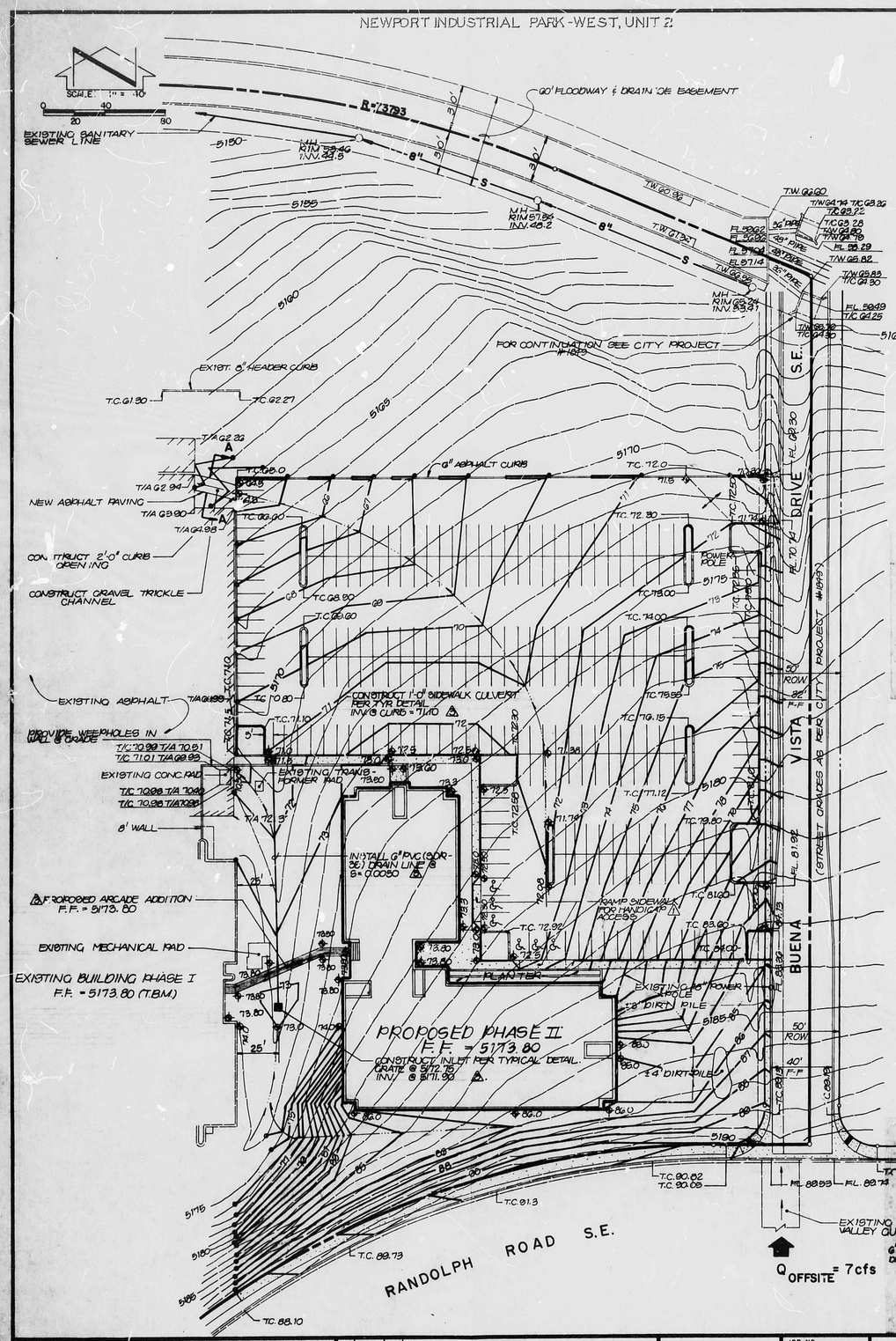
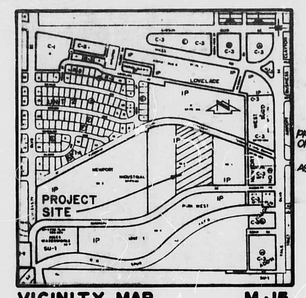
HYDROLOGY M15/D10 4B BDM PHASE II

