HYDROLOGY D17/D11 3 PLANS

D17/D11

3 PLANS

DRAINAGE REPORT
FOR
SHOP FACILITY
4501 HAWKINS NE
ALBUQUERQUE, NEW MEXICO

DRAINAGE REPORT

FOR

SHOP FACILITY
4501 HAWKINS NE
ALBUQUERQUE, NEW MEXICO

Prepared by:

Adam, Hamlyn, Anderson
Consulting Engineers, Inc.
4055 Montgomery Blvd. NE
Albuquerque, New Mexico 87109

Prepared for:

Ken Hovey Design Group
3700 Simms Avenue SE
Albuquerque, New Mexico

REGISTERED PROFESSIONAL ENGINEER AND LAND SURVEYOR NO 5110 NEW MEXICO JEAN J. BORDENAVE

Jean J. Bordenave, N.M.P.E. & L.S. #5110

RECEIVED
DEC 1 - 1981
CITY ENGINEER

TABLE OF CONTENTS

	Page
PURPOSE	1
LOCATION AND TERRAIN	1
UPLAND DRAINAGE	1
INTERNAL DRAINAGE	1
CONCLUSION	2
APPENDIX A	
COMPUTATIONS	
APPENDIX B	
RAINFALL CHARTS	
PLATE I	
LOCATION MAP	
PLATE II	
AREA TOPOGRAPHY	
PLATE III	
GRADING AND DRAINAGE PLAN	
PLATE IV	
FLOOD HAZZARD BOUNDARY MAP	

DRAINAGE REPORT
SHOP FACILITY
4501 HAWKINS NE
ALBUQUERQUE, NEW MEXICO

PURPOSE

The purpose of this report is to provide a method of construction which will comply with AMAFCA drainage requirements and the City of Albuquerque Policy, dated November, 1979.

LOCATION AND TERRAIN

The tract is located in the northeast quadrant of the City of Albuquerque and is situated on the north side of Hawkins Street, west of Jefferson Street. See Plate I for the exact location.

The site slopes to the west at approximately 2.5% . The site is presently in a natural state with very little vegetation.

UPLAND DRAINAGE

The site recieves flows from the area immediately east of the site bounded by Jefferson Street on the east and Hawkins Street on the south (see Plate II). Approximately 35,000 square feet of area is involved. The flows will be allowed to follow historic directions except at Area 2 where they will be deflected north and south by an 8 inch high header curb.

INTERNAL DRAINAGE

The site consists of two distinct areas (see Plate III). Area A 1 will be left unchanged from that presently existing and any flows generated from this portion of the site will be permitted to flow unimpeded from east to west across the site. The runoff factor for this area is taken to be 0.40 for both the developed and undeveloped conditions.

Area A 2 is the portion of the site that will be modified during development. The flows generated from this portion of the site will be directed to a detention pond located at the southwest corner of the property. The flows will discharge onto Hawkins Street through a 4 inch diameter PVC drainage pipe. The runoff factors for this area are 0.95 for roof and parking areas and 0.30 for landscaped areas.

CONCLUSION

Internally generated flows have been treated in such a manner that the 5yr 100 year peak flow from the developed site will be less than the 10 year undeveloped peak flow as required by the City of Albuquerque Policy, dated November 1979. Offsite flows are permitted to pass through the site.

The site is not in a flood hazard area. (See Plate IV.)

APPENDIX A
COMPUTATIONS

ADAM, HAMLYN, ANDERSON CONSULTING ENGINEERS, INC.		JOB NO. DATE: 12/12/81 BY: DW	SHT. NO. OF

EXISTING CONDITION

AREA = $A_1 + A_2$

" = 190 × 100 = 19000 ft²

A_1 = 100 × 83 + 13 × 57 = 9040 ft²

A_2 = 9960 ft² ; A_{2A} = 17.5 × 30 = 525 ; A_{2B} = 56 × 39 + 19 × 13 = 2431

A_{2C} = 9960 − 525 − 2431 = 7004 ft²

ON-SITE – 10 YR.

tc = 5 MIN. ∴ I = 4.44 IN/HR.

Q_{10} = CIA = 0.4 (4.44) 19000/43,560

= 0.77 cfs

ON-SITE – 100 YR., 6 HR

ACCUM. 6 HR RAINFALL = 2.4 IN

6 HR VOL = 2.4 (.4) (19000)/12 = 1520 ft³

DEVELOPED COND

6 HR. VOL = 2.4 [(9040 (.4) + (525 + 2431)(.30) + 7004 × .95]/12

(A_2) = 2231 ft³

POND VOL. REQ'D = 2231 − 1520 = 711 ft³

POND VOL. PROV.

CONTOUR	ELEV.	31.55	A = 0	VOL = 0	ΣVOL = 0
"	"	31.80	A = 455	VOL = 57	ΣVOL = 57
"	"	33.30	A = 656	VOL = 833	ΣVOL = 890

ADAM, HAMLYN, ANDERSON CONSULTING ENGINEERS, INC.		JOB NO. DATE: 12/12/81 BY: DW	SHT. NO. OF

MAX. FLOW FROM DETAINED AREA = Q_{10} (UND) − Q_{100} (A, DEV)

Q_{100} (A, DEV) = CIA = (0.4)(5.52)(9040)/43,560 = .46 CFS.

