



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

November 30, 1994

J.J. Bordenave, P.E.
Bordenave Designs
Post Office Box 91194
Albuquerque, N.M. 87199

RE: GRADING PLAN FOR NEW HEART, (E-18/D36)
RECEIVED NOVEMBER 14, 1994 FOR GRADING PERMIT APPROVAL
ENGINEER'S STAMP DATED 10-28-94

Dear Mr. Bordenave:

Based on the information included in the submittal referenced above, City Hydrology approves a Grading Permit to backfill the existing sediment pond and regrade the existing earth channel.

After the Engineer's Certification of the proposed grading has been approved, the Notice of Release will be signed and recorded.

If you have any questions about this project, You may contact me at 768-2727.

Sincerely,

John P. Curtin, P.E.
Civil Engineer/Hydrology

c: Andrew Garcia
Theresa Lucero



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

April 7, 1994

J.J. Bordenave, P.E.
Bordenave Designs
Post Office Box 91194
Albuquerque, New Mexico 87199

RE: DRAINAGE COVENANT FOR NEW HEART ((E-18/D36))
RECEIVED APRIL 1, 1994 FOR CERTIFICATE OF OCCUPANCY APPROVAL

Dear Mr. Bordenave:

Based on the information provided in the submittal referenced above, City Hydrology releases a Permanent Certificate of Occupancy for this project.

If I can be of further assistance, you may contact me at 768-2727.

Sincerely,

John P. Curtin, P.E.
Civil Engineer/Hydrology

c: INSPECTOR

WPHYD/2713/jpc



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

January 28, 1993

Jake Bordenave, P.E.
Bordenave Designs
Post Office Box 91194
Albuquerque, New Mexico 87199

RE: GRADING & DRAINAGE PLAN FOR NEW HEART (E-18/D36)
RECEIVED JANUARY 19, 1993 FOR BUILDING PERMIT APPROVAL
ENGINEER'S STAMP DATED 01-18-93

Dear Mr. Bordenave:

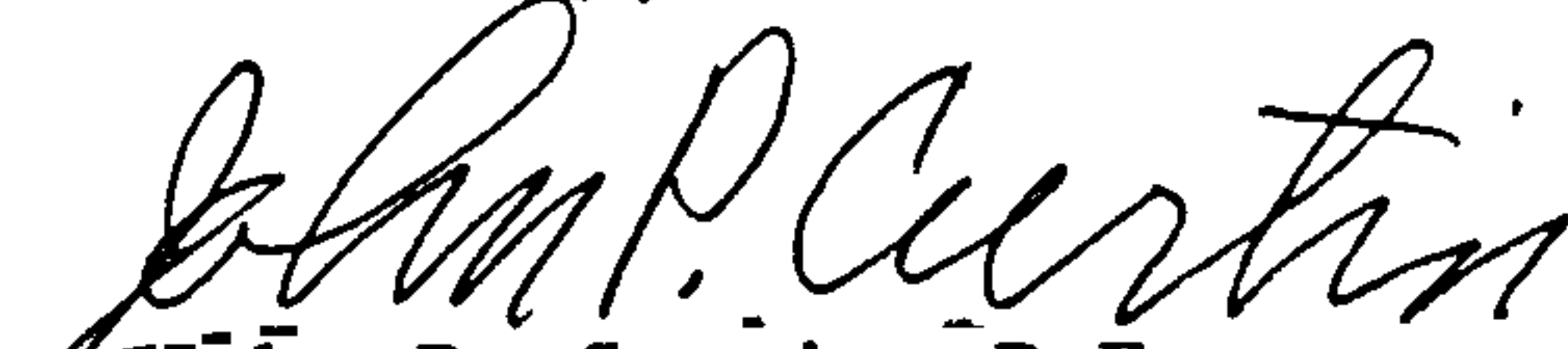
Based on the information provided in the referenced submittal, City Hydrology approves the Building Permit for this project.

The Grading & Drainage plan must be included in the set of construction drawings that you submit for Building Permit.

Engineer's Certification of grades in accordance with DPM checklist will be required before any Certificate of Occupancy is released.

If you have any questions about this project, you may contact me at 768-2727.

Sincerely,


John P. Curtin, P.E.
PWD/Hydrology

xc: Fred Aguirre
Alan Martinez

HYDWP+2713

PUBLIC WORKS DEPARTMENT



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

August 17, 1992

Jake Bordenave, P.E.
Bordenave Designs
Post Office Box 91194
Albuquerque, New Mexico 87199

RE: CONCEPTUAL GRADING & DRAINAGE PLAN FOR NEW HEART (E-18/D36)]
RECEIVED AUGUST 7, 1992 FOR SITE DEVELOPMENT PLAN APPROVAL
ENGINEER'S STAMP DATED AUGUST 6, 1992

Dear Mr. Bordenave:

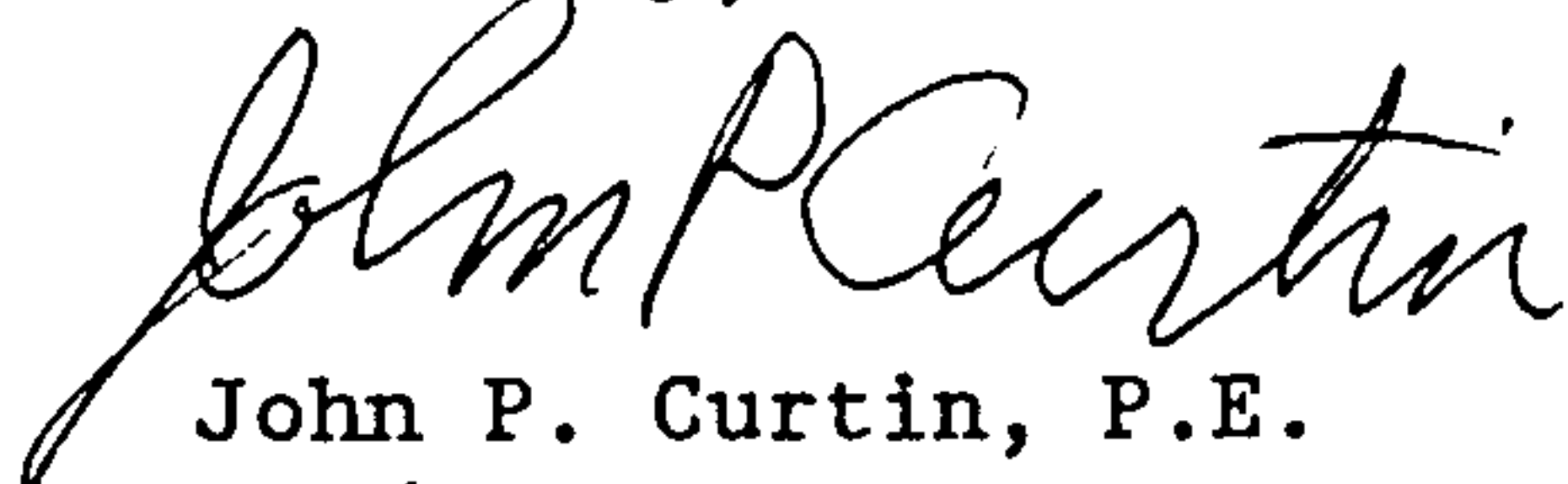
Based on the information provided on the referenced submittal, the Site Development Plan for this project is approved by Hydrology.

The detailed Grading & Drainage plan must address the following details before the Building Permit will be issued:

1. A Drainage Covenant is required for the maintenance of the Sediment Pond.
2. An Encroachment Agreement maybe required for improvements in the existing public drainage easement.
3. The Stabilized Channel has a steep upstream reach and an almost flat downstream reach. Ground slopes toward channel and could flow right over it. There is a ridge next to the North Pino Arroyo which the channel will have to cut through. The stabilized channel design will have to account for all of these factors.

If you have any questions about this project, you may contact me at 768-2727.

Sincerely,


John P. Curtin, P.E.
PWD/Hydrology

HYDWP+2713

xc: Fred Aguirre
Alan Martinez

PUBLIC WORKS DEPARTMENT



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

January 4, 1994

CERTIFICATE OF COMPLETION AND ACCEPTANCE

Presbyterian Helathcare Services
P.O. Box 26666
Albuquerque, NM 87125

**RE: PROJECT NO. 4521.80 FOREST HILLS DRIVE
(MAP E-18) D17 F**

Dear Jim Peterson:

This is to certify that the City of Albuquerque accepts Project No. 4521.80 as being completed according to approved plans and construction specifications. Please be advised this certificate of completion and acceptance shall only become effective upon final plat approval and filing in the office of the Bernalillo County Clerk's Office.

