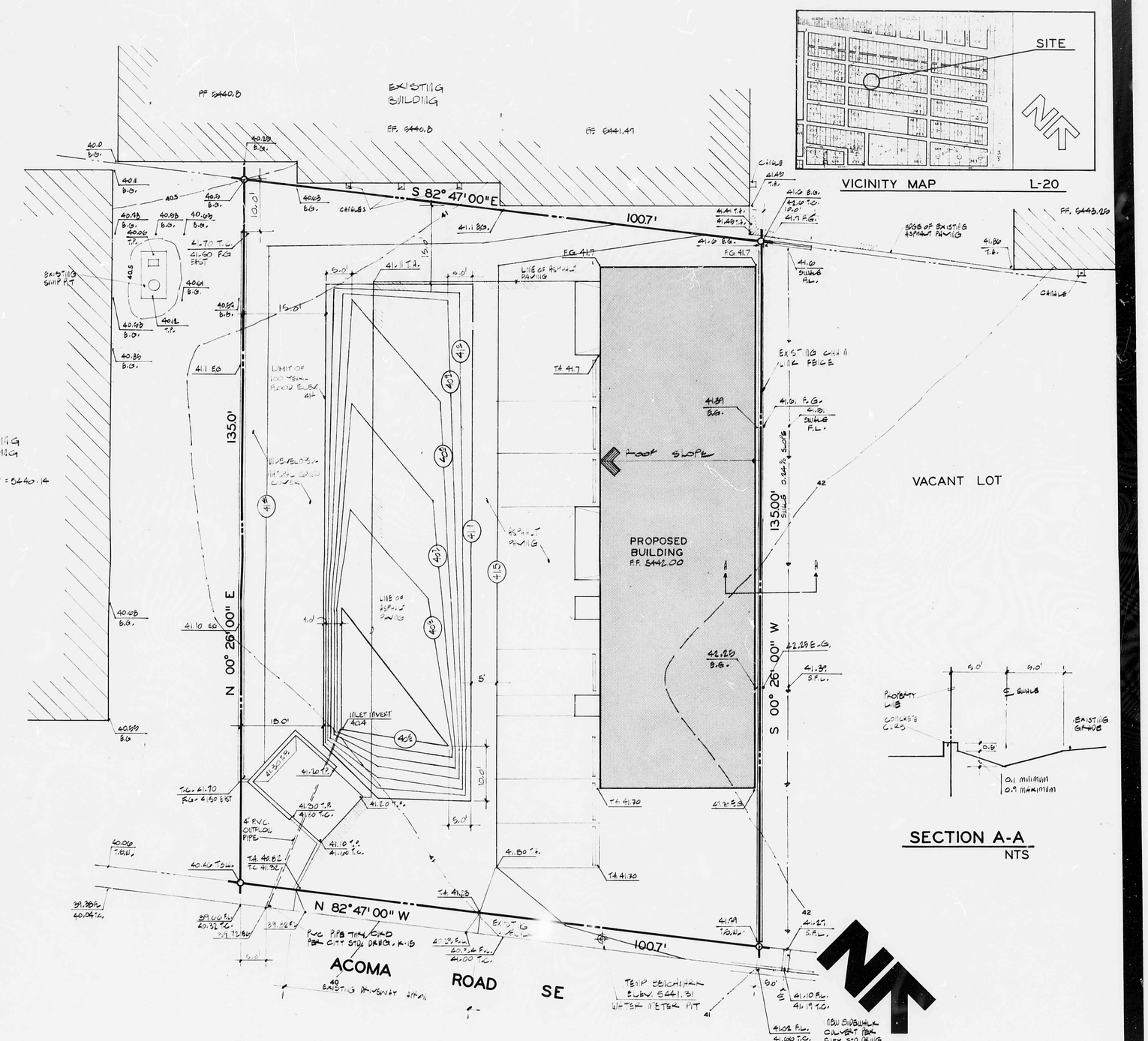
HYDROLOGY

L20/D17
THREE PLANS

L 20/017

3 PLANS



DATE: October 5, 1983

PROJECT: Office and Warehouse for K & L Electric

LEGAL DESCRIPTION: Lot 9A, (formerly lots 9 & 10), in Block 15 of the Skyline Heights Subdivision, Albuquerque, New Mex.co. Zone Atlas Map No. L-20.

ADDRESS: 9901 Acoma Road SE, Albuquerque, New Mexico.

