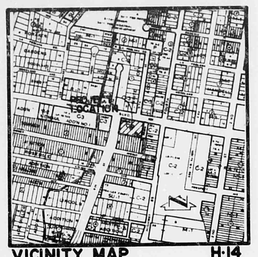
HYDROLOGY

H14/D21
1 PLAN

H14/D21

1 Plan




VICINITY MAP H-14

SCALE 1"= 800'

• LEGEND •

| | |
|---|---|
| ⊕ | EXISTING SPOT ELEVATION |
| ⊗ | PROPOSED SPOT ELEVATION |
| —4963— | EXISTING GRADE |
| —63— | PROPOSED GRADE |
| — — | SWALE |
| T.C. 62.70 | EXISTING TOP OF CURB |
| F.L. 62.08 | EXISTING FLOW LINE |
| | CONCRETE |
| —·····— | BASIN BOUNDARY |

SCALE 1"= 20'

PROJECT BENCHMARK:

ACS BENCHMARK 4-H14, A SQUARE □ CHISELED ON TOP OF CONCRETE CURB AT THE SSE CURB RETURN OF THE INTERSECTION OF 4TH ST. N.W. AND MENAUL BLVD. N.W.
ELEVATION = 4968.40 FEET (MSLD)

TEMPORARY BENCHMARK:

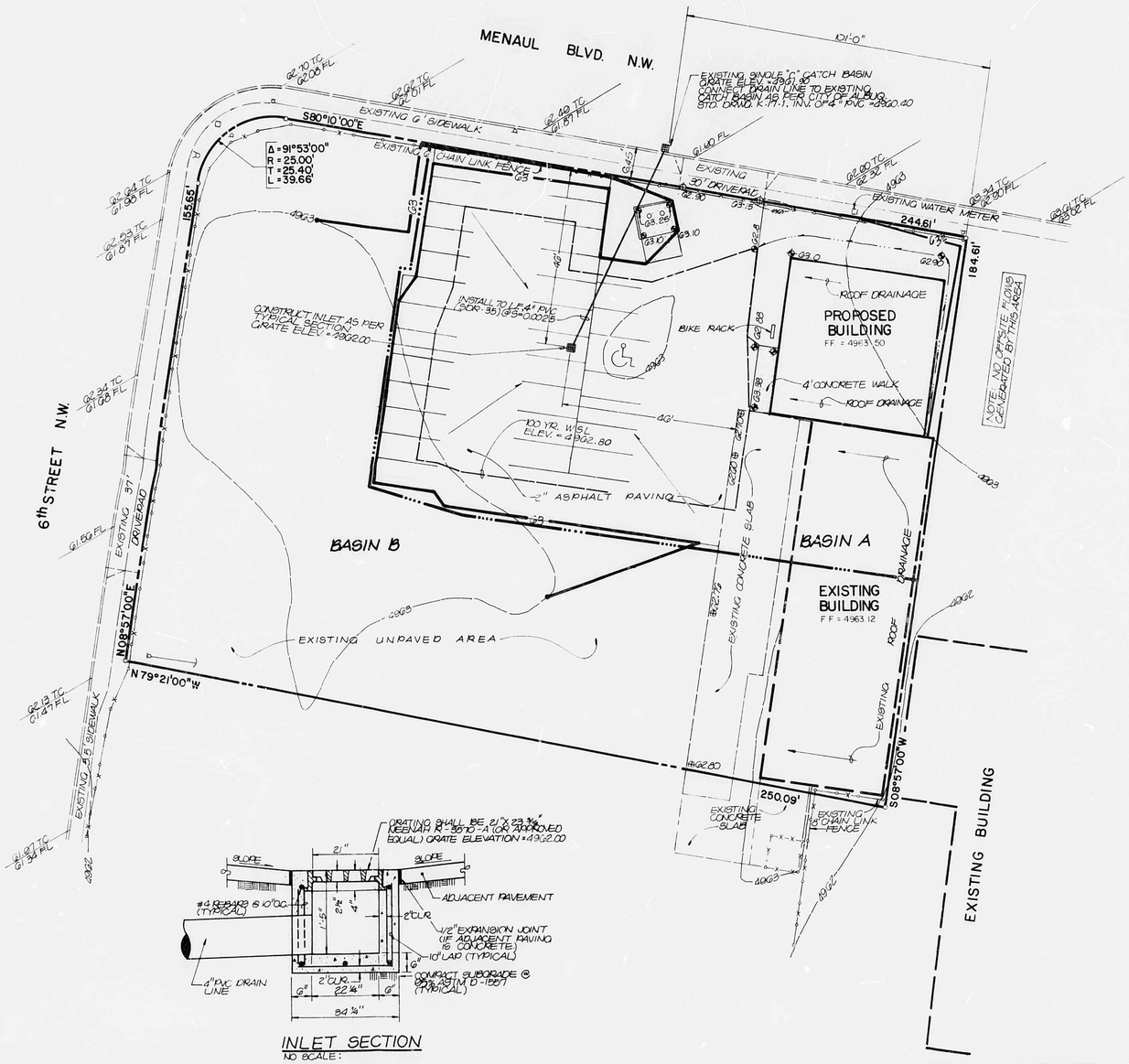
FINISH FLOOR OF EXISTING BUILDING, DUKE CITY DIESEL
ELEVATION = 4963.12 FEET (MSLD)