The project is described as follows:

- This project consisted of asphalt, curb & gutter, also a left turn bay was built at an existing median opening on McKinney & Forest Hills Drive N.E.

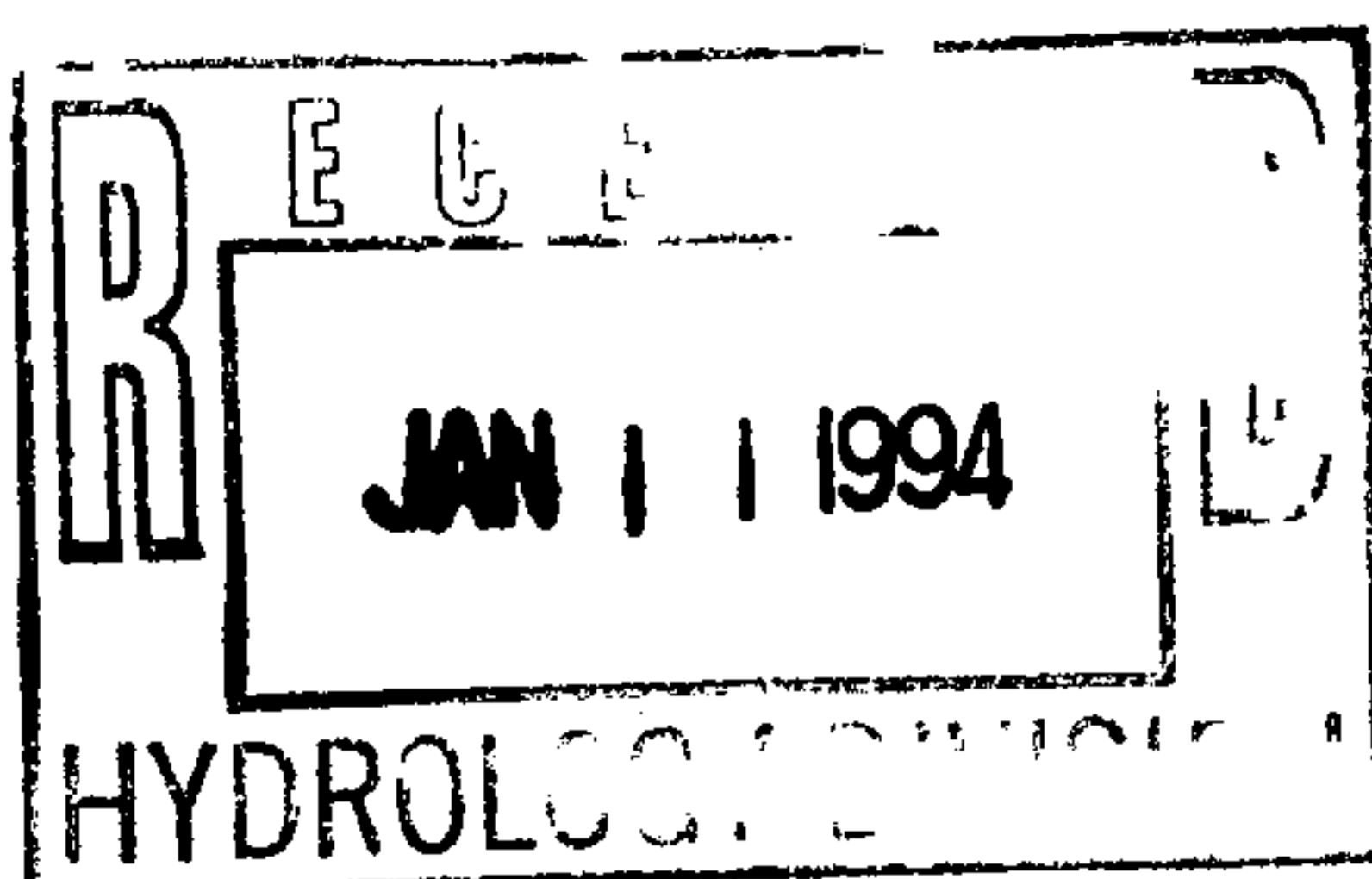
The contractor's correction period begins the date of this letter and will be effective for a period of one (1) year.

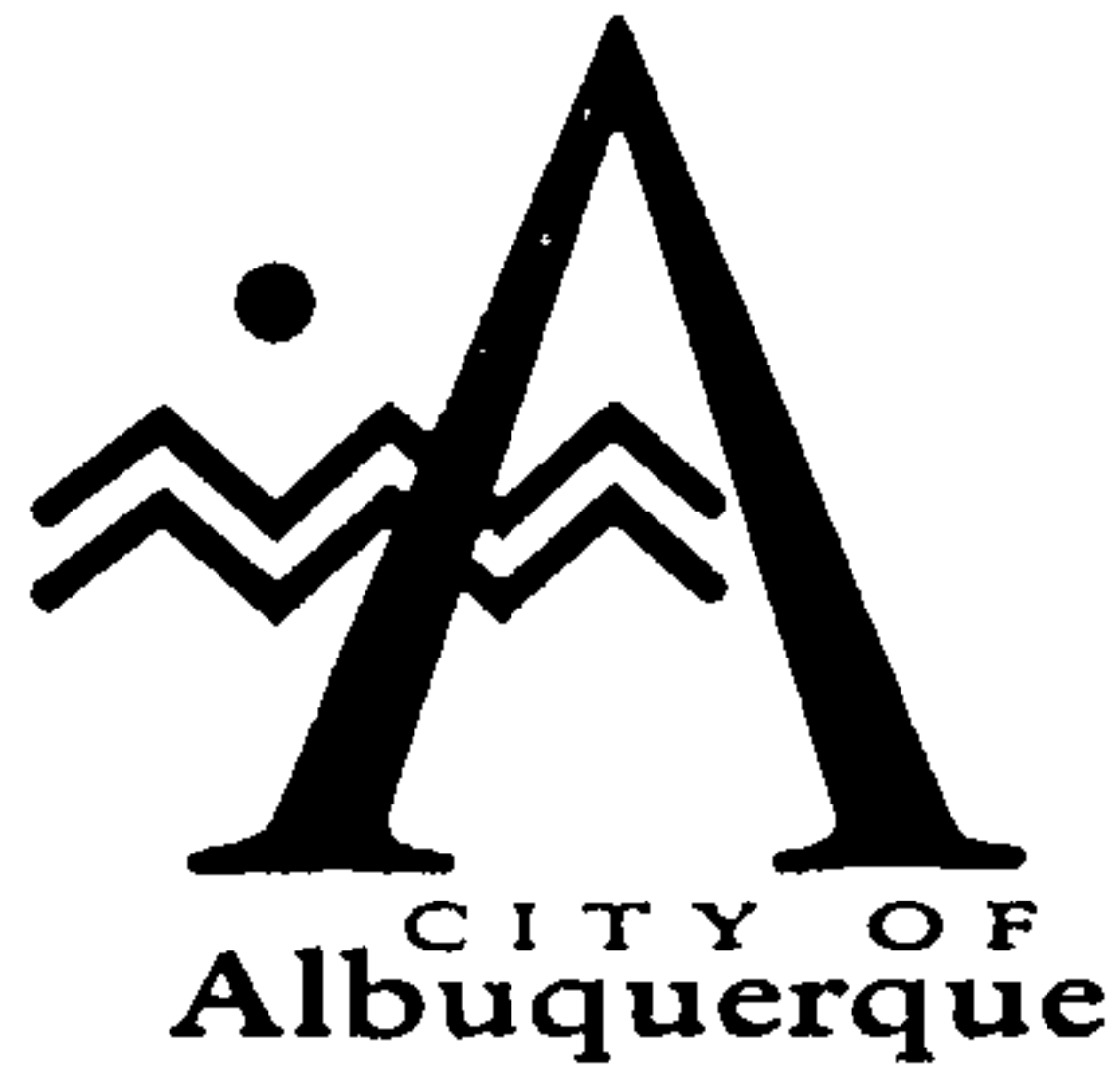
Sincerely,

Rick Roybal, PE
City Engineer,
Engineering Group
Public Works Department

Sincerely,

Russell B. Givler, PE
Chief Construction Engineer,
Engineering Group
Public Works Department





March 3, 1998

James Topmiller, P.E.
Bohannon-Huston, Inc.
7500 Jefferson NE
Albuquerque, NM 87109

**RE: PRESBYTERIAN HEARTPLEX (E18-D36). GRADING AND DRAINAGE PLAN
FOR PAVING PERMIT. ENGINEER'S STAMP DATED FEBRUARY 9, 1998.**

