HYDROLOGY

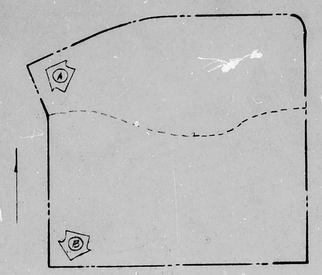
E22/D9

TWO PLANS

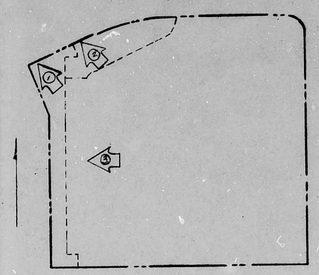
2 PLANS FOR

ALBUQ. EAST STATE BLDG.

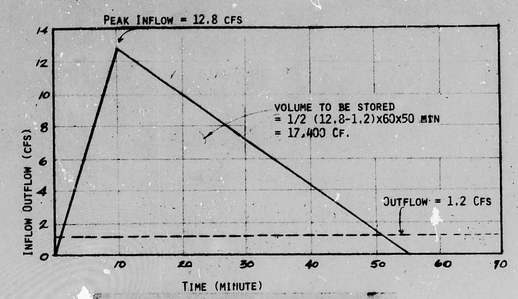
E 22 - D 9



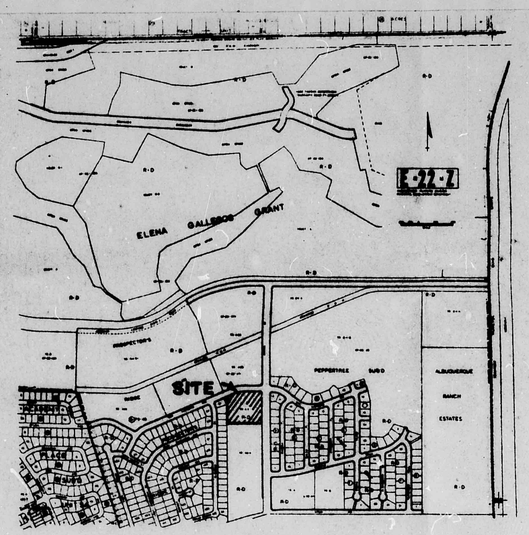
DRAINAGE AREA - EXISTING SITE
1" = 100'



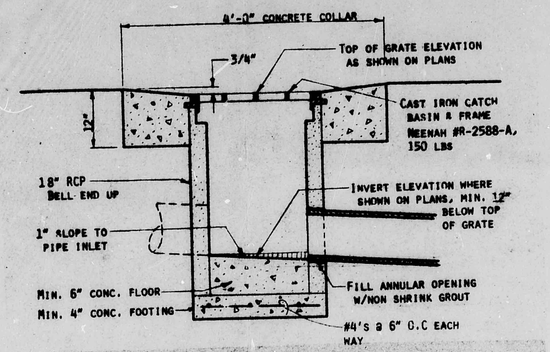
DRAINAGE AREAS - DEVELOPED SITE
1" = 100'



DETENTION POND HYDROGRAPH

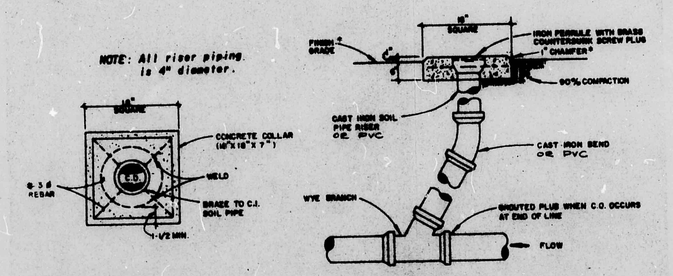


VICINITY MAP
1" = 735'



DRAINAGE INLET DETAIL

NO SCALE



PLAN **SECTION**

CLEANOUT DETAIL

NOT TO SCALE

*Delete chamfer and set collar flush with finish grade in paved areas.

