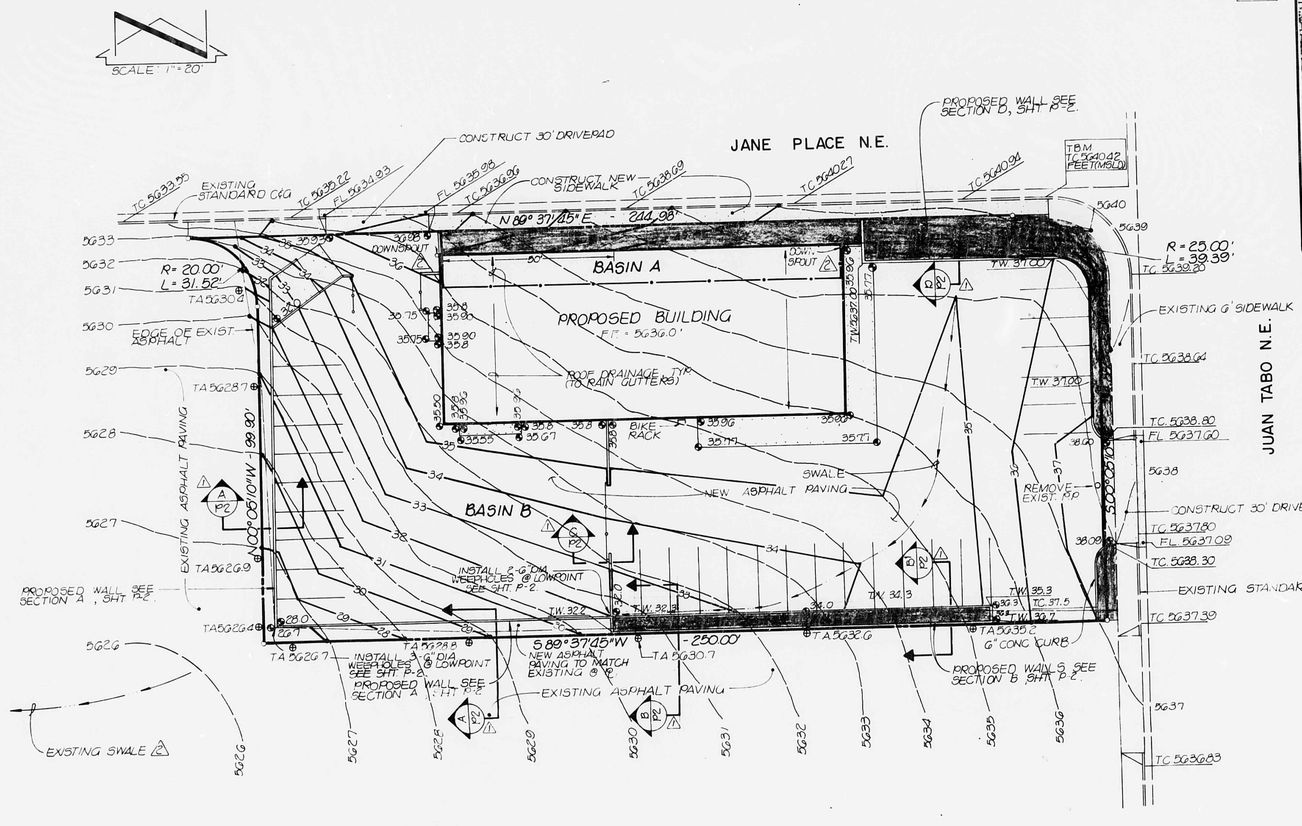
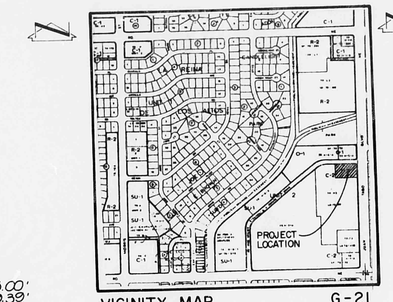
HYDROLOGY