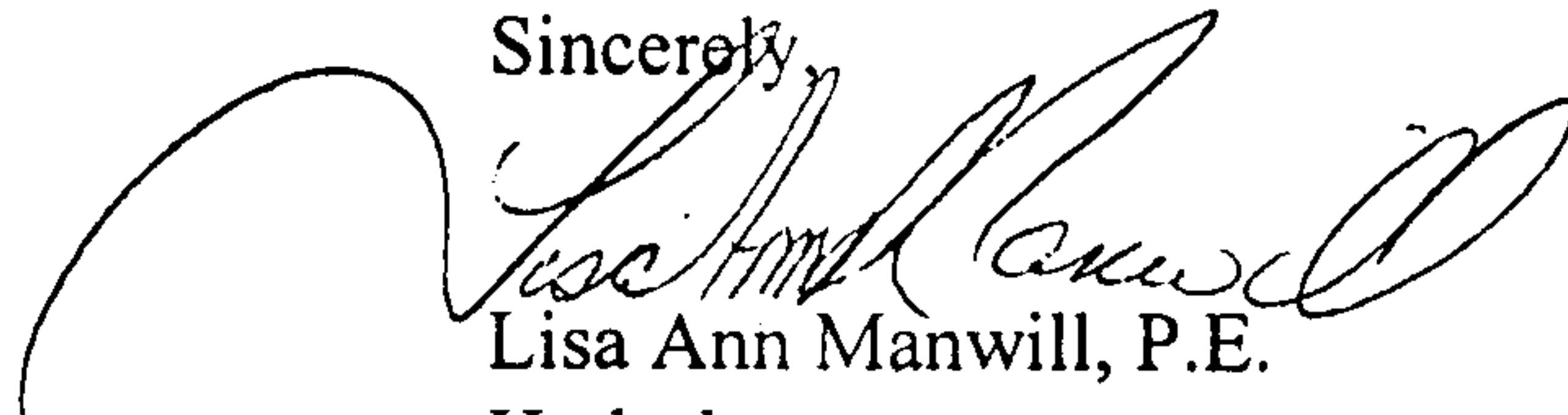
Dear Mr. Topmiller:

Based on the information provided on your February 11, 1998 submittal, the above referenced project is approved for Paving Permit.

Please provide an Engineer's Certification upon project completion.

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

Sincerely,



Lisa Ann Manwill, P.E.
Hydrology

c: Andrew Garcia
~~File~~

Good for You, Albuquerque!



94035172

DRAINAGE COVENANT

9941

4521.DC

950585

This Drainage Covenant, between PRESBYTERIAN HEALTHCARE SERVICES ("Owner"), whose address is P.O. BOX 26666, ALBUQUERQUE, NM, and the City of Albuquerque, New Mexico municipal corporation ("City"), whose address is P.O. Box 1293, Albuquerque, New Mexico 87103, is made in Albuquerque, Bernalillo County, New Mexico and is entered into as of the date Owner signs this Covenant.

1. Recital. Owner is the owner of certain real property described as:
Tract 2, New Heart Center
in Bernalillo County, New Mexico (the "Property").

Pursuant to City ordinances, regulations and other applicable laws, the Owner is required to construct and maintain certain Drainage Facilities on the Property, and the parties wish to enter into this Agreement to establish the obligations and responsibilities of the parties.

2. Description and Construction of Drainage Facilities. Owner shall construct the following "Drainage Facility" within the Property at Owner's sole expense in accordance with the standards, plans and specifications approved by the City pursuant to Drainage File No. E18/D36:
Sedimentation pond at site outfall to Pino Arroyo Channel

The Drainage Facility is more particularly described in the attached Exhibit A. The Owner will not permit the Drainage Facility to constitute a hazard to the health or safety of the general public.

3. Maintenance of Drainage Facility. The Owner will maintain the Drainage Facility at Owner's cost in accordance with the approved Drainage Report and plans.

4. City's Right of Entry. The City has the right to enter upon the Property at any time and perform whatever inspection, maintenance or repair of the Drainage Facility it deems appropriate, without liability to the Owner.

5. Demand for Construction or Repair. The City may send written notice ("Notice") to the Owner requiring the Owner to construct or repair the Drainage Facility within 30 days ("Deadline") of receipt of the Notice, as provided in Section 11, and the Owner will comply promptly with the requirements of the Notice. The Owner will perform all required work by the Deadline, at Owner's sole expense.

6. Failure to Perform by Owner and Emergency Work by City. If the Owner fails to comply with the terms of the Notice by the Deadline, or if the City determines that an emergency condition exists, the City may perform the work itself. The City may assess the Owner for the cost of the work and for any other expenses or damages which result from Owner's failure to perform. The Owner agrees promptly to pay the City the amount assessed. If the Owner fails to pay the City within thirty (30) days after the City gives the Owner written notice of the amount due, the City may impose a lien against Owner's Property for the total resulting amount.

94 MAR 16 AM 10:22

OCT

(Approved by Legal Dept.
as to form only 06/90)948 9941-2944
J. Yeaman
CLERK & RECORDER
DEPUTY

9942

7. Liability of City for Repair after Notice or as a Result of Emergency. The City shall not be liable to the Owner for any damages resulting from the City's repair or maintenance following notice to the Owner as required in this agreement or in an emergency unless the damages are the result of the reckless conduct or gross negligence of the City.

8. Indemnification. Owner agrees to indemnify and save the City, its officials, agents and employees harmless from all claims, actions, suits and proceedings arising out of or resulting from the Owner's negligent maintenance, construction, repair or use of the Drainage Facility. To the extent, if at all, Section 56-7-1 NMSA 1978 is applicable to this Agreement, this Agreement to indemnify will not extend to liability, claims, damages, losses or expenses, including attorney's fees, arising out of (1) the preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs or specifications by the indemnitee, or the agents or employees of the indemnitee; or (2) the giving of or the failure to give direction or instructions by the indemnitee, where such giving or failure to give directions or instructions is the primary cause of bodily injury to persons or damage to property.

9. Cancellation of Agreement and Release of Covenant. This Agreement may be released if the Drainage Facility is no longer required for the protection of the public health, safety and welfare by the City filing a "Notice of Release" with the Bernalillo County Clerk. The Notice of Release must be signed by the City's Chief Administrative Officer, or his designee, and the approval of the City Hydrologist must be endorsed thereon.

10. Assessment. Nothing in this agreement shall be construed to relieve the Owner, his heirs, assigns, and successors from an assessment against Owner's Property for improvements to the property under a duly authorized and approved Special Assessment District. The parties specifically agree that the value of the Drainage Facility will not reduce the amount assessed by the City.

11. Notice. For purposes of given formal written notice to the Owner, Owner's address is:

PRESBYTERIAN HEALTHCARE SERVICES
P.O. BOX 24666
ALBUQUERQUE, NM, 87125-6666

Notice may be given to the Owner either in person or by mailing the notice by regular U.S. mail, postage paid. Notice will be considered to have been received by the Owner within three days after the notice is mailed if there is no actual evidence of receipt. The Owner may change Owner's address by given written notice of the change by Certified Mail, return receipt requested, to the City Public Works Department, P.O. Box 1293, Albuquerque, New Mexico, 87103.

12. Term. This Agreement shall continue until terminated by the City pursuant to Section 9 above.

(Approved by Legal Dept.
as to form only 06/90)

9943

13. Binding on Owner's Property. The covenants and obligations of the Owner said forth herein shall be binding on Owner, its heirs, personal representatives, assigns and successors and on Owner's Property and shall constitute covenants running the Owner's Property until released by the City.

14. Entire Agreement. This Agreement contains the entire agreement of the parties and supercedes any and all other agreements or understanding, oral or written, whether previous to the execution hereof or contemporaneous herewith regarding this subject matter.

15. Changes to Agreement. Changes to this Agreement are not binding unless made in writing, signed by both parties.

16. Construction and Severability. If any part of this Agreement is held to be invalid or unenforceable, the remainder of the Agreement will remain valid and enforceable if the remainder is reasonably capable of completion.

17. Captions. The captions to the sections or paragraphs of this Agreement are not part of this Agreement and will not affect the meaning or construction of any of its provisions.

OWNER: Presbyterian Healthcare Services
By: [Signature]
Its: VICE PRESIDENT
Dated: 3/1/94

STATE OF New Mexico)
COUNTY OF Bernillo) ss

1994 This instrument was acknowledged before me 1st day of March,
[by name of person:] Gene C. Wharton, [title or capacity,
for instance "president" or "owner":] Vice President
of [Subdivider:] Presbyterian Healthcare Services.

