HYDROLOGY

G15/D26

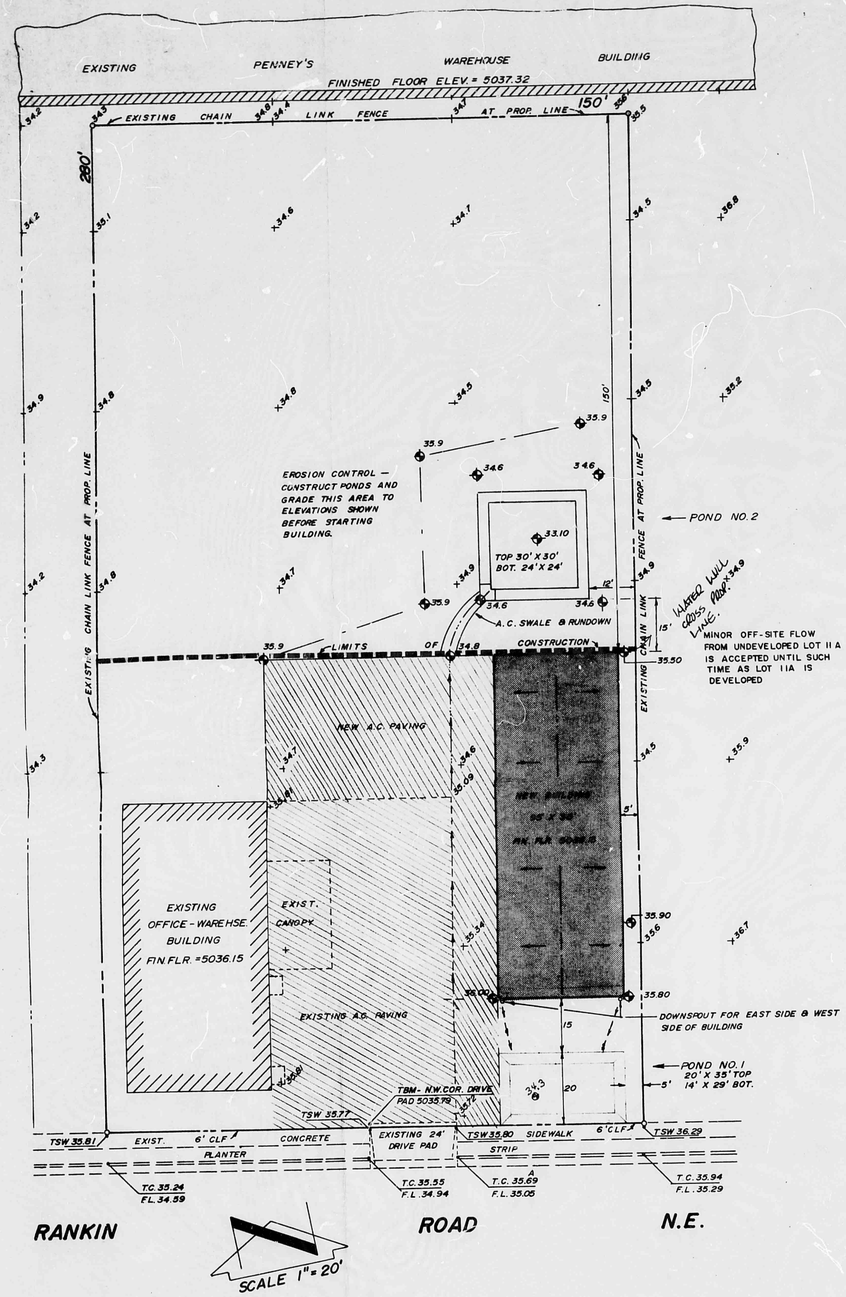
ONE PLAN

PLAN FOR

QUALITY PLBG. + HTG.

STORAGE BLDG.

G15- D26



LEGEND

EXISTING	NEW	DESCRIPTION
———		PROPERTY LINE
+	⊕	SPOT ELEVATION
	——·——	SWALE
═══		CURB & GUTTER

DRAINAGE CALCULATIONS

I. REFERENCES:

A. City of Albuquerque Development Process Manual (DPM) Volume 2, Design Criteria, Chapter 22, Drainage, Flood Control and Erosion Control.

B. Soil Survey of Bernalillo County and Parts of Sandoval and Valencia Counties, New Mexico, United States Department of Agriculture, Soil Conservation Service.

