Boyle Engineering Corporation

BY V.J.C. DATE 4/20/28 SUBJECT Ballowah Office Bldg. SHEET NO. 5 OF
CHKD. BY DATE Revise Dry Well Capacity JOB NO.

Infiltration rate = 1.25 min/inch (average in 30' hole)

Velocity through dry well surface = $0.8 \frac{\text{inch}}{\text{min}} \frac{1 \text{ min}}{60 \text{ sec}} \frac{\text{ft}}{12 \text{ inch}} = .00111 \frac{\text{ft}}{\text{sec}}$.

Total Area = $\pi(5.5)(30) + \frac{\pi(5.5)^2}{4} = 542 \text{ ft}^2$

Capacity per dry well = .60 ft^3/sec.

Try 4- dry wells Total Cap. = 2.4 cfs.

Total Area contributing to Dry Wells = 2.79 - 1.48 = 1.31 Ac.

Approximate portion of hydrograph from time = 0 to t_c = 11 min using triangular configuration. Determine ponding required using 5 min. time increments beyond t_c.

time	i	Q	Vol. to Pond	Vol. to Dry Well	Ponding Req.	Σ Pond.
11	5.25	6.1	2013	1584	429	
15	4.73	5.49	1390	576	814	1243
20	4.20	4.88	1555	720	835	2078
25	3.78	4.39	1390		670	2748
30	3.43	3.99	1257		537	3285
35	3.15	3.66	1147		427	3712
40	2.90	3.38	1056		336	4048
45	2.69	3.13	976		256	4304
50	2.51	2.93	909		189	4493
55	2.36	2.74	850		130	4623
60	2.22	2.58	798		78	4701
65	2.10	2.44	753		33	4734 ←
70	1.98	2.31	712	720	-25	4726
			14,806			

Max. Ponding Req. = 4734 ft^3

Boyle Engineering Corporation

BY V.J.C. DATE 4/20/88 SUBJECT Bellomah Office Drng SHEET NO. 6 OF
CHKD. BY DATE Revise Dry Well Capacity JOB NO.

Determine Ponding Volume Avail.

Using Cross-Section Method, Vol. @ 11.66 El = 2758 ft^3

Surface Area ≈ 10,500 ft^2

Additional depth Req. = $(4734 - 2758)/10{,}500 = .19'$

Raise Slope @ Parking ramp from 9.5 % to 10.0 %

High Water Elev. = 11.82

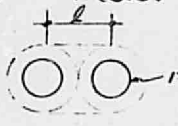
Δ Area = 1100 $ft.^2$

Add. Vol. = $(.82 - .66)(10{,}500 + 11{,}600)(.5) = 1768$

Total Volume = 2758 + 1768 = 4526 = 96 % of Req. Vol. *

Ck. Min. Distance Req Between Dry Wells

$C = \pi(5.5) = 17.3\ ft^2$



To maintain Percolating Surface Min. Seperation must be 17.3'

* Incremental method used to determine req. ponding is conservative in that 14,806 cubic feet which is calculated to flow to the pond is equivalent to a total rainfall of 3.5 inches. With the 100-year 6-hour storm providing a total of 2.95 inches, the ponding volume provided will be adequate to maintain existing runoff.

Boyle Engineering Corporation

1721 Girard Boulevard, N.E.
Albuquerque, New Mexico 87106

consulting engineers
505 / 266-7789

Bruno Conegliano
City Drainage Engineer
CITY OF ALBUQUERQUE
P.O. Box 1293
Albuquerque, New Mexico 87103

April 21, 1978

Dale Bellamah Office Building

This transmittal provides information supplemental to "Storm Drainage Study Relative to Development of Dale J. Bellamah's Jeannedale - Unit 4, Albuquerque, New Mexico", January, 1973 as prepared by MacCornack and Burns, Consulting Engineers, Inc., Albuquerque, New Mexico. As required by the City, we have revised improvement plans for the site to include temporary storage and percolation facilities which will maintain the existing rate, volume and location of run-off. Calculations for these changes are attached.

Percolation will be provided by four 5.5'Ø x 30' dry wells located at the southwest corner of the parking area. Percolation rates were obtained from Sergent, Hauskins, and Beckwith, Consulting Soil and Foundation Engineers. A copy of the amendment to the original soils report is attached. In their report, SH&B point out that the injection of surface waters into the sub-surface is possible only because of the drilled pier foundation which is being employed. They further mention th the effects of this injection will be minimal on the proposed construction but its effect on future adjacent structures is uncertain. Future develo ment of adjacent properties will require a careful review of the potential effects of injecting surface waters into sub-surface soils.

Also attached is a sketch of the dry well system that will be used, including the settling basin for sediment accumulation. The individual wells will be connected to the basin using 24"Ø R.C.P. with adverse slopes to reduce sedimentation in the wells. The location of the wells is indicated on the attached site plan as well as the planned ponding areas.

If this drainage handling proposal is acceptable, please sign below and return a copy to this office at your earliest convenience.

BOYLE ENGINEERING CORPORATION

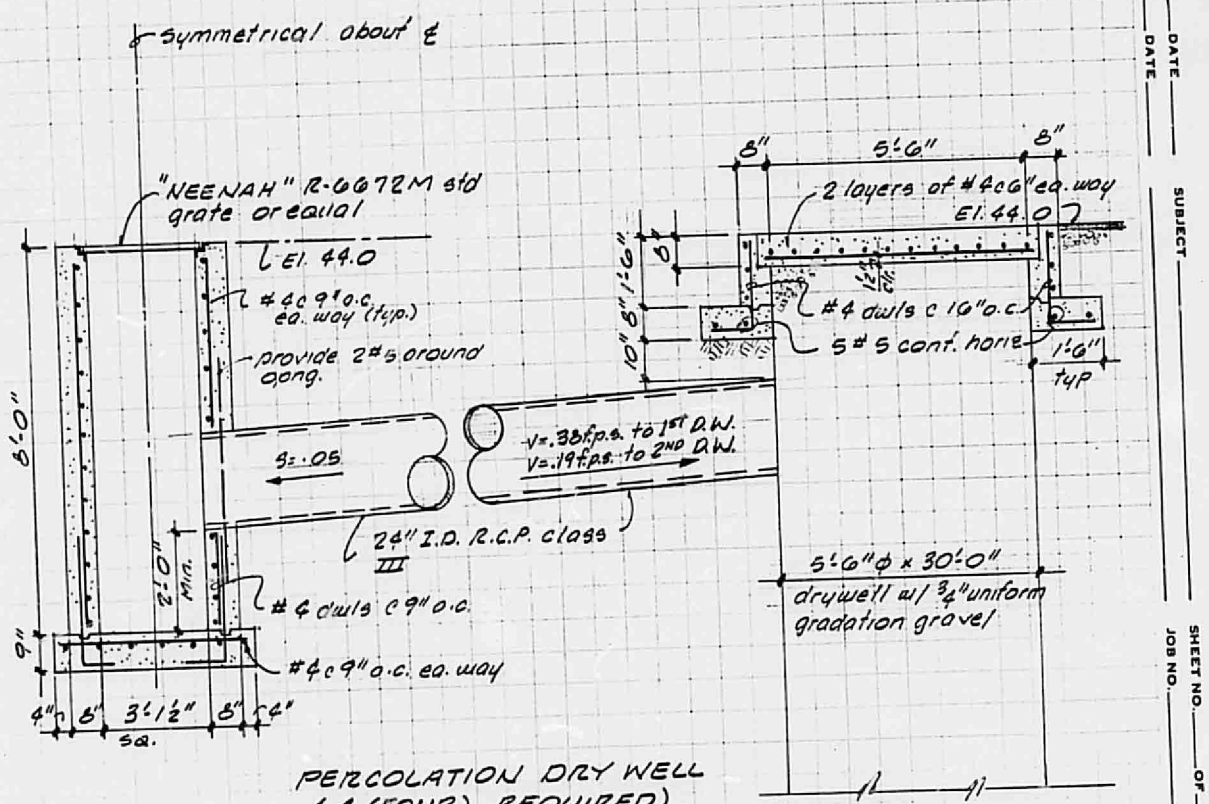
Victor J. Chavez

Victor J. Chavez, PE

PROPOSAL ACCEPTED:

Bruno Conegliano
City Drainage Engineer

Date



PERCOLATION DRY WELL
(4 (FOUR) REQUIRED)

Albuquerque
Me. politan
Arroyo
Flood
Control
Authority

Bellamah
H-18

RECEIVED
MAR 29 1978
CITY ENGINEER

March 28, 1978

Dale Bellamah Land Company, Inc.
Post Office Box 3325
Albuquerque, New Mexico 87190

Attention: Mr. Joseph E. Shipley

Reference: Dale Bellamah Office Building
Indian School Road & Jeannedale Drive., N.E.

