HYDROLOGY E11/D7a SADDLE RIDGE EQUESTRIAN CENTE

E11 / D7A

SADDLE RIDGE

EQUESTRIAN CENTER

1 PLAN

City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

MAYOR
David Rusk

March 26, 1979

Mr. Tom Isaacson
Chambers, Campbell, Isaacson, Chaplin, Inc.
3500 Indian School Road N.E.
Albuquerque, New Mexico 87106

Re: Saddle Ridge Equestrian Center Drainage Report

Dear Mr. Isaacson:

I have reviewed the Drainage Report for the captioned development and I cannot concur with the proposal submitted, primarily but not solely on public health grounds.

I recommend that a meeting be convened with representatives of your firm, the City's Department of Environmental Health, Mr. Richard Heller, City Engineer, and myself. Please advise on the time and date that would be convenient.

Very truly yours,

Bruno Conegliano
Assistant City Engineer-Hydrology

BC/ms

cc - Dick Heller
Rich Leonard
Drainage File

April 4, 1979

Mr. Bruno Conegliano
Assistant City Engineer - Hydrology
City of Albuquerque
Engineering Division
P.O. Box 1293
Albuquerque, NM 87103

REFERENCE: Saddle Ridge Equestrian Center

Dear Mr. Conegliano:

The following Drainage Report is being re-submitted for your review and approval. Based on your letter of March 26, 1979 a meeting was held at the City Engineer's Office with all concerned parties. At that meeting, criteria was established that met with everyone's approval.

The guidelines that were agreed upon and therefore incorporated into the drainage report were as follows:

1. Runoff from the horse travelled/occupied areas shall <u>not</u> be allowed to leave the site.
2. The creation or a low-profile berm along the site's east boundary that will retain all runoff and allow it to infiltrate into the site sub-surface.
3. Allowing all runoff from the areas not travelled/occupied by horse do runoff into the existing drainage right-of-way. But to insure that this volume does <u>not</u> exceed the undeveloped volume that leaves the site.

Hopefully, these changes will meet with your approval so that this project may proceed. Please contact CCIC if there are any questions or if further discussion is required.

Very truly yours,

Fred C. Arfman

Fred C. Arfman, for
CHAMBERS, CAMPBELL,
ISAACSON, CHAPLIN, INC.

FCA:pw

City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

MAYOR
David Rusk

April 23, 1979

Mr. Fred Arfman
Chambers,Campbell,Isaacson & Chaplin
3500 Indian School Rd. N.E.
Albuquerque, N.M. 87106

Re: Saddle Ridge Equestrian Center

Dear Mr. Arfman:

The drainage report for the captioned subdivision as revised to retain onsite runoff with potential animal wasteload is approved.

Very truly yours,

Bruno Conegliano
Assistant City Engineer-Hydrology

BC/fs

cc - Dick Heller, City Engineer
Rich Leonard, AMAFCA
Drainage File

DRAINAGE REPORT

for

SADDLE RIDGE EQUESTRIAN CENTER

Prepared for

AMBELL

(A Joint Venture of AMDEC and Dale Bellamah)

March 1979

Chambers, Campbell, Isaacson, Chaplin, Inc.
architects engineers planners 3500 indian school road ne albuquerque new mexico 87106 505 266 5521

DRAINAGE REPORT

for

SADDLE RIDGE EQUESTRIAN CENTER

Prepared for

AMBELL

(A Joint Venture of AMDEC and Dale Bellamah)

March 1979

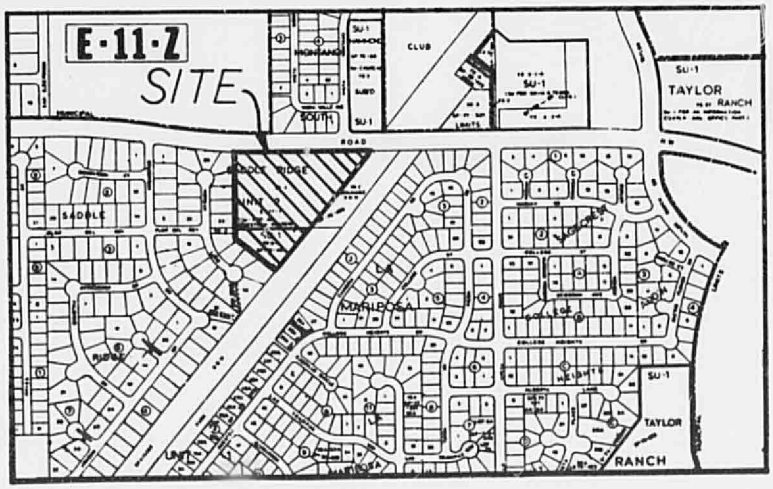
REGISTERED PROFESSIONAL ENGINEER AND LAND SURVEYOR
NO. 5285
NEW MEXICO
THOMAS O. ISAACS

INTRODUCTION

At the request of AMBELL, a joint venture of AMDEC and Dale Bellamah Land Company, CCIC has investigated the storm drainage for the site. This investigation addresses itself to the subject property in its undeveloped condition and analyzes the internal flows in its developed state with recommendations for compliance to A.M.A.F.C.A.'s requirements and area characteristics.

