HYDROLOGY

F20/D10A

TWO PLANS

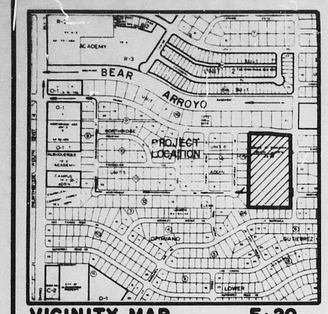
OSUNA ELEMENTARY

SCHOOL

4715 MOON N.E.

F20/D10A

2 PLANS

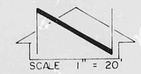


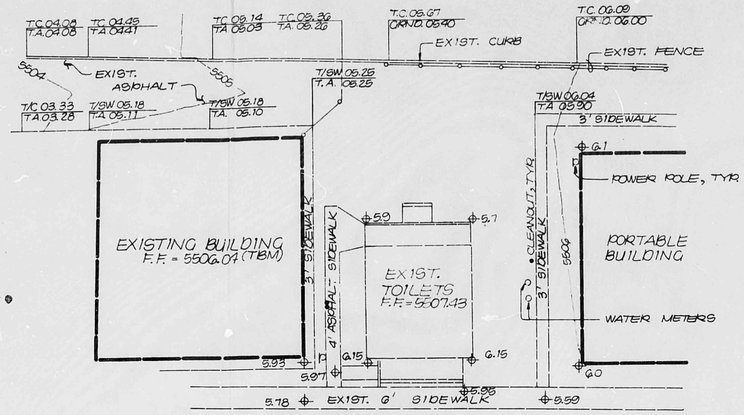
VICINITY MAP **F·20**

SCALE 1" = 800'

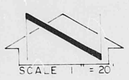
·LEGEND·

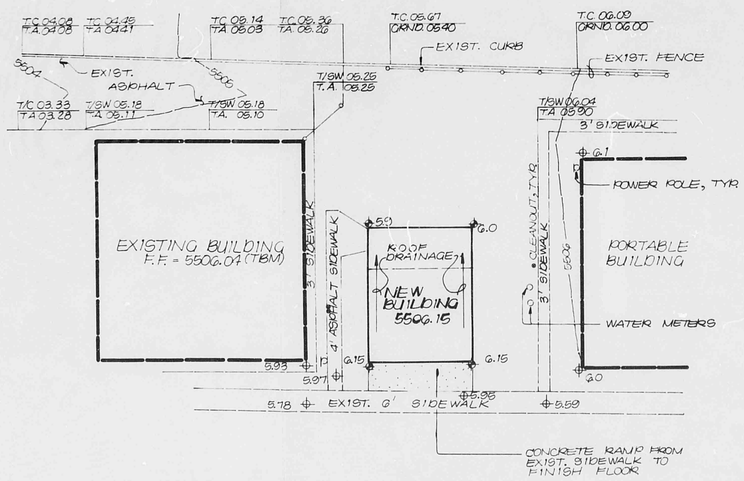
- EXISTING SPOT ELEVATION
- PROPOSED SPOT ELEVATION
- 5825 — EXISTING CONTOUR
- 56 — PROPOSED CONTOUR
- SWALE
- T.C. 55.62 — EXISTING TOP OF CURB
- F.L. 56.21 — EXISTING FLOW LINE
- CONCRETE
- BASIN BOUNDARY





EXISTING





PROPOSED

DRAINAGE PLAN

The following items concerning the Osuna Elementary School Restroom Addition Drainage Plan are contained hereon:

1. Vicinity Map
2. Grading Plan

The proposed improvements, as shown by the Vicinity Map, are located on the west side of Moon Street N.E. between Osuna Avenue N.E. and La Barranca Avenue N.E. At present, the site is developed as an elementary school campus. Much of the surrounding area is already developed residentually.