Dear Sir:

As a result of a meeting with Mr. Vic Chavez of Boyle Engineers on Thursday, March 23, 1978, I have reviewed the above captioned plans and letter from Boyle Engineering dated March 10, 1978 to Mr. Bruno Conegliano, Assistant City Engineer. In reviewing drainage reports for Jeannedale, Unit 1A, dated August 1972 and Jeannedale, Unit 4, dated January 1973, no provision had been proposed to convey runoff water from the existing swale that crosses the northwest edge of said property. Now it is proposed to eliminate this swale and convey the runoff to an overloaded 72" storm drain in Jeannedale Boulevard. With proposed excess of 1095 cfs at the Jeannedale/Indian School Road intersection, this solution is not acceptable for AMAFCA. It was suggested in the Unit 4 drainage report that runoff from area 6 be conveyed in multiple channels at minimum slope to diversify times of concentration. The present development appears to follow a one channel concept.

Although the Unit 4 drainage report permits overland flows without on-site retention, existing flow in Jeannedale Boulevard of 352 cfs coupled with the confluence of runoff east and west on Indian School Road will cause a total 1095 cfs excess at Jeannedale and Indian School Road. This excess runoff will flow at over 13 f.p.s. with a 2 foot depth. In view of the high potential for loss of life and property to pedestrians and motorists that could occur, I request that the developer and engineer pay heed to remarks from Mr. Conegliano in his letter dated March 22, 1978. On-site retention and delay of flows could greatly lessen the effects of large storm runoff in this area. All interested parties should recognize that the local drainage culverts and streets are not capable of handling the flows that will occur at present without the additional runoff proposed by this development.

I am available if you have any further questions regarding this matter.

Sincerely,

Wiley R. Smith
Engineer

cc: Jorge de la Torre, Architect
Fred Burns, Boyle Engineering
Bruno Conegliano, Asst. City Engineer
City Planning Department

WRS:sls

Drainage File

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

March 22, 1978

Fred Burns
Boyle Engineers Corporation
1721 Girard N.E.
Albuquerque, New Mexico 87106

RE: Bellamah Office Building - Drainage

Dear Mr. Burns:

This letter follows my telephone conversation with Mr. Vic Chavez of your office regarding the drainage of the Bellamah Office Building. I have reviewed the correspondence received regarding the above project together with Mr. Kimmick. To our best recollection the question of on site handling of the surface runoff was not discussed, in particular no request was advanced for the waving of the AMAFCA requirements for on site retention.

The existing rate and volume of runoff will be accepted on Jeannedale Boulevard but I cannot concur with a site grading plan that does not manage on site, the increased rate and volume of runoff. Given the size of the development a formal drainage report will have to be submitted for approval and forwarding to AMAFCA which will have to include both site plans and the approved method for handling the offsite flows.

Very truly yours,

Bruno Conegliano
Asst. City Engineer-Hydrology

BC/gm

cc; Jim Smith
Rip Orr
V.M. Kimmick
Drianage file

Boyle Engineering Corporation

1721 Girard Boulevard, N.E.
Albuquerque, New Mexico 87106

ting engineers
505 / 266-7789

March 10, 1978

Mr. Bruno Conigliano
Engineering Department
CITY OF ALBUQUERQUE
P. O. Box 1293
Albuquerque, NM 87103

BELLAMAH OFFICE BUILDING - DRAINAGE

In accordance with our meeting on February 27, 1978, storm drainage facilities associated with the referenced project will be designed in accordance with the following conclusions:

1. Storm flows from the existing crossing below Uptown Blvd., which consists of local runoff from parking areas south of Coronado Shopping Center, will be transported by buried conduits to the existing 72" Ø storm drain located in Jeannedale Blvd. A new junction box will be constructed at the intersection of Indian School Road and Jeannedale Blvd. for injection of 86 cfs into the existing facility.

2. Development of the easternmost half of the area bounded by Uptown Blvd., Jeannedale Blvd., Indian School Road and San Pedro Blvd. will handle on-site runoff through surface flows in Jeannedale Blvd. to the existing box inlet at San Pedro and I-40.

3. Future development of the westernmost half of the area described in Item 2 will include facilities to accumulate on-site runoff for injection into an existing 54" Ø storm drain located immediately east of San Pedro Blvd. The injection rate will be approximately 38 cfs.

Please call if you have any questions regarding these design parameters.

Your help in resolving this matter is appreciated.

BOYLE ENGINEERING CORPORATION

Fred Burns

Fred Burns, PE

VC/mt

Drainage file

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

February 13, 1978

Fred Burns
MacCornack and Burns
1721 Girard Blvd., NE
Albuquerque, New Mexico 87106

RE: Drainage for the Bellamah Office Building

Dear Mr. Burns:

In reply to your letter dated February 2, 1978 and confirming the essence of my telephone conversation with Mr. Vic Chavez of your office, please be advised that the City cannot accept any connections to the storm sewer located in Jeannedale Dr. because this facility is severly overloaded. A storm sewer to replace the existing temporary drainage channel will have to be routed independently to the outfall at San Pedro and I-H 40.

Very truly yours,

Bruno Conegliano
Asst. City Engineer-Hydrology

BC/gm

cc; V.M. Kimmick
Drainage file

Boyle Engineering Corporation

consulting engineers

1721 Girard Boulevard, N.E.
Albuquerque, New Mexico 87106

505 / 266-7789

February 2, 1978

Bruno Conigliano
Drainage Engineer
City of Albuquerque
P. O. Box 1293
Albuquerque, New Mexico 87103

Bellamah Office Building

Plans are presently being prepared for the development of a portion of Jeannedale Addition - Unit No. 2 as shown on the attached sketch. Storm drainage from the southeast portion of Coronado Shopping Center is presently transported through the proposed development in an earthen channel and is deposited as surface flows in Indian School. Areas directly west of the site presently flow to San Pedro. We hereby request your approval for a new buried conduit drainage system which will handle flows from both referenced areas in accordance with both "Storm Drainage Study Relative to Development of Dale J. Bellamah's Jeannedale - Unit 4", January 1973 as prepared by MacCornack and Burns, Consulting Engineers, Inc. and "Drainage Calculations, Coronado Center, Albuquerque, New Mexico", May 1974, as prepared by Burke, Kober, Nicolais, Archuleta, Consulting Engineers.

The proposed system is shown on the attached sketch as well as sizes and required flow capacities. Please note that the required capacity will be provided to drain Area 2, but neither the required grading nor injection facilities will be provided until the area is developed. Flow will be injected in Manhole S-910. Table - 1 is a summary of the effect this additional flow will have on the existing storm drain system. As shown, the hydrostatic gradient will be located above the pipe soffitt, but well below the manhole rim elevations. Flows are based on upstream pipe capacities plus the additional injected flows from the referenced areas.

The proposed drainage system will eliminate the existing undesirable surface flows, provide drainage in accordance with previously approved studies, and will not increase the threat of flooding to the site or to adjacent areas.

If this proposal meets with your approval, please sign both copies and return one for our files. Your assistance in this matter is appreciated.

Very truly yours,

BOYLE ENGINEERING CORPORATION

Fred Burns, PE

APPROVED:

City Drainage Engineer _____ Date _____

mw

djb

1529 EUBANK BOULEVARD, NE
POST OFFICE BOX 11097

DALE J. BELLAMAH CORPORATION

ALBUQUERQUE, NEW MEXICO 87112
TELEPHONE 299-7631

AUG 8 REC'D

File with Jeannedale addition Project.

August 7, 1972

Mr. E. F. Hensch, Director
Department of Public Works
City of Albuquerque
P.O. Box 1293
Albuquerque, New Mexico 87103

Re: Delay in City Estimates for Jeannedale Addition

Dear Mr. Hensch:

On July 11, 1972, a month ago, I submitted a completed design for curb and gutter, paving, sewer and water improvements for the Dale J. Bellamah Jeannedale Addition, Unit 1-A. As I am aware that the City Engineering Department is overloaded at this time, I had gone to the additional expense of a complete engineering design by William Matotan and Associates and submitted this completed design for review and preparation of estimates.

As I have discussed with you in the past, we are willing to cooperate with the City and help alleviate the heavy work load in any way possible, even to the extent of doing our own engineering by private consultant. However, in order to justify this additional expense, we must be assured that these projects will be expeditiously handled.

To date, I have not heard from the City Estimates for the Jeannedale Addition, but feel that one month is adequate for review and preparation of estimate after we have gone to the expense of a complete design to assist the City. As always, we appreciate your cooperation and that of the City Engineering Department, but feel that in this instance our cooperation and efforts have not yet been reciprocated.

