HYDROLOGY K14/D23 GLOBE FURNITURE

K14/D23

Globe Furniture

1 Plan

VICINITY MAP K-14

SCALE: 1" = 800'

LEGEND

- EXISTING SPOT ELEVATION
- PROPOSED SPOT ELEVATION
- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED CONCRETE
- EXISTING POWER POLE
- EXISTING LIGHT POLE
- EXISTING TELEPHONE PED.
- EXISTING SAG MANHOLE
- EXISTING FIRE HYDRANT

PROJECT BENCHMARK

THE STATION, A STANDARD DISK MARKED "2-K-14", IS SET IN A DRILLED HOLE IN THE SIDEWALK. LOCATED IN THE NORTHWEST QUADRANT OF THE INTERSECTION OF 3rd ST. N.W. AND COPPER AVE. N.W. 7.5' WEST OF THE BACK OF CURB ON 3rd ST. & 7.5' NORTH OF THE BACK OF CURB ON COPPER AVE.
ELEVATION = 4952.310 FEET (MSLD)

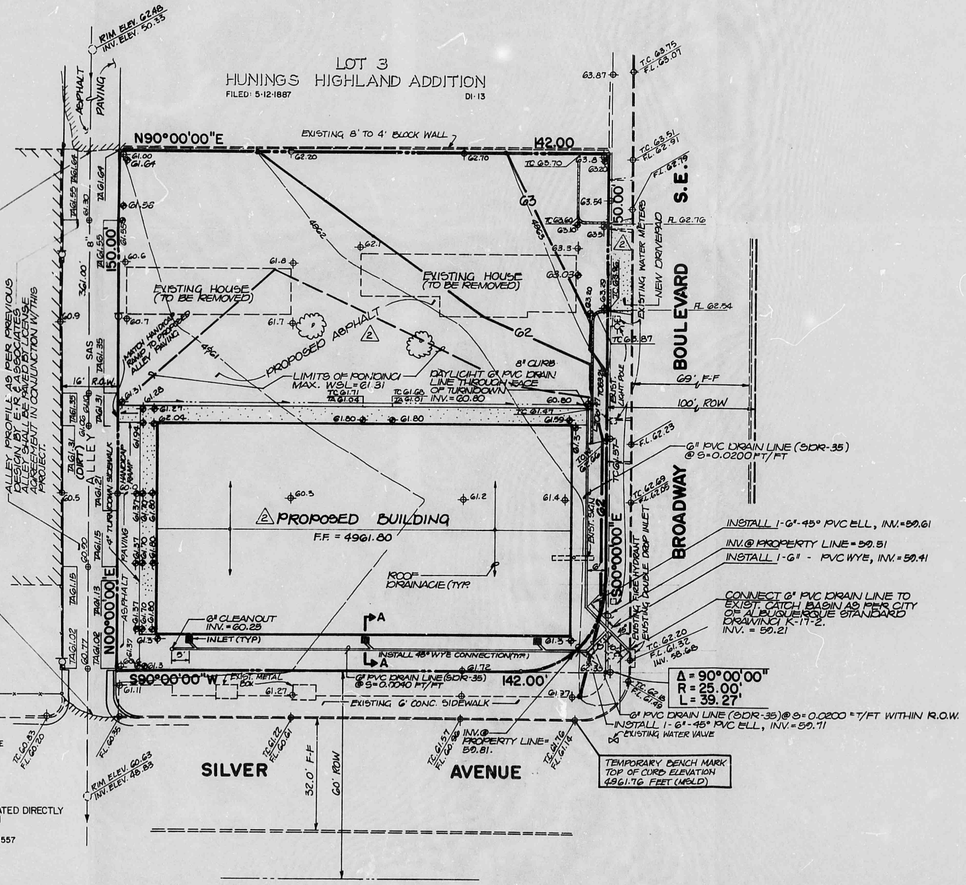
T.B.M.

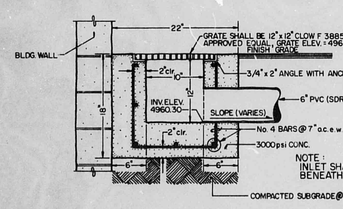
TOP OF W. N. W. CURB RETURN LOCATED AT THE N.W. CORNER OF THE INTERSECTION OF SILVER AVE. AND BROADWAY BLVD. SE
ELEVATION = 4961.76 FEET (MSLD)

LEGAL DESCRIPTION

TRACT B, BLOCK 3 HUNING'S HIGHLAND ADDITION

SCALE: 1" = 20'





SECTION A·A

1" = 1'-0"

DRAINAGE PLAN

The following items concerning the Globe Furniture Drainage Plan are contained hereon:

1. Vicinity Map
2. Grading Plan
3. Calculations

The proposed improvements, as shown by the Vicinity Map, are located at the northwest corner of Broadway Boulevard S.E. and Silver Avenue S.E. Two existing buildings are located on the site. With the exception of those buildings, the site is essentially undeveloped.

