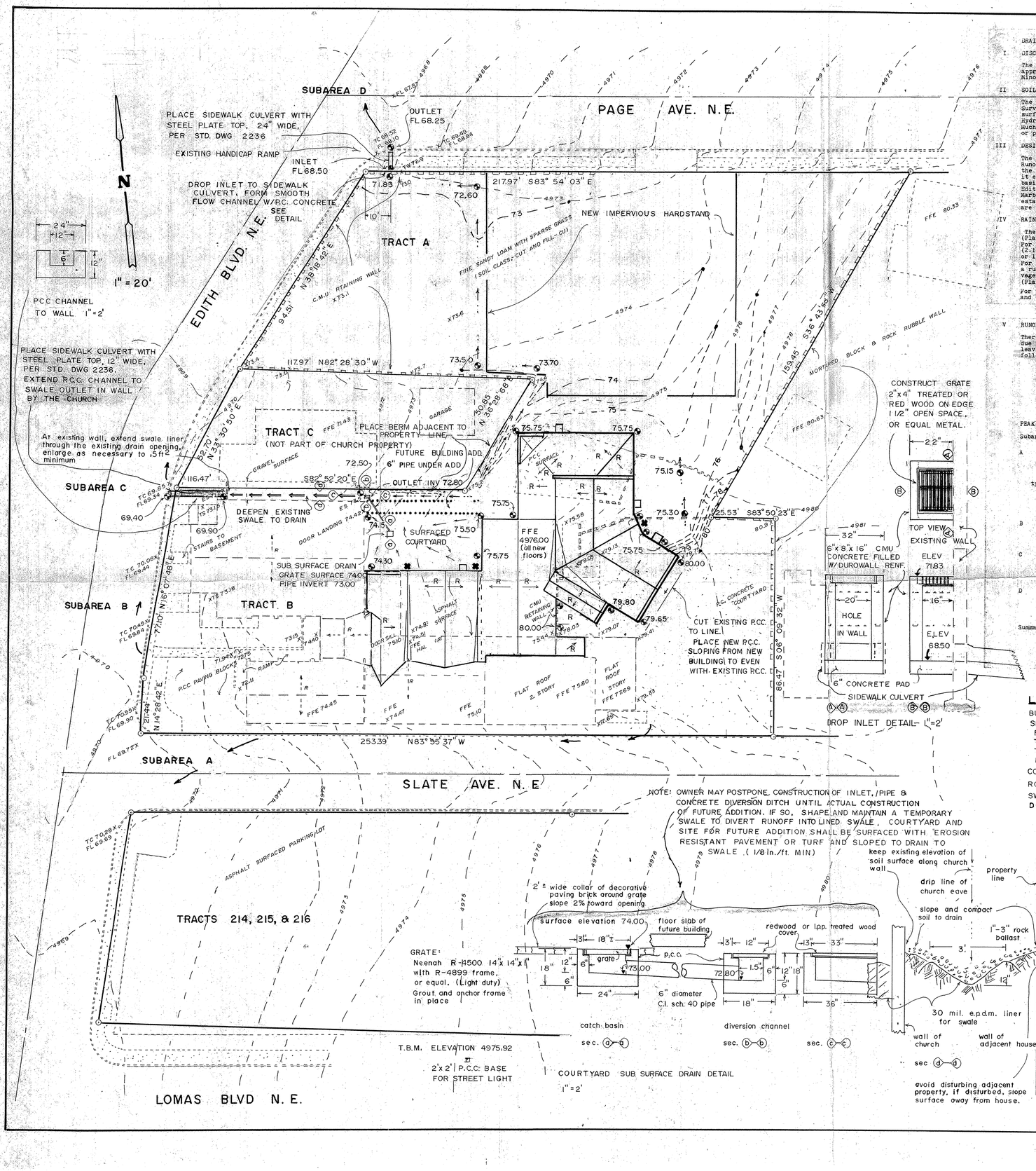


DRAINAGE CONSIDERATIONS AND CALCULATIONS

I. DISCUSSION:

The purpose of this grading and drainage plan is to obtain approval for building an addition to the existing building. Minor changes to surface runoff will occur due to the addition.

II SOILS:

The soils are identified as Cut and Fill (CU) by the Soil Survey of Bernalillo County..., New Mexico, USDA, SCS. The surface soils appear to be a fine sandy loam, classified as Hydrological Soils Group A, soils that absorb the most runoff. Much of the area of concern is presently surfaced with asphalt or portland cement concrete surfacing.

