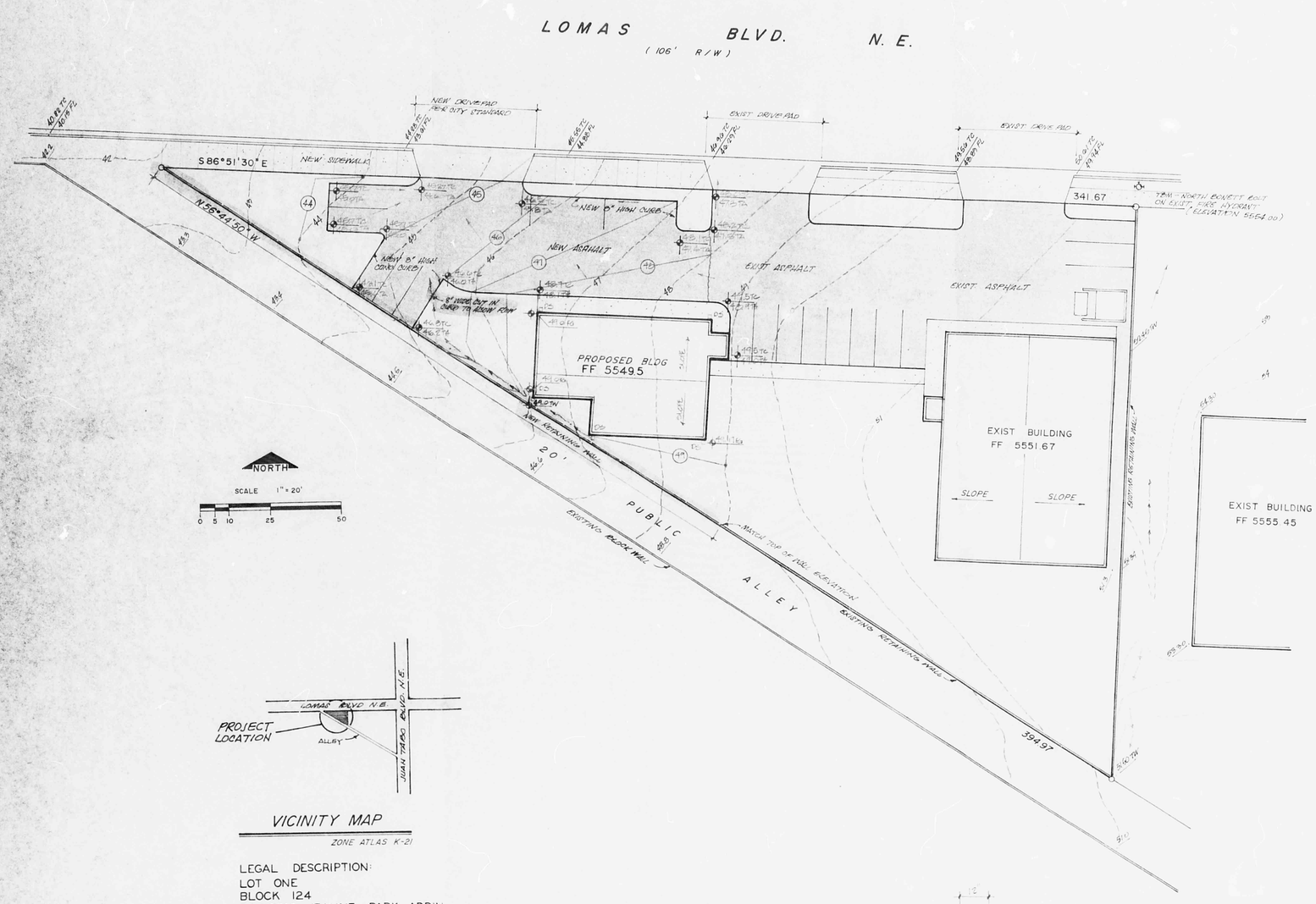
HYDROLOGY

K21/D14
TWO PLANS

X 21-D14

2 Plans



VICINITY MAP

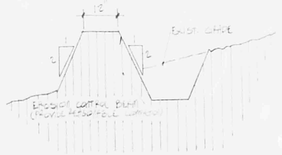
ZONE ATLAS K-21

LEGAL DESCRIPTION:
LOT ONE
BLOCK 124
PRINCESS JEANNE PARK ADD'N.