Sincerely,

THE DALE J. BELLAMAH CORPORATION

Larry D. Stroup, P.E. & L.S.
Chief Engineer

LDS:ccs
cc: Mr. V. E. Kimmick

SERGENT, HAUSKINS & BECKWITH CONSULTING SOIL AND FOUNDATION ENGINEERS

APPLIED SOIL MECHANICS • ENGINEERING GEOLOGY • MATERIALS ENGINEERING

B. DWAINE SERGENT, P.E.
DALE V. BEDENKOP, P.E.
JOHN R. HAUSKINS, P.E.
ROBERT D. BOOTH, P.E.
DONALD G. METZGER, GEOL
GEORGE B. BECKWITH, P.E.
BENNY E. McMILLAN, P.E.
BUD WOODWARD

April 20, 1978

Dale Bellamah Corporation
P.O. Box 3325
Albuquerque, New Mexico 87110

SHB Job No. E78-1002
Addendum No. 2

Re: Bellamah Office Building
Indian School & Jeannedale, N.E.
Albuquerque, New Mexico

Gentlemen:

In accordance with the request of Mr. Victor Chavez, P.E., with MacCornack & Burns, Inc., we have performed drilling and infiltration testing at the site of the referenced project to evaluate infiltration capacities of the clean sands underlying the site.

One boring was drilled within the area of the proposed dry wells to a depth of 30 feet below existing grade. During the drilling, the soils encountered were continuously examined, visually classified and logged. As indicated by the exploratory boring, silty sands and sandy clays were encountered to depths of about 13 feet below existing grade. Below this depth, relatively clean coarse sand with some gravel was encountered to a depth of 23 feet below existing grade. Gravelly sand with occasional cobbles was then encountered and extended to the full depth of the boring. A perforated, 2-inch I.D. PVC casing was then inserted into the hole to the full depth.

Infiltration tests were then performed by the falling head method and a stabilized infiltration rate of 1.25 minutes per inch was established. This infiltration rate is believed to be realistic for the soils encountered below the 13 foot level. Infiltration rates above this level would be somewhat less.

As discussed in our original soil and foundation report on the referenced project, saturation of the supporting soils would tend to increase foundation settlements. This is particularly critical if shallow spread-type footings were placed directly upon the underlying native soils. However, it is understood that the proposed structure will be supported on straight drilled piers extending to greater depths below existing grade. Although this type of foundation system would be somewhat less affected by moisture increases, complete saturation throughout the side wall area of the drilled piers would undoubtedly create additional settlements. It appears that the location of the proposed dry wells is such that subsurface flow will probably not affect the proposed construction. However, this necessarily has to be considered a possibility. In addition, the effect that injection of surface waters into the subsurface soils will have upon adjacent structures or other properties either now or in the future, should be considered.

Should any questions arise concerning this addendum, we would be pleased to discuss them with you. This addendum should be attached to the original report and made a part thereof.

Respectfully submitted,
Sergent, Hauskins & Beckwith, Engineers

By Robert D. Booth

ROBERT D. BOOTH
NEW MEXICO
5711
REGISTERED PROFESSIONAL ENGINEER

Copies: Addressee (1)
Jorge Del La Torre
MacCornack & Burns, Inc.

SERGENT, HAUSKINS & BECKWITH

PROJECT Bellamah Office Building

JOB NO. E78-1002 DATE 4-18-78

LOG OF TEST BORING NO. 1

Percolation Test

RIG TYPE CME-55

BORING TYPE 6½" Hollow Stem Auger

Location NW corner Indian School & Jeannedale Street

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Percent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0								SM		SILTY SAND, fine, nonplastic to low plasticity, brown
5								CL		SANDY CLAY, low to medium plasticity, brown
10								SM		SILTY SAND, nonplastic, brown
15								SP		SAND, coarse, some gravel, nonplastic, brown
20										
25								SM-SW		Gravelly SAND, occasional cobbles, nonplastic, brown
30										Stopped auger at 30'
35										

GROUND WATER

DEPTH	HOUR	DATE

SAMPLE TYPE

A – Auger cuttings. B – Block sample

S – 2" O.D. 1.38" I.D. tube sample.

U – 3" O.D. 2.42" I.D. tube sample.

T – 3" O.D. thin-walled shelby tube.

SERGENT, HAUSKINS & BECKWITH

PROJECT Bellamah Office Building

JOB NO. E78-1002 DATE 1-24-78

LOG OF TEST BORING NO. 2

RIG TYPE CME-55

BORING TYPE 6½" Hollow Stem Auger

SURFACE ELEV. 5246

DATUM Topo

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Percent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0			☒	S	14		4	SC	moderately firm	CLAYEY SAND, low plasticity, brown
			☒	S	27		6		firm to very firm	CLAYEY SAND, moderately cemented, low plasticity, brown
5			☒	S	35		7	SC		
10			☒	S	18		7	SM	firm to very firm	SILTY SAND, predominantly fine, nonplastic, brown note: occasional sandy silt layers
15			☒	S	54		5			
20			☒	S	20		2	SM-SP	firm	SAND, some silt, predominantly course, nonplastic, brown note: traces of gravel
25			☒	S	53		4	SM-SW	very dense	GRAVELLY SAND, some silt, nonplastic, brown
30			☒	S	36		4	ML	very firm	SANDY SILT, low plasticity to nonplastic, brown
35										Stopped auger at 29'6" Stopped sampler at 31'

Fig. 2.

GROUND WATER

DEPTH	HOUR	DATE
	none	

SAMPLE TYPE

A – Auger cuttings. B – Block sample
S – 2" O.D. 1.38" I.D. tube sample.
U – 3" O.D. 2.42" I.D. tube sample.
T – 3" O.D. thin-walled Shelby tube.

SERGENT, HAUSKINS & BECKWITH

CONSULTING SOIL AND FOUNDATION ENGINEERS
PHOENIX • TUCSON • ALBUQUERQUE • EL PASO

H18/D6

RODEY, DICKASON, SLOAN, AKIN & ROBB, P. A.
COUNSELLORS AND ATTORNEYS AT LAW
20 FIRST PLAZA, SUITE 700
P. O. BOX 1888
ALBUQUERQUE, NEW MEXICO 87103
TELEPHONE 765-5900
AREA CODE 505
TELECOPIER 765-5903
TELEX 660401

SANTA FE OFFICE:
MARCY PLAZA, SUITE 101
123 EAST MARCY STREET
P. O. BOX 1357
SANTA FE, NM 87501-1357
TELEPHONE 984-0100
AREA CODE 505

RIO RANCHO OFFICE:
JEMEZ PROFESSIONAL BLDG.
3615 RIO RANCHO BLVD.
SUITE 203 A
P. O. BOX 15423
RIO RANCHO, NM 87174-0423
TELEPHONE 765-5900
AREA CODE 505

March 21, 1985

Hand-Delivered

RECEIVED
MAR 21 1985
HYDROLOGY SECTION

Ms. Adelia Kearny
Asst. City Attorney
City Legal Department
Plaza Maya
Albuquerque, New Mexico

Re: Release of Drainage Covenant

Dear Ms. Kearny:

This is to request a release of the Drainage Covenant between the City of Albuquerque and William T. Criswell and Sharon L. Criswell as filed and recorded in the office of the Bernalillo County Clerk on October 8, 1981, Misc. 884, Pages 309-312, Document No. 81 53748, a coy of which we have enclosed. We have confirmed with Fred Aguirre, City Hydrologist, that the enclosed Drainage Covenant can be released due to the recordation of two private easements between the adjoining property owners, providing for the necessary drainage protection, and thereby making the execution of a covenant with the City unnecessary. For your information and convenience, we have enclosed copies of the private easements.

We would appreciate it if you would allow us to review the proposed release of the Drainage Covenant before it is executed. As time is of the essence we would also appreciate your immediate attention to this matter. If you should have any questions or concerns please contact Fred Aguirre or myself as soon as possible.

Sincerely,

RODEY, DICKASON, SLOAN, AKIN & ROBB, P.A.

By
Nancy J. Appleby

NJA:wp

Enc.
cc: Fred Aguirre

81 53748

DRAINAGE COVENANT

date? 339

THIS COVENANT made this ____ day of _____, 1981, by and between the City of Albuquerque, a municipal corporation, (City) and William T. Criswell and Sharon L. Criswell (Owner, which term includes successors and assigns.)

RECITAL

The Owner is owner of certain real property located at 6200 Uptown N.E. in Albuquerque, New Mexico, (the Property) and more particularly described as follows:

Tract 2-B-3, as the same is shown on the plat of Tracts 2-B-1, 2-B-2 and 2-B-3, BELLAMAH OFFICE ADDITION, Albuquerque, Bernalillo County, New Mexico (being a replat of Tract 2-B), filed in the office of the County Clerk of Bernalillo County, New Mexico, on the 20th day of May, 1981.

