HYDROLOGY

M15/D4C

ONE PLAN

AVIS FACILITY

M15 / D4C

1 PLAN

DRAINAGE PLAN

The following items concerning the Avis Facility Drainage Plan are contained hereon:

1. Vicinity Map
2. Grading Plan
3. Calculations

The proposed improvements, as shown by the Vicinity Map, are located on the north side of Randolph Road S.E. just west of Yale Boulevard S.E. The site is more particularly described as Tract 1 of the Newport Industrial Park-West, Unit I. At present, the site is undeveloped. The adjacent site to the east is developed, and the adjacent site to the west is currently in the building permit process.

It was determined at the pre-design meeting with Mr. Fred J. Aguirre, Hydrology Section, that the site does not lie within a designated Flood Hazard Zone, and that downstream capacity does exist. Because of this, the runoff generated by the developed site will be freely discharged to the downstream system. The downstream system is detailed on City Project No. 1849. The system is composed of two pairs of catch basins which drain through the headwall of an existing concrete-lined drainage channel. This plan does, however, rely upon the proposed improvements to Buena Vista Drive S.E. If these improvements are not made, an alternate solution for conveying runoff to the downstream channel will need to be formulated. At this time, however, it appears almost certain that the improvements to Buena Vista Drive S.E. will be completed.

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 elevations, 3) proposed street improvements for Buena Vista Drive S.E., and 4) the limit and character of the proposed onsite improvements. As shown by this plan, the proposed improvements include the construction of a rental and service facility for Avis Rent-a-Car. In particular, the improvements include the construction of an office, service area, asphalt parking, and landscaping. At present, runoff flows from southeast to northwest across the site and enters an existing inlet to the aforementioned concrete drainage channel. The Buena Vista Drive S.E. project will remove the existing inlet, but will incorporate a pair of single "C" catch basins in place of the existing inlet. Discharge from the developed site will be directed into the easterly catch basin of the southerly pair of catch basins to be constructed. As previously mentioned, this series of catch basins will discharge into the existing concrete drainage channel. Lastly, it should be noted that the existing pattern of runoff will not be altered by construction. Of course, the manner in which the runoff is conveyed will undergo modification.

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, Volume II. The evaluation of outlet capacity is based upon the orifice equation.

CALCULATIONS

1. From SCS Bernalillo County Soil Survey, Plate 41:
   BED Bluepoint Rokan Association
   BCC Bluepoint Loamy Fine Sand
   Hydrologic Soil Group A
2. Existing Condition

   A_{total} = 135,700 sf = 3.11 Ac±

   A_{imp} = 0 sf

   % = impervious = 0%

   'C' = 0.16 (DPM Plate 22.2C-1)
3. Developed Condition

   A_{total} = 135,700 sf = 3.11 Ac±

   A_{imp} = 124,700 sf

   % = impervious = 124,700/135,700 = 92%

   'C' factor = 0.80 (DPM Plate 22.2C-1)

Rational Method

1. Discharge: Q = CIA

   where C varies

   $i = P_6\,(6.84)\,T_c^{-0.51} = 4.86$ in/hr

   P_6 = 2.3 in (DPM Plate 22.2D-1)

   T_c = 10 min (minimum)

   A = area = 3.11 Ac

2. Volume: $V = CP_6A(1/12)$

   where C varies

   P_6 = 2.3 in (DPM Plate 22.2D-1)

   A = 135,700 sf

EXISTING CONDITION

$Q_{100} = CIA = 0.16\,(4.86)(3.11) = 2.4$ cfs

$V_{100} = C'P_6(12)A = 0.16(2.3/12)(135,700) = 4161$ cf

DEVELOPED CONDITION

$Q_{100} = CIA = 0.80(4.86)(3.11) = 12.1$ cfs

$V_{100} = C(P_6/12)A = 0.80(2.3/12)(135,700) = 20,807$ cf

COMPARISON

$\Delta Q_{100} = 2.4 - 12.1 = 9.7$ cfs (increase)

$\Delta V_{100} = 4161 - 20,807 = 16,646$ cf (increase)

OFFSITE FLOWS (confined to the street)

Previously determined by prior plan for BDM Phase II dated 1/22/82 to be 7 cfs.

CATCH BASIN/12" DRAIN CAPACITY

$Q = CA\sqrt{2gh}$ (Orifice Equation)
where C = 0.75

A = 0.7854 sf (12" dia pipe)

$g = 32.2$ ft/sec^2

h = 67-64 = 3'

$Q_{capacity}$ = 8.2 cfs

OVERFLOW (SIDEWALK CULVERT) CAPACITY

$Q = CA\sqrt{2gh}$ (Orifice Equation)
where C = 0.75

A = 2(0.67) = 1.34 sf

$g = 32.2$ ft/sec^2

h = 1/2(0.67) = 0.33'

$Q_{capacity}$ = 4.6 cfs

TOTAL OUTLET CAPACITY

$Q_{drain} + Q_{s/w\ culvert} = 8.2 + 4.6 = 12.8$ cfs $> Q_{100}$

PROJECT BENCHMARK:

A standard brass cap stamped "Airport AMAFCA 1965" and set in top of 8-inch square concrete post. It is 5.6 feet west of a wooden witness post on the south side of Viewpoint Road S.E. west of Yale Boulevard S.E.

