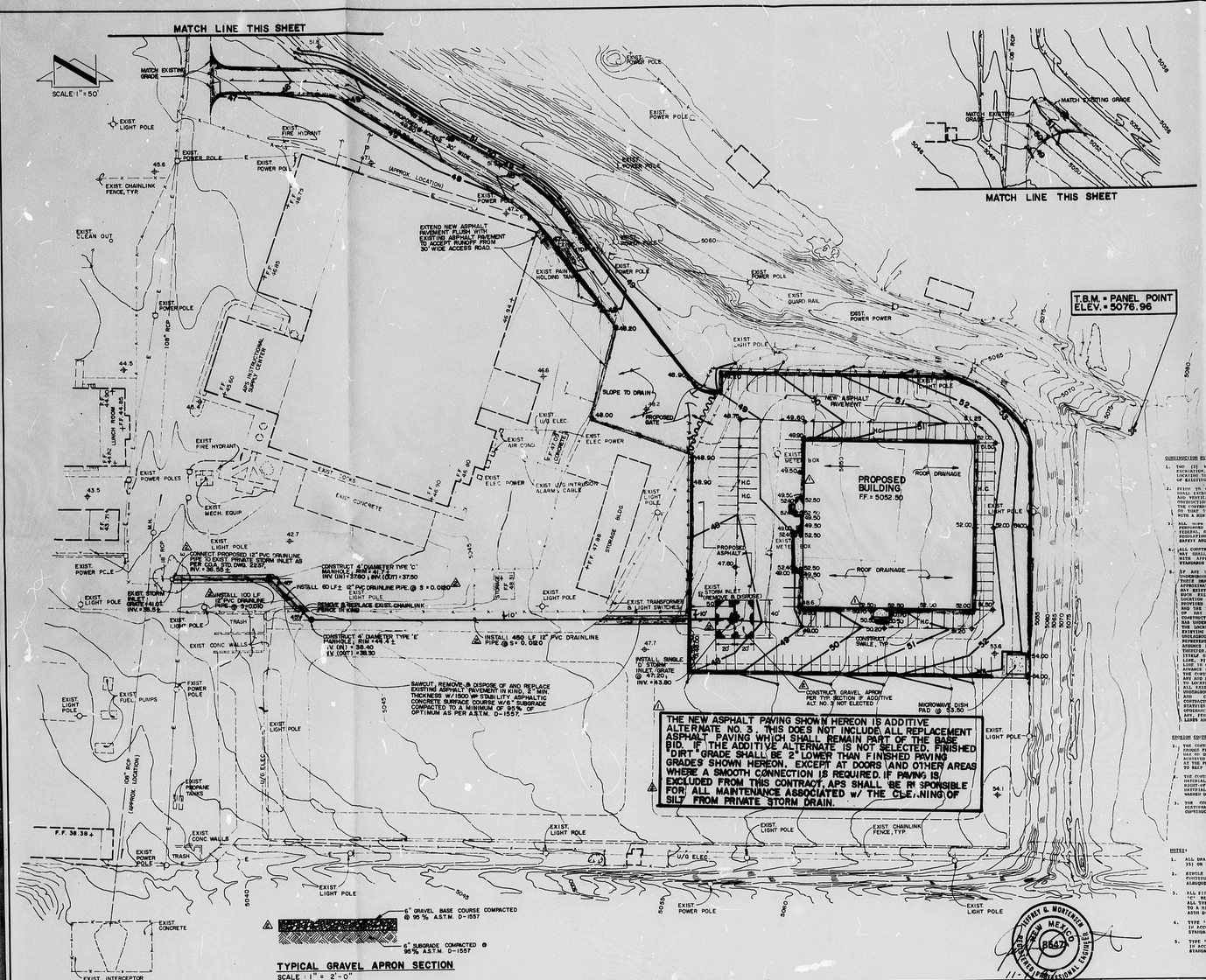
HYDROLOGY K15/D47 1 PLAN

K15/D47
1 Plan

CITY OF



TYPICAL GRAVEL APRON SECTION
SCALE 1" = 2'-0"

PROJECT BENCHMARK

STATION IS AMAFCA BRASS TABLET STAMPED "SCC 14-15", SET ON A CONCRETE POST PROJECTING 0.5 ft. ABOVE THE GROUND. THE STATION IS LOCATED 1100' NORTH OF THE STADIUM BLVD. BRIDGE OVER THE AMAFCA SOUTH DIVERSION CHANNEL ELEVATION: 5036.3 (M.S.L.D.)

T.B.M.

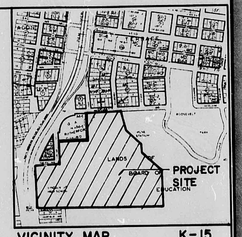
A PANEL POINT AS SHOWN HEREON ELEVATION: 5076.96 (M.S.L.D.)