That pursuant to City ordinances, regulations, and other applicable laws, the Owner is required to install and/or maintain certain drainage facilities on the Property, and the parties wish to provide for an agreement as to the obligations and responsibilities for same.

DESCRIPTION OF FACILITIES

The following facilities are to be constructed and/or maintained by the owner:

Drainage inlets with connection to existing storm sewer in Jeanredale Drive specifically shown on sheet A4 construction drawings dated June 5, 1981 prepared by Warden/Evans/Hill, Architects-Planners, Inc. and Rupley & Associates, Inc. attached hereto as Exhibit "A". More specifically an inlet structure on site and one off site (in curb on west side of Jeanredale Drive) all to connect to existing 72 inch storm sewer in Jeanredale Drive.

CONSTRUCTION OF DRAINAGE FACILITIES

The Owner shall construct the drainage facilities in accordance with standards, plans, and specifications prescribed and approved by the City.

MAINTENANCE OF FACILITIES

The Owner shall, at his cost in accordance with the standards, plans, and specifications prescribed by the City, maintain said drainage facility. The City shall have the right to enter periodically upon the Property to inspect the drainage facility.

FAILURE TO COMPLY AND LIEN

In the event that the Owner shall fail to construct the drainage facility in accordance with standards, plans, and specifications prescribed and approved by the City or fail to adequately maintain said facilities, the City shall give the Owner notice in writing to construct, correct, or maintain said

facilities, and if the Owner fails to comply therewith within 180 days, the City may enter upon said property to perform the necessary construction or maintenance. The cost of the City's performing such construction or maintenance shall be paid by the Owner. In the event the Owner fails to pay said cost within thirty (30) days after being billed for same, the City may file a lien against the Property.

LIABILITY

The City shall not be liable for any damages to the Owner resulting from its construction, modification, or maintenance of said facilities.

NOTICE

The written notice provided for herein shall be accomplished by mailing same to:

William T. Criswell
5501 LBJ Freeway
Suite 900
Dallas, Texas 75240

The Owner may change said address by giving written notice, certified mail, return receipt requested, to the City Engineer, City Hall, at 505 Marquette Street, Albuquerque, New Mexico, 87103.

INDEMNIFICATION AND HOLD HARMLESS

The Owner agrees to defend, indemnify, and hold harmless, the City, its officials, agents and employees from and against any and all claims, actions, suits, or proceedings of any kind brought against said parties for or on account of any matter arising from the drainage facility provided for herein or the Owner's failure to construct, maintain, or modify the drainage facility under this Covenant.

COVENANT RUNNING WITH THE PROPERTY

The obligation of the Owner set forth herein shall be binding upon the Owner, his heirs, and assigns, and the property of the Owner as described herein and will run with said property until released by the City.

REVIEWED BY HYDROLOGY SECTION
CITY ENGINEER'S OFFICE

by: _____

REVIEWED BY THE LEGAL DEPARTMENT:

_____
Assistant City Attorney

OWNER

_____
William T. Criswell

_____
Sharon L. Criswell

CITY OF ALBUQUERQUE

_____
Chief Administrative Officer

ACKNOWLEDGEMENTS

STATE OF NEW MEXICO)
) ss.
COUNTY OF BERNALILLO)

The foregoing instrument was acknowledged before me this ____ day of _____, 1981, by _____, _____ (Name of Officer) (Title) of _____, a _____ (Name of Corporation) (State of Incorporation) corporation, on behalf of said corporation.

_____
Notary Public

My Commission Expires:
_____

STATE OF NEW MEXICO)
) ss.
COUNTY OF BERNALILLO)

The foregoing instrument was acknowledged before me this ____ day of _____, 1981, by _____ (Name of Acknowledging Partner or Partners) on behalf of _____ (Name of Partnership) a partnership.

_____
Notary Public

My Commission Expires:
_____

STATE OF TEXAS)
) ss.
COUNTY OF DALLAS)

The foregoing instrument was acknowledged before me by William T. Driscoll and Sharon L. Crimm on this 14th day of September, 1981.

C. Millie L. McAuliffe
Notary Public

My Commission Expires:
4/27/15

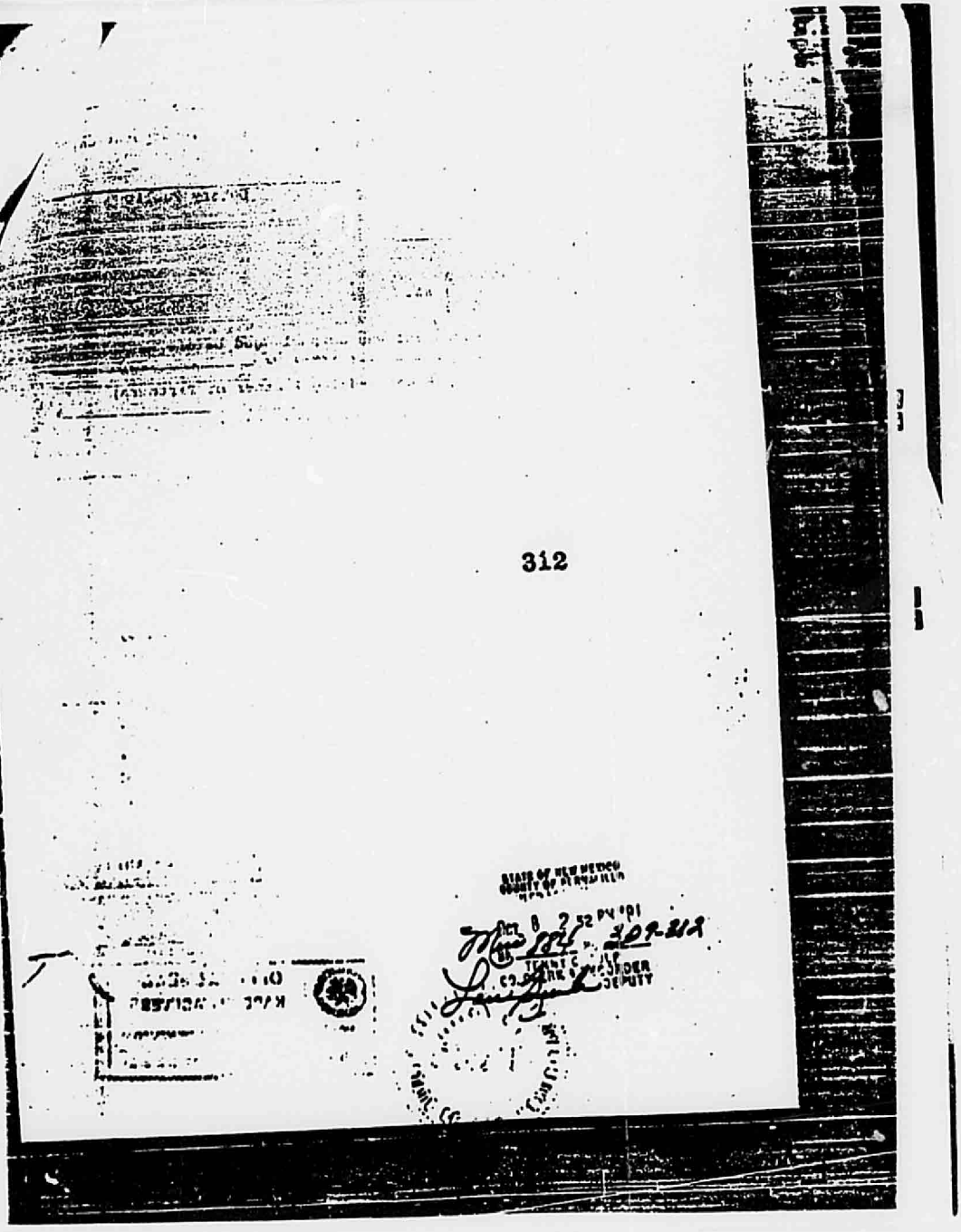
STATE OF NEW MEXICO)
) ss.
COUNTY OF BERNALILLO)