Research has revealed that the site does not lie within a designated Flood Hazard Zone. The site discharges runoff to the Bear Arroyo via several residential streets. It is because of this that the runoff generated by the proposed improvements will be freely discharged from the site. At present, the site drains from east to west to a low point along the west boundary of the site. At this point, runoff leaves the site via an existing asphalt drainage channel which discharges to the "eyebrow" along Northridge Drive N.E. Once in Northridge Drive, the runoff flows west to the intersection with General Bradley Street N.E. where it turns and flows north to Osuna Avenue N.E. At this point, the runoff turns and flows to the west to Wyoming Boulevard N.E. where it turns and flows north a short distance where it enters the Bear Arroyo via an existing rundown. This pattern of runoff is depicted on the Vicinity Map. Also, this pattern of runoff will not be altered by construction.

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) the limit and character of existing improvements, and 4) the limit and character of the proposed improvements. As shown by this plan, the proposed improvements consist of the construction of a new restroom building. This new construction requires the removal of the existing building.

No calculations have been performed for this addition because the new building is exactly the same size as the existing building. In other words, no additional impervious area has been created; therefore, the quantity and characteristics of the runoff generated in this portion of the campus will remain unchanged.

MISCELLANEOUS INFORMATION

PROJECT BENCHMARK:

ACS BM S-F20

ELEVATION: 5508.40 FEET (MSLD)

TBM:

FINISH FLOOR OF EXISTING BUILDING IMMEDIATELY WEST OF THE PROPOSED ADDITION.

ELEVATION: 5506.04 FEET (MSLD)

ADDRESS:

4715 MOON N.E.

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.
4. ALL CONSTRUCTION WITHIN PUBLIC RIGHT-OF-WAY SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE CITY OF ALBUQUERQUE STANDARDS AND PROCEDURES.

REGISTERED PROFESSIONAL ENGINEER — STATE OF NEW MEXICO — 3792 — LAND SURVEYOR

7/6/83

Smith, Morris & Associates, Inc.
811 DALLAS, N.E. · ALBUQUERQUE · NEW MEXICO · 87110
ENGINEERS

NO.	DATE	BY	REVISIONS

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

JOB NO. 30631
DATE 6 · 83

GRADING & DRAINAGE PLAN

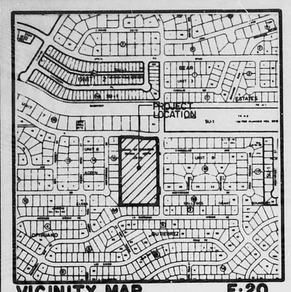
OSUNA ELEMENTARY SCHOOL RESTROOM ADDITION

F20/D10 R

FILE NO.

SHEET 1 OF 2

N29563



VICINITY MAP **F-20**

SCALE 1" = 800'

• LEGEND •

- EXISTING SPOT ELEVATION
- PROPOSED SPOT ELEVATION
- 5625 — EXISTING CONTOUR
- 28 — PROPOSED CONTOUR
- SWALE
- T.C. 56.21 — EXISTING TOP OF CURB
- FL 54.88 — EXISTING FLOW LINE
- CONCRETE
- BASIN BOUNDARY
- PROPOSED ASPHALT PAVING

MISCELLANEOUS INFORMATION

1. **PROJECT BENCHMARK:**

   ACS BM 5-F20

   ELEVATION: 5508.40 FEET (MSLD)

2. **TBM:**

   FINISH FLOOR OF EXISTING BUILDING IMMEDIATELY EAST OF THE PROPOSED ADDITION.

   ELEVATION: 5506.50 FEET (MSLD)

3. **ADDRESS:**

   4715 MOON N.E.

DRAINAGE PLAN

The following items concerning the Osuna Elementary School P.E. Building 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 west side of Moon Street N.E. between Osuna Avenue and La Barranca Avenue N.E. At present, the site is developed as an Elementary School campus. Much of the surrounding area is already developed residentially.