SITE LOCATION AND TOPOGRAPHY

Saddle Ridge Equestrian Center is located in northwest Albuquerque immediately south of Montano Road; approximately one mile west of its intersection with Coors Road. Abutting the site on its southeast boundary is a 150 ft. drainage R.O.W.



Location Map

Ground topography is typical of the area -- sloping generally from west to east, with irregular contour patterns. An average slope across this site is from the northwest to the southeast at a -1.0%. Ground elevations vary from 5117 to 5111 (MSLD). Soils typically are composed of fine to very fine silts and sands, and ground cover consists mainly of abbit brush, yucca and cactus.

DESIGN CRITERIA

Engineering Parameters: For calculation of composite coefficients of runoff, the following values of "C" were taken for the indicated land coverages:

(a)	parking area, roofs, walks	0.95
(b)	landscaped areas	0.15
(c)	gravel service roads	0.50
(d)	natural ground	0.34

In addition, all runoff volume calculations have been based on a 100 year-6 hour rainfall of 2.2" as per AMAFCA requirements. Rate of runoff calculations have been based on the frequency-intensity-duration relationship for a 100 year storm as presented by Gordon Herkenhoff and Associates in their 1963 Master Plan of Drainage for the City of Albuquerque. This relationship is expressed by the following equation: $I = 189/(TC+25)$.

Flood Control Regulations: The drainage plan presented in this report has been designed to comply with the 1972 AMAFCA Resolution in regard to rate and volume leaving the site. That resolution has been interpreted to say that the rate and volume of runoff allowed to leave the site after development shall be no greater than that prior to development.

COMPUTATIONAL PROCEDURES

Hydrological flow rate calculations are based on the rational runoff method. Time of concentrations were calculated using the nomograph illustated in Plate II. Estimates were made in percents of area covered by each coverage type described in the above section for each drainage sub-area.

Volume calculations for sizing individual area ponds and for determing the net volumes of discharge for the entire site in both natural and developed states were preformed by multiplication of the applicable "C" factor times the 100 year-6 hour rainfall (0.183) times the appropriate area to obtain cubic feet of water.

OFFSITE DRAINAGE

There are no offsite contributing areas. All runoff from the north is controlled by Montano Road; all runoff from the west is diverted by Morgan Lane, a street in Saddle Ridge, Unit II subdivision, into the 150 foot drainage R.O.W. All lots abutting the westerly boundary have back yard ponds. The easterly boundary is contiguous with the proposed AMAFCA channel.

ONSITE DRAINAGE

Plate I delineates the internal patterns of drainage of the site. In order to comply with AMAFCA regulations, it will be necessary to use the area ponding approach to control runoff.

AMAFCA has constructed the drainage channel along the southeast boundary of the project. It is currently a graded, excavated channel with no lining extending from Montano Road on the north the Dellyne Avenue on the south, being 3000 feet in length, and serving temporarily as a large storage reservoir. All volumes allowed to runoff from the Equestrian Center shall enter into this channel.

Table I itemizes areas, coefficients of runoff, and volumes of discharge for each sub-area of drainage shown on Plate I. A summary tally of volumes of discharge in both the natural state and the developed state indicates that the area pond approach will, in fact, meet AMAFCA requirements. Estimate runoff

volume before development is equal to 21,727 cubic feet; while after development, it is estimated that runoff volume will be 18,348 cubic feet, a decrease of 15%.

Table II itemizes flow rates for control points B and C. These flow rates were used in sizing drainage rundowns.

SUMMARY OF RECOMMENDATIONS

In conclusion, we make the following recommendations regarding drainage for the Saddle Ridge Equestrian Center.

1. Area ponds be incorporated into the drainage plan for onsite drainage.

2. Rundowns be provided at exit points B and C to prevent any excessive erosion of the channel's side slopes.

TABLE I

VOLUME CALCULATIONS

Drainage Area Designation	Area (acres)	Amount of Rainfall	%Area Running off @ 0.95	%Area Running off @ 0.15	%Area Running Off @ 0.50	%Area Running off @ 0.35	Composite "C"	Allowed to Runoff	Volume to be retained (cu. ft.)	Pond Capacity (cu. ft.)	Pond or Point of Departure Designation
I	1.86	2.2"	40	0	45	15	0.66	-0-	9,800	10,000	A
II	2.34	2.2"	38	0	5	57	0.59	11,025	-0-	-0-	B
III	1.40	2.2"	11	0	0	89	0.42	4,696	-0-	-0-	C
IV	0.57	2.2"	20	75	0	5	0.32	-0-	1,457	1,900	D
V	0.46	2.2"	0	66	0	34	0.22	-0-	810	1,500	E
VI	0.16	2.2"	0	100	0	0	0.15	-0-	200	500	F
VII	0.94	2.2"	0	0	0	100	0.35	2,627	-0-		Sheet Flow
Sub-Totals	7.74							18,348*			

*This volume is (21,627-18,348) = 3,279 cu.ft. less than required. A decrease of runoff equal to 15%

TABLE II

FLOW CALCULATIONS

Point Designation	Areas Contributing	Travel Length (feet)	H (feet)	TC (minutes)	I(100) = 189/(T=25)	Q = (CIA) c.f.s
B	II	550	4	1 (use 10)	5.4	7.5
C	III	524	4	7 (use 10)	5.4	3.2
Sheet Flow	VII	244	3	3 (use 10)	5.4	1.8