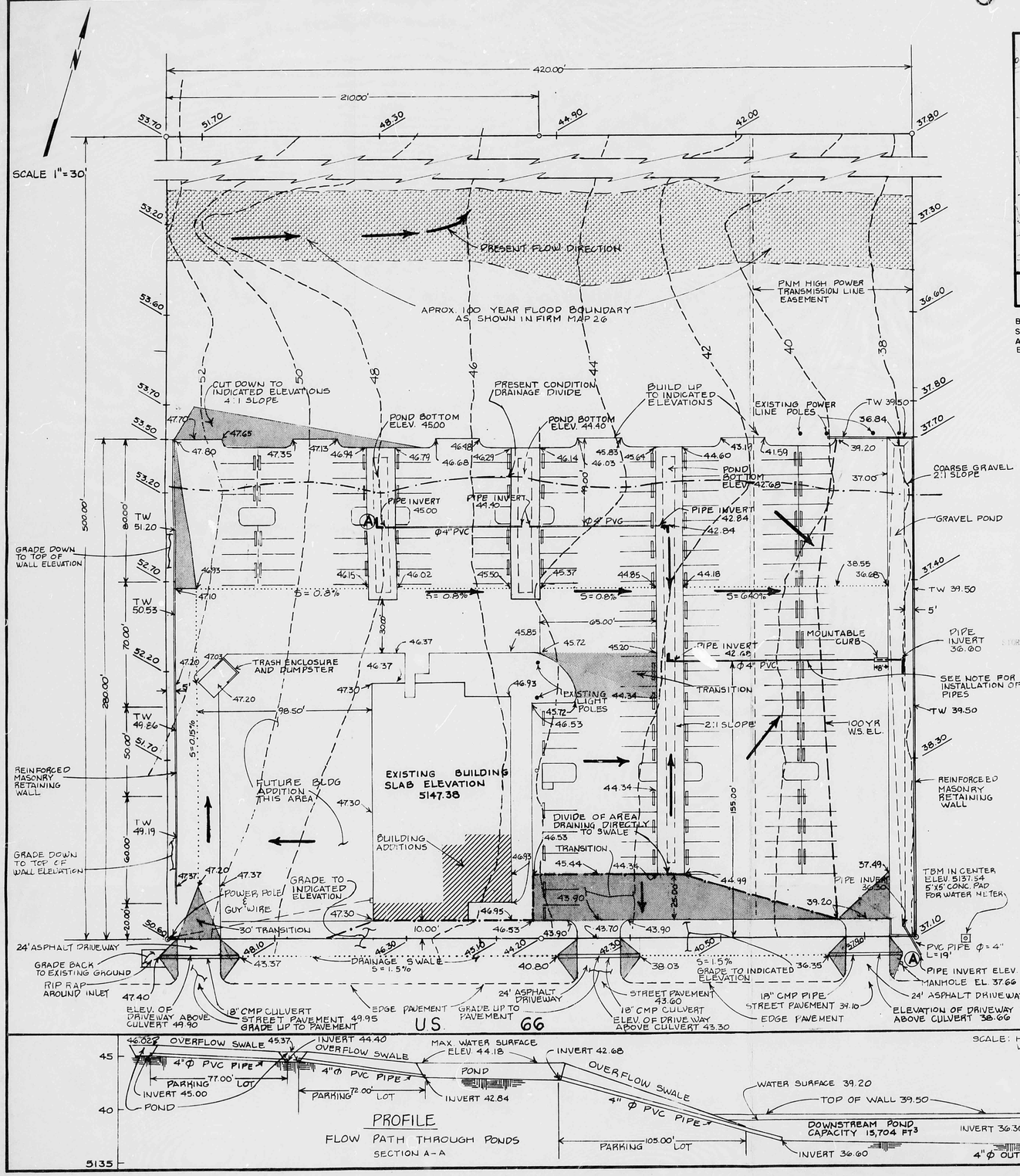
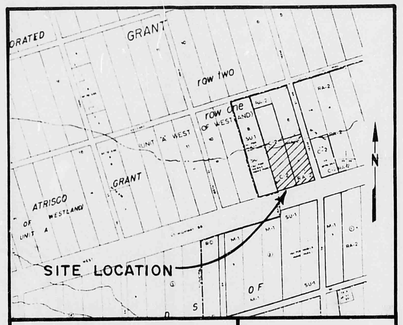
Hydrology L8/D8 Far West Club

