Boyle Engineering Corporation

DRAINAGE PLAN

FOR

ALBUQUERQUE NATIONAL BANK OPERATIONS CENTER

725 SIXTH STREET NW

ALBUQUERQUE, NEW MEXICO

JANUARY 14, 1983

S01-224-18

Boyle Engineering Corporation

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

consulting engineers

505 / 883-7700

January 14, 1983

Mr. Fred Aguirre
Civil Engineer/Hydrology
City of Albuquerque
P.O. Box 1293
Albuquerque, New Mexico 87103

RE: Drainage Plan for ANB
Operations Center
725 6th Street N.W.
S01-224-18

Dear Mr. Aguirre:

Submitted herewith are three (3) copies of the subject drainage plan, drainage calculations and back-up information.

If you have any questions, please do not hesitate to contact me.

Sincerely,

BOYLE ENGINEERING CORPORATION

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

cc: Glenn H. Fellows
Stevens,Mallory,Pearl & Campbell

INFORMATION SHEET

PROJECT TITLE Albuquerque National Bank Operations Center Drainage Plan
TYPE OF SUBMITTAL Drainage Plan
ZONE ATLAS PAGE NO. J-14
CITY ADDRESS 725 6th Street N.W.
LEGAL DESCRIPTION Block 28, Perfecto Armijo & Brothers Addition

ENGINEERING FIRM Boyle Engineering Corporation PHONE 883-7700
CONTACT Frank D. Lovelady
ADDRESS 3939 San Pedro NE, Suite D

OWNER Albuquerque National Bank PHONE 255-8668
CONTACT Glen Fellows (SMPC)
ADDRESS 115 Amherst Drive SE

ARCHITECT Stevens,Mallory,Pearl & Campbell PHONE 255-8668
CONTACT Glen Fellows (SMPC)
ADDRESS 115 Amherst Drive SE

SURVEYOR Elder Company, Surveyors PHONE 268-1830
CONTACT Edward Ross Elder
ADDRESS 530 Jefferson, NE

CONTRACTOR Lembke PHONE 243-7808
CONTACT Sheldon Sutton
ADDRESS 1719 5th Street NW

DATE SUBMITTED January 14, 1983
BY Frank D. Lovelady
Frank D. Lovelady, P.E.

Use this Information Sheet when submitting the following:

Drainage report or plan, conceptual grading and drainage plan, engineer's certification plan, erosion plan and grading plan. Provide the information applicable to your submittal.

DRAINAGE CALCULATIONS:

1. BENCH MARK: City of Albuquerque Bench Mark 8-J14 located at the intersection of Slate Avenue and 6th Street N.W. in the southeast quadrant of the intersection. A square, chiseled on top of concrete at the SSE curb return. Elevation 4555.157

2. AREA:

	Square Feet	Acres
Existing Building	34,528	0.793
Proposed Addition	21,164	0.486
Paved Parking Area	71,158	1.634
Landscaped Area	10,595	0.243
Sidewalks & Other Areas	15,255	0.350
TOTAL AREA	152,700	3.506

3. SIX HOUR RAINFALL:
See Development Process Manual (DPM) Volume 2
Plate 22.2 D-1 100-year, six-hour volume is 2.20 inches

4. VOLUME:
((152,700 - 10595) 0.9 + (10.595 X 0.4)) X 2.20/12= 24.224 CF

5. POND VOLUME:
Based on cross sections (Figure 1) and average end areas (Table 1) the total volume of the parking lot below elevation 56.00 is 21,379 CF. The remaining 2,843 CF will overflow through the driveway into the street.

6. STORM SEWER CHARACTERISTICS:
The 24" storm sewer in 6th Street between Slate Avenue and Lomas Blvd., into which the parking lot is to drain, is assumed to be flowing at maximum capacity during the 100-year flood.

