HYDROLOGY

D18/D7

ONE PLAN

Plan Shot In two Sections

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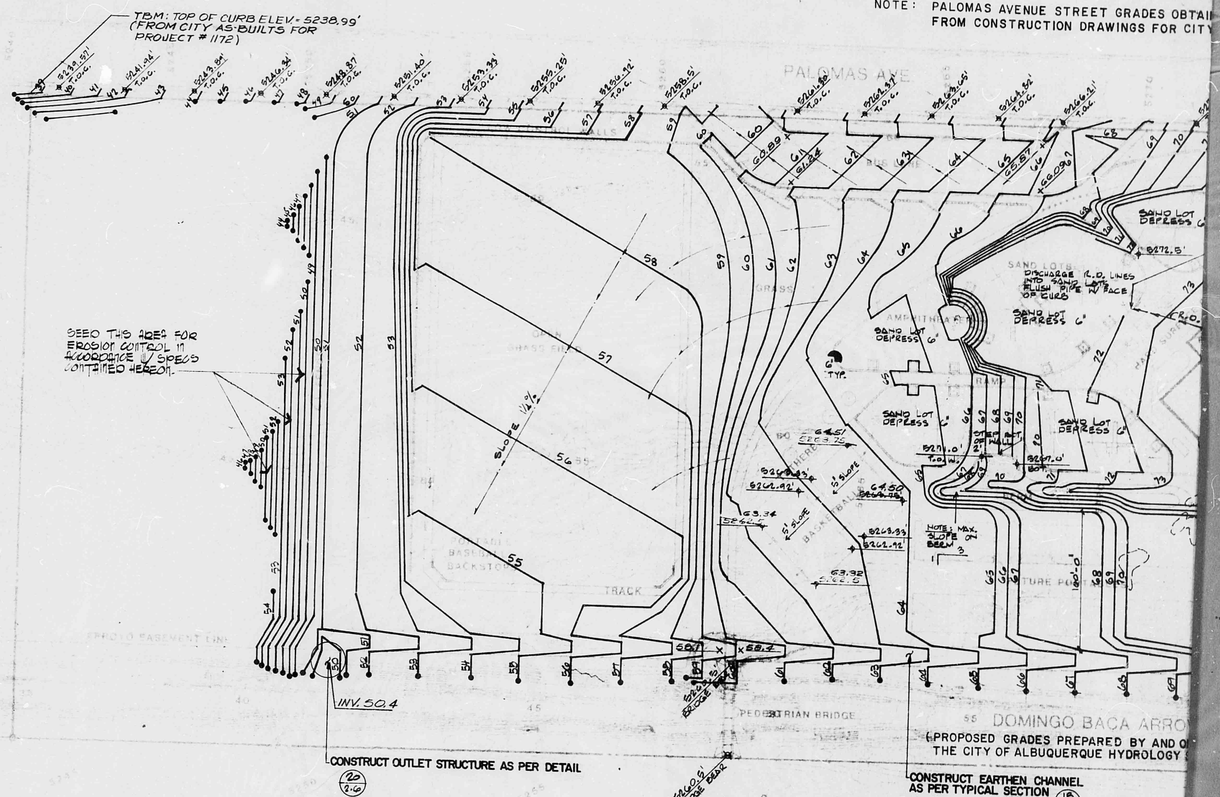
B.M. 5235.63' (M.S.L.D.)

PROJECT BENCH MARK: A STANDARD A.C.S. BRASS TABLET STAMPED "II-D18-1978" SET IN THE TOP OF A CONCRETE POST FLUSH WITH THE GROUND AT THE SOUTHEAST CORNER OF THE INTERSECTION OF SAN PEDRO BLVD.,N.E. AND LOS ANGLES AVE.,N.E.

NOTE: PALOMAS AVENUE STREET GRADES OBTAI
FROM CONSTRUCTION DRAWINGS FOR CITY



(PROPOSED GRADES PREPARED BY AND O
THE CITY OF ALBUQUERQUE HYDROLOGY

VEGETATION FOR EROSION CONTROL

SEED RATE:

Species	Pure Live Seed (lbs/acre)*
Annual Rye Grass	8.0
Giant Dropseed	2.0
Sand Dropseed	1.0
Indian Ricegrass	4.0
Sideoats Grama	6.0
Total	21.0

*Rates apply to drilled seed. Double rates listed if seed is broadcast.