[Signature]
Notary Public

My Commission Expires:
8/17/94

CITY OF ALBUQUERQUE:

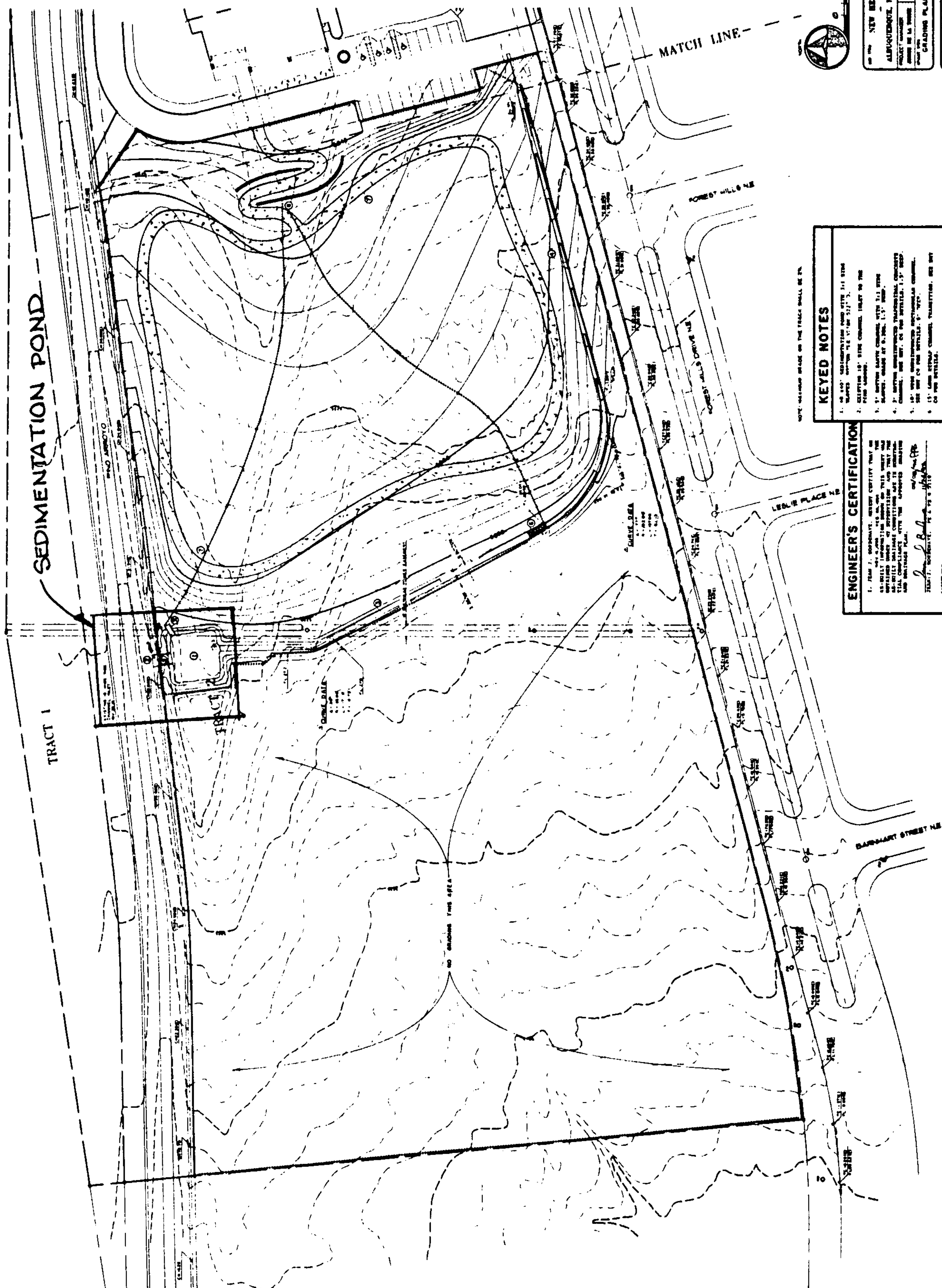
Approved:

By: [Signature]
Title: City Engineer
Dated: 3/1/94

(EXHIBIT A ATTACHED)

(Approved by Legal Dept.
as to form only 06/90)

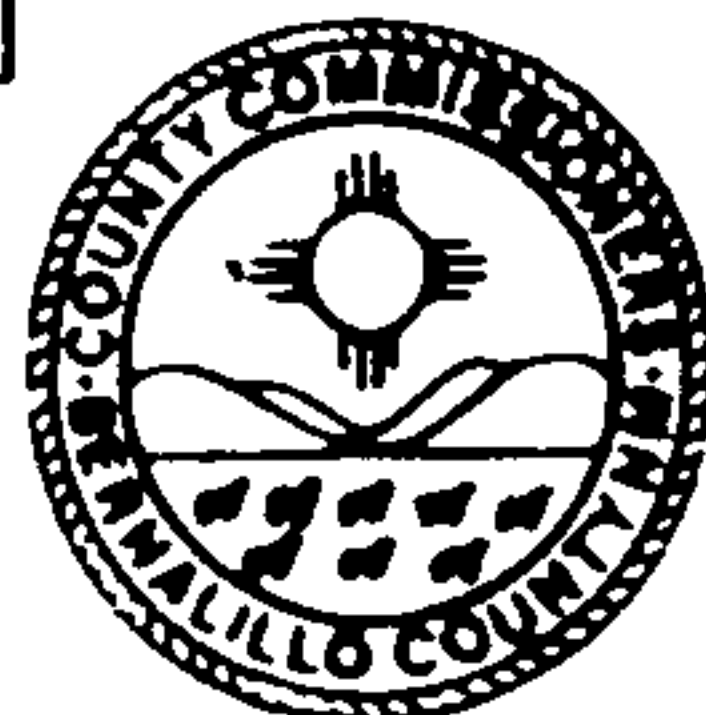
EXHIBIT 'A'



