HYDROLOGY

E21/D9
TWO PLANS

E21/D14a

2 Plans

DRAINAGE PLAN

The following items concerning the Burnhamwood Subdivision Drainage Plan are contained hereon:

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

As shown by the Vicinity Map, the site is located on the north side of Juan Tabo Boulevard N.E., between Eubank Boulevard N.E. and Camero Avenue N.E. At present, the site is undeveloped and zoned for townhouse development. There are existing townhouses to the west of the site. Single family residential development exists to the north and the south. The Eisenhower Mid-School is located on the east side of the project. Hence, this site can be viewed as an infill site.

As shown by the Watershed Map, this site does not lie within a designated Flood Hazard Zone. Furthermore, this site does not contribute runoff to a designated flood hazard area. At present, the site drains onto Juan Tabo Boulevard N.E. From this point, the runoff flows to the west within Juan Tabo Boulevard N.E. to its intersection with Eubank Boulevard N.E. From this point, the runoff carried by the street enters the Bear Tributary Arroyo via the improvements completed under SAD 205. The Bear Tributary Arroyo is the outfall for this site. The Watershed Map further delineates the watershed in which the site lies. The total area of the watershed is approximately 123 acres this site being only 4 acres. The impact of the development of this site on the watershed is negligible based upon this analysis. Because this is the last developing site within the watershed, the fact that this is an infill site, the negligible percentage of the watershed that this site constitutes and the proximity of the site to the Bear Tributary Arroyo the free discharge of runoff from this development is appropriate.

The Grading Plan shows 1) existing grades shown by spot elevations and contours at 1'0" intervals, 2) proposed grades indicated by spot elevations, 3) existing and proposed street grades indicated by top of curb and flowline elevations, 4) the limit and character of the existing improvements, 5) the limit and character of the proposed improvements, and 6) continuity between existing and proposed grades. As shown by the Grading Plan, the proposed improvements will consist of the construction of a looped public street within the site (Street Grades are attached) along with the development of residential lots for townhouse construction. The finished grades shown hereon will permit the rough grading of each of the lots in a manner which is acceptable to the City of Albuquerque. All roofs and front yards will drain to the street. The majority of the backyard areas will be graded in order to allow the drainage of those areas to the street. Some of the backyard areas will not be able to drain to the street and therefore will contain that runoff which falls upon those areas. Yard walls will be constructed along the property lines which will serve to contain any nuisance flows which may be generated within the rear yard areas. The Calculations, however, have assumed that all runoff generated onsite is discharged to the streets.

The Calculations which appear hereon analyze both the existing and developed conditions for the 100-year, 6-hour rainfall event. The peak rate of discharge has been quantified using the Rational Method, whereas the volume of runoff generated has been quantified using the SCS Method. Both of these methods have been used in accordance with the City of Albuquerque Development Process Manual, Volume II, coupled with the Emergency Rule issued by the Mayor on January 14, 1986. As shown by these calculations, the proposed improvements will result in an overall increase in runoff generated by this site. The calculations further demonstrate that only 13.6 cfs is anticipated from the total development. This discharge can adequately be handled by the streets. This conclusion is based upon the small magnitude of runoff generated by the site.

CALCULATIONS

Ground Cover Information

From SCS Bernalillo County Soil Survey,
Plate 22: 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
Open Space: Good Condition)

Time of Concentration/Time to Peak

$T_c = 0.0078\ L^{0.77}/S^{0.385}$ (Kirpich Equation)

$T_p = T_c = 10$ min.