FERTILIZER

200 bulk lbs. 0-20-0 Super Phosphate per acre
150 bulk lbs. 45-0-0 Urea per acre

MULCH

5,000 lbs. hay mulch per acre

WATERING SCHEDULE

WEEK NO.	1	2	3	4	5	6	Total
IN/ACRE	1.0/1.0*	2.0	1.0	1.0	0.5	0.5	7.0

*Two (2) applications three (3) days apart are required the first week.

DRAINAGE CERTIFICATION

The plan contained hereon shows (1) design grades indicated by spot elevations and contours and (2) as-built spot elevations at key locations.

The as-built conditions of the project are in substantial compliance with the approved drainage plan. This has been determined by field visits and survey information. The building finish floor elevations are approximately 0.6 feet higher than designed, however this does not present a problem. The survey information is the basis for the as-built spot elevations shown on this plan. Furthermore, the as-built conditions are compatible with the approved drainage plan, adjacent property and the street grades. It is because of this that a Certificate of Occupancy is hereby requested for the new school building.

REGISTERED PROFESSIONAL ENGINEER THOMAS MARK JONES 5982 NEW MEXICO AND LAND SURVEYOR

4/4/08

1/2-2 SITE GRADING & DRAINAGE PLAN

DRAINAGE PLAN

The following items concerning the Drainage Plan for the Northeast Heights Elementary School are contained hereon:

1. Vicinity Map
2. Flood Hazard Map
3. Grading Plan
4. Calculations

The proposed improvements, as shown by the Vicinity Map, are located on the south side of Palomas Avenue N.E. between San Pedro Boulevard N.E. and Louisiana Boulevard N.E. The site is more particularly described as Lots 3-10 and the northerly 164 feet of Lots 23-30, Block 12, Tract A, Unit A, North Albuquerque Acres. At present the site is undeveloped.

The site does not lie within a designated flood hazard zone as demonstrated by the Flood Hazard Map. The Domingo Baca Arroyo does lie along the southerly boundary of the site. In addition, several minor arroyos transect the site; however, the development of Hope High School to the east and the construction of Palomas Avenue to the north, combined with the grading of the site, will eliminate these arroyos. In following, no offsite flows will enter the site.

The Grading Plan shown above has been prepared by Vogt & Byrnes. Tom Mann & Associates has provided drainage consultation in conjunction with the preparation of the Grading Plan. The Grading Plan shows (1) existing contours at 1'-0" intervals, (2) proposed grades indicated by spot elevations and contours at 1'-0" intervals, (3) swales, (4) continuity between proposed and existing elevations, (5) roof drain lines and their points of discharge and (6) delineation of ground cover types. Because the site will consist of paved areas, building areas, landscaped areas, naturally seeded areas or rip-rap, erosion will not result from the proposed improvements. Finished floor elevations have been established to avoid flooding.

The site has been graded essentially to drain to the Domingo Baca Arroyo. This drainage scheme is consistent with the existing drainage pattern as well as the pre-design conference minutes as recorded by the City of Albuquerque Hydrology Section (Project No. D18-D7). The pre-design conference findings permit (1) the free discharge of runoff to Palomas Avenue from the school entrance, (2) the provision of no ponding and (3) the free discharge of runoff from the site to the arroyo. The site has been graded with these points in mind. To achieve this, the majority of the site drains to an interceptor swale which channels the runoff toward the southwest corner of the site where it will discharge to the Domingo Baca Arroyo. Details concerning the construction of the swale are contained on an accompanying sheet. Minor ponding will occur, however, in the sand lot areas due to the shifting of the sand associated with the playing patterns of children. Ponded volumes of water will be low and infiltration rates, rapid; therefore, standing water will not be a concern.

The Calculations shown hereon analyze existing and proposed drainage conditions by the Soil Conservation Service (SCS) Curve Number Method. These calculations demonstrate that the peak discharge from the site is reduced due to development. Although impervious areas have been created, landscaped areas have been added which improve the surface drainage characteristics of the site. It is because of this that the development of this site will reduce the peak discharge from the site.

The calculations which appear below also demonstrate the adequacy of the interceptor swale. These calculations analyze not only the capacity of the swale, but also the depth and velocity anticipated for the 10-year and 100-year flows. These calculations are based on the usage of the Mannings equation.