C. Floodway Map, Panel 23 of 50, Federal Emergency Management Agency, October 14, 1983.

II. GENERAL INFORMATION:

A. Soil Type (Ref.B., Sheet No. 21) Soil type is BkD, Bluepoint-Kokan association, Hydrologic Soil Group "A".

B. Imperviousness:

Type of Surface	Existing Area Sq.Ft.	Acres	Proposed Area Sq.Ft.	Acres
Building roof	3,200	0.0735	6,525	0.1498
Concrete Surfaces	—	—	—	—
Asphalt Surfaces	4,500	0.1033	8,010	0.1839
Landscaping	900	0.0207	1,300	0.0298
Undeveloped surface	10,900	0.2502	3,665	0.0842
Site total	19,500	0.4477	19,500	0.4477
Percent impervious	39%		75%	

C. "C" Factor (See Ref. A., Plate 22.2 C-1)
1. Undeveloped "C" Factor = 0.36
2. Developed "C" Factor = 0.60

D. Rainfall, 100-year, 6-hour, R_6; (See Ref.A., Plate 22.2 D-1) R_6 = 2.2 inches.

E. Time of Concentration, T_c; Use Kirpich Equation.
L = 160' Delta Elev. = 1.25' Slope = 0.0078

$T_c = 0.0078(160^{0.77}/0.0078^{0.385}) = 2.5$ min. Use 10 minutes, minimum time of concentration.

F. Rainfall Intensity, I; (See Ref. A, Plate 22.2 D-2)

$I = R_6 \times 6.84 \times T_c^{-0.51} = 2.2 \times 6.84 \times (10)^{-0.51}$

I = 4.65 In/Hr

III. PEAK DISCHARGE:

A. Existing Conditions. Use Rational Equation.
$Q_{100} = 0.36 \times 4.65 \times 0.45 = 0.75$ cfs
$Q_{10} = 0.657 \times 0.75 = 0.49$ cfs

B. Developed Conditions.
$Q_{100} = 0.60 \times 4.65 \times 0.45 = 1.26$ cfs
$Q_{10} = 0.657 \times 1.26 = 0.83$ cfs

IV. PEAK VOLUME:

A. Existing Conditions.
$V_{100} = C(R_6/12)$(Area in sq.ft.)
$V_{100} = 0.36\ (2.2/12)19{,}500 = 1{,}287$ cf
$V_{10} = 0.657 \times 1{,}294 = 850$ cf

B. Developed Conditions.
$V_{100} = 0.6\ (2.2/12)19{,}500 = 2145$ cf
$V_{10} = 0.657 \times 2145 = 1409$ cf

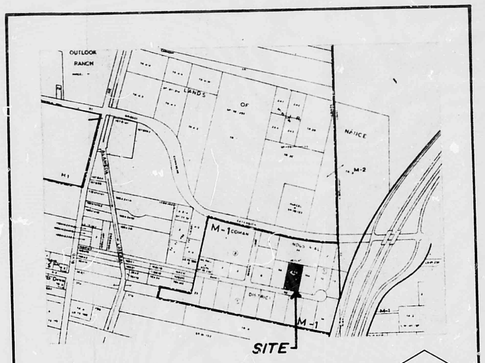
V. PONDING CALCULATIONS:

Pond No. 1
New building 35 x 95 = 3325
South end of Parking lot 35 x 64 = 2240
unpaved area (40 x 35) + (5 x 20) = 1500
Total 7065

Percent impervious 5565;7065 = 0.79 or 79%
C = 0.64 $V_{100} = 0.64 \times (2.2/12)\ 7065 = 829$ CF

Area available for pond = 32 x 17 = 544
Required depth = 829/544 = 1.52 Say 1.5 feet.

Pond No. 2
North end of Parking lot 95 X 64 = 6080 SF = 0.14 ac
100% impervious C = 0.95
$V_{100} = 0.95\ (2.2/12)$ 6455 = 1124 cf
For 1.5 feet deep Area = (1059/1.5)^2 = 2576 Use 27.0
Pond to be 30'x30' at the top and 24'x24' at bottom



VICINITY MAP - ZONE ATLAS NO. G-15

DRAINAGE COMMENTS:

1. PER PRE-DESIGN CONFERENCE RECAP, A LINE DENOTING LIMIT OF CONSTRUCTION IS SHOWN. DISCHARGE QUANTITIES AND VOLUMES ARE CALCULATED FOR ALL AREA SOUTH OF THIS LINE. AREA NORTH OF THIS LINE IS CONSIDERED UNIMPROVED AND NON-CONTRIBUTING.

