



City of Albuquerque

October 18, 1999

Larry D. Read, PE
Larry Read & Associates
12836-B Lomas NE
Albuquerque, NM 87112

**Re: New Mexico Activities Association Office Addition
Grading and Drainage Plan
Engineer's Stamp dated 4-27-99, (C17/D1U11)
Engineering Certification dated 9-10-99**

Dear Mr. Read,

Based upon the information provided in your submittal dated 9-10-99, Engineering Certification for Certificate of Occupancy for the above referenced site is approved.

If I can be of further assistance, please contact me at 924-3986

Sincerely,

Bradley L. Bingham
Bradley L. Bingham, PE
Hydrology Review Engineer

C: Arlene Portillo
file



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

May 14, 1999

Larry Read, P.E.
Larry Read & Associates
P.O. Box 90233
Albuquerque, NM 87199

RE: NEW MEXICO ACTIVITIES ASSOCIATION (D18-D24). DRAINAGE REPORT AND GRADING PLAN FOR BUILDING PERMIT APPROVAL. ENGINEER'S STAMP DATED APRIL 23, 1999 (Accompanying Plan Stamped March 25, 1999.)

Dear Mr. Read:

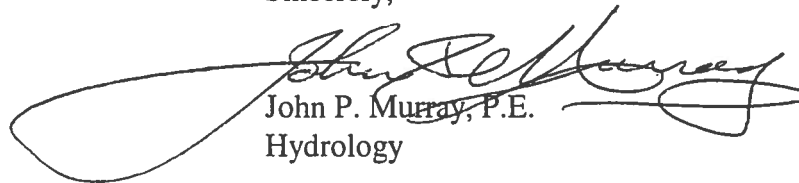
Based on the information provided on your April 28, 1999 submittal, the above referenced project is approved for Building Permit.

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

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

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

Sincerely,


John P. Murray, P.E.
Hydrology

✓: File



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

September 28, 1992

Charles Chuck Easterling
Easterling & Associates
10131 Coors Boulevard N.W. Suite H-7
Albuquerque, NM 87114

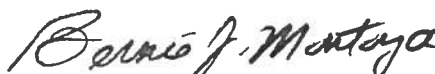
RE: ENGINEER CERTIFICATION FOR NEW MEXICO ACTIVITIES ASSOCIATION
(D18-D24) CERTIFICATION STATEMENT DATED 9/8/92.

Dear Mr. Easterling:

Based on the information provided on your September 14, 1992 submittal,
Engineer Certification for the above referenced site is acceptable.

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/3640

xc: Alan Martinez
File

PUBLIC WORKS DEPARTMENT



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

December 12, 1991

Chuck Easterling
Easterling & Associates, Inc.
10131 Coors Boulevard, NW Suite H-7
Albuquerque, New Mexico 87114

RE: REVISED DRAINAGE PLAN FOR NEW MEXICO ACTIVITIES ASSOCIATION
(D-18/D24) REVISION DATED DECEMBER 9, 1991

Dear Mr. Easterling:

Based on the information provided on your resubmittal of December 10, 1991, revisions as indicated are acceptable. Please be advised that if the building permit has already been obtained, it is your responsibility to assure that the contractor is provided a copy of this approved plan.

Also, Engineer's Certification per the DPM Checklist will be required prior to Certificate of Occupancy release.

If for some reason the channel construction has not been completed prior to Certificate of Occupancy request, then the proposed 15" PVC temporary drain will need to be installed and coordinated with Glenn Jurgensen, Arroyo Maintenance.

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

Cordially,

Bernie J. Montoya, C.E.
Engineering Assistant

xc: Alan Martinez

BJM/bsj
(WP+2867)

PUBLIC WORKS DEPARTMENT

Walter H. Nickerson, Jr., P.E.
Assistant Director Public Works

ENGINEERING GROUP

Telephone (505) 768-2500

AN EQUAL OPPORTUNITY EMPLOYER



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

December 10, 1991

Chuck Easterling
Easterling & Associates, Inc.
10131 Coors Boulevard, NW Suite H-7
Albuquerque, New Mexico 87114

RE: REVISED DRAINAGE PLAN FOR NEW MEXICO ACTIVITIES ASSOCIATION
(D-18/D24) REVISION DATED NOVEMBER 29, 1991

Dear Mr. Easterling:

Based on the information provided on your resubmittal of December 4, 1991, revisions as indicated are acceptable. Please be advised that if the building permit has already been obtained, it is your responsibility to assure that the contractor is provided a copy of this approved plan.