		11 ⁰⁰		3/16	Public Works	94035172	<i>SS</i>
BANK TRANSIT NO.	\$ CHECKS	\$ CASH	NET	DATE	NAME	DESCRIPTION	RECEIVED BY

IF **ENCIRCLED**
INDICATES CASH
RETURNED FOR
ADJUSTMENT TO
NET AMOUNT OF
ACTUAL PAYMENT

↑
INVALID
WITHOUT
SIGNATURE



County of Bernalillo

COUNTY CLERK
ONE CIVIC PLAZA N.W.
ALBUQUERQUE, NEW MEXICO 87102

cc 153676A

RETAIN THIS RECEIPT
FOR YOUR RECORDS

J. Yeaman

SIGNATURE

Cerny Hiron
883-5338

A GRADING & DRAINAGE PLAN

for the

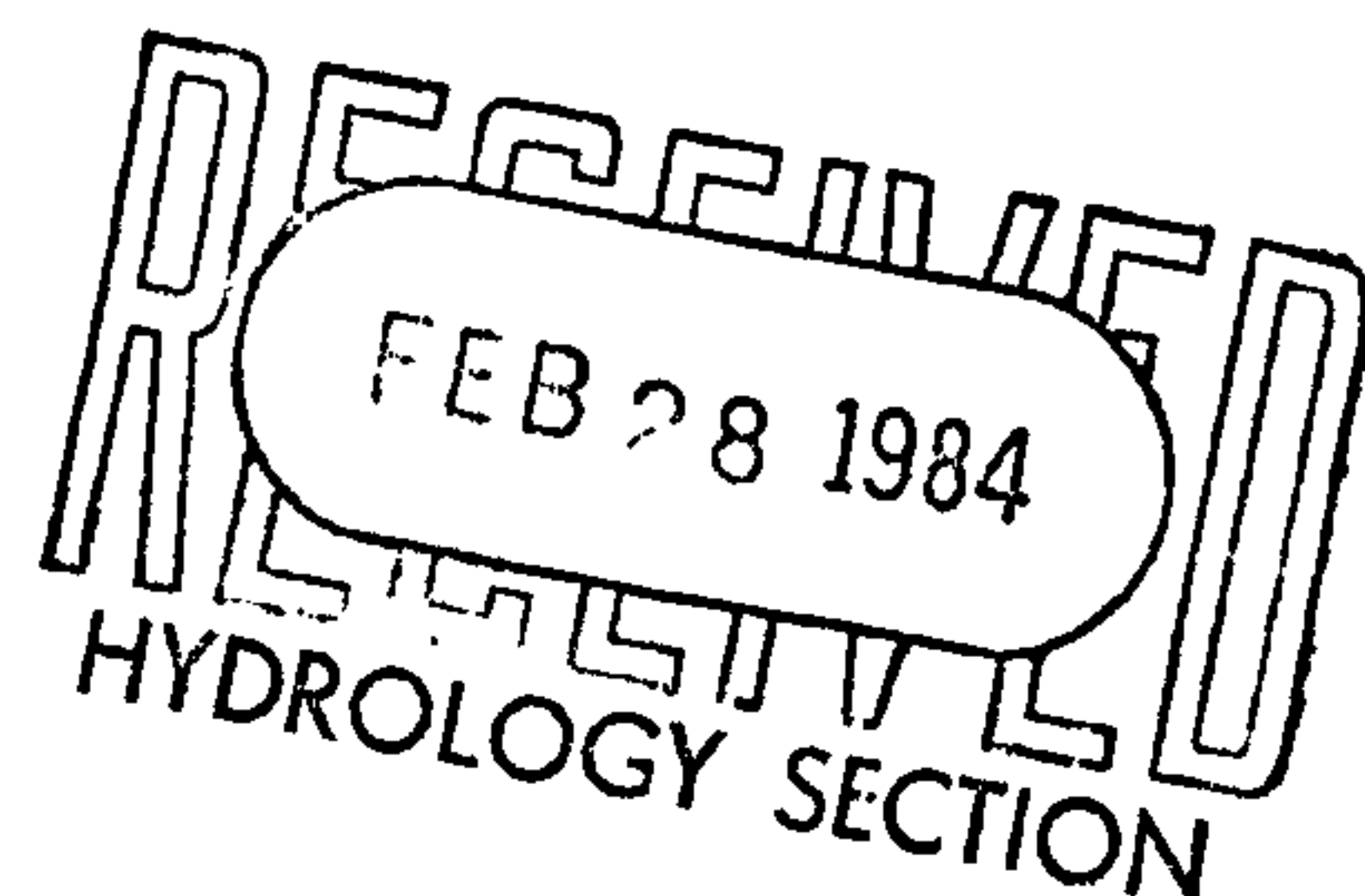
New Heart Center
near
San Mateo Blvd. and I-25
Albuquerque, New Mexico

E18-D 36

Prepared for
Dorman, Nelson & Breen
1512 Paseo de Peralta
Santa Fe, New Mexico 87501

Prepared by:
Scanlon & Associates, Inc.
8008 Pennsylvania Circle NE
Albuquerque, New Mexico 87110

January 27, 1984
Scanlon Job No. 84109



General

Plans for the construction of a New Heart Center are being prepared by Dorman, Nelson and Breen, an architectural firm located in Santa Fe, New Mexico. Scanlon and Associates has been retained by the architect to prepare a grading and drainage plan for the project. This report presents a preliminary concept for grading and draining the project site. Upon approval of this conceptual plan, a detailed report and drawings will be presented. The detailed drawings will be the plans used in constructing the facility.

Location

The New Heart Center is a health recovery facility located in North Albuquerque near San Mateo Boulevard and Interstate 25. It can be found on the City of Albuquerque Zone Atlas page E-18. It is a tract of land 17.37 acres in area. This land is owned by New Heart, Inc. of Albuquerque. The property is bounded by Forest Hills Drive on the south, Arroyo Del Pino on the north, San Pedro Drive on the east and the west boundary is approximately 230 feet west of a Barnhart Street projection. Barnhart Street extends southward from Forest Hills Drive but it does not extend north of Forest Hills.

Existing Conditions

The project site covers approximately 17.37 acres. Currently it is in a totally undeveloped state. The Bernalillo County Soil Survey shows that there are two basic soil types present at the site. These are EmB (Embudo) and EtC (Embudo Tijeras complex). Both soil types are in the same hydrologic soil group B.

Two major features can be easily recognized on the property. First the Pino Arroyo lies on the northern edge of the lot. Second, an earth dike has been constructed on the property to influence the arroyo flows. East of San Pedro the arroyo is in a state of degradation. Flows in the Pino have cut a small but well define channel. However, west of San Pedro, the arroyo encounters more mild slopes and the sediments picked up upstream have deposited and caused a less defined channel. This aggradation of the arroyo has caused a southward movement of flows. It appears that the earth dike was constructed to prevent this southward movement of the flows and to keep the arroyo on its more northern alignment. On the west edge of the property the channel is once again in a cutting or degradation state. Andrews, Asbury and Robert Consulting Engineers are currently preparing construction drawings to concrete line the Pino Arroyo in this area.

Forest Hills Drive is now paved from the east Frontage Road to McKinney Drive. San Antonio Drive, well to the north, is a paved road and San Pedro Drive is paved to the north of San Antonio Drive. Eventually San Pedro Drive will be extended south from San Antonio to connect to Forest Hills Drive just east of McKinney Dr. The alignment of this connection is shown in the attached drawings. This alignment is currently a dirt roadway and is being heavily used.

Drainage Characteristics

As mentioned before, the Pino Arroyo has experienced a tendency to flow to the south or southwest at the project site and an earth berm was constructed to try to prevent this from happening. This southward tendency can be easily seen by looking at the attached orthophoto map. This map was made before Forest Hills Drive was extended from Barnhart Street to the east Frontage Road. Also this map was made prior to the construction of the Anne Pickard Convalescent Hospital which is on the south side of Forest Hills Dr. just west of Barnhart St. The hospital is on top of the arroyo shown. Since these facilities have blocked the natural arroyo, other means have been implemented to handle drainage. A rundown and drainage swale have been constructed along the north side of Forest Hills Drive. The rundown is just north of the east hospital entrance. The drainage swale extends to the intersection of Forest Hills Drive and the east Frontage Road where runoff is then taken southward across Forest Hills Drive through a grating-covered culvert and further south to the old arroyo crossing on the Frontage Road between extensions of Menduis Street and Belcher Street.

A copy of the flood plain map (F.I.R.M. No. 17 of 50) has been attached. The white line through the flood area represents the earth dike present on the property. This map shows that the top of the dike is out of the flood plain but the flood plain exists on both sides of the dike. This situation can happen only by one condition. The dike does not extend any further east than San Pedro. Apparently, at San Pedro, the flow splits and goes on either side of the dike. Most of the flow goes north of the dike in the channel alignment but some flow goes to the south of the dike and creates a shallow sheet-flow type situation that causes flow to spread out over the area. Before the hospital and Forest Hills extension were constructed, this flow probably found the arroyo cut as shown on the orthophoto map.

A field inspection of the site and examination of the 1"=50' topographic map leads one to believe that the F.I.R.M. map does not accurately show the flooded area south of the dike. This flooded area is not adjacent to the dike but rather on Forest Hills Drive. When flow is split at San Pedro, the flow on the south side of the dike is immediately directed to Forest Hills Drive. There is a mild but definite downhill slope from the dike to Forest Hills Drive. In order for the flood plain shown on the F.I.R.M. to be true, flow would have to move up hill from Forest Hills Drive to the dike.

If the dike could be extended eastward across San Pedro, this flow split probably would not occur. The flood plain would probably be completely contained north of the dike. However, a dike across San Pedro would not be desirable as traffic would be blocked.

As mentioned earlier, Andrews, Asbury and Robert are currently preparing drawings for the construction of concrete channel lining for the Pino Arroyo. When this channel is in place, the flood plain will be contained in the channel and the flood plain problems described above will be eliminated. Diversion dikes will not be needed and Forest Hills Drive will be out of the flood plain.

Hydrology

The proposed development will be examined in three basic steps. First, existing conditions will be examined. Second, the ultimate drainage solution will be proposed. Third, a temporary or interim solution may be necessary because it appears that the New Heart Center may be constructed before the Pino Arroyo channel improvements are begun.

The total project area is approximately 18 acres so Rational Method ($Q = C i A$) techniques will be applied to investigate the runoff amounts. Procedures and criteria used were taken from the Albuquerque Development Process Manual (DPM), Volume 2.

Plate 22.2 D-1 of the DPM shows that the rainfall amounts are 1.45 inches for the 10 year 6 hour event and 2.20 inches for the 100 year 6 hour event. Reach lengths are rather short so the minimum value for time of concentration (10 minutes) will be used. According to Plate 22-2 D-2, this creates rainfall intensities of 3.06 inches per hour and 4.65 inches per hour for the 10 year and 100 year events respectively.

C values used in the Rational Formula are as follows:

Existing Condition	C=0.34
Paved Areas	C=0.95
Roofs	C=0.95
Grass Areas	C=0.34

These values were obtained from ASCE Manual of Practice No. 37, "Sewer Design and Construction" and were modified by using plate 22.2 C-1 of the DPM.