GRADING & DRAINAGE PLAN

VOLUME CALCULATION BY SUB METHOD
MINOR CURVE CN = 61 (FIG A, PLATE 22.2, D-1)
CN OVERLAY (Commercial area to
PHASE AUTHOR Q, TABLE (FIG A, PLATE 22.2, D-4)
$Q = \frac{(P - 0.2S)^2}{P + 0.8S}$ (EQUATION 1-5)
P = 2.86 ——— Too High
S = (1000/CN - 10)
Q = 1.00 INCHES
TOTAL RUNOFF VOLUME
$\frac{1.00}{12} \times 33985 = 2833$ CU FT.

plate 22.2 D-3
% impervious = 52.7
Previous CN = 61
⇒ Composite CN = 81 not 92



EROSION CONTROL PLAN

BERM SHALL BE BUILT ALONG THE LOWER PROPERTY LINE TO REMAIN DURING THE ENTIRE PERIOD OF CONSTRUCTION

APPROVED BY:
Roger L. Green, P.E. 12-4-86
CITY ENGINEER

G. L. LEE JR. NEW MEXICO 1077 REGISTERED PROFESSIONAL ENGINEER

REV 12/11/86

52.7%
unimproved

DRAINAGE CALCULATIONS

I. REFERENCES:

A. City of Albuquerque Development Process Manual (DPM) Vol. c, Design Criteria, Chapter 22: Drainage, Flood Control, and Erosion Control.
B. Soil Survey of Bernalillo County and parts of Sandoval and Valencia Counties, New Mexico, United States Department of Agriculture, Soil Conservation Service.
C. Floodway, Flood Boundary and Floodway Map, City of Albuquerque, New Mexico, Panel 31 of 50.
D. Zone Atlas page K-21-Z.

II. GENERAL INFORMATION:

A. Soil Type (Ref. B, Page 11) Soil type is Tijeras gravelly fine sandy loam, Hydrologic Soil Group "B".
B. Imperviousness:

Type of Surface	Existing Sq. Ft.	Existing Area Acres	Proposed Sq. Ft.	Proposed Area Acres
Building Roof	4800	0.1102	7140	0.1639
Concrete Surfaces	665	0.0153	1010	0.0232
Asphalt Surfaces	5278	0.1212	9683	0.2223
Landscaping and	699	0.0158	16018	0.3677
Undeveloped Surface	22419	0.5146	-0-	-0-
Site Total	33861	0.7771	33861	0.7771

C. "C" Factor (See Amendment to the DPM Jan.19,1986)

1. Existing impervious surfaces

	"C" Factor	Area	C x A
Building (Roof area)	0.90	0.1102	0.0992
Concrete surface	0.95	0.0152	0.0145
Asphalt surface	0.95	0.1212	0.1151
Landscape	0.25	0.0158	0.0040
Undeveloped area	0.40	0.5146	0.2058
		Total:	0.4386

Existing weighted "C" Factor: 0.4386/0.7771 = 0.56

2. Proposed impervious surfaces

	"C" Factor	Area	C x A
Building (Roof area)	0.90	0.1639	0.1475
Concrete surface	0.95	0.0232	0.0220
Asphalt surface	0.95	0.2223	0.2112
Landscape area	0.25	0.3677	0.1471
		Total:	0.5278

Proposed Weighted "C" Factor: 0.5278/0.7771 = 0.68

D. Rainfall, 100-year, 6-hour, R(6). (See Ref. A, Plate 22.2 D-1), R(6) = 2.45 inches.
E. Time of Concentration, Tc: Tc 10 minutes; use 10 minutes (minimum value) - calculations.
F. Rainfall intensity, I: (See Ref. A, Plate 22.2 D-2)

$I = R(6) \times 6.84 \times Tc(-0.51)$
$I = 2.45 \times 6.84 \times 10(-0.51)$
$I = 5.18$ in/hr