Also, Engineer's Certification per the DPM Checklist will be required prior to Certificate of Occupancy release.

If for some reason the channel construction has not been completed prior to Certificate of Occupancy request, then the proposed 15" PVC temporary drain will need to be installed and coordinated with Glenn Jurgensen, Arroyo Maintenance.

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

Cordially,

Bernie J. Montoya, C.E.
Engineering Assistant

xc: Alan Martinez

BJM/bsj
(WP+2867)

PUBLIC WORKS DEPARTMENT

Walter H. Nickerson, Jr., P.E.
Assistant Director Public Works

ENGINEERING GROUP

Telephone (505) 768-2500

AN EQUAL OPPORTUNITY EMPLOYER



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

September 27, 1991

Chuck Easterling
Easterling & Associates, Inc.
10131 Coors Boulevard, NW Suite H-7
Albuquerque, New Mexico 87114

RE: REVISED DRAINAGE PLAN FOR NEW MEXICO ACTIVITIES
ASSOCIATION (D-18/D24) REVISION DATED SEPTEMBER 12, 1991

Dear Mr. Easterling:

Based on the information provided on your resubmittal of September 12, 1991, the above referenced plan is approved for Building Permit.

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

Also, Engineer's Certification per the DPM Checklist will be required prior to Certificate of Occupancy release.

If for some reason the channel construction has not been completed prior to Certificate of Occupancy request, then the proposed 15" pvc temporary drain will need to be installed and coordinated with Glenn Jurgensen.

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

Cordially,

Bernie J. Montoya, C.E.
Engineering Assistant

xc: Glenn Jurgensen
Alan Martinez

BJM/bsj
(WP+2867)

PUBLIC WORKS DEPARTMENT

Walter H. Nickerson, Jr., P.E.
Assistant Director Public Works

ENGINEERING GROUP

Telephone (505) 768-2500

AN EQUAL OPPORTUNITY EMPLOYER

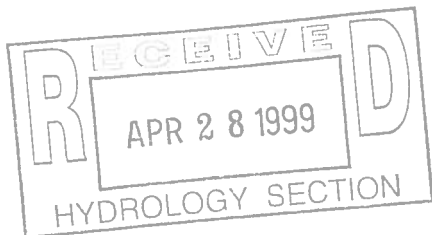
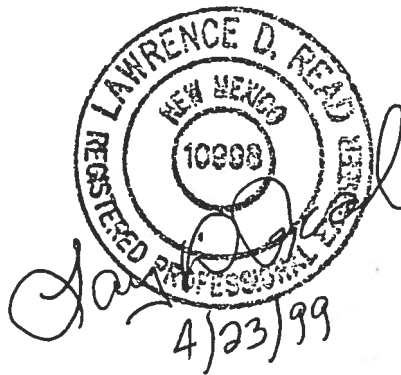
DRAINAGE REPORT

for

NEW MEXICO ACTIVITIES ASSOCIATION

ALBUQUERQUE, NEW MEXICO

April 23, 1999



Prepared by
Larry D. Read, P.E.
12836-B Lomas Boulevard, NE
Albuquerque, New Mexico 87112
(505) 237-8421

DRAINAGE REPORT

for

NEW MEXICO ACTIVITIES ASSOCIATION

ALBUQUERQUE, NEW MEXICO

April 23, 1999

LOCATION & DESCRIPTION

The project site is a 2.07 acre parcel located on the south side of Palomas Palomas Ave NE just east of San Pedro Blvd. NE. The site is currently developed with a 11,800 square foot building and approximately 29,900 square feet of paved parking and sidewalks. The parcel west of this site, between the site and San Pedro is not developed. The parcel east of the site is developed as a school.

The owner is proposing to construct a 1460 square foot addition on the east side of the existing building and a 3096 square foot parking area on the south side of the existing building.

The purpose of this report is to update the existing hydrology for the site to reflect the proposed site additions. COA Drainage File No. D18/D24 prepared by Easterling and Associates dated 9-28-92.

EXISTING DRAINAGE

The site was designed to drain to a 3750 cubic foot detention pond in the northwest corner of the site. A 15" "future outfall" from the pond to the Domingo Baca Arroyo was planned in the original Grading and Drainage Plan. Since construction of the site in 1992, the 15" outfall from the pond to the Domingo Baca Arroyo south of the site has been constructed to the concrete lined arroyo.

The existing roof areas drain through internal roof drain systems that connect to a yard drain system. This 6" diameter system connects to the 15" discharge just inside of the property line near the Domingo Baca Arroyo.