Point Rainfall

$P_6 = 2.54$ in. (DPM Plate 22.2 D-1)

Rational Method

Discharge: $Q = CiA$

where C varies
$i = P_6\ (6.84)\ T_c^{-0.51} = 5.37$ in/hr
$P_6 = 2.54$ 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} = 173,990 sf = 3.99 Ac
Undeveloped area = 173,990 sf (1.00)
C = 0.40 (Weighted average per Emergency Rule, 1/14/86)
$Q_{100} = CiA = 8.6$ cfs
A_{imp} = -0- sf; % impervious = -0- %
Composite CN = 70 (DPM Plate 22.2 C-3)
DRO = 0.47 in (DPM Plate 22.2 C-4)
$V_{100} = 3630\ (DRO)A = 6870$ cf

Developed Condition

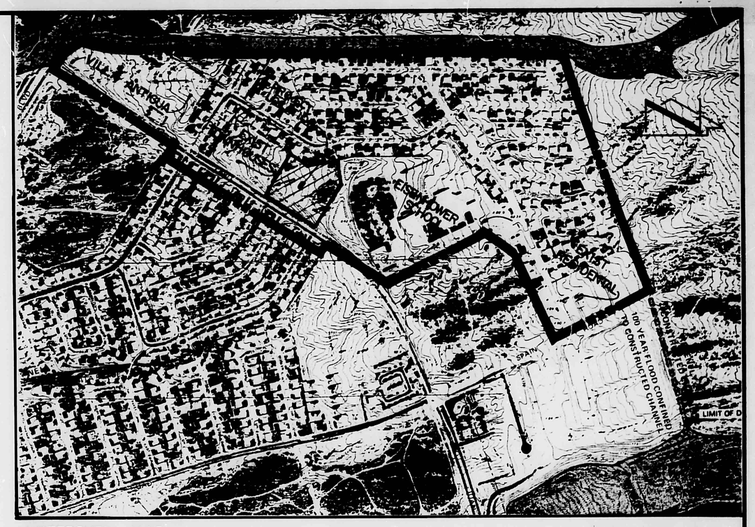
A_{total} = 173,990 sf = 3.99 Ac
Roof area = 49,544 sf (0.28)
Paved area = 49,711 sf (0.29)
Landscaped area = 74,735 sf (0.43)
C = 0.635 (Weighted average per Emergency Rule, 1/14/86)
$Q_{100} = CiA = 13.6$ cfs
A_{imp} = 99,255 sf; % impervious = 57 %
Composite CN = 82 (DPM Plate 22.2 C-3)
DRO = 1.0 in (DPM Plate 22.2 C-4)
$V_{100} = 3630\ (DRO)\ A = 14,480$ cf

Comparison

$\Delta Q_{100} = 13.6 - 8.6 = 5.0$ cfs (Increase)
$\Delta V_{100} = 14,480 - 6,870 = 7,610$ cf (Increase)

Watershed Analysis

Total Area = 123 Acres
Area of Site = 4 Acres
Site % = 4/123 = 3% (Negligible)



WATERSHED MAP

SCALE: 1" = 500'

FEMA MAP 18

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MAY 12 1987
HYDROLOGY SECTION

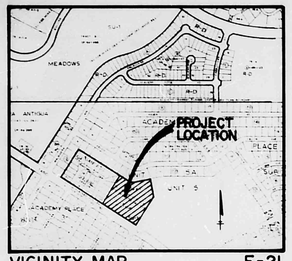
JEFFREY G. MORTENSEN
NEW MEXICO
8647
REGISTERED PROFESSIONAL ENGINEER

03-20-87

MORTENSEN & ASSOCIATES, P.C. ENGINEERS, 811 DALLAS N.E. · ALBUQUERQUE · NEW MEXICO · 87110	NO. / DATE / BY / REVISIONS	DESIGNED BY J.G.M. / DRAWN BY R.A.R. / APPROVED J.G.M.	JOB NO. 61442 / DATE 04/87	GRADING & DRAINAGE PLAN BURNHAMWOOD	DWG. NO. 3232	SHEET 2 OF 2

SANTIAGO SQUARE
FILED 8-20-1981, C18-165

GRADING & DRAINAGE PLAN
BURNHAMWOOD



VICINITY MAP E-21
SCALE: 1" = 800'

SCALE: 1" = 20'
20 10 0 20

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.

