HYDROLOGY

F17/D36

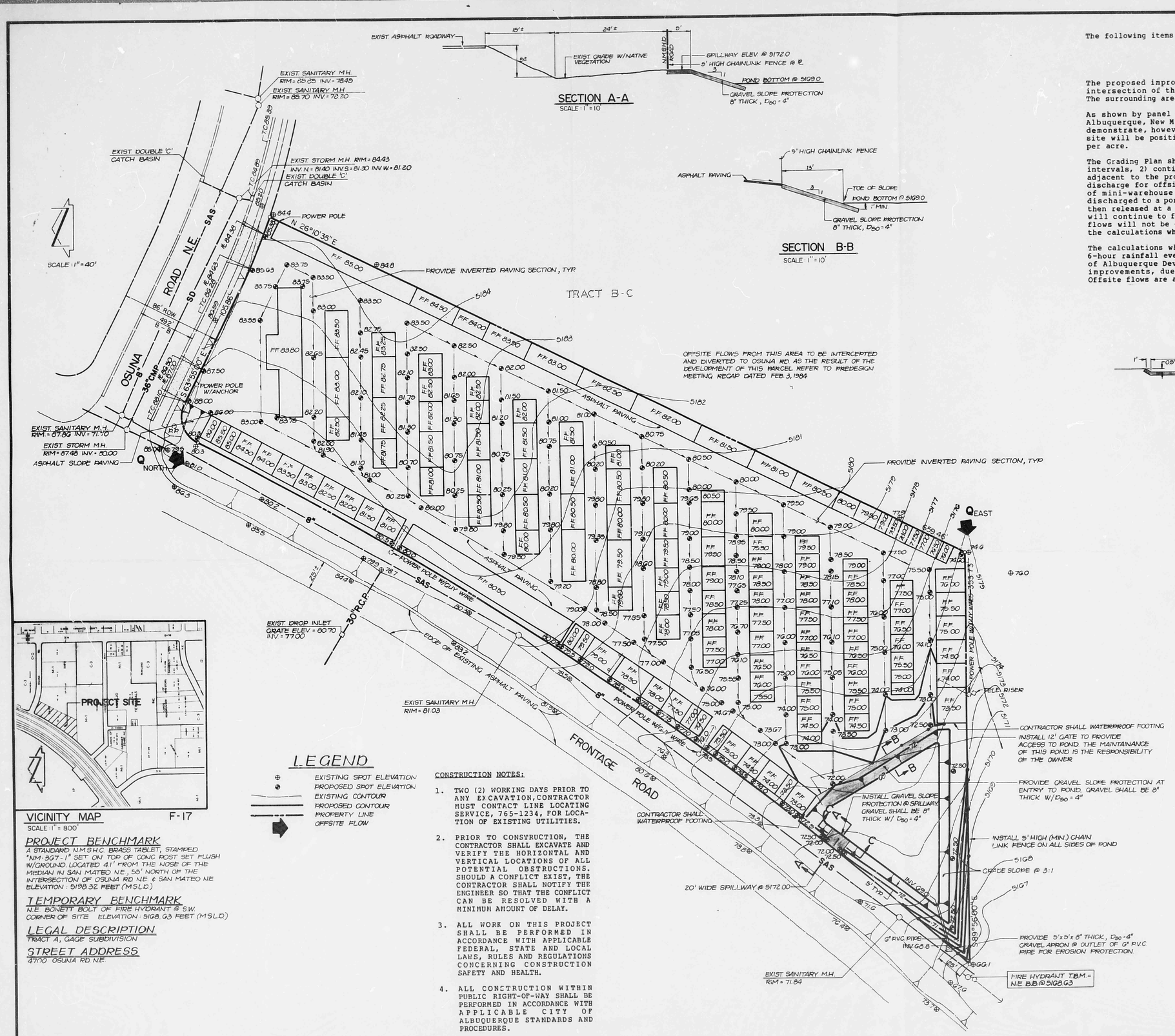
ONE PLAN

OSUNA SELF

STORAGE

-D36

1 PLAN



VICINITY MAP F-17

SCALE: 1" = 800'

PROJECT BENCHMARK

A STANDARD N.M.S.H.C. BRASS TABLET, STAMPED "NM-3G7-1" SET ON TOP OF CONC. POST SET FLUSH W/GROUND. LOCATED 41' FROM THE NOSE OF THE MEDIAN IN SAN MATEO N.E., 55' NORTH OF THE INTERSECTION OF OSUNA RD. N.E. & SAN MATEO N.E. ELEVATION: 5198.32 FEET (MSLD.)

TEMPORARY BENCHMARK

N.E. BONETT BOLT OF FIRE HYDRANT @ S.W. CORNER OF SITE. ELEVATION: 5168.63 FEET (MSLD.)

LEGAL DESCRIPTION

TRACT A, GAGE SUBDIVISION

STREET ADDRESS

4700 OSUNA RD. N.E.

LEGEND

- EXISTING SPOT ELEVATION
- PROPOSED SPOT ELEVATION
- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPERTY LINE
- OFFSITE FLOW

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.