CALCULATIONS

EXISTING CONDITION:

$L = 1{,}400\ ', \Delta elev = 30', s = \frac{\Delta elev}{L} = 0.02$

$t_c = 0.00013 \frac{L^{0.77}}{s^{0.385}} = 0.16$ Hr. (Kirpich Equation)

Soil type = EtC (B soil w/15% cover - Herbaseous)
CN = 80

By SCS Curve Number Method for Area = 10 Ac,
Rainfall (P) = 2.5 in., and Rainfall Distribution = 75%,
$Q_{100,\ Exist} = 13.7$ cfs
$V_{100,\ Exist} = 0.75$ ac-ft.

PROPOSED CONDITION:

Building and paved areas = 3.68 Ac (CN = 95)
Landscaped areas = 6.32 Ac (CN = 61)

Composite CN $= \frac{3.68}{10}(95) + \frac{6.32}{10}(61) = 74$

By SCS Curve Number Method,
$Q_{100,\ Dev} = 9.3$ cfs
$V_{100,\ Dev} = 0.51$ ac-ft

$\Delta Q = Q_{100,\ Dev} - Q_{100,\ Exist} = 9.3 - 13.7 = -4.4$ cfs
∴ Peak discharge reduced by development.
$Q_{10,\ Dev} = 4$ cfs

CHANNEL:

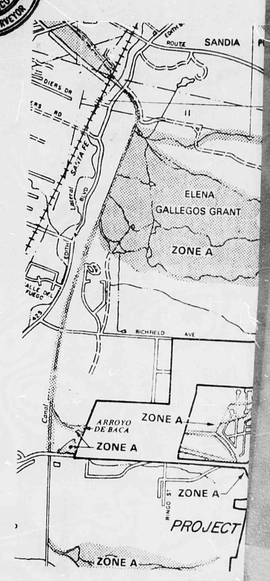
$Q = \frac{1.49}{n} AR^{2/3} s^{1/2}$ (Manning Equation)
Where n = 0.029 (Hydrology for Engineers, Linsley, et al., 1975)
s = 0.027 (average value)

For full flow, d = 1', A = 12 sf, P = 15.3' and $R = \frac{A}{P} = 0.78'$,
$Q_{capacity} = 86$ cfs

For design flow, Q = 9.3 cfs,
d = 0.27'
v = 3.3 fps

∴ Freeboard = 1-0.27 = 0.73' and $FS = \frac{86}{9.3} = 9.2$

For 10-year flow, $Q_{10,\ Dev} = 4$ cfs,
d = 0.16'
v = 2.4 fps



2/2-2 FLOOD

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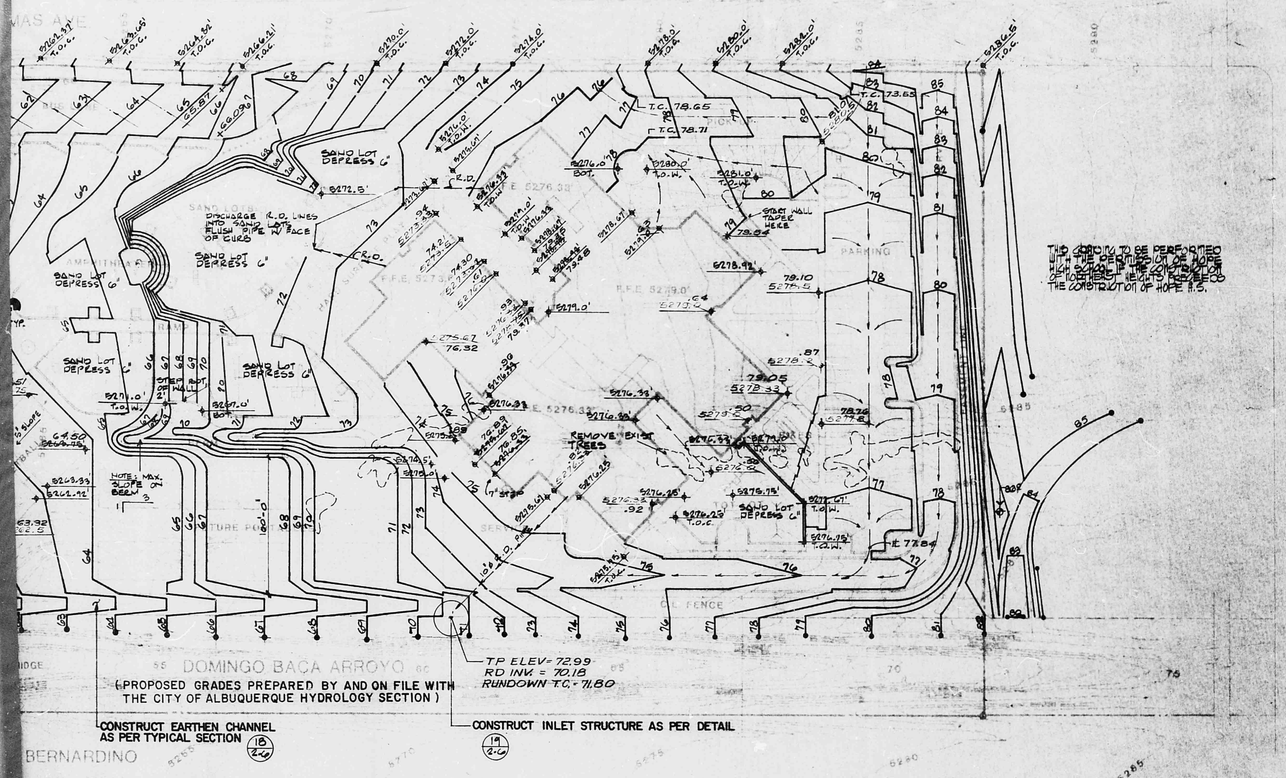
NOTE: PALOMAS AVENUE STREET GRADES OBTAINED FROM CONSTRUCTION DRAWINGS FOR CITY PROJECT # 1172