OFFSITE DRAINAGE

The Easterling & Associates Report on the site indicated about 0.53 acres of the school property east of this site drains onto the site. Since that report, a berm has been constructed along the property line to attempt to divert the offsite flows south to the Domingo Baca Arroyo. Field investigation of the berm indicated that the berm is dumped, uncompacted earth that could easily erode voiding the diversion so this report has not considered it in its calculations. There is no other offsite drainage that impacts the site.

PROPOSED CONDITIONS

The building and parking lot additions proposed on this site will divert only a small amount of runoff from its current pattern. This diversion will route runoff from northeast of the proposed addition north into the parking area where it will run west into the existing pond. This runoff currently runs west, around the south side of the existing building, into the existing storm drain and finally into the Domingo Baca Arroyo outfall from the site. The new routing will not increase surface flows on the site, only the surface routing.

The roof area of the proposed addition will connect into the existing collection system as the existing roof areas do.

The remainder of the proposed grading for the proposed building and parking lot addition will only be minor grading to blend the existing grades into the new facilities.

FLOODPLAIN STATUS

This project, as shown on FEMA Flood Insurance Rate Map Panel 35001C0137 D, September 20, 1996, shows that this site is in a Zone X, areas of 100-year flooding with average depths of less than 1 foot or with drainage areas of less than 1 square mile.

METHODOLOGY

The hydrology for this project was analyzed using the January 1994 release of the AHYMO computer modeling program as developed by Anderson Hydro. All procedures are in accordance with those shown in the January 1993 release of the City of Albuquerque Development Process Manual, Section 22.2.

The specific values used for this analysis are as follows:

-Precipitation Zone 3

-Design Storm 100-year, 6-hour duration
 $i = 5.38 \text{ in/hr}$ ($t_c = 0.2 \text{ hours}$)
 $p = 2.60 \text{ in}$

PEAK RUNOFF QUANTITIES

The AHYMO printouts, summary sheets, and miscellaneous calculations to support these analyses are included in Appendix B of this report for reference.

SUMMARY

BASIN	CONDITION /PORTION	Q ₁₀₀ (cfs)	V ₁₀₀ (cf)	Q ₁₀ (cfs)	V ₁₀ (cf)
1D	ON-Site/Exist	3.13	5140	2.09	3426
1D	OFF-Site/Exist	0.67	871	0.45	575
2D	ON-Site/Exist	4.87	7666	3.25	5060
2D	OFF-Site/Exist	1.18	1612	0.79	1064
1D	ON-Site/Dev	NO CHANGE			
1D	OFF-Site/Dev	NO CHANGE			
2D	ON-Site/Dev	5.00	7971	0.33	5260
2D	OFF-Site/Dev	NO CHANGE			

Increase due to Proposed Additions Q₁₀₀ = 0.13 cfs V₁₀₀ = 305 cfs

Capacity of 15" outfall @ 0.005 ft/ft = 6.6 CFS (GRAVITY FLOW)

Head on 15" outfall - pressure flow = 1.71 ft (max water surface 41.7 - top of berm 42.00)

PRESSURE CONDITIONS - 15" OUTFALL
Worksheet for Pressure Pipe

Project Description	
Project File	c:\haestad\fmw\junk.fm2
Worksheet	PRESSURE CONDITIONS
Flow Element	Pressure Pipe
Method	Hazen-Williams Formula
Solve For	Pressure at 1

Input Data	
Pressure at 2	0.00 psi
Elevation at 1	39.00 ft
Elevation at 2	37.50 ft
Length	300.00 ft
C Coefficient	150.0
Diameter	15.00 in
Discharge	4,488.0 gal/min

Results		
Pressure at 1	0.73	psi
Headloss	3.18	ft
Energy Grade at 1	41.71	ft
Energy Grade at 2	38.53	ft
Hydraulic Grade at 1	40.68	ft
Hydraulic Grade at 2	37.50	ft
Flow Area	1.23	ft ²
Wetted Perimeter	3.93	ft
Velocity	8.15	ft/s
Velocity Head	1.03	ft
Friction Slope	0.010583	ft/ft

15" PVC OUTFALL TO ARROYO
Worksheet for Circular Channel

Project Description	
Project File	c:\haestad\fmw\junk.fm2
Worksheet	NMAA
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Mannings Coefficient	0.009
Channel Slope	0.005000 ft/ft
Depth	1.25 ft
Diameter	15.00 in

Results	
Discharge	6.60 cfs
Flow Area	1.23 ft ²
Wetted Perimeter	3.93 ft
Top Width	0.33e-7 ft
Critical Depth	1.03 ft
Percent Full	100.00
Critical Slope	0.004921 ft/ft
Velocity	5.38 ft/s
Velocity Head	0.45 ft
Specific Energy	1.70 ft
Froude Number	0.16e-3
Maximum Discharge	7.10 cfs
Full Flow Capacity	6.60 cfs
Full Flow Slope	0.005000 ft/ft
Flow is subcritical.	