28/28

FAR WEST CLUB

1 PLAN





VICINITY MAP | NO SCALE

BENCHMARK LOCATED WEST SIDE 98TH ST. S.W., 0.20 MILES SOUTH JUNCTION WITH CENTRAL AVE., A 60 PENNY NAIL IN A ELECTRIC POWERLINE POLE. ELEV. 5195.192'
BENCHMARK 2-L9

LEGAL DESCRIPTION

TRACT A
TOWN OF ATRISCO GRANT - UNIT "A" ROW ONE
TOWNSHIP 10 NORTH RANGE 2 EAST
BERNALILLO COUNTY, NEW MEXICO

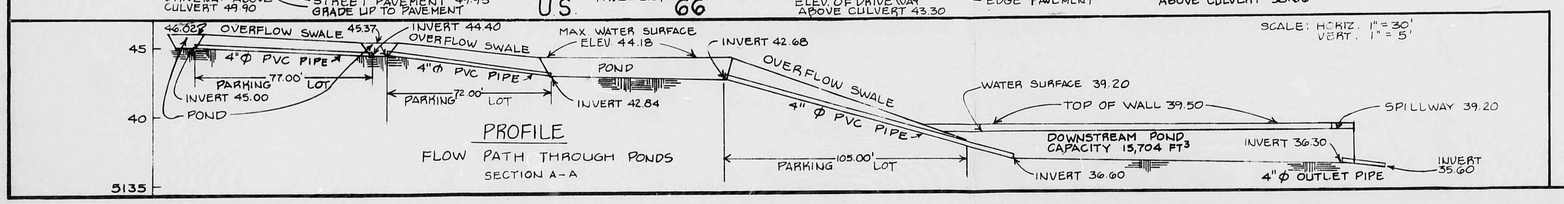
LEGEND	
→	FLOW DIRECTION
—46—	EXISTING CONTOUR
+ 39.00	EXISTING SPOT ELEVATION
←42.00	PROPOSED ELEVATION
	TRANSITION AREA
	100-YEAR FLOOD BOUNDARY

STORAGE CAPACITY

Runoff will be detained in 4 ponds distributed across the parking lot. The ponds are interconnected with 4-inch diameter PVC pipes and overflow swales. Each of the three upstream ponds will have variable depths near 1.5 feet, 2H:1V side slopes; and are located between the parking rows. The downstream pond extends into the eastern parking lane. It is triangular in cross section, with the following characteristics:
100-yr. water surface area = 10,605 sq. ft.
Average depth = 1.48 ft.
Maximum depth = 2.90 ft.
Total volume = 16,200 cu. ft.
Freeboard = 0.30 ft.

Discharge will be through a 4-inch diameter outlet pipe, with the east driveway performing as a weir for emergency overflows. The upstream ponds will provide additional storage and flow detention under normal conditions; however, if the downstream pond outlet is clogged all runoff will accumulate in the downstream pond. In this case adequate storage capacity is provided in the downstream pond.

The ponds in this system are conected in series and have both an outlet pipe and an emergency weir. The outlet pipes will be 4-inch diameter PVC pipe, to be installed at a minimum depth of one foot from the surface, and following ASTM standard D-2321.
The proposed swale in front of the tract will be built to the indicated elevations. Eighteen inch diameter C.M.P. culverts will be installed under the proposed driveways following the engineer's specifications.



GENERAL

Zone Atlas page L-8; Tract A, formerly the southern portion of Tracts 6 & 7 Town of Atrisco Grant, Row 1. Proposed Development is within the Flood Hazard Zone C; Part of the remaining undeveloped tract area is within the Flood Hazard Zone A-1.