7. NUISANCE WATERS:
Nuisance waters, such as irrigation of landscaped areas, will be retained in these areas.

8. POND DISCHARGE

Flow Velocity - Use Orifice assume non-submerged outlet.

$$V = \frac{Q}{A} = C\sqrt{2gh}$$

When pond is at full depth

High water = 56.00
Pipe Invert = 53.92
h = 2.08 feet C = 0.598

$V = 0.598 \quad 2 \times 32.2 \times 2.08 = 6.92$ fps

When pond is at minimum depth

Low Water Elev. = 55.10
Pipe Invert = 53.92
h = 1.18 C = 0.598

$V = 0.598 \quad 2 \times 32.2 \times 1.18 = 5.21$ fps

Average velocity = 6.92 + 5.21/2 = 6.07 fps

$$\text{Area} = \frac{\pi (0.33)^2}{4} = 0.0855 \text{ SF}$$

$Q = AV = 5.21 \times 0.0855 = 0.4455$ cfs

Length of time to drain pond = 21.379 cubic feet/(0.4455 X 3600) = 13.33 Hours

Try 8" Pipe $A = \frac{\pi}{4} (0.67)^2 = 0.35$

$Q = AV = 5.21 \times 0.35 = 1.8235$ cfs

21.379/(1.8235 X 3600) = 3.25 Hours

Try 12" Pipe $A = \frac{\pi}{4} (1)^2 = 0.78$

$Q = AV = 5.21 \times 0.78 = 4.0638$ cfs

21.379/(4.0638 X 3600) = 1.46 Hours

Pond discharge line connects to an existing catch basin. The maximum size of line is, therefore, limited to 12 inches or one size smaller than the existing catch basin outlet pipe, which is 15". Therefore, use 12" pond discharge with a 4" diameter orifice plate in the first up-stream catch basin.

