

LEGAL DESCRIPTION

TRACTS 218A AND 83A, MRCD MAP NO. 44

PERMANENT BENCHMARK

ACS 1-B19 ELEVATION 5393.00

GRADING CERTIFICATION

I, Jean J. Bordenave, New Mexico Professional Engineer and Land Surveyor No. 5110, hereby certify that I have personally inspected the property shown hereon and that it appears that no grading, filling or excavation has occurred thereon since the contour map shown hereon was prepared.

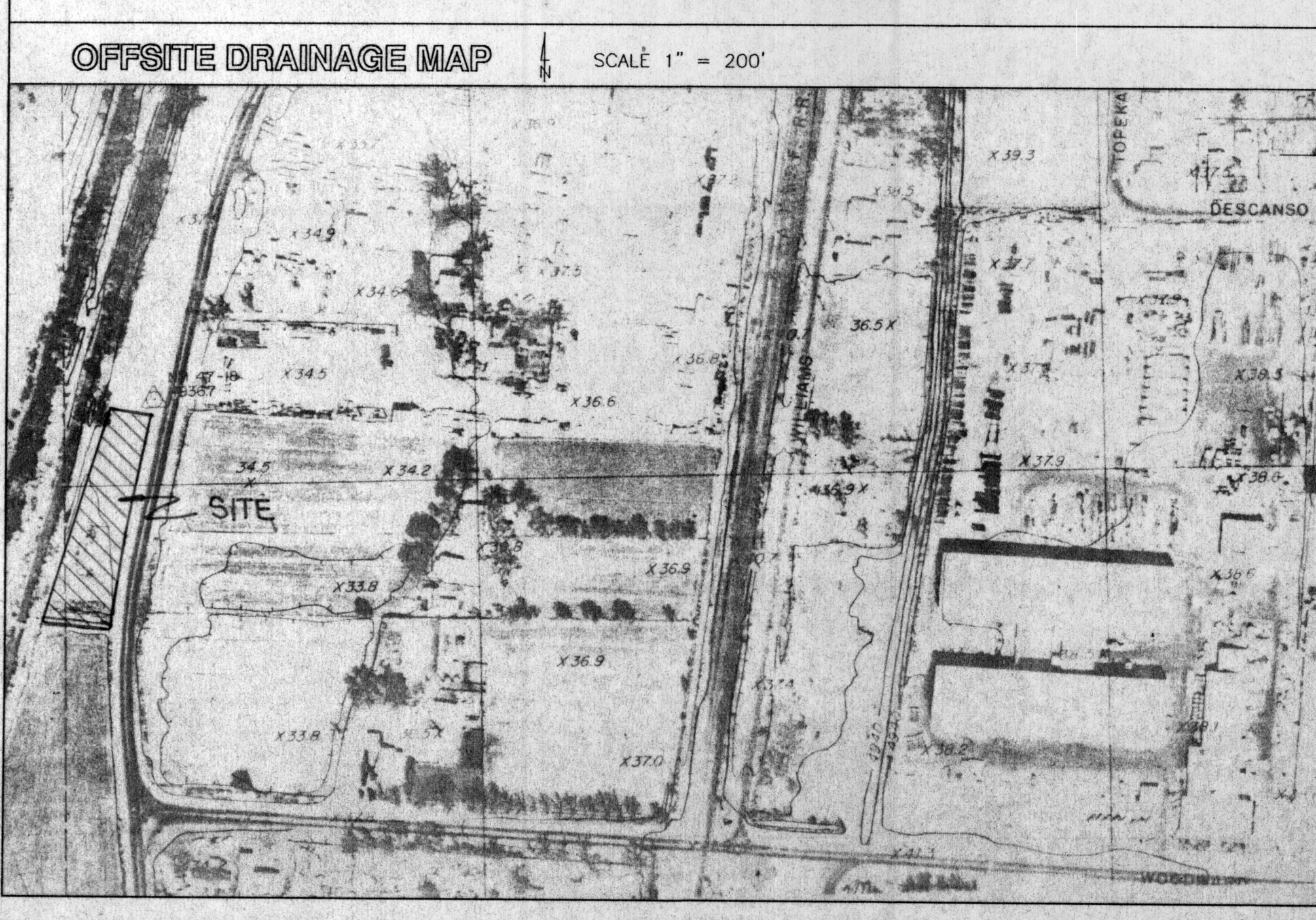
