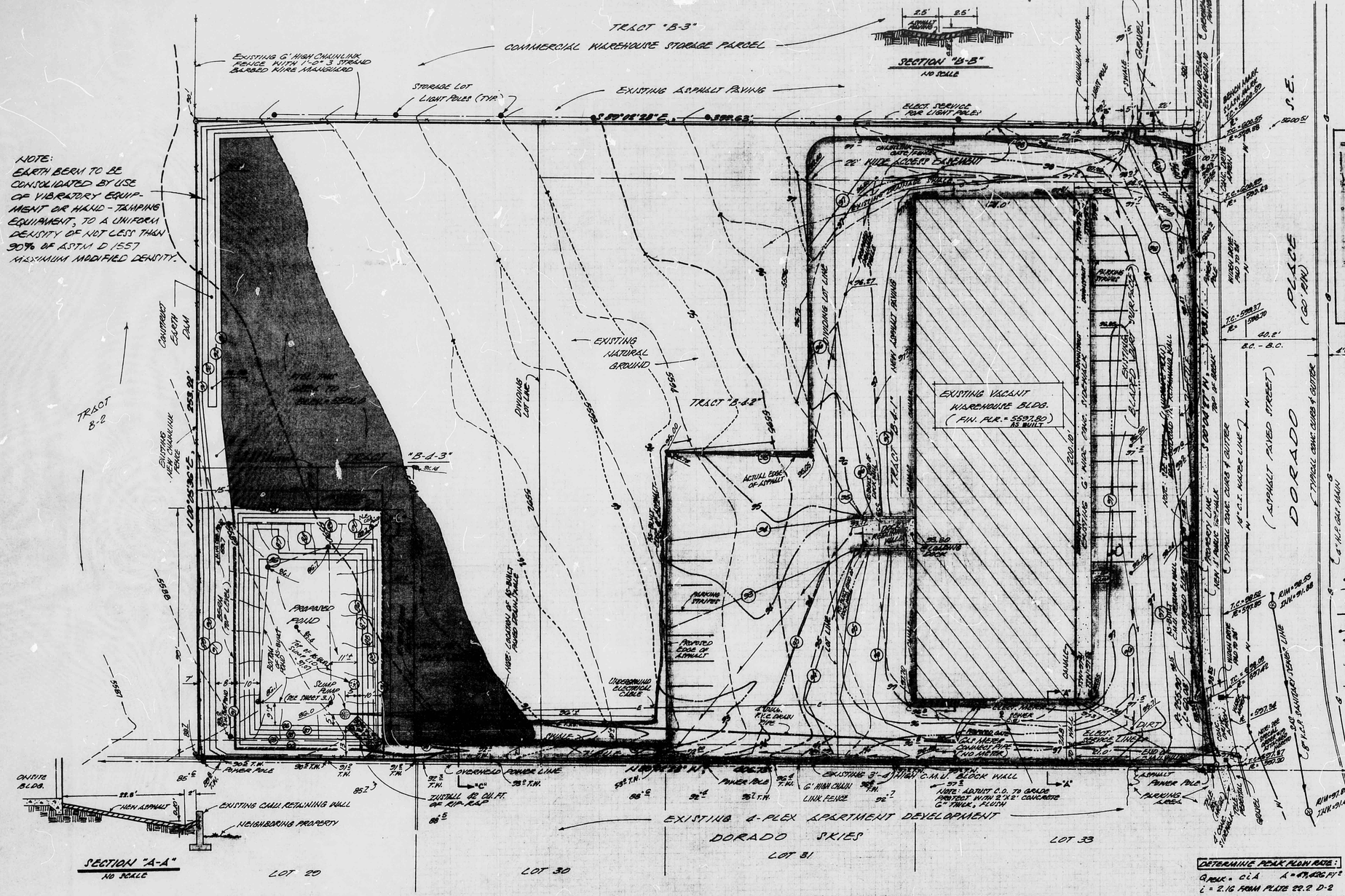
HYDROLOGY L22/D8 WAREHOUSE REMODEL

L22/D8

WAREHOUSE REMODEL

1 PLAN



THIS GRADING AND DRAINAGE PLAN SHOWS, (1) EXISTING GRADES INDICATED BY CONTOURS AT ONE-FOOT INTERVALS, (2) PROPOSED GRADES INDICATED BY SPOT ELEVATIONS AND CONTOURS AT ONE-FOOT INTERVALS, (3) A PROPOSED PONDING AREA, AND (4) THE LIMITS AND CHARACTER OF PROPOSED IMPROVEMENTS.

