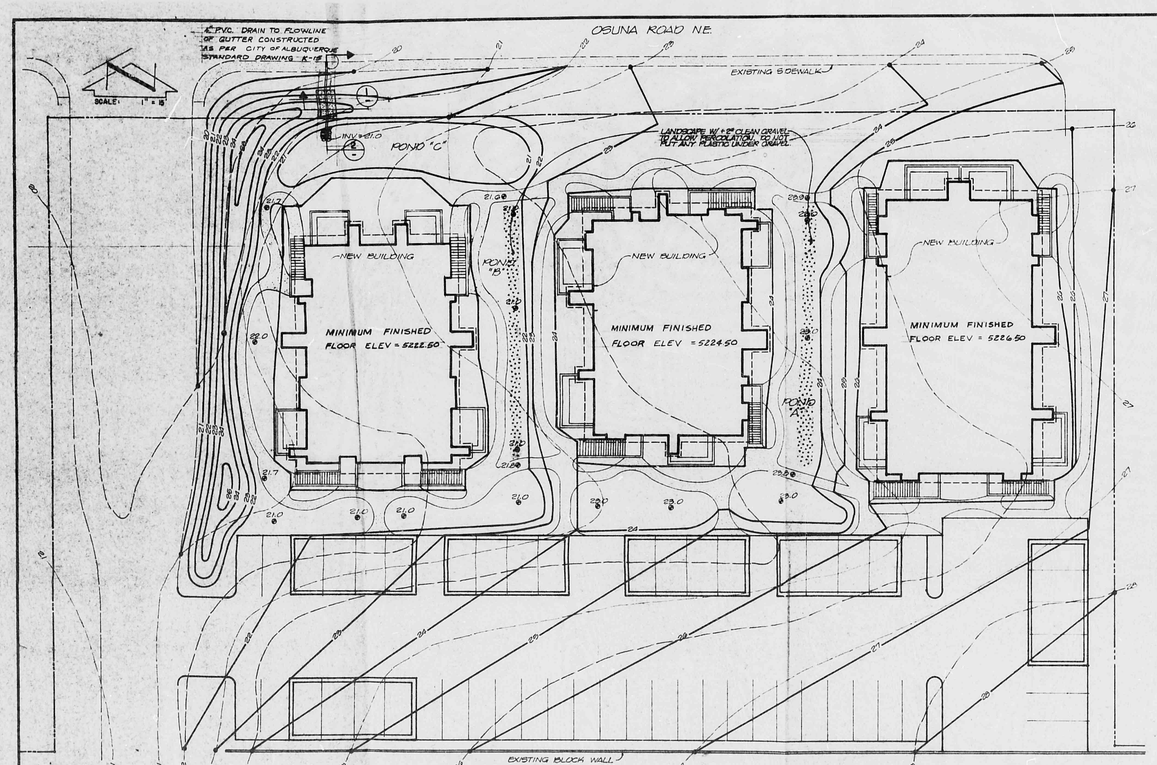
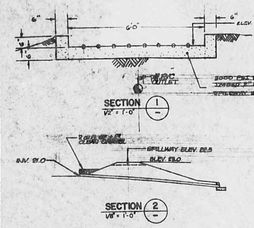
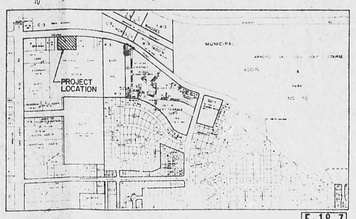
PUBLIC WORKS/HYDROLOGY

F18/D23

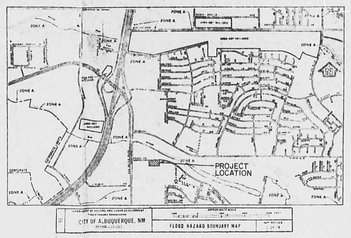






VICINITY MAP

F-18-Z



FLOOD HAZARD MAP

NOTICE TO CONTRACTORS

1. The Unified Standard Specifications for Public Works Construction, 1977 Edition, will be referred to hereon as the "Standard Specifications".
2. All work shall be done where shown to be performed under this contract, in accordance with materials shown or specified for hereon, be constructed in conformity with "Construct Documents" for Albuquerque Publication per Form No. 10 and the Standard Specifications.
3. Two working days prior to any excavation, contractor must contact Blue Staking Service, 765-1234, for locations of existing utilities.
4. Prior to transportation, the contractor shall secure all permits and pay all fees required by law for all excavations. Should a conflict arise, the contractor shall notify the engineer or surveyor so that the conflict can be resolved with a minimum amount of delay.

