HYDROLOGY K14/D7 2 PLANS

K14/D7

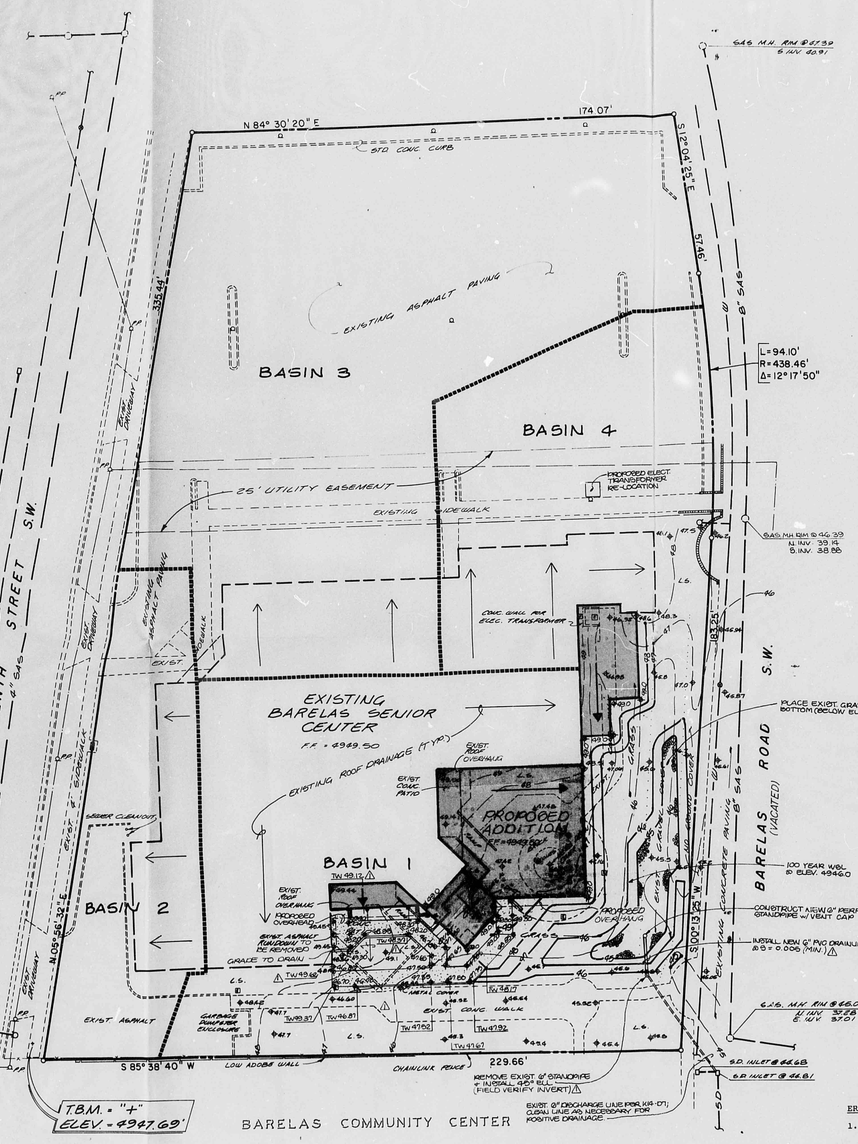
2 Plans

CITY OF ALBUQUERQUE

SCALE : 1" = 20'

LEGEND

- PROPERTY LINE
- EXISTING SPOT ELEVATION
- EXISTING CONTOUR
- L.S. LANDSCAPED AREA
- UPLIGHT EXPANDED TYPE
- CONCRETE WALL
- MANHOLE
- STORM DRAIN INLET
- FIRE HYDRANT
- WATER VALVE
- WATER METER
- PP POWER POLE
- LIGHT POLE
- OVERHEAD LINE
- CHAINLINK FENCE
- ELECTRIC RISER
- PROPOSED BLDG ADDITION
- DRAINAGE BASIN BOUNDARY
- EXISTING STAND PIPE
- PROPOSED CONC. WALKS
- 45 PROPOSED CONTOUR
- PROPOSED ROOF DRAINAGE
- PROPOSED SPOT ELEVATION
- PROPOSED SLOPE



LEGAL DESCRIPTION

BARELAS SENIOR CENTER

PROJECT BENCHMARK

A.C.S. STATION "1-K13" STANDARD BRASS TABLET STAMPED "1-K13", SET IN TOP OF A CONCRETE POST, APPROX. 0.2' BELOW THE TURF, 0.7' WEST OF THE WEST CURB ON EUCLID ST. S.W. IT IS APPROX. 265' SOUTH OF SILVER AVE. S.W.
ELEVATION = 4946.03 FEET (M.S.L.D.)