∴ MAX Q = .77 − .46 = .31 CFS

DEPTH OF WATER @ VOL = 711 ft^3

A @ EL 31.8 = 455 VOL = 57

A @ EL 33.3 = 656 VOL = 890

A @ EL > 31.8 = $455 + \left(\frac{656-455}{1.5}\right)d$

$$VOL = \left[455 + 455 + \left(\frac{656-455}{1.5}\right)d\right]\frac{d}{2}$$

$$VOL = 455d + 67d^2$$

$$.1473d^2 + d - .0022V = 0$$

$$d = \frac{-1 + [1 + .0013V]^{1/2}}{.2946}$$

$$\therefore d = \frac{-1 + [1 + .0013(711-57)]^{1/2}}{.2946} = 1.218 \text{ ft}$$

DETERMINE ORIFICE SIZE

$$Q = 0.6A[2gh]^{1/2}(t) = 0.31 \text{ CFS}$$

?

$$.6A[2(32.2)1.22]^{1/2}(1.0) = 0.31$$

$A = .0583 \text{ ft}^2 = 8.39 \text{ in}^2$

$A = \frac{\pi D^2}{4} = .785D^2 = 8.39$

∴ D = 3.27"

TRY 4" ϕ PVC ID = 3.548 in

A = 9.89 in^2 = .0687 ft^2

$$Q = 0.6(.0687)(64.4d)^{1/2}t$$

$= .3306d^{1/2}t$

$= 99.18d^{1/2}$ for 5 min

$= 198.35d^{1/2}$ for 10 min

ADAM, HAMLYN, ANDERSON
CONSULTING ENGINEERS, INC.

JOB NO.
DATE: 12/12/81
BY: DW
SHT. NO.
OF

RUNOFF TO POND

= RUNOFF FROM A2
= [(525 + 2431)(.30) + 7004(.95)] RAINFALL/12
= (886.8 + 6653.8) RAINFALL/12
= 628.4 × RAINFALL

4"Φ PVC. h = d - .17'

TIME	RAINFALL	RUNOFF VOLUME	STOR. DEPTH	Δ OUTFLOW	Σ OUTFLOW	STORAGE
MIN	IN	ft³	'	ft³	ft³	ft³
0	0	0	.40	48	48	323
5	.59	371	.79 .90	85	133	445
10	.92	578	1.02 1.08	95	228	507
15	1.17	735	1.13 1.14	98*	326	522
20	1.35	848	1.16 1.16	98*	424	519
25	1.50	943	1.15			

* PEAK FLOW = 98/5×60 = .33 cfs

CHECK PEAK OUTFLOW FROM TOTAL SITE. (CFS)

TIME	5 min	10 min	15 min	20 min	25
AREA A2	.16	.28	.32	.33	.33
AREA A1	.59	.46	.36	.33	.30
TOTAL	.75	.74	.68	.66	.63

PEAK FLOW DEV. < PEAK FLOW UND = .77 cfs OK

APPENDIX B
RAINFALL CHARTS

PRECIPITATION DATA

ALBUQUERQUE, SAN PEDRO BLVD WEST

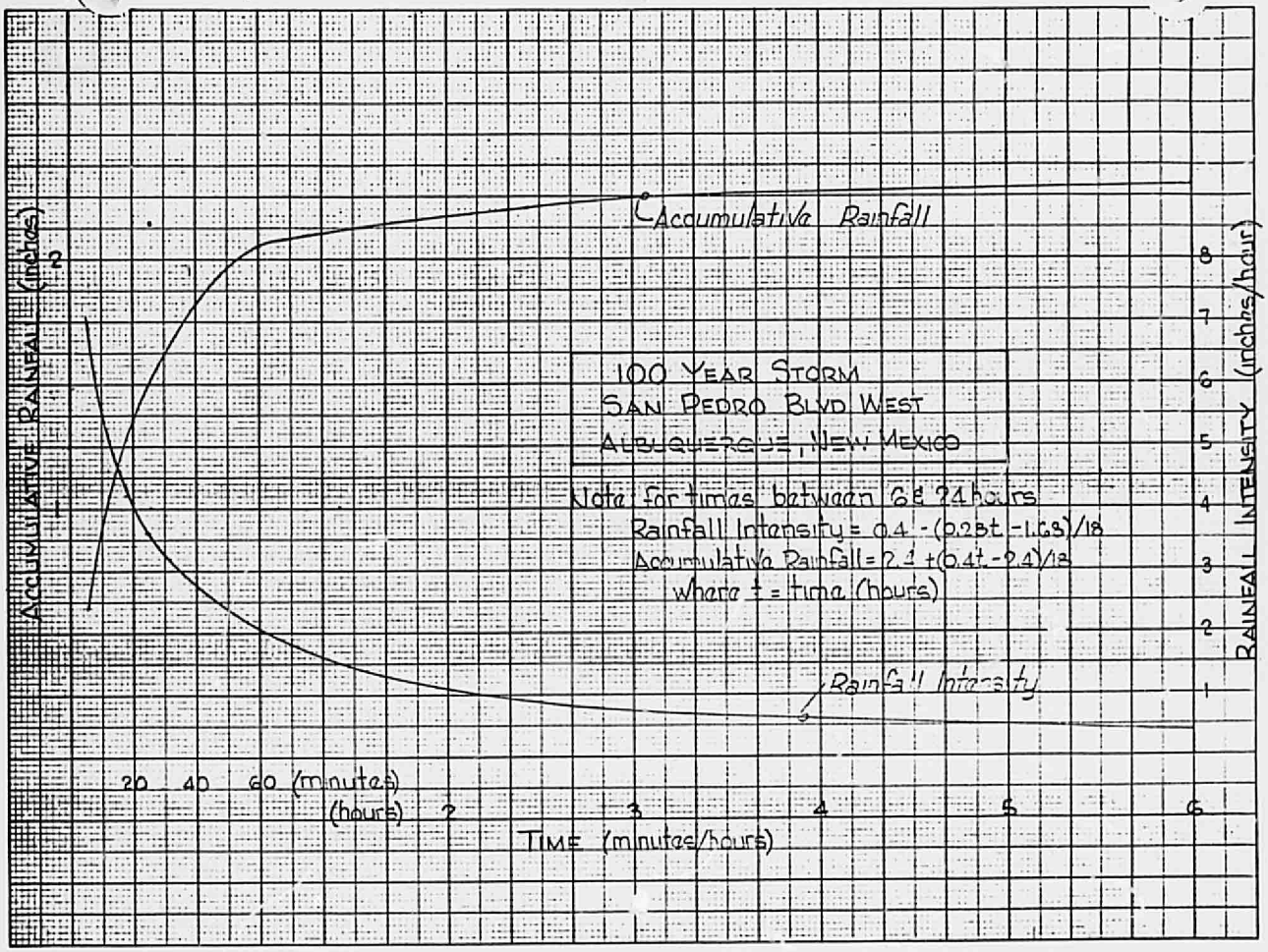
from NOAA Atlas 2, Volume IV, New Mexico

