FILE COPY

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

Ken Schultz
Mayor

UTILITY DEVELOPMENT DIVISION
HYDROLOGY SECTION
(505) 768-2650

March 11, 1987

Leonard Utter
Tom Mann & Associates, Inc.
811 Dallas, NE
Albuquerque, New Mexico 87110

RE: DRAINAGE PLAN FOR SUMMIT HILLS
(J-23/D9E) RECEIVED FEBRUARY 19, 1987

Dear Mr. Utter:

The drainage plan submitted is no longer applicable. The new plans being processed through DRL use a pipe instead of a concrete channel. The DRC chairman and the owner are in discussion as to who will be responsible for the costs.

If you should have any questions, call me at 768-2650.

Cordially,

Carlos Montoya

Carlos A. Montoya, P.E.
City/County Floodplain Administrator

CAM/bsj

DRAINAGE INFORMATION SHEET

PROJECT TITLE: SUMMIT HILLS ZONE ATLAS/DRNG. FILE #: J-23/96

LEGAL DESCRIPTION: LOTS 1-8 SUMMIT HILLS

CITY ADDRESS: NOT KNOWN

ENGINEERING FIRM: TOM MANN + ASSOC CONTACT: LEONARD UTTER

ADDRESS: 811 DALLAS N.E. PHONE: 265-5611

OWNER: RON BAKER CONTACT: RON BAKER

ADDRESS: 1101 CARDENAS N.E SUITE 202 PHONE: 842-8981

ARCHITECT: _____ CONTACT: RON BAKER

ADDRESS: _____ PHONE: _____

SURVEYOR: TOM MANN + ASSOC. CONTACT: LEONARD UTTER

ADDRESS: 811 DALLAS. N.E. PHONE: 265-5611

CONTRACTOR: _____ CONTACT: RON BAKER

ADDRESS: _____ PHONE: _____

RECEIVED
FEB 19 1987
HYDROLOGY SECTION

PRE-DESIGN MEETING:

___ YES

✓ NO

___ COPY OF CONFERENCE RECAP SHEET PROVIDED

DRB NO. _____

EPC NO. _____

PROJ. NO. _____

TYPE OF SUBMITTAL:

___ DRAINAGE REPORT

✓ DRAINAGE PLAN

___ CONCEPTUAL GRADING & DRAINAGE PLAN

✓ GRADING PLAN

___ EROSION CONTROL PLAN

___ ENGINEER'S CERTIFICATION

CHECK TYPE OF APPROVAL SOUGHT:

___ SKETCH PLAT APPROVAL

___ PRELIMINARY PLAT APPROVAL

___ SITE DEVELOPMENT PLAN APPROVAL

___ FINAL PLAT APPROVAL

✓ BUILDING PERMIT APPROVAL

___ FOUNDATION PERMIT APPROVAL

___ CERTIFICATE OF OCCUPANCY APPROVAL

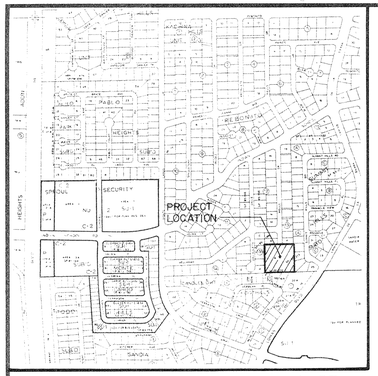
___ ROUGH GRADING PERMIT APPROVAL

___ GRADING/PAVING PERMIT APPROVAL

✓ OTHER REVISIONS (SPECIFY)

DATE SUBMITTED: 02/18/87

BY: _____



VICINITY MAP J-23

SCALE : 1" = 800'

LEGEND

- EXISTING SPOT ELEVATION
- PROPOSED SPOT ELEVATION
- T.C. TOP OF CURB
- F.L. FLOW LINE
- 75 EXISTING CONTOUR
- 75 PROPOSED CONTOUR
- SCALE
- PROPERTY LINE
- PROPOSED CONCRETE
- PROPOSED ASPHALT
- BASIN BOUNDARY

PROJECT BENCHMARK

A.C.S. STATION 1-123-A, BEING A STANDARD A.C.S. BRASS TABLET STAMPED "1-123-A, 1985", SET 0.30 FT. BELOW THE GROUND WITHIN AN 11 INCH DIA. STEEL MONUMENT BOX, LOCATED IN THE NORTH MEDIAN OF THE INTERSECTION OF INDIAN SCHOOL RD. AND TRAMWAY BLVD. ELEVATION = 5840.58 FEET.