THE CALCULATIONS WHICH APPEAR ON THE PLAN HEREON ANALYZE THE DEVELOPED CONDITIONS FOR THE 100-YEAR RAINFALL EVENT. THE RATIONAL METHOD IS USED, IN ACCORDANCE WITH THE CITY OF ALBUQUERQUE DEVELOPMENT PROCESS MANUAL, VOLUME II.

THE DEVELOPMENT CONSISTS OF A VACANT WAREHOUSE BUILDING LOCATED AT 221 DORADO PLACE, S.E., ZONED C-2. THE EXISTING BUILDING WILL BE REHABILITATED, WITH ASPHALT PARKING AND LANDSCAPE ADDED.

THE SITE DOES NOT LIE WITHIN A FLOOD HAZARD ZONE AS SHOWN ON THE CITY FLOOD HAZARD BOUNDARY MAP, C-22. THE PROPERTY IS AT A LOWER ELEVATION THAN THE ONLY ADJACENT STREET, DORADO PLACE, SO THE RUNOFF WATERS MUST BE PUMPED INTO THE STREET GUTTERS.

ALTHOUGH ONLY TRACT "B-4-1" AND PART OF TRACT "B-4-2" ARE PLANNED FOR IMMEDIATE DEVELOPMENT, THE PONDING AREA IS SIZED FOR FULL DEVELOPMENT OF ALL THREE (3) TRACTS SO THAT FUTURE BUILDING WILL NOT REQUIRE ENLARGEMENT OF THE DETENTION POND AS DESIGNED HEREON.

OFFSITE FLOWS ARE BEING ACCEPTED NEAR THE NORTHEAST CORNER OF THE SITE FROM THE INADEQUATELY CONSTRUCTED NEIGHBORING DEVELOPMENT, FOUR HILLS SELF STORAGE AND BUSINESS MINI-WAREHOUSE, LOCATED AT 201 DORADO PLACE, S.E.; THE GRADING AND PAVING ON THAT SITE WERE COMPLETED WITHOUT THE BENEFIT OF, AND WITH ABSOLUTELY NO PONDING, IN TOTAL VIOLATION OF THE APPROVED DRAINAGE PLAN, L22-D8 BY ENCHANTMENT ENGINEERING, DATED 8-18-77. AN AREA 88' WIDE BY 216' LONG, CONSISTING WITH GRAVEL, LANDSCAPING, AND ASPHALT, DRAINS INTO TRACT B-4-1; A SMALL ASPHALT SWALE IS DESIGNED TO ACCEPT THIS FLOW. NO OTHER OFF-SITE FLOWS IMPACT THIS SITE.

IT IS PROPOSED THAT ALL RUNOFF BE DIRECTED TO A STABLE POND AT THE LOW SIDE OF TRACT B-4-3, SIZED TO ACCOMODATE THE 100-YEAR STORM, WITH PUMPED DISCHARGE INTO DORADO PLACE, S.E.. ALL DRAINAGE FROM THE BUILDING AND PAVEMENT IS DIRECTED DOWN AN ASPHALT V-CHANNEL; ALL OTHER DRAINAGE IS DIRECTED IN SHEET FLOW INTO THE POND.

PERCENT IMPERVIOUS = 95%

THE SCS BERNALILLO COUNTY SOIL SURVEY MAPS SHOW THE SITE TO BE A 'TaB' SOIL, WHICH IS IN GROUP 'B' AS DETERMINED BY THE SOIL CONSERVATION SERVICE.

FROM PLATE 22.2 C-1, THE 'C' FACTOR = 0.32
FROM THE MAP ON PLATE 22.2 D-1, RAINFALL = 2.50 IN.

REQUIRED POND VOLUME = 2.50 IN. (0.32)(101,465 FT²)/12 IN/FT = 19,465.0 FT³

ACTUAL POND VOLUME = DEPTH x 1/3 x (BOTTOM AREA + TOP AREA + $\sqrt{\text{BOTTOM AREA} \times \text{TOP AREA}}$)

$= \frac{6}{3}$ (66 x 39 + 98 x 59 + $\sqrt{66 \times 39 \times 98 \times 59}$)

= 20,890 FT³

DETERMINE FREEBOARD.