M15/010

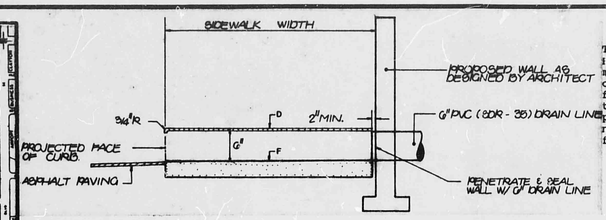
BDM PHASE II

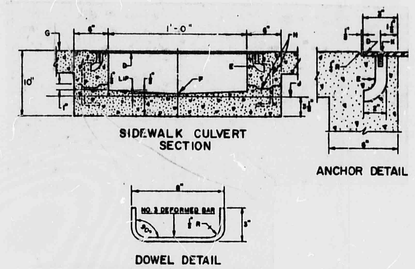
1 Plan



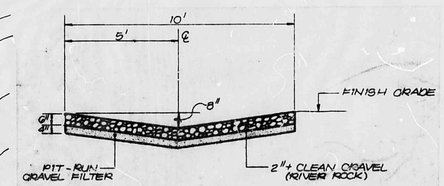


VICINITY MAP M-15
SCALE: 1" = 800'





SIDEWALK CULVERT DETAILS
NO SCALE



SECTION A-A
SCALE 1" = 3'

CONSTRUCTION NOTES:

A. JOIN NEAREST SCORE LINE OR WEAKENED PLANE JOINT, PLACE ½ EXPANSION JOINT MATERIAL.
B. SIDEWALK ON SETBACK (VARIABLE).
C. 5" RADIUS (TYPICAL).
D. ⅛" CHECKERED STEEL PLATE CULVERT TOP
E. ROD ANCHOR 1" x 6".
F. ¼" INVERT.
G. SIDEWALK GRADE.
H. DOWEL AND JOINT (OPTIONAL).
J. GUTTER FLOWLINE ELEV.
K. ⅛" x 1" FH. C'SUNK STAINLESS STL. MACHINE SCRW
L. BOTTOM OF GUTTER.
M. DRAIN WIDTH, 24" MAX. 18" MIN.
N. SLOPE ¼" PER FT. MIN.

· LEGEND ·

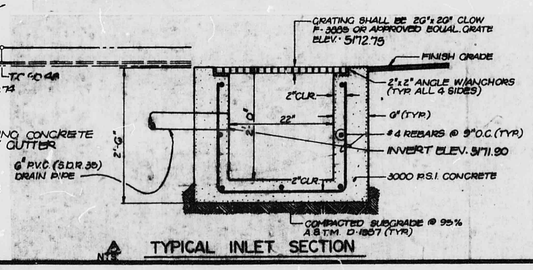
- EXISTING SPOT ELEVATION
- PROPOSED SPOT ELEVATION
- 5625 — EXISTING CONTOUR
- 28 — PROPOSED CONTOUR
- SWALE
- T.C. 55.21 — EXISTING TOP OF CURB
- F.L. 54.88 — EXISTING FLOW LINE
- CONCRETE
- BASIN BOUNDARY

CONSTRUCTION NOTES:

1 TWO (2) WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT LINE LOCATING SERVICE, 765-1234, FOR LOCATION OF EXISTING UTILITIES.

2 PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL POTENTIAL OBSTRUCTIONS. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY THE ENGINEER SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT OF DELAY.

3 ALL WORK ON THIS PROJECT SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL LAWS, RULES AND REGULATIONS CONCERNING CONSTRUCTION SAFETY AND HEALTH.



TYPICAL INLET SECTION

DRAINAGE PLAN

This plan supercedes the previously approved plan dated 1/22/82, Hydrology File No. H15-D10. The current plan has been revised to modify the building layout and parking lot configuration. The concept of the plan is the same with the exception that runoff formerly conveyed through the temporary drainage easement along the east property line of the site will now be conveyed within a public right-of-way, Buena Vista Drive S.E. Key issues which have not changed are worthy of further mention. These items are as follows:

1. The site does not lie within a designated flood hazard zone.
2. A concrete-lined channel to the north of the site is the outfall for runoff from the site.
3. Free discharge of runoff is permitted based upon the 1980 agreement between Richard S. Heller and Richard H. Johnston, Hydrology File No. H15-D5.
4. The majority of the runoff leaving Phase II will be conveyed through Phase I and into the channel at the northwest corner of the site. This trend was established on the BDM Master Drainage Plan which was approved February 23, 1982, Hydrology File No. H15-D9.