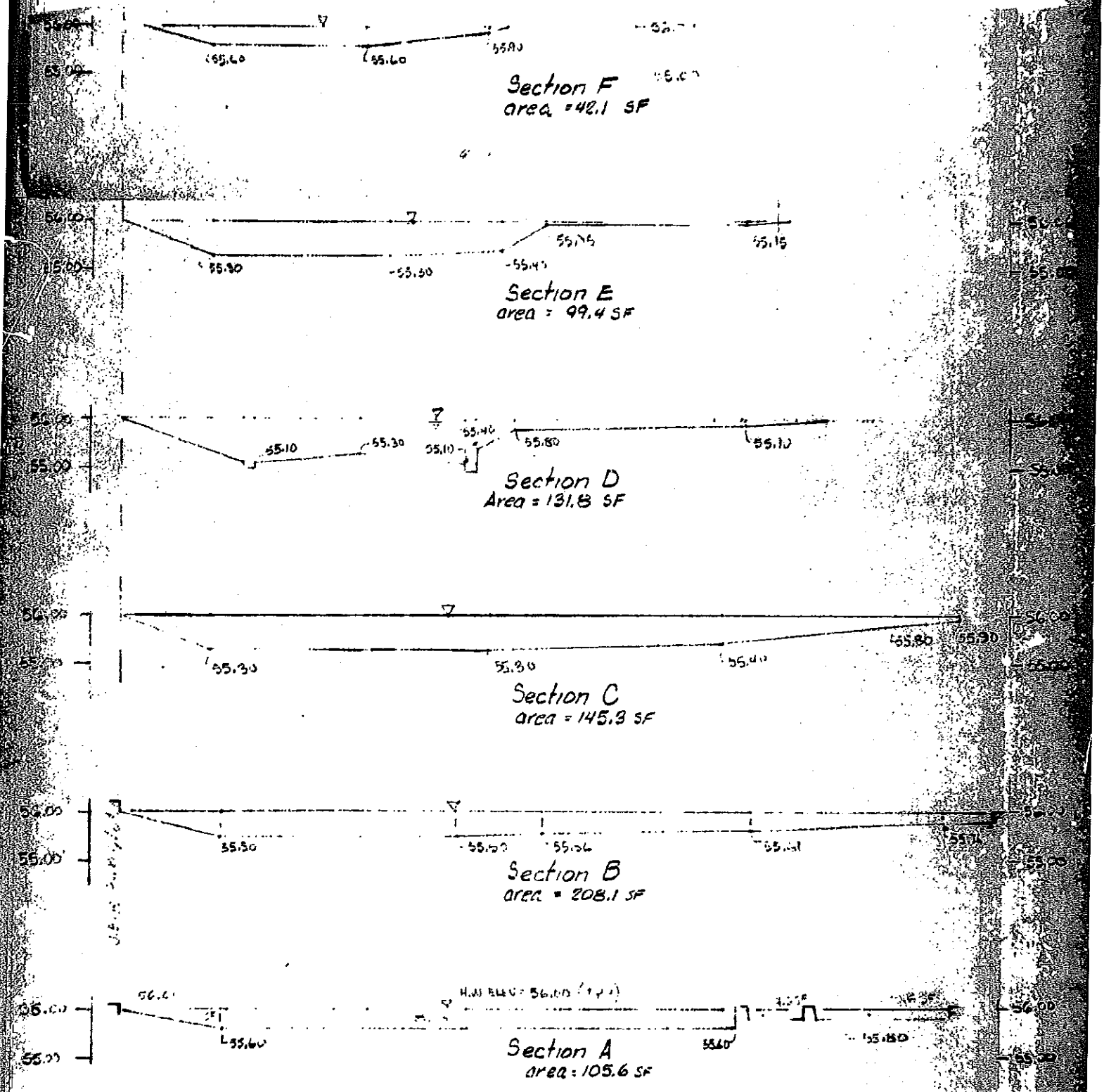