LEGAL DESCRIPTION

A certain tract of land situate within Sections 27 and 34, T11N, R4E, N.M.P.M., and being a portion of Tract A of Lands of Ambome IV, filed in the office of the County Clerk, Bernalillo County, New Mexico, on May 30, 1978, and being more particularly described by New Mexico State Plam Grid bearings and ground distances as follows:

BEGINNING at a point of curvature whence the southeast corner of said Tract A, the 1/4 corner common to Sections 27 and 34, bears S35° 28'02"E, 51.75 feet and from said beginning point running thence, 34.95 feet along the arc of a curve to the right having a radius of 25.00 feet and a chord bearing S40° 00'30"W, 32.17 feet to a point of reverse curvature; thence,
192.00 feet along the arc of a curve to the left ~~having a radius of~~ 1594.28 feet and a chord bearing S7° 36'28"W, 191.88 feet to a point of tangency; thence,
S73° 09'27"W, 223.14 feet to the southwest corner; thence,
N00° 02'19"W, 423.46 feet to the northwest corner; thence,
N89° 57'41"E, 421.00 feet to the northeast corner; thence,
S00° 02'19"E, 290.00 feet to the point and place of beginning.

Tract contains 3.5000 acres.

DRAINAGE INFORMATION & CALCULATIONS

A. LEGAL DESCRIPTION. TRACT A3, AMHOME IV SUBDIVISION

B. BENCH MARK.
ON-SITE: TOP OF SANITARY SEWER MANHOLE COVER LOCATED 60' NORTHWEST OF THE NORTHWEST PROPERTY CORNER, ELEVATION = 5864.80
CITY BENCH MARK: ACS BRASS CAP 1-E22, ELEVATION = 5986.41'

C. FLOOD HAZARD. THE SITE IS NOT LOCATED WITHIN ANY FLOOD HAZARD ZONE

D. OFFSITE FLOWS. THERE ARE NO OFFSITE FLOWS ENTERING THE PROPERTY

E. WATERSHED SOILS. SCS SOIL ETC, HYDROLOGIC SOIL GROUP B

F. RAINFALL DATE.
P = 6 HR. RAINFALL DEPTH = 2.55" (DPM, 22.2 D-1)
I = 2.55" x 2.2 = 5.61 "/HR. (DPM, 22.2 D-2)

G. DOWNSTREAM CAPACITY. FLOWS LEAVING THE DEVELOPED SITE PROCEED BY STREET FLOW TO THE INTERSECTION OF VISTA BONITA AND HOLLY BROWN AVENUE LOCATED APPROXIMATELY 0.4 MILE SOUTHWEST OF THE PROPERTY. A STORM SEWER SYSTEM CONSISTING OF 3 DOUBLE C STORM SEWER INLETS INTERSECT FLOWS AT THIS LOCATION. THE COMBINED CAPACITY OF THESE INLETS IS LESS THAN THE 100 YEAR RUNOFF RATE AT THIS LOCATION.

H. DRAINAGE CONCEPT. FLOWS LEAVING THE PROPERTY MUST BE CONTROLLED SINCE DOWNSTREAM STORM DRAINAGE FACILITIES DO NOT HAVE EXCESS CAPACITY FOR ANY RUNOFF RATE INCREASES. A STORM WATER DETENTION POND WILL BE CONSTRUCTED IN THE WEST PARKING LOT OF THE PROPOSED FACILITY TO CONTROL THE RATE OF RUNOFF FROM THE DEVELOPED SITE TO AN ACCEPTABLE RATE. THE COMBINED SITE RUNOFF RATE FROM THE DEVELOPED SITE IS 2.3 CFS, WHICH IS LESS THAN THE EXISTING, UNDEVELOPED RUNOFF RATE OF 6.7 CFS (SEE RUNOFF CALCULATION TABLE). THE PROPOSED RATE IS ALSO MUCH LESS THAN THE CALCULATED UNCONTROLLED RATE OF 13.9 CFS, WHICH WOULD OCCUR WITHOUT THE PROPOSED DETENTION POND.