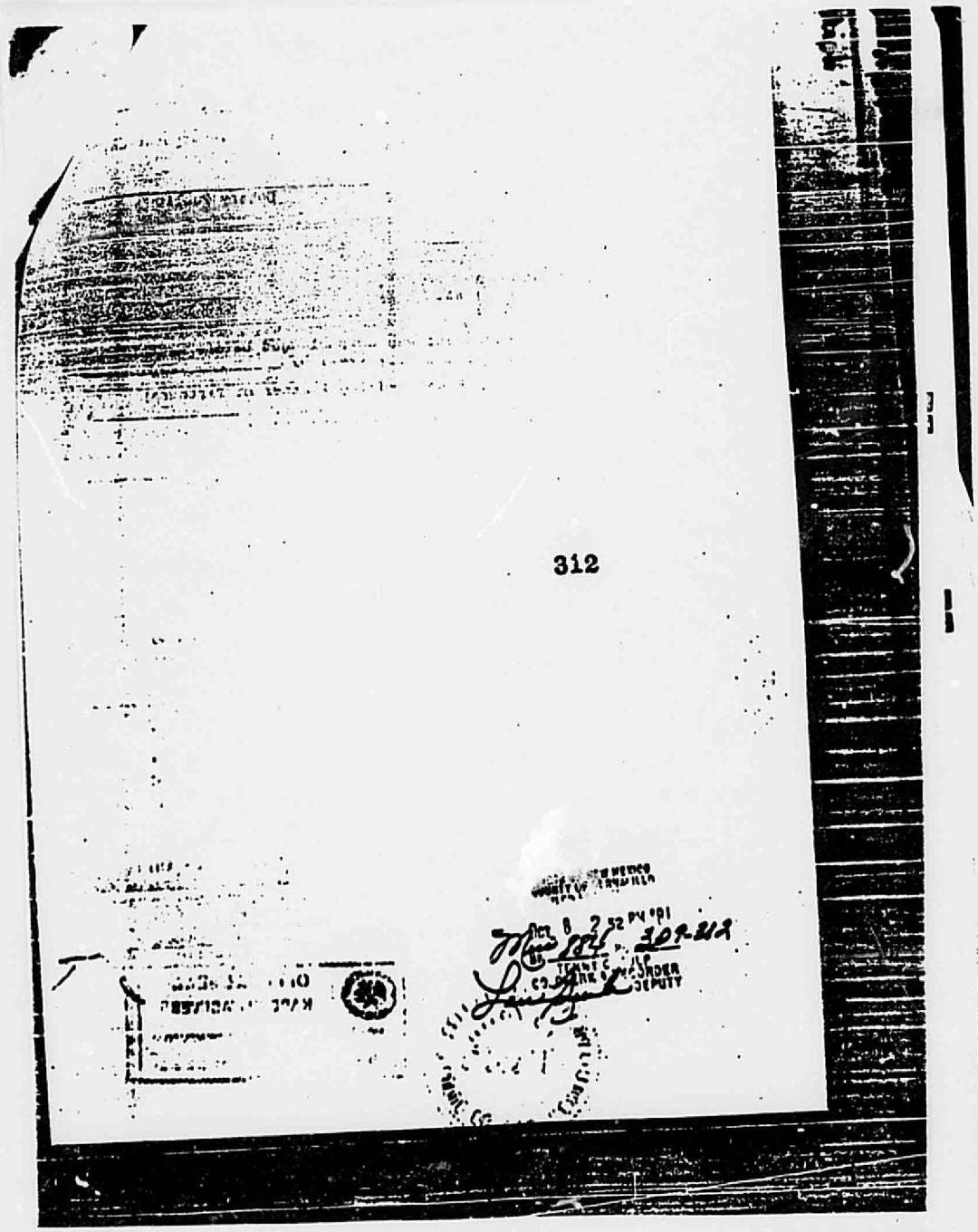
The foregoing instrument was acknowledged before me this 8th day of October, 1981, by James B. Lewis, Chief Administrative Officer of the City of Albuquerque, a municipal corporation, on behalf of said corporation.

Karen M. Aceves
Notary Public

My Commission Expires:
4/24/15

OFFICIAL SEAL
KAREN M. ACEVES
NOTARY PUBLIC - STATE OF NEW MEXICO
My Com. 4/24/15





81 54352

27 RETURN TO: ... TITLE # 187...

EASEMENT

STATE OF NEW MEXICO §
§ KNOW ALL MEN BY THESE PRESENTS:
COUNTY OF BERNALILLO §

WHEREAS, William T. Criswell and Sharon L. Criswell (collectively called Criswell") are the owners of that certain property described on Exhibit A attached hereto and made a part hereof ("Tract A") and Criswell is also the owner of that certain property described on Exhibit B attached hereto and made a part hereof ("Tract B");

WHEREAS, Criswell desires to grant an easement across Tract A permitting surface drainage from Tract B to flow across certain portions of Tract A as hereinafter provided;

NOW, THEREFORE, for and in consideration of the sum of Ten Dollars ($10.00) and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, Criswell has Granted, Sold and Conveyed, and by these presents does Grant, Sell and Convey to the present owner and any future owner of Tract B an easement across and along that certain portion of Tract A which is hereinafter described ("Easement Property") for the purpose of permitting surface drainage to flow from Tract B across the Easement Property to a new drain inlet to be installed in the eastern boundary line of Tract A. The easement hereby granted shall be an unobstructed flow easement permitting a maximum Q of 12.1 cubic feet per second to flow across the Easement Property.

The center line of the Easement Property shall be located as follows: beginning at the southwest corner of Tract A, proceed north 54 degrees 33 minutes 50 seconds east along the western boundary line of Tract A 32 feet to a point. The center line of the Easement Property shall be a line running from said point in an easterly direction along the traffic aisles and

ending at a drain inlet to be constructed on the eastern property line of Tract A. The Easement Property shall include all property within Tract A located on each side of said center line which is necessary for the purposes for which this easement is granted, including all parking areas located south of the office building to be constructed on Tract A but excluding said office building, sidewalks and landscaped areas.

Criswell and any future owner of Tract A shall have the right to maintain the Easement Property as a paved area and to permit the parking of vehicles within any portion of the Easement Property. Criswell and any future owner of Tract A shall keep the Easement Property free of any obstructions other than vehicles which would block the flow of water from Tract B across the Easement Property.

TO HAVE AND TO HOLD the above described easement, together with all and singular the rights and appurtenances thereto in anywise belonging unto the owner of Tract B, its successors and assigns forever, and the owner of Tract A, its successors and assigns, shall warrant and forever, defend all and singular the said easement unto the owner of Tract B, its successors and assigns, against any person whomsoever lawfully claiming or to claim the same, or any part thereof.

EXECUTED this 14th day of SEPTEMBER, 1981.

William T. Criswell

Sharon L. Criswell

STATE OF TEXAS §
§
COUNTY OF DALLAS §

BEFORE ME, the undersigned authority in and for said County and state, on this day personally appeared William T. Criswell and Sharon L. Criswell, known to me to be the persons

whose names are subscribed to the foregoing instrument, and acknowledged to me that they executed the same for the purposes and consideration therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE this 14th day of September, 1981.

Mollie A McAuliffe
Notary Public in and for
the State of Texas

4/27/85

EXHIBIT A

LEGAL DESCRIPTION

TRACT 2-B-3, as the same is shown on the plat of Tracts 2-B-1, 2-B-2 and 2-B-3, BELLAMAH OFFICE ADDITION, Albuquerque, Bernalillo County, New Mexico (being a Replat of Tract 2-B), filed in the office of the County Clerk of Bernalillo County, New Mexico, on the 20th day of May, 1981.

EXHIBIT B

TRACT 2-B-2, as the same is shown and designated on the plat of Tracts 2-B-1, 2-B-2 and 2-B-3, BELLAMAH OFFICE ADDITION, Albuquerque, Bernalillo County, New Mexico (being a Replat of Tract 2-B), filed in the office of the County Clerk of Bernalillo County, New Mexico, on the 20th day of May, 1981.

81 54351

23 RETURN TO Katz, RIO GRANDE TITLE 18733

EASEMENT

STATE OF NEW MEXICO)
) ss. KNOW ALL MEN BY THESE PRESENTS:
COUNTY OF BERNALILLO)

WHEREAS, The Travelers Insurance Company, a Connecticut Corporation ("Travelers") is the owner of that certain property described on Exhibit A attached hereto and made a part hereof (the "Travelers Property"), and William T. Criswell and Sharon L. Criswell (collectively called "Criswell") are the owners of that certain property described on Exhibit B attached hereto and made a part hereof (the "Criswell Property");

WHEREAS, Travelers desires to grant an easement across the Travelers Property permitting surface drainage from the Criswell Property to flow across certain portions of the Travelers Property as hereinafter provided;

NOW, THEREFORE, for and in consideration of the sum of Ten Dollars ($10.00) and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged by all parties, Travelers has Granted, Sold and Conveyed, and by these presents does Grant, Sell and Convey to the present owner and any future owner of the Criswell Property an easement across and along that certain portion of the Travelers Property which is hereinafter described ("Easement Property") for the purpose of permitting natural surface drainage to flow from the Criswell Property across the Easement Property to the existing drain inlet in the southwest corner of the Travelers Property. The easement hereby granted shall be an unobstructed flow easement permitting a maximum Q of 9.5 cubic feet per second to flow across the Easement Property.

