HYDROLOGY M18/D6 2 PLANS

M18/D6

2 Plans

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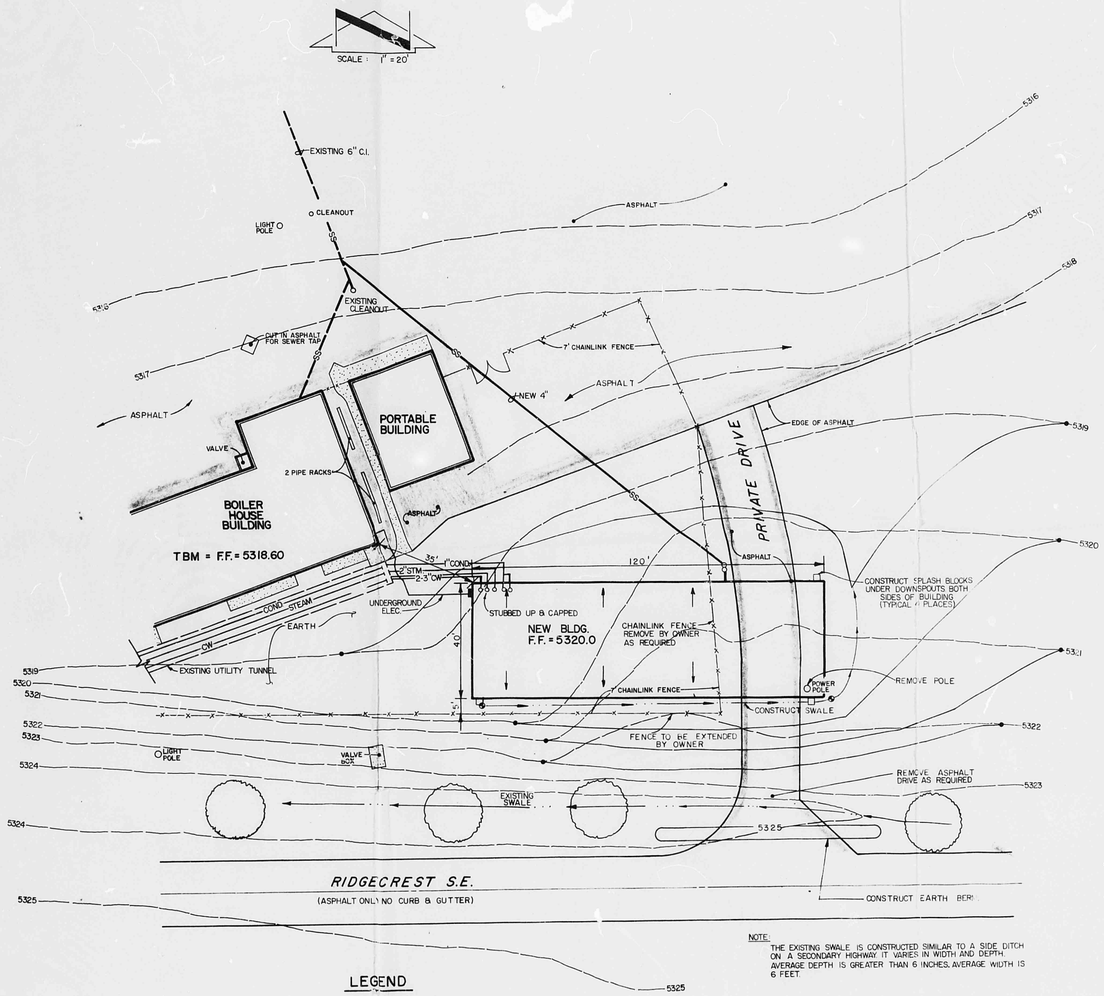
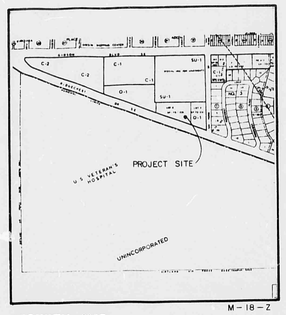


NOTE:
THE EXISTING SWALE IS CONSTRUCTED SIMILAR TO A SIDE DITCH ON A SECONDARY HIGHWAY. IT VARIES IN WIDTH AND DEPTH. AVERAGE DEPTH IS GREATER THAN 6 INCHES. AVERAGE WIDTH IS 6 FEET.