2. THE FOLLOWING IS QUOTED FROM A DRAINAGE PLAN FOR A SITE ACROSS THE STREET FROM THIS SITE, HYDROLOGY FILE NO. G15/D23. "DOWNSTREAM FLOODING CONDITIONS EXIST DUE TO THE FACT THAT THERE IS NO CURB AND GUTTER IN COMANCHE BLVD., N.E. TO ADEQUATELY CONVEY FLOWS, THEREFORE, THE CONTROLLED DISCHARGE OF RUNOFF IS REQUIRED FOR THIS SITE." THIS STATEMENT IS ALSO APPLICABLE FOR LOT 10A.

3. A POND IN THE SOUTHEAST CORNER OF THE LOT WITH A POSITIVE DISCHARGE TO THE STREET IS THE DESIREABLE APPROACH. HOWEVER, THE PRACTICALITY OF SUCH A DESIGN IS LIMITED BY THREE CONSTRAINTS. 1.) THE SLOPE OF THE EAST EDGE OF THE EXISTING A.C. PAVED AREA IS FROM SOUTH TO NORTH. THIS IS TO BE THE CENTER OF A SWALE FORMED BY THE EXISTING A.C. PAVING ON THE WEST SIDE AND THE NEW A.C. PAVING ON THE EAST SIDE. TO FORCE THIS SWALE TO FLOW NORTH TO SOUTH WOULD REQUIRE REMOVAL OF A CONSIDERABLE AMOUNT OF THE EXISTING PAVING AND IT WOULD STILL HAVE AN UNSIGHTLY, FORCED APPEARANCE. 2.) THE ELEVATION AT THE N.E. CORNER OF THE EXISTING A.C. PAVING IS ALMOST EXACTLY THE SAME AS THE FLOWLINE ELEVATION IN THE STREET. THEREFORE, EVEN IF DRAINAGE WERE FORCED TO THE SOUTH, THE INVERT OF AN 18-INCH DEEP POND WOULD BE AT LEAST 18 INCHES BELOW THE STREET FLOW LINE, PRECLUDING POSITIVE DISCHARGE. 3.) THERE IS SIMPLY NOT ENOUGH SPACE SOUTH OF THE NEW BUILDING TO CONTAIN ALL THE PONDING WITH THE REQUIRED SETBACKS AND MAXIMUM POND DEPTH. THEREFORE, IT IS PROPOSED TO POND PART OF THE FLOW SOUTH OF THE NEW BUILDING AND PART NORTH OF THE NEW BUILDING.

4. BOTH PONDS WILL BE RETENTION PONDS DUE TO THE ABSENCE OF SUFFICIENT ELEVATION DIFFERENCE BETWEEN THE EXISTING ASPHALT PARKING LOT AND THE STREET FLOWLINE. THE SOIL BEING GROUP "A" SHOULD BE FAIRLY QUICK DRAINING AND IF THE FUEL VOLUME DOES NOT DRAIN WITHIN 24 HOURS, IT SHOULD AT LEAST DRAIN WITHIN A REASONABLE TIME.

CONSTRUCTION NOTES:

1. TWO (2) WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT LINE LOCATING SERVICE AT 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 CITY RIGHT-OF-WAY SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE CITY OF ALBUQUERQUE STANDARDS AND PROCEDURES.

BENCH MARK:

CITY OF ALBUQUERQUE BENCH MARK 3-G15 LOCATED ½ MILE S. OF GRIEGOS OPPOSITE HOUSE NO. 4208 WEST SIDE OF EDITH. 40 PENNY NAIL IN POWER POLE. ELEV. 4979.566 FT/1517.775 M

LEGAL DESCRIPTION:

LOT 10A, BLOCK 1, COMAN INDUSTRIAL DISTRICT.

RECEIVED
OCT 25 1985
HYDROLOGY SECTION

FRANK D. LOVE, JR. NEW MEXICO 5181 REGISTERED PROFESSIONAL ENGINEER
10/9/85

APPROVED FOR DRAINAGE
10-28-85
DATE
Roger A. Brown PE Hydrology
SIGNATURE TITLE
ADVISE DRAINAGE INSPECTOR WHEN GRADING EXECUTED

OCT. 4, 1985
REVISED OCT. 24, 1985

G15/D26

REVISIONS	BY

GRADING & DRAINAGE PLAN
FOR QUALITY PLUMBING & HEATING, INC.
NEW STORAGE BUILDING
75' RANKIN ROAD, N.E.
ALBUQUERQUE, NEW MEXICO

DRAWN	
CHECKED	
DATE	
SCALE	
JOB NO.	
SHEET	ONE
OF	ONE SHEETS

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