T.B.M.

A PK NAIL SET IN THE TOP OF WALL AT THE SOUTHEAST CORNER OF SUBJECT PROPERTY, ALSO BEING THE S.E. CORNER OF LOT 4. ELEVATION @ TOP OF NAIL = 5979.05 FEET

LEGAL DESCRIPTION

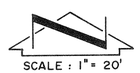
LOTS 1 thru 8 inclusive, SUMMIT HILLS, ALBUQUERQUE, NEW MEXICO.

EROSION CONTROL MEASURES

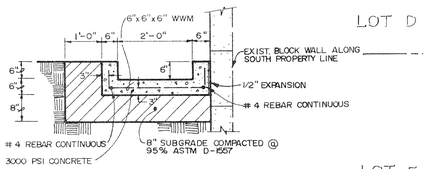
1. THE CONTRACTOR SHALL ENSURE THAT NO SOIL ERODES FROM THE SITE INTO PUBLIC RIGHT-OF-WAY OR ONTO PRIVATE PROPERTY. THIS CAN BE ACHIEVED BY CONSTRUCTING TEMPORARY BERMS AT THE PROPERTY LINES AND WETTING THE SOIL TO KEEP IT FROM BLOWING.
2. THE CONTRACTOR SHALL PROMPTLY CLEAN UP ANY MATERIAL EXCAVATED WITHIN THE PUBLIC RIGHT-OF-WAY SO THAT THE EXCAVATED MATERIAL IS NOT SUSCEPTIBLE TO BEING WASHED DOWN THE STREET.
3. THE CONTRACTOR SHALL SECURE "TOPSOIL DISTURBANCE PERMIT" PRIOR TO BEGINNING CONSTRUCTION.

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 LOCATION 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.
5. IF ANY UTILITY LINES, PIPELINES, OR UNDERGROUND UTILITY LINES ARE SHOWN ON THESE DRAWINGS, THEY ARE SHOWN IN AN APPROXIMATE MANNER ONLY, AND SUCH LINES MAY EXIST WHERE NONE ARE SHOWN. IF ANY SUCH EXISTING LINES ARE SHOWN, THE LOCATION IS BASED UPON INFORMATION PROVIDED BY THE OWNER OF SAID UTILITY, AND THE INFORMATION MAY BE INCOMPLETE, OR MAY BE OBSOLETE BY THE TIME CONSTRUCTION COMMENCES. THE ENGINEER HAS UNDERTAKEN NO FIELD VERIFICATION OF THE LOCATION, DEPTH, SIZE, OR TYPE OF EXISTING UTILITY LINES, PIPELINES, OR UNDERGROUND UTILITY LINES, MAKES NO REPRESENTATION PERTAINING THERETO, AND ASSUMES NO RESPONSIBILITY OR LIABILITY THEREFOR. THE CONTRACTOR SHALL INFORM ITSELF OF THE LOCATION OF ANY UTILITY LINE, PIPELINE, OR UNDERGROUND UTILITY LINE IN OR NEAR THE AREA OF THE WORK IN ADVANCE OF AND DURING EXCAVATION WORK. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY AND ALL DAMAGE CAUSED BY ITS FAILURE TO LOCATE, IDENTIFY AND PRESERVE ANY AND ALL EXISTING UTILITIES, PIPELINES, AND UNDERGROUND UTILITY LINES. IN PLANNING AND CONDUCTING EXCAVATION, THE CONTRACTOR SHALL COMPLY WITH STATE STATUTES, MUNICIPAL AND LOCAL ORDINANCES, RULES AND REGULATIONS, IF ANY, PERTAINING TO THE LOCATION OF THESE LINES AND FACILITIES.
6. ALL WORK DETAILED ON THIS PLAN SHALL BE PERFORMED UNDER CITY OF ALBUQUERQUE WORK ORDER 2563.
7. WHERE CONCRETE CHANNEL ABUTS EXISTING WALLS, A 1/2" EXPANSION JOINT WILL BE REQUIRED BETWEEN CONCRETE CHANNEL AND WALL.