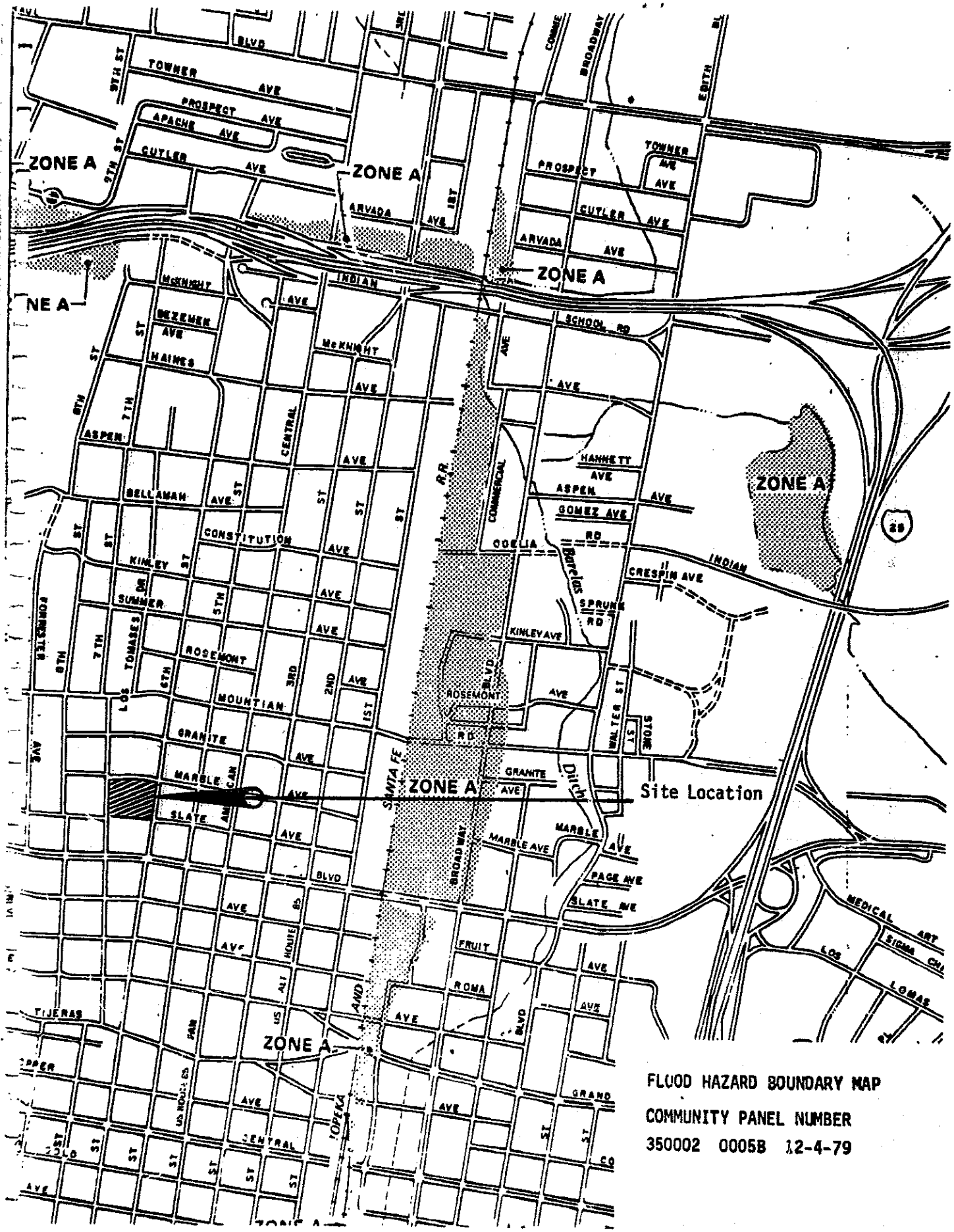