LEGAL DESCRIPTION

LANDS OF BOARD OF EDUCATION

LEGEND

- EXISTING SPOT ELEVATION
- PROPOSED SPOT ELEVATION
- 5645 — EXISTING CONTOUR
- 45 — PROPOSED CONTOUR
- PROPOSED ASPHALT
- PROPOSED CONCRETE
- PROPOSED WATERBLOCK



VICINITY MAP K-15

DRAINAGE PLAN

The following items concerning the PSF 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 southeast quadrant of Hazeldine Avenue S.E. and Interstate 25. At present, the site is developed, making this a modification to an existing site. Much of the surrounding area is currently developed, thereby making this an infill site. The site shown by Plate K-15 of the Albuquerque Master Drainage Study, in which the site does not lie within a designated Flood Hazard Zone. Downstream capacity is not apparent and therefore does not appear to be a problem. No offsite flows enter the site along the west and north property lines. Offsite flows from the existing roads route runoff away from the project site. Minor offsite flows enter the site along the south property line. The existing site is graded in a manner which will route runoff away from the project site. Some offsite flows enter the site along the east property line which will be accepted and conveyed through the project site.

The Grading Plan shows 1) existing grades indicated by contours at 1'0" intervals, 2) continuity between existing and proposed grades, 3) the limit and character of the proposed improvements. As shown by this plan, the proposed improvements consist of the construction of a new program support facility and adjacent paving. Flows generated by this site will be routed east to west and north to south to a proposed Storm inlet discharge to an existing storm drain directly into a private storm drain which discharges to an existing storm inlet located within the Stadium Blvd. Bridge site. The existing storm inlet drains directly into an existing 108" RCP storm drain system which is the outfall for this site. The existing storm drain extension will adequately handle the runoff generated by the proposed improvements. Runoff exceeding the private storm drain capacity will follow the existing drainage pattern of the site. The proposed storm drains will handle the more frequent events and the increase in runoff generated by the proposed improvements. This pattern is consistent with the existing site drainage and based upon the fact that this site is located at the bottom of the watershed and the proximity of downstream facilities, the free discharge of runoff from this site is appropriate.

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 to quantify the peak rate of discharge and the SCS Method has been used to quantify the volume of runoff. Both methods have been used in accordance with the City of Albuquerque Development Process Manual, Volume II, and the Mayor's Emergency Rule adopted January 14, 1986. As shown by these calculations, the proposed improvements will increase the discharge by approximately 2.6 cfs.

CALCULATIONS

Ground Cover Information

From SCS Bernalillo County Soil Survey,
Plate 31: Cu - Cut and fill land
Hydrologic Soil Group: A
Existing Pervious CN = 54 (DPM Plate 22.2 C-2
Pasture or Range land: fair condition)
Developed Pervious CN = 39 (DPM Plate 22.2 C-2
Landscaping: good condition)

Time of Concentration/Time to Peak

$T_C = 0.0078\,(P.77/S^{0.385})$ (Kirpich Equation)

$T_P = T_C + 10$ min.

Point Rainfall

$P_6 = 2.28$ in. (DPM Plate 22.2 D-1)

Rational Method

Discharge: Q = CIA

where C varies
$I = P_6\,(6.6)\,T_C^{-0.51} = 4.82$ in/hr
$P_6 = 2.28$ in (DPM Plate 22.2D-1)
$T_C = 10$ min (minimum)
A = area, acres

SCS Method

Volume: V = 3630(DRO) A

Where DRO = Direct runoff in inches
A = area, acres

Existing Condition

Atotal = 104,760 sf = 2.40 Ac
Paved area = 39,320 sf (0.57)
Dirt area = 45,440 sf (0.43)
C = 0.21 (Weighted average per Emergency Rule, 1/14/86)
Q100 = CIA = (0.71)(4.82)(2.4) = 8.2 cfs
Aimp = 59,320 sf; % impervious = .57
Composite CN = 78.5 (DPM Plate 22.2 D-1)
DRO = 0.7 in (DPM Plate 22.2 C-4)
V100 = 3630 (DRO) A = 6,100 cf

Developed Condition

Atotal = 104,760 sf = 2.40 Ac
Roof area = 31,500 sf (0.30)
Paved area = 73,260 sf (0.70)
Landscaped area = -0- (0.0)
C = 0.93 (Weighted average per Emergency Rule, 1/14/86)
Q100 = CIA = (0.93)(4.33)(2.40) = 10.8 cfs
Aimp = 104,760 sf; % impervious = 100
Composite CN = 98 (DPM Plate 22.2 C-3)
DRO = 2.1 in (DPM Plate 22.2 C-4)
V100 = 3630 (DRO) A = 18,295 cf

Storm Inlet Capacity (Single 'D' Storm Inlet)

$Q = 0.6A\sqrt{2gh} = 25.8$ cfs > Q100 (Orifice Flow Equation)
Where A = 6.0 sf (free open area of grate)
g = 32.2 ft/sec²
h = 0.8 ft

12" PVC CAPACITY

Q = 4.7 cfs > Q100 (Field's Hydraulic Calculator for Gravity Flow in Pipes)
Where s = 0.010 (average)
n = 0.010