LEGEND

- RIDGELINE
- PROPOSED BLOCKWALL
- EXISTING SPOT ELEVATION
- PROPOSED SPOT ELEVATION
- EXISTING CONTOUR
- PROPOSED CONTOUR
- TC TOP OF CURB
- FL FLOW LINE
- SWALE
- PROPERTY LINE
- PROPOSED CONCRETE
- PROPOSED ROOF DRAINAGE
- PROPOSED DRAINAGE FLOW

PROJECT BENCHMARK:

THE STATION MARK IS A STANDARD BOHANNAN WESTMAN AND HUSTON BRASS TABLET STAMPED "77-120-I, 1977" SET FLUSH WITH THE CONCRETE IN THE SIDEWALK. THE STATION IS LOCATED AT THE INTERSECTION OF JUAN TABO BLVD. AND CAMERO AVE. THE STATION IS IN THE SOUTHEAST QUADRANT OF THE INTERSECTION. ELEV. = 5748.88 FEET (M.S.L.D.)

TEMPORARY BENCHMARKS:

T.B.M. #1: NAIL & SHINER LOCATED W/ IN JUAN TABO BLVD. N.E. CORRESPONDING TO S.W. PROPERTY CORNER. ELEV. = 5745.39 FEET (M.S.L.D.)

T.B.M. #2: NAIL & SHINER LOCATED W/ IN JUAN TABO BLVD. N.E. CORRESPONDING TO S.E. PROPERTY CORNER. ELEV. 5731.02 FEET (M.S.L.D.)

LEGAL DESCRIPTION:

TRACT B-1, ACADEMY PLACE SUBD., UNIT 5 (PROPOSED REPLAT TO LOTS 1-29, BURNHAMWOOD, CASE 87-87), COMPRISING 3.9943 AC ± (173,990 S.F.)

REVISIONS

△1 4-87, J.G.M., REVISE ADJOINING LOT LINES; ADD N.L. PTS. @ KNUCKLES.

△2 5-87, J.G.M., ADD NOTE 11.

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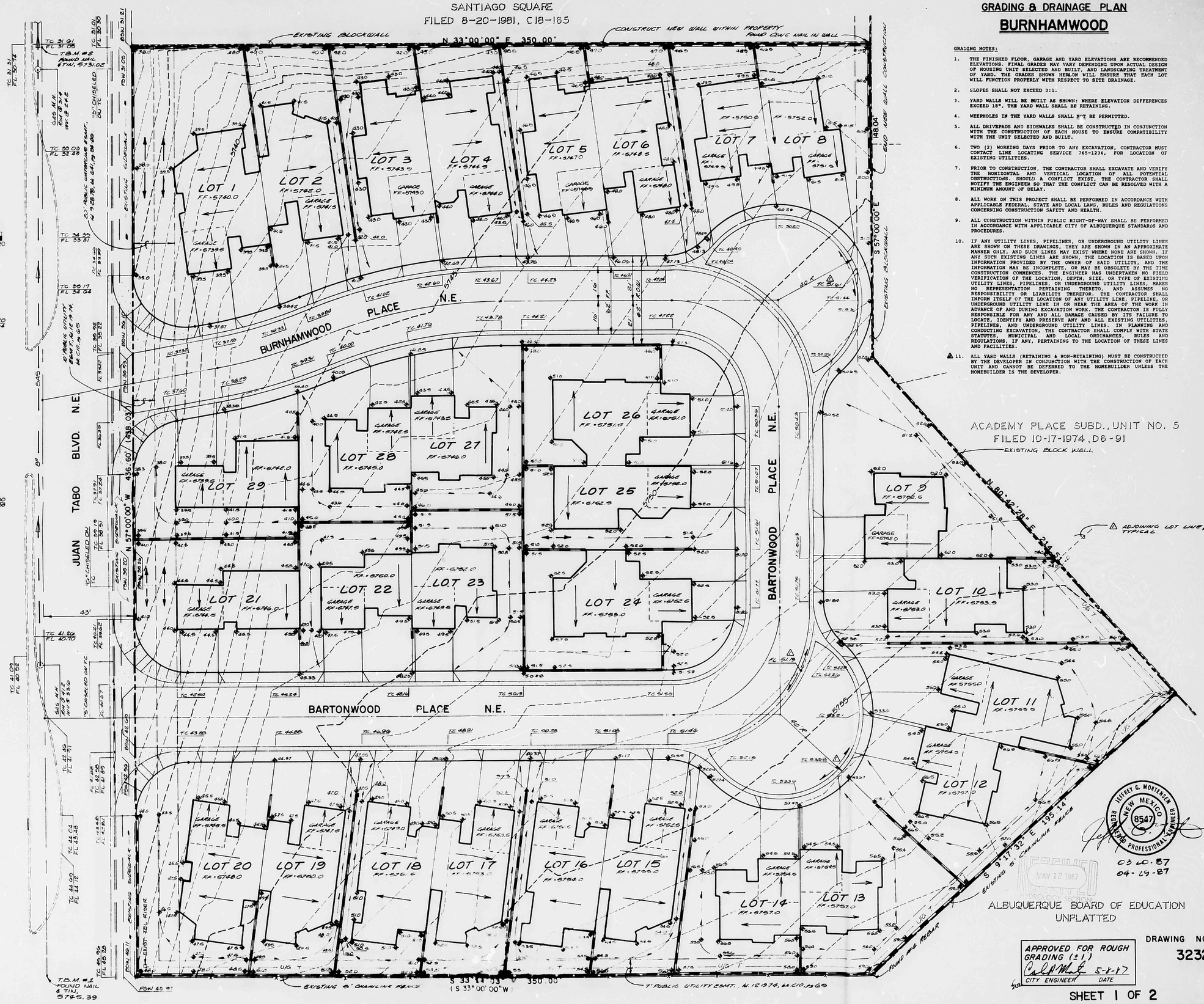
MARK ROSENTHAL INC.
ENGINEERS
JOB NO. 61442