FOR DRAINAGE WORK THIS APPLY WITH EXCEPTS

- ☐ All utilities and utility service lines shall be installed prior to paving.
- ☐ Manhole elevations shall be according to specified street use.
- ☐ Back zone requirements shall be determined by the City Engineer.
- ☐ Sidewalks and wheelchair ramps within the work returns shall be constructed whenever a curb back curbs is constructed.
- ☐ If curb is constructed for a driveway, the driveway shall be constructed prior to the adjacent to each lot owner.
- ☒ All storm drainage facilities shall be completed prior to final acceptance.

The requested or developer shall be responsible for repair or replacement of all work and permits to approval of the Director of Public Works and City Engineer if work completed by the contractor.

G-65

Drainage Plan

The following items concerning the L. B. Nelson Condominium project are contained hereon:

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

The proposed project is located on the south side of Osuna Boulevard N.E. and east of San Mateo Boulevard N.E. There will be three (3) buildings with associated parking to be used as condominium units.

The land to the east of the project site has been developed as commercial property. It is higher than the project site, but generally slopes to the north away from the project site. The land to the south is separated from the project site by a solid block wall. Streets border the project on the north and west. The project site is higher than both streets. Therefore, any off-site runoff that should enter the site will be conveyed through the property and the ponding system. Off-site flows should be negligible. The project 1) does not lie in a flood plain, 2) does not lie adjacent to a natural or artificial water course and 3) has no drainage easements on the property. Erosion will not result from off-site runoff or the construction of this project.

The grading plan shows 1) existing contours at 2'-0" intervals, 2) proposed grades indicated by spot elevations and contours, 3) swales, 4) continuity between proposed and existing elevations, 5) that all runoff will be conveyed into a pond before leaving the site and 6) that retaining walls will not be required. Curb and gutter will not be constructed adjacent to the parking areas on the site. Therefore, runoff will be allowed to cross the edge of the asphalt to enter the ponding areas. The ponds will be provided with drains to the nearest street. At the present time an asphalt street bisects the site. The street was built prior to the 1972 ordinance and, therefore, credit is established for "C" for this project.

The runoff from the additional impervious areas will be retained in ponds adjacent to the buildings. The ponds will retain in excess of 100% of the runoff that results from a 100 year frequency storm. The ponds are not greater than 18" in depth and, therefore, fencing is not required.

CALCULATIONS

Area of Parcel = 295 x 200 = 59,000 s.f.

Impervious Area = 32,502 s.f.

Previous Impervious Area (prior to 1972) = 13,000 s.f.

Required Pond Volume = 19,502 x 0.1 = 1,950 c.f.

Pond A = 13.0 x 225 x 1/3 = 975 c.f.

Pond B = 12.8 x 225 x 1/3 = 960 c.f.

Pond C = 6.0 x 225 x 1/3 = 450 c.f.

Total Pond Volume = 2,385 c.f.

Composite 'C' = $\frac{32,502}{59,000}(0.4) + \frac{26,498}{59,000}(0.95) = 0.65$

Q = cia = 0.65(5.4) 1.35 = 6.4 cfs

weir = $3.33\ Lh^{3/2} = 3.33(6.0)(0.5)^{3/2} = 7.1$ cfs

9/1/81

Goldberg · Mann & Associates
Engineers-Planners
911 Pennsylvania N.E. Albuquerque, New Mexico 87110