Recur. Inter.	Duration	min / hour	5	10	15	30	1	2	3	6	12	24
2 Year	Rainfall	inches	0.23	0.36	0.45	0.62	0.79	0.83	0.94	1.05	1.18	1.3
	Intensity	inches/hour	2.76	2.16	1.80	1.24	0.79	0.44	0.31	0.18	0.10	0.05
5 Year	Rainfall	inches	0.32	0.49	0.62	0.86	1.09	1.18	1.24	1.35	1.50	1.65
	Intensity	inches/hour	3.84	2.94	2.48	1.72	1.09	0.65	0.41	0.23	0.13	0.07
10 Year	Rainfall	inches	0.37	0.58	0.73	1.02	1.29	1.40	1.47	1.6	1.75	1.9
	Intensity	inches/hour	4.44	3.48	2.92	2.04	1.29	0.70	0.49	0.27	0.15	0.08
25 Year	Rainfall	inches	0.46	0.71	0.89	1.24	1.57	1.68	1.76	1.9	2.13	2.35
	Intensity	inches/hour	5.52	4.26	3.56	2.48	1.57	0.84	0.59	0.32	0.18	0.10
50 Year	Rainfall	inches	0.52	0.81	1.03	1.43	1.81	1.94	2.03	2.2	2.40	2.6
	Intensity	inches/hour	6.24	4.86	4.12	2.86	1.81	0.97	0.68	0.37	0.20	0.11
100 Year	Rainfall	inches	0.59	0.92	1.17	1.62	2.05	2.17	2.25	2.4	2.60	2.8
	Intensity	inches/hour.	7.08	5.52	4.68	3.24	2.05	1.09	0.75	0.4	0.22	0.12

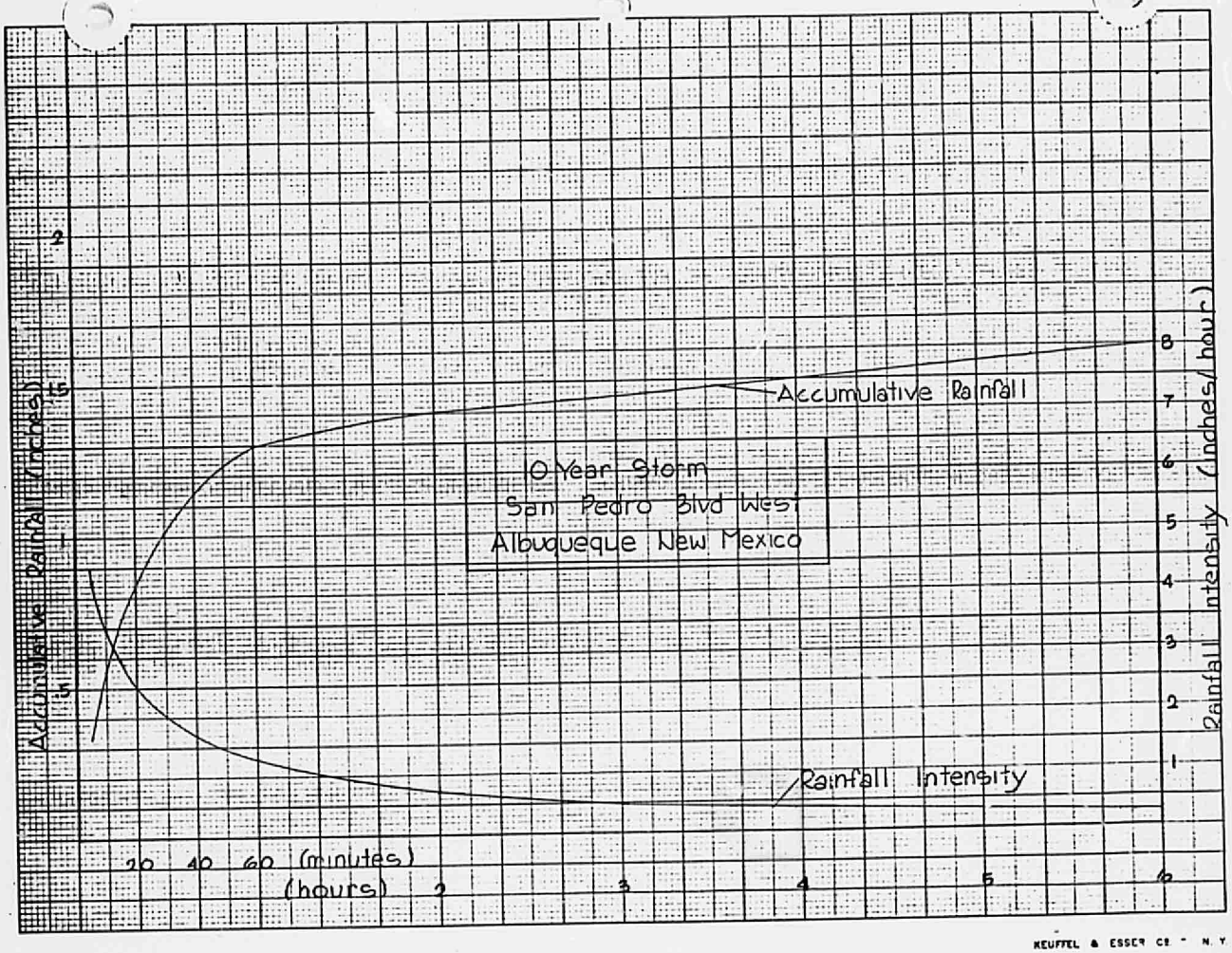
2 year 1 hour = $-0.011 + 0.942(1.05^2/1.3) = 0.79$ in.

100 year 1 hour = $0.494 + 0.755(2.4^2/2.8) = 2.05$ in.