THE EXISTING SITE NATURALLY DRAINS BOTH TO THE NORTH INTO SAN VICTORIO AVENUE AND TO THE SOUTH INTO THE ADJOINING TRACT OF LAND. (SEE MAP THIS SHEET) SINCE THE ADJOINING TRACT OF LAND TO THE SOUTH DOES NOT HAVE AN DRAINAGE EASEMENTS WHICH ACCEPT THESE FLOWS, THE DRAINAGE PLAN HAS BEEN DESIGNED TO FORCE ALL FLOWS TO DRAIN NORTH INTO THE SAN VICTORIO PUBLIC RIGHT-OF-WAY.

I. DETENTION POND VOLUME CALCULATIONS.

CONTOUR	AREA (S.F.)	AVG. AREA (S.F.)	DEPTH (FT)	VOLUME (CU. FT.)
74.45	0			
		2794	.55	1537
75.0	5580			
		10,950	0.3	3285
75.3	16,320			
		19,290	0.65	12,530
75.95	22,260			
				17,360
				+ 57 (PIPE STORAGE) = 17,417

J. DETENTION POND ADEQUACY. ADEQUACY IS DEMONSTRATED BY RUNOFF HYDROGRAPH (SEE HYDROGRAPH THIS SHEET), WHICH SHOWS A REQUIRED STORAGE VOLUME OF 17,400 CUBIC FEET. THE DETENTION POND STORAGE CAPACITY OF 17,417 CUBIC FEET SAFELY EXCEEDS THIS REQUIREMENT.

K. DETENTION POND DRAIN LINE CAPACITY CALCULATION.
LENGTH = 195' (TO MID-POINT OF 4 DRAINAGE INLETS)
AVERAGE TOTAL HEAD: 75.3 - 69.94 = 5.36'
(CONSIDERING POND 50% FULL)
C = 130
FROM TRIAL & ERROR SOLUTION FOR TOTAL HEAD LOSS:
AT Q = 1.2 CFS
LINE FRICTION LOSS = 4.62'
V = 5.5 FPS
VELOCITY HEAD = .58'
ENTRANCE & EXIT HEAD LOSSES, 1.5 HV, = .87'
ΣH_L = 4.62 + 0.87 = 5.49'
THEREFORE Q = 1.2 CFS (TO CLOSEST 0.1 CFS)

L. DRAIN LINE SIZE JUSTIFICATION. A 6" DIAMETER DRAIN LINE FOR THE DETENTION POND IS JUSTIFIED FOR BOTH MAINTENANCE AND FLOW CAPACITY PURPOSES. A 6" LINE WILL BE MUCH LESS LIKELY TO BECOME CLOGGED THAN A SMALLER LINE. ALSO THE 6" LINE WILL OPERATE AT A CAPACITY WHICH ASSISTS IN CONTROLLING FLOWS FROM THE SITE MUCH BELOW THE EXISTING 100 YEAR FLOW RATE.

M. RUNOFF CALCULATION TABLE

SITE DEVELOPMENT	DRAINAGE AREA	PERCENT IMPERVIOUS	C	P (FT)	I (IN/HR)	AREA (S.F.)	Q100 (CFS)	VOLUME (CU.FT.)
EXISTING	(A)	-0-	0.34	.21	5.61	63,510	2.8	4,530
"	(B)	-0-	"	"	"	88,950	3.9	6,350
TOTALS							6.7	10,880
DEVELOPED	(1)	-0-	"	"	"	9,240	0.4	660
	(2)	64	0.65	"	"	8,650	0.7	1,180
	(3)	77	0.74	"	"	134,570	1.2*	20,912
TOTALS							2.3	22,752

* CONTROLLED FLOW RATE (12.8 CFS UNCONTROLLED)
** LOCATED ON EAST SIDE OF TRAMWAY ROAD WITHIN AN ELECTRICAL POWER LINE R/W, 1.0 MILES NORTH OF MONTGOMERY BLVD.