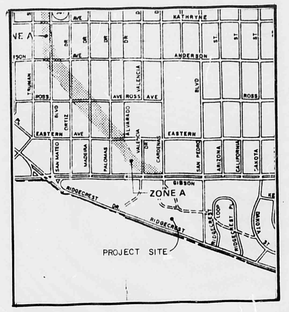
LEGEND

— — — EXISTING CONTOURS
——— PROPOSED CONTOURS



VICINITY MAP
SCALE: 1" = 800'

BENCHMARK:
A SQUARE, Ø, CHISELED ON TOP OF THE CONCRETE CURB. LOCATED ON THE NORTHSIDE OF GIBSON BLVD. SE, OPPOSITE BATAAN MEMORIAL HOSPITAL. ELEVATION = 5305.60



FLOOD MAP
SCALE: 1" = 1000'

DRAINAGE PLAN

The following items concerning the Lovelace Physical Plant Addition are contained hereon:

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

The proposed building will be located north of Ridgecrest S.E. at the far southern extremity of the Lovelace property. The building will be used as a warehouse space for physical plant activities.

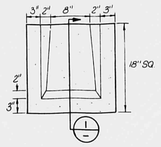
The land slopes from south to north. The project site is lower than Ridgecrest S.E., but is approximately level with the land to the east and the west and then is higher than the land to the north. Any offsite flows that enter the site would come from Ridgecrest, but these flows are normally contained in a drainage ditch that flows parallel to Ridgecrest. An earth berm will be constructed to assure the continuity of the ditch and to prohibit traffic from driving through the ditch area into the Lovelace parking lot.

The existing site has been used as a warehouse and yard storage facility for a number of years. At the present time, there are three mobile homes parked in the area that are used for warehousing facilities. Those mobile homes will be removed with the construction of the new facility. Since the land is basically impervious now due to the traffic and loading which has compacted the earth, the addition of the building will not significantly increase the runoff; therefore, the site has been shaped and graded to drain and ponding is not being provided.

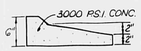
The Grading Plan shows (1) existing contours at 1'-0" intervals, (2) proposed grades indicated by spot elevations and contours, (3) swales, (4) continuity between proposed and existing elevations, (5) that retaining walls will not be required and (6) erosion will not occur as a result of the proposed construction.

CALCULATIONS:
AREA OF CONSTRUCTION = 40 X 120 = 4800 S.F.
RUNOFF TC SWALE = 0.95(5.4)0.06 = 0.31 CFS
SWALE CAPACITY = $\frac{1.49}{n} AR^{2/3} S^{1/2} = \frac{1.49}{0.030}(1.5)0.40(0.07) = 2.11$ CFS.

TYPICAL SWALE DETAIL
SCALE: 1" = 2'



TYPICAL SPLASHBLOCK DETAIL
SCALE: 1" = 1'



SECTION 1
SCALE: 1" = 1'

RECEIVED
OCT 14 1981
ENGINEERING

9/1/81
10/13/81

BII DALLAS N.E. · ALBUQUERQUE · NEW MEXICO · 87110 ENGINEERS	NO. DATE BY REVISIONS	DESIGNED BY T.M. / DRAWN BY R.J. / APPROVED T.M.	JOB NO. 1-082 / DATE 8/81	LOVELACE PHYSICAL PLANT — DRAINAGE PLAN	FILE NO. / SHEET 1 OF 1	