III. PEAK DISCHARGE:

A. Existing Conditions. (Use Rational Equation)
Q(100) = 0.56 x 5.18 x 0.77 = 2.25 cfs
Q(10) = 0.657 x 2.25 = 1.48 (Ref. A, Plate 22.2 D-1)
B. Developed Conditions.
Q(100) = 0.68 x 5.18 x 0.77 = 2.74 cfs
Q(10) = 0.657 x 2.74 = 1.80 cfs

IV. EROSION CONTROL:
The contractor shall promptly clean up any material excavated within the public right-of-way and any debris which could possibly be washed down the street.

V. CONCLUSIONS:

1. The proposed development is an infill site.
2. The runoff currently generated by the existing development is discharged into the unimproved alley adjacent to the property. Proposed development diverts the runoff directly into Lomas Boulevard NE as indicated on the plan.
3. The existing 20' wide public alley will not be used for access to the proposed development nor will there be water discharged into the alley from the development.
4. The development runoff increase of 0.49 cfs (Q100) will have a minimal impact and will not adversly affect downstream conditions.
5. This site does not lie within a designated flood plain, per reference C.
6. The existing masonry wall along the east and a portion of the south property line prohibits any offsite flow.

VI. CONSTRUCTION NOTES:

1. Two (2) working days prior to any excavation, contractor must contact line locating service at 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 City Right-of-Way shall be performed in accordance with applicable City of Albuquerque standards and proceedures.

SYMBOL LEGEND

	Existing contour
	Proposed contour
5564	Existing spot elevation
4.4 TC	Proposed spot elevation
	Direction of flow
DS	Downspout
TA	Top of asphalt
TC	Top of curb
FL	Flowline

TBM Temporary Benchmark as shown on plan being the north bonnet bolt of the existing fire hydrant located at the northeast corner of the property; reference to City Benchmark Datum J21-1, a ☐ chisled on top of concrete curb at the east, northeast curb return at the intersection of Lomas Ct. and Lomas Blvd. NE Bears elevation 5518.582 (MSL).