In the existing condition, the property can be divided into two basic areas, one north of the dike and one south of the dike. The area of both areas including the portion on the Pino Arroyo right-of-way and the small portion north of the arroyo right-of-way is 17.37 acres. 10.94 acres is south of the dike and 6.43 acres is north of the dike. Under existing conditions, peak flow rates are:

If the dike could be extended eastward across San Pedro, this flow split probably would not occur. The flood plain would probably be completely contained north of the dike. However, a dike across San Pedro would not be desirable as traffic would be blocked.

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	$Q = C i A$			
South	Q 10	=	$0.34 \times 3.06 \times 10.94$	= 11.4 cfs
	Q 100	=	$0.34 \times 4.65 \times 10.94$	= 17.3 cfs
North	Q 10	=	$0.34 \times 3.06 \times 6.43$	= 6.7 cfs
	Q 100	=	$0.34 \times 4.65 \times 6.43$	= 10.2 cfs
Total	Q 10	=	$0.34 \times 3.06 \times 17.37$	= 18.1 cfs
	Q 100	=	$0.34 \times 4.65 \times 17.37$	= 27.5 cfs

Flows north of the dike remain in the Pino Arroyo. Flows south of the dike enter Forest Hills Drive and flow west to the run-down across from the east hospital entrance.

The ten year street capacity of Forest Hills Drive is 10.2 cfs. Flow is at 0.39 feet deep with a top width of 15 feet. This will allow one 11 foot wide lane to be dry. If flow depth is increased to 0.50 feet, the street can carry 22.6 cfs covering 20.75 feet and leaving 5.25 feet dry. Street grade is 0.0285 ft/ft. At the southwest corner of the New Heart Center, just across the street from the east entrance of the hospital, an additional outside lane was constructed on the north side of Forest Hills so the allowable width of flow expands from 15 feet to 24 feet. This additional lane only extends westward for 100 or so feet. At this point a rundown has been constructed to get flow off of the street to the drainage swale on the north side of Forest Hills. This was described earlier in this report.

The final or ultimate drainage plan will involve utilizing the Pino Arroyo after it is concrete lined. Portions of the development will drain to the channel and portions will drain to Forest Hills Drive. In the final developed state the area can be divided into four basic drainage areas, A through D. Area A is north of the Pino Arroyo right-of-way. It covers 0.98 acres. This area will not be developed. It will remain in its existing state.

Area B is the area within the Pino Arroyo right-of-way. This area is approximately 2.54 acres. The development of this area will be accomplished by others in the arroyo improvement project.

Areas C and D are the areas being developed for the New Heart Center. The drainage area boundary between these areas are shown on the attached drawing. Area C covers 5.25 acres and Area D covers 8.60 acres. These areas will be graded such that Area C drains to the northeast to Pino Arroyo and Area D will drain to the southwest to Forest Hills Drive.

Runoff in Area C will be influenced to the parking lot on the west end of the property. Half of the parking lot will slope north and half will slope south. For Area C the parking lot will be graded such that a low point and ponding area will exist at the northwest corner. At this point a standard City catch basin will be installed with an outlet pipe to the concrete lined channel.

Similarly, Area D will drain to a low spot on the southwest corner of the parking lot. Flows will be conveyed to Forest Hills Drive from this point using either an open channel drainage easement or a standard catch basin with pipe. Flows will enter Forest Hills in the widened section where the previously mentioned rundown exists. The introduction of flows at this widened area will reduce the possibility of blocked traffic:

Developed Peak runoff rates for Area D at this point are:

$$Q = C i A$$

$$Q_{10} = (0.95)(3.06)(3.81) + (0.34)(3.06)(4.79) = 16.1 \text{ cfs}$$

$$Q_{100} = (0.95)(4.65)(3.81) + (0.34)(4.65)(4.79) = 24.4 \text{ cfs}$$

Summary of flows for southwest corner (Area D)

$$\text{Existing } Q_{10} = 11.4 \text{ cfs}$$

$$Q_{100} = 17.3 \text{ cfs}$$

$$\text{Developed } Q_{10} = 16.1 \text{ cfs}$$

$$Q_{100} = 24.4 \text{ cfs}$$

Developed peak runoff rates for Area C at northwest corner are:

$$Q_{10} = (0.34)(3.06)(2.74) + (0.95)(3.06)(2.51) = 10.2 \text{ cfs}$$

$$Q_{100} = (0.34)(4.56)(2.74) + (0.95)(4.65)(2.51) = 15.1 \text{ cfs}$$

Summary of Areas A, B, C, i.e., northwest corner

$$\text{Existing } Q_{10} = 6.8 \text{ cfs}$$

$$Q_{100} = 10.2 \text{ cfs}$$

$$Q_{10} = 14.1 \text{ cfs}$$

$$Q_{100} = 21.0 \text{ cfs}$$

As a result, this development will create an additional 4.7 cfs in Forest Hills for a 10 year event and an additional 7.1 cfs for the 100 year event. This is no problem for the 100 year event as capacity of the street is 126 cfs.

The additional 4.7 cfs for the 10 year (11.4 cfs total) should be no problem either if it is introduced at the widened section.

Similarly, this development introduces 7.3 cfs additional runoff in the Pino Arroyo for a 10 year event and an additional 10.8 cfs for the 100 year event. Design flows for the arroyo are based on ultimate urbanization conditions so this increase should have been accounted for in the arroyo design.

With a concrete lined channel in place, the flood plain problem will be alleviated. The earth dike on the property can be completely eliminated. The 100 year flow will be within the channel banks.

At the present time, it appears that the New Heart Center will be constructed before the channel improvements are made to the Pino Arroyo. This possibility has led to the necessity of developing an interim temporary plan to drain the Center while the arroyo is in its existing state.

To protect the Center from the 100 year flood plain, the earth dike must remain in place. This will split the flood plain as described earlier in this report. The 100 year flood plain will form on the north side of the dike and on Forest Hills as it currently does. The Center buildings should be out of the flooded area. The dike will have to be relocated in one area to allow construction of the tennis courts. This relocation is shown on the attached drawing.

Should further protection from the flood plain be necessary, the Pino Arroyo could be excavated to the shape proposed by Andrews, Asbury and Robert. This may influence flows to stay north of the dike rather than splitting at San Pedro. This excavated earth channel may require routine maintenance however as erosion or sediment deposits form from routine events.

The drainage patterns and methods explained for the final condition will be implemented for this temporary state in the same way with a few exceptions.

Area A is to be left alone as explained earlier. Area B will also be left alone as well. Area D will drain to Forest Hill as previously explained. Area C will be handled somewhat differently. Facilities on the east end of the property such as the jogging trail will not be constructed at this time since the dike must be left in place until Pino Arroyo is lined. Area B must drain to the north but the dike will cut off the flows. A small ditch will be excavated on the south side of the dike so that Area C will drain towards this ditch. The ditch will then flow west along the dike. Flows may enter the parking lot to the catch basin on the northwest corner or else this ditch and dike will be continued until it can empty into the Pino Arroyo. The pipe exiting the northwest catch basin will discharge to the existing arroyo. The arroyo is fairly well defined at this point. This pipe may need to be relocated slightly when the arroyo is lined. This is a minor effort though. Every effort will be made to match the proposed channel at this time to avoid the relocation.

Conclusions

Temporary and permanent solutions to drainage problems will be met with construction of the New Heart Center. The existing earth dike will remain in place at this time to provide protection for the proposed buildings. This dike will be shifted somewhat in places to allow construction of certain facilities.

Construction of certain facilities on the east end of the project (such as the jogging trail) will be delayed until Pino Arroyo is concrete lined and the earth dike will no longer be needed. A small ditch will be constructed on the south side of the dike to allow positive drainage to the west and to Pino Arroyo.

