PLANS/PLATS ON FILE

FILE DESC: _____

B-23 / D001A

_____

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_____

PLANS/PLATS 1

COUNTY

DRAINAGE REPORT

RECEIVED
JUL 16 1985
HYDROLOGY SECTION

FOR

THE OUTPOST ARENA BP85-1012

LOT 3-B-3, TRACT 1

SANDIA HEIGHTS SOUTH - UNIT 7

B23/01A

PREPARED BY

Lovelady & Associates

JUNE 21, 1985

DRAINAGE INFORMATION SHEET

PROJECT TITLE: Lot 3-B-3, Tract 1 Sandia Heights South Unit 7 ZONE ATLAS/DRNG. FILE #: B23/D1A

LEGAL DESCRIPTION: Lot 3-B-3, Tract 1, Sandia Heights South - Unit 7

CITY ADDRESS: _____

ENGINEERING FIRM: Lovelady & Associates CONTACT: Frank Lovelady

ADDRESS: 7408 Morrow Road, N.E. PHONE: 883-7973

OWNER: Canyon Concepts Corp. CONTACT: Bob Martin

ADDRESS: 137 Juniper Hill Rd. N.E. PHONE: 298-6853

ARCHITECT: The Ken Hovey Design Group CONTACT: Ken Hovey

ADDRESS: 3700 Simms Ave. S.E. PHONE: 255-4756

SURVEYOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

CONTRACTOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

PRE-DESIGN MEETING:

____ YES

____ NO

____ COPY OF CONFERENCE RECAP SHEET PROVIDED

DRB NO. 84-524 3/28/85

EPC NO. _____

PROJECT NO. _____

TYPE OF SUBMITTAL:

X DRAINAGE REPORT

____ DRAINAGE PLAN

____ CONCEPTUAL GRADING & DRAIN. PLAN

X GRADING PLAN

____ EROSION CONTROL PLAN

____ ENGINEER'S CERTIFICATION

CHECK TYPE OF APPROVAL SOUGHT:

____ SKETCH PLAT APPROVAL

____ PRELIMINARY PLAT APPROVAL

____ SITE DEVELOPMENT PLAN APPROVAL

____ FINAL PLAT APPROVAL

X BUILDING PERMIT APPROVAL

____ FOUNDATION PERMIT APPROVAL

____ CERTIFICATE OF OCCUPANCY APPROVAL

____ ROUGH GRADING PERMIT APPROVAL

____ GRADING/PAVING PERMIT APPROVAL

OTHER _____ (SPECIFY)

DATE SUBMITTED: June 21, 1985

BY: Frank D. Lovelady, P.E.

Rev. 11/84

Lovelady & Associates
7408 Morrow Road NE
Albuquerque, N.M. 87110
June 21, 1985

Mr. Dan Sabo
Drainage Engineer
A.M.A.F.C.A.
P.O. Box 25851
Albuquerque, N.M. 87125

RE: Grading and Drainage Plan and Report for the Outpost Arena, Located at Tramway Blvd. and Tramway Lane.

Dear Dan:

Submitted herewith is the Grading and Drainage Plan and Report for the referenced development. Two copies are provided.

The City of Albuquerque information sheet is provided with as much information as was available to assist you in your review of this plan.

If you have any questions, please do not hesitate to contact me at 883-7973.

Cordially,

Frank Lovelady

Frank Lovelady

Lovelady & Associates
7408 Morrow Road NE
Albuquerque, N.M. 87110
June 21, 1985

Mr. Cyde Vigil
Assistant Building Official
Bernalillo County
1429 Central Avenue, N.W.

RE: Grading and Drainage Plan and Report for Ice Arena
to be located at Tramway Blvd. and Tramway Lane

Dear Mr. Vigil:

Submitted herewith is the Grading and Drainage Plan and Report for the referenced property.

The City of Albuquerque information sheet is provided with as much information as was available to assist you in review of this Plan.

If you have any questions, please do not hesitate to contact me at 883-7973.

Cordially,

Frank Lovelady

Frank Lovelady

DRAINAGE REPORT

FOR

LOT 3-B-3, TRACT 1

SANDIA HEIGHTS SOUTH - UNIT 7

I. DESCRIPTION AND LOCATION:

This report deals with existing off-site flow entering the site through established drainage channels, and with on-site flows that will be generated by the proposed development. On-site flow calculations are shown on the drainage plan as well as flow depth calculations for the channels.

The site is located on Tramway Lane east of Tramway Blvd. and lies approximately three (3) miles north of the City Limits of the City of Albuquerque.