TEMPORARY BENCHMARK

AN "+" CHISELED IN THE CONCRETE SIDEWALK APPROX. 7' WEST OF THE N.W. PROPERTY CORNER, AS SHOWN HEREON.
ELEVATION = 4947.69 FEET (M.S.L.D.)

VICINITY MAP K-14-Z

SCALE : 1" = 800'

DRAINAGE PLAN

The following items concerning the Barelas Senior Center Drainage Plan are contained hereon:

1. Vicinity Map
2. Grading Plan
3. Calculations

As shown by the Vicinity Map, the site is located on the east side of Seventh Street S.W., just south of Iron S.W. At present, the site is developed as a City of Albuquerque Senior Center. Adjacent sites are also developed, hence this is a modification to an existing site within an infill area.

As shown by Plate K-14 of the Albuquerque Master Drainage Study, this site does not lie within a designated Flood Hazard Zone. Furthermore, this site does not appear to contribute to a designated Flood Hazard Zone. A plan was previously prepared for this site in 1982, Hydrology File No. K14-D7, by this office. The 1982 Plan identified four drainage basins within the site. The proposed improvements under this plan will only affect Basin 1. Basin 1 presently drains from west to east into the vacated Barelas Road alignment. There is a public storm drain facility located within the vacated alignment which discharges to an existing 15" line at the intersection of Sixth Street S.W. and Hazeldine Avenue S.W. The capacity of the existing public storm drain facility is not known, however, it is believed to be an undersized facility. Because of this, the controlled discharge of runoff from this site is appropriate and is consistent with the previously approved plan and the more recent Conceptual Drainage Plan approved on March 23, 1987.

The Grading Plan shows 1) existing grades indicated by spot elevations and contours at 1'0" intervals obtained from the survey prepared by the City of Albuquerque, 2) proposed grades indicated by spot elevations and contours at 1'0" intervals, 3) the limit and character of the existing improvements as obtained from the survey prepared by the City of Albuquerque, 4) the limit and character of the proposed improvements, and 5) continuity between existing and proposed grades. As shown by this plan, the proposed improvements consist of a building addition with Basin 1. The addition will involve the removal and disposal of existing landscaping and concrete paving along with the regrading of a portion of the southeast corner of the site. The proposed construction will also require the reconstruction of the existing ponding area which does not appear to have sufficient capacity and which lies within 15' feet of the proposed addition. The proposed regrading of the pond will ensure that adequate capacity is provided and a positive outflow is attained. This Will be assured by cleaning the existing 6" drain line and extending said line to within the regraded pond. The private storm drain extension will occur within private property, hence, a Special Order 19 will not be required. The proposed scheme of drainage is consistent with the previously approved plans for this site.

The Calculations which appear hereon analyze both the existing and developed conditions for the 100-year, 6-hour rainfall event. The Rational Method has been used to quantify the peak rate of discharge and the SCS Method has been used to quantify the volume of runoff. Both Methods have been used in accordance with the City of Albuquerque Development Process Manual, Volume II, and the Mayor's Emergency Rule adopted January 14, 1986. As shown by these calculations, a negligible increase in runoff is anticipated due to the proposed addition. These calculations only deal with Basin 1 in that Basin 1 is the only basin affected by the proposed improvements. As previously stated, the existing pond will need to be regraded to offset it 15' from the proposed addition, as well as providing sufficient capacity. The pond volume provided will equal or exceed the 100-year runoff volume under the developed condition for Basin 1.

CALCULATIONS

Ground Cover Information

From SCS Bernalillo County Soil Survey,
Plate 30: Bt - Brazito Complex
Hydrologic Soil Group: A
Existing Pervious CN = 39 (DPM Plate 22.2 C-2)
Open Space: good condition)
Developed Pervious CN = 39 (DPM Plate 22.2 C-2)
Open Space: good condition

Time of Concentration/Time to Peak

$T_c = 0.0078\ L^{0.77} S^{0.385}$ (Kirpich Equation)

$T_p = T_c = 10$ min.