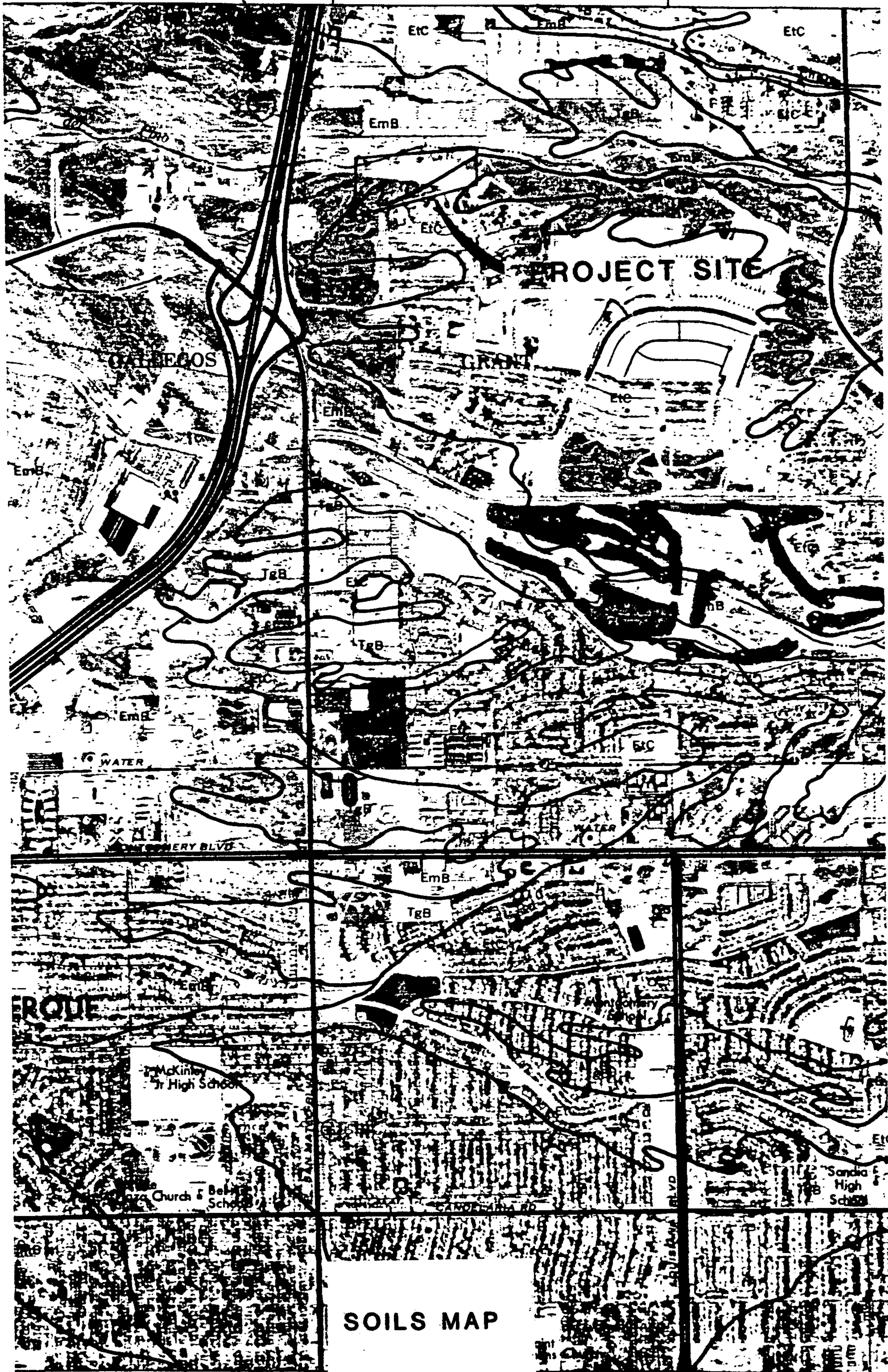
For the most part, runoff will be directed to the parking lot on the west side of the property. About half of the developed area will be directed to the northwest corner of the parking lot where a catch basin and pipe will discharge to the Pino Arroyo.

The south half of the property will be graded to the southwest corner of the parking lot. From this point runoff will be discharge to Forest Hills Drive through a catch basin and pipe or an open channel. The discharge point on Forest Hills Drive will be at an existing special widened section to convey flows off of the street to a drainage swale along the north side of Forest Hills Drive. Flow will go east along Forest Hills Drive to the east Frontage Road, then south along the Frontage Road to a point 500 feet + south where an existing arroyo crosses I-25 eventually reaching the Bear Arroyo channel.

This development will increase the observed peak runoff rates but only by 10 cfs or less. It is felt that existing or proposed improvements should be able to handle these minor increases without problem. Furthermore, it would be possible to use the parking area as a detention area to further reduce developed peak rates.

Plans for the construction of channel linings for Pino Arroyo are currently being prepared by Andrews, Asbury and Robert. This channel is necessary to confine the 100 year flood plain within the channel banks. While this channel is not in place, it appears that Forest Hills Drive will be in the flood plain. construction of this channel is needed not only for the protection of the New Heart Center but also for the protection of residents along Forest Hills Drive.

Construction for the New Heart Center may begin within a year. Construction for the Pino Arroyo is anticipated to begin in 2 - 5 years. It should be simple and reasonably inexpensive to tie the temporary facilities into the permanent facilities. The earth dike can be removed and the northwest pipe will be connected to the channel lining. At present the northwest pipe will be fitted with a headwall and rip rap.