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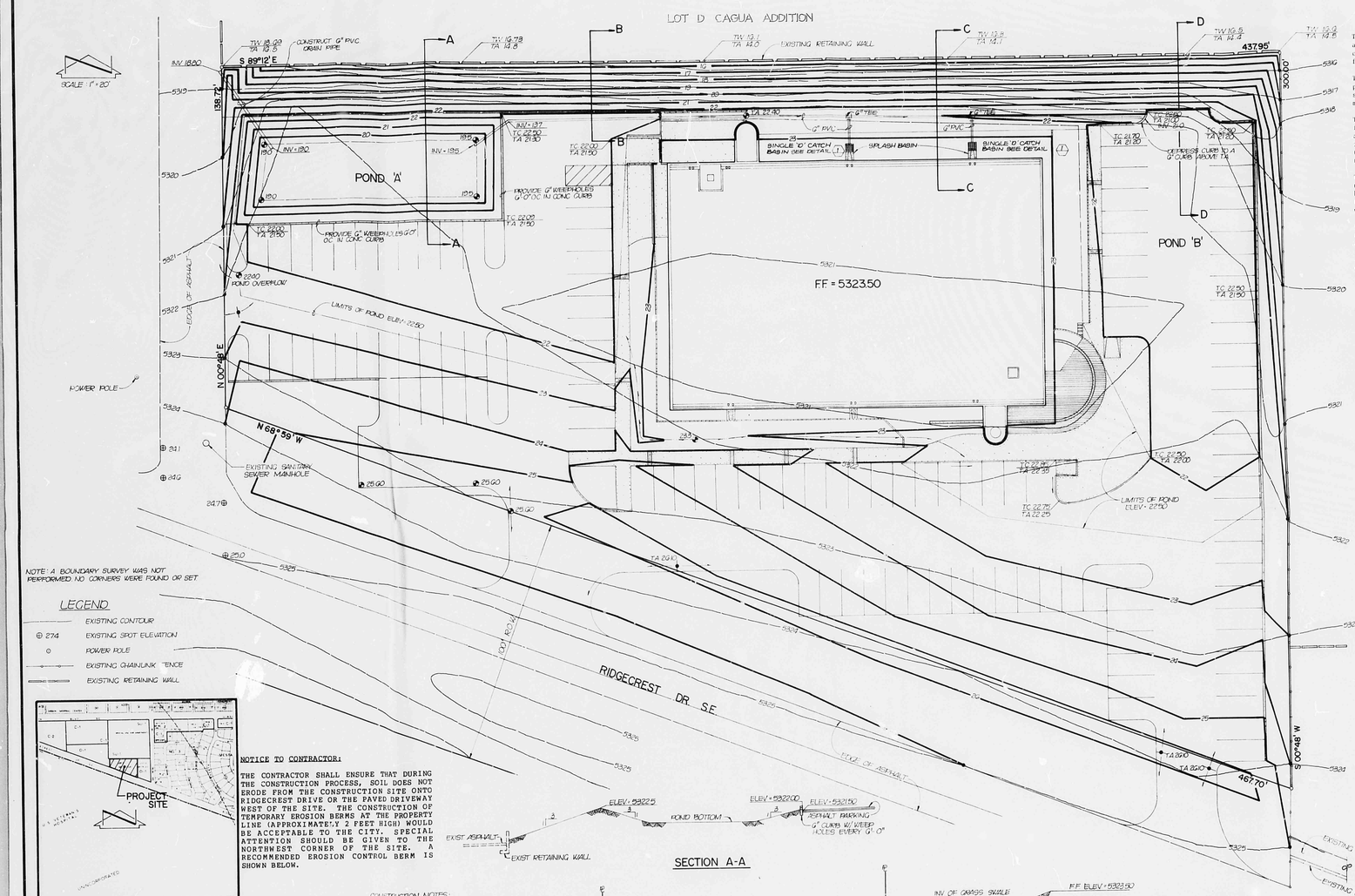

Drainage Plan

The following items concerning the Lovelace Medical Building drainage plan are contained hereon:

1. Vicinity Map
2. Grading Plan
3. Calculations

The proposed site is located on the north side of Ridgecrest Drive S.E. approximately 400 feet west of San Pedro Dr. The 2.2 acre parcel is currently undeveloped and plans call for the construction of a medical facility building with associated parking and landscape areas.

