}
 \end{aligned}$$

$$\begin{aligned}
 \text{Duration of Peak} &= .25 \times \frac{A_D}{A_T} = .25 \left(\frac{.6952}{.9641} \right) = .1758 \text{ hr} \\
 &= 10.8 \text{ min} \\
 &= 11 \text{ min}
 \end{aligned}$$

The project site is to generate a total developed discharge of 1.8 cfs to lot C, south of the existing Veterinary Clinic Building. (see the approved Drainage Plan hydrology File # FZ1-D53A for COA project # 3698, Laguna Del Oro Veterinary Clinic & Pitt St. NE)



Project _____

Subject _____

Project No. _____ Date _____ By _____

- ☐ Memorandum
- ☐ Telephone record
- ☐ Note to the file
- ☐ Minutes of meeting
- ☐ To be typed
- ☐ _____

(total site),
by sim. & s

$$\frac{4.3}{13} = \frac{4.3 - 1.8}{X_1}, \quad X_1 = 7.6 \text{ min}$$

$$\frac{4.3}{27} = \frac{4.3 - 1.8}{X_2}, \quad X_2 = 15.7 \text{ min}$$

$$V_1 = \frac{1}{2}(X_1)(4.3 - 1.8) = \frac{1}{2}(7.6)(2.5) = 9.5 \text{ cfs-min}$$

$$V_2 = 11(4.3 - 1.8) = 11(2.5) = 27.5 \text{ cfs-min}$$

$$V_3 = \frac{1}{2}(X_2)(4.3 - 1.8) = \frac{1}{2}(15.7)(2.5) = \frac{19.6 \text{ cfs-min}}{56.63 \text{ cfs-min}}$$

$$V_{\text{TOTAL}} = V_1 + V_2 + V_3 = 56.6 \text{ cfs-min} = 3397 \text{ cfs (Detention Volume)}$$



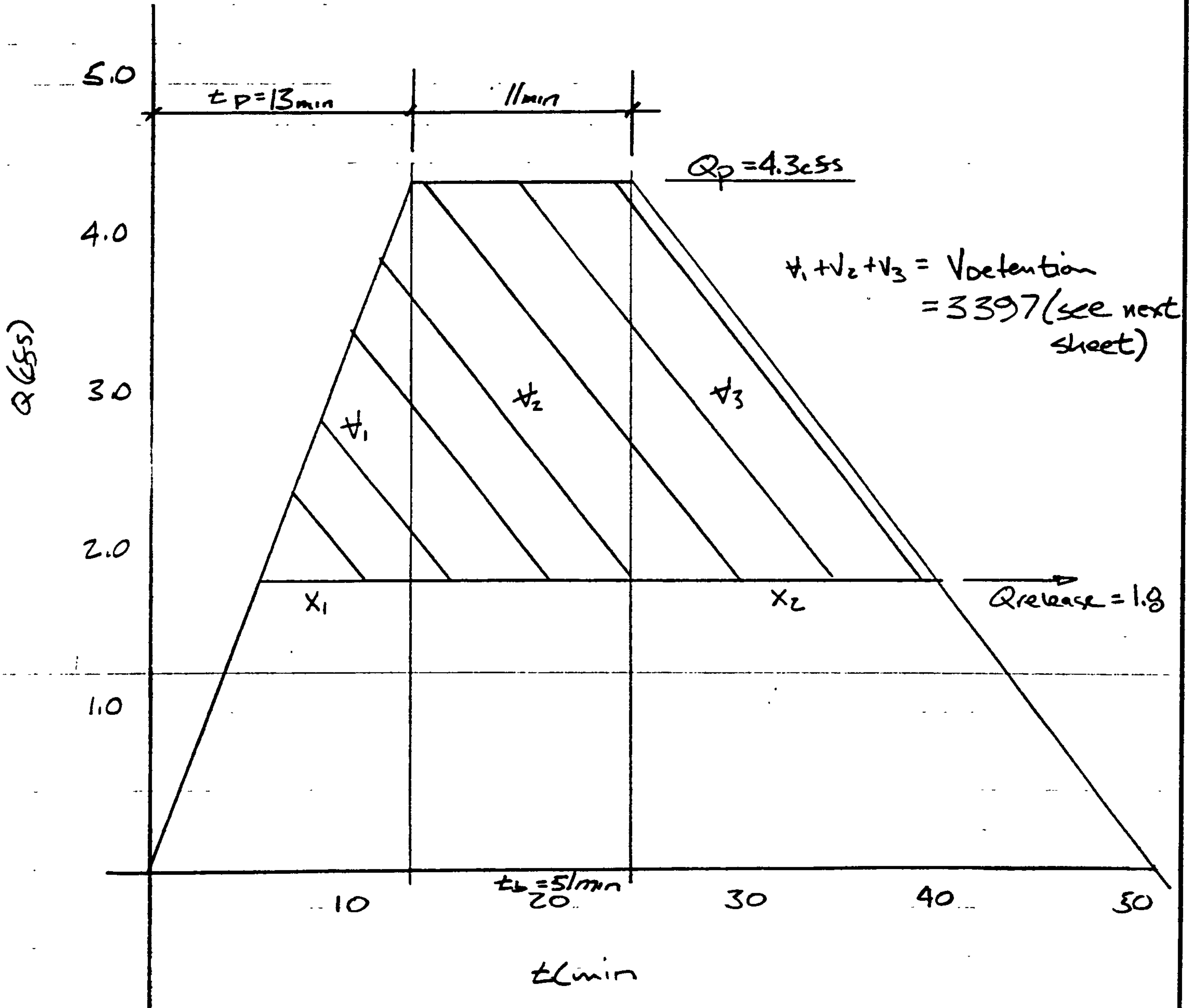
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HYDROGRAPH (TOTAL SITE)