Figure 2 - Parking Lot Cross Sections
Scale Horiz 1" = 40'
Vert 1" = 2'

T A B L E I

X-SECTION	X-SECTION AREA	AVE. AREA	DISTANCE BETWEEN X-SEC.	VOLUME (CUBIC FEET)
A	105.6	156.9	39	6.119
B	208.1	176.7	27	4.770
C	145.3	138.6	30	4.158
D	131.8	115.6	28	3.237
E	99.4	70.8	36	2.549
F	42.1	21.0	26	546
G	0			
				21.379 CF



FLOOD HAZARD BOUNDARY MAP

COMMUNITY PANEL NUMBER

350002 0005B 12-4-79

BENCH MARK DATA

City of Albuquerque, New Mexico
Public Works Department
Engineering Division

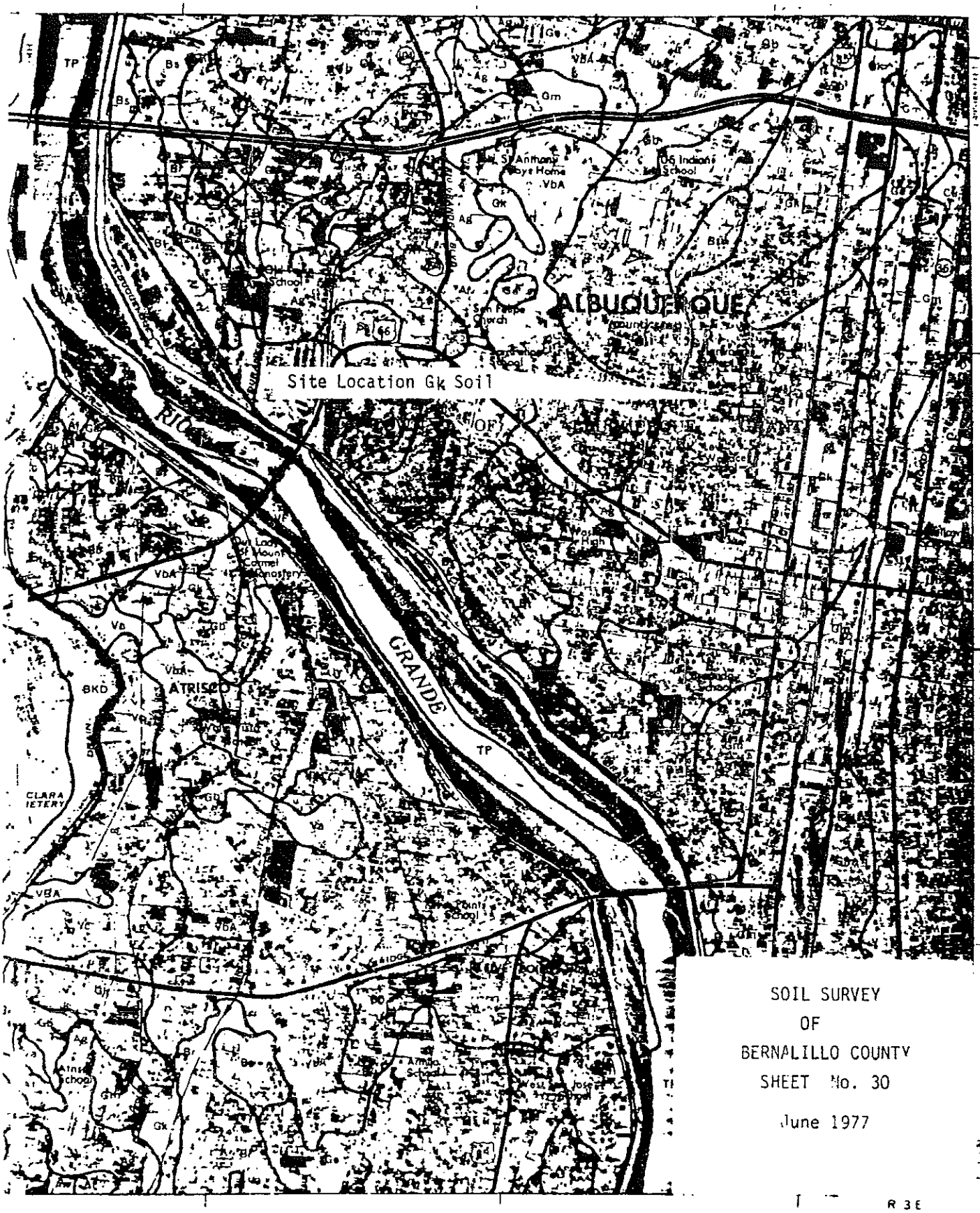
State NM County Bernalillo

Geographic Quadrant of City: ☒ NW; ☐ NE; ☐ SE; ☐ SW;

Establishing Agency ACS Year 1974

BM. No.	Location	Bench Mark Description	Elevation (MSLD 1929) Ft. / Meters
7-D18	Located on the east side of US Hwy. I-25 East Frontage Rd., about 0.2 miles south of the junction with Pino Ave.	An "X" chiseled on the west bonnet bolt of a fire hydrant.	#5190.962 1582.208
3-E10	See Page C-15	See Page C-15	#5316.012 1620.324
9-E10	Located at the junction of 81st. Street and Marigold Dr. NW, in the northeast quadrant of the junction, and in the right-of-way of the P.E. Co-Op. transmission line.	A 40-penny nail in the west pole of pylon #24/4.	#5329.023 1624.289
8-J14	Located at the intersection of Slate Ave. and Sixth Street NW, in the south-east quadrant of the inter-section.	A square, chiseled on top of concrete at the SSE curb return.	#4955.157 1510.335