REVISIONS

ALBUQUERQUE EAST STAKE CENTER

SHEET TITLE: DRAINAGE INFORMATION, CALCULATIONS & DETAILS

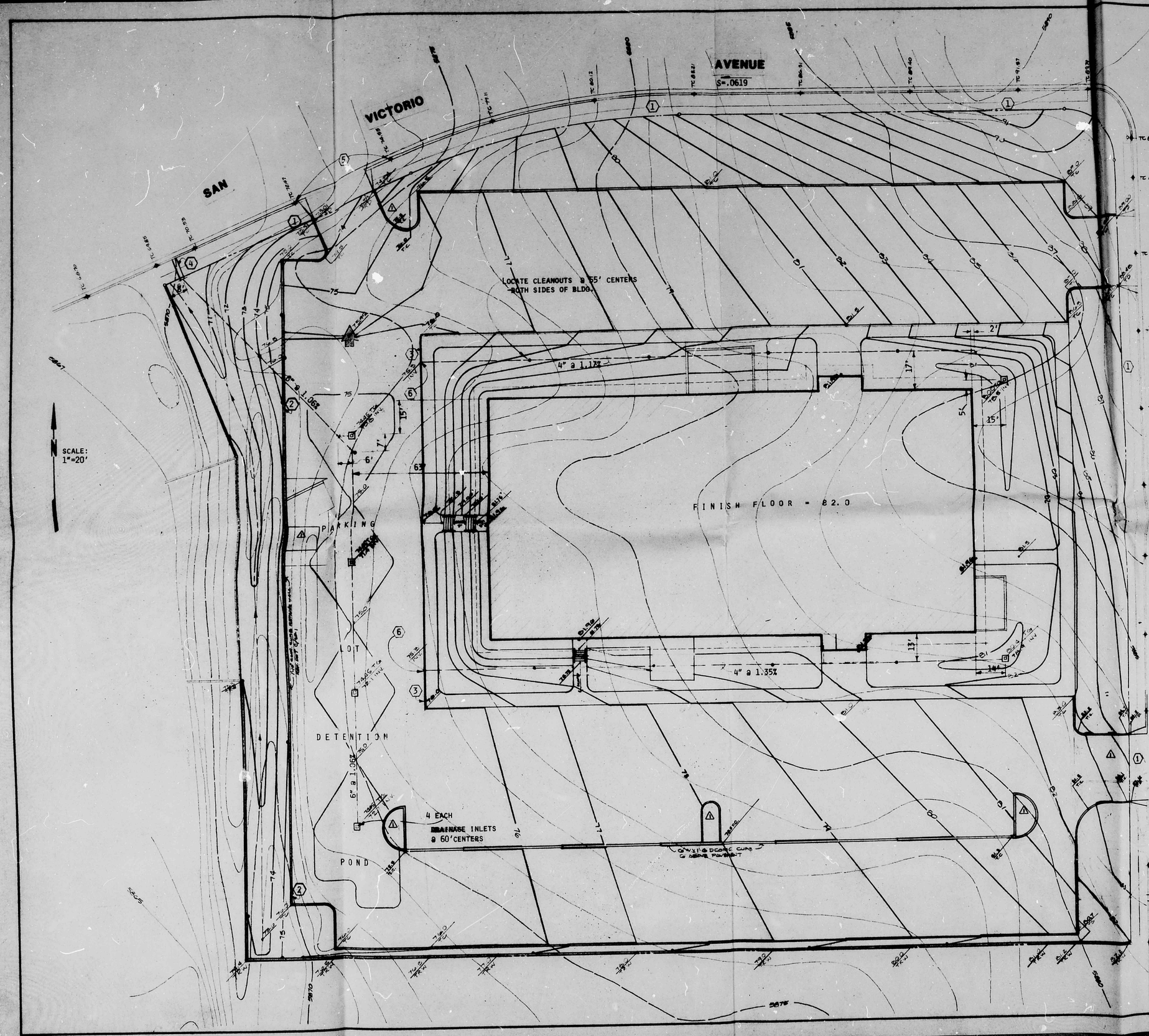
DRAWN BY

RECORD BY

PROJECT NUMBER: 520-446-72

DEVELOPMENT NUMBER

SHEET NO.