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POND A (BASIN A)

$$A_T = .2645 \text{ AC}, A_{D\%} = .0794 \text{ AC}, A_{D\%} = .1852 \text{ AC}, E_{wt} = 1.85 \text{ in}$$

$$Q_p = 1.2 \text{ cfs}, V = 1775 \text{ cfs}$$

Hydrograph:

$$t_B = \frac{2.107 (E_{wt}) (A_T)}{Q_p} - \frac{.25 (A_{D\%})}{A_T}$$

$$= \frac{2.107 (1.85) .2645}{1.2} - \frac{.25 (.1852)}{.2645} = .684 \text{ hr}$$

$$= 41 \text{ min}$$

$$t_c = .20 \text{ hrs}$$

$$t_p = .7(t_c) + \frac{1.6 - A_{D\%}/A_T}{12} = .7(.2) + \frac{1.6 - .1852/.2645}{12}$$

$$= .21 \text{ hr} = 12.6 \text{ min}$$

$$\text{Duration at Peak} = .25 \left(\frac{A_D}{A_T} \right) = .25 \left(\frac{.1852}{.2645} \right) = .175 \text{ hr} = 10.5 \text{ min}$$



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POND A

by similar Δ 's

$$\frac{1.2}{13} = \frac{1.2 - .17}{x_1}, x_1 = 11.2 \text{ min}$$

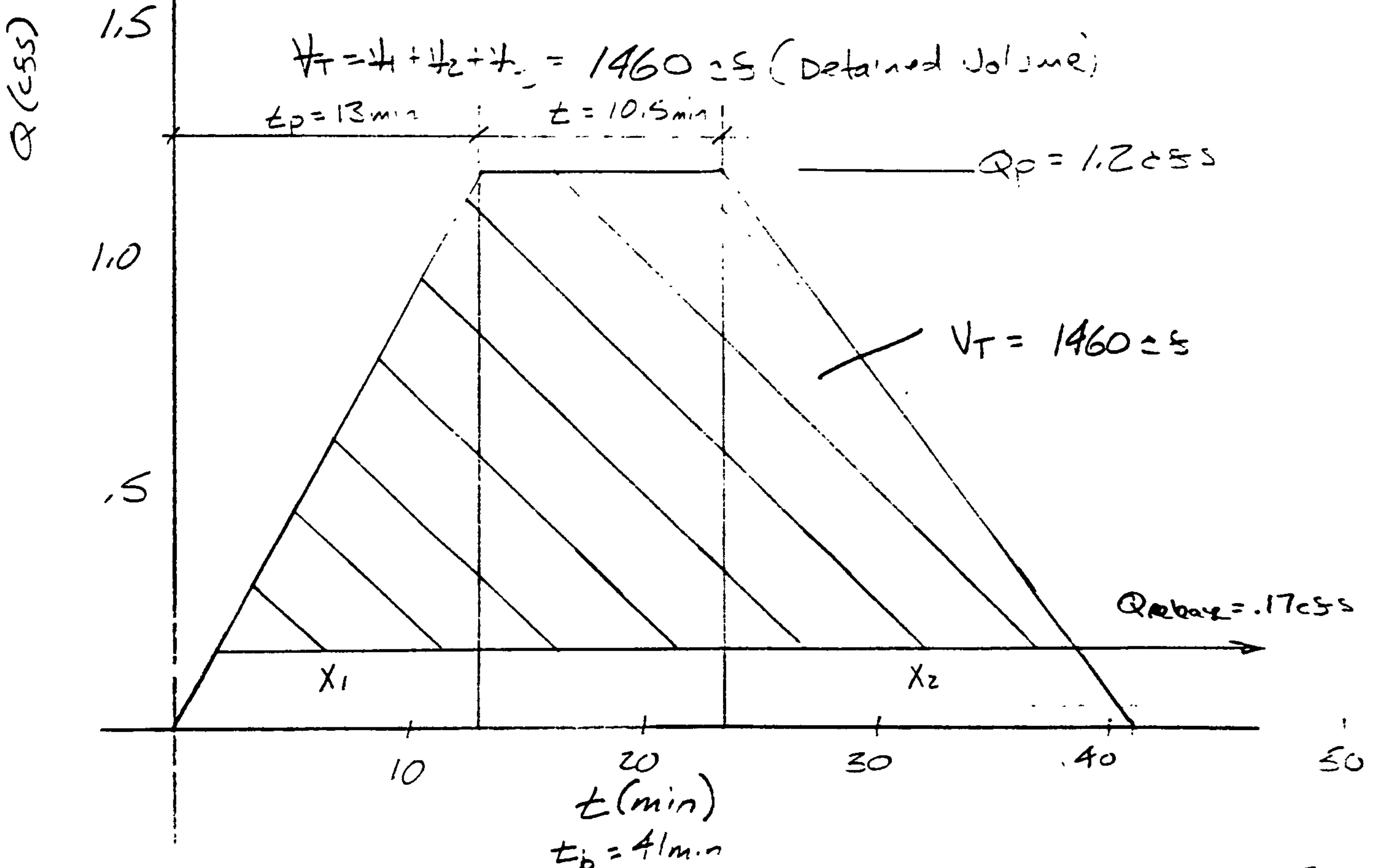
$$\frac{1.2}{41.235} = \frac{1.2 - .17}{x_2}, x_2 = 15.0 \text{ min}$$

$$V_1 = \frac{1}{2}(11.2)(1.2 - .17) = 5.8 \text{ cfs-min} = 348 \text{ cfs}$$

$$V_2 = 10.5(1.2 - .17) = 10.8 \text{ cfs-min} = 648 \text{ cfs}$$

$$V_3 = \frac{1}{2}(15.0)(1.2 - .17) = 7.7 \text{ cfs-min} = 464 \text{ cfs}$$

$$V_T = V_1 + V_2 + V_3 = 1460 \text{ cfs (Detained Volume)}$$



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POND B (BASIN B)