Lot 3-B-3 contains 3.2811 acres and will be used for commercial development including an ice arena and possibly a small convenience-type restaurant. A separate grading and drainage plan has been submitted to Bernalillo County for Lot 3-B-2. A grading and drainage plan will also be submitted for lot 3-B-1 when it is developed.

II. REFERENCES:

1. Drainage Report for Tracts 1 and 2, Unit 7, Sandia Heights South, February 1975, Bohannan, Westman, Huston & Associates, Inc.

2. Drainage Management Plan for Portions of Sandia Heights South, Unit 7 and Chamisa Park, Unit 3, July, 1983, Bohannan Huston, Inc.

III. OFF-SITE FLOWS:

The quantities and rates of off-site flows are established in the previous drainage reports, References 1 and 2. Both reports show two channels entering the property from the east. The southerly of the two channels is contributed to by Area II which contains 135 acres and has a peak discharge of 350 cfs. The north channel is contributed to by Area II which contains 135 acres and has a peak discharge of 250 cfs, according to Reference 2.

The total off-site flow of 600 cfs is the quantity that this site must accept. However, recent field investigations reveal that a major diversion has been constructed within within Area I which results in different quantities than those shown in references 1 and 2.

The floodway map shows the lower reaches of the area that has been diverted fairly clearly. However, the contours end at the section line. Therefore, the U.S.C. & G.S. quad map was used to evaluate the drainage area. The total area is 60.1 acres.

This diversion is very important from the standpoint of development because the larger channel which is capable of handling the larger flow is the northern channel. The southern channel, which is closer to the proposed building will be required to carry less of the total 600 cfs off-site flow. Instead of 350 cfs, it is only required to carry 245 cfs. This is computed on the basis of the Rational Equation where the variables for the equation that are given in Reference 2 are as follows:

$C = 0.34 \quad I = 5.1$

$$Q = 0.34 \times 5.1 \times 60.1 = 104.2 \text{ cfs}$$

IV. ON-SITE FLOWS:

A. North Channel.

Calculations for the depth of flow in this channel are shown on the grading and drainage plan. The south bank will be lined with rip rap underlain with filter material. Where the south channel enters, grouted rip rap will be used.

B. South Channel.

Two options were considered for conveying the flow of the south channel across the property to be intercepted by the north channel. One was surface flow by swaling the parking lot. The second was a rectangular concrete box section with removeable steel grate to facilitate maintenance. The surface-flow option was chosen for the following reasons:

1. The velocity of flow in the box was from 20 to 25 feet per second which would cause severe maintenance problems at the outlet of the channel.

2. Capturing the natural channel flow which is about 15' wide by 18" deep and forcing it into a 4.5' x 3' opening would be very difficult and could result in hydraulic jump or other wave action that would cause continuing maintenance problems.

3. The flow in the swale would only be about 0.5' to 0.6' deep. This is less than the curb-height flow in city streets. The use of city streets to handle peak runoff is common practice in the City of Albuquerque and is established by the Albuquerque Master Drainage Plan in the development of drainage criteria.

4. The velocity in the swale will be less than 9 feet per second. The combination of low head and low velocity will result in less erosion where the flows of the two channels converge.

5. The concrete box would be prohibitively expensive. Since the box would not be closed at the top, the walls would have to be designed as retaining walls. The more shallow the box, the less costly the walls, but the wider span increases the cost of the steel grate. In addition, the cost of the inlet structure necessary to capture the flow and the outlet structure designed to dissipate the energy would be excessive.

6. The property to the east was developed using the surface flow option. The swale on the north channel which carries much more water than the south channel is very narrow by comparison with the proposed swale. Therefore, the flow in that swale will be very deep and fast moving.

V. CONCLUSIONS:

1. The proposed swale through the parking lot is comparable to flow in city streets in that both are approximately the same depth, and both involve the presence of parked or moving vehicles.