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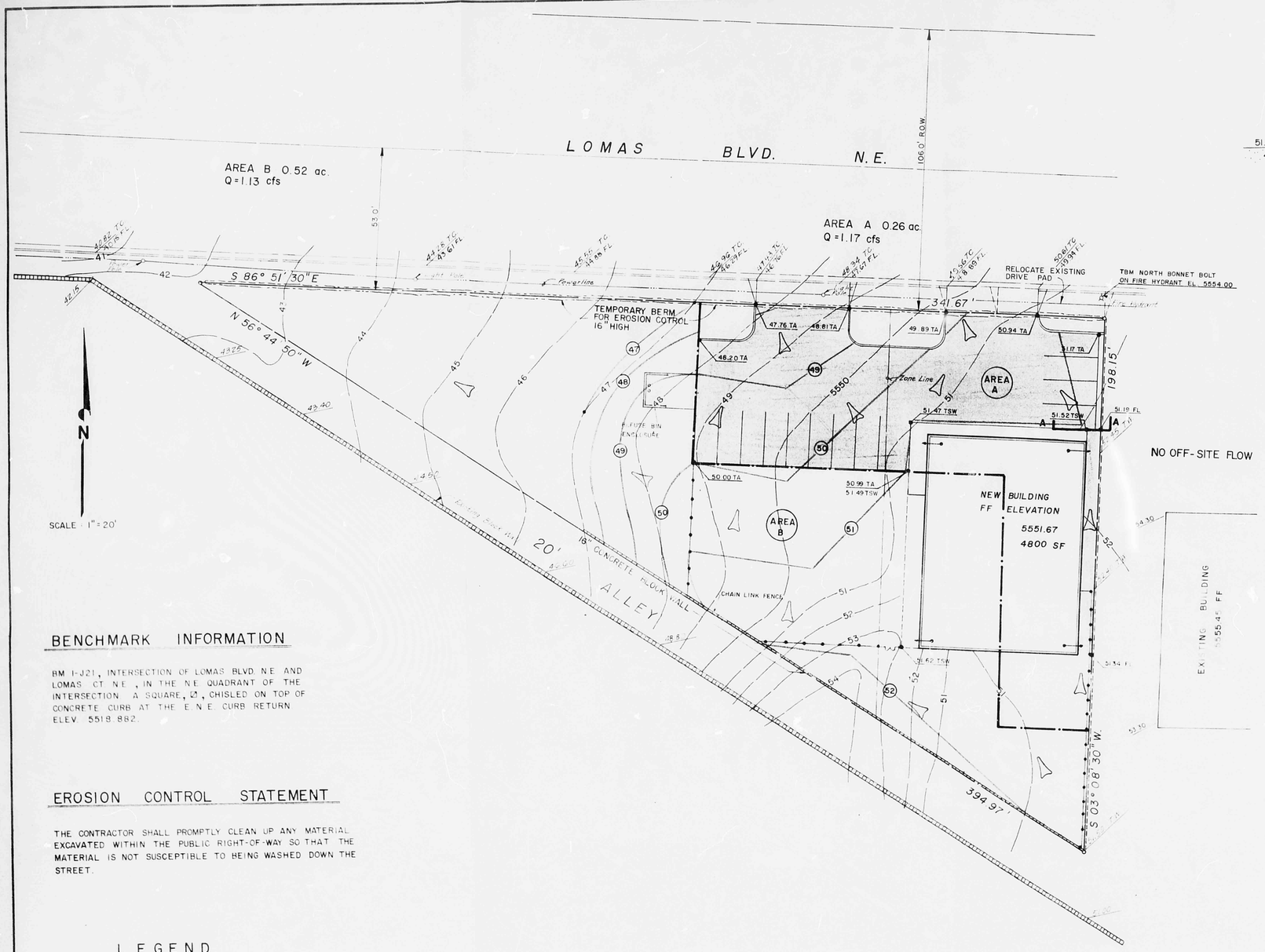
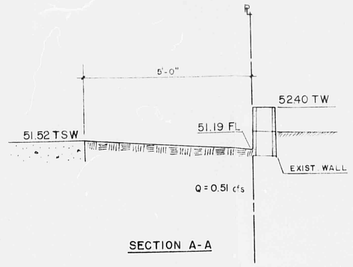
GRADING & DRAINAGE PLAN

FACILITY FOR SOUTHWEST CHILDCARE
11800 LOMAS BOULEVARD NE
ALBUQUERQUE, N.M.

2





SECTION A-A

VICINITY MAP K-21-Z

GRADING & DRAINAGE PLAN
FOR
BARNHOUSE DAY — CARE CENTER
LOT 1 BLOCK 124
OF
DALE J. BELLAMAH'S
PRINCESS JEANNE PARK
ALBUQUERQUE, NEW MEXICO
AUGUST 1985

BENCHMARK INFORMATION

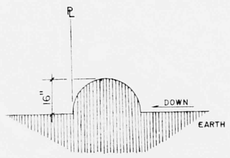
BM I-J21, INTERSECTION OF LOMAS BLVD. N.E. AND LOMAS CT. N.E., IN THE N.E. QUADRANT OF THE INTERSECTION. A SQUARE, Ø, CHISLED ON TOP OF CONCRETE CURB AT THE E.N.E. CURB RETURN ELEV. 5518.882.

EROSION CONTROL STATEMENT

THE CONTRACTOR SHALL PROMPTLY CLEAN UP ANY MATERIAL EXCAVATED WITHIN THE PUBLIC RIGHT-OF-WAY SO THAT THE MATERIAL IS NOT SUSCEPTIBLE TO BEING WASHED DOWN THE STREET.

