HYDROLOGY E18/D20 THREE PLANS

E18/D20

3 PLANS

DRAINAGE REPORT

LINCOLN HEIGHTS

Tract B-3A of the Summary
Replat of Tract B-3, Unit 5
ACADEMY ACRES SUBDIVISION

REGISTERED PROFESSIONAL ENGINEER AND LAND SURVEYOR
NO. 3447
NEW MEXICO
JOHN W. BETTIS

PREPARED BY

ENCHANTMENT ENGINEERING
1517 Eubank Blvd., NE
Albuquerque, New Mexico 87111

October 21, 1979

PURPOSE

The purpose of this report is to present to governing agencies a reasonable and feasible method of complying with City Ordinance 59-1976 thereby lessening runoff from the development to an amount and rate of flow that is less than or equal to the flows expected from the property in its natural state during a 100-year frequency storm. This report consists of a narrative of both existing and proposed conditions and recommended runoff control structures.

LOCATION

The project site is located in the Northeast quadrant of the City (Atlas page E-18). It is bounded on the North by Harper Drive, on the East by Harper Place and a planned residential development, on the South by an 80-foot wide drainage right-of-way and on the West by an undeveloped parcel of land which separates it from the east frontage road of Interstate Highway 25. The parcel is designated as Tract B-3A as it appears on the Summary Plat showing the redivision of Tract B-3 of ACADEMY ACRES.

TERRAIN

As the contours indicate on the orthophoto map included in this report and as the recent field data confirms, there are the remnants of three flow lines running from east to west. It appears that the northermost of these has been filled in and flows which would have normally entered the site from the east have been intercepted by both Harper Place and the residential

development immediately to the east. Harper Place diverts flows to the north and the development diverts flows to the south and into (eventually) the Drainage right-of-way. The slope of the site is approximately 4 per cent. Naturally occurring soil consists mainly of alluvial sand with a small amount of clay. Vegetation is limited to scattered seasonal weeds. Considering the slope, soil and vegetation, infiltration may be assumed to be no more than one-half inch per hour. No natural retention occurs on the site.

PROPOSED DEVELOPMENT

The overall site drainage plan included within this report (sheets 4 & 5) shows the building layout, parking areas, ponding areas and breaks in the internal drainage areas. In addition to the layout plan itself, a third sheet is included which shows the specific calculations for each of the ponding areas together with the requirements for the site as a whole. On that sheet also are details of the ponds. All stormwater retention areas shown are to have landscaped surfaces and are not to be lined with polyester film or any other impervious material.

UPLAND DRAINAGE

Due to construction changes since the orthophoto map was made, upland flows which would have otherwise have entered and crossed the site are now diverted around it. The thalweg which appears on Plate 3 of the Flood Plain Information
(ORTHOPHOTO SHEET - 3)

book (published by the Army Corps of Engineers, 1970 and revised in 1974) at one time drained the area now lying within ACADEMY ACRES UNIT 3. Some of the flows which this natural channel conveyed are now intercepted upstream at the intersection of Burlison Drive and Harper Drive about 4500 feet east of the project site and are directed south along Burlison, then west through the right-of-way that passes south of the site. Harper Drive, which follows the old channel closely, now drains only a fraction of the area previously drained by that channel. Immediately to the north of Harper Drive water blocks on Barnhart Street and McKinney Drive together with grades on those streets divert flows away from Harper to the north. These flows are released to the west through two 10-foot wide drainage easements exiting from Belcher Avenue and Avenida La Costa. The nearest of these flow lines is 520 feet from the study site. (SHEET - 2) No potential flows can enter the site from the east or the north because of the recent developments and street improvements. The tract of land lying to the north of Harper Drive is the only nearby parcel within a flood hazard zone.

INTERNAL DRAINAGE

Flows generated within the development are to be channeled via a string of ponding areas as shown on the drainage plan itself. (sheets 4 & 5) Sheet 6 shows the more specific calculations for each of the designated drainage areas and the recommended pond sizes for each. Discharges from these ponds is to be controlled by a system of pipes running from

pond to pond within each area. The flows are directed to both Harper Drive and the Drainage right-of-way (the Drainage r-o-w collects the majority of the developed flows). With the exception of the minor flows which are directed to Harper Drive, all others are directed towards a collection area lying on the west side of the site. The area is located approximately where the natural flows would have exited the property. In this area is a Double 'D' drop inlet feeding an 18" RCP which discharges into the Drainage right-of-way. The ponds are designed to drain in not less than a 24 hour period (if their maximum capacities not be attained). During a storm greater than the pdoject storm, the ponds should fill to capacity then discharge directly into the tops of the drains. These drains are designed to match the generated rates of flow within each of the interior drainage areas (assuming natural expected rates of flow). The total required capacity of all ponds within the site is 20 589 cubic feet - 24 769 cubic feet is provided. The natural discharge of the site is 11.93 c.f.s. discharging to the tract to the west. The developed constricted discharge is 9.62 c.f.s. total maximum, with .29 c.f.s. directed to Harper Drive and 9.33 c.f.s. being channeled into the Drainage right-of-way. No flows from this site will be allowed to enter the tract to the west.