Research has revealed that the site does not lie within a designated flood hazard zone. The site discharges runoff to the Bear Arroyo via several residential streets. It is because of this that the runoff generated by the proposed improvements will be freely discharged from the site. At present, the site drains form east to west to a low point along the west boundary of the site. At this point, runoff leaves the site via an existing asphalt drainage channel which discharges to the "eyebrow" along Northridge Drive N.E. Once in Northridge Drive, the runoff flows west to the intersection with General Bradley Street N.E. where it turns and flows north to Osuna Avenue N.E. At this point, the runoff turns and flows to the west to Wyoming Boulevard N.E. where it turns and flows north a short distance where it enters the Bear Arroyo via an existing rundown. This pattern of runoff is depicted on the Vicinity Map. Also, this pattern of runoff will not be altered by construction.

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) the limit and character of existing improvements, and 4) limit and character of the proposed improvements. As shown by this plan, the proposed improvements include the construction of a new P.E. Building along with new concrete and asphalt walkways, and an extension of the existing asphalt swale to the existing asphalt drainage channel. The purpose of the asphalt swale is to accept and convey storm water from the site to the existing asphalt drainage channel. Hopefully, this will minimize the potential soil erosion anticipated from the vast, unpaved playground area of the school.

The Calculations which appear below analyze both the existing and proposed 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. As shown by these calculations, a minor increase in runoff is anticipated to leave the site due to the proposed improvements. In addition, the overall discharge of runoff from the site has been estimated and found to be slightly less than the capacity of the asphalt swale and the asphalt drainage channel.

Calculations

Ground Cover Information

1. From SCS Bernalillo County Soil Survey, Plate 21:

   EtC Embudo-Tijeras Complex

   TgD Tijeras gravelly fine sandy loam

   Hydrologic Soil Group B

2. Existing Condition

   A_{total} = 20,400 sf = 0.47 Ac

   A_{imp} = 1450

   % impervious = 1450/20,400 = 7%

   'C' = 0.37 (DPM Plate 22.2C-1)

3. Developed Condition

   A_{total} = 20,400 sf = 0.47 Ac

   A_{imp} = 7650 sf

   % impervious = 7650/20,400 = 38%

   'C' factor = 0.52 (DPM Plate 22.2C-1)

Rational Method

1. Discharge: $Q = CiA$

   where C varies

   $i = P_6 (6.84) T_c^{-0.51} = 5.07$ in/hr

   P_6 = 2.4 in (DPM Plate 22.2D-1)

   T_c = 10 min (minimum)

   A = 0.47 Ac (area affectd by addition)

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

   where C varies

   P_6 = 2.4 in (DPM Plate 22.2D-1)

   A = 20,400 sf (area affected by addition)

Existing Condition

$Q_{100} = CiA = 0.37 (5.07)(0.47) = 0.9$ cfs

$V_{100} = CP_6A = 0.37 (2.4/12)(20,400) = 1510$ cf

Developed Condition

$Q_{100} = CiA = 0.52 (5.07)(0.47) = 1.2$ cfs

$V_{100} = CP_6A = 0.52 (2.4/12)(20,400) = 2122$ cf

Comparison

$Q_{100} = 0.9 - 1.2 = 0.3$ cfs (increase)

$V_{100} = 1510 - 2122 = 612$ cf (increase)

Estimate of Q_{site}

$Q = CiA = 24$ cfs

where C = 0.6 (estimate)

i = 5.0 in/hr (approx.)

A = 8 Ac

Capacity of Asphalt Swale

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

$Q_{swale} = 27$ cfs $> Q_{site}$

where n = 0.02

A = f (w,m,d)

R = A/P

P = f (w,m,d)

w = 0' (i.e. inverted crown)

m = 5 (i.e. 5:1)

d = 1' (depth)

s = 0.014

Capacity of Asphalt Channel

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

$Q_{channel} = 32$ cfs $> Q_{site}$

where n = 0.02

A = f (w,m,d)

R = A/P

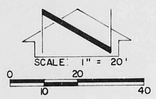
P = f (w,m,d)