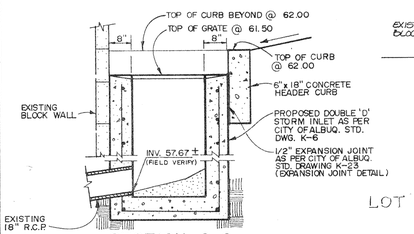


SCALE : 1" = 20'



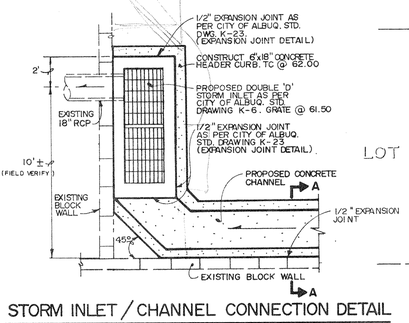
SECTION A-A

SCALE : 1" = 2'



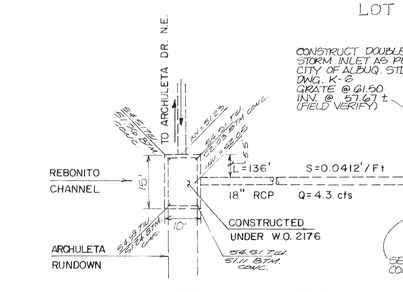
SECTION C-C

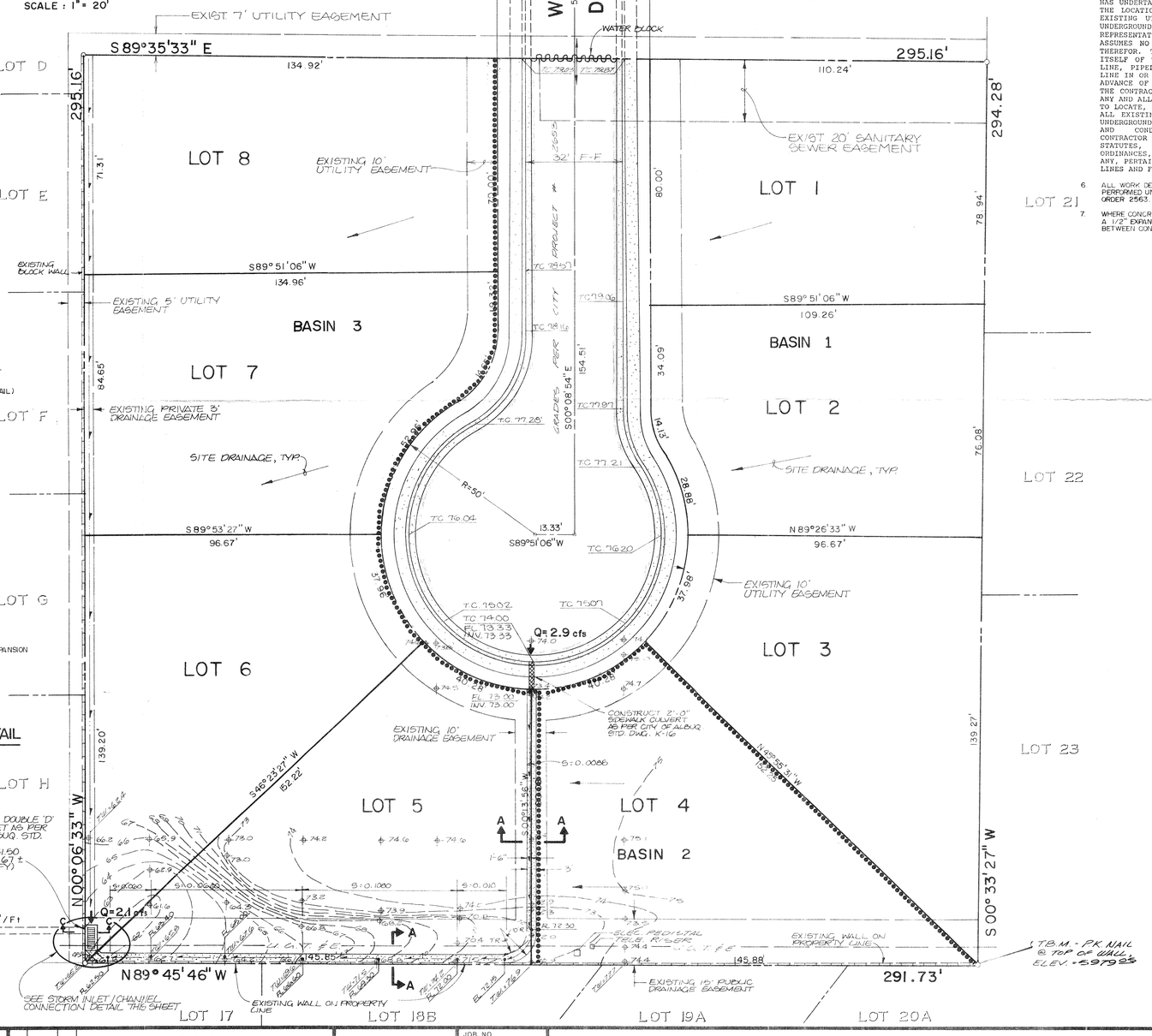
NOT TO SCALE



STORM INLET / CHANNEL CONNECTION DETAIL

NOT TO SCALE





DRAINAGE PLAN

The following items concerning the Summit Hills Drainage Plan are contained hereon:

1. Vicinity Map
2. Grading Plan
3. Calculations

As shown by the Vicinity Map, the site is located on the most southerly side of Wells Drive N.E. Much of the surrounding area is currently developed, thereby making this an infill site. As shown by Panel 31 of the Floodway Boundary and Floodway Maps for the City of Albuquerque, New Mexico, the site does not lie within a designated Flood Hazard Zone. Downstream flooding is not apparent and therefore does not appear to be a problem. At present, the site drains from northeast to northwest to an existing concrete rundown located west of the southwest property corner of the project site, which is the outfall for the project site. No offsite flows enter the site along the north, south and west property lines since the existing lots are graded in a manner which will route runoff away from the project site. Some offsite flows enter the project site along the east property line which will be accepted and conveyed through the site.

The approved drainage plan for this site prepared by Denny Gross and Associates, Inc. has provided for the free discharge of all developed flows. The purpose of this drainage plan is to verify the capacity of the proposed sidewalk culvert and concrete channel. Also to provide Lot 5 with more open space by relocating the proposed drainage channel along the most southerly portion of the existing 25 foot drainage easement.