III DESIGN CRITERIA:

The site is not within a flood plain or a flood hazard area. Runoff from the site flows to Edith Blvd, then partially to the south to Lomas Blvd, then west along Lomas Blvd, where it enters a major 48" storm drain through established catch basins. A greater portion of the runoff flows north along Edith Blvd to its intersection with Marble Ave, then west along Marble Ave, where it enters a major 30" storm drain through established catch basins. All streets over which runoff flows are paved, with curbs and gutters.

IV RAINFALL:

The 6-hr. rainfall volume, 100 yr. frequency, is 2.3 in. (Plate 22.2 D-1, Ref A)
For the rational formula, the rainfall intensity, I, will be (2.15% 2.3)=4.95, for times of concentration of ten minutes or less.
For runoff volume, use CN=96 for the impervious areas, with a runoff in inches of 1.8. For the areas with bare or lightly vegetated soil, use CN=68, with a runoff in inches of 0.5. (Plates 22.2 C-2 & C-4, Ref A)
For peak flows, use "C"=0.95 for paved areas, "C"=0.90 for roofs, and "C"=0.40 for undeveloped and bare areas. (Ref B)

V RUNOFF CALCULATIONS:

There is no significant runoff onto the site from adjacent areas due to existing solid walls uphill (east) of the site. Runoff leaving the site generally flows out along four channels, as follows:
Subarea A- South and east of the existing building, flows out along Slate Ave, then south along Edith Blvd.
Subarea B- Roofs and courtyard west of the existing building, flows out west to Edith Blvd, then north along Edith Blvd.
Subarea C-Roof and courtyard in the center of the buildinr, flows out to the west to Edith Blvd along a swale just north of the main church building and Tract C.
Subarea D- The northwest portion of the new addition, and most of tract A.

PEAK FLOW Q=CIA (ft.³/sec.)

Subarea	Existing Conditions				New Conditions			
	item	area ft.²	"C"		item	area ft.²	"C"	
A	roof	2545	x.90=	2290.5	roof	3035	x.90=	2731.5
	imp. su.	3685	.95	3500.75	imp. su.	5215	.95	4954.25
		6230	.93*	5791.25		8250	.93	7685.75
	area=.14 acre**		Q=	.64***			.19	Q= .87
	typical * composite "C"= 5791.25 / 6230 = .93							
	** area= 6230 ft.² / 43560 ft.²/acre = .14 acre							
	*** Q=CIA=.93x4.95x.14=.64 ft.³/sec.							
B	roof	2580	x.90=	2322	roof	2580	x.90=	2322
	imp. sur.	1735	.95	1648.25	imp. su.	1735	.95	1648.25
		4315	.92	3970.25		4315	.92	3970.25
	.10 acres	Q=.46					.10 acres	Q= .46
C	roof	3635	x.90=	3271.5	roof	5415	x.90=	4873.5
	imp. su.	3995	.95	3795.25	imp. su.	1215	.95	1154.25
	bare	4170	.40	1668	bare	550	.40	220.0
		11800	.74	8734.75		7180	.87	6247.75
	.27 acres	Q=.99					.16 acre	Q=.69
D	roof	0	x.90=	0	roof	1980	x.90=	1782
	imp. su.	1125	.95	1068.75	imp. su.	8080	.95	7676
	bare	22110	.40	8844	bare	13775	.40	5510
		23235	.43	9912.75		23835	.61	13768
	.53 acre	Q=1.13					.59 acre	Q=1.78

Summary: Peak flow to south: existing 0.64 ft.³/sec.
new 0.87
Increase 0.23

Peak flow to north: existing 2.58
new 2.93
Increase 0.35

RUNOFF VOLUMES V=ft.³

Subarea	Existing conditions				New conditions			
	item	area ft.²	rii	V ft.³	item	area ft.²	rii	V ft.³
A	roof	2545	xr x 1.8 =	382	roof	3035	xr x 1.8 =	455
	imp. su	3685	1.8	553	imp. su	5215	1.8	782
		6230		935		8250		1237
B	roof	2580	1.8	387	roof	2580	1.8	387
	imp. su	1735	1.8	260	imp. su	1735	1.8	260
		4315		647		4315		647
C	roof	3635	1.8	545	roof	5415	1.8	812
	imp. su	3995	1.8	599	imp. su	1215	1.8	182
	bare	4170	.5	174	bare	550	.5	23
		11800		1318		7180		1017
D	roof	0	1.8	0	roof	1980	1.8	297
	imp. su	1125	1.8	169	imp. su	8080	1.8	1212
	bare	22110	.5	921	bare	13775	.5	1537
		23235		1090		23835		2166
Summary:	Total volume to the south: (to Lomas Blvd.)				existing	935 ft.³		
					new	1237		
					Increase	302		
	Total volume to the north (to Marble Ave)				existing	3055 ft.³		
					new	3830		
					Increase	775		