Point Rainfall

$P_6 = 2.2$ in. (DPM Plate 22.2 D-1)

Rational Method

Discharge: $Q = CiA$

where C varies
$i = P_6\ (6.84)\ T_c^{-0.51} = 4.65$ in/hr
$P_6 = 2.2$ in (DPM Plate 22.2D-1)
$T_c = 10$ min (minimum)
A = area, acres

SCS Method

Volume: $V = 3630(DRO)\ A$

Where DRO = Direct runoff in inches
A = area, acres

Existing Condition (Basin 1)

A_{total} = 27,070 sf = 0.62 Ac
Roof area = 10,830 sf (0.40)
Paved area = 5,100 sf (0.19)
Landscaped area = 11,140 sf (0.41)
C = 0.64 (Weighted average per Emergency Rule, 1/14/86)
$Q_{100} = CiA = 0.64(4.65)(0.62) = 1.8$ cfs
% Impervious = 59 %
Composite CN = 74 (DPM Plate 22.2 C-3)
DRO = 0.5 in (DPM Plate 22.2 C-4)
$V_{100} = 3630\ (DRO)A = 1120$ cf

Developed Condition (Basin 1)

A_{total} = 27,070 sf = 0.62 Ac
Roof area = 14,900 sf (0.55)
Paved area = 2,500 sf (0.09)
Landscaped area = 9,670 sf (0.36)
C = 0.67 (Weighted average per Emergency Rule, 1/14/86)
$Q_{100} = CiA = 0.67(4.65)(0.62) = 1.9$ cfs
% Impervious = 64 %
Composite CN = 76 (DPM Plate 22.2 C-3)
DRO = 0.55 in (DPM Plate 22.2 C-4)
$V_{100} = 3630\ (DRO)\ A = 1240$ cf

Comparison

$\Delta Q_{100} = 1.9 - 1.8 = 0.1$ cfs (increase)
$\Delta V_{100} = 1240 - 1120 = 120$ cf (increase)

Pond Volume

$V_{pond} = 1/2(A_{46} + A_{45})(46-45)$
$= 1/2(1700 + 840)(1)$
$= 1270$ cf $> V_{100}$

RECEIVED JUL 28 1987 HYDROLOGY SECTION

JEFFREY G. MONTANEZ NEW MEXICO 8547 REGISTERED PROFESSIONAL ENGINEER 07-28-87

CONSTRUCTION NOTES:

1. TWO (2) WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT LINE LOCATING SERVICE 765-1234, FOR LOCATION OF EXISTING UTILITIES.
2. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF ALL POTENTIAL OBSTRUCTIONS. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY THE ENGINEER SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT OF DELAY.
3. ALL WORK ON THIS PROJECT SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL LAWS, RULES AND REGULATIONS CONCERNING CONSTRUCTION SAFETY AND HEALTH.
4. ALL CONSTRUCTION WITHIN PUBLIC RIGHT-OF-WAY SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE CITY OF ALBUQUERQUE STANDARDS AND PROCEDURES.
5. IF ANY UTILITY LINES, PIPELINES, OR UNDERGROUND UTILITY LINES ARE SHOWN OF THESE DRAWINGS, THEY ARE SHOWN IN AN APPROXIMATE MANNER ONLY, AND SUCH LINES MAY EXIST WHERE NONE ARE SHOWN. IF ANY SUCH EXISTING LINES ARE SHOWN, THE LOCATION IS BASED UPON INFORMATION PROVIDED BY THE OWNER OF SAID UTILITY, AND THE INFORMATION MAY BE INCOMPLETE, OR MAY BE OBSOLETE BY THE TIME CONSTRUCTION COMMENCES. THE ENGINEER HAS UNDERTAKEN NO FIELD VERIFICATION OF THE LOCATION, DEPTH, SIZE, OR TYPE OF EXISTING UTILITY LINES, PIPELINES, OR UNDERGROUND UTILITY LINES, MAKES NO REPRESENTATION PERTAINING THERETO, AND ASSUMES NO RESPONSIBILITY OR LIABILITY THEREFOR. THE CONTRACTOR SHALL INFORM ITSELF OF THE LOCATION OF ANY UTILITY LINE, PIPELINE, OR UNDERGROUND UTILITY LINE IN OR NEAR THE AREA OF THE WORK IN ADVANCE OF AND DURING EXCAVATION WORK. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY AND ALL DAMAGE CAUSED BY ITS FAILURE TO LOCATE, IDENTIFY AND PRESERVE ANY AND ALL EXISTING UTILITIES, PIPELINES, AND UNDERGROUND UTILITY LINES. IN PLANNING AND CONDUCTING EXCAVATION, THE CONTRACTOR SHALL COMPLY WITH STATE STATUTES, MUNICIPAL AND LOCAL ORDINANCES, RULES AND REGULATIONS, IF ANY, PERTAINING TO THE LOCATION OF THESE LINES AND FACILITIES.