Changes which have occurred due to the revision of the site layout are as follows:

1. No off-site grading will be required.
2. The temporary drainage easement previously referenced has been eliminated by a plat and replaced with the dedication of Buena Vista Drive S.E.
3. A temporary desilting basin will not be required prior to discharging runoff into the concrete lined channel because runoff discharged to the channel will be conveyed via a hard surface and not erodible soil.

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 calculation of off-site flow, however, was previously determined by the Soil Conservation Service Curve Number approach. The calculation of the off-site flow appears on the previously approved plan dated 1/22/82.

CALCULATIONS

1. From SCS Bernalillo County Soil Survey, Plate 41:
   BKD Bluepoint Kokan Association
   BOC Bluepoint Loamy Fine Sand
   Hydrologic Soil Group A
2. Existing Condition
   A_{total} = 157,860 sf = 3.62 Ac±
   A_{imp} = 0 sf
   % = impervious = 0%
   'C' = 0.16 (DPM Plate 22.2C-1)
3. Developed Condition
   A_{total} = 157,860 sf = 3.62 Ac±
   A_{imp} = 109,360 sf
   % = impervious = 109,360/157,860 = 69%
   'C' factor = 0.55 (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 = 3.62 Ac
2. Volume: $V = CP_6A(1/12)$
   where C varies
   P_6 = 2.3 in (DPM Plate 22.2D-1)
   A = 157,860 sf

Existing Condition

$Q_{100} = CiA = 0.16\ (4.86)(3.62) = 2.8$ cfs

$V_{100} = C(P_6/12)A = 0.16\ (2.3/12)(157,860) = 4841$ cf

Developed Condition

$Q_{100} = CiA = 0.55\ (4.86)(3.62) = 9.7$ cfs

$V_{100} = C(P_6/12)A = 0.55\ (2.3/12)(157,860) = 16,641$ cf

Comparison

$\Delta Q_{100} = 2.8 - 9.7 = 6.9$ cfs (increase)

$\Delta V_{100} = 4841 - 16,641 = 11,800$ cf (increase)

Offsite Flows (confined to the street)

Previously determined by prior plan dated 1/22/82 to be 7 cfs. By Manning Equation, street capacity is 150 cfs.

$Q_{capacity} >> Q_{offsite}$

$Q = \frac{1.49}{n} A R^{2/3} s^{1/2}$ (Manning Equation)

where n = 0.02

A = f(w,d,s_c)

W = street width = 32'

d = curb height = 0.67'

s_c = street cross slope = 0.02

R = f (w,d,s_c)

s = average street slope = 0.04

3. Supplemental Calculations for Arcade

Contributing Area = 20,000 sf ≈ 0.5 Ac

C = 0.16

i = 4.86

$Q_{100} = 0.16(4.86)(0.50) = 0.4$ cfs

Pipe capacity = 0.5 cfs (Manning Equation)
Inlet capacity = 1.6 cfs (Orifice Equation)
No ponding will occur.

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). See adjacent plan for clarification.

Elevation = 5,173.80 feet (MSLD).

LEGAL ADDRESS:

Tract 2, Newport Industrial Park - West, Unit 1.

Approved 4/9/84

HYDROLOGY SECTION MAR 22 1984

REGISTERED PROFESSIONAL ENGINEER THOMAS M. MOORE 3792 STATE OF NEW MEXICO

REGISTERED PROFESSIONAL LAND SURVEYOR

6/24/83 10/17/83 10/18/83 3/21/84

bohannan-huston inc.
ENGINEERS
811 DALLAS, N.E. · ALBUQUERQUE · NEW MEXICO · 87110

NO.	DATE	BY	REVISIONS
1	9/30/83	JGH	Revise to provide handicap ramp.
2	10/18/83	JGH	Revise South Parking lot entrance per Traffic Engineering
3	3/19/84	JGH	Revise for BDM Arcade

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

JOB NO. 30421
DATE 5·83

GRADING & DRAINAGE PLAN

BDM PHASE II

M15/D10

FILE NO.

SHEET ___ OF ___