HYDROLOGY K15/D5 7 PLANS

K15/P5

7 Plans

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

K15-D5

September 17, 1981

Mr. Frank Lovelady
Boyle Engineering
Suite D, 3939 San Pedro Dr. N.E.
Albuquerque, New Mexico 87110

Re: STORAGE ADDITION - REVISED PRESBYTERIAN HOSPITAL DRAINAGE REPORT

Dear Frank:

A 30-day conditional approval of the referenced report will be granted by the Hydrology Department based on your submittal of September 10, 1981. The proposed alley grades should be submitted for review during this period. A Certificate of Occupancy will not be issued by this department until approval of the alley grades has been granted by the City. Mr. Fred Aguirre will sign off for the Hydrology Section when copies of the revised plans are placed in the construction sets.

If I can answer any questions concerning this matter, please call.

Very truly yours,

Brian G. Burnett

Brian G. Burnett
Civil Engineer/Hydrology

BGB/fs

cc: Mr. Bill Sellers, Jaynes Corporation

Boyle Engineering Corporation

Suite D
3939 San Pedro N.E.
Albuquerque, New Mexico 87110

consulting engineers

505 / 883-7700

City of Albuquerque
Engineering Division
P.O. Box 1293
Albuquerque, New Mexico 87103
ATTN: Mr. Brian G. Burnett

September 10, 1981

K15-D5

RE: REVISION TO 12-29-78 and 1-4-79 PRESBYTERIAN HOSPITAL DRAINAGE PLAN
B.E.C. PROJECT NO. AL-S01-200-01

Dear Mr. Burnett:

In reference to your letter of August 21, 1981 to Mr. Thornton Schwenk, attached are three prints of the revised drawing for the subject drainage plan which reflect the changes numbered 1 through 6 and 8. Regarding number 7, we are presently preparing grades for the alley.

The alley grade is already established by 2' wide concrete "curbs" adjacent to each right-of-way line with the exception of only 50' on the north side near the east end. Although they do not appear to be any type of city standard curb, they appear new and in good condition. It is, therefore, recommended that they remain as edging for the future alley paving.

In order to satisfy the requirement for a spillway, it was necessary to adjust the pond elevations slightly to provide for additional banking along the west side.

If you have any questions, please call.

Sincerely,

BOYLE ENGINEERING CORPORATION

Frank D. Lovelady

Frank D. Lovelady, P.E.
Senior Civil Engineer

FDL:sof

RECEIVED
SEP 2 1981
ENGINEERING

RECEIVED
SEP 11 1981
ENGINEERING

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

K15-D5

August 21, 1981

Mr. Thornton Swenk
Boyle Engineering Corporation
3939 San Pedro N.E., Suite D
Albuquerque, New Mexico 87110

Re: STORAGE ADDITION - REVISED PRESBYTERIAN HOSPITAL DRAINAGE REPORT

Dear Thornton:

An initial review of the referenced drainage report has resulted in the comments listed below. The numbers indicated refer to the Drainage Report (DR) and Construction Plan (CP) Checklists.

1. DR #3A - Please supply with future drainage submittals a signed and dated professional engineer's stamp.

2. DR #13 - Please supply calculations showing on-site undeveloped and developed flow rates.

3. DR #15B2 - The drainage report states that the existing grade in the gutter of Lead Avenue at the southwest corner is too high to permit positive discharge. What is this flowline elevation in Lead Avenue?

4. DR #15B3 - Since the pond is sized to handle the 100 year increased runoff, an emergency spillway scheme should be proposed. Special consideration must be given to spillway location and the affect of runoff to adjacent property. Supporting calculations should also be included.

5. DR #17C - Please supply a legend identifying nomenclature on the plans.

6. DR #19C - Is the 68.56 elevation indicated for the bench mark correct?

7. DR #21C - The proposed alley grades between Site II-E and II-B must be approved by the City Engineer.

8. DR #21I - Please indicate finish floor elevations to a five digit Mean Sea Level Designation.

If I can answer any questions concerning the above items, please call.