23 28
26 25

5200

MUNICIPAL

FOREST

190

172

172

CHRISTY

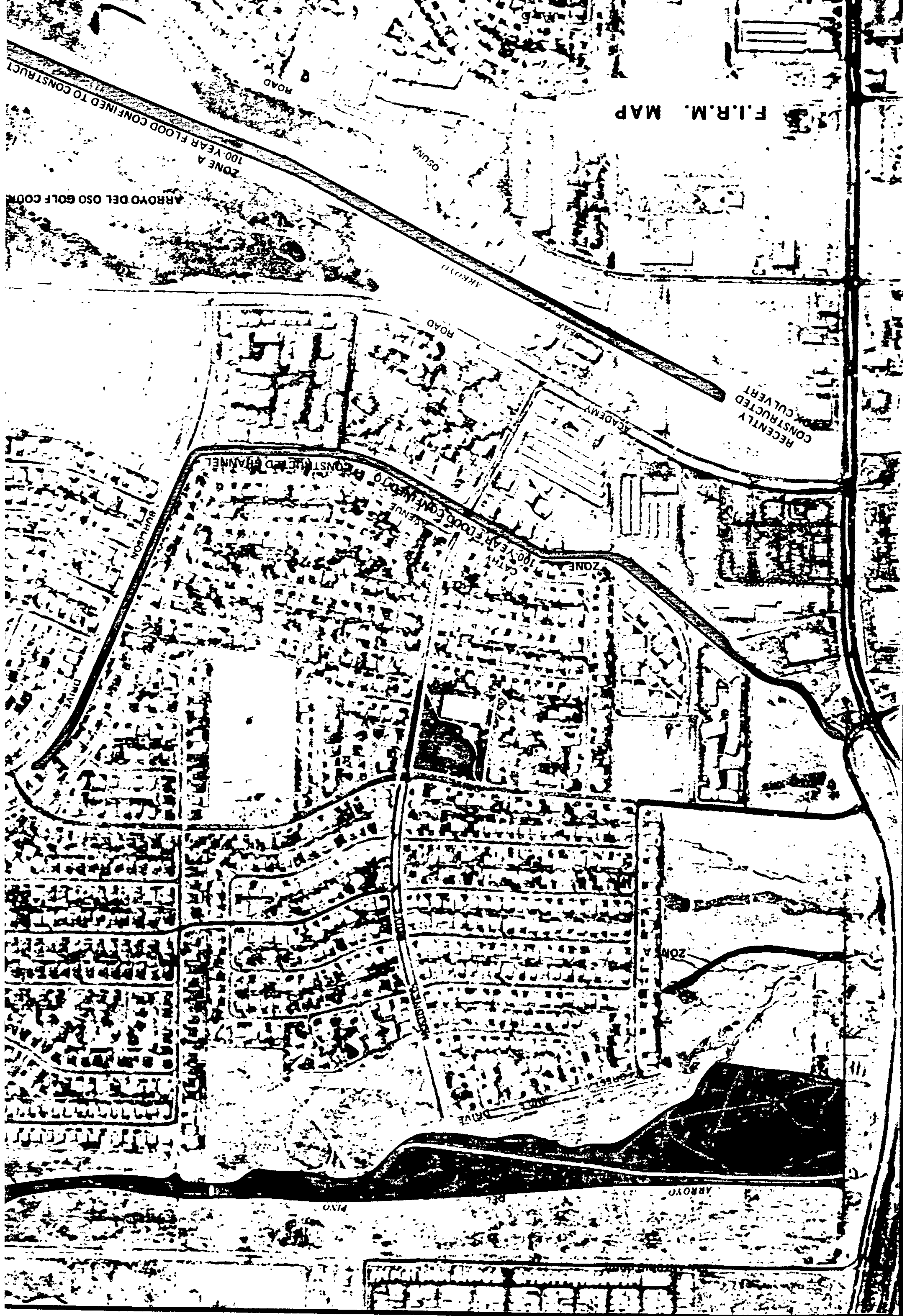
HARPER

AVENUE

LA

ORTHOPHOTO MAP

F.I.R.M. MAP





SCANLON & ASSOCIATES

CONSULTING ENGINEERS

8008 Pennsylvania Circle NE
Albuquerque, New Mexico 87110
(505) 265-6941

Project Street Capacity

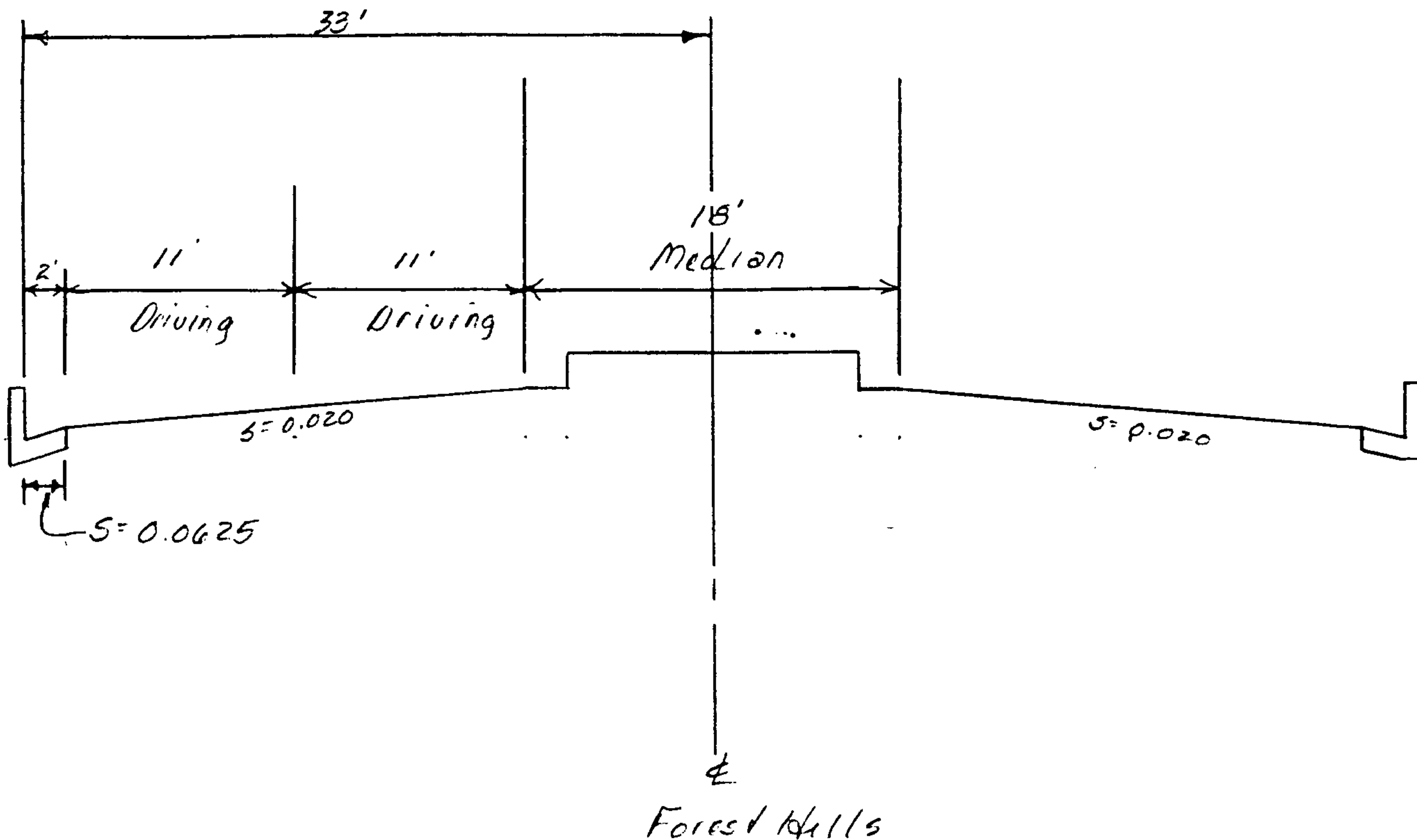
Location New Heart Center

Job No. 84109

Date 1/27/84

By KSF

Sheet 1 of 2



$$Q = \frac{1.486}{n} A R^{2/3} S^{1/2} \quad n = 0.017$$

10 yr. 1 lane dry. TW = 13' $\alpha = 0.35'$

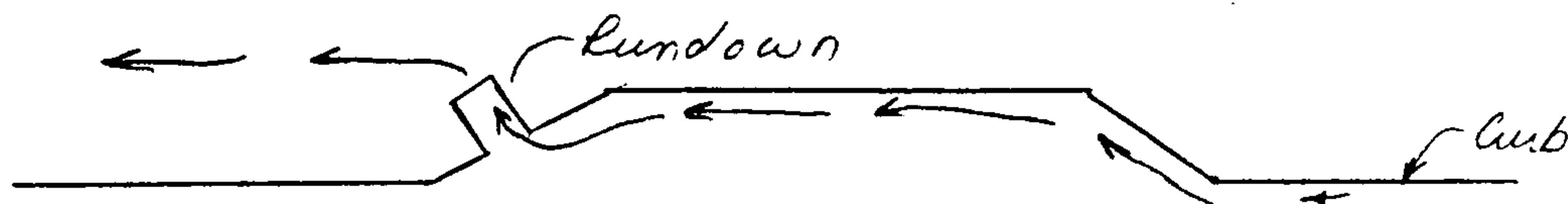
100 yr. $\alpha = 0.867'$

S = 0.0285 ft/ft

10 yr Cap = 7.2 cfs


There is an extra lane near rundown

$\alpha = 0.50'$ $Q = 22.6$ cfs TW = 18.75'



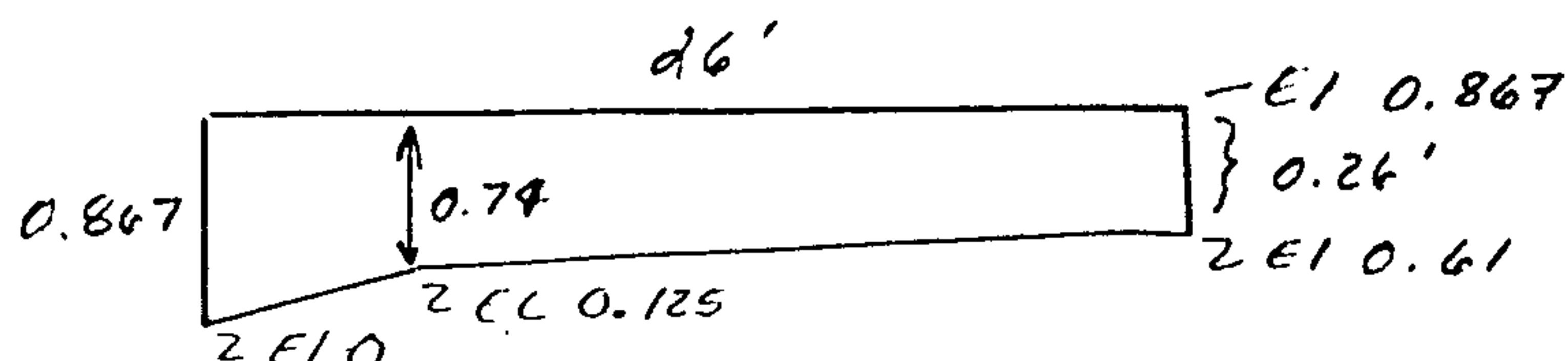
Forest Hills

East hospital entrance

 SCANLON & ASSOCIATES <small>CONSULTING ENGINEERS</small>	Project <u>Street Capacity</u>
	Location <u>New Heart Center</u>
	Job No. <u>84109</u> Date <u>1/27/84</u>
8008 Pennsylvania Circle NE Albuquerque, New Mexico 87110 (505) 265-8941	By <u>KSF</u> Sheet <u>2</u> of <u>2</u>

100 year

$d = 0.867$ or 0.2' over Top of Curb.



$$Area = \frac{1}{2}(0.867 + 0.74)(2) + \frac{1}{2}(0.74 + 0.26)(24) = 13.61 \text{ sf}$$

$$P = 0.867 + 2.00 + 24.00 + 0.26 = 27.13$$

$$R: A/P = 13.61 / 27.13 = 0.50$$

$$Q = \frac{1.486}{0.017} (13.61) (0.50)^{3/2} (0.0285)^{1/2}$$

$$Q = 126.5 \text{ cfs}$$