3 hour = 0.569 (6 hour) + 0.431 (1 hour)
2 hour = 0.341 (6 hour) + 0.659 (1 hour)
30 min = 0.79 (1 hour)
15 min = 0.57 (1 hour)
10 min = 0.45 (1 hour)
5 min = 0.29 (1 hour)



KEUFFEL & ESSER CO. N. Y.



KEUFFEL & ESSER CO. N. Y.

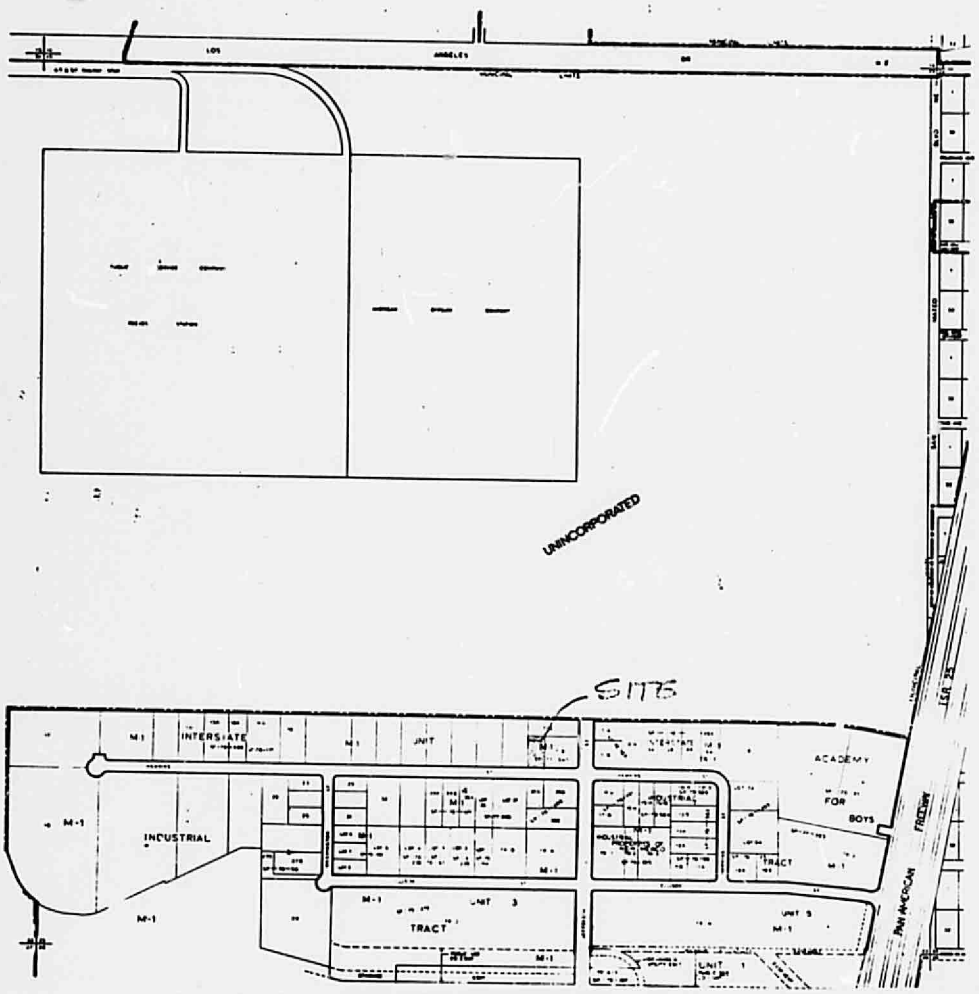


PLATE II

D·17·Z

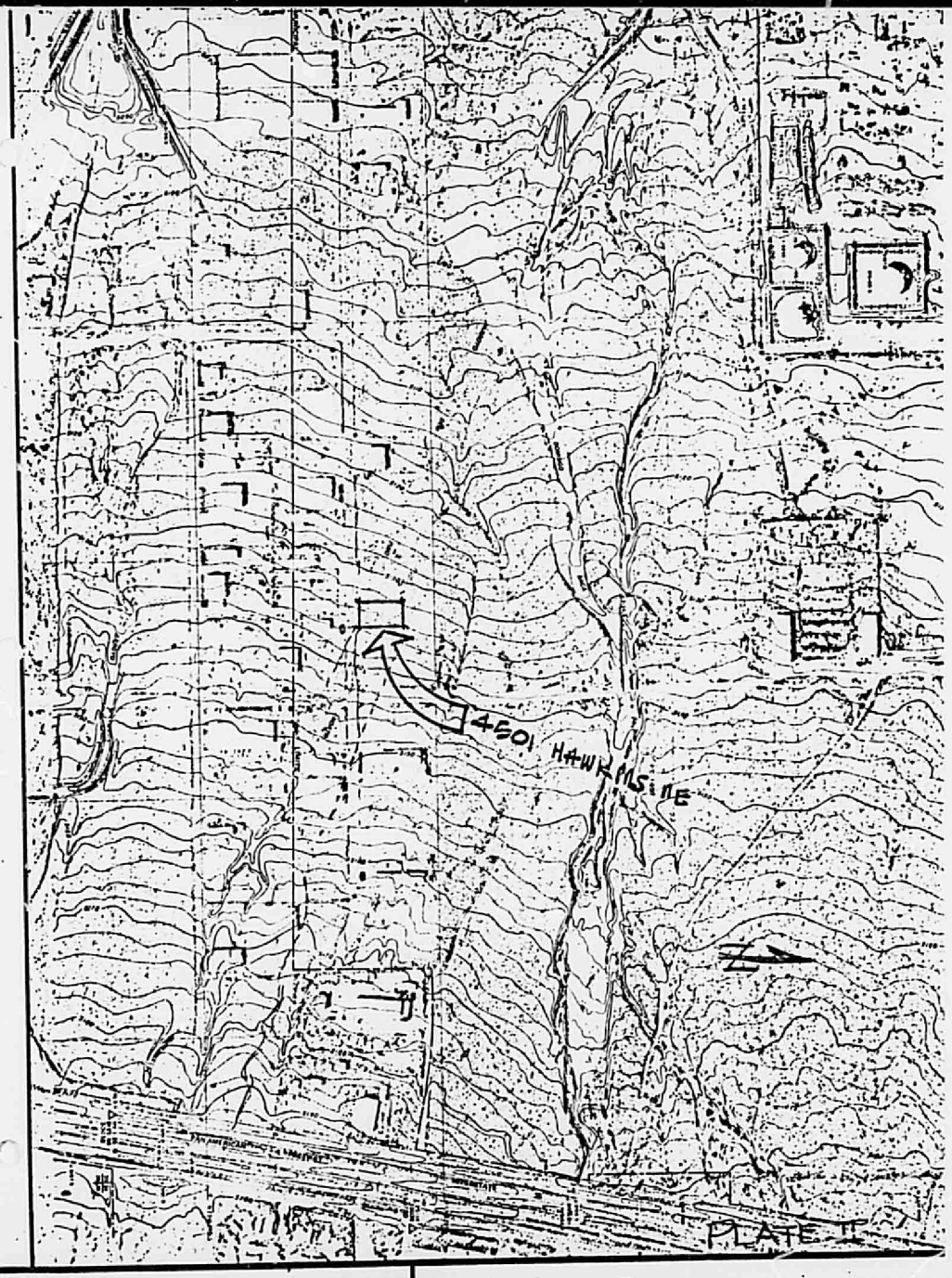
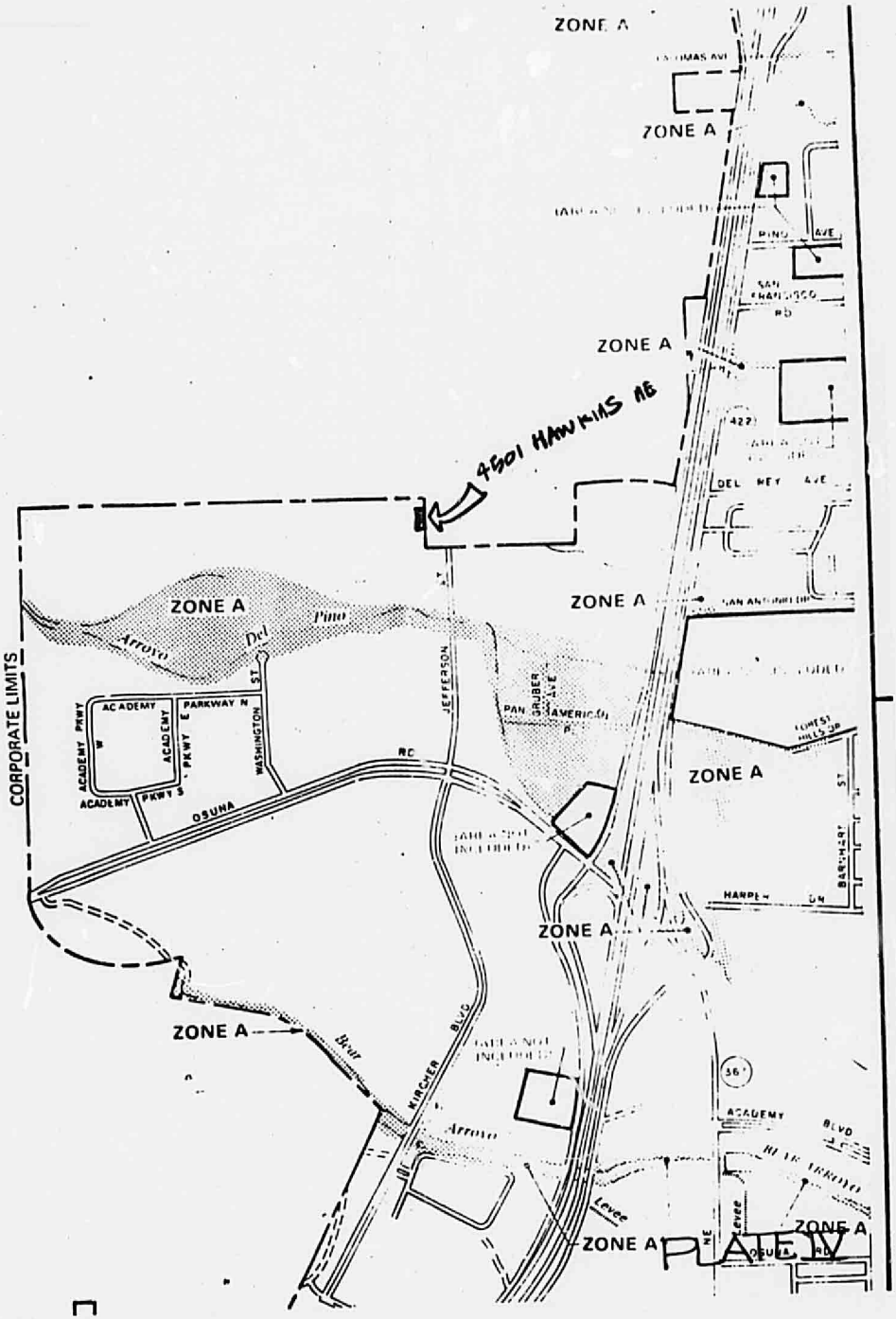


PLATE II


ZONE A
ZONE A
ZONE A
4501 HAWKINS NE
ZONE A
ZONE A
ZONE A
ZONE A
ZONE A
ZONE A
ZONE A
ZONE A
CORPORATE LIMITS
Arroyo
Del
Pino
ACADEMY
PARKWAY N
ACADEMY PKWY W
ACADEMY PKWY E
ACADEMY PKWY S
WASHINGTON ST
JEFFERSON
OSUNA
RC
PAN AMERICAN
GRUBER AVE
DEL REY AVE
HARPER DR
BARNHART ST
ACADEMY BLVD
KIRCHER BLVD
Bear
Arroyo
Levee
Levee
PLATEAU

August 9, 1982

City of Albuquerque
Hydrology Department
Albuquerque,
New Mexico

Attention: Fred Aguirre

Dear Sir;

The drainage situation between the property at 4501 Hawkins and the property immediately to the west, owned by John Turner, is temporary.