KEYED NOTES

1. FINISH CONTOURS ARE DRAWN TO TERMINATE AGAINST FUTURE SIDEWALKS (NOT CONSTRUCTED) WHICH ARE ASSUMED TO BE BUILT 0.33' ABOVE ADJACENT TOP OF CURB (EXISTING ON LOWELL STREET AND FROM PLAN GRADES ON SAN VICTORIO AVENUE).
2. TOP OF ASPHALT TO BE CONSTRUCTED 8" BELOW TOP OF RETAINING WALL - THIS AREA ONLY.
3. TOP OF ASPHALT TO BE CONSTRUCTED 8" BELOW TOP OF SIDEWALK - WEST END OF BLDG. ONLY.
4. BUILD SIDEWALK DRAINAGE CULVERT, CITY OF ALBUQUERQUE STANDARD DRAWING K-16-1, W/12" DRAIN WIDTH, INLET INVERT = 69.69, OUTLET INVERT = 69.49. THIS IS A CITY OF ALBUQUERQUE "SPECIAL ORDER 19" CONSTRUCTION ITEM. IT IS THE CONTRACTOR'S RESPONSIBILITY TO HAVE A "SPECIAL ORDER 19" DRAWING PREPARED, SUBMIT IT TO THE CITY FOR REVIEW AND SECURE APPROVAL. (BUILDING PERMIT WILL NOT BE ISSUED UNTIL DRAWINGS ARE COMPLETE AND ACCEPTED).
5. CONTRACTOR TO VERIFY THESE GRADES BEFORE INTIATING ANY WORK ON THE PARKING LOT OR DRIVEPADS FOR THIS PROJECT. CONTACT THE ARCHITECT IF AS-BUILT CURB GRADES DIFFER FROM FROM PLAN GRADES BY MORE THAN 0.05 FEET.
6. DRAIN THROUGH CURB. SEE CITY OF ALBUQUERUQE STANDARD DETAIL K-15 FOR DETAILS.

LEGEND

- EXISTING CONTOUR
- FINISH CONTOUR
- SPOT ELEVATION ON EXISTING IMPROVEMENTS*
- FINISHED SPOT ELEVATION
- INV — INVERT OF DRAINAGE PIPING
- TC — TOP OF CURB
- TD — TOP OF DRIVEPAD
- TG — TOP OF GRATE
- TRW — TOP OF RETAINING WALL
- DRAINAGE INLET
- DRAINAGE PIPING W/SIZE
- 4" — CLEANOUT ON DRAINAGE PIPING
- EXISTING CURB & GUTTER (OFFSITE)
- PROPOSED CURB & GUTTER (OFFSITE)
- EXISTING CONCRETE BLOCK GARDEN WALL
- NEW GARDEN WALL (NOT IN THIS CONTRACT)
- NEW CURB & GUTTER W/6" HIGH CURB FACE
- NEW CURB & GUTTER W/8" HIGH CURB FACE
- 10' LONG TRANSITION FROM NEW 6" TO NEW 8" CURB FACE
- NEW RETAINING WALL
- DRAINAGE SWALE
- DETENTION POND SPILLWAY

*EXCEPT FOR TOP OF CURB ELEVATIONS ON SAN VICTORIO AVE. WHICH ARE TAKEN FROM CONSTRUCTION DRAWINGS

GRADING & DRAINAGE PLAN

1"=20'

E22/D9

ALBUQUERQUE EAST BRAKE CENTER

SHEET TITLE: GRADING & DRAINAGE PLAN