DRAINAGE PLAN

The following items concerning the Osuna Mini-Warehouse Storage 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 corner of the intersection of the I-25 East Frontage Road and Osuna Road N.E. At present, the site is undeveloped. The surrounding area is currently developed or will be developed in the near future.

As shown by panel 16 of 50 of the National Flood Insurance Flood Boundary and Floodway Map, City of Albuquerque, New Mexico, the site does not lie within a designated Flood Hazard Zone. This panel does demonstrate, however, that downstream flooding conditions do exist. Because of this, runoff from the site will be positively discharged at a controlled rate. The rate of discharge will not exceed 0.5 cfs per acre.

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) existing storm drain improvements adjacent to the property, 4) the limit and character of the proposed improvements, and 5) the points of discharge for offsite flows. As shown by this plan, the proposed improvements include the construction of mini-warehouse storage units along with adjacent asphalt paving. The runoff from the site will be discharged to a pond located at the southwest corner of the site where the runoff will be detained and then released at a controlled rate along the east edge of the Frontage Road. From this point, the runoff will continue to flow in a southwesterly direction, which is the existing drainage pattern. Offsite flows will not be disrupted by the proposed construction. Offsite flows are discussed in more detail in the calculations which apear below.

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. As shown by these calculations, the proposed improvements, due to interim ponding, will result in a decrease in the peak runoff from the site. Offsite flows are also quantified and discussed in the calculations.

SECTION C-C

SCALE: 1" = 10'

SPILLWAY HYDRAULICS

$Q = CLH^{3/2} = 23.5$ cfs

C = 3.33

L = 20'

H = 0.5'

$Q_{SPILLWAY} > Q_{100}$

Calculations

Ground Cover Information

1. From SCS Bernalillo County Soil Survey, Plate 21:
   EmB Embudo gravelly fine sandy loam
   Hydrologic Soil Group B
2. Existing Condition

   A_{total} = 170,00 sf = 3.90 Ac
   A_{imp} = 0
   % Impervious = 0%
   'C' = 0.34 (DPM Plate 22.2 C-1)
3. Developed Condition

   A_{total} = 170,000 sf = 3.90 Ac
   A_{imp} = 151,300 sf
   % Impervious = 89%
   'C' = 0.85 (DPM Plate 22.2 C-1)

Rational Method

1. Discharge: $Q = CiA$

   where C varies
   $i = P_6(6.84)T_c^{-0.51} = 4.65$ in/hr

   P_6 = 2.2 in (DPM Plate 22.2 D-1)

   T_c = 10 min (minimum)

   A = area, acres
2. Volume: $V = CP_6A(1/12)$

   where C varies
   P_6 = 2.2 in (DPM Plate 22.2 D-1)
   A = area, sf

Existing Condition

$Q_{100} = CiA = 0.34(4.65)(3.90) = 6.2$ cfs

$V_{100} = CP_6A = 0.34(2.2/12)(170,000) = 10,600$ cf

Developed Condition

$Q_{100} = CiA = 0.85(4.65)(3.90) = 15.4$ cfs

$V_{100} = CP_6A = 0.85(2.2/12)(170,000) = 26,500$ cf

$V_{pond} = \frac{1}{3}(A_{69}+A_{72})(72-69)$

$= \frac{1}{3}(7200+10,500)(3) = 26,550$ cf

$V_{pond} \simeq V_{100}$

$Q_{release} = CA\sqrt{2gh}$ (Orifice Equation)

where C = 0.7
A = 0.1963 (6" dia. pipe)
$g = 32.2$ ft/sec^2
h = 72 - 69 - 0.25 = 2.75'

$Q_{release} = 1.8$ cfs $\leq$ 0.5 cfs/acre

Comparison

$\Delta Q_{100} = 6.2 - 1.8 = 4.4$ cfs (decrease)
$\Delta V_{100} = 10,600 - 26,500 = 15,900$ cf (increase)

Offsite Flows

1. North

   Based upon the watershed calculations for Uncle Cliff's Raceway (E17-D31), the estimated 100-year, 6-hour runoff is in the order of 44 cfs (for the developed condition). The existing flow is probably 30 cfs or less (assuming C = 0.5). In either case, the existing 30" RCP under the Frontage Road has limited capacity as determined from the Bureau of Public Roads RCP culvert capacity nomograph for "inlet control." Because of this, a portion of the ruoff can be expected to flow beyond the inlet of the 30" RCP and continue flowing to the south along the east edge of the Frontage Road.
2. East

   A = 3.5 Ac
   C = 0.34
   i = 4.65 in/hr
   $Q_{100} = CiA = 5.5$ cfs

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8-1-91

Tom Moore Associates, Inc. 811 DALLAS N.E. · ALBUQUERQUE · NEW MEXICO · 87110 ENGINEERS	NO. / DATE / BY / REVISIONS	DESIGNED BY J.G.M. DRAWN BY C.G.C. APPROVED T.T.M.	JOB NO. 3-1521 DATE 1/84	GRADING & DRAINAGE PLAN MINI-WAREHOUSE STORAGE	F17/D36	FILE NO. SHEET 1 OF 1