

PROJECT BENCHMARK

THE STATION MARK IS A STANDARD ACS BRASS TABLET, STAMPED "3-K221974" CEMENTED IN A DRILL HOLE IN TOP OF CONCRETE CURB. THE STATION IS ABOUT 40 FT. SOUTHWEST OF THE INTERSECTION OF ZENA LOMA ST. AND CLOUDVIEW AVE. ELEVATION = 5574.87 ft. (M.S.L.D.)

TEMPORARY BENCHMARK

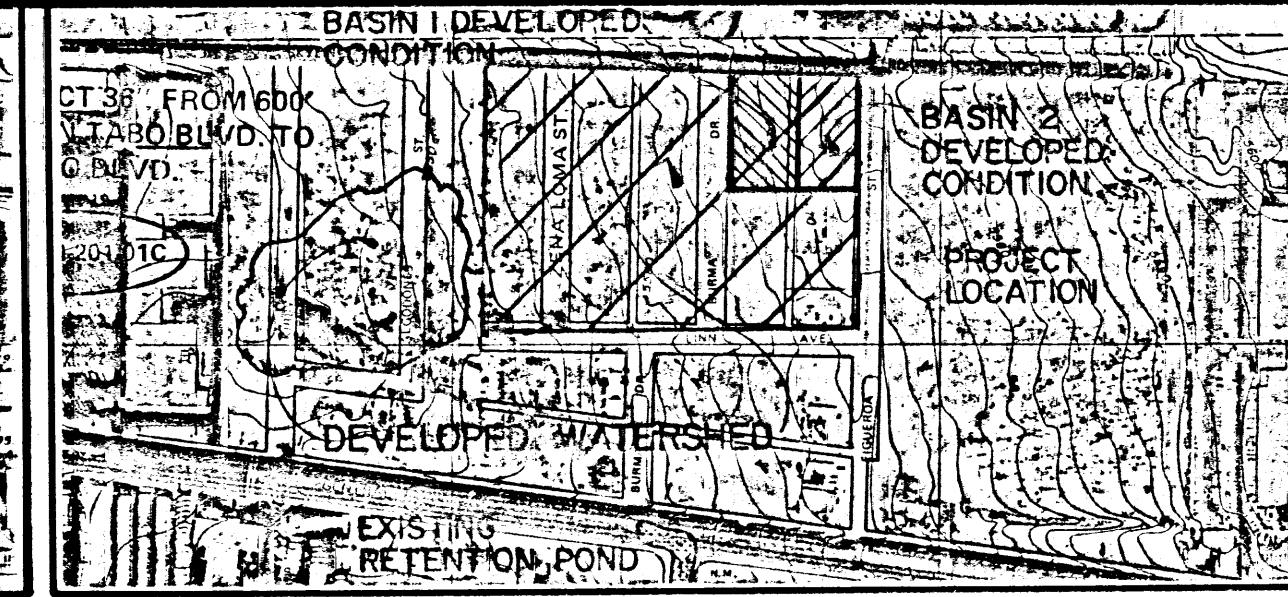
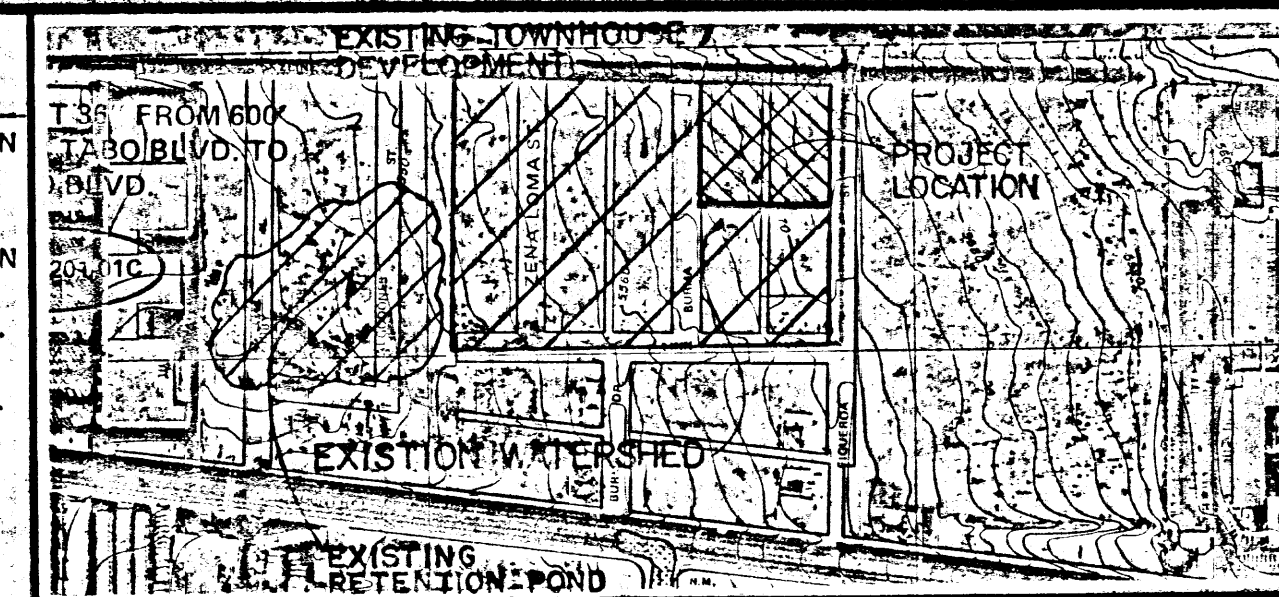
A CHISELED "I" LOCATED ON TOP OF CURB AN EXTENSION OF THE SOUTHEAST PROPERTY CORNER. ELEVATION = 5574.33 ft. (M.S.L.D.)