2. The proposed swale is the only practical method of conveying the flow of the south channel across the property.

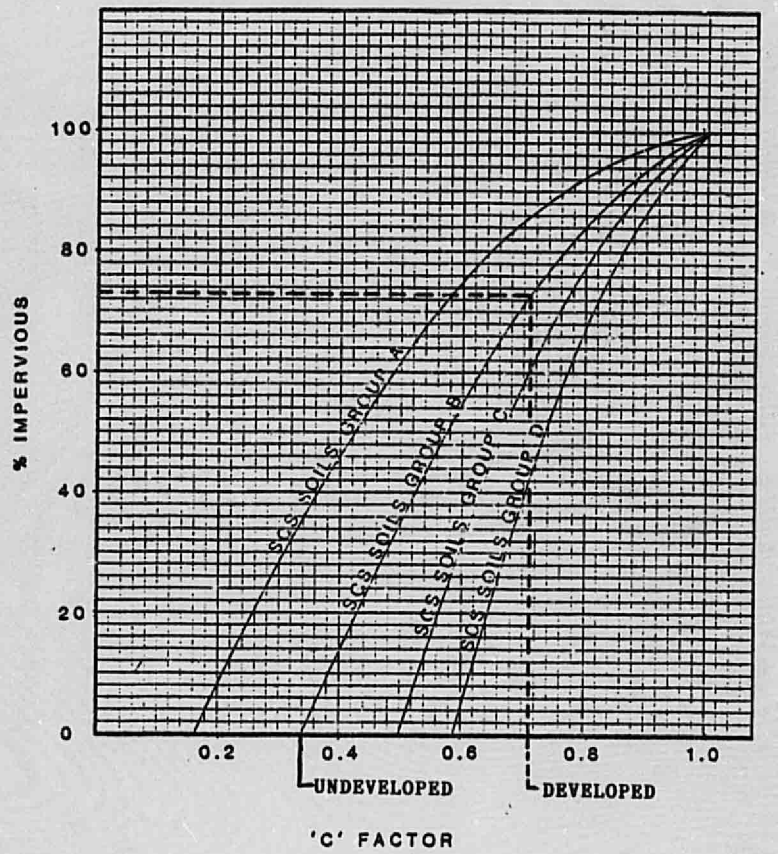
VI. RECOMMENDATIONS:

1. It is recommended that the proposed swale with concrete cut-off walls at the inlet and cut-off walls and grouted rip rap slope protection at the confluence with the main channel be approved as the method of conveying flows in the south channel across the property.

2. It is recommended that all other provisions for on-site flow shown on the grading and drainage plan be accepted and approved for construction.