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

December 10, 1979

E18-D20

Mr. John Bettis
Enchantment Engineering, Inc.
1517 Eubank N.E.
Albuquerque, New Mexico

Reference: Lincoln Heights Subdivision

Dear Mr. Bettis:

I have reviewed the drainage report for the referenced development, and while I am substantial agreement the drainage scheme, I find that the grading plan does not bear out the recommendations of the report. In particular, the grading plan indicates pond levels which can easily be misinterpreted by the contractor as the elevations of the bottom of the ponds while I believe that the intent is to furnish an indication of the water surface elevation. The proper pond bottom elevations should be shown on the grading plan rather than the water surface elevations so that there is no chance for equivocation. Even so, taking the elevation of the inlets of the drain pipes as the planned elevation of the bottom of the ponds, the volumes provided do not correspond to the volumes recommended and shown in tabular form on Sheet 6. For instance, pond A-1: invert elevation 5.7, pond elevation 6.2 ft(water surface elevation?); in the table the minimum depth of the pond is given as 0.7 ft. The same problem appears to exist for all the ponds; for example, pond B: invert elevation 1.8, pond devel 2.2 ft(water surface elevation?); recommended depth of pond 1.5 ft. etc.

I want also to note that I do not concur with the proposal to discharge from the northernmost ponds, onto Harper Dr. Since the western parking lot is sloped to drain towards the drainage channel along the south property line, I consider desirable to outlet of these ponds onto the parking area, and from there south to the channel. The drainage and grading plan also does not indicate in a satisfactory manner the design of the outlet from the western parking lot. This outlet is shown to terminate on the slope rather than at the flow line of t channel. It is my recommendation that you work in conjunction with Mr. o Mielich, who is presently proceeding with the design of the improv s to the arroyo to the south, from the Pan American Freeway to Burli ive.

Incidently, as indicated to you verbally, and on a prior occasion to the developer, building permits will not be issued on this parcel in the absence of a committment, satisfactory to the City Attorney's Office for

the proper "pro rata" contribution to the construction of the channel.

Mr. Goolsby has supplied you with indications of some inaccuracies that were noted in the computations, which are to be corrected, and resubmitted together with the site grading plan.

I need also to advise you that recently, the structural section of the Building and Inspection Division, has become particularly concerned with the impact of the pondings areas in close proximity to the foundations of buildings. A soil and foundation engineer report may have to be supplied, to demonostrate that the ponding areas will not have an adverse impact on the structures.

If you want to discuss this matter further, please don't hesitate to contact my office.

Very truly yours,

Bruno Conegliano
Assistant City Engineer/Hydrology

BC/lc
xc: Richard Leonard, AMAFCA
Richard Heller, City Engineer
Bob Kielich, Asst. City Engineer/Design
Drainage File
reading

Answers to questions

ENCHANTMENT ENGINEERING, INC.
CIVIL CONSULTING ENGINEERS
J.W. BETTIS, REG. P.E. & L.S.
1517 EUBANK N.E.
PHONE 294-8859
MAIL TO BOX 11571
ALBUQUERQUE, NEW MEXICO 87192

December 6, 1979

Drainage Engineer,
City of Albuquerque,
Albuquerque, N. M.

To whom it may concern:

This letter is in response to the remarks received by us from you on December 5, 1979.

There were 10 points covered in your review of the plans, and the following is an explnation, point for point of each point.

1.- The time of concentration shown was derived fromthe nomograph given on page 33 of the Drainage Criteria Manual where if given a 5 % slope with limited vegetation (where the coefficient of runoff is .30 to .40, again per the nomograph) the nomograph shows a 12 minute overland flow time. Since this nomograph is "TENTATIVE", a second similar graph from the Seeley DATA BOOK FOR CIVIL ENGINEERS was used. From this an overland flow time of 15 minutes was derived, therefore the 14 minute time of concentration shown, while not precise, is within reason.
This is for overland flow - not a channelized flow.

2.- The capacity of the catch basin is about 400 Cubic Feet. However, since the total required maximum volume has been attained ahead of the catch, this is unimportant. The basin is provided to catch only those flows which would be in excess of the developed flows less the natural flows and to direct them into the south drainage easement. The void ratio of gravel is close to 30%.

3.- "C" values are derived from AMAFCA guidelines as set forth in TABLE II - 3 on page 44 of the Manual.