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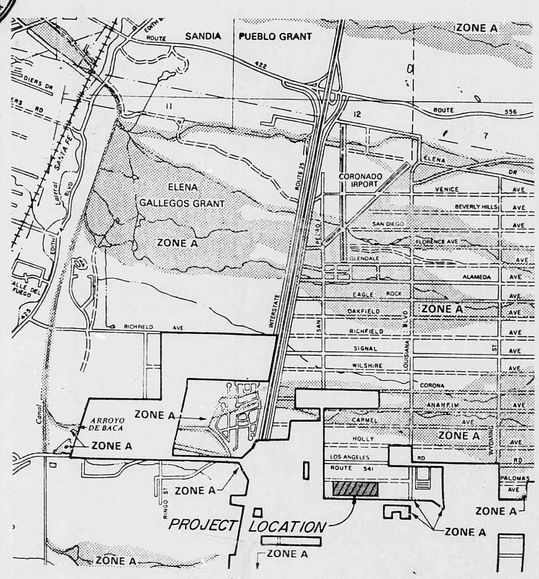
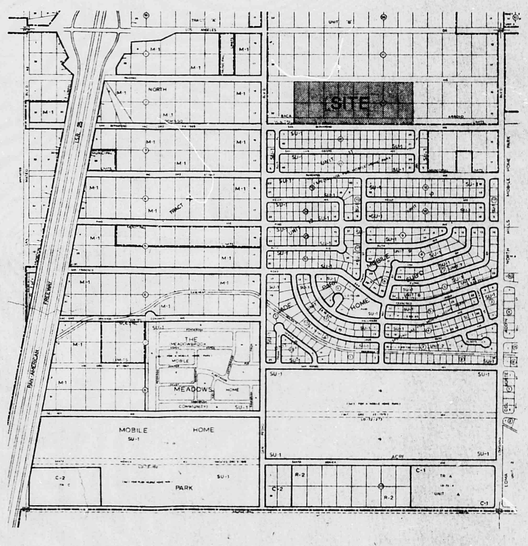
0 50 100 200 300 400

1":50'-0"

north



2/2-2 FLOOD HAZARD MAP



3/2-2 VICINITY MAP

D-18-Z

NORTHEAST ELEMENTARY SCHOOL

ALBUQUERQUE PUBLIC SCHOOLS BOARD OF EDUCATION CITY OF ALBUQUERQUE, N.M.

VOGT & BYRNES P.A. 1617 University Blvd. N.E., Albuquerque, New Mexico 87102 (505) 242-1526

JOB NO: 8109
DRN BY: G.R.D.
APP'D BY: T.T.M.
DATE: NOV. 6, 1981

PAGE NO: 2-2
6 OF: 60

(1) D/18/D7