$$A_T = .2047AC, A_{B90} = .0614AC, A_{D90} = .1433AC, E_{wt} = 2.17$$

$$V_o! = 1614cfs; Q_p = .03cfs$$

$$\begin{aligned} \text{Hydrograph } t_B &= \frac{2.107(E)A_T}{Q_p} - .25 \frac{A_D}{A_T} \\ &= \frac{2.107(2.17)(.2047)}{.03} - .25 \left(\frac{.1433}{.2047} \right) \\ &= .831 \text{ hr} = 50 \text{ min} \end{aligned}$$

$$t_c = .20 \text{ hrs}$$

$$\begin{aligned} t_p &= .7(t_c) + \frac{1.6 - A_D/A_T}{12} = .7(.2) + \frac{1.6 - .1433/.2047}{12} \\ &= .21 \text{ hr} = 13 \text{ min} \end{aligned}$$

$$\text{Duration of Peak} = .25 \left(\frac{A_D}{A_T} \right) = .25 \left(\frac{.1433}{.2047} \right) = .175 \text{ hr} = 10.5 \text{ min}$$



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POND B

by similar x 's

$$\frac{.93}{13} = \frac{.93-.24}{x_1}, x_1 = 9.6 \text{ min}$$

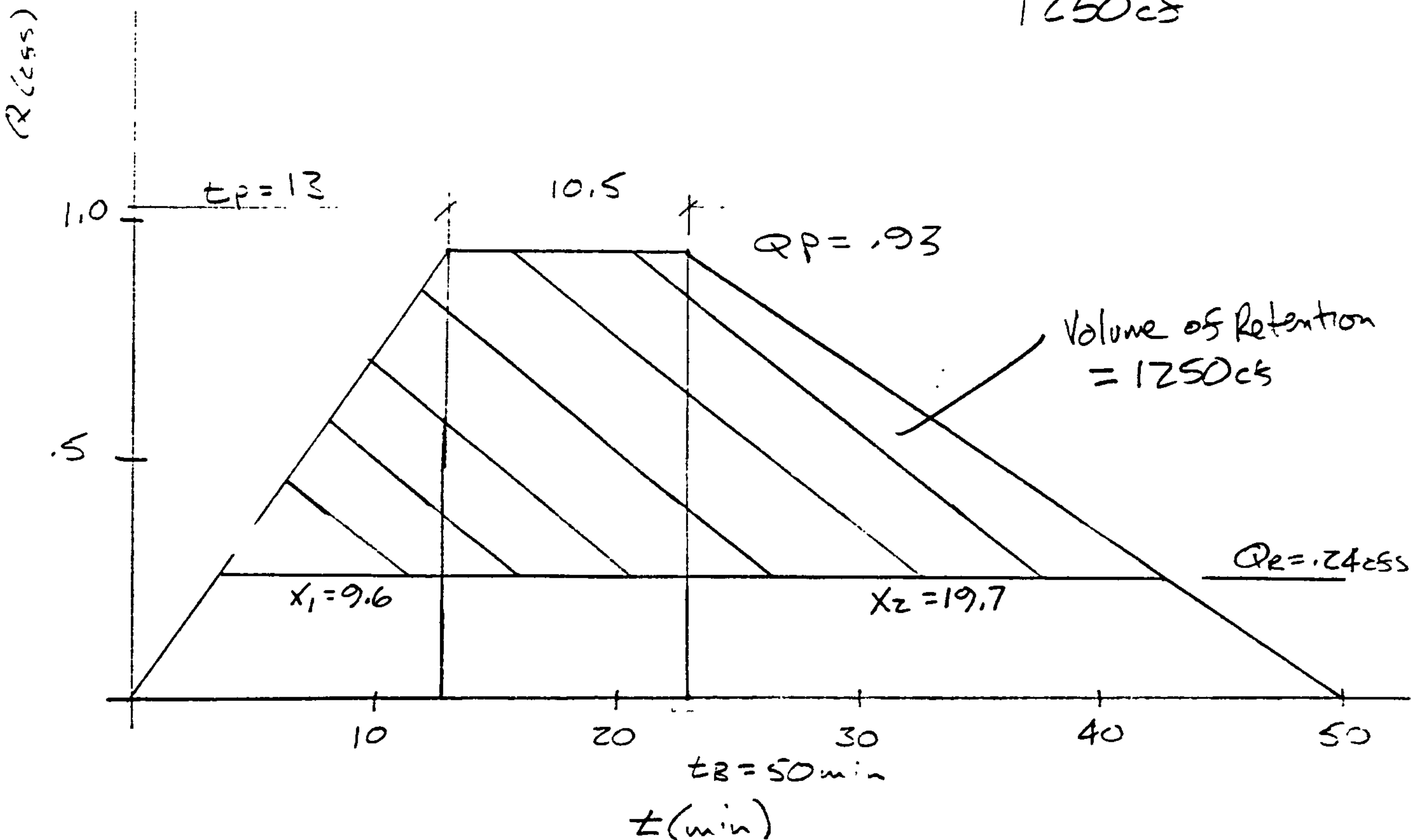
$$\frac{.93}{50-23.5} = \frac{.93-.24}{x_2}, x_2 = 19.7 \text{ min}$$