The site is part of the Lovelace Hospital complex and the surrounding property on the north side of Ridgecrest Drive is fully developed. The site is bounded on the east by a nursing home, on the north by an apartment complex, and on the west by paved parking.

The grading plan shows: (1) lot boundaries 2) locations of proposed improvements, including buildings, parking, sidewalks, and landscaped area 3) existing contours at 1'-0" intervals 4) proposed grades indicated by spot elevations and contours at 1'-0" intervals 5) swales that convey the water away from the buildings 6) required ponds 7) direction of roof drainage 8) existing retaining walls and fences.

The adjacent properties on the north side of Ridgecrest Drive contribute no flow onto the site. The land south of Ridgecrest Drive is higher, however, small ponding facilities within Ridgecrest Drive tend to capture the runoff from the south and convey that runoff in Ridgecrest Drive westward.

Storm flows generated on site will be routed to one of two ponds. Pond B at the east end of the building drains into pond A via a 6" storm drainage pipe. Overflow from this pond is also conveyed into Pond A. All storm flows are routed through Pond A before leaving the site via a 6" drain pipe at the northwest corner of the site. Upon leaving the site storm flows will be conveyed northward to Gibson Blvd. via a paved driveway. A drainage easement will be granted to the proposed site for the conveyance of these flows.

Calculations:

Drainage Conditions:

1. From SCS Bernalillo County Soil Survey, Plate 31, Soil Types: Latene sandy loam (LTB), and wink fine sandy loam (WAB). Hydological Soil Group: B
2. P_{100} = 2.3" (DPM Plate 22.2 D-1)
3. $Tc = (0.0078)\ (L^{0.77})(S^{-0.385})$

   Where L=240'
   S=(25-15)/240=0.042 ft/ft

   Tc = 1.8 min, use 10 min
4. $i_{100} = (P_{100})\ (6.84)\ (Tc^{-0.51})$ =4.86 in/hr.

Existing Drainage Conditions On-Site:

Area = 2.2ac
% Impervious = 0%
C = 0.34 (DPM Plate 22.2 C-1)
Q_{100} = CIA = (0.34)(4.86)(2.2) = 3.6 cfs
Vol_{100} = CPA (0.34) (2.3) (2.2) (43560)/12 = 3600 cf

Developed Drainage Conditions On-Site

Area:	Impervious:	1.52 ac	(69%)
	Pervious:	0.68 ac	(31%)
	Total:	2.20 ac	(100%)

C = 0.69
Q_{100} = (0.69) (4.86) (2.20) = 7.4 cfs
Vol_{100} = (0.69) (2.3) (2.20) (43560)/12 = 12,600 c.f.

Required Pond Volume, using dimensionless hydrograph

qp = Q_{100} = 7.4 cfs.
tp = tc = 10 min
T = 46.7 +10 = 56.7 min
$q_{release}$ = CA $\sqrt{2gh}$ = 1.54 cfs
Where C = 0.8 (Cameron Handbook)
A = 0.196 (6" Pipe)
g = 32.2 ft/sec²
h = 1.5'

Vol release = 4700 cf (Runoff hydrograph, plate 2212 E-1)
Vol required = 12600 - 4700 = 7900 cf

Actual Pond Volume:

Pond 'A': 3600 c.f. (landscaped area) + 2500 c.f. (parking area) =6100 cf
Pond 'B': 4700 cf (parking area)
Total = 10,800 cf

REGISTERED PROFESSIONAL ENGINEER TAMIM M. ALI 3792 NEW MEXICO
REGISTERED PROFESSIONAL SURVEYOR
4/14/83
5/23/83

CONTINENTAL ENGINEERING & SURVEYING
811 DALLAS, N.E. · ALBUQUERQUE · NEW MEXICO · 87110
ENGINEERS

NO.	DATE	BY	REVISIONS

DESIGNED BY BC
DRAWN BY CGG
APPROVED TTM
JOB NO 3-0231
DATE 3/83

LOVELACE MEDICAL FACILITY DRAINAGE PLAN
CHANT / LOVELACE

FILE NO.
SHEET 1 OF 1

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