John Turner's property is not developed at this time. George Martin and John Turner agree at this time that the 4501 Hawkins property may drain westward onto the vacant lot immediately to the west owned by Turner.

They further agree that when the Turner lot is developed a drainage system satisfactory to the City of Albuquerque will be implemented by the parties.

John Turner

George R. Martin

City of Albuquerque
P.O. BOX 129 ALBUQUERQUE, NEW MEXICO 87103

D17 - D11

December 23, 1981

Mr. Jake Bordenave
Adams, Hamlyn, Anderson
4055 Montgomery N.E.
Albuquerque, NM 87109

RE: DRAINAGE REPORT FOR SHOP FACILITY - 4501 HAWKINS N.E.

Dear Jake:

The referenced drainage report is approved based on your submittal of December 22, 1981.

Very truly yours,

Brian G. Burnett
Civil Engineer/Hydrology

BGB/tsl

cc: Mr. Ken Hovey
Mr. George Martin

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

D17 - D11

December 23, 1981

Mr. Jake Bordenave
Adams, Hamlyn, Anderson
4055 Montgomery N.E.
Albuquerque, NM 87109

RE: DRAINAGE REPORT FOR SHOP FACILITY - 4501 HAWKINS N.E.

Dear Jake:

The referenced drainage report is approved based on your submittal of December 22, 1981.

Very truly yours,

BGB

Brian G. Burnett
Civil Engineer/Hydrology

BGB/tsl

cc: Mr. Ken Hovey
Mr. George Martin

Adam, Hamlyn, Anderson / consulting engineers inc.

4751 North Fifteenth Street
4055 Montgomery Blvd. N.E.
216 North Chippewa Place

Phoenix, Arizona 85014
Albuquerque, NM 87109
Chandler, Arizona 85224

602-264-1397
505-881-1808
602-889-1345

PRINCIPALS:
CARL H. ADAM, P.E.
RICHARD L. HAMLYN, P.E.
JAMES D. ANDERSON, P.E.
DOYLE L. WISTE, P.E.
JAKE BORDENAVE, P.E.

ASSOCIATE:
FRED E. GOLDMAN, P.E.

December 22, 1981

City of Albuquerque, Engineering
P.O. Box 1293
Albuquerque, New Mexico 87103

Attn: Mr. Brian Burnett

AHA Job No. AC81591

Re: Drainage Report for Shop Facility
4501 Hawkins NE

Dear Sir:

As per our telephone conversation this morning, the curb has been removed along the east property line of the subject project.

Submitted herewith are 2 prints to be inserted into the Drainage Report and 2 copies to be attached to construction plans. Please remove and destroy previously submitted prints.

It is my understanding that the Drainage Report will be accepted upon submittal of these prints.

Sincerely,

Jean J. Bordenave, P.E.
Vice President

RECEIVED
DEC 23 1981
ENGINEERING

JJB/ccl

Encl:

Reply to: ☐ Phoenix ☐ Chandler ☒ All

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

RECEIVED

DEC 16 1981

ENGINEERING

DRAINAGE REPORT INFORMATION SHEET

PROJECT TITLE SHOP FACILITY AT 4501 HAWKINS ST. NE

ZONE ATLAS PAGE NO. D-17-Z11 CITY ADDRESS 4501 HAWKINS ST. NE

Shop Fac. 4501 Hawkins

LEGAL ADDRESS ~~LOT 1A, UNIT 4, INTERSTATE INDUSTRIAL TRACT~~

ENGINEERING FIRM ADAM, HAMLTN, ANDERSON CONTACT JAMES GARDENHIRE

ADDRESS 4055 MONTGOMERY NE PHONE 883-3093

OWNER GEORGE MARTIN CONTACT

ADDRESS 7117 VERANDA RD. NE PHONE 884-5213

ARCHITECT/SURVEYOR KEN HOVEY DESIGN GROUP CONTACT KEN HOVEY

ADDRESS 3700 SIMMS SE PHONE 255-4756

DATE SUBMITTED DEC. 8, 1981

BY KEN HOVEY

RECEIVED

DEC 16 1981

CITY ENGINEER

MUNICIPAL DEVELOPMENT DEPARTMENT

Richard S. Heller, P.E., City Engineer ENGINEERING DIVISION Telephone (505) 766-7467

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

CONSTRUCTION PLAN REQUIREMENTS
CHECKLIST

PROJECT TITLE SHOP FACILITY AT 4201 HAWKINS NE

DATE _____ ZONE ATLAS PAGE NO. D-17

REVIEWER _____

LEGAL ADDRESS LOT 1A, UNIT 4, INTERSTATE INDUSTRIAL TRACT

ENGINEERING FIRM ADAM, HAMLTN, ANDERSON CONTACT JAMES EDERMANN

ADDRESS 4000 MONTGOMERY NE PHONE 883-3093

OWNER GEORGE MARTIN CONTACT GEORGE MARTIN

ADDRESS 7117 VERANDA NE PHONE 884-5713

ARCHITECT/SURVEYOR KEN HOVEY DESIGN GROUP CONTACT KEN HOVEY

ADDRESS 3700 SIMMS SE PHONE 255-4750

GENERAL

Yes	No	NA	See Comments	
				1. Professional's Stamp with signature and date: A. Engineer who prepared the Drainage Report B. Engineer or Surveyor who performed survey C. Engineer, Architect or Surveyor who prepared the grading plan.
				2. North arrow with standard engineering scales used: A. 1"=10' for sites less than one (1) acre. B. 1"=20' for sites equal to but less than five (5) acres. C. 1"=50' for sites greater than five (5) acres
				3. Vicinity map with Zone Atlas Page No. and legal description.
				4. Location and Description of the Albuquerque Control Survey Vertical Datum.
				5. Location and Description of the Temporary Bench Mark on site.
				6. Legend indicating symbols and abbreviations used.
				7. Certification of: A. Finish floor elevation in the Flood Zone by Engineer or Surveyor. B. Drainage & Grading Plan by Engineer.