LEGAL DESCRIPTION

LOTS 1,2,3,8,9, & 10, BLOCK 5, GALLAGHER ADDITION.

LEGEND

- EXIST. SPOT ELEVATION
- EXIST. CONTOUR
- PROPOSED SPOT ELEVATION
- PROPOSED CONTOUR
- PROPOSED CONCRETE PAVEMENT
- PROPOSED ASPHALT PAVEMENT
- BASIN BOUNDARY
- PROPOSED RETAINING WALL



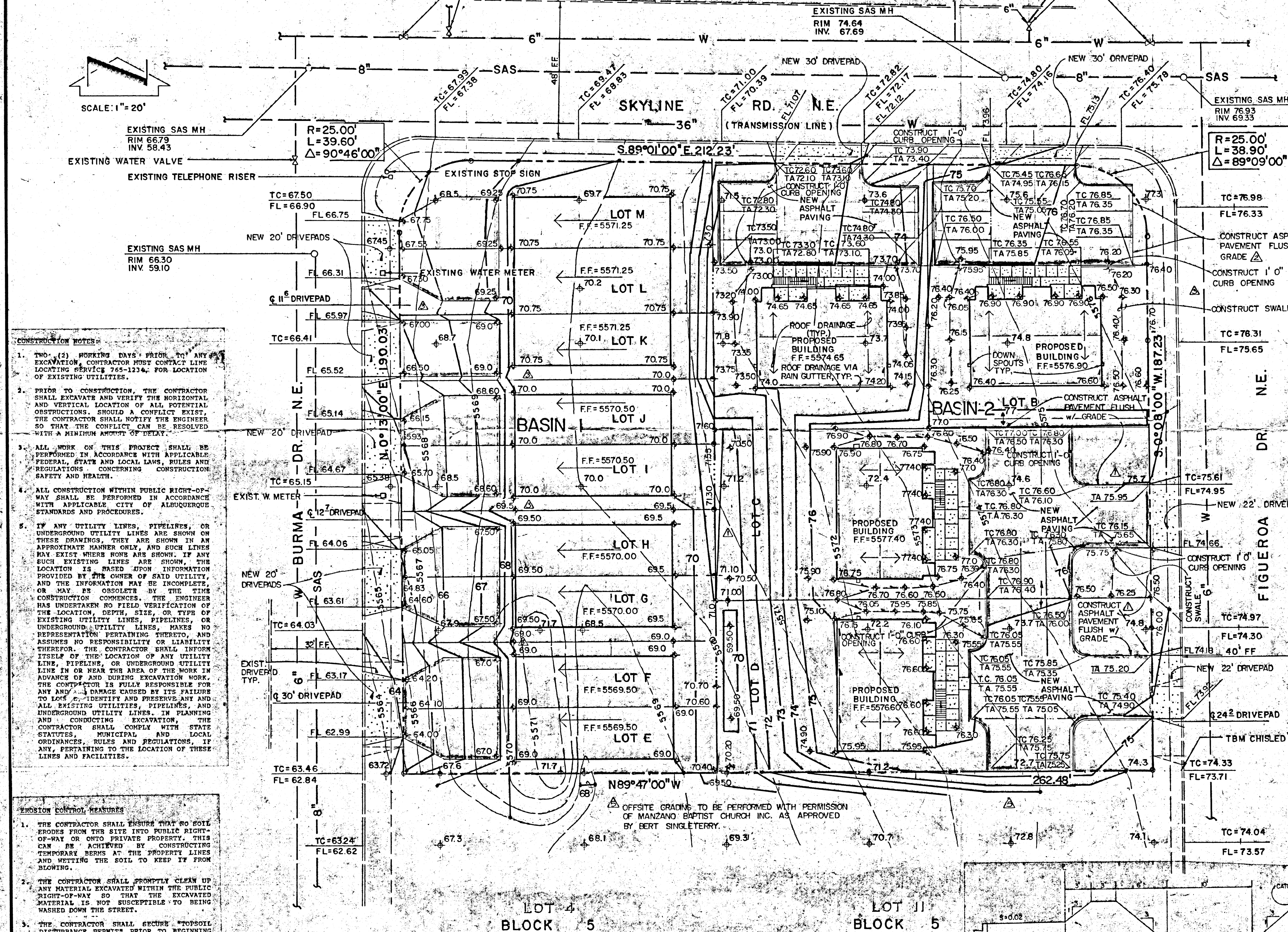
VICINITY MAP
SCALE: 1"=800"