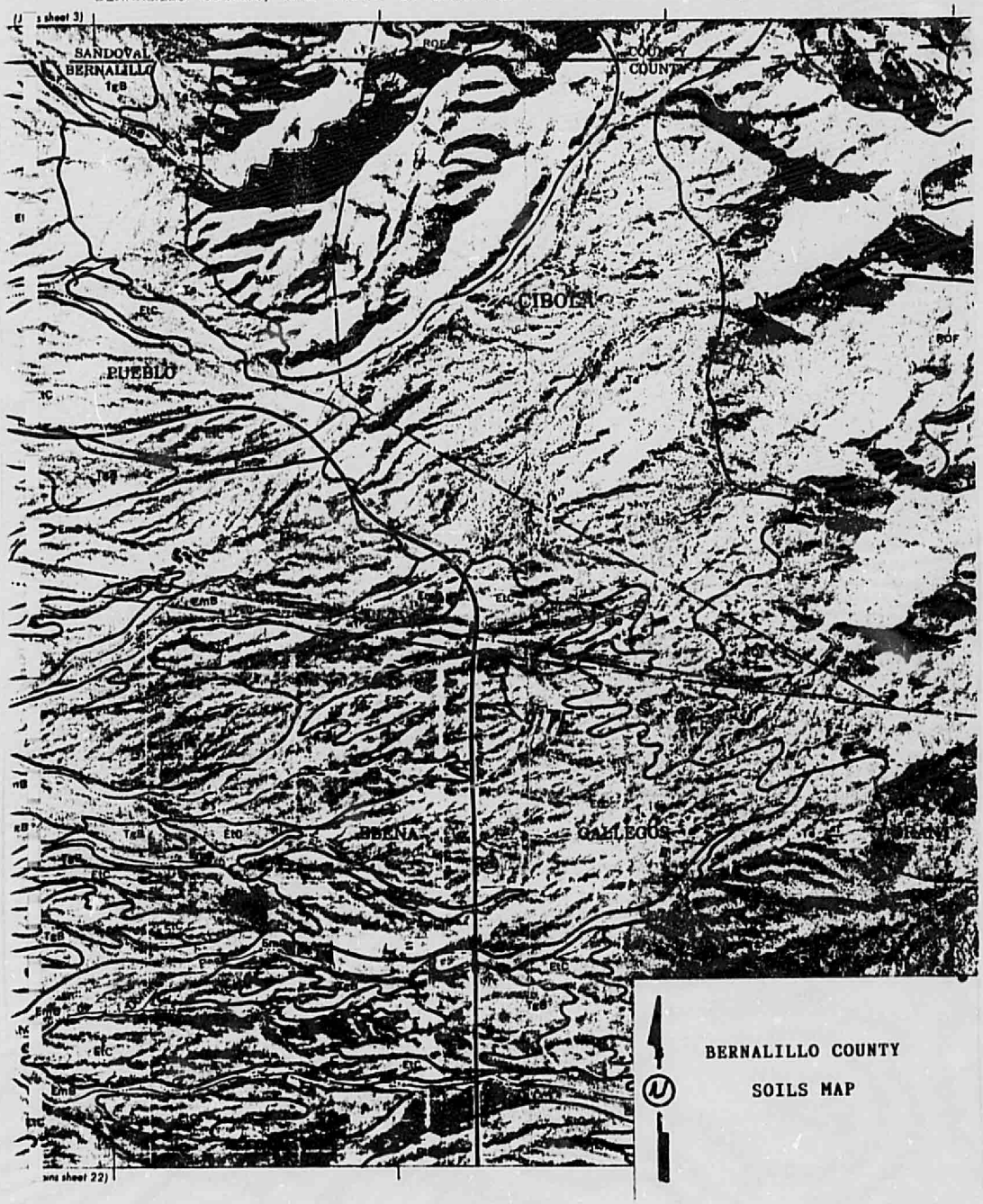
DRAINAGE CRITERIA

DETERMINATION OF RATIONAL FORMULA 'C' FACTOR



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

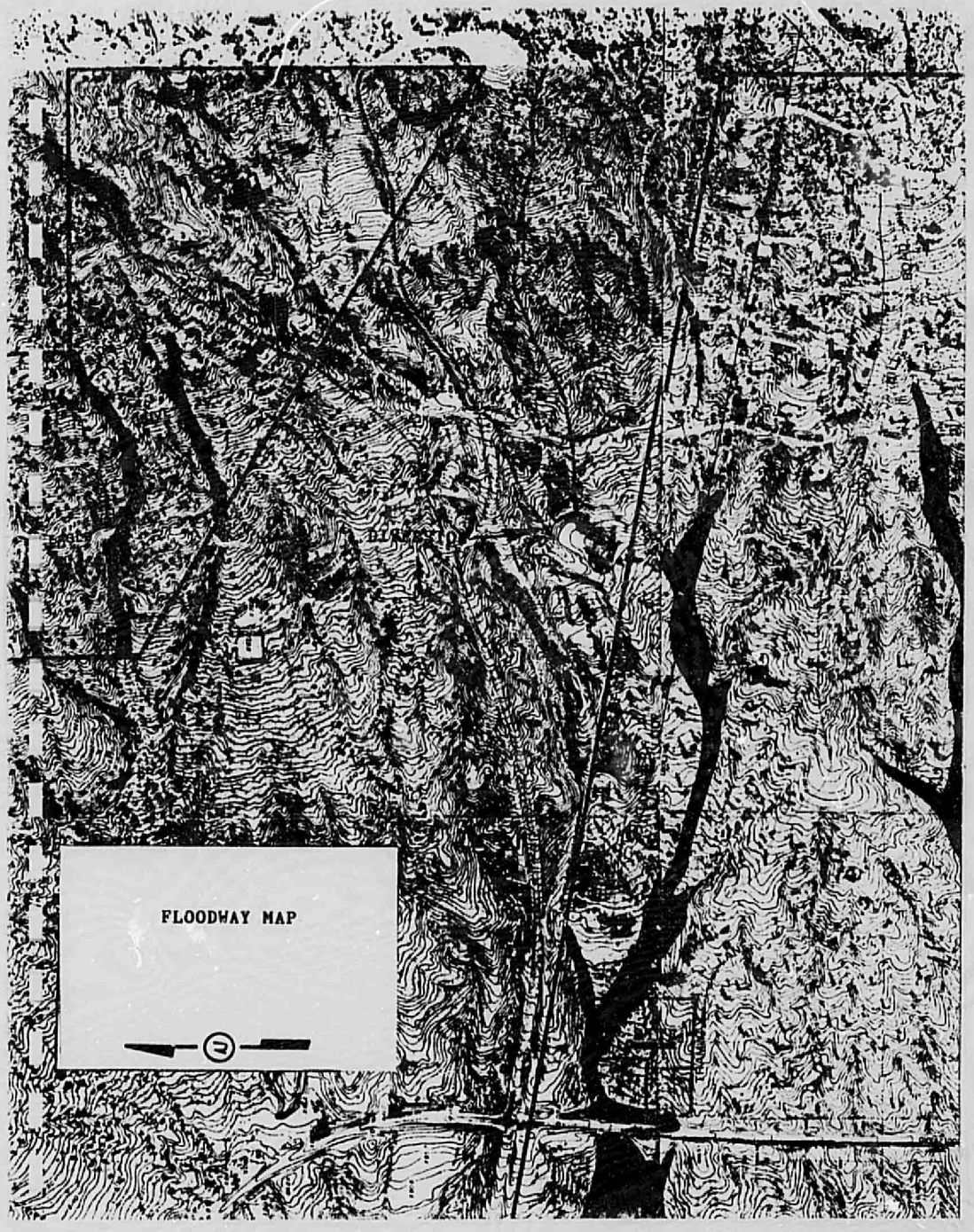
BERNALILLO COUNTY, AND PARTS OF SANDOVAL AND VALENCIA COUNTIES, NEW MEXICO — SHEET