TOPOGRAPHY:

Yes	No	NA	See Comments		
				8.	Existing contours (per Subdivision Ordinance A-21A5el and AMAFCA 80-15 Sec. 7A and spot elevations adequately showing conditions on-site and any other significant spot elevations off-site which would increase clarity. Note: Contours and spot elevations should be extended a minimum of 15' beyond property line. Some sites may require more off-site topographic information.
				9.	Proposed contours (per Subdivision Ordinance A-21A5el and AMAFCA 80-15 Sec. 7A) superimposed over existing contours, auequately supporting the drainage plan (A-21A11; B-7A).
				10.	Proposed and existing contours or spot elevations at the property line adequately demonstrating any changes in grade.
				11.	Existing or proposed (City approved) top-of-curb and flowline elevations along streets adjacent to the site with mean sea level designation (This also applies to alleys).
				12.	Finish floor elevation(s) with mean sea level designation.
				13.	Required spot elevations for the standard City drivepad.

CONSTRUCTION DETAIL:

Yes	No	NA	See Comments		
				14.	Swales defined by arrows, spot elevations, and cross-sections.
				15.	Elevation at property line at least 4" above top of curb.
				16.	Internal contributory drainage areas outlined, including roof areas,
				17.	Location of canales, scuppers and drain pipes.
				18.	Notes defining property line, asphalt sidewalks, planting areas, ponding areas, and all other areas where definition would increase clarity.
				19.	Erosion Control Plan (during construction and for phased construction).
				20.	Indication of all easements and rights-of-way on, or adjacent to, the site with dimensions and purpose shown.
				21.	Retaining wall required when a vertical grade change greater than 18" is indicated.
				22.	Details of ponds, swales, rundowns, curb cuts, water blocks, emergency spillways, retaining walls, pond outlets, safety fences, slopes, and all other significant drainage structures with contours, cross-sections and spot elevations when appropriate. ALL CROSS-SECTIONS MUST BE DRAWN TO STANDARD ENGINEERING SCALE OR ADEQUATELY DIMENSIONED.

23. Proposed construction within City right-of-way per City Engineer's Special Order No. 19.

24. Indication of all existing structures on or adjacent (15' minimum) to the site, such as: retaining walls, buildings, pavement, ponds, etc.

25. Indication of street name(s) adjacent to the site.

26. Storm runoff routed through the drivepad or a City approved curb cut.

27. Slopes (cut or fill) with height of less than 18", not steeper than 2:1. Slopes with height greater than 18", not steeper than 3:1.

28. Pond(s)' 100 year water surface:
    A. Elevation
    B. Outlined on the Plan

COMMENTS:

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

DRAINAGE REPORT REQUIREMENTS
CHECKLIST

PROJECT TITLE SHOP FACILITY AT 4501 HAWKINS ST. NE

DATE OCT. 23, 1981 ZONE ATLAS PAGE NO. D-17

REVIEWER

LEGAL ADDRESS LOT 1A, UNIT 4, INTERSTATE INDUSTRIAL TRACT

ENGINEERING FIRM ADAM, HAMILTON, AMBERSON CONTACT JAKE BERGMANS

ADDRESS 4095 MONTGOMERY NE PHONE 883-3093

OWNER GEORGE MARTIN CONTACT GEORGE MARTIN

ADDRESS 7117 VERANDA RD. NE PHONE 884-5213

ARCHITECT/SURVEYOR KEN HOVEY DESIGN GROUP CONTACT KEN HOVEY

ADDRESS 3100 SIMMS SE PHONE 255-4756

Approval of the submitted drainage will be granted when the following items have been satisfied. Please be advised that approval of the drainage report does not constitute approval of the construction plans (See Construction Plan Requirements Checklist). The pertinent sections of the City of Albuquerque Subdivision Ordinance and/or the AMAFCA Resolution 80-15 (labelled A and B respectively) are identified in parenthesis after each requirement.

GENERAL:

YES	NO	NA	SEE COMMENTS	
				1. ENGINEER CERTIFIES
				2. PLANNING HISTORY - Planning and zoning action history (A-21B; B-7).
				3. PROFESSIONAL CERTIFICATION - Professional's stamp with signature and date (B-4F and B-7B):
				A. Engineer who prepared the Drainage Report.
				B. Engineer or Surveyor who performed the survey.
				C. Engineer, Architect, or Surveyor who prepared the grading plan.
				4. FLOOD HAZARD - Delineation of site on pertinent Flood Hazard Boundary Map (A-21B; B-7B).
				5. WATERSHED SOILS - Delineation of site and contributing off-site watersheds on SCS Bernalillo County Soil Survey Maps (A-21B; B-7B).
				6. SOILS - Soils investigation report for ponding within 15 ft. from planned or existing structure or closer than 15 ft. from the property line minus the required setback on adjacent property. For ponds 18" deep or less, water may be impounded adjacent to street ROW but not closer than 10' from pavement. For ponds deeper than 18", water shall not pond closer than 15' to the pavement (A-21D;B-7B).

OFF-SITE CONDITIONS:

YES	NO	NA	SEE COMMENTS	
				7. WATERSHED AREA - Delineation of off-site contributing watersheds on City of Albuquerque Ortho-Topo Area Maps at scale 1" = 200' or 1" = 500' (A-6B15; B-7B).
				8. STORM FLOWS - Quantification of off-site rates of flow caused by contributing watersheds for the:
				A. 10 year frequency storm (A-6B15)
				B. 100 year frequency storm (A-6B15 B-2E).
				9. FLOW DEPTH AND VELOCITY
				A. Off-site flow velocities determined (A-6B15).
				B. Off-site flow depths determined (A-6B15).
				C. Locations indicated for A and B above (A-6B15).
				10. OTHER CONDITIONS - Discussion of any off-site conditions or drainage facilities that affect site drainage (A-21A5f; B-7B).
				11. PROPOSED TREATMENT - Adequate treatment of off-site flows including:
				A. Definition of required drainage facilities (A-21B; B-4A).
				B. Location and configuration of facilities defined in A above (A-21B; B-4A).
				C. Quantification that off-site flow draining through site shall do so at a rate of flow velocity, quantity, and location which does not exceed the capacity on such site and downstream drainage facilities OR does so in a manner similar to that which existed before such alteration (B-4A).
				12. ROW-EASEMENTS - Delineation of R.O.W. and/or Easement configuration necessary to accommodate #11 above (A-21B;B-7B).