NO.	DATE	BY	REVISIONS

DESIGNED BY TM
DRAWN BY PO
APPROVED TM

JOB NO. 9-95
DATE 9-79

L. B. NELSON DRAINAGE PLAN

FILE NO.
SHEET 1 OF 1

R# 2 DATE 3-26-02 OP

CITY OF ALBUQUERQUE

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DIRECTOR

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Roberta Duran
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STATE OF NEW MEXICO
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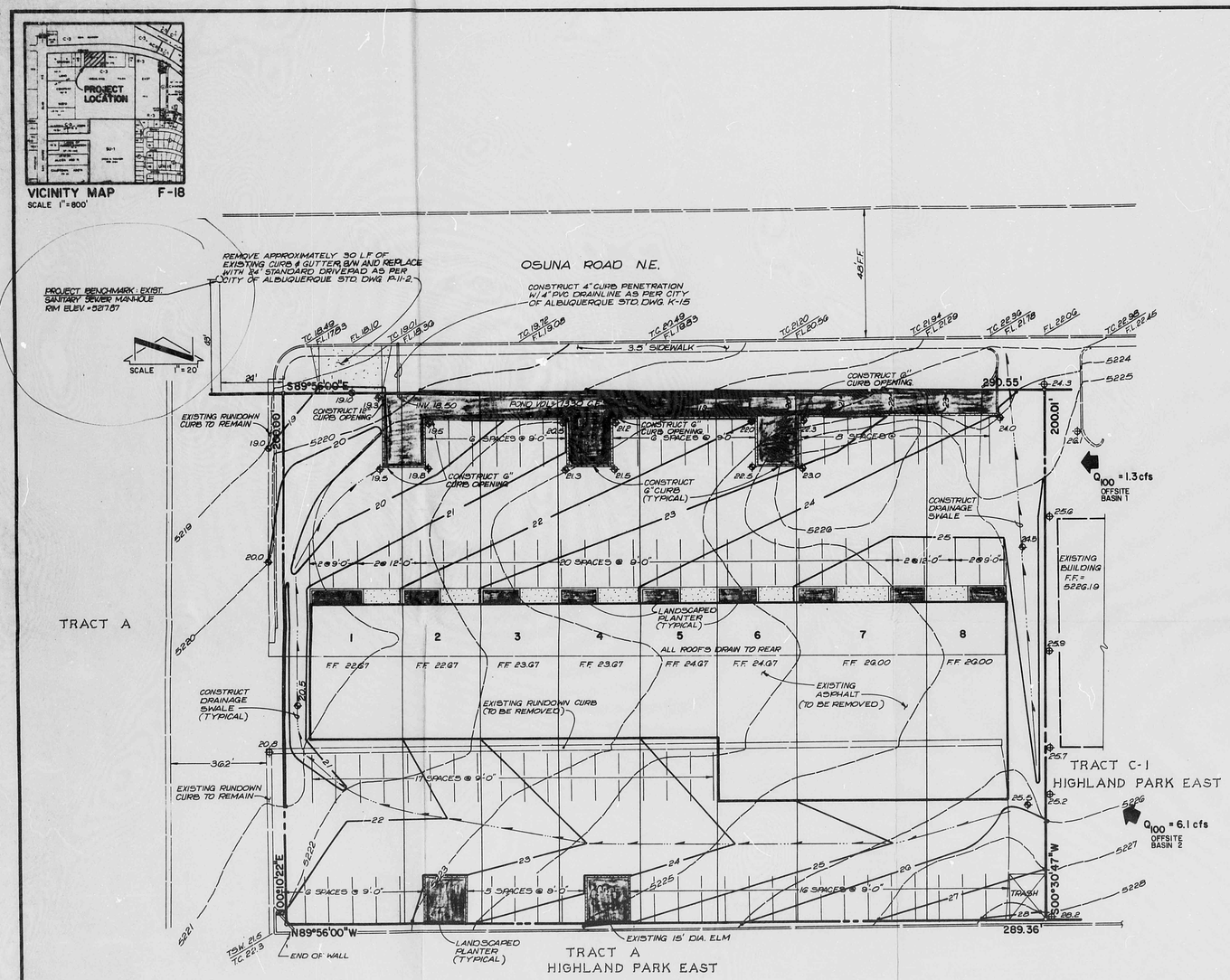
PLANS/PLATS ON FILE

FILE DESC: F18/D23

PLANS/PLATS 2

E 30 D 24 C 20 B 16 A 12 CITY OF ALBUQERQUE C D F



DRAINAGE PLAN

The following items concerning the Osuna Commercial Subdivision 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 Osuna Road N.E., approximately 600 ft. east of San Mateo Blvd. N.E. This site is more particularly described as Tract C2, Highland Park Addition. At present the site is partially developed with asphalt paving, with adjacent sites to the east and west already developed.