G21/D22
1 PLAN

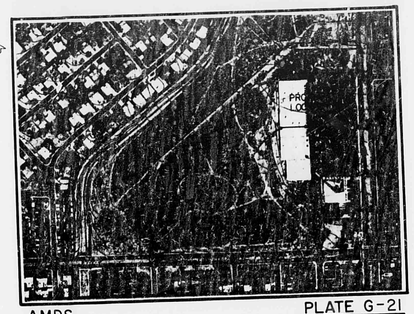
G21/D22

1 PLAN





VICINITY MAP G-21
SCALE: 1" = 800'



AMDS PLATE G-21
SCALE 1" = 400'

LEGEND

--5G--	EXISTING CONTOUR
	PROPOSED CONTOUR
⊕	EXISTING SPOT ELEVATION
	PROPOSED SPOT ELEVATION
TA	TOP OF ASPHALT
TC	TOP OF CURB
	PROPOSED LANDSCAPING
	SWALE FLOWLINE
	DRAINAGE BASIN BOUNDARY

DRAINAGE PLAN

The following items concerning the Glickman Building Drainage Plan are contained hereon:

1. Vicinity Map
2. Watershed Map
3. Grading Plan
4. Calculations

The proposed improvements, as shown by the Vicinity Map, are located at the southwest corner of the intersection of Jane Place, N.E. and Juan Tabo Blvd. N.E. At present, the site is undeveloped. The adjacent site, to the south and west, is developed as a shopping center with paved parking.

The site does not lie within a designated flood hazard zone as shown by Plate G-21 taken from the Albuquerque Master Drainage Study. This figure also delineates the over-all watershed to which the subject project contributes runoff. In addition, off site flows do not present a problem to this site as evidenced by field inspection and map review.

The grading plan shows existing and proposed grades as well as the limit and character of the proposed improvements. The proposed improvements include the construction of a commercial building with contiguous paving, retaining walls and landscaping. These improvements, as shown by the grading plan, will not alter the existing drainage pattern. The majority of the runoff generated on-site will flow toward the southwest corner of the site where it will discharge via weepholes onto the existing asphalt paving. From this point, the runoff will flow westerly across the existing asphalt and eventually enter Jane Place. Jane Place, as noted on the Watershed Map, is a paved street. A small portion of the runoff from the site will discharge directly to Jane Place. In all probability, the roof water generated by this portion of the site, Basin A, will be contained in the landscaped area.

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 Development Process Manual, Vol... Additional calculations have been provided to size the weepholes through the retaining walls and to demonstrate that Jane Place has sufficient capacity to receive an additional increment of runoff. These calculations also demonstrate that only a minor increase in runoff is anticipated due to the proposed development. Lastly, it should be noted that the proposed plan does not alter the existing drainage pattern and that the watershed, of which the subject project is a part, has an outfall into an existing drainage easement at its crossing with Candelaria Rd. N.E. The location of this easement is shown by the AMDS Plate G-21.

CALCULATIONS

SOILS INFORMATION

1. Soil Classification (from SCS Soil Survey, Plate 22):

   Etc Embudo - Tijeras Complex B Soil

2. Condition:

   Compacted from vehicular traffic ∴ $CN_{existing}$ = 82 (DPM Plate 22.2C-2)

   $CN_{undisturbed}$ = 65 (DPM Plate 22.2C-2)

   Equivalent % impervious = 53% (DPM Plate 22.2C-3)

   $C_{existing}$ = 0.59 (DPM Plate 22.2C-1)
   $C_{undisturbed}$ = 0.36 (DPM Plate 22.2C-1)

RATIONAL METHOD

1. Discharge: $Q = CiA$

   C varies according to % impervious

   $i = P_6(6.84)T_c^{-0.51} = 5.28$ in/hr

   where P_6 = 2.5" (DPM Plate 22.2D-1)

   T_c = 10 min (Minimum)

   A varies, acres

2. Volume : $V = CP_6A$

   C varies according to % impervious

   P_6 = 2.5 inches (DPM Plate 22.2D-1)

   A varies, sf.

EXISTING CONDITION

A = 29,965 sf = 0.69 Ac.