ABBREVIATIONS AND SYMBOLS:

T.A.	Top of Asphalt	T.S.W.	Top of Sidewalk
F.G.	Finished Grade	E.G.	Existing Grade
F.F.	Finished floor	T.P.	Top of concrete Pad
F.L.	Flow Line	S.F.L.	Swale Flow Line
T.C.	Top of Curb	T.B.M.	Temporary Bench Mark
	Spot Elevation		Existing contour
	Direction of Flow		Proposed Contour

L20-D17

APPROVED FOR DRAINAGE
10/06/83
DATE

SIGNATURE TITLE
ADVISE DRAINAGE INSPECTOR WHEN GRADING EXECUTED

ONSITE CONDITIONS:

RUNOFF FACTOR:

ITEM	AREA	C	EFFECTIVE AREA
Roof	3000	0.95	2850
Earth	2584	0.40	1034
Concrete	419	1.00	419
Asphalt(pres)	4688	0.95	4454
Asphalt(future)	2902	0.95	2758
			11515

RUNOFF VOLUME:

$\frac{11515}{12}$ (Rainfall in inches) = 960 x Rainfall, ft^3

POND CHARACTERISTICS:

VOLUME PROVIDED

ELEV.	AREA	VOLUME
40^{4}	4	
		13
40^{5}	250	
		49
40^{6}	726	
		97
40^{7}	1218	
		153
40^{8}	1842	
		204
40^{9}	2234	
		237
41^{0}	2520	
		270
41^{1}	2880	
		1023 ft^3

VOLUME REQUIRED

(from Drainage Computations below) V=1018 ft^3

OVERFLOW THRU DRIVEPAD

Peak flow @ time - 10 minutes

Q=(5.07)(11515/43560)=1.8 cfs

BROADCRESTED WEIR

$Q=2.6L\ H^{3/2}$

TRIANGULAR BASE

L=87.5 H

$1.3 = 2.6(87.5)\ H^{5/2}$

H = 0.13 ft 0.5 ft curb

DRAINAGE COMPUTATIONS

TIME	ACCUM. RAINFALL	RUNOFF VOLUME	INSTANT WATER SURF.	AVERAGE WATER SURF.	ORIFICE HEAD	INCREM. FLOW	INCREM OUTFLOW	ACCUM. OUTFLOW	STORAGE VOLUME
min.	inch	ft^3	ft	ft	ft	ft^3/sec.	ft^3	ft^3	ft^3
0	--	--	40.4						
				40.54	.059	.040	12		
5	0.137	131	40.68					12	119
				40.72	.156	.162	48		
10	0.307	295	40.76					60	235
				40.84	.27	.218	66		
15	0.682	654	40.91					126	528
				40.98	.41	.269	81		
20	1.140	1094	41.05					207	887
				41.06	.49	.294	88		
25	1.313	1260	41.08					295	965
				41.08	.51	.300	90		
30	1.435	1378	41.09					385	993
				41.09	.52	.303	182		
40	1.651	1585	41.10					567	1018
				41.10	.53	.306	184		
50	1.843	1769	41.10					751	1018
				41.10	.53	.306	184		
60	2.035	1954	41.10					935	1019
				41.07	.50	.297	178		
70	2.072	1989	41.05					1113	876
				41.03	.46	.285	171		
80	2.108	2022	40.99					1284	738

OFFSITE FLOWS:

BASIN "A" (East of project site)

CONTRIBUTING AREA

27000 sf undev. @ C=0.4= 10800 ft^3

6250 sf roof @ C=0.95= 5938 ft^3

16738 ft^3

100 YEAR PEAK FLOW RATE

Q= (5.07)(16738/43560)= 1.9 cfs

SWALE FLOW (Check two conditions)

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

n= 0.035
S= 0.0024
Q= 3.48 cfs > 1.9 cfs
V= 0.9 fps non-erosive

n= 0.035
S= 0.0024
Q= 5.51 cfs > 71.9 cfs
V= 1.2 fps non-erosive

BASIN "B" (North of project site)

CONTRIBUTING AREA

1045 sf asph. paving @ 0.95 = 993 ft^3

4440 sf roof @ 0.95 = 4218 ft^3

1418 sf earth @0.4 = 567 ft^3

5778 ft^3

100 YEAR PEAK FLOW RATE

Control section between buildings northwest of project site.