Very truly yours,

Brian G. Burnett

Brian G. Burnett
Civil Engineer/Hydrology

BGB/fs

cc: Reading File

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

K15-D5

August 21, 1981

Mr. Thornton Swenk
Boyle Engineering Corporation
3939 San Pedro N.E., Suite D
Albuquerque, New Mexico 87110

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Very truly yours,

Brian G. Burnett

Brian G. Burnett
Civil Engineer/Hydrology

BGB/fs

cc: Reading File

Boyle Engineering Corporation

Suite D
3939 San Pedro N.E.
Albuquerque, New Mexico 87110

consulting engineers
505 / 883-7700

RECEIVED
AUG 14 1981
ENGINEERING

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

August 14, 1981

Attention: Mr. Brian G. Burnett

RE: REVISIONS TO 12-29-78 and 1-4-79 PRESBYTERIAN HOSPITAL DRAINAGE PLAN

Dear Mr. Burnett:

Attached are copies of documents relative to the above referenced drainage study.

1. B.E.C. print, dated 1-4-79, Presbyterian Hospital Energy Building Drainage Study (3 copies).

2. B.E.C. print, dated 12-29-78, Presbyterian Hospital Energy Storage Tank Drainage Study (3 copies).

3. SMPC prints, dated January, 1981, Presbyterian Hospital Center Landscaping Phase II, Sheets 1 of 3 and 3 of 3 (1 each). Sheet 1 of 3 is the Site Development Plan of December 20, 1978 and the last revision was November 18, 1980.

4. B.E.C. print, dated 8-14-81, revisions to 12-29-78 and 1-4-79 Drainage Studies, Energy and Storage Building Site.

As we discussed in our meeting of August 6, 1981, the revision to the original studies is required to show a new combined site plan for sites II-E and II-B, including Lot 12.

Although Lot 12 was not a part of the 1978 Drainage Study, the City approved a site Development Plan (which did include Lot 12) and issued a building permit for the Hospital to erect a metal shop and storage building on Lot 12. This permit No. 30946, issued to the contractor, Lembke Construction Co., was dated 9-12-79.

The hospital now desires to erect a new 18' x 92' storage addition adjoining the 33' x 92' building. The problem of Lot 12 being omitted originally was discovered by the City when the present Contractor, Jaynes Corporation, applied for a building permit for the new addition. Our revised drainage study shows a new configuration for the retention pond and takes into account asphalt paving which will result in 80% of site II-B being developed.

The retention pond which is already in existence is sufficient to hold the 6-hour 100-year storm for the proposed development.

Please call us should you encounter any questions during your review. As this study is merely a revision to an earlier study, we hope that a timely approval will be possible.

Sincerely yours,

BOYLE ENGINEERING CORPORATION

Thornton D. Schwenk

Thornton D. Schwenk, P.E.
Senior Civil Engineer

K15/D5

City of · Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

December 11, 1978

Donald P. Stevens
Stevens, Mallory, Pearl & Campbell ~~255-8668~~
115 Amherst Dr. S.E.
Albuquerque, New Mexico 87106

RE: PRESBYTERIAN HOSPITAL STUDY

Dear Mr. Stevens:

The plan submitted for the captioned development is in agreement with the concepts conveyed verbally to Mr. Vic Chavez. The plan is, therefore, hereby approved.

266-7789

Sincerely,

Bruno Conegliano
Asst. City Engineer-Hydrology

BC/tl

cc: Rick Leonard, AMAFCA
Richard Heller, City Engineer
Fred Aguirre, Assistant Hydrology Engineer
Vic Chavez, Boyle Engineering, Inc.
Dr. File

12-15-78
A NEW DRAINAGE STUDY TO BE SUBMITTED LATER
ACCORDING TO VIC CHAVEZ

STEVENS, MALLORY, PEARL & CAMPBELL
ARCHITECTS
115 AMHERST DRIVE, S.E. 505 255-8668
ALBUQUERQUE, NEW MEXICO 87106

November 16, 1978

Mr. Bruno Conegliano
City of Albuquerque
City Engineer's Office
P. O. Box 1293
Albuquerque, New Mexico 87103

RECEIVED
NOV 20 1978
CITY ENGINEERS

Subject: Presbyterian Hospital Center
1100 Central Avenue, S.E.
Albuquerque, New Mexico
Storm Drainage Study

Dear Mr. Conegliano:

Transmitted herewith are two copies each of strom drainage studies relative to development of the 1979 projects for the Presbyterian Hospital Center.

These studies cover two projects:

1. The new main additions to the hospital. Our submission to you consists of a letter from Boyle Engineering Company dated October 25, 1978, and of a drawing entitled Site Plan dated April 14, 1978, Sheet A-2.