As shown by Plate 2 of the Flood Hazard Boundary Maps for the City of Albuquerque, New Mexico, this site does not lie within a designated Flood Hazard Zone. Investigation of existing storm drainage facilities have revealed that downstream capacity exists at the intersection of San Mateo Boulevard and Osuna Road. For this reason, a release equivalent to the 6-hour, 10-year design storm has been approved by Mr. Brian G. Burnett, City of Albuquerque, Hydrology Section. Offsite flows have historically entered the east boundary of the site flowing in a northerly direction and exiting through the existing drivepad at the northeast corner of the site. This drainage pattern will not be altered due to this developement. No flows enter the site from the south or 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 elevations 3) proposed buildings, sidewalks, parking areas, and landscaped areas 4) limit and character of the proposed improvements.

As shown by this plan the proposed improvements include the construction of stores and adjacent asphalt parking and required landscaping. The grading required by these improvements will route all storm runoff through a detention pond. Flows will exit the pond through a 4-inch PVC drain line and a weir. The runoff will then be conveyed via Osuna Road where it will be picked up by the existing storm conveyance system located at the intersection of Osuna Road and San Mateo Blvd.

The calculations which appear below analyze both the existing and developed conditions for the 100-year and 10-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. As shown by these calculations, runoff leaving the site under fully developed conditions will be slightly more than that which currently leaves the site. However, existing downstream storm drainage facilities have adequate capacity to accept the excess runoff generated by this site.

Calculations

Ground Cover Information

1. From SCS Bernalillo County Soil Survey, Plate 21; ENB - Rabade and TgB - Tijeras, Hydrologic Soil Group B

Rational Method

1. Discharge: $Q = CIA$
   Where C varies

   $I = P_6(6.84)t_c^{-0.51}$ (DPM Plate 22.2 D-2)

   $P_6 = 2.20$ in (100 yr)

   $P_6 = 1.45$ in (10 yr)

   $t_c = 10$ min (minimum)

   $I_{100} = 4.65$ in/hr

   $I_{10} = 3.06$ in/hr

   A = Area, Acres
2. Volume: $V = CP_6A\ (1/12)$
   Where C varies

   $P_6 = 2.20$ in (100 yr)

   $P_6 = 1.45$ in (10 yr)

   A = Area, Acres

Existing Condition

1. Onsite:

   $A = 1.33$ Ac $= 57,935$ sf

   $A_{imp} = 13,300$ sf

   I Impervious = 23%

   $C = 0.44$ (DPM Plate 22.2 C-1)

   $Q_{100} = CiA = 0.44(4.65)(1.33) = 2.72$ cfs

   $V_{100} = CP_6A = 0.44(2.2)(57,935)/12 = 4673$ cf

   $Q_{10} = CiA = 0.44(3.06)(1.33) = 1.79$ cfs

   $V_{10} = CP_6A = 0.44(1.45)(57,935)/12 = 3080$ cf

2. Offsite Basin 1:

   $A = 0.30$ Ac $= 13,068$ sf

   $A_{imp} = 12,415$ sf

   I Impervious = 95%

   $C = 0.96$

   $Q_{100} = CiA = 0.96(4.65)(0.30) = 1.34$ cfs

   $V_{100} = CP_6A = 0.96\ (2.20)(13,068)/12 = 2300$ cf

3. Offsite Basin 2:

   $A = 2.00$ Ac $= 87120$ sf

   $A_{imp} = 54,886$ sf

   I Impervious = 63%

   $C = 0.65$

   $Q_{100} = CiA = 0.65(4.65)(2.00) = 6.05$ cfs

   $V_{100} = CP_6A = 0.65(2.20)(87,120)/12 = 10,382$ cf

Developed Condition

1. Onsite:

   $A = 1.33$ Ac $= 57,935$ sf

   $A_{imp} = 53,225$ sf

   I Impervious = 92%

   $C = 0.88$

   $Q_{100} = CiA = 0.88(4.65)(1.33) = 5.44$ cfs

   $V_{100} = CP_6A = 0.88(2.20)(57,935)/12 = 9347$ cf

   $Q_{10} = CiA = 0.88\ (3.06)(1.33) = 3.59$ cfs

   $V_{10} = CP_6A = 0.88(1.45)(57,935)/12 = 6160$ cf

$V_{pond} = 1/2(A_{19.5'}A_{18'})(.5') + 1/2(A_{19'}-A_{18.5'})(.5') =$

$1/2(2159+2137)(.5)+1/2(1327+1073)(.5) = 1330$ cf

$Q_{release} = Q_{10} = 3.59$ cfs $= Q_{4"\ pipe} + Q_{weir}$

$Q_{4"\ pipe} = CA\sqrt{2gh}$ (Orifice Eqn)