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 grades, and 3) the limit and character of the proposed improvements. As shown by this plan, the proposed improvements consist of the construction of new single family dwellings along with adjacent paving. Flows generated by Basin 1 will be routed from north to south then west to a proposed Double 'D' storm drain inlet via the proposed concrete channel. The storm drain inlet will discharge directly into the aforementioned concrete rundown located west of the project site. Flows generated by Basin 2 will be routed from east to west onto the aforementioned concrete channel. Flows generated by Basin 3 will be routed from north to south along the westerly property line to the aforementioned storm drain inlet. This plan is consistent to the previously approved plan.

The Calculations which appear hereon analyze both the existing and developed conditions for the 100-year, 6-hour rainfall event. The Rational Method has been used to quantify the peak rate of discharge and the SCS Method has been used to quantify the volume of runoff. Both Methods have been used in accordance with the City of Albuquerque Development Process Manual, Volume II and the Mayor's Emergency Rule adopted January 14, 1986. As shown by these calculations, the proposed improvements will result in a increase in runoff. The increase in runoff will be approximately 1.3 cfs.

CALCULATIONS

Ground Cover Information

From SCS Bernalillo County Soil Survey,
Plate: 32, Etc: Embudo - Tijeras Complex
Hydrologic Soil Group: B
Existing Pervious CN = 70 (DPM Plate 22.2 C-2
Pasture or Range Land: fair condition)
Developed Pervious CN = 61 (DPM Plate 22.2 C-2)

Time of Concentration/Time to Peak

$T_c = 0.0078\ i^{0.77}/s^{0.385}$ (Kirpich Equation)

$T_p = T_c = 10$ min.

Point Rainfall

$P_6 = 2.5$ in. (DPM Plate 22.2 D-1)

Rational Method

Discharge: Q = CiA

where C varies
$i = P_6\ (6.84)\ T_c^{-0.51} = 5.28$ in/hr
$P_6 = 2.5$ in (DPM Plate 22.2D-1)
$T_c = 10$ min (minimum)
A = area, acres

SCS Method

Volume: V = 3630(DRO) A

Where DRO = Direct runoff in inches
A = area, acres

Existing Condition

$A_{total} = 86,482$ sf $= 1.99$ Ac
C = 0.40 (Weighted average per Emergency Rule, 1/14/86)
$Q_{100} = CiA = (0.40)(5.28)(1.99) = 4.2$ cfs
$A_{imp} = -0-$ sf; % impervious = -0- %
Composite CN = 70 (DPM Plate 22.2 C-3)
DRO = 0.5 in (DPM Plate 22.2 C-4)
$V_{100} = 3630$ (DRO)A = 3610 cf