4.- The owner is responsible for the maintenance of the ponds and pipenetwork and fully realizes such responsibility.

5.- Harper Drive can easily handle an additional .29 C.F.S. This is about the same discharge as that experienced from a 6000 Sq. Ft. residential lot. considering the nearly 300 feet of lot frontage on Harper Drive, this is not unreasonable nor may it in any way be considered excessive. Our figures show also that the total rate of release of flows from the site is less than the natural expected rate. Therefore the site development will not affect the capacity of thechannel. (It WILL NOT SIGNIFICANTLY INCREASE OR DECREASE)

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6.- The 966 Sq. Ft. in question is the area of the swimming pool. All rainwater would be discharged via the overflow system of the pool itself into a sanitary sewer (Volume = $\frac{966 \times 2.5}{12}$ = 201 Cubic Feet.)

7.- Gravel shall be placed around perforated inlets per request.

8.- Pipes up to four inch diametar are PVC larger pipes in the system are VCP.

9.- Discharges were determined by $Q_{max} = .6a\sqrt{2gh}$ where
a -crossection of pipe in Sq. Ft.
g -32.2 Ft/sec/sec
h -available head in feet (maximum)

The pipes were provided for positive discharge of retention areas. As total capacity of each pond is attained, the Q through each pipe will approximately equal the allowable Qnat for the total area upstream from the pipe (given the available manufactured pipe sizes and site grades). Where Q exceeded Qnat somewhat, the next downstream ponds have each been deliberately oversized to accommodate the increased inflow.
NOTE that the total provided retention capacity exceeds the required capacity by 4180 Cubic feet.

10.- Side slopes of the channel are to be stabilized. The property to the West is protected from overflows from this development by the grading in the West parking lot. the wall on the west property line will be protectedwith a vapor barrier. This will appear on the wall plan when a separate wall permit is applied for.

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CLAYBURGH, ASHBY, ROSE AND PASKIND, P.A.
ATTORNEYS AT LAW
ALBUQUERQUE, NEW MEXICO

January 3, 1980

Mr. Bruno Conegliano
Assistant City Engineer/Hydrology
City of Albuquerque
P. O. Box 1293
Albuquerque, New Mexico 87103

Dear Mr. Conegliano:

As you know, I represent Lincoln Heights Associates Limited, the owner of the following described real property:

> Tract B-3-A of the Summary Replat of Tract B-3, Unit 5, Academy Acres Subdivision, as the same is shown and designated on the Plat thereof, filed in the office of the County Clerk of Bernalillo County, New Mexico, on December 8, 1977.

It is the purpose of this letter to set forth the basic circumstances surrounding the suggested modification and alteration of the adjacent arroyo, and, based thereon, to make a request of you concerning the same.

I have your letter of December 10, 1979, to John Bettis of Enchantment Engineering indicating that a building permit for the proposed 184 unit apartment project will not be issued until a commitment has been made, satisfactory to the City Attorney's office, for the proper "pro-rata" contribution to the construction of the channel within the adjacent drainage easement. I have reviewed with Mr. William L. Kraemer of the City Attorney's office certain lien agreements between the City and property owners which have been suggested as a format to follow in connection with this matter. Further, I have reviewed Resolution No. 59-1976 of the Albuquerque City Council and specifically Section 5 of Appendix D relating to the division of responsibilities between public and private participants in flood control projects.

With this background in mind, I met with you on January 3, 1980, to

discuss the matter. We initially established that it was your position that an appropriate form of commitment by Lincoln Properties was required before a building permit might be issued, and that all other requirements for the issuance of the building permit had been complied with. As you know, I suggested that the ordinance or policy resolution and its application by the City was illegal and unconstitutional and that any lien agreement which my client might execute for the purpose of securing a building permit would have been executed under duress and coercion, and would be unenforceable. This opinion was expressed with a full appreciation of the circumstances, specifically that the easement in question is not upon my client's property and that the question at hand was the issuance of a building permit, not the platting or zoning and related development activities of a property owner across which there existed an arroyo.

In our discussions we did note, however, that the City's policy was under current study and an expected revision will be forthcoming in February.

It would serve no point to further belabor this letter with a reiteration of our positions, or the obvious lack of agreement as to the validity thereof. However, you did indicate that the tiling of the arroyo would be very much in my client's best interest and would serve to protect and preserve his property. With this concept we are in total agreement. Furthermore, my client's property is so situated that it is likely to suffer damage in the event of a substantial runoff. We do not believe that attempting to construct flood control facilities on our property is a sensible solution, and therefore request that the City proceed, as soon as possible, with the proper channelization and tiling of the arroyo. Although we feel we have no responsibility under Resolution 59-1976, because we are not a landowner, but the owner of an adjacent property, nevertheless, we feel compelled to request that the City take action, as soon as possible, to alleviate the situation. In order to induce the City to do so, my client will pay a reasonable pro-rata share of the contemplated improvements. Because we cannot ascertain how this is yet to be computed, nor the actual cost which may be involved, we submit herewith a bond in the amount suggested, $5,000.00, as an indication of our interest and support of the project. I am confident that the subsequent details can be worked out to everybody's satisfaction and that cooperative effort will serve the best interests of all parties.