EXISTING WATERSHED MAP
SCALE: 1"=400"

MAP No. L-22

DEVELOPED WATERSHED MAP
SCALE: 1"=400"

MAP No. L-22



DRAINAGE PLAN

The following items concerning the Oakcrest Estates Drainage Plan are contained hereon:

1. Vicinity Map
2. Watershed Maps
3. Grading Plan
4. Calculations

As shown by the Vicinity Map, the site is located on the south side of Skyline Road N.E. between Burma Drive N.E. and Figueroa Street N.E. At present the site is undeveloped, much of the surrounding area is currently developed thereby making this an infill site. As shown by Plate L-22 of the Albuquerque Master Drainage Study, this site does not lie within the designated Flood Hazard Zone; however, flooding is apparent and therefore does appear to be a problem. No offsite flows enter the site along the north, west and east property lines since the adjacent streets route runoff away from the project site. No offsite flows enter the site along the south property line since the adjacent site is graded in a manner which will route runoff away from the project site. Runoff generated onsite flows from east to west onto Burma Drive N.E. From that point the runoff flows south onto Lynn Avenue N.E. which flows in a westerly direction into an existing retention pond located west of Lynn Avenue N.E. as shown on the Watershed Maps above.

As shown by the Watershed Maps taken from Map L-22 of the Albuquerque Master Drainage Study, the project site contributes runoff to the aforementioned retention pond. When the project site is developed, runoff generated by Basin 1 will continue to discharge to the existing retention pond which is consistent with the existing drainage pattern. Runoff generated by Basin 2 will be routed outside Basin 1 and hence reduce the overall runoff discharged to the existing retention pond.

The Grading Plan shows 1) existing and proposed grades indicated by contours at 1' intervals, 2) continuity between existing and proposed grades, 3) the basic and character of the proposed improvements. As shown by this Plan, the proposed improvements consist of the construction of four apartment complexes (Phase I) along with adjacent paving and landscaping and nine townhomes (Phase II) which will be constructed at a later time. The grading for the entire project site will be performed as a single operation, however the construction of the four-phases will be done simultaneously under separate permits. Because of this, the interface between lots and phases will not be a problem. Runoff generated by the proposed improvements within Basin 1 will flow from east to west onto Lynn Avenue N.E. From that point, the runoff will flow in a westerly direction to the aforementioned retention pond located west of Lynn Avenue N.E. This Plan is consistent with existing drainage patterns. The proposed drainage pattern will improve the existing drainage by decreasing the amount of runoff discharged to the retention pond by 0.9 cfs. Because the watershed downstream is already developed, the development of the nine townhomes will not affect the frequency of runoff. Basin 2 consists of four four-phases on individual lots. The developed runoff resulting from the roofs via rain gutters, drives and walks will be directed to the adjoining streets. The backyards will be allowed to slope away from the street because they will only generate runoff based upon what falls on these landscaped areas and no hard surfaced flows. Flows generated by Basin 2 will be routed from west to east and discharged onto Figueroa Street N.E. From that point, runoff will flow south onto Central Avenue. From that point the runoff will flow west to existing catch basins located in Central Avenue. In addition, some portion of the flows generated by Basin 2 will flow from south to north onto Skyline Drive N.E. From that point the runoff will flow west onto Juan Tabo Boulevard N.E. Based upon the fact that this site is an infill site, the proximity of downstream facilities and a decrease of runoff discharged to the retention pond, the free discharge of runoff from this site is appropriate.

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 decrease in runoff generated by Basin 1 and a relatively minor increase in runoff generated by Basin 2. The decrease in runoff from Basin 1 by the proposed improvements will be approximately 0.9 cfs. The increase in runoff from Basin 2 will be approximately 2.3 cfs.