MINIMUM DEPTH:

REQUIRED = $\frac{\text{REQUIRED VOLUME}}{1/3\ (\text{BOTTOM AREA} + \text{TOP AREA} + \sqrt{\text{BOTTOM AREA} \times \text{TOP AREA}})}$

$= \frac{19,465}{4178}$ = 4.65 FT.

FREEBOARD = 5.0 - 4.65 = 0.35 FT.

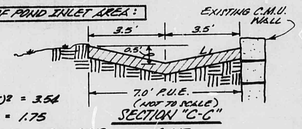
DETERMINE PEAK FLOW RATE:

$Q_{PEAK} = CiA$ $A = 49,886\ FT^2 = 1.09$ ACRES $T_C = 10$ MIN.

$i = 2.16$ FROM PLATE 22.2 D-2

$Q_{PEAK} = 0.97\ (2.16)(2.50)(1.09) = \underline{5.70\ C.F.S.}$ AT POND INLETS

CHECK CAPACITY OF POND INLET AREA:



SECTION "C-C"

$L_1 = \sqrt{(0.5)^2 + (3.5)^2} = 3.54$

$A = 7\ (0.5)\ (1/2) = 1.75$

$R = \frac{A}{P_w} = \frac{1.75}{7.08} = 0.247$ $S_f = 0.03$ $n = 0.017$

$Q = \frac{1.486}{n} A R^{2/3} S_f^{1/2} = \frac{1.486}{0.017} (1.75)(0.396)(0.116)$

$Q = \underline{6.87\ C.F.S.}$

FIND VELOCITY AT POND INLET:

ACTUAL $T_C = \frac{0.0078\ L^{0.77}}{S^{0.385}}$ $L = 300 + 220 + 38 = 558$

$T_C = 0.0078\ \frac{130.20}{0.188} = 5.41$ MIN.

$V_{AV} = \frac{L}{T_C \times 60} = \frac{558}{5.41 \times 60}$ ∴ $V_{AV} = \underline{1.72\ fps}$

NOTES

NOTICE TO CONTRACTORS

1) New Mexico Standard Specifications for Public Works Construction -1979 Edition will be referred to hereon as the "Standard Specifications".
2) All work detailed on these plans to be performed under contract shall, except as otherwise stated or provided for hereon, be constructed in accordance with "Contract Documents for City-Wide Utilities and Cook Paving Rp. 31 and the Standard Specifications."
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 or survey so that the conflict can be resolved with minimum of delay.

THE FOLLOWING NOTES APPLY WHEN CHECKED:

☐ All utilities and utility service lines shall be installed prior to paving.

☑ Backfill compaction shall be according to specified street use. ARTERIAL

NOTE: THE DRAINAGE POND AS SHOWN HEREON WILL BECOME A PERMANENT EASEMENT BY SEPERATE QUITCLAIM DEED RECORDATION, AND WILL BECOME IRREVOCABLE WITHOUT THE CONSENT OF THE CITY OF ALBUQUERQUE ENGINEERING DEPARTMENT - HYDROLOGY DEPT.

CERTIFICATION: THE AS-BUILT INFORMATION ADDED TO THIS PLAN SHOWS THAT THE CONSTRUCTION COMPLIES SUBSTANTIALLY WITH THE APPROVED PLAN.

RICHARD C. BRYANT, NEW MEXICO, 8798, PROFESSIONAL ENGINEER, 10-21-83

NOTE: SEE SHEET 4 OF 5 FOR SITE PLAN LANDSCAPING

NOTE: AS-BUILT TOPOGRAPHIC SURVEY PERFORMED 10-3-83 BY "TRIUMPH STUDIA" METHOD.

(1.) GRADING & DRAINAGE PLAN: 5-26-83
REVISIONS

RICHARD C. BRYANT, NEW MEXICO, 8798, PROFESSIONAL ENGINEER, 5-26-83
ENGINEER

STATE OF NEW MEXICO, RONALD L. PETERS, NO. 759, REGISTERED ARCHITECT
ARCHITECT

WAREHOUSE REMODEL

AS-BUILT DRAINAGE PLAN L22-D8

221 DORADO PLACE SE
ALBUQUERQUE, NEW MEXICO

PROJECT NO. 82-37

DATE JAN 1983

SHEET 3 OF

L22/D8