Q= (5.07)(5778/43560) = 0.7 cfs

$Q = CLH^{3/2}$

$0.7 = (2.6)(2.5)(H^{3/2})$

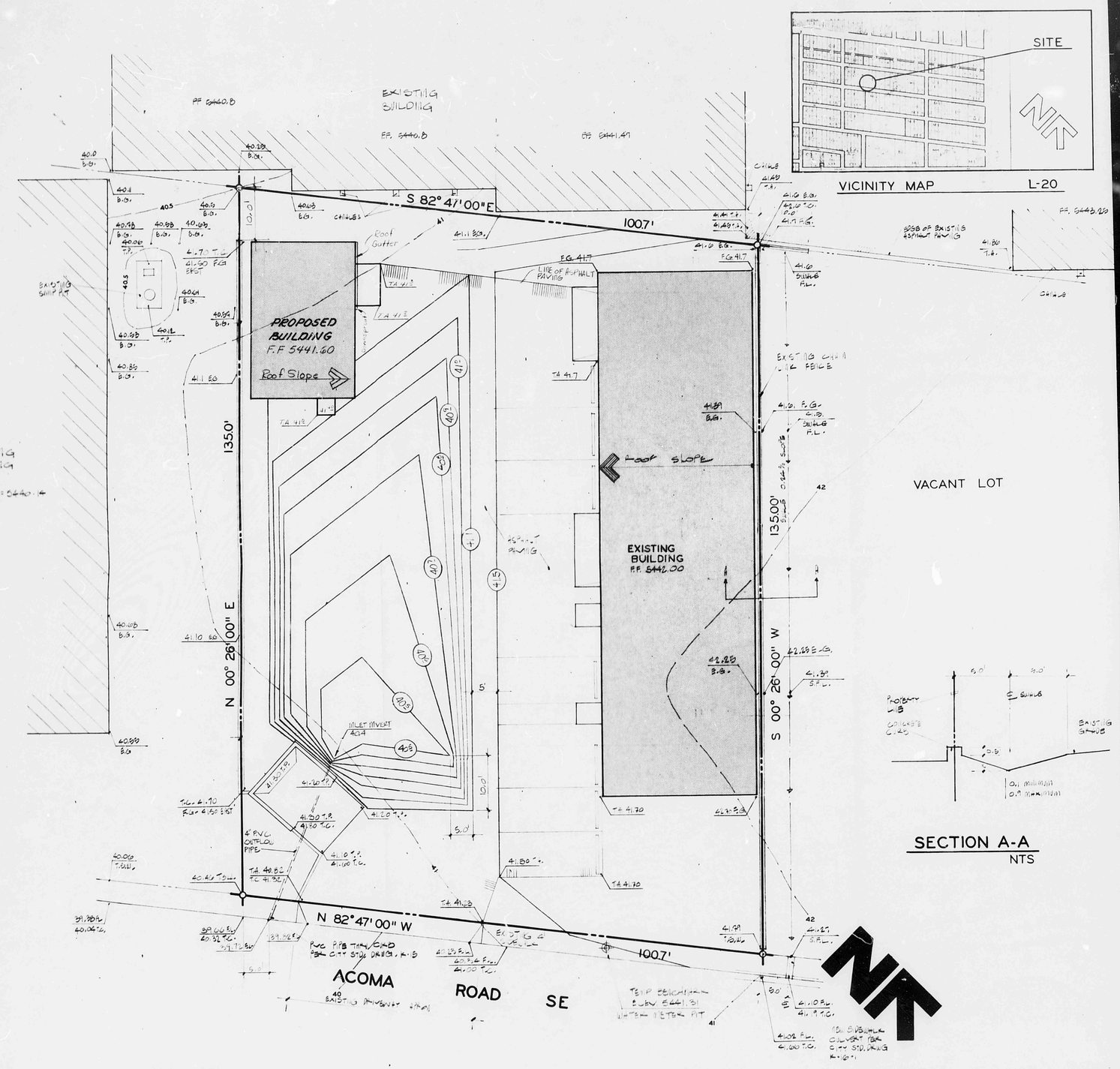
H= 0.23 ft

Existing ground = 40.11

Depth of flow = 0.23

Water surface = 40.34

L20/D17



VICINITY MAP L-20

SECTION A-A
NTS

GRADING & DRAINAGE PLAN

1" = 10.0'

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RUNOFF VOLUME:

$\frac{11515}{12}$ (Rainfall in inches) = 960 x Rainfall, ft^3

POND CHARACTERISTICS:

VOLUME PROVIDED

ELEV.	AREA	VOLUME
40^4	0	
		8
40^5	261	
		52
40^6	772	
		111
40^7	1451	
		169
40^8	1938	
		213
40^9	2324	
		254
41^0	2759	
		300
41^1	3246	
		1107 ft^3

VOLUME REQUIRED

(from Drainage Computations below) V=1018 ft^3

OVERFLOW THRU DRIVEPAD

Peak Flow @ time - 10 minutes

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Rev. 2/28/85
Add bldg @ N.W. corner
Revised Pond Shape &
Paving Limit.