$Q_{100} = 0.59\ (5.28)(0.69) = 2.15$ cfs

$V_{100} = 0.59(\frac{2.5}{12})(29,965) = 3683$ cf

DEVELOPED CONDITION

1. Basin A (direct discharge to Jane Place)

   $A_{total} = 10(120) + 7(125) = 2075$ sf

   $A_{impervious} = 10\ (120) = 1200$ sf

   $A_{pervious} = 7(125) = 875$ sf

   % impervious $= \frac{1200}{2075}(100) = 58\%$

   C = 0.62 (DPM Plate 22.2C-1)

   $Q_{100} = 0.62\ (5.28)(0.05) = 0.16$ cfs

   $V_{100} = 0.62(\frac{2.5}{12})(2075) = 268$ cfs

2. Basin B (discharge to Jane Place via existing parking lot)

   $A_{total} = 29,965 - 2075 = 27,890$ sf
   $= 0.64$ Ac

   $A_{impervious} = 26,540$ sf

   $A_{pervious} = 1350$ sf

   % impervious $= \frac{26,540}{27,890}(100) = 95\%$

   C = 0.92

   $Q_{100} = 0.92(5.28)(0.64) = 3.11$ cfs.

   $V_{100} = 0.92(\frac{2.5}{12})(27,890) = 5346$ cf

3. COMPARISON

   $\Delta Q_{100} = (3.11+0.16)-2.15 = 1.12$cfs

   $\Delta V_{100} = (5346+268) - 3683 = 1931$ cf

4. ORIFICE SIZING

   $Q_{100} = 3.11$ cfs.

   $Q = C_c\sqrt{2gh}\ A = C_c\sqrt{2gh}\ \frac{\pi d^2}{4}$

   or $d^2 = \frac{4}{\pi C_c}\frac{Q}{\sqrt{2gh}} = 0.23$

   d = 0.48' = 6"

   where $Q = 1/3\ Q_{100} = 1.04$ cfs.

   C_c = 1.0 (Daugherty & Franzini, 1965)

   g = 32.2 ft/sec^2

   h = 0.5'

   ∴ Use 3 - 6" dia. weepholes @ SW cor. (Q = 3.12 cfs.)
   Use 2 - 6" dia. weepholes @ Mid pt. (Q = 2.08 cfs.) 2

STREET CAPACITY (JANE PLACE)

Assume 32" FF street with 4" crown and 8" curb.

S_{min} = 0.013 (AMDS Plate G-21)

n = 0.017

By Manning equation, $Q = \frac{1.49}{n}\ AR^{2/3}S^{1/2}$

$Q_{capacity}$ = 101 cfs

A_{total} = 20 acres (±) (AMDS Plate G-21)

Let Tc = 10 min.

Let C = 0.95 (to be conservative)

$Q_{estimate} = 0.95(5.28)(20) = 100.3$ cfs. 2

$Q_{estimate} < Q_{capacity}$ ∴ Street capacity exists.

OTHER INFORMATION

1. PROJECT BENCHMARK: ACS brass cap "JT-2A" located at the intersection of Juan Tabo Blvd. N.E. and Candelaria Road N.E. Elevation = 5618.04 feet (MSLD)

2. TEMPORARY BENCHMARK: Top of curb elevation at the WSW curb return at the intersection of Jane Place N.E. and Juan Tabo Blvd. N.E. (AS SHOWN). Elevation = 5640.42 feet (MSLD).

3. LEGAL DESCRIPTION: Tract H4C, Unit 2, La Reina de Los Altos

4. STREET ADDRESS: 3305 Juan Tabo Boulevard, N. E.

RECEIVED AUG 23 1982 ENGINEERING

REGISTERED PROFESSIONAL ENGINEER STATE OF NEW MEXICO THOMAS T. MARNELL 3152 LAND SURVEYOR

8/6/82
8/23/82

NO.	DATE	BY	REVISIONS
1	8/17/82	JJT	ADDED WALL SECTION CUTS
2	8/23/82	JMC	ADDED SWALE & DOWNSPOUTS, REVISE CALCS.

DESIGNED BY J.G.M.
DRAWN BY J.M.C.
APPROVED T.T.M.

JOB NO. 2078-1
DATE 8-82

DRAINAGE PLAN
GLICKMAN BUILDING

FILE NO.
SHEET P-1 OF 2

GLICKMAN ASSOCIATES, P.C.
811 DALLAS N.E. · ALBUQUERQUE · NEW MEXICO · 87110
ENGINEERS