VI CONCLUSIONS:

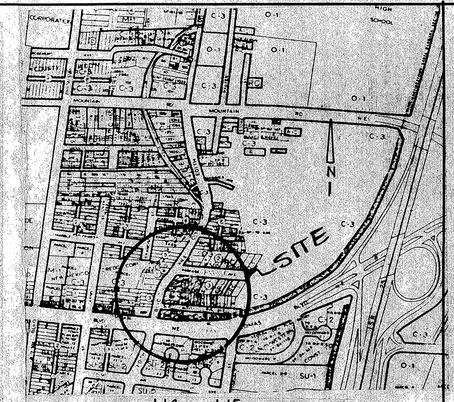
The increase in peak flow and total volume will not create a significant increase in flooding downstream

VII REFERENCES:

A. Development Process Manual, Albuquerque, New Mexico.
B. Notice of Emergency Rule, signed by Mayor Schultz, Jan. 14, 1986, City of Albuquerque, New Mexico
C. Soil Survey of Bernalillo County, New Mexico, USDA, SCS.

DEPTH OF FLOW IN SIDEWALK CULVERTS

DEPTH FT	AREA FT²	VELOCITY FT/SEC	QUANTITY FT³/SEC	
12" wide channel subarea C				
0.1	0.1	3.5	.35	
0.2	0.2	5.0	1.00	estimated flow 0.69
24" " " " D				
0.1	0.2	3.8	.76	" " 1.78
0.2	0.4	5.7	2.27	



LEGAL DESCRIPTION:

Lots 1, 2, 4, 65, Block 3, JESUS ROMERO ADDITION #1, Lots 1-7, inclusive, TROTTER ADDITION #2, Tracts 213, 214, 215 and a portion of 216, NRGCD Map # 37

NOTICE

AT COMPLETION, OWNER MUST OBTAIN CERTIFICATE OF COMPLETION FROM A N.M. REGISTERED ENGINEER FOR REQUIRED DRAINAGE FACILITIES ON PRIVATE PROPERTY.

BENCHMARK 6-J-15
LOCATED IN NE QUADRANT OF THE INTERSECTION OF EDITH BLVD & MARBLE AVE. N.E.
A SPIKE IN A POWER LINE POLE.
ELEVATION 4965.91

SURVEYOR
SOUTHWEST SURVEYING CO.
NOV. 5, 1987

DATE	BY	APPROVALS
SEP 25,1989	M.R. KORTUM	PRELIMINARY REV.2
JULY 20,1989	M.R. KORTUM	PRELIMINARY REV.1
MAY 31,1989	M.R. KORTUM	PRELIMINARY

MARVIN R. KORTUM NEW MEXICO 7841 REGISTERED PROFESSIONAL ENGINEER

RECEIVED SEP 25 1989 HYDROLOGY SECTION

MARVIN R. KORTUM, P.E.
Civil Engineering
1605 Speakman Drive, S.E.
Albuquerque, New Mexico 87123
(505) 299-0774

DRAINAGE FACILITIES WITHIN CITY RIGHT-OF-WAY

NOTICE TO CONTRACTOR

1. An excavation construction permit will be required before beginning any work within City right-of way. An approved copy of these plans must be submitted at the time of application for this permit.

2. All work detailed on these plans to be performed, except as otherwise stated or provided hereon, shall be constructed in accordance with City of Albuquerque Standard Specifications for Public Works Construction, 1986, as amended to Dec. 1, 1987.

3. Two working days prior to any excavation, contractor must contact Line Locating Service 765-1234, for location of existing utilities.

4. Backfill compaction shall be according to street use.

5. Prior to construction, the contractor shall excavate and verify the horizontal and vertical locations of all obstructions. Should a conflict exist, the contractor shall notify the engineer so that the conflict can be resolved with a minimum amount of delay.

6. Maintenance of these facilities within the city right-of-way shall be the responsibility of the owner served

APPROVALS	NAME	DATE
A.C.E. / DESIGN	D. Montoya	10/16/89
INSPECTOR		
A.C.E. / FIELD		

AN ADDITION TO THE SECOND PRESBYTERIAN CHURCH

GRADING AND DRAINAGE PLAN
ADDITION TO 2ND PRESBYTERIAN CHURCH
808 EDITH BLVD. N.E.

MAP J-14, 15

SHEET 1 OF 1
CIVIL