You have indicated a necessity of access by way of a temporary easement or a license across our property to undertake construction in the arroyo area. We will be happy to grant this and would appreciate your advice as to details of your requirements.

We have also discussed the desirability of a foot bridge across the

arroyo, and would like to lend you all possible assistance in connection with this facet of the project.

At the time of our meeting, we discussed the lien agreement between the City and Albertson's and others dated July 7, 1978. Although this approach may have been appropriate in connection with the development of an unplatted tract, we hope that you agree that our request that you proceed with construction is superior under our particular circumstances.

Incidently, the total frontage of my client's property along the drainage easement is 430.42 feet. Of that distance, the arroyo has already been channelized and tiled for 159.78 feet, probably in connection with the development of the Far North Shopping Center. There remains 270.64 feet of frontage, which I would expect to be the basis for the pro-rata computation. There is also some disparity in elevation between the properties adjacent to the arroyo on the north and south, which may, or perhaps not, be a factor. However, as we obtain these facts, I suggest that we share them in our effort to accomplish the desired purpose.

Trusting the foregoing is satisfactory, I am

Very truly yours,

STEWART ROSE

SR:gg

Enclosure

cc: Nick Keipert

CLAYBURGH, ASHBY, ROSE AND PASKIND, P.A.
ATTORNEYS AT LAW
618 MANZANO, N. E.
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MARK C. DOW

OF COUNSEL
ROBERT J. TORVESTAD

January 4, 1980

Mr. Richard S. Heller
City Engineer
City of Albuquerque
P. O. Box 1293
Albuquerque, New Mexico 87103

Dear Mr. Heller:

I represent Lincoln Heights Associates Limited which has requested the building permit for a 184 unit apartment complex on Tract B-3-A of the Summary Replat of Tract B-3, Unit 5, Academy Acres. Mr. Bruno Conegliano of your office verifies that the only matter holding up the issuance of the building permit is a commitment for the proper pro-rata contribution to the construction of improvements in the arroyo within the easement adjacent to my client's property.

Although the procedures used to solve these problems in the past raise considerable legal complications, tiling and proper channelization of arroyo are important to us and we wish to persuade the City to proceed therewith as soon as possible. Therefore, I suggest we put aside the legal problems and simply request that the City proceed as soon as possible, furnishing us with an estimate of our pro-rata cost. My client would then like to reduce this to a contract, so that by the payment of an appropriate share of the cost, we can persuade the City to proceed. In the meantime, and until the design and cost data can be developed, we submit our form of Bond, as evidence of our good faith and interest in this project.

We do sincerely hope that these suggestions will resolve the problem and permit the issuance of the building permit immediately.

Thanking you for your kind consideration, I am

Very truly yours,

STEWART ROSE

SR:gg

cc: Nick Keipert

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

February 29, 1980

Mr. Stewart Rose
Clayburgh, Ashby, Rose
and Paskind, P.A.
Attorneys at Law
618 Manzano N.E.
Albuquerque, New Mexico 87110

Reference: Flood Protection For The Lincoln Heights Property

Dear Mr. Rose:

I have received your letter dated February 27, 1980, regarding the Pino Arroyo Tributary Channel, which borders the Lincoln Heights Property to the South.

I appreciate your concern and wish to assure you that the City is proceeding as quickly as possible with the design of the plans for the construction of the improvements needed to protect the referenced property. The Design Section has informed me, that preparation of the plans may be completed around the middle of March rather than the end of March, as previously verbally indicated to you.

Mr. Conegliano had conveyed to me your interest in the construction of a pedestrian crossing of the arroyo, to allow the future residents of Lincoln Heights and the Senior Center. To the east, access to the Far North Shopping Center. I fully concurr with the desirability of a pedestrian access to the shopping center, but I find it impossible to spend public funds, to provide access to private property. The costs of such a crossing is estimated to be in the order of $15,000. Maybe I can prevail on your civic sense and ask if you were willing to coordinate a private effort to raise the monies necessary for the construction of the said crossing. If adequate private contributions can be obtained for the cost of construction of said facility, the City will be more than glad to furnish the design at no cost, and include the crossing in the channel improvement project.

Please advise me on the further interest on this subject.

Very truly yours,

Richard S. Heller

Richard Heller
City Engineer

RH/lc
xc: Bob Kielich
Bruno Conegliano

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