EROSION CONTROL MEASURES

1. THE CONTRACTOR SHALL ENSURE THAT NO SOIL ERODES FROM THE SITE INTO PUBLIC RIGHT-OF-WAY OR ONTO PRIVATE PROPERTY. THIS CAN BE ACHIEVED BY CONSTRUCTING TEMPORARY BERMS AT THE PROPERTY LINES, AND WETTING THE SOIL TO KEEP IT FROM BLOWING.
2. THE CONTRACTOR SHALL PROMPTLY CLEAN UP ANY MATERIAL EXCAVATED WITHIN THE PUBLIC RIGHT-OF-WAY SO THAT THE EXCAVATED MATERIAL IS NOT SUSCEPTIBLE TO BEING WASHED DOWN THE STREET.
3. THE CONTRACTOR SHALL SECURE "TOPSOIL DISTURBANCE PERMIT" PRIOR TO BEGINNING CONSTRUCTION.

GRADING & DRAINAGE PLAN

BARELAS SENIOR CENTER

△1 REVISED 07-23-87 TO ADD TOP OF WALL ELEVATIONS + DRAINLINE GRADE INFORMATION

PUGH & ASSOCIATES, AIA
ARCHITECTURE AND PLANNING
301 GOLD AVENUE SW, SUITE 202 / P.O. BOX 1247
ALBUQUERQUE, NEW MEXICO 87103 (505) 242-7572

ENGINEER: T.M.A. # 20584

Drawings and Specifications as instruments of service are and shall remain the property of the Architect whether the Project for which they are made is executed or not. The Drawings and Specifications shall not be used on other Projects, for additions to this Project, or for completion of this Project by others, except by agreement in writing and with appropriate compensation to the Architect.

SHEET OF

CITY OF ALBUQUERQUE
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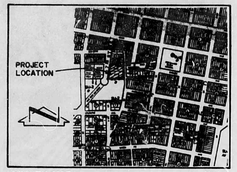


VICINITY MAP
SCALE 1" = 800'

K-14

PROJECT BENCHMARK:

A STANDARD ACS BRASS CAP STAMPED "I-K13" SET IN TOP OF A CONCRETE POST, APPROXIMATELY 0.7 FEET WEST OF THE WEST CURB ON EIGHTH STREET S.W., APPROXIMATELY 225 FEET SOUTH OF THE INTERSECTION WITH STOVER AVE. S.W.
ELEVATION = 4944.026 FEET. (MSLD)

TEMPORARY BENCHMARK:

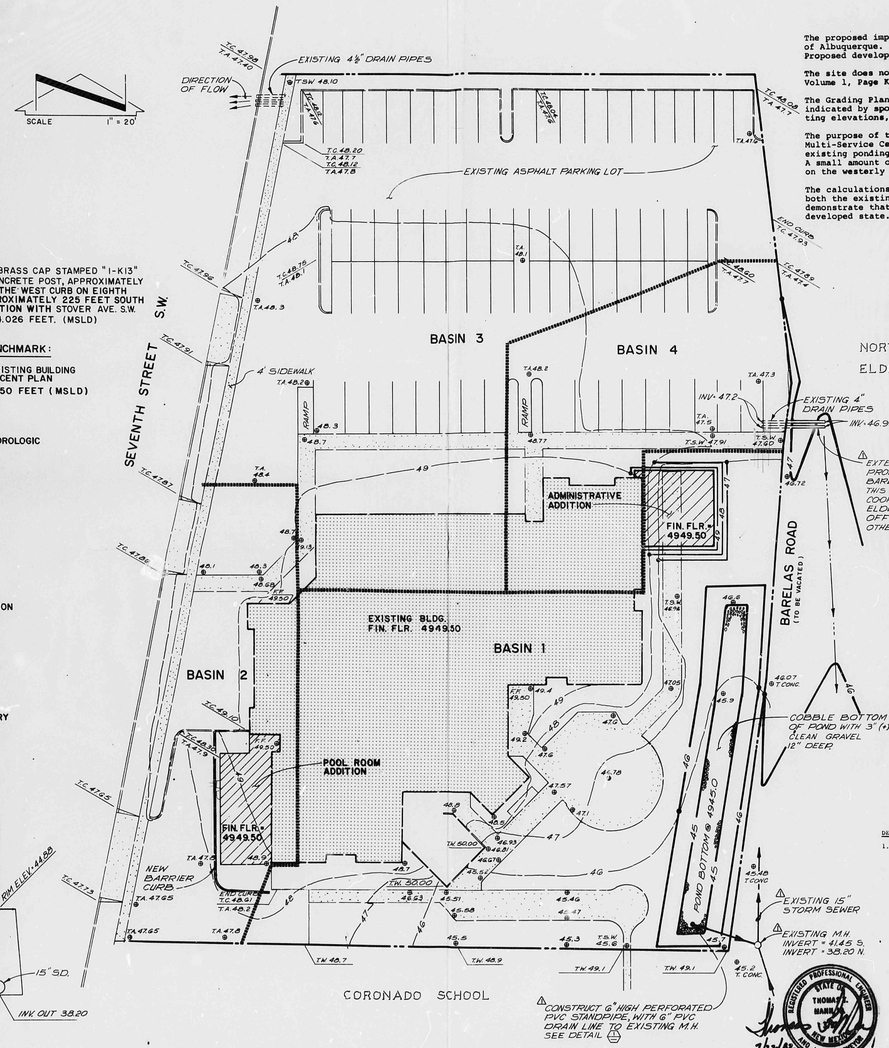
FINISH FLOOR OF EXISTING BUILDING AS SHOWN ON ADJACENT PLAN
ELEVATION = 4949.50 FEET (MSLD)

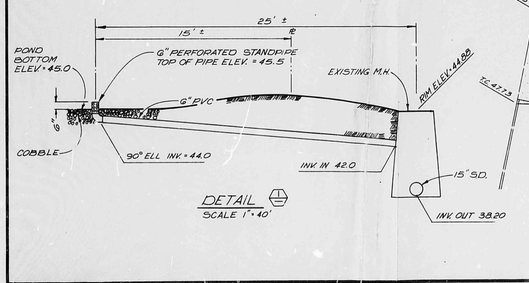
SOIL TYPE:

BRAZITO (B1). HYDROLOGIC SOIL GROUP A.

LEGEND

- EXISTING CONTOUR
- TA TOP OF ASPHALT
- TSW TOP OF SIDEWALK
- ⊕ EXISTING SPOT ELEVATION
- TC TOP OF CURB
- TW TOP OF WALL
- PROPOSED CONTOUR
- CONCRETE
- LANDSCAPING
- PROPOSED ADDITION
- DRAINAGE BASIN BOUNDARY





DETAIL
SCALE 1" = 10'

DRAINAGE PLAN

The following items concerning the Senior Multi-Service Center Drainage Plan are contained hereon:

1. Vicinity Map
2. Flood Hazard Map
3. Grading Plan
4. Calculations

The proposed improvements, as shown by the vicinity map, are located in Tracts 98A, 98B and 98C, City of Albuquerque. At present, the site contains a one-story building and an asphalt paved parking lot. Proposed development consists of additions to the northeast and southwest corners of the building.

The site does not lie within a flood hazard zone as shown by the Albuquerque Master Drainage Study, Volume 1, Page K-14, prepared by Bohannan-Huston in January, 1981.

The Grading Plan shows (1) existing grades indicated by contours at 1'-0" intervals, (2) proposed grades indicated by spot elevations and contours at 1'-0" intervals, (3) continuity between proposed and existing elevations, (4) proposed ponding areas and (5) limits and character of proposed improvements.

The purpose of this drainage plan is to address the runoff generated by the additions to the Senior Multi-Service Center. The extent of drainage improvements includes the enlarging and reshaping of the existing ponding area along Barelas Road. No additional flows are being discharged into Barelas Road. A small amount of additional runoff is being discharged into 7th Street, where it enters a catch basin on the westerly side of 7th Street.

The calculations which appear below determine the 100-year peak discharge rates and runoff volumes in both the existing and developed states based upon the Rational formula. Furthermore, the calculations demonstrate that the pond volume is sufficient to contain in excess of the 100-year runoff volume in the developed state. Therefore, no spillway has been proposed.