$$V_1 = \frac{1}{2}(9.6)(.93-.24) = 6.8 \text{ cfs-min} = 407$$

$$V_2 = 10.5(.93-.24) = 7.2 \text{ cfs-min} = 435$$

$$V_3 = \frac{1}{2}(19.7)(.93-.24) = 6.9 \text{ cfs-min} = 408$$

$$\underline{1250 \text{ cs}}$$



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BASIN (POND)

$$A_T = .1636 A.C., A_B = .0654 A.C., A_D = .0982 A.C., E = 2.02$$

$$V = 1197, Q_p = .50 cfs$$

$$\text{Hydrograph } t_e = \frac{2.107(2.02)(.1636)}{.50} - \frac{.25(.0982)}{.1636} = 1.24 \text{ hr} = 75 \text{ min}$$

$$t_c = .20 \text{ hrs}$$

$$t_p = .7(.20) + \frac{1.6 - (.0982 / .1636)}{12} = .22 \text{ hr} = 13.4 \text{ min}$$

$$\text{Duration of Peak} = .25 \left(\frac{.0982}{.1636} \right) = .15 \text{ hr} = 9.0 \text{ min}$$

by Sim's

$$\frac{.5}{13} = \frac{.5 - .1}{X_1}; X_1 = 10.4 \text{ min}$$

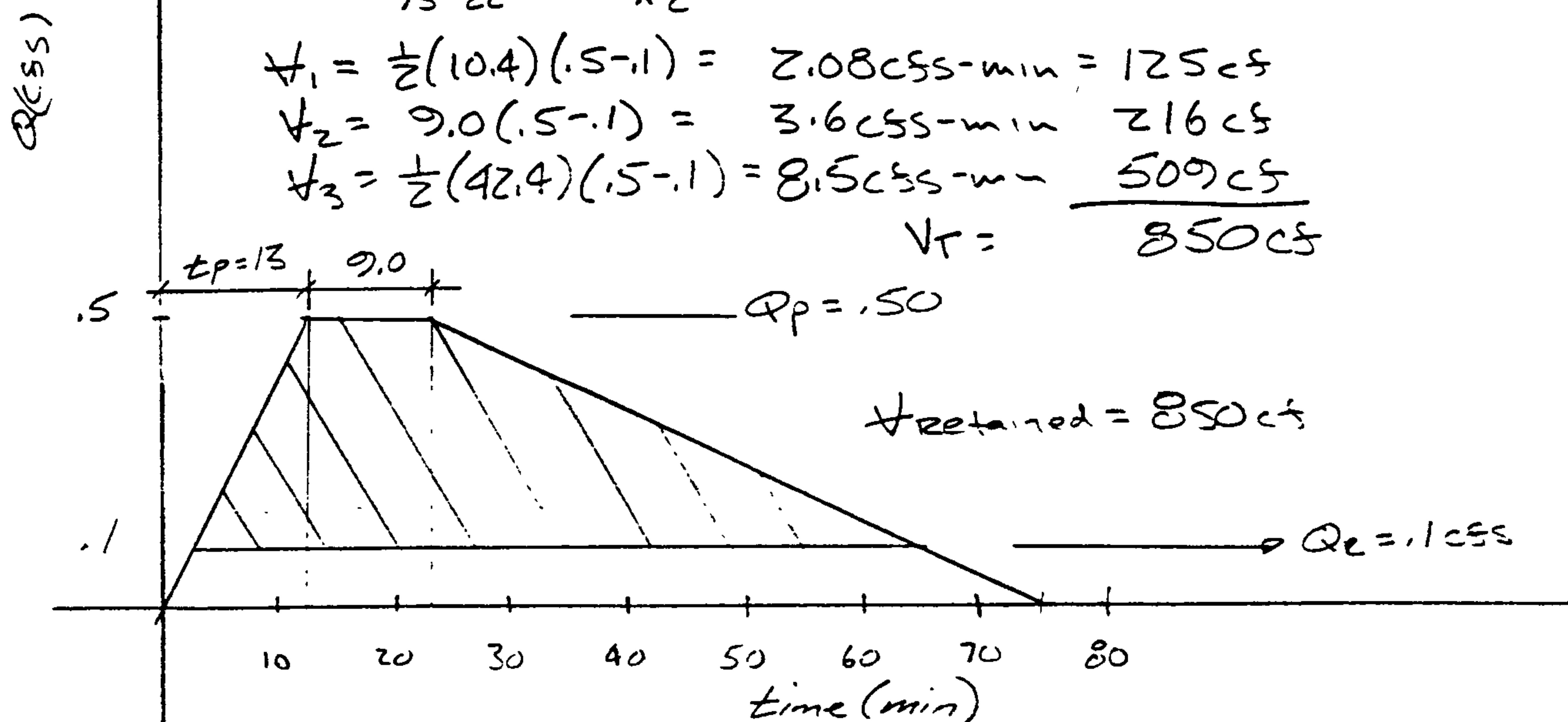
$$\frac{.5}{75 - 22} = \frac{.5 - .1}{X_2}; X_2 = 42.4 \text{ min}$$

$$V_1 = \frac{1}{2}(10.4)(.5 - .1) = 2.08 \text{ cfs-min} = 125 \text{ cfs}$$