LAND USE
Present - There is an existing commercial building on the project tract. Frontage is to a service road parallel to Central Avenue NW, which is a paved street without curbs or gutters. The site is bounded on the north by Tract B, on the west by a tract that has been developed as a mobile home park, on the east by a tract partially developed with a commercial building, and on the south by the service road.
Proposed - Development on Tract A will be extended to include a parking lot for the existing building.

SOIL TYPE
Fajarito - fine sandy loam to sandy loam.
Hydrologic soil group B

TOTAL AREA
Total tract area:
420 ft. x 500 ft. = 210,000 sq.ft. (4.82 acres)
Area draining to arroyo:
420 ft. x 220 ft. + 420 ft. x 25 ft. = 102,900 sq. ft.
Area draining to Central Av. NW:
420 ft. x 280 ft. - 420 ft. x 25 ft. = 107,100 sq. ft.
Area of proposed development:
420 ft. x 280 ft. = 117,600 sq.ft. (2.69 acres)
Assume increase in area draining to Central Avenue is minor.
Allow total area of proposed development to drain to Central Avenue through proposed detention pond.

HYDROLOGY

TIME OF CONCENTRATION
Flow length = 495 ft.
Elevation difference = 12.90 ft.
Time of concentration = 3.78 min.; use 10 min.

6-HR RAINFALL DEPTH
10-yr. = 1.45 in.
100-yr. = 2.20 in.

RAINFALL INTENSITY
10-yr. = 3.19 in./hr.
100-yr. = 4.84 in./hr.

RUNOFF COEFFICIENTS
Present conditions -- for area of proposed development:
existing impervious area = 7,583 sq. ft.; C = 0.37
Future conditions -- for area of proposed development:
future impervious area = 92,325 sq.ft.; C = 0.75

RUNOFF RATES
Present conditions

Total runoff:
10-yr. = 3.19 cfs
100-yr. = 4.83 cfs
Draining to the street:
10-yr. = 2.96 cfs
100-yr. = 4.03 cfs
Future conditions -- all runoff draining to the street
10-yr. = 6.46 cfs
100-yr. = 9.80 cfs
Runoff rate to the arroyo is slightly reduced.

RUNOFF VOLUMES
Present conditions
Total runoff volume:
10-yr. = 5,258 cu. ft.
100-yr. = 7,977 cu. ft.
Volume draining to the street:
10-yr. = 4,382 cu. ft.
100-yr. = 6,647 cu. ft.
Future conditions -- total volume draining to the street
10-yr. = 10,658 cu. ft.
100-yr. = 16,170 cu. ft.
Runoff volume to arroyo is slightly reduced.

OFF-SITE FLOWS
Off-site flows were routed through the study area in an arroyo that crossed on the north side of the tract. This arroyo has been filled in and graded over through the study area and the tracts immediately to the west and east. The mobile home park to the west has been built across the arroyo. There is a shallow swale transporting the flows across this development to the study area. Proposed development will not be affected by these flows because the area to be developed lies to the south, and these off-site flows are presently spreading north before draining to the tract immediately to the east.

There are some off-site flows draining onto the site from the frontage road parallel to Central Avenue. There is a drainage swale excavated in front of the mobile home park, to the west of the site. In front of the study area this drainage swale disappears, and runoff spreads onto the study tract. Near the entrance to the mobile home park two 24 inch pipes transport upstream flows under the frontage road to another swale running between the frontage road and Central Avenue. Therefore, only flows in excess of the capacity of these pipes reaches the study site. To take care of these flows a drainage swale will be excavated between the frontage road and the tract, with 18 inch diameter culverts under the proposed driveways.

HYDRAULICS

STREET CAPACITY
Runoff expected from the study tract for developed conditions will be released through a 4-inch diameter pipe from a system of ponds with enough capacity to hold the total 100-year volume.

RECEIVED
DEC 07 1984
DESIGN HYDROLOGY SECTION

DESIGNED BY: ED CS	DRAINAGE & GRADING PLAN
DRAWN BY: F.M.	FARWEST CLUB
CHECKED BY: E.D.	
NOV. 1984	PREPARED BY RESOURCE TECHNOLOGY INC.

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