ON-SITE CONDITIONS:

YES	NO	NA	SEE COMMENTS	
				13. FLOW VOLUMES AND RATES - Calculations showing on-site undeveloped and developed flow volumes and rates (B-4F).
				14. FLOW DEPTH AND VELOCITY:
				A. On-site flow velocities determined (A-6B15).
				B. On-site flow velocities determined (A-6B15).
				C. Locations indicated for A and B above (A-6B15).
				15. PROPOSED TREATMENT - Adequate treatment of on-site flows including:
				A. Definition of required drainage facilities (A-21B; B-4F).
				B. Location and configuration of facilities defined in A above (A-21B; B-4F).
				1. Pond volume calculations (B-4B).
				2. Positive discharge of ponds with required rate and outlet calculations (B-4B).
				3. Pond emergency spillway calculations (B-7B)

YES	NO	NA	SEE COMMENTS	
				4. Pond fencing required for depths greater than 18" (B-7B).
				5. Pond landscaping provisions and commitments (A-21B).
				6. Pond maintenance provisions and commitments. SEE ATTACHED STANDARD COVENANT (A-21B).
				7. Channel characteristics including flow depths and velocities (A-21B).
				8. Storm sewer characteristics including capacity and hydraulic grade line calculations (A-21B).
				9. Hydraulic characteristics of other storm drainage facilities listed in 80-15; Sec. 2c(A-21B).
				C. Quantification that on-site flow shall discharge at a rate of flow, velocity, quantity, and location which does not exceed the capacity of downstream drainage facilities OR does so in a manner similar to that which existed before such alteration (B-4B).
				16. ROW-EASEMENTS - Delineation of R.O.W. and/or Easement configuration necessary to accommodate #13 above (A-21B).

PLAN DRAWINGS:

YES	NO	NA	SEE COMMENTS	
				17. DRAFTING STANDARDS:
				A. North Arrow indicated (A-21A2).
				B. Standard engineering scales used - 1" = 10' for sites less than one acre; 1" = 20' for sites less than five acres; 1" = 50' for sites greater than five acres (A-21A2).
				C. Legend.
				18. SITE DESCRIPTION:
				A. Copy of zone atlas page with property outlined (A-21A6).
				B. Legal description (A-21A6).
				19. BENCH MARKS:
				A. Reference Albuquerque Control Survey Vertical Datum Location (A-21A5e; B-7A).
				B. Site ground elevation based on mean sea level datum as established by the U.S. Coast and Geodetic Survey, North American datum 1929 (A-21A5e; B-7A).
				C. Temporary bench mark description (A-21A5e; B-7A).
				20. EXISTING SITE CONDITIONS:
				A. Existing contours per Subdivision Ordinance A-21A5el and AMAFCA 80-15 B-7A.
				B. Spot elevations adequately showing conditions on-site (A-21A5el; B-7A).

YES	NO	NA	SEE COMMENTS	
				C. Contours and spot elevations extending a minimum of 15' beyond property line (A-21A5e1; B-7A).
				D. Identification of all existing structures located on-site or on adjacent property (15' minimum) with particular attention to retaining and garden walls (A-21B; B-7B).
				E. Identification of all existing drainage facilities located on-site or on adjacent property (A-21B; B-7B).
				F. Pertinent elevation(s) of structures and facilities defined in D and E above with Mean Sea Level designation (A-21B; B-7A).
				G. Indication of all existing easements and right-of-ways on, or adjacent to the site with dimensions and purpose shown (A-21A5b & c).
				H. Existing City top of curb and flow line elevations with Mean Sea Level designation (A-21B; B-7B).

21. PROPOSED SITE CONDITIONS:

				A. Proposed contours (per Subdivision Ordinance A-21A5e1 and AMAFCA 80-15 Sec. 7A) superimposed over existing contours, adequately supporting the drainage plan (A-21A11; B-7A).
				B. Indication of all proposed easements and right-of-ways on or adjacent to the site with dimensions and purpose shown (A-21A5G & C).
				C. Proposed street and alley grades when site abuts a dedicated unpaved street or alley. These grades are available, at no charge, from the City Engineer's Office. An advance request will expedite your project. NOTE: At present there is a 3 month wait to have the City Engineer supply grades. However, to expedite the plans, the City Engineer will review grades provided by an engineer (A-21A7).
				D. Internal contributory drainage areas, including roof areas, outlined on plan (A-21B; B-7B).
				E. Proposed (City approved) top of curb elevations with Mean Sea Level designation (A-21B; B-7B).
				F. Flow lines defined by arrows and spot elevations with Mean Sea Level designation (A-21B; B-7B).
				G. 100 year pond depth determined and outlined on the plan (A-21B;B-7B).
				H. Notes defining property line, asphalt sidewalks, planting areas, ponding areas, and all other areas whose definition would increase clarity (A-21A5d & g; B-7A).
				I. Finish building floor elevation(s) with Mean Sea Level designation (A-21A11; B-7A).
				J. Slopes (cut or fill) with height of less than 18", not steeper than 2:1. Slopes with height greater than 18", not steeper than 3:1 (A-21B; B-5).

				K. Elevation of property line at least 1 ft. above flowline (A-21B).
				L. Retaining wall required when a vertical grade change greater than 18" is indicated (A-21B; B-7A).
				M. Details of ponds, swales, rundowns, curb cuts, water blocks, and all other significant drainage structures with contours, cross-sections, and spot elevations when appropriate. NOTE: All proposed construction within the public right-of-way must follow the City Engineer's Special Order No. 19 (A-21B; B-7B).

OTHER:

YES	NO	NA	SEE COMMENTS	
				22. Erosion Control Plan (A-21B; B-7B).
				23. Owners commitment to construct, operate, and maintain drainage facilities in substantial compliance with drainage report and grading plan (A21B).

COMMENTS: _____