$$V_2 = 9.0(.5 - .1) = 3.6 \text{ cfs-min} = 216 \text{ cfs}$$

$$V_3 = \frac{1}{2}(42.4)(.5 - .1) = 8.5 \text{ cfs-min} = 509 \text{ cfs}$$

$$V_T = 850 \text{ cfs}$$



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BASIN F (POND F)

$$A_T = .1169 \text{ AC}, \quad A_{8\%} = .10468, \quad A_{D\%} = .10701 \text{ AC}, \quad E_{wt} = 2.02 \text{ in}$$

$$\text{Volume} = 855 \text{ cfs}, \quad Q_p = .50 \text{ cfs}$$

Hydrograph

$$t_B = \frac{2.107 \times E \times A_T}{Q_p} - \frac{.25 \times A_D}{A_T}$$

$$= \frac{2.107 \times 2.02 \times .1169}{.50} - \frac{.25 (.10701)}{.1169} = .85 \text{ hr} = 50 \text{ min}$$

$$t_c = .20 \text{ hrs}$$

$$t_p = .7 \times t_c + \frac{1.6 - (A_D/A_T)}{12} = .7(.2) + \frac{1.6 - (.10701/.1169)}{12}$$
$$= .223 \text{ hr} = 13 \text{ min}$$

$$\text{Duration of peak} = .25 \left(\frac{A_D}{A_T} \right) = .25 \left(\frac{.10701}{.1169} \right) = .15 \text{ hr} = 9 \text{ min}$$