DRAINAGE COMPUTATIONS

TIME min.	ACCUM. RAINFALL inch	RUNOFF VOLUME ft^3	INSTANT WATER SURF. ft	AVERAGE WATER SURF. ft	ORIFICE HEAD ft	INCREM. FLOW ft^3/sec.	INCREM OUTFLOW ft^3	ACCUM. OUTFLOW ft^3	STORAGE VOLUME ft^3
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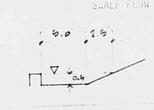

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V= 0.9 fps non-erosive

n= 0.035
S= 0.024
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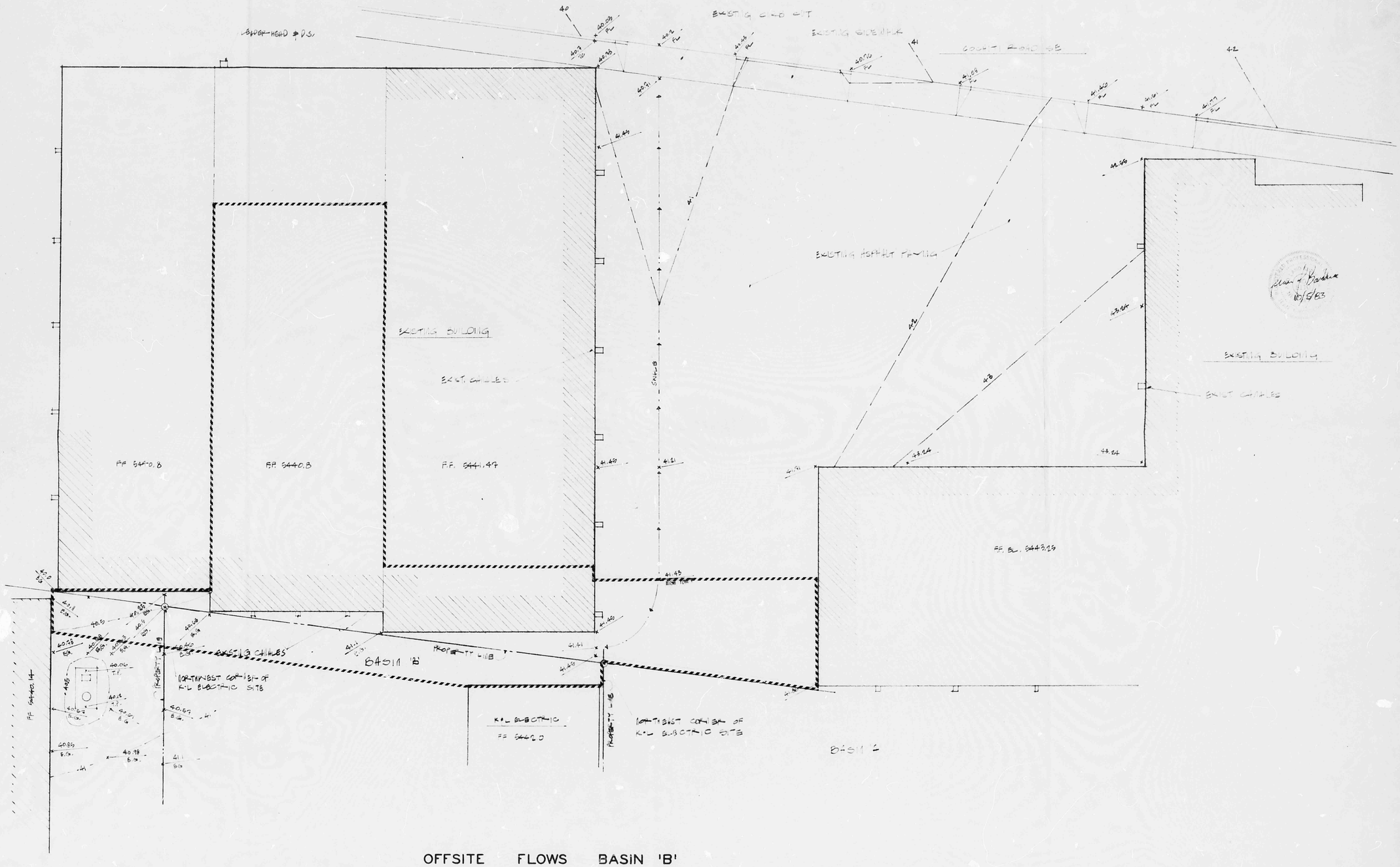
HYDROLOGY SECTION

L20/D17



OFFSITE FLOWS BASIN 'B'