The center line of the Easement Property shall be located as follows: beginning at the southeast corner of the Travelers Property, proceed north 0 degrees 55 minutes 30 seconds east along the eastern boundary line of the Travelers Property 88 feet to a point. The center line of the Easement Property shall be a line running from said point in a southwestern direction along the traffic aisles to the drain inlet at the southwest corner of the Travelers Property. The Easement Property shall include all property within the Travelers Property located on each side of said center line which is necessary for the purposes for which this easement is granted, including all parking areas located south of the office building on the Travelers Property but excluding the existing office building, sidewalks and landscaped areas.

Travelers reserves the right to maintain the Easement Property as a paved area and to permit the parking of vehicles within any portion of the Easement Property. Travelers agrees to keep the Easement Property free of any obstructions other than vehicles which would block the flow of water from the Criswell Property across the Easement Property.

TO HAVE AND TO HOLD the above described easement, together with all and singular the rights and appurtenances thereto in anywise belonging unto the owner of the Criswell Property, its successors and assigns forever, and Travelers, its successors and assigns, shall warrant and forever, and Travelers, its successors and assigns, shall warrant and forever defend all and singular the said easement unto the owner of the Criswell Property, its successors and assigns, against any person whomsoever lawfully claiming or to claim the same, or any part thereof.

EXECUTED this 14th day of September, 1981.

THE TRAVELERS INSURANCE COMPANY, a Connecticut Corporation

By: [signature]
Title: Vice President (J. Thomas Montgomery)

STATE OF CONNECTICUT)
) ss.
COUNTY OF HARTFORD)

BEFORE ME, the undersigned authority in and for said county and state, on this day personally appeared J. Thomas Montgomery, Vice President, known to me to be the person and officer whose name is subscribed to the foregoing instrument, and acknowledged to me that the same was the act of the said The Travelers Insurance Company, a Connecticut corporation, and that he executed the same as the act of such corporation for the purposes and consideration therein expressed, and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE this 14th day of September, 1981.

[signature]
Notary Public in and for Hartford County (Patricia M. Gannon)
My Commission Expires March 31st, 1986

EXHIBIT A

LEGAL DESCRIPTION

Xerox Building

TRACT 2-A,
BELLAMAH OFFICE ADDITION, as the same is shown and designated on the Summary Plat, Tract 2, Bellamah Office Addition, Albuquerque, New Mexico, now comprising Tracts 2-A and 2-B, filed in the office of the County Clerk of Bernalillo County, New Mexico, on the 20th day of May, 1980.

EXHIBIT B

TRACT 2-B-2, as the same is shown and designated on the plat of Tracts 2-B-1, 2-B-2 and 2-B-3, BELLAMAH OFFICE ADDITION, Albuquerque, Bernalillo County, New Mexico (being a Replat of Tract 2-B), filed in the office of the County Clerk of Bernalillo County, New Mexico, on the 20th day of May, 1981.

EXHIBIT B

TRACT 2-B-2, as the same is shown and designated on the plat of Tracts 2-B-1, 2-B-2 and 2-B-3, BELLAMAH OFFICE ADDITION, Albuquerque, Bernalillo County, New Mexico (being a Replat of Tract 2-B), filed in the office of the County Clerk of Bernalillo County, New Mexico, on the 20th day of May, 1981.

STORM DRAINAGE STUDY
RELATIVE TO DEVELOPMENT OF
DALE J. BELLAMAH'S
JEANNEDALE - UNIT 4
ALBUQUERQUE, NEW MEXICO

JANUARY 1973

Approved - Subject to:
1. Changed area "G" from existing grading so that 75% run off to Indian School Rd (to low point - Jeannedale balance to San Pedro (
2. Depth of flow in Jeandale not exceed 10"
3. Uptown dip be designed to keep trickle flow out of Street

MAC CORNACK AND BURNS
Consulting Engineers, Inc.
Albuquerque, New Mexico

Mar 1, 1973

Fred Burns to Write letter on above - to design Engrs. Copy to us

STORM DRAINAGE STUDY
RELATIVE TO DEVELOPMENT OF
DALE J. BELLAMAH'S
JEANNEDALE - UNIT 4
ALBUQUERQUE, NEW MEXICO

JANUARY 1973

MAC CORNACK AND BURNS
Consulting Engineers, Inc.
Albuquerque, New Mexico

TABLE OF CONTENTS

MacCORNACK & BURNS
CONSULTING ENGINEERS, INC.
1517 GIRARD BLVD., N.E. — SUITE D
ALBUQUERQUE, NEW MEXICO 87106

(505) 266-7789

JAMES A. MacCORNACK, P.E.
FRED BURNS, P.E.

February 2, 1973

Dale J. Bellamah Corporation
1529 Eubank Boulevard NE
Albuquerque, New Mexico 87112

Gentlemen:

Transmitted herewith is the "Storm Drainage Study Relative to Development of Dale J. Bellamah's Jeannedale - Unit 4." This study is supplementary to a previous report prepared by this firm for Unit 1-A of the subject development and comprises a comprehensive analysis in accordance with the requirements of Resolution No. 1972-2, Albuquerque Metropolitan Arroyo Flood Control Authority, and of the City of Albuquerque.

Thank you for the opportunity of participating in your project.

Respectfully submitted,

MAC CORNACK AND BURNS
Consulting Engineers, Inc.

Fred Burns, P. E.
New Mexico Registration No. 4000

nt

STORM DRAINAGE STUDY
RELATIVE TO DEVELOPMENT OF
DALE J. BELLAMAH'S
JEANNEDALE - UNIT 4
ALBUQUERQUE, NEW MEXICO

1. PURPOSE: The purpose of this report is to present those data relative to estimation of quantity and proposed means of proper handling of storm drainage as is related to the master planned development of Dale J. Bellamah's Jeannedale - Unit 4.

2. SCOPE: The scope of this report is limited to evaluation of source and quantity of storm runoff waters which would affect the properties under consideration and the contiguous areas.

General engineering methods are presented for the conveyance of storm runoff; however, these are not detailed to the extent of providing an engineering analysis for construction of the facilities so indicated.

3. LOCATION: Jeannedale - Unit 4 comprises generally the SE 1/4, Section 12, T10N, R3E, N.M.P.M., excluding the area of Coronado Shopping Center and Jeannedale Unit 1-A. The area lies between Indian School Road NE on the south, Menaul Boulevard NE on the north, San Pedro Boulevard NE on the west, and the westerly boundary of Coronado Shopping Center and Unit 1-A on the east, all as shown on maps included in the appendices of this report.

4. EXISTING DRAINAGE CONDITIONS:

A. Topography: The area is presently undeveloped mesa land located on clino-[illegible]n of the Rio Grande Valley approximately midway between the valley floor and the Sandia Mountain escarpment. The general slope of the land is downward to the west and southwest at approximately 1.8 percent.

Vegetation is sparse grass to bare soil. There are no significant geological or topographical features.

B. Existing Drainage Facilities: The report area is crossed by a 66" I.D. storm sewer running east to west as shown on the maps of the appendices. A 72" I.D. storm sewer runs east to west in Indian School Road on the south boundary of the area. There are four drop inlets (single C) located in San Pedro near the intersection of Taylor. These inlets are drained by 18-inch diameter pipe directly to the two 10' x 10' CBC under San Pedro.

There are no evidences of surface drainage arroyos or channels existent on the property of the report area.

C. Drainage Areas: The areas up-slope from the tract which drainage would affect the tract under consideration are outlined in the referenced report on Jeannedale Unit 1-A. The quantities and locations of flow onto the properties of this report are taken directly from the previous report.

The drainage of on-site precipitation will be treated by this report.

D. Proposed Development: The tract under consideration is proposed to be developed as commercial properties comprising low, medium, and high-rise buildings with paved parking and sidewalks covering the entire area not occupied by buildings.

5. PROPOSED DRAINAGE PLANS:

A. Criteria:

(1) General: Resolution No. 1972-2, Albuquerque Metropolitan Arroyo Flood Control Authority.

(2) Project Storm: 100-year intensity; frequency-duration as shown on Curve 1, 1963 Master Plan of Drainage for the City of Albuquerque and Environs, as prepared by Gordon Herkenhoff and Associates, Inc., Consulting Engineers, Albuquerque, New Mexico.

B. General: It is proposed to utilize the existing storm sewers to the full amount of their capacities and to utilize street flow within the allowable limits. Overland flows in excess of that treated by the beforementioned means will be conveyed in channels, new storm sewers and drainage swales as is appropriate.

The majority of the runoff flows will be diverted directly to the inlet of the existing concrete box culvert located under San Pedro and thence to the North Diversion Channel. For this reason, in those areas which runoff is thus diverted, no retention, ponding or percolation is proposed.