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1	NOTATION	
START												
*S	COMPUTE 100 YR. 6 HR. HYDROGRAPHS FOR 617 TRUMAN NE										TIME=	.00
*S	NMAA.TXT - HYMO PER JAN 1993 DPM REVISIONS											
*S	LOCATION ALBUQUERQUE											
*S	RAINFALL TYPE= 1											
*S	-----											
*S	COMPUTE RUNOFF FOR DEVELOPED CONDITIONS											
*S	-----											
*S	BASIN 1D											
*S	ONSITE PORTION OF BASIN 1D											
COMPUTE NM HYD	101.10	-	1	.00106	3.13	.118	2.07783	1.500	4.603 PER IMP=	78.00		
*S	OFF-SITE PORTION OF BASIN 1D											
COMPUTE NM HYD	102.10	-	2	.00030	.67	.020	1.28888	1.500	3.506 PER IMP=	.00		
*S	ONSITE PORTION OF BASIN 2D											
COMPUTE NM HYD	103.10	-	3	.00177	5.00	.183	1.94006	1.500	4.423 PER IMP=	61.00		
*S	OFF-SITE PORTION OF BASIN 2D											
COMPUTE NM HYD	104.10	-	4	.00053	1.18	.037	1.28888	1.500	3.482 PER IMP=	.00		
*S	-----											
*S	ADD HYD											
ADD HYD	105.10	1& 2	5	.00136	3.80	.138	1.90524	1.500	4.363			
ADD HYD	106.10	5& 3	6	.00313	8.80	.321	1.92483	1.500	4.397			
ADD HYD	107.10	6& 4	7	.00366	9.98	.357	1.83245	1.500	4.264			
*S	-----											
*S	COMPUTE RUNOFF FOR EXISTING CONDITIONS											
*S	-----											
*S	BASIN 1D											
*S	ONSITE PORTION OF BASIN 1D											
COMPUTE NM HYD	108.10	-	8	.00106	3.13	.118	2.07783	1.500	4.603 PER IMP=	78.00		
*S	OFF-SITE PORTION OF BASIN 1D											
COMPUTE NM HYD	109.10	-	9	.00030	.67	.020	1.28888	1.500	3.506 PER IMP=	.00		
*S	ONSITE PORTION OF BASIN 2D											
COMPUTE NM HYD	110.10	-	10	.00177	4.87	.176	1.86533	1.500	4.313 PER IMP=	54.00		
*S	OFF-SITE PORTION OF BASIN 2D											
COMPUTE NM HYD	111.10	-	11	.00053	1.18	.037	1.28888	1.500	3.482 PER IMP=	.00		
*S	-----											
*S	ADD HYD											
ADD HYD	112.10	8& 9	12	.00136	3.80	.138	1.90524	1.500	4.363			
ADD HYD	113.10	12&10	13	.00313	8.67	.314	1.88261	1.500	4.335			
ADD HYD	114.10	13&11	14	.00366	9.86	.350	1.79636	1.500	4.211			
FINISH												

① Flow DRAINING TO CONC. RUNDOWN

AREA = 3780 ft² = 0.08678 ACRES

FROM DPM CHAP 22.2 (Aug 1991 REV)

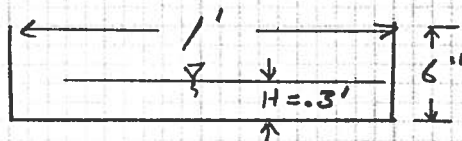
ZONE 3

TREATMENT D

C = 0.93
 i = 5.38 in/hr

Q₁₀₀ = CLA = (0.93)(5.38)(0.08678) = 0.43 cfs

CONCRETE
 RUNDOWN



TREAT AS BROAD CRESTED WEIR
 (TO BE CONSERVATIVE)

Q = CLH^{3/2}

C = 2.5

L = 2/0' 1.0'

Q = 0.43 cfs

FIND H

H = (Q / (CL))^{2/3} = ((0.43) / ((2.5)(1)))^{2/3} = 0.31'