CALCULATIONS	
Ground Cover Information	
From SCS 88-Hydrologic Engineering Series, "Gravelly Flows"	
Plate 32	Hydrologic Soil Group B
Existing Perviousness = 70 (DPM Plate 22.2 C-3)	
Developed Perviousness = 61 (DPM Plate 22.2 C-2)	
Time of Concentration/Time to Peak	
$T_c = 0.0078 L^{0.775} S^{0.385}$ (Kirpich Equation)	
$T_p = T_c = 10$ min.	
Point Rainfall	
$P_g = 2.49$ in. (DPM Plate 22.2 D-1)	
Rational Method	
Discharge: $Q = CIA$	
where C varies	
$C = \frac{P_g}{P_g + 0.5}$ in (DPM Plate 22.2 D-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	
Actual = 55,770 sq ft = 1.28 Ac	
$C = 0.40$ (Weighted average per Emergency Rule, 1/14/86)	
$Q_{100} = CIA = (0.40)(5.26)(1.28) = 2.7$ cfs	
$A_{imp} = 0$ sq ft (Impervious = 0)	
Composite $CN = 70$ (DPM Plate 22.2 C-3)	
DRO = 0.50 in (DPM Plate 22.2 C-4)	
$V_{100} = 3630(DRO)A = 2,323$ cf	
Developed Condition	
Basin 1	
Actual = 23,522 sq ft = 0.54 Ac	
Roof area = 9,145 sq ft = (0.21)	
Paved area = 5,010 sq ft = (0.11)	
Landscaped area = 9,367 sq ft = (0.21)	
$C = 0.65$ (Weighted average per Emergency Rule, 1/14/86)	
$Q_{100} = CIA = (0.65)(5.26)(0.54) = 1.8$ cfs	
$A_{imp} = 14,195$ sq ft (Impervious = 60)	
Composite $CN = 84$ (DPM Plate 22.2 C-3)	
DRO = 1.1 in (DPM Plate 22.2 C-4)	
$V_{100} = 3630(DRO)A = 2,156$ cf	
Basin 2	
Actual = 32,248 sq ft = 0.74 Ac	
Roof area = 5840 sq ft = (0.13)	
Paved area = 8950 sq ft = (0.20)	
Landscaped area = 17,530 sq ft = (0.41)	
$C = 0.58$ (Weighted average per Emergency Rule, 1/14/86)	
$Q_{100} = CIA = (0.58)(5.26)(0.74) = 2.3$ cfs	
$A_{imp} = 15,430$ sq ft (Impervious = 47)	
Composite $CN = 61$ (DPM Plate 22.2 C-3)	
DRO = 0.8 in (DPM Plate 22.2 C-4)	
$V_{100} = 3630(DRO)A = 2,150$ cf	
Comparison Basin 1	
$\Delta Q_{100} = 2.7 - 1.8 = 0.9$ cfs (decrease)	
$\Delta V_{100} = 2323 - 2156 = 167$ cf (decrease)	
Comparison Basin 2	
$\Delta Q_{100} = 2.3 - 0 = 2.3$ cfs (increase)	
$\Delta V_{100} = 2150 - 0 = 2150$ cf (increase)	

- CONSTRUCTION NOTES**
1. TWO (2) WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT LINE LOCATING SERVICE 766-1234, 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, AND 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 UTILITY LINES, 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.
- EROSION CONTROL MEASURES**
1. THE CONTRACTOR SHALL ENSURE THAT NO SOIL ERODES FROM THE SITE INTO PUBLIC RIGHT-OF-WAY OR ONTO PRIVATE PROPERTY. EROSION CONTROL MEASURES SHALL BE ACHIEVED BY CONSTRUCTING TEMPORARY BERM 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.
 4. THE CONTRACTOR SHALL CONSTRUCT A TEMPORARY EROSION CONTROL BERM ALONG THE WEST PROPERTY LINE OF THE SUBDIVISION TO CONTROL THE EROSION FROM LOTS B THROUGH M REFER TO SECTION A-A.

12/86 LRV	DELETE RETAINING WALL + REVISE GRADES
12/86 LRV	UNREGRADED PORTION OF SITE + REVISED PLAN + CALCULATIONS
11/86 LRV	UNREGRADED PORTION OF SITE

NO.	DATE	BY	REVISIONS
1	08/86	LRV	DELETE CURB TO PORTION OF FOUR-PLEX PARKING LOTS
2	11/86	LRV	SHOW RETAINING WALL ALONG SOUTH PROPERTY LINE OF LOTS O + E

DESIGNED BY: L.P.V.
DRAWN BY: C.J.W.
APPROVED: J.G.M.

JOB NO.
60632
DATE
08-86

GRADING & DRAINAGE PLAN OAKCREST ESTATES



09-23-86
10-06-86
11-13-86
11-24-86
12-03-86

FILE NO.
SHEET 1 OF 1