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POND F

by sim 4s $\frac{.5}{13} = \frac{.5-.3}{x_1}$, $x_1 = 5.2 \text{ min}$

$\frac{.5}{28} = \frac{.5-.3}{x_2}$, $x_2 = 11.2 \text{ min}$

$V_1 = \frac{1}{2}(x_1)(.5-.3) = \frac{1}{2}(5.2)(.2) = .52 \text{ cfs-min}$

$V_2 = Q_m(.2) = 1.8 \text{ cfs-min}$

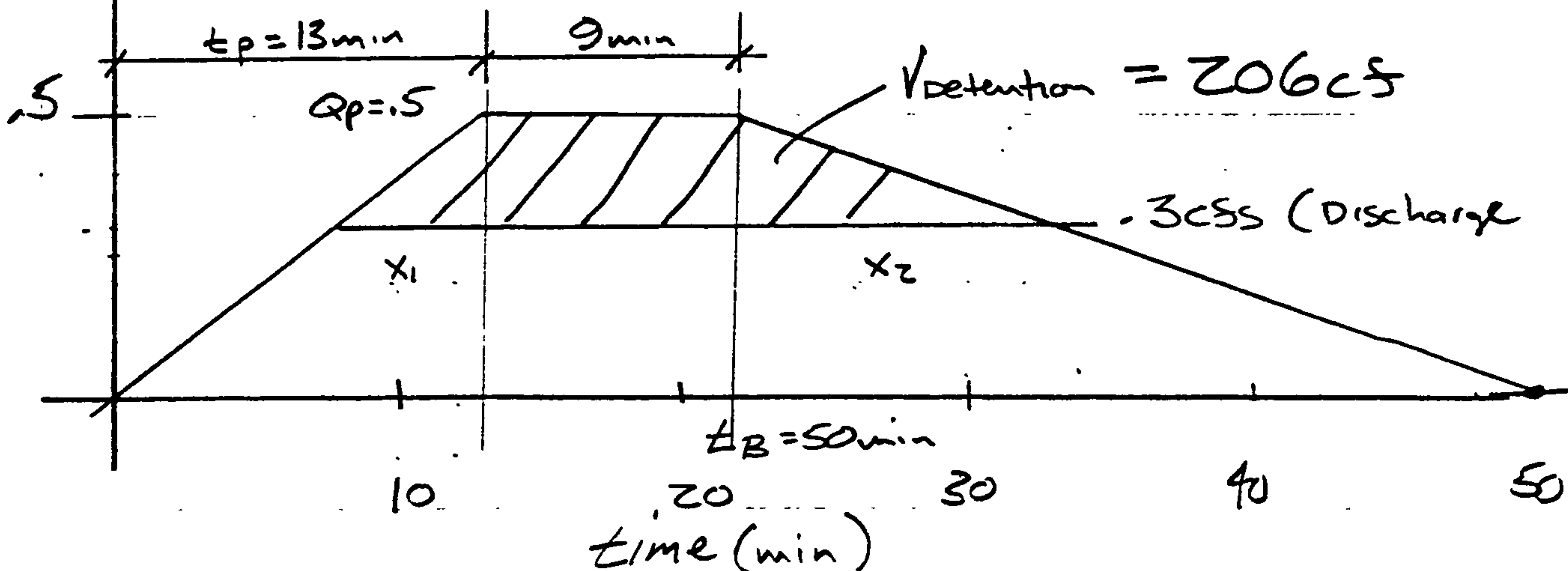
$V_3 = \frac{1}{2}(x_2)(.2) = \frac{1}{2}(11.2)(.2) = 1.12 \text{ cfs-min}$

$V_T = .52 + 1.8 + 1.12 = 3.44 \text{ cfs-min} = \underline{206 \text{ cfs}}$

Q (cfs)

10

$V_{\text{TOTAL}} = 855 \text{ cfs}$



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DRAIN LINES

POND A (From Rear to Front Pond)