2. The site on Lots 10 and 11, Block 17, Terrace Addition on Lead Avenue is a site to incorporate an underground tank to store warm and cold water for energy supply to the hospital. The study is shown on Boyle Engineering drawing 1 of 1, Job #S01-156-01.

We are submitting this report for your review and approval prior to submitting plans to the Building Inspection Department for a building permit.

Sincerely,

Donald P. Stevens

DPS:dd
Enclosures

DONALD P. STEVENS A.I.A.
ROBERT G. MALLORY A.I.A.
GEORGE CLAYTON PEARL A.I.A.
C. ROBERT CAMPBELL A.I.A.

Boyle Engineering Corporation

consulting engineers

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

505 / 266-7789

STEVENS, MALLORY, PEARL & CAMPBELL
115 Amherst SE
Albuquerque, New Mexico 87106

October 25, 1978

RE: Supplement to "Storm Draiange Study Relative to Expansion of the Presbyterian Hospital Facilities, Albuquerque, NM - September 1975"

The referenced drainage report was prepared as a definite study of the existing conditions in September 1975. The report was prepared in conjunction with the construction of the Courtyard Expansion Project. Approval of the report specifically required that future expansions comply with AMAFCA Resolution 1977-2. As a result of this requirement and recently promulgated guidelines for expansion of existing facilities this Addenda and the attached calculations have been prepared to determine development guidelines for the proposed 1978 expansion.

Areas covered in this addenda are those outlined in red on the attached Site-Plan, Sheet A-2. Existing conditions are shown by the broken lines in the vicinity of the new hospital wing and in red near the expanded parking lot at the southeast corner of the property. Details of the existing conditions are available in the original report.

Proposed expansion plans include large areas of landscaping as shown on Sheet A-2. A review of the plan indicates a decrease in the coefficient of runoff as a result of the reduction in the net impermiable area. A summary of these calculations are attached. With the proposed decrease in runoff, ponding will not be required. It should be noted however that some ponding will be provided at the Architects request. This ponding will be incorporated in any future drainage study as required to comply with development regulations at the time.

It is our opinion that the proposed development will not require ponding, will comply with AMAFCA Resolution 1972-2, will not be susceptable to flooding from upstream areas and will not increase the threat of flooding to downstream areas.

BOYLE ENGINEERING CORPORATION

Victor J. Chavez

Victor J. Chavez, P.E.

Enclosures
VJC/pjf

October 20, 1975

K15-D5

Mr. Fred Burns
MacCornack and Burns
1721 Girard Blvd. N.E.
Albuquerque, N.M. 87106

RE: PRESBYTERIAN HOSPITAL

Dear Mr. Burns:

The drainage report for Presbyterian Hospital is approved and I will sign the building permit.

This letter reaffirms the need for compliance with AMAFCA Resolution 1972-2 for future improvements.

Very truly yours,

Kleston H. Laws
Assist. City Engineer-Hydrology

KHL/fs

cc: Mr. John Robert

STORM DRAINAGE STUDY

RELATIVE TO EXPANSION OF

PRESBYTERIAN HOSPITAL FACILITIES

ALBUQUERQUE, NEW MEXICO

SEPTEMBER 1975

MacCORNACK & BURNS
CONSULTING ENGINEERS, INC.
1721 GIRARD BLVD., N.E.
ALBUQUERQUE, NEW MEXICO 87106

ADDENDUM TO "STORM DRAINAGE STUDY RELATIVE TO EXPANSION OF PRESBYTERIAN HOSPITAL FACILITIES, SEPTEMBER 1975"

Total Area to be developed

Hospital -	3.66 Ac.
Parking Lot -	.65 Ac.
	4.31

Existing Conditions:

Imperveous Area =	143,625	(.9) =	129,263
Landscaped Area =	43,817	(.4) =	17,526
	187,442		146,789

Existing Coefficient = 145,789/187,442 = .7831

Proposed Conditions:

Impervious Area =	142,322	(.9) =	128,090
Landscaped Area =	45,120	(.4) =	18,048
	187,442		146,138

Proposed Coefficient = 146,138/187,442 = .7796

Decrease in Coefficient = .0035

STORM DRAINACE STUDY

RELATIVE TO EXPANSION OF

PRESBYTERIAN HOSPITAL FACILITIES

ALBUQUERQUE, NEW MEXICO

SEPTEMBER 1975

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APPENDIX

Calculations

Map No. 1

Map No. 2

Map No. 3

MacCORNACK & BURNS
CONSULTING ENGINEERS, INC.
1721 GIRARD BLVD., N.E.
ALBUQUERQUE, NEW MEXICO 87106
(505) 266-7789

October 1, 1975

Mr. Cecil L. Poppe
PRESBYTERIAN HOSPITAL
1100 Central, SE
Albuquerque, N. M. 87106

Dear Mr. Poppe:

Transmitted herewith is the "Storm Drainage Study Relative to Expansion of Presbyterian Hospital Facilities, Albuquerque, New Mexico". This study 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,

MacCORNACK & BURNS, INC.