Comparison

ΔQ100 = 10.8 - 8.2 = 2.6 cfs (increase)
ΔV100 = 18,295 - 6,100 = 12,195 cf (increase)

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 VERIFY THE LOCATION, SIZE, DEPTH AND VERTICAL LOCATION OF ALL POTENTIAL CROSSCUTTING. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY THE ENGINEER TO 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.
4. ALL CONSTRUCTION WITHIN PUBLIC RIGHT-OF-WAY SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE CITY OF ALBUQUERQUE STANDARDS AND PROCEDURES.
5. IF ANY UTILITY LINES, PIPELINES, OR UNDERGROUND UTILITY LINES ARE SHOWN ON THESE DRAWINGS, THEY ARE SHOWN AS AN APPROXIMATE MANNER ONLY, AND SUCH LINES MAY OR MAY NOT BE COMPLETELY ACCURATE. IF SUCH EXISTING LINES ARE SHOWN, THE LOCATION IS BASED UPON INFORMATION PROVIDED BY THE OWNER OF SAID UTILITY, AND THE INFORMATION MAY BE INCOMPLETE, OUTDATED, OR INACCURATE. PRIOR TO CONSTRUCTION COMMENCE, THE ENGINEER HAS UNDERTAKEN NO FIELD VERIFICATION OF THE LOCATION OF ANY UTILITY LINES, OR OTHER EXISTING UTILITY LINES, PIPELINES, OR UNDERGROUND UTILITY LINES. MARKS NO REPRESENTATION REGARDING THEIRS, AND ASSUMES NO RESPONSIBILITY OR LIABILITY REGARDING THE INCONVENIENCE CAUSED BY THEIR OF THE LOCATION OF ANY UTILITY LINE, PIPELINE, OR UNDERGROUND UTILITY LINE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ASCERTAIN THE EXACT LOCATION OF ANY UTILITY LINE, IN PLANNING AND CONDUCTING EXCAVATION. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE STATUTES, ORDINANCES, RULES AND REGULATIONS, IF ANY, PERTAINING TO THE LOCATION OF THESE LINES AND FACILITIES.

EROSION CONTROL MEASURES

1. THE CONTRACTOR SHALL ENSURE THAT NO SOIL EROSION OR SILT RUNOFF OCCURS ON ADJACENT PROPERTIES OR ON PUBLIC PROPERTY. THIS CAN BE ACHIEVED BY CONSTRUCTING TEMPORARY LEVEES AT THE PROPERTY LINE OR BETTER THE SOIL TO KEEP IT FROM RUNNING.
2. THE CONTRACTOR SHALL PROMPTLY CLEAN UP ANY MATERIAL TRACKED OUTSIDE THE PROJECT BOUNDARY. ANY SILT FROM THE EXCAVATED MATERIAL IS NOT PERMITTED TO BEING WASHED DOWN THE STREET.
3. THE CONTRACTOR SHALL SECURE "TOPSOIL DISTURBANCE PERMIT" PRIOR TO BEGINNING CONSTRUCTION.

NOTES:

1. ALL DRAINLINE PIPE SHALL BE PVC (SDR-35) OR EQUAL.
2. SINGLE 'D' STORM INLET SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF ALBUQUERQUE STANDARD DRAWING 2236.
3. ALL PIPE SHALL BE FURNISHED WITH CLASS 'C' BEDDING UNLESS OTHERWISE NOTED. ALL TRENCH BACKFILL SHALL BE COMPACTED TO A MINIMUM OF 95% OF OPTIMUM, AS PER ASTM D-1557.
4. TYPE 'C' MANHOLE SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF ALBUQUERQUE STANDARD DRAWING 2101.
5. TYPE 'E' MANHOLE SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF ALBUQUERQUE STANDARD DRAWING 2101.

RECEIVED
NOV 25 1987
HYDROLOGY SECTION

JEFFREY G. MORTENSEN
NEW MEXICO
8547
PROFESSIONAL ENGINEER
11-17-87
11-25-87

BI DALLAS N.E. • ALBUQUERQUE • NEW MEXICO • 87110
ENGINEERS

GRADING AND DRAINAGE PLAN
ALBUQUERQUE PUBLIC SCHOOLS
PROGRAM SUPPORT FACILITY

DESIGN BY	L.P.U.
DRAWN BY	R.A.R.
APPROVED BY	J.G.M.

No.	Date	By	Revision
1	11/17/87	J.G.M.	Remove Ramps; Add Note
2	11/23/87	J.G.M.	Add Gravel Base Cause; Expand Note; Decrease Private S.D. Size, Revise Report & Calcs.

JOB NO. 871261
DATE 10/87
SHEET 1 OF 1

CITY OF ALBUQUERQUE
THIS MICROIMAGE IS THE BEST POSSIBLE REPRODUCTION DUE TO THE POOR QUALITY OF THE ORIGINAL DOCUMENT

CITY OF ALBUQUERQUE