$h = 1.5'$, USE 4" pvc w/ reducer for $Q = .17 \text{ cfs}$
 1) Size Reducer/Aperture
 $Q = CA\sqrt{2gh}$ (ORIFICE EQUATION) $= .17 \text{ cfs}$
 $A = \frac{Q}{C\sqrt{2gh}} = \frac{.17}{.72\sqrt{64.4(1.5)}} = .0240 \text{ ft}^2 \left(\frac{144 \text{ in}^2}{15 \text{ ft}^2} \right) = 3.4593 \text{ in}^2$
 $A = \frac{\pi D^2}{4} \Rightarrow D^2 = \frac{4(3.4593)}{\pi} \Rightarrow D = 2 \text{ in Aperture}$

POND B (Gravity flow from Pond to Street)

$h = 1.5'$, USE 4" pvc w/ reducer for $Q = .24 \text{ cfs}$
 1) Size Reducer/Aperture
 $Q = CA\sqrt{2gh} = .24$, $A = \frac{Q}{C\sqrt{2gh}} = \frac{.24}{.72\sqrt{64.4(1.5)}}$
 $A = .0339 \text{ ft}^2 = 4.88 \text{ in}^2$
 $A = \frac{\pi D^2}{4} \Rightarrow D^2 = \frac{4(4.88 \text{ in}^2)}{\pi} \Rightarrow D = 2.5 \text{ in Aperture}$

POND A Discharge line to street

4" drain line with sump pump w/ impeller sized to restrict flows to street (via 4" curb opening) to $Q = .17 \text{ cfs}$

POND E Discharge line to street

4" drain line w/ sump pump w/ impeller sized to restrict flows to street (via 4" curb opening) to $Q = .10 \text{ cfs}$



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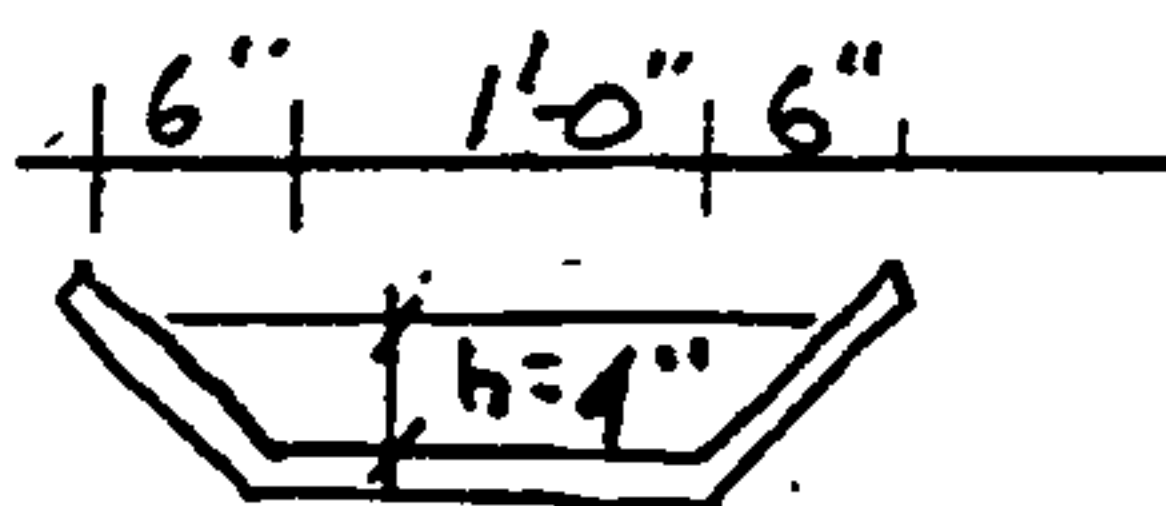
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POND F Discharge line to street
4" drainline w/ sump pump w/ impeller sized to
restrict flows to street (via 4" curb opening).
to $Q = .30 \text{ cfs}$

Emergency overflow spillway from ponds A, B, E, & F
(typical)



$$h = 6", \quad Q = CLH^{2/3} = 3.33(1.0)(.33)^{2/3} \\ = \underline{1.6 \text{ cfs}} \text{ (actual capacity of weir)}$$

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APPENDIX B

POCKET I - PLATE I (DRAINAGE PLAN)

POCKET II - PLATE II (GRADING PLAN)

POCKET III - DETAILS