BERNALILLO COUNTY

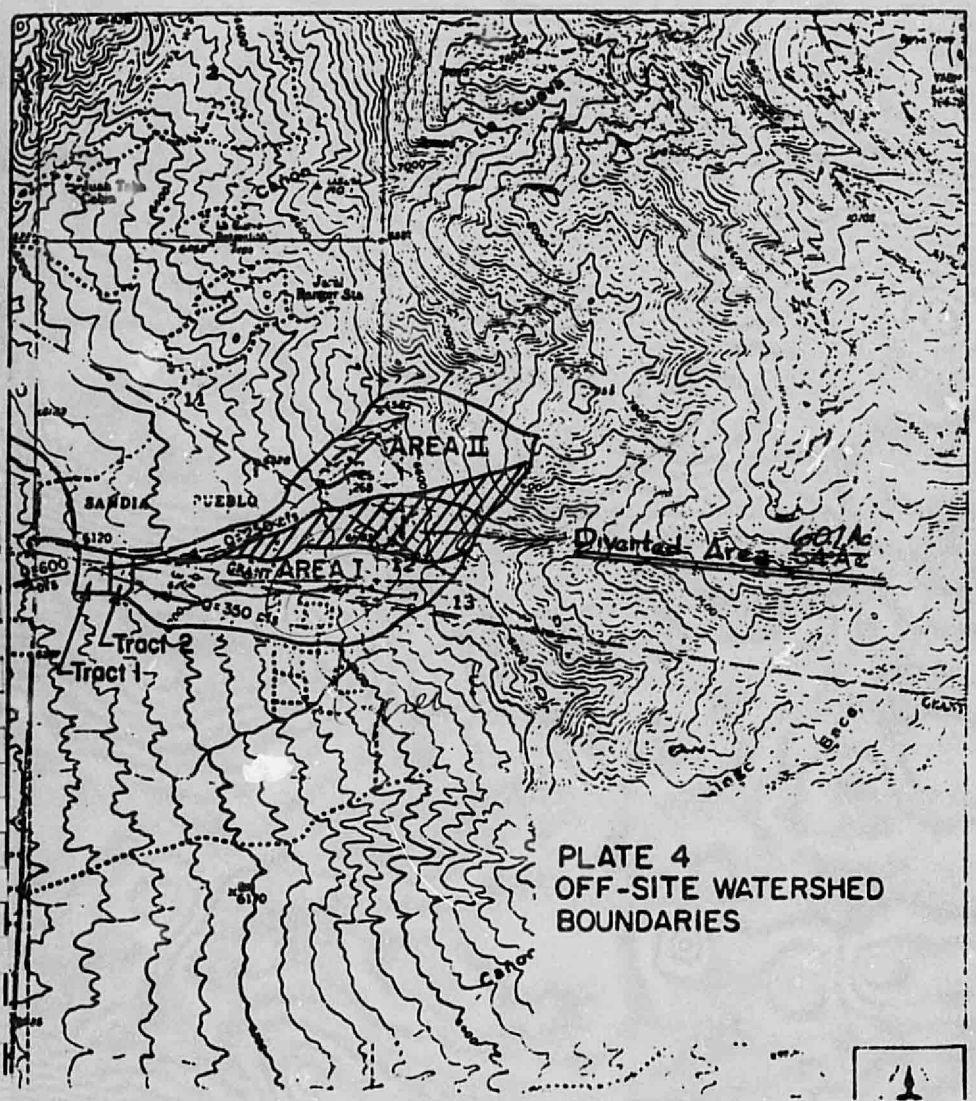
SOILS MAP

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

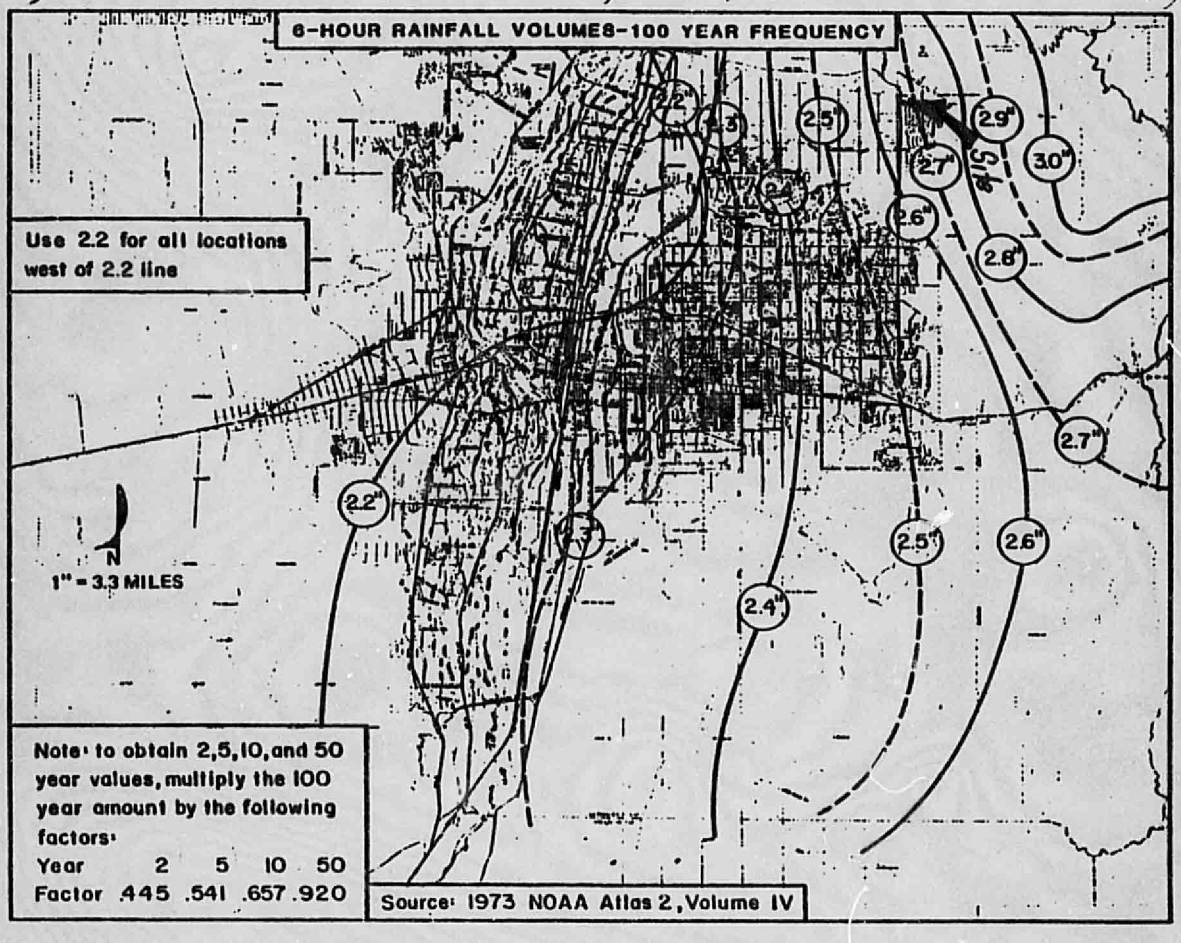


THIS MICROIMAGE IS THE BEST POSSIBLE REPRODUCTION DUE TO THE POOR QUALITY OF THE ORIGINAL DOCUMENT.

Plate I
Location & Upland Drainage
Tracts 1 & 2, Unit 7
Sandia Heights South



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



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REX PUNK, DIRECTOR

RICHARD E. LEONARD
EXECUTIVE ENGINEER

Albuquerque
Metropolitan
Arroyo
Flood
Control
Authority

P. O. BOX 25851 - ALBUQUERQUE, N. M. 87125
TELEPHONE 884-2215

July 18, 1985

Frank Lovelady
Lovelady & Assoc.
7408 Morrow Road, NE
Albuquerque, NM 87110

SUBJECT: Grading & Drainage Plan & Report
Outpost Arena, Lot 3-3-3, Tract 1,
Sandia Hts. South - Unit 7

Dear Frank:

We have the following comments. The overall concept of the plan is approved subject to the following:

1. Page 2 of the report - Please discuss the use of 5.1 for I. This is not used in Reference 2.

2. Section A-A does not seem to apply east of the channel inlet. Two feet of freeboard is required.

3. Section A-A. The thickness of riprap should be equal to that of the north bank. Show gradation for filter blanket. The riprap and filter blanket must extend a vertical dimension of 3 ft. below channel bottom. (See ref. 2 of your report.)

4. The grading plan appears to pond offsite flows between the ice arena floor and the proposed retaining wall. Offsite flows must be accepted by the Outpost Arena (see AMAFCA Resolution 1980-15).