Let H = 1.0 ft

$A = 0.086$ sf

$C = 0.8$

$g = 32.2$ ft/sec^2

$Q_{4"\ pipe} = 0.41$ cfs

$Q_{weir} = 3.33\ LH^{3/2}$ (Weir Eqn)

Let $Q_{weir} = Q_{10} - Q_{4"\ pipe} = 3.59 - 0.41 = 3.18$ cfs

$H = .65'$

Solving for L:

$L = 3.18/3.33(H^{3/2}) = 0.95'$ Use 12"

By Graphic Solution of Hydrograph,

$V_{required} = 1082$ cf

Hence $V_{pond} > V_{required}$

Comparison

$\Delta Q = Q_{100(Existing)} - Q_{10} = 2.72 - 3.59 = 0.87$ cfs Increase

LEGEND

- EXISTING SPOT ELEVATION
- PROPOSED SPOT ELEVATION
- 26 EXISTING CONTOUR
- 27 PROPOSED CONTOUR
- EXISTING BLOCK WALL
- PROPOSED CONCRETE
- PROPOSED LANDSCAPING
- DIRECTION OF FLOW
- TC: 21.94 TOP OF CURB ELEVATION
- FL 21.29 FLOW LINE
- PROPERTY LINE

LEGAL DESCRIPTION

TRACT C-2 HIGHLAND PARK EAST

PROPERTY ADDRESS

5712 - 5740 OSUNA RD. N.E.

REGISTERED PROFESSIONAL ENGINEER STATE OF NEW MEXICO THOMAS A. MARTINEZ NEW MEXICO AND LAND SURVEYOR

3/3/83

MARTINEZ ASSOCIATES, INC.
811 DALLAS, N.E. • ALBUQUERQUE • NEW MEXICO • 87110
ENGINEERS

NO.	DATE	BY	REVISIONS

DESIGNED BY: D.L.
DRAWN BY: B.S.
APPROVED: T.T.M.