(#) = 1st-Order (##) = 2nd-Order ((#)) = 3rd-Order



SOIL SURVEY
OF
BERNALILLO COUNTY
SHEET No. 30

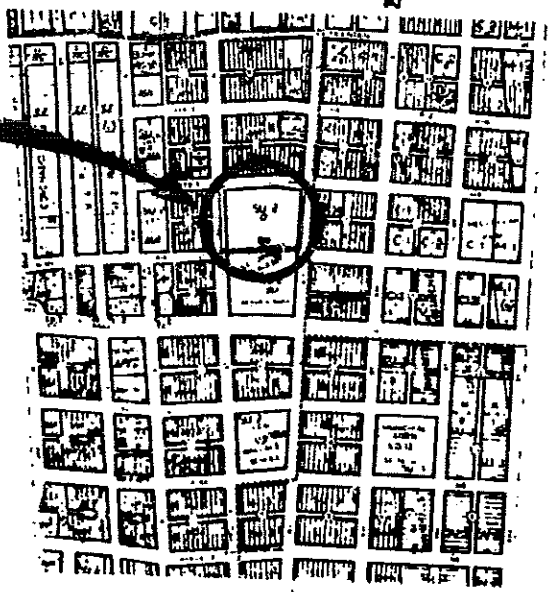
June 1977

PROJECT LOCATION:

BLOCK 28 PERFECTO ARMIJO & BROTHERS ADDITION.
725 6TH STREET N.W.

OWNER:

ALBUQUERQUE NATIONAL BANK



VICINITY MAP
CITY MAP NO. J-14
SCALE: 1"=750'

FRANK D. LOVELACE
NEW MEXICO
5
REGISTERED PROFESSIONAL ENGINEER
JAN 14, 1993

NOTICE TO CONTRACTOR

1. An excavation/construction permit will be required before beginning any work within the city right-of-way. An approved copy of these plans must be submitted at the time of application for this permit.

2. All work detailed on these plans to be performed, except as otherwise stated or provided hereon, shall be constructed in accordance with "Contract Documents for City-Wide Utilities and Cash Paving No. 31 .

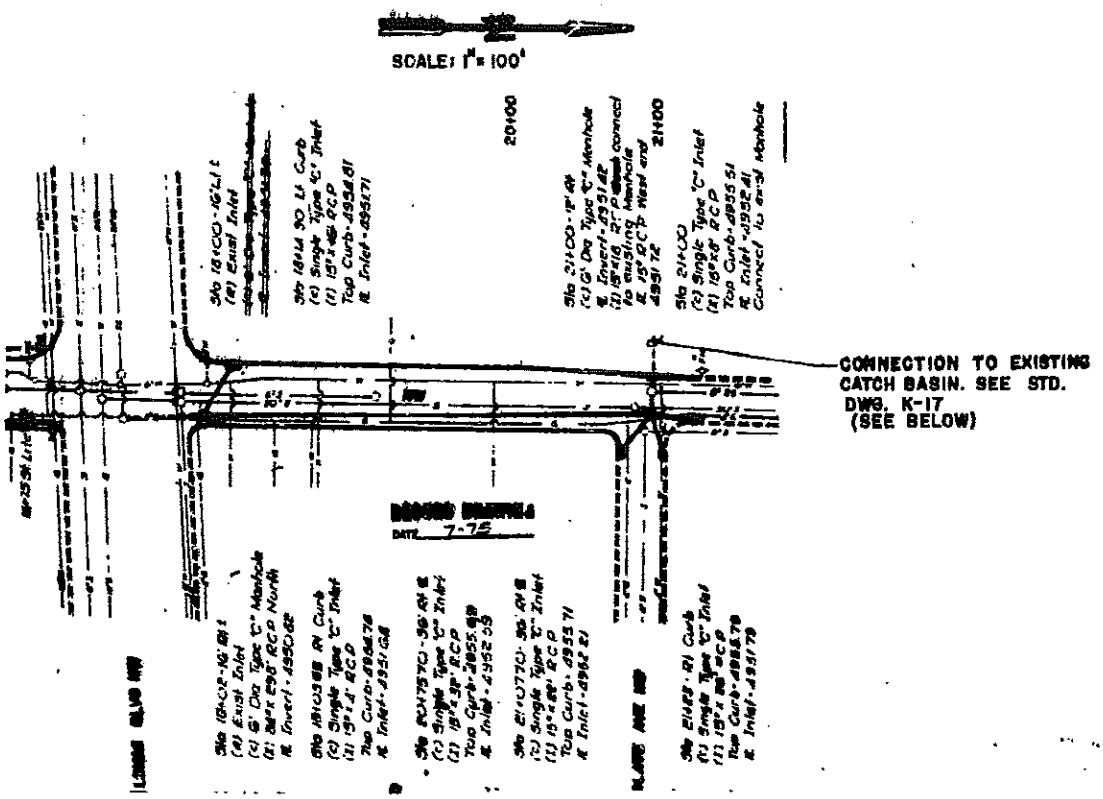
3. Two working days prior to any excavation, contractor must contact Line Locating Service, 765-1234, for location of existing utilities.