LEGEND

44	EXISTING CONTOUR LINE
(50)	PROPOSED CONTOUR LINE
42.00	EXISTING SPOT ELEVATIONS
51.47 TA	PROPOSED SPOT ELEVATIONS
	DRAINAGE AREA DIVISION LINE
	FLOW DIRECTION
51.52 TW	TOP OF WALL (EXIST)
44.05 TC	TOP OF CURB (EXIST.)
48.80 TA	TOP OF ASPHALT
	EXISTING BLOCK WALL
	DIRECTION OF ROOF DRAIN



TEMPORARY BERM FOR EROSION CONTROL
(DURING CONST. ONLY)

DRAINAGE INFORMATION

I. References
A. City of Albuquerque, Development Process Manual (DPM), Volume 2, Design Criteria
B. Soil Survey of Bernalillo County and Parts of Sandoval and Valencia Counties, New Mexico, U.S. Soil Conservation Service, Sheet 32

II. General Information
A. Site Location and Elevation Data
1. Legal Description: Lot 1 Block 124 Princess Jeanne Park
2. Total Site Area: 11,951.00 square feet. 0.2731 acre
3. City Address:
4. City Bench Mark: No. 21
5. Temporary Bench Mark:
B. Soil Type. Reference B. (Hydrologic Soils Group B)
C. 6-hour, 100-year rain, P_6 = 2.25
D. Runoff Coefficient. ("C" Factor) See Reference A, Table 22.2-5

AREA A 0.2563 ac
Undeveloped "C" Factor, Curve 18 0.34
Developed "C" Factor, assume the following values:
Buildings and concrete surface 0.90
Asphalt concrete paving 0.9
Landscaping, same as natural soil, or,
Weighted "C" Factor:

Type of Surface	"C"	Area (SF)	C x A
Buildings	1.00	2820	2820
Concrete	0.90	7401	6661
Asphalt paving			
Landscaping or natural	0.34	942	320
Totals			

Weighted "C" = $\frac{\Sigma (\text{"C"} \times A)}{A}$ = 9801/11163 = 0.88

E. Time of Concentration.
Watershed length, L = 160 ft
Watershed change in elevation h = 1.58 ft
Watershed slope S = h/L = 0.0099 ft/ft
by Kirpich equation $T = 0.0078 (L^{0.77}/S^{0.385})$
T_c = 2.29 min
By overland flow velocity, Ref. , Plate 22.2 B-1
Velocity = $T = L/60V$ =
The minimum T_c shall be 10 minutes.
F. Intensity. (Reference A, Plate 22.2 B-2)
$I = P_6 \times 6.84 \times T_c^{-0.51}$ =
= 5.18 inches per hour
G. Peak Discharge - Rational Method: Q = CIA
Q = 0.88 x 5.18 x 0.2563
= 1.17 cfs

III. Existing Conditions (Undeveloped
A. "C" Factor = 0.34 Plate 22.2 D-1
B. Time of Concentration
Watershed length L = 160 ft
Watershed change in elevation h = 1.06 ft
Watershed slope S = h/L = 0.0066 ft/ft
by Kirpich equation $T = 0.0078 (L^{0.77}/S^{0.385})$ < 10 minutes T_c 2.65 min.
T_c = 10 minutes minimum
C. Intensity Reference , Plate
$I = P_6 \times 6.84 T_c^{-0.51}$
= 5.18 in/hr
D. Peak Discharge - Rational Method: Q = CIA
= (0.34) (5.18) (0.2563) = 0.45 cfs

AREA B 0.5208 ac
Developed "C" Factor is 0.42 Plate 22.2 C-1
E. Time of Concentration - Developed Area
Watershed length L = 350 ft
Watershed change in elevation h = 9.70 ft
Watershed slope S = h/L = 0.0277 ft/ft
by Kirpich equation $T = 0.0078 (L^{0.77}/S^{0.385})$ < 10 minutes T_c = 2.82
T_c = 10 minutes minimum
F. Intensity Reference , Plate 22.2 D-1
$I = P_6 \times 6.84 \times T_c^{-0.51}$
= 5.18in/hr
G. Peak Discharge - Rational Method: Q = CIA
Q = 0.42x 5.18 x 0.5208
= 1.13cfs
Existing Condition (Undeveloped)
Q = 0.34 x 5.18 x 0.5208
= 0.92172 cfs

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Rehnd 4-0

August 7, 1985
Revised 8/15/85
Revised 9/23/85

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