Fred Burns

Fred Burns, P.E.
N. M. Registration No. 4000

JFB:mt
Encls.

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

STORM DRAINAGE STUDY

RELATIVE TO EXPANSION OF

PRESBYTERIAN HOSPITAL FACILITIES

ALBUQUERQUE, NEW MEXICO

1. PURPOSE:

The purpose of this report is to transmit data relative to a storm drainage study completed for the proposed expansion of existing Presbyterian Hospital facilities located at 1100 Central Avenue, SE, Albuquerque, New Mexico.

2. SCOPE:

This report is to establish existing storm drainage conditions in the vicinity of the site and to determine required changes to comply with AMAFCA Resolution 1972-2.

3. LOCATION:

The site is located in the southern half of the Northwest quarter of Sec. 21, T 10 N, R 3 E, NMPM and is bounded by Central Avenue, Sycamore Street, SE, Silver Avenue, SE, and Oak Street, SE. The land area of the tract is approximately 16.2 acres.

Privately owned lots located within the above boundaries have been excluded in this report and the attached calculations.

4. EXISTING DRAINAGE CONDITIONS:

The site under consideration is located in a highly

developed area of the city. The site itself is fully developed in terms of storm runoff potential. Approximately eighty percent (80%) of the site has been paved for parking, fifteen percent (15%) is building sites, and five percent (5%) is landscaped. Total runoff in the event of a 100 year frequency storm is 93.92 cfs. Flow from the site is channeled to existing storm drain facilities located in Central Avenue, Cedar and Oak Streets, SE.

Flow from adjacent properties to the site is minimal. The southern edge of the property is the natural ridge of the drainage basin in which the site is located, and what flow is developed is diverted by Silver Avenue, SE, to existing storm drain facilities. The eastern edge of the property is Sycamore, SE, which also diverts flow to existing facilities. The threat of flooding from upstream properties is minimal, due to the construction of local streets and the natural controls in the original watersheds.

Flow to contiguous properties downstream of the site has been channeled by topography and city streets to either Central Avenue, Oak Street, SE, or Cedar Street, SE. A portion of the flow to both Cedar and Central is intercepted by the I-025 Interceptor Storm Drain. Other existing storm drains intercept flow along Oak Street and Central Avenue. The attached drawings indicate the sources of runoff and location of storm drain inlets with 25 year storm flows being intercepted.

5. PROPOSED DRAINAGE PLANS:

A. CRITERIA:

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

2. Project Storm: 100-year, frequency-duration, as shown on Chart 1, "1963 Master Plan of Drainage for the City of Albuquerque and Environs", as prepared by Gordon Herkenhoff and Associates, Inc., Consulting Engineers.

B. EXISTING CONDITIONS:

Total maximum runoff for each subsection was determined for both one hundred (100) and twenty-five (25) year frequency storms. The results are indicated on Drawing No. 1. Total runoff from hospital properties is 93.92 and 56.16 cfs for the 100 and 25 year storms respectively. Drawing No. 2 indicates the total area and flow from both hospital properties and surface streets. Total runoff is 107.37 and 65.19 for the 100 and 25 year storms respectively. Drawing No. 3 indicates the direction and rate of runoff. Rates are reduced at storm drain inlets to simulate their effect on total runoff. Flow into the drop inlets is based on 25 year storm capacities. Average coefficient of runoff for the total contributing area, including streets, is .862. Using the time of concentration for the total area of 4.25 minutes, 100 and 25 year runoffs are 104.1 and 63.44 cfs respectively.

C. FUTURE CONDITIONS:

The addition of the proposed laboratory facilities will increase the overall coefficient of runoff to .864. Increases in the 100 and 25 year storm runoffs will be .37 and .23 cfs respectively. Runoff from this area is presently directed to existing inlets on Oak Street, SE. Construction of the new facility will provide a sump system, which will inject storm runoff directly into existing drain facilities. Entrance to the new facility will also be maintained at an elevation of 51.5 feet to prevent possible backwater on Oak Street from entering the facility in the event of an inoperative drop inlet. Construction of a waterstop to this elevation will allow ponding on Oak Street up to an elevation at which it will flow out toward Central Avenue at a rate equal to the entering flows.