4. Prior to construction, the contractor shall excavate and verify the horizontal and vertical locations of all obstructions. Should a conflict exist, the contractor shall notify the engineer so that the conflict can be resolved with a minimum amount of delay.

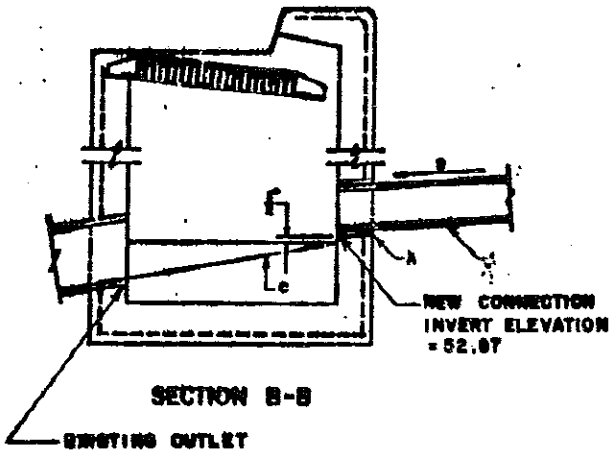
5. Backfill compaction shall be according to Arterial street use.

CITY OF ALBUQUERQUE

APPROVALS	ENGINEER	DATE	TITLE ANB OPERATIONS CENTER
A.C.E. / DESIGN			CONNECTION TO CATCH BASIN
INSPECTOR			
A.C.E. / FIELD			PROJECT NO. SHEET 1 OF 2 / MAP NO. J-14



RECORD DRAWING OF EXISTING STORM SEWER



GENERAL NOTES:

1. THE CITY DOES NOT ACCEPT RESPONSIBILITY FOR MAINTENANCE FOR ANY DRAIN LINES INSTALLED BY OR FOR PRIVATE PROPERTY OWNERS.

CONSTRUCTION NOTES:

A. CORE DRILL INTO BACK OF EXIST. CATCH BASIN WITH INVERT OF DRILLED OPENING 1" ABOVE EXIST. CONC. FILL. GROUT WITH NONSHRINK, NON-METALLIC GROUT.

B. NEW DRAIN LINE TO BE SCH. 40 P.V.C., REINF. CONC. OR DUCTILE IRON PIPE. DRAIN SIZE TO BE AT LEAST ONE SIZE SMALLER THAN OUTLET PIPE WITH A MAX. SIZE OF 12".

C. EXIST. CONC. FILL.

D. SLOPE .02 FT. PER FT. MIN. WITHIN R.O.W.

FRANK D. LOVELADY NEW MEXICO 6512 REGISTERED PROFESSIONAL ENGINEER

DRAIN LINE CONNECTION TO EXISTING CATCH BASIN

(FOR FULL DETAILS SEE CITY STD. DWG. K-17)

CITY OF ALBUQUERQUE

APPROVALS	ENGINEER	DATE	TITLE ANB OPERATIONS CENTER
A.C.E. / DESIGN			CONNECTION TO CATCH BASIN
INSPECTOR			PROJECT NO. SHEET 2 OF 2 / MAP NO. J-14
A.C.E. / FIELD			