LEGAL DESCRIPTION:

TRACT 36 B-1-B, MRGCD MAP NO. 36

PROPERTY ADDRESS:

416 MENAUL BLVD. N.W.







INLET SECTION

NO SCALE:

DRAINAGE PLAN

The following items concerning the Duke City Diesel Grading and Drainage Plan are contained hereon:

1. Vicinity Map
2. AMDS Plate
3. Grading Plan
4. Calculations

The proposed improvements as shown by the Vicinity Map, are located at the south east corner of the intersection of Menaul Blvd. N.W., and 6th Street N.W. The site is more particulary described at Tract 36B-1-B, M.R.G.C.D. Map Number 36. The site is presently developed with one existing building, a concrete parking area, and a gravel parking area.

The site does not lie within a designated Flood Hazard Zone as indicated by Plate H-14 of the Albuquerque Master Drainage Study. Downstream flood conditions do exist, however, in 5th Street north of Menaul. Therefore, the runoff from the site will be positively discharged through a 6-inch pipe into the existing storm sewer in Menaul. If the existing storm sewer has no additional capacity, runoff will pond on the new parking lot.

The Grading Plan shows: 1) existing and proposed grades indicated by spot elevations and contours at 1'-0" intervals 2) continuity between proposed and existing grades and 3) the limit and character of proposed improvements. Also shown on this plan is the limit of ponding on the parking lot. If the pond volume is exceeded, runoff will overflow through the driveway cut.

The calculations which appear below analyze both the existing and developed conditions for the 100-year, 6-hour rainfall event. The Rational Method has been used for this analysis in accordance with the City of Albuquerque Develoment Process Manual, Volume II. Pond volume calculations are based on the average end area method. The pond dishcarge rate calculation is based on the orifice equation. No development is intended for Basin B, therefore, calculations have not been provided for the basin. Lastly, no runoff from Basin B will enter Basin A.

Calculations

Rational Method

1. Discharge: $Q = CIA$
   From DPM Plate 22.2 C-1
   C = Rational coefficient

   $i = P_6(6.84)T_c^{-0.51}$ (100-yr., 6-hr. storm)
   Where $P_6$ = 2.23" (DPM Plate 22.2D-1)

   $T_c$ = time of concentration = $0.0078L^{0.77}S^{-0.385}$ (minutes)
   L = hydraulic length, ft.
   S = Slope, ft/ft
   A = basin area, acres

2. Volume: $V = C(P/12)A$
   C = Rational coefficient
   P = 2.23" (DPM Plate 22.2 D-1)

   A = basin area, $ft^2$

EXISTING STATE

Basin A:
Area = 20,520 sf = 0.47 Ac
Impervious Area = 3000 sf
% impervious = 3000/20,520 = 15%
C = 0.41
$T_c$ = 10 minutes (min)
i = 4.71 in/hr
$Q_{100}$ = 0.91 cfs
$V_{100}$ = 1563 cf

DEVELOPED STATE

Basin A:
Area = 20,520 sf = 0.47 Ac
Impervious Area = 15,500 sf
% Impervious = 15,500/20,520 = 76%
C = 0.73
$T_c$ = 10 minutes (min)
i = 4.71 in/hr
$Q_{100}$ = 1.62 cfs
$V_{100}$ = 2784 cf

POND VOLUME

$V_{pond} = 1/2\ (A_{62.0} + A_{62.80})(62.00-62.00)$
$V_{pond} = 1/2\ (0 + 7750\ )(0.80)$
$V_{pond}$ = 3100 cf > $V_{100}$ = 2784 cf

ORIFICE EQUATION:

$Q = C_d A_d \sqrt{2gh}$
H = head = 1.75 ft
$A_d$ = Area of 4" pipe = 0.0873sf
$C_d$ = 0.74
Q = 0.7 cfs

NOTE TO CONTRACTOR:

CONSTRUCTION OF UNDERGROUND STORM DRAINAGE FACILITIES WITHIN PRIVATE PROPERTY WILL REQUIRE THE INSPECTION & CERTIFICATION OF A REGESTERED PROFESSIONAL ENGINEER IN ORDER TO OBTAIN CITY APPROVAL OF CONSTRUCTION.

REGISTERED PROFESSIONAL ENGINEER — STATE OF NEW MEXICO — THOMAS T. MARTINEZ — 5962 — PROF. LAND SURVEYOR

1/25/83
2/9/83

811 DALLAS N.E. · ALBUQUERQUE · NEW MEXICO · 87110
ENGINEERS

| NO. | DATE | BY | REVISIONS |
|---|---|---|---|
| 1 | 1/18/83 | JGM | REVISE PARKING LOT LAYOUT, GRADES & CALCS. |
| 2 | 2/7/83 | JGM | ADDRESS HYDROLOGY COMMENTS. |

DESIGNED BY JGM
DRAWN BY: JMC
APPROVED TTM

JOB NO. 21391
DATE 1·83

GRADING & DRAINAGE PLAN

DUKE CITY DIESEL

FILE NO.

SHEET 1 OF 1