CALCULATIONS

RATIONAL METHOD

1. DISCHARGE: $Q = CiA$

   C = Rational coefficient from DPM Plate 22.2C-1

   $i = P_6(6.84)T_c^{-0.51}$

   where P_6 = rainfall = 2.2 inches (NOAA Atlas)

   T_c = time of concentration = $0.00013\ L^{0.77}S^{-0.385}$

   A = Area of basin

2. VOLUME: $V = CP_6A$

EXISTING CONDITION

1. Basin 1 (contained on site)

   Area = 27,070 sf

   % impervious = $\frac{27070-12450}{27070} = 54$

   $C_{24h} = 0.45$

   t_c = 10 min (minimum)

   i = 4.65 in/hr

   $Q_{100} = CiA = 1.3$ cfs

   $V_{100} = CP_6A = 2233$ cf

2. Basin 2 (discharged into 7th Street)

   Area = 8900 sf

   % impervious = $\frac{8900-2010}{8900} = 77$

   $C_{77h} = 0.63$

   t_c = 10 min (minimum)

   i = 4.65 in/hr

   $Q_{100} = CiA = 0.6$ cfs

   $V_{100} = CP_6A = 1030$ cf

3. Basin 3 (discharged into 7th Street, ponded along north property line)

   Area = 28,325 sf

   % impervious = $\frac{28325-3800}{28325} = 87$

   $C_{87h} = 0.74$

   t_c = 10 min (minimum)

   i = 4.65 in/hr

   $Q_{100} = CiA = 2.3$ cfs

   $V_{100} = CP_6A = 3,840$ cf

4. Basin 4 (discharged into Barelas Road)

   A = 6,750 sf

   % impervious = $\frac{6750-700}{6750} = 90$

   $C_{90h} = 0.75$

   t_c = 10 min (minimum)

   i = 4.65 in/hr

   $Q_{100} = CiA = 0.6$ cfs

   $V_{100} = CP_6A = 770$ cf

DEVELOPED CONDITION

1. Basin 1 (contained on site)

   Area = 27070 sf

   % impervious = $\frac{27070-11910}{27070} = 56$

   $C_{56h} = 0.46$

   t_c = 10 min (minimum)

   i = 4.65 in/hr

   $Q_{100} = CiA = 1.35$ cfs

   $V_{100} = CP_6A = 2280$ cf

   Ponding Area (maximum water surface elevation = 49.50)

   Area $elev._{46.0}$ = 3500 sf

   Area $elev._{45.0}$ = 1270 sf

   Volume = $\frac{3500+1270}{2}(1) = 2385$ cf

   Volume beneath rock = 1270(1)1/3 = 425 cf

   Where 1/3 = fraction of voids in rock

   Total available ponding volume = 281f

   Volume required for 100-year, 6-hour storm = 2280 cf

2. Basin 2 (discharged to 7th Street)

   Area = 8900 sf

   % impervious = $\frac{8900-1085}{8900} = 88$

   $C_{88h} = 0.74$

   $i = 4.65$ in/hr

   $Q_{100} = CiA = 0.7$ cfs

   $V_{100} = CP_6A = 12.0$ cf

3. No change from Existing Condition:

   $Q_{100} = 2.3$ cfs

   $V_{100} = 3,840$ cf

4. No change from Existing Condition:

   $Q_{100} = 0.6$ cfs

   $V_{100} = 930$ cf

REGISTERED PROFESSIONAL ENGINEER THOMAS T. MANNAN NEW MEXICO AND LAND SURVEYOR

7/12/82
8/10/82

CITY OF ALBUQUERQUE
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BOHANNAN-HUSTON INC.
811 DALLAS, N.E. · ALBUQUERQUE · NEW MEXICO · 87110
ENGINEERS

NO.	DATE	BY	REVISIONS
1	8/10/82	SKS	CORRECT TO EXISTING SWDM & DAYLIGHT EXISTING 4" PIPE & REVISE CALCS FOR BASIN 4.

DESIGNED BY SKS
DRAWN BY B.S.
APPROVED T.T.M.

JOB NO. 20581
DATE 6/82

SENIOR MULTI-SERVICE CENTER OF ALBUQUERQUE
DRAINAGE PLAN

FILE NO.
SHEET 1 OF 1

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CITY OF ALBUQUERQUE
C D