Elevation = 5,302.81 feet (MSLD).

TEMPORARY BENCHMARK:

The finished floor of the existing BDM Building (Phase I). This building is located due west of the subject project at 1801 Randolph Road S.E.

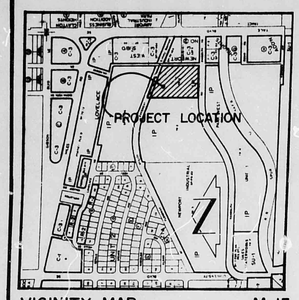
Elevation = 5,173.80 feet (MSLD).

LEGAL ADDRESS:

Tract 1, Newport Industrial Park - West, Unit I.

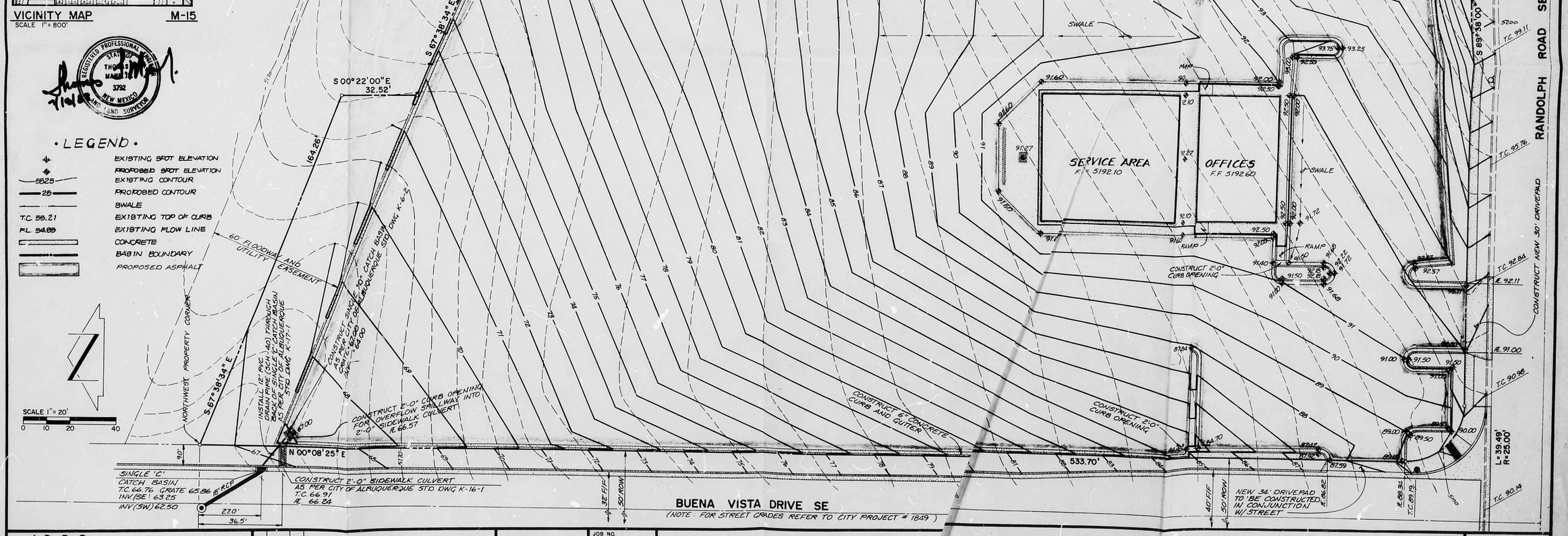
ADDRESS:

2001 Randolph Road S.E.



VICINITY MAP M-15
SCALE 1" = 800'

REGISTERED PROFESSIONAL ENGINEER
STATE OF NEW MEXICO
THOMAS M. MAGEE
3792
LAND SURVEYOR



• LEGEND •

- EXISTING SPOT ELEVATION
- PROPOSED SPOT ELEVATION
- 5625 EXISTING CONTOUR
- 25 PROPOSED CONTOUR
- SWALE
- T.C. 55.21 EXISTING TOP OF CURB
- F.L. 54.89 EXISTING FLOW LINE
- CONCRETE
- BASIN BOUNDARY
- PROPOSED ASPHALT

Tom Mann Associates, P.C.
811 DALLAS N.E. · ALBUQUERQUE · NEW MEXICO · 87110
ENGINEERS

NO.	DATE	BY	REVISIONS

DESIGNED BY: J.G.M.
DRAWN BY: T.X.W.
APPROVED: T.T.M.

JOB NO. 30551
DATE 7·83

GRADING AND DRAINAGE PLAN
AVIS FACILITY

M15/D4C

FILE NO.
SHEET 1 OF 1