For the area which runoff cannot be diverted to the major drainage facilities, the runoff will be retained, impounded, or percolated such that the runoff quantity will not exceed that which would normally run off from a like area of residential-type development.

6. CONCLUSIONS AND RECOMMENDATIONS: On the basis of the study of this report, it is concluded that the area under consideration can be developed as commercial property consisting of buildings and parking lots without creating flood threat to lower-lying or adjacent properties if the following recommendations are implemented prior to, or concurrent with, the proposed development:

A. Excess Runoff from Coronado Shopping Center: As shown in "Storm Drainage Study Relative to Development of Dale J. Bellamah's Jeannedale - Unit 1-A", dated August, 1972, the Coronado Shopping Center boundary will be provided with intercepting ditches along its southerly and westerly boundaries. These may be in the form of swales in paved parking lots or by well-defined ditches with berms to allow the flow-in of runoff waters along the full lengths. These boundary interceptors shall both flow toward the southwest corner of the Coronado property boundary.

The west interceptor shall have a capacity varying from 10 cfs at the Menaul Boulevard boundary up to 35 cfs at the southwest corner.

The south interceptor shall have a capacity of 44 cfs for its full extent along the boundary.

At the confluence of the Coronado interceptors at the southwest corner, a drainage swale, or ditch, shall be extended across Jeannedale Unit 4 in a southwesterly direction to a point on the proposed Uptown Boulevard. The capacity of this channel, or swale, shall be 79 cfs. The proposed general alignment shall be as shown on the map of Exhibit A.

B. Uptown Boulevard shall be graded to provide street flow capacities as follows:

From a low point at the intersection of Jeannedale Avenue, eastward to the boundary of Unit 1-A, the street flow capacity shall be 170 cfs.

From the above-mentioned low point westward to high point (adverse grade) located approximately 750 feet east of the intersection of Uptown Boulevard and San Pedro Boulevard, the street shall have a flow capacity of 157 cfs.

C. Jeannedale Avenue shall be graded for a street flow capacity from its intersection at Uptown Boulevard to its intersection of Indian School Road of 352 cfs. This will require special street cross-section design. required section ?

D. The area designated "G" shall be graded to drain to Indian School Road east of San Pedro. The existing grade of Indian School Road will convey this flow to the low point (at the Jeannedale intersection). Additionally, a swale type channel shall be extended from Uptown Boulevard, southward to Indian School Road to convey runoff flows from Area H.

E. The storm runoff flows in excess of the existing storm sewer capacities at the intersection of Jeannedale and Indian School Road total 1095 cfs for the design storm. This flow quantity shall be conveyed to the concrete box culvert located approximately 500 feet west of the intersection. It will be required

to establish a drainage easement and to design and construct a drainage channel of this capacity. A suggested cross section is shown in the appendix.

F. The area designated "H" on the maps presently has a natural drainage to San Pedro Boulevard NE in the general locality of the intersection with Prospect Avenue NE. San Pedro Boulevard has a low point at this intersection such that storm runoff will flow westward from the intersection along Prospect Avenue.

The area "H" shall be treated to divert the natural flow southward along the contour levels to Uptown Boulevard, thence southward across area "G" in a swale channel to Indian School Road. The nature of development within this area is not planned at this time, so channelization cannot be proposed; however, it is suggested that multi-channelization be utilized at a minimum slope of S = 0.0025 to diversify times of concentration.

G. The area designated "K" shall retain the natural drainage pattern of westward flow into San Pedro Boulevard with concentration at the intersection with Prospect Avenue NE. Because of the diversion of areas "H" and "E", the quantity of flow westward along Prospect will be greatly reduced below the capacity of the street, thereby providing capacity for runoff of downstream precipitation.

Respectfully submitted,

MAC CORNACK AND BURNS
Consulting Engineers, Inc.

Fred Burns, P. E.
New Mexico Registration No. 4000

APPROVED for general compliance with requirements of Albuquerque Metropolitan Arroyo Flood Authority Resolution No. 1972-2.

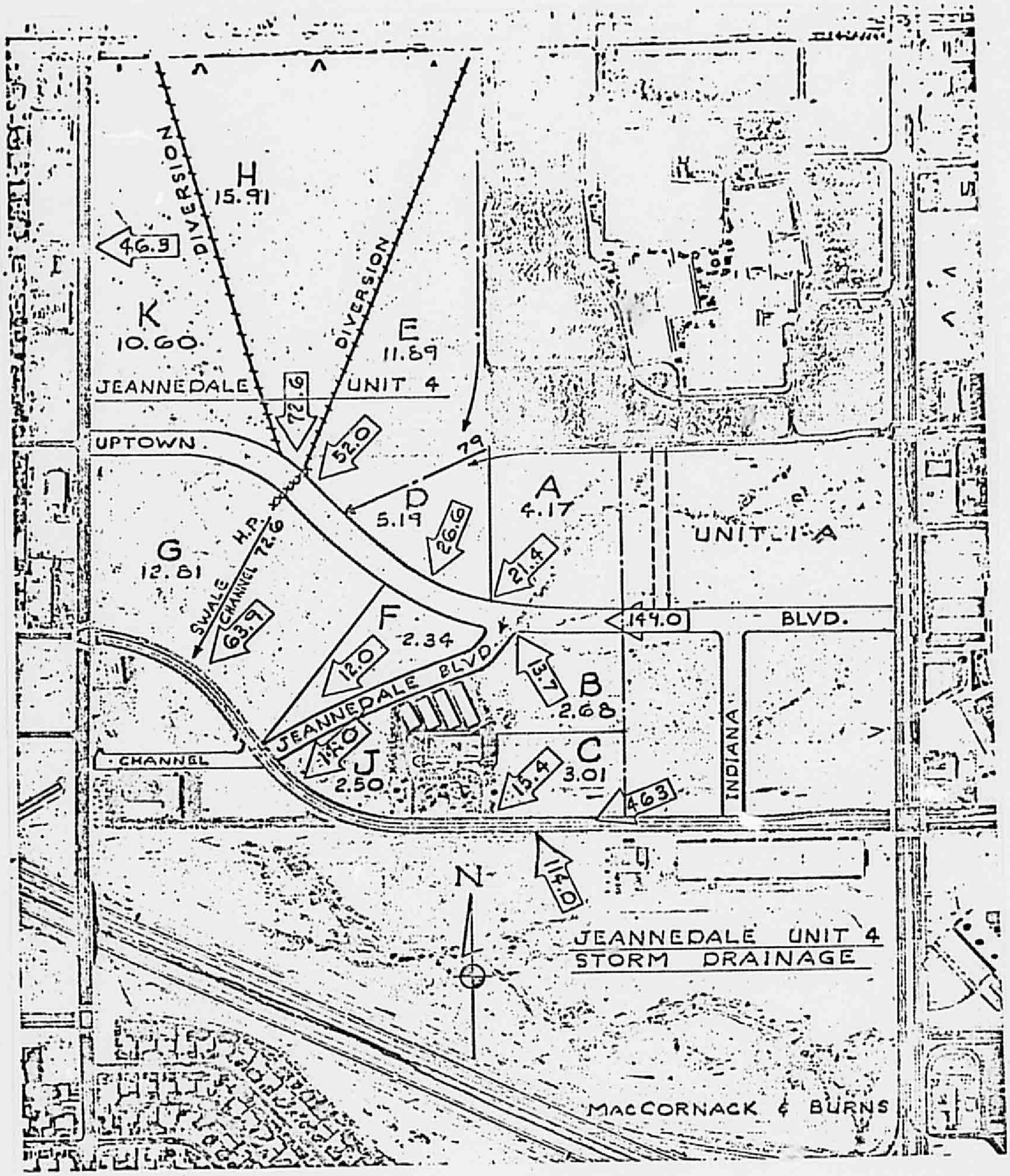
John Robert, P.E., Executive Engineer

Date

APPROVED for general compliance with requirements of City of Albuquerque.

Varne Kimmick, P.E., City Engineer

Date


DIVERSION
H
15.91
46.9
K
10.60
DIVERSION
E
11.89
JEANNEDALE UNIT 4
72.6
UPTOWN
52.0
79
D
5.19
A
4.17
UNIT 1-A
G
12.81
H.P.
CHANNEL 72.6
SWALE
63.9
26.6
21.4
F
2.34
144.0
BLVD.
12.0
JEANNEDALE BLVD.
13.7
B
2.68
C
3.01
J
2.50
15.4
46.3
INDIANA
CHANNEL
N
14.0
JEANNEDALE UNIT 4
STORM DRAINAGE
MacCORNACK & BURNS

Job JEANNEDALE - UNIT 4 Sheet No. 1 of ___
Subject STORM DRAINAGE Job No. 72-48
Client DALE J. BELLAMAH CORP. By Burns Date Jan 73
MAC CORNACK & BURNS Consulting Engineers, Inc., Albuquerque, NM

AREA "A"

Surface Runoff.