As shown by the Plate K-14 of the Albuquerque Master Drainage Study (AMDS), the site does not lie within a designated Flood Hazard Zone. As shown by Plate 1 (Area 1) of the Albuquerque Master Drainage Study, the site contributes runoff to Storm Drain System 132. The adjacent portion of the storm drain system is a 72-inch diameter closed conduit within Broadway Boulevard S.E. The subject site is located close enough to the existing storm drain system (132) to warrant the free discharge of runoff directly to that system. This conclusion has been drawn based on the fact that the peak runoff from the site will have entered the storm drain system long before the peak discharge of the upstream contributing area will occur. The adjacent site to the north is presently developed with a wall at the property line between that site and the project site. This wall diverts offsite flows west to the existing alley, therefore no offsite flows will enter the project site from the adjacent site from the north. Presently, the alley is unimproved, however, an alley profile has been designed by E R & Associates. The proposed alley will have an inverted crown to carry storm water, therefore, no offsite flows are anticipated from the west.

The Grading Plan shows 1) existing and proposed grades indicated by spot elevations and contours at 1' 0" intervals, 2) continuity between existing and proposed grades, 3) the limit and character of the existing and proposed improvements, and 4) the limit of ponding. As shown by this plan, the proposed improvements include the construction of a warehouse building, paving and landscaping, along with the removal of the two existing buildings. The parking lot will drain from northwest to southeast to a six-inch PVC drain pipe daylighted through the turndown sidewalk. Roof runoff from the north half of the warehouse building will drain to the parking lot. The runoff will be conveyed through the drain pipe and discharged into an existing double 'D' catch basin located at the N.N.W. curb return at Broadway Boulevard S.E and Silver Avenue S.E. Roof runoff from the south half of the warehouse building will drain to the south. This runoff will be collected by a series of inlets located at the south edge of the building. This runoff will then be conveyed by a six-inch PVC drain pipe which will connect to the aforementioned drain pipe. Minor ponding will occur on the parking lot due to the restriction of runoff imposed by the entrance to the 6-inch PVC drain pipe. The pond depth will not exceed eight inches. Overflow runoff from the ponding area will discharge into the alley at the southwest corner of the parking lot and then discharge to Silver Avenue S.E.

The Calculations which appear hereon 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, Volume II. The release rate was analyzed using the Orifice Equation. Hydrograph Analysis was used to determine the required pond volume. The Average End-Area Method was used to calculate the pond volume provided. As shown by these calculations, the proposed improvements will increase the runoff from the site by approximately 0.3 cfs.

CALCULATIONS

Ground Cover Information

From SCS Bernalillo County Soil Survey, Plate 30:
Cu: Cut and Fill Land
Hydrologic Soil Group A

Rational Method

Discharge: $Q = CiA$
where C varies
$i = P_6 (6.84) T_c^{-0.51} = 4.73$ in/hr
$P_6 = 2.24$ in (DPM Plate 22.2D-1)
$T_c = 10$ min (minimum)
A = area, acres
Volume: $V = CP_6A(1/12)$
where C varies
$P_6 = 2.24$ in (DPM Plate 22.2D-1)
A = area, sf

Existing Condition

$A_{total} = 21.165$ sf = 0.49 Ac
$A_{imp} = 1640$ sf; % impervious = 8%
'C' = 0.20 (DPM Plate 22.2C-1)
$Q_{100} = CiA = 0.20\ (4.73)(0.49) = 0.5$ cfs
$V_{100} = CP_6A = 0.20\ (2.24/12)(21.165) = 790$ cf

Developed Condition

2

$A_{total} = 21.165$ sf = 0.49 Ac
$A_{imp} = 19{,}158$ sf; % impervious = 91%
'C' = 0.78 (DPM Plate 22.2C-1)
$Q_{100} = CiA = 0.78\ (4.73)(0.49) = 1.8$ cfs
$V_{100} = CP_6A = 0.78\ (2.24/12)(21.165) = 3080$ cf

6"-Diameter Drain Pipe Capacity

$Q_{release} = CA\sqrt{2gh}$ (orifice Equation)
where C = 0.80
A = 0.20 sf
g = 32.2 ft/sec^2
h = 0.42 ft
$Q_{release} = 0.80\ (0.20)\sqrt{2(32.2)(0.40)}$
$Q_{release} = 0.8$ cfs

Comparison

2

$\Delta Q_{100} = 0.8 - 0.5 = 0.3$ cfs (increase)
$\Delta V_{100} = 3080 - 790 = 2290$ cf (increase)

Pond Volume

$V_{pond} = 1/2\ (A_{top\ elev.} + A_{bottom\ elev.})(\text{top elev.} - \text{bottom elev.})$
$V_{pond} = 1/2\ (2480 + 0)(61.31 - 60.80)$
$V_{pond} = 632$ cf
$V_{pond} > V_{ponding\ required}$
(Determined by Hydrograph Analysis)
632 cf > 567 cf

RECEIVED JUN 21 1985 HYDROLOGY SECTION

JEFFREY G. MONTGOMERY NEW MEXICO 8547 REGISTERED PROFESSIONAL ENGINEER 06-21-85

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ENGINEERS

NO.	DATE	BY	REVISIONS
1	1/2/85	JTO	F.L. ELEV. @ DRIVEPAD, T.O.W. ELEV. @ DRIVEPAD
2	6/85	JGM	REVISE LAYOUT & ADJUST GRADES & CALCULATIONS

DESIGNED BY: JTO
DRAWN BY: SGH
APPROVED: JGM

JOB NO. 41421
DATE 10·84

GRADING AND DRAINAGE PLAN
GLOBE FURNITURE

FILE NO.
SHEET 1 OF 1