JOB NO. 3009 2
DATE 2/83

GRADING AND DRAINAGE PLAN
FOR
OSUNA COMMERCIAL SUBDIVISION

FILE NO.
SHEET 1 OF 1

PLAN SHOT TWICE ONCE ON LIGHT ONCE ON DARK

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R# 26 DATE 3-26-92 OP BSP

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DIRECTOR 11/5/82

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STATE OF NEW MEXICO
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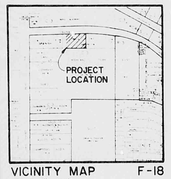
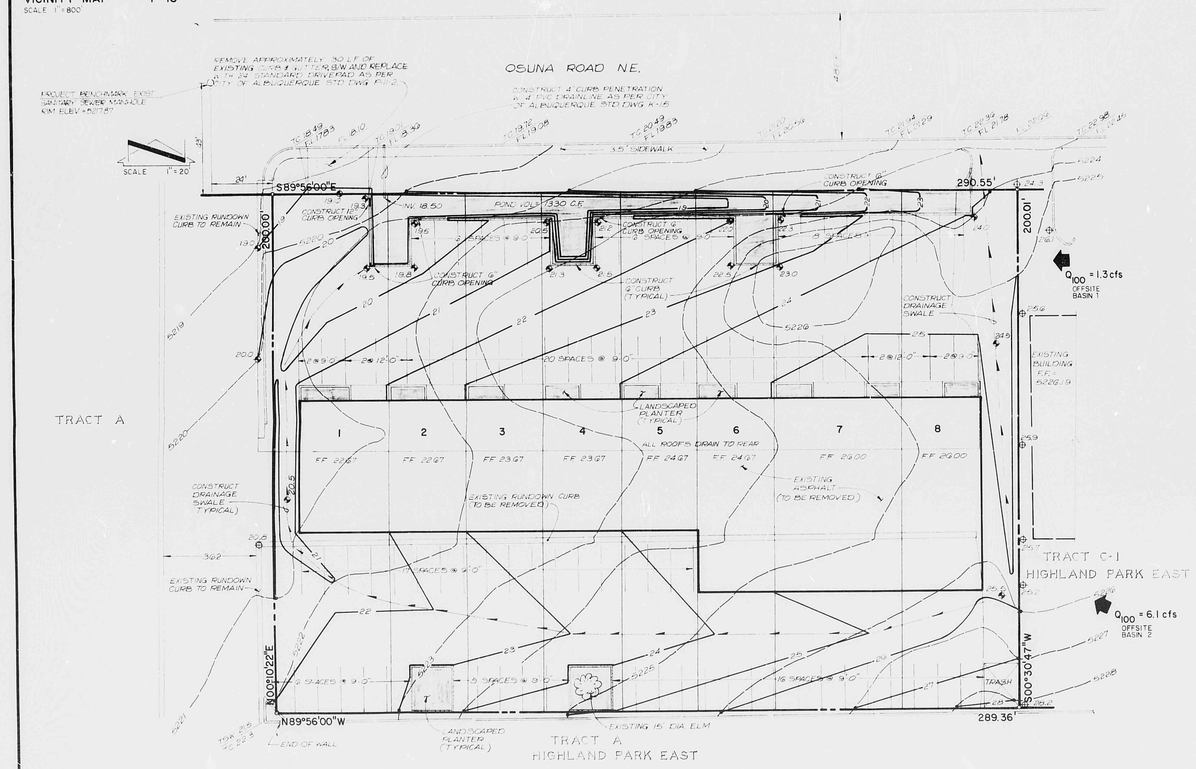
B24 C20 B16 A12 CITY OF ALBUQUERQUE C



VICINITY MAP F-18
SCALE 1" = 800'



DRAINAGE PLAN

The following items concerning the Osuna Commercial Subdivision 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 Osuna Road N.E., approximately 600 ft. east of San Mateo Blvd. N.E. This site is more particularly described as Tract C2, Highland Park Addition. At present the site is partially developed with asphalt paving, with adjacent sites to the east and west already developed.

As shown by Plate 2 of the Flood Hazard Boundary Maps for the City of Albuquerque, New Mexico, this site does not lie within a designated Flood Hazard Zone. Investigation of existing storm drainage facilities have revealed that downstream capacity exists at the intersection of San Mateo Boulevard and Osuna Road N.E. For this reason, a release equivalent to the 6-hour, 10-year design storm has been approved by Mr. Brian G. Burnett, City of Albuquerque, Hydrology Section. Offsite flows have historically entered the east boundary of the site flowing in a northerly direction and exiting through the existing drivepad at the northeast corner of the site. This drainage pattern will not be altered due to this developement. No flows enter the site from the south or 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 elevations 3) proposed buildings, sidewalks, parking areas, and landscaped areas 4) limit and character of the proposed improvements.

As shown by this plan the proposed improvements include the construction of stores and adjacent asphalt parking and required landscaping. The grading required by these improvements will route all storm runoff through a detention pond. Flows will exit the pond through a 4-inch PVC drain line and a weir. The runoff will then be conveyed via Osuna Road where it will be picked up by the existing storm conveyance system located at the intersection of Osuna Road and San Mateo Blvd.

The calculations which appear below analyze both the existing and developed conditions for the 100-year and 10-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. As shown by these calculations, runoff leaving the site under fully developed conditions will be slightly more than that which currently leaves the site. However, existing downstream storm drainage facilities have adequate capacity to accept the excess runoff generated by this site.

Calculations

Ground Cover Information

1. From SCS Bernalillo County Soil Survey, Plate 21; EmB - Rabuds and TgB - Tejera, Hydrologic Soil Group B

Rational Method

1. Discharge: Q = CiA
   Where C varies

$$i = P_6(6.0)^{-0.51} \quad \text{(DPM Plate 22.2 D-2)}$$

P_6 = 2.25 in (100 yr)
P_6 = 1.45 in (10 yr)
T_c = 10 min (minimum)
i_{100} = 4.65 in/hr
i_{10} = 3.06 in/hr
A = Area, Acres