Developed Condition

Basin 1
$A_{total} = 39,265$ sf $= 0.90$ Ac
Roof area = 7260 sf (0.18)
Paved area = 12,790 sf (0.33)
Landscaped area = 19,215 sf (0.49)
C = 0.60 (Weighted average per Emergency Rule, 1/14/86)
$Q_{100} = CiA = (0.60)(5.28)(0.90) = 2.9$ cfs
$A_{imp} = 20,050$ sf; % impervious = 52 %
Composite CN = 81 (DPM Plate 22.2 C-3)
DRO = 1.0 in (DPM Plate 22.2 C-4)
$V_{100} = 3630$ (DRO) A = 3270 cf

Basin 2
$A_{total} = 9,190$ sf $= 0.21$ Ac
Roof area = 2420 sf (0.26)
Paved area = 400 sf (0.04)
Landscaped area = 6390 sf (0.70)
C = 0.45 (Weighted average per Emergency Rule, 1/14/86)
$Q_{100} = CiA = (0.45)(5.28)(0.21) = 0.5$ cfs
$A_{imp} = 2820$ sf; % impervious = 30 %
Composite CN = 72 (DPM Plate 22.2 C-3)
DRO = 0.6 in (DPM Plate 22.2 C-4)
$V_{100} = 3630$ (DRO) A = 460 cf

Basin 3
$A_{total} = 38,027$ sf $= 0.87$ Ac
Roof area = 9860 sf (0.26)
Paved area = 1600 sf (0.04)
Landscaped area = 26,567 sf (0.70)
C = 0.45 (Weighted average per Emergency Rule, 1/14/86)
$Q_{100} = CiA = (0.45)(5.28)(0.87) = 2.1$ cfs
$A_{imp} = 11,460$ sf; % impervious = 30 %
Composite CN = 72 (DPM Plate 22.2 C-3)
DRO = 0.6 in (DPM Plate 22.2 C-4)
$V_{100} = 3630$ (DRO) A = 1895 cf

Sidewalk Culvert Sizing

$Q = CLH^{3/2} = 3.4$ cfs $> Q_{100}$ (Basin 1) (Weir Equation)

Where C = 3.09
L = 2'-0"
H = 0.67'

Channel Capacity

$Q = \frac{1.49}{n} AR^{2/3}s^{1/2} = 11.1$ cfs $> Q_{100}$ (Basins 1 - 3)

Where A = 1 sf
$R = \frac{A}{WP} = 1/3 = 0.33$
S = 0.054 (Average)
n = 0.015

Offsite Flows

$A_{total} = 30,000$ sf $= 0.69$ Ac
Roof area = 9600 sf (0.32)
Paved area = 1000 sf (0.03)
Landscaped area = 19,400 sf (0.65)
C = 0.48 (Weighted average per Emergency Rule, 1/14/86)
$Q_{100} = CiA = (0.48)(5.28)(0.69) = 1.8$ cfs
$A_{imp} = 10,600$ sf; % impervious = 35 %
Composite CN = 75 (DPM Plate 22.2 C-3)
DRO = 0.7 in (DPM Plate 22.2 C-4)
$V_{100} = 3630$ (DRO) A = 1755 cf

Comparison

$\Delta Q_{100} = (2.9 + 0.5 + 2.1) - 4.2 = 1.3$ cfs (increase)
$\Delta V_{100} = (3270 + 460 + 1895) - 3610 = 2015$ cf (increase)

JEFFREY G. MORTENSEN NEW MEXICO 8547 REGISTERED PROFESSIONAL ENGINEER

RECEIVED FEB 19 1987 HYDROLOGY SECTION

Denny Gross & Associates, Inc. ENGINEERS
811 DALLAS N.E. · ALBUQUERQUE · NEW MEXICO · 87110
505-265-5611

NO.	DATE	BY	REVISIONS

DESIGNED BY: L.P.U.
DRAWN BY: T.M.A.
APPROVED: J.G.M.

JOB NO. 870121
DATE 2-87

GRADING & DRAINAGE PLAN
SUMMIT HILLS

FILE NO.

SHEET 1 OF 1

hs0937