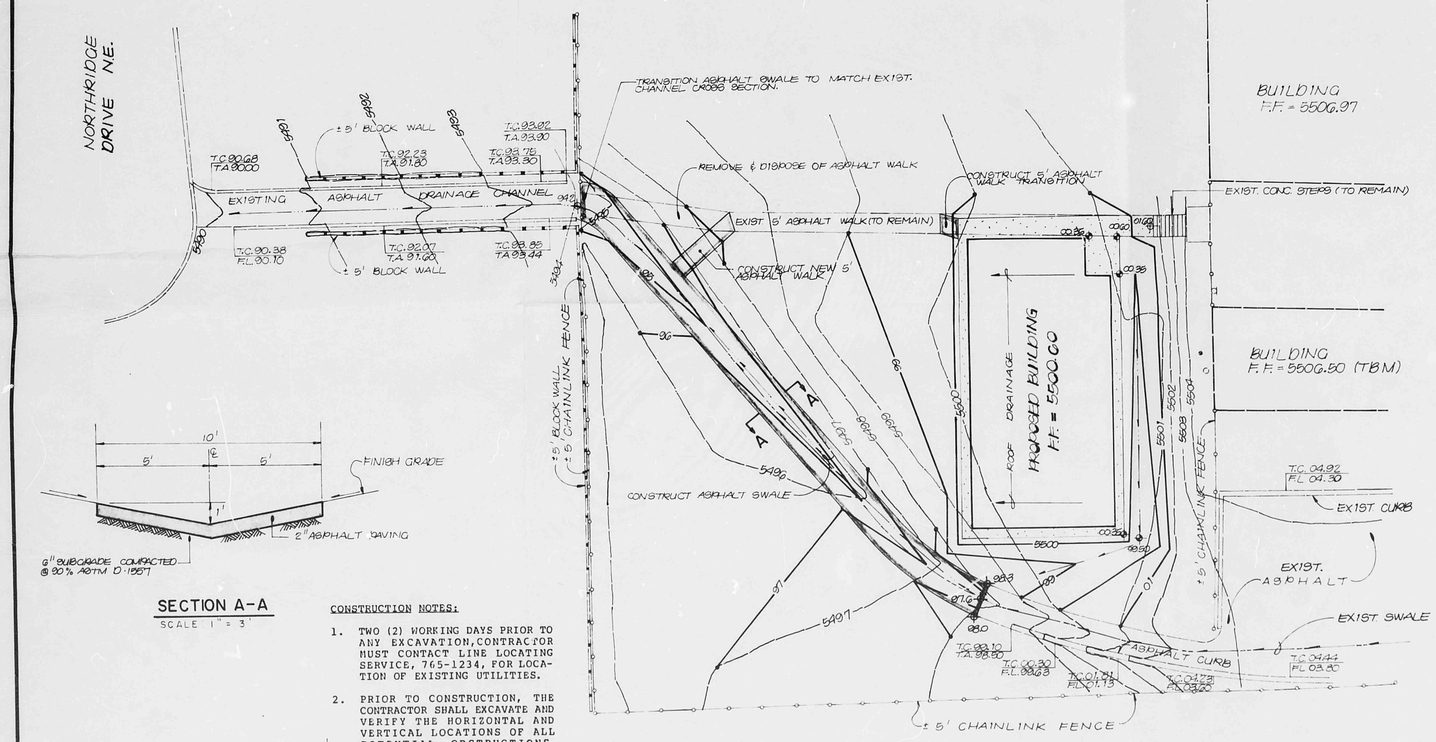
w = 1' (assume flat)

m = 0 (vertical wall)

d = 0.4 (average)

s = 0.03





SECTION A-A

SCALE 1" = 3'

CONSTRUCTION NOTES:

1. TWO (2) WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT LINE LOCATING SERVICE, 765-1234, FOR LOCATION OF EXISTING UTILITIES.
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REGISTERED PROFESSIONAL ENGINEER — STATE OF NEW MEXICO — THOMAS T. MOORE — 5788 — NEW MEXICO — LAND SURVEYOR

7/8/83

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

NO.	DATE	BY	REVISIONS

DESIGNED BY J.G.M.
DRAWN BY JMC
APPROVED T.T.M.

JOB NO. 30631
DATE 6·83

GRADING & DRAINAGE PLAN

OSUNA ELEMENTARY SCHOOL P.E. BUILDING

F20/D10 A

FILE NO.

SHEET 2 OF 2

N29563