2. Volume: V = CP$_6$A (/12)
   Where C varies
   P_6 = 2.25 in (100 yr)
   P_6 = 1.45 in (10 yr)
   A = Area, Acres

Existing Condition

1. Onsite:

A = 1.33 Ac = 57,935 sf
A_{imp} = 33,300 sf
% impervious = 58%
C = 0.44 (DPM Plate 22.2 C-1)
Q_{100} = CiA = 0.44(4.65)(1.33) = 2.72 cfs
V_{100} = CP$_6$A = 0.44(2.25)(57,935)/12 = 4673 cf
Q_{10} = CiA = 0.44(3.06)(1.33) = 1.75 cfs
V_{10} = CP$_6$A = 0.44(1.45)(57,935)/12 = 3060 cf

2. Offsite Basin 1:

A = 0.30 Ac = 13,068 sf
A_{imp} = 12,435 sf
% impervious = 95%
C = 0.94
Q_{100} = CiA = 0.94(4.65)(0.30) = 1.34 cfs
V_{100} = CP$_6$A = 0.94 (2.25)(13,068)/12 = 2300 cf

3. Offsite Basin 2:

A = 2.00 Ac = 87176 sf

Developed Condition

1. Onsite:

A = 1.33 Ac = 57,935 sf
A_{imp} = 51,225 sf
% impervious = 92%
C = .88
Q_{100} = CiA = 0.88(4.65)(1.33) = 5.44 cfs
V_{100} = CP$_6$A = 0.88 (2.25)(57,935)/12 = 9367 cf
Q_{10} = CiA = 0.88 (3.06)(1.33) = 3.59 cfs
V_{10} = CP$_6$A = 0.88(1.45)(57,935)/12 = 6160 cf

V_{pond} = 1/2(A$_1$ + A$_2$ + $\sqrt{A_1 A_2}$)(d$_1$ - d$_2$)
= 1/2(15792+12271+.5*1+2(1337+1073)(.5)) = 1330 cf
$Q_{release}$ = Q$_{10}$ - 3.59 cfs = Q$_{4"\ pipe}$ + Q$_{weir}$

Q$_{4"\ pipe}$ = CA$\sqrt{2gh}$ (Orifice Eqn)
Let h = 1.0 ft
A = 0.0873 sf
C = 0.6
g = 32.2 ft/sec^2
Q$_{4"\ pipe}$ = 0.41 cfs

Q$_{weir}$ = 3.33 LH$^{3/2}$ (Weir Eqn)
Let Q$_{weir}$ = Q$_{10}$-Q$_{4"\ pipe}$ = 3.59-0.41 = 3.18 cfs
H = .95'
Solving for L:
L = 3.18/(3.33(H$^{3/2}$)) = 0.95' Use 12"

by Graphic Solution of Hydrograph,

V$_{required}$ = 1082 cf
Hence V$_{pond}$ = V$_{required}$

Comparison

ΔQ_{100} = Q$_{100(Existing)}$-Q$_{10}$ = 2.72-3.59 = 0.87 cfs Increase

LEGEND

- EXISTING SPOT ELEVATION
- PROPOSED SPOT ELEVATION
- EXISTING CONTOUR
- PROPOSED CONTOUR
- EXISTING BLOCK WALL
- PROPOSED CONCRETE
- PROPOSED LANDSCAPING
- DIRECTION OF FLOW
- TC 2194 TOP OF CURB ELEVATION
- FL 2129 FLOW LINE
- PROPERTY LINE

LEGAL DESCRIPTION

TRACT C-2 HIGHLAND PARK EAST

PROPERTY ADDRESS

5712 - 5740 OSUNA RD. N.E.

REGISTERED PROFESSIONAL ENGINEER STATE OF NEW MEXICO THOMAS T. MANLEY 7872 PROFESSIONAL ENGINEER AND LAND SURVEYOR

3/3/83

PLAN SHOT TWICE
ONCE ON LIGHT
ONCE ON DARK

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DIRECTOR 11/5/82

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STATE OF NEW MEXICO
My Commission Expires
07/07/02

NO.	DATE	BY	REVISIONS

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

DESIGNED BY D.L.
DRAWN BY B.S.
APPROVED T.T.M.

JOB NO 3009 2
DATE 2/83

GRADING AND DRAINAGE PLAN
FOR
OSUNA COMMERCIAL SUBDIVISION

FILE NO

SHEET 1 OF 1

D 24 C 20 B 16 A 12 | CITY OF ALBUQERQUE C D