Area = 4.17 ac.

$S = \frac{5273 - 5256}{720} = .0236/$

$t = 9.5$ min. $\rightarrow$ $i = 5.4$ in/hr.

$Q = 4.17 \times 0.95 \times 5.4 = \underline{21.4 \text{ cfs.}}$

AREA "B"

Surface Runoff.

Area = 2.68 ac.

$S = \frac{5263 - 5250}{515} = .02524$

$t = 6.5$ min $\rightarrow$ $i = 5.4$ in/hr.

$Q = 2.68 \times 0.95 \times 5.4 = \underline{13.7 \text{ cfs}}$

AREA "C"

Surface Runoff.

Area = 3.01 ac.

$S = \frac{5263 - 5251}{500} = .024$

$t = 6.4$ min $\rightarrow$ $i = 5.4$ in/hr.

$Q = 3.01 \times .95 \times 5.4 = \underline{15.4 \text{ cfs}}$

Job JEANNEDALE - UNIT 4 Sheet No. 2 of ____
Subject STORM DRAINAGE Job No. 72-46
Client UNCLE I BELLEMAH CORP. By Burns Date Jan 73
MAC CORNACK & BURNS Consulting Engineers, Inc., Albuquerque, NM

AREA "D"

Surface Runoff.

Area = 5.19 ac

$S = \frac{5268 - 5255}{780} = .01667$

$t = 9.3$ min $\rightarrow$ $i = 5.4$ in/hr.

$Q = 5.19 \times 0.95 \times 5.4 = 26.6$ cfs

AREA "E" (imposed)

Surface Runoff.

Area = 11.89 ac

$S = \frac{5280 - 5256}{1480} = 0.01622$

$t = 15.1$ min $\rightarrow$ $i = 4.6$ in/hr.

$Q = 11.89 \times 0.95 \times 4.6 = 52.0$ cfs.

AREA "F"

Surface Runoff.

Area = 2.34 ac.

$S = \frac{5238 - 5254}{680} = .02353$

$t = 8.2$ min $\rightarrow$ $i = 5.4$ in/hr.

$Q = 2.34 \times 0.95 \times 5.4 = 12.0$ cfs

Job [illegible] Sheet No. 5 of ____
Subject STORM DRAINAGE Job No. 72-48
Client By Burns Date ____
MAC CORNACK & BURNS Consulting Engineers, Inc., Albuquerque, NM

AREA "G"

Surface Runoff.

Area = 12.81 ac.

$S = \frac{5255 - 5238}{1000} = 0.017$

$t = 10.2$ min $\rightarrow$ $i = 5.25$ in/hr.

$Q = 12.81 \times 0.95 \times 5.25 = 63.9$ cfs

AREA "H"

Surface Runoff.

Area = 15.91 ac.

$S = 0.0025$ (min. divers. channels)

$t = 13.9$ min $\rightarrow$ $i = 4.8$ in/hr

$Q = 15.91 \times 0.95 \times 4.8 = 72.6$ cfs

AREA "K"

Surface Runoff.

Area = 10.60 ac.

$S = \frac{5257 - 5248}{500} = 0.018$

$t = 16.0$ min $\rightarrow$ $i = 4.6$ in/hr.

$Q = 10.60 \times 0.95 \times 4.6 = 46.3$ cfs

Capacity of Prospect Ave. NE west from intersection w/ San Pedro Blvd.

Street Width = 32' (No Crown)

$S = \frac{40}{2640} = 0.01515$

$Q = 193$ cfs.

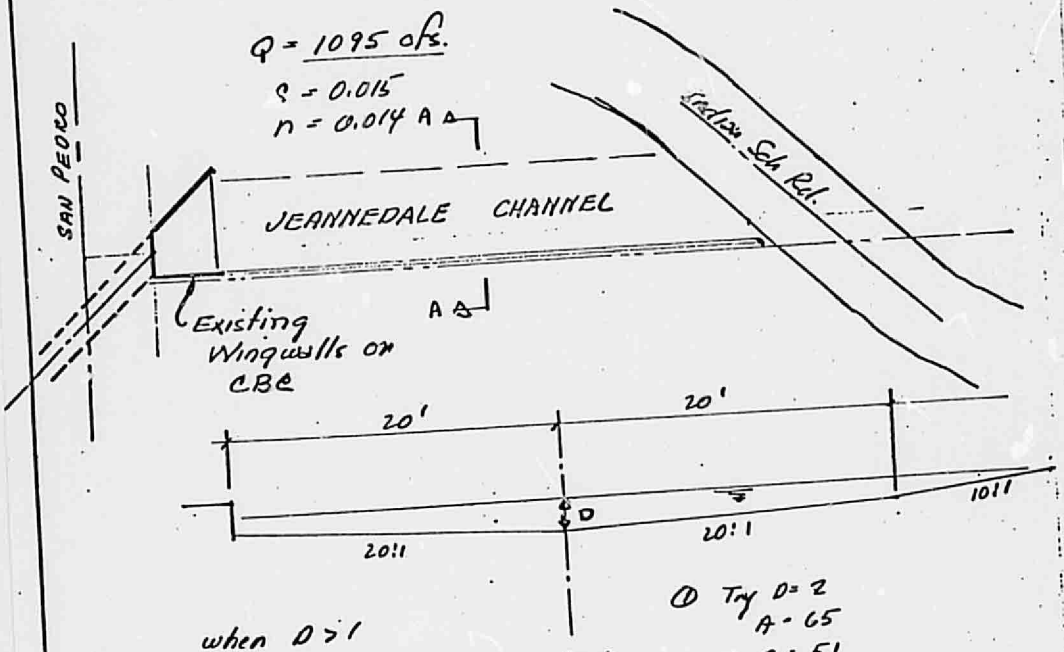
Job JEANNEDALE - UNIT 4 Sheet No. 4 of ___

Subject STORM DRAINAGE Job No. 72-48

Client DALE J. BELLAMAH CORP By Burns Date ___

MAC CORNACK & BURNS Consulting Engineers, Inc., Albuquerque, NM

JEANNEDALE OPEN CHANNEL



when $D > 1$

$A = [40 \times (D-1)] + 20 + \frac{10(D-1)}{2}$

$P = (D-1) + 40 + 10(D-1)$

① Try $D = 2$

$A = 65$

$P = 51$

$R = 1.27451$

$Q = AV$

$V = \frac{1.486}{n} \times R^{2/3} \times S^{1/2}$

$V = 106.14 \times .122 \times R^{2/3}$

$= 12.95 \times 1.176$

$V = 15.22$

$Q = 989 < 1095$

② Try $D = 2.2$

$A = 74$

$P = 52$

$R = 1.423$

$V = 12.95 \times 1.265 = 16.38$

$Q = 74 \times 16.38 = 1212 > 1095$

$d = 2.1$ $W = 40 + 11 = 51'$

Boyle Engineering Corporation

BY VJC DATE 4/4/25 SUBJECT Bellamah Office Drainage SHEET NO. 1 OF
CHKD. BY DATE JOB NO.

Area of Development = 2.996 Ac = 130,527 ft²

Existing Coeff. of Runoff. = 0.4

for ℓ = 480' $S \approx .07$ T_c = 11.0 min

$i = 189/11+25 = 5.25$ in/hr.

$Q = 2.996 (5.25)(.4) = 6.3$ cfs. Vol = 13,052

Determine Developed Conditions.

Item	Area	C	C x A
Roof	32,364 ft²	0.9	29,127
Grass (closed Cont.)	9,162 ft²	0.0	-0-
Grass	10,100	0.1	1,010
Concrete	6,636	0.9	5,972
Paving	72,265	0.9	65,038
			101,147

$C_{Ave} = 101,147/130,527 = .77$

$Q = .77 (2.996)(5.25) = 12.1$

Vol. = .77 (130,552)(3/12) = 25,131

Add Ponding Req. = 25,131 − 13,052 = 12,079 N.G.

Ponding Volume is not available

Boyle Engineering Corporation

BY V. J. C. DATE 4/4/78 SUBJECT Kellemah Office Orng. SHEET NO. 2 OF ____
CHKD. BY ____ DATE ____ JOB NO. ____

Check that sufficient flow will reach dry wells by eliminating flow to street.

Flow to Street			
Roof	32,634	(0.9)	29,370
Grass	10,231	(0.1)	1,023
Concrete	2,280	(0.9)	2,052
Pavement	19,500	(0.9)	17,550
	64,645 = 1.48 Ac.		49,995

$\therefore C = 49995/64,645 = .773$

$Q = 1.48(5.25)(.773) = 6.00$ cfs.

$\therefore$ Flow to dry wells = 12.1 - 6.00 = 6.1 cfs.