ACADEMY PLACE SUBD., UNIT NO. 5
FILED 10-17-1974, D6-91

ALBUQUERQUE BOARD OF EDUCATION
UNPLATTED

GRADING NOTES:

1. THE FINISHED FLOOR, GARAGE AND YARD ELEVATIONS ARE RECOMMENDED ELEVATIONS. FINAL GRADES MAY VARY DEPENDING UPON ACTUAL DESIGN OF HOUSING UNIT SELECTED AND BUILT, AND LANDSCAPING TREATMENT OF YARD. THE GRADES SHOWN HEREON WILL ENSURE THAT EACH LOT WILL FUNCTION PROPERLY WITH RESPECT TO SITE DRAINAGE.
2. SLOPES SHALL NOT EXCEED 3:1.
3. YARD WALLS WILL BE BUILT AS SHOWN; WHERE ELEVATION DIFFERENCES EXCEED 18", THE YARD WALL SHALL BE RETAINING.
4. WEEPHOLES IN THE YARD WALLS SHALL NOT BE PERMITTED.
5. ALL DRIVEPADS AND SIDEWALKS SHALL BE CONSTRUCTED IN CONJUNCTION WITH THE CONSTRUCTION OF EACH HOUSE TO ENSURE COMPATIBILITY WITH THE UNIT SELECTED AND BUILT.
6. TWO (2) WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT LINE LOCATING SERVICE 765-1234, FOR LOCATION OF EXISTING UTILITIES.
7. 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.
8. 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.
9. ALL CONSTRUCTION WITHIN PUBLIC RIGHT-OF-WAY SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE CITY OF ALBUQUERQUE STANDARDS AND PROCEDURES.
10. 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.
11. △ ALL YARD WALLS (RETAINING & NON-RETAINING) MUST BE CONSTRUCTED BY THE DEVELOPER IN CONJUNCTION WITH THE CONSTRUCTION OF EACH UNIT AND CANNOT BE DEFERRED TO THE HOMEBUILDER UNLESS THE HOMEBUILDER IS THE DEVELOPER.

JEFFREY G. MORTENSEN
NEW MEXICO
8547
REGISTERED PROFESSIONAL ENGINEER

03-10-87
04-29-87

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APPROVED FOR ROUGH GRADING (±1)
CITY ENGINEER — DATE 5-1-87

DRAWING NO. 3232

SHEET 1 OF 2