6. CONCLUSIONS AND RECOMMENDATION:

On the basis of this study and in accordance with AMAFCA Resolution 1972-2, it is the conclusion of this report that facilities for maintaining natural topography, drainage pattern and perviousness are not required for the following reasons:

A. Section 3-B, Par. 2: The installation of storm drain facilities in the area defines the site as lying "within the boundaries of a municipal corporation where the municipal corporation certifies that the pattern and density

of development existing on July 15, 1972 within the drainage area being considered has created a need for municipal storm sewer facilities", thereby waiving compliance with the provisions of Paragraph 3(B).

B. Section 9: Specifically excluded from the area affected by the Resolution is that area lying between the Diversion Channels and the Rio Grande. The area being developed, while located in AMAFCA jurisdiction, drains into subbasins excluded by the Resolution.

C. Section 10-B: Efforts to comply with AMAFCA Resolution 1972-2 would require the construction of approximately 480,000 gallons of temporary storage to maintain undeveloped rates of runoff. Due to the existing topography and land uses, efforts to comply would require substantial alteration of existing facilities.

It is the recommendation of this report that the elevation of the new driveway be raised to an elevation of 51.5 feet to prevent flows onto the site being considered.

With the implementation of this recommendation concurrent with the proposed development, it is concluded that such development will not be in danger of flooding and will comply with the intent of AMAFCA Resolution 1972-2.

Future development of adjacent properties by Presbyterian Hospital will be planned to fully comply with the requirements of AMAFCA Resolution 1972-2.

Respectfully submitted,

MacCORNACK AND BURNS
Consulting Engineers, Inc.

Fred Burns

Fred Burns
N. M. Registration No. 4000

APPROVED:

City of Albuquerque
New Mexico

Kleston H. Laws

Kleston H. Laws
Assistant City
Engineer-Hydrology

APPROVED:

Albuquerque Metropolitan Arroyo
Flood Control Authority

for

John B. Robert
Executive Engineer

Job Presbyterian Hospital-Drainage Study Sheet No. 1 of ____
Subject ____ Job No. ____
Client Pres Hospital By DJC Date 10/25
MAC CORNACK & BURNS Consulting Engineers, Inc., Albuquerque, NM

Hospital Area = 16.23 Ac

Total Gross Area = 19.1 Ac

Existing Coefficient of Runoff

Roof Area	2.8 Ac	2.8(.9) = 2.52
Parking Area	15.0 Ac	15.0(.9) = 13.50
Grassed	.9 Ac.	.9(.1) = .09
Ponded	.4 Ac.	.4(0) = 0
		16.11/19.1 = .843

Velocity of flow in street @ 6" depth

$V = 1.486/.015\ (.5)^{2/3}(.05)^{1/2} = 14$ fps.

Approximate $T_c = 1220/14(60) + 2.8 = 4.25$ min.

$i_{100} = 188/29.25 = 6.46$ $\quad i_{25} = 123/31.25 = 3.94$

$Q_{100} = 6.46(19.1)(.843) = 104.01$ cfs. $\quad Q_{25} = 3.94(19.1)(.843) = 63.44$

Calculation of each individual Lot hydrologic properties are shown on the attached drawing.

Ck effect of the proposed development on total runoff:
.079 Ac changed from grass to roofing.

$\Delta C = [16.11 + .079(.9-.2)]/19.1 - .843 = .003$

$\Delta Q_{100} = .003(19.1)(6.46) = .37$ cfs.

$\Delta Q_{25} = .003(19.1)(3.94) = .23$ cfs.

Job Presbyterian Hospital - Drainage Study
Subject
Client Pres. Hospital

Sheet No. 2 of
Job No.
By MJC Date 10/75

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

Ck effect of clogged inlets in Oak Street.

Total Runoff to Oak from property = 17.94 cfs.

w/ 4" freeboard @ driveway S = .0023

for S = .0025, 32' street, 6" Crown, Cap. = 37 cfs.

(for Cap. See Table IV, Master Plan of Drainage, Herkenhoff)

Overflow capacity of Oak St. is adequate to handle flows from property as well as sideslope flows from adjacent Interstate 025 Right of Way.