5. The ice arena floor is located in a floodplain easement. (See attached title block of plat filed I believe in July of 1983.) AMAFCA policy as stated on that plat is to revert excess R.O.W. to the owner; however, this must be done by Board action. In addition, a grant of easement must be made for the improved channel section (use attached form). In addition, since the owner will use the improved channel section for parking, the owner will have to sign a maintenance agreement for the channel thru the tract.

6. Concrete Toe and Rundown Section. The Section and detail are satisfactory; however, dumped riprap similar to Section A-A will be required on the bottom of the channel in the rundown reach.

7. The plan shows culvert pipe in the County R.O.W. where the dike joins the culvert and under the driveway to Tramway Blvd. These should be included as part of this project; however, details must be approved by the County Road Dept.

Please call if you have any questions regarding my comments.

As we have discussed previously, this letter does not imply approval by the County Building Office. The drainage plan must comply with the County Flood Damage Prevention Ordinance (81-36) and be approved by that office.

Sincerely,

Dan Sabo

Dan Sabo
Drainage Engineer

ic
Encl.

cc: ✓Carlos Montoya
Clyde Vigil, Asst. Bldg. Official
John Ramsey, County Road Dept.

RECEIVED
JUL 31 1985
HYDROLOGY SECTION

Lovelady & Associates
7408 Morrow Road NE
Albuquerque, N.M. 87110
July 30, 1985

Dan Sabo
Drainage Engineer
P.O. Box 25851
Albuquerque, New Mexico 87125

RE: GRADING AND DRAINAGE PLAN AND REPORT FOR OUTPOST ARENA
LOT 3-B-3, TRACT 1, SANDIA HIEGHTS SOUTH, UNIT 7

Dear Dan:

Regarding your letter of July 18, 1985, the following are in response to the numbered comments:

1. The value of 5.1 was given in the July, 1983 report by Bohannan-Huston, Inc. (Reference 2 in my report). The value of I for Area 2 was 5.22. In reviewing your comment I found I had overlooked the difference in I values for the two areas and used 5.1 for both. However, this results in an increase in Q for Area 2 of only 2.5 cfs.

2. The main channel section east of the side channel inlet has been regraded to comform to Section A-A.

3. The thickness of rip rap has been shown. The gradation of the filter blanket has also been shown. (Type II for granular soils.) The rip rap has been extended 3' below the channel bottom.

4. The retaining wall near the northeast corner of the building has been deleted and the easement will be paved all the way to the property line to allow offsite flow to enter the swale.

5. A drainage easement has been prepared for the improved channel section. The owner will enter into a maintenance agreement with AMAFCA as requested.

6. The toe and rundown detail has been revised to show dumped rip rap the full width of the bottom for the full length of the rundown section.

7. The culverts in the County right-of-way have been sized and elevations shown and the plan sent to John Ramsey, County Road Department for his review and approval. I will advise you of his decision.

I will also advise you of any response form the County Building Office. If you have any questions regarding any of the revisions that you requested, please do not hesitate to contact me at 883-7973.

Sincerely,

Frank Lovelady

cc: Carlos Montoya
Clyde Vigil, Asst. Bldg. Official
John Ramsey, County Road Department

BOARD OF COUNTY COMMISSIONERS
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DISTRICT 4
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DISTRICT 5
ALEX ABEYTA, JR., COUNTY MANAGER

County of Bernalillo

State of New Mexico

620 LOMAS, N.W.
ALBUQUERQUE, NEW MEXICO 87102

BOB STOVER, SHERIFF
JAMES B. LEWIS, TREASURER
DOLORES C. WALLER, COUNTY CLERK
JACK H. DARLING, ASSESSOR
ROBERT H. SCOTT,
PROBATE JUDGE

August 7, 1985

Mr. Frank Lovelady
Lovelady & Assoc.
7408 Morrow Rd. NE
Albuquerque, NM 87110

REF: DRAINAGE PLAN FOR OUTPOST ARENA (B23/D1a) RECEIVED JULY 31, 1985

Dear Mr. Lovelady:

I have reviewed the referenced plan and forward the following comments:

1. Please indicate the limits of construction. Also, submit a drawing showing the different lots & tracts which were referred to in the report.

2. The following questions refer to the calculations shown in section V & III of drainage plan.
   a. Please explain where the cross section of the Southerly channel was taken to produce the manning equation data.
   b. Please check the calculations for the parking lot swale. The values of area, and hydraulic radius appear suspect.

If you have any questions, please contact this office at 766-7644.

Sincerely,

Carlos A. Montoya

Carlos A. Montoya
City/County Flood Plain Admin.

CAM/cl

cc: Dan Sabo

Lovelady & Associates
7408 Morrow Road NE
Albuquerque, N.M. 87110
August 14, 1985

RECEIVED
AUG 15 1985
HYDROLOGY SECTION

Mr. Carlos A. Montoya
City/County Flood Plain Admin.
County of Bernalillo
620 Lomas Blvd. N.W.
Albuquerque, New Mexico, 87102

RE: DRAINAGE PLAN FOR OUTPOST ARENA (B23/D1a)

Dear Mr. Montoya:

With regard to your letter of August 7, 1985, the following are in response to your comments.

1. The limits of construction have been indicated on the plan. A copy of the plat for the subdivision is attached for your information.

2. a. The cross section from which the southerly channel flow was calculated is upstream from the point the channel enters the property. A distance of 25 feet was selected as a point being fairly typical of the contours shown.

   b. The calculations for the parking lot swale have been checked and revised. The capacity was reduced somewhat but is still in excess of the design flow.

If you have any further questions, please do not hesitate to contact me at 883-7973.

Sincerely,

Frank D. Lovelady

Frank D. Lovelady

cc: Dan Sabo

DRAINAGE INFORMATION SHEET

Lot 3-B-3 TRACT 1 SANDIA HTS. SOUTH

PROJECT TITLE: OUTPOST ARENA ZONE ATLAS/DRNG. FILE #: B-23/D1A

LEGAL DESCRIPTION: Lot 3-B-3, TRACT 1, Sandia Heights South - Unit 7

CITY ADDRESS:

ENGINEERING FIRM: Lovelady & Associates CONTACT: Frank Lovelady

ADDRESS: 7408 Morrow Road, N.E. 87110 PHONE: 883-7973

OWNER: Canyon Concepts Corp. CONTACT: Bob Martin

ADDRESS: 137 Juniper Hill Road, PHONE: 298-6853

ARCHITECT: THE KEN HOVEY DESIGN GROUP CONTACT: Ken Hovey

ADDRESS: 3700 Simms Ave SE PHONE: 255-4756

SURVEYOR: CONTACT:

ADDRESS: PHONE:

CONTRACTOR: CONTACT:

ADDRESS: PHONE:

RECEIVED AUG 15 1985 HYDROLOGY SECTION

PRE-DESIGN MEETING:

___ YES

___ NO

___ COPY OF CONFERENCE RECAP SHEET PROVIDED

DRB NO. 84 524. 5/28/85

EPC NO. —

PROJ. NO.

TYPE OF SUBMITTAL:

X DRAINAGE REPORT

X DRAINAGE PLAN

___ CONCEPTUAL GRADING & DRAINAGE PLAN

X GRADING PLAN

___ EROSION CONTROL PLAN

___ ENGINEER'S CERTIFICATION

CHECK TYPE OF APPROVAL SOUGHT:

___ SKETCH PLAT APPROVAL

___ PRELIMINARY PLAT APPROVAL

___ SITE DEVELOPMENT PLAN APPROVAL

___ FINAL PLAT APPROVAL

X BUILDING PERMIT APPROVAL

___ FOUNDATION PERMIT APPROVAL

___ CERTIFICATE OF OCCUPANCY APPROVAL

___ ROUGH GRADING PERMIT APPROVAL

___ GRADING/PAVING PERMIT APPROVAL

___ OTHER _____ (SPECIFY)

DATE SUBMITTED: August 15, 1985

BY: Frank O. Lovelady

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ALEX ABEYTA, JR., COUNTY MANAGER

County of Bernalillo

State of New Mexico
620 LOMAS, N.W.
ALBUQUERQUE, NEW MEXICO 87102

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JAMES B. LEWIS, TREASURER
DOLORES C. WALLER, COUNTY CLERK
JACK H. DARLING, ASSESSOR
ROBERT H. SCOTT,
PROBATE JUDGE

October 17, 1985

Mr. Frank Lovelady
Lovelady & Associates
7408 Morrow Rd.
Albuquerque, NM 87110

REF: DRAINAGE PLAN FOR OUTPOST ARENA (B23-D1a) RECEIVED AUGUST 15, 1985

Dear Mr. Lovelady:

The above referenced plan dated 6-21-85 is approved in concurrence with the Floodplain Ordinance. Upon completion of the project the construction will have to be certified.

If you have any questions, please contact this office at 766-7644.

Sincerely,

Carlos A. Montoya

Carlos A. Montoya
City/County Flood Plain Admin.

CAM/cl

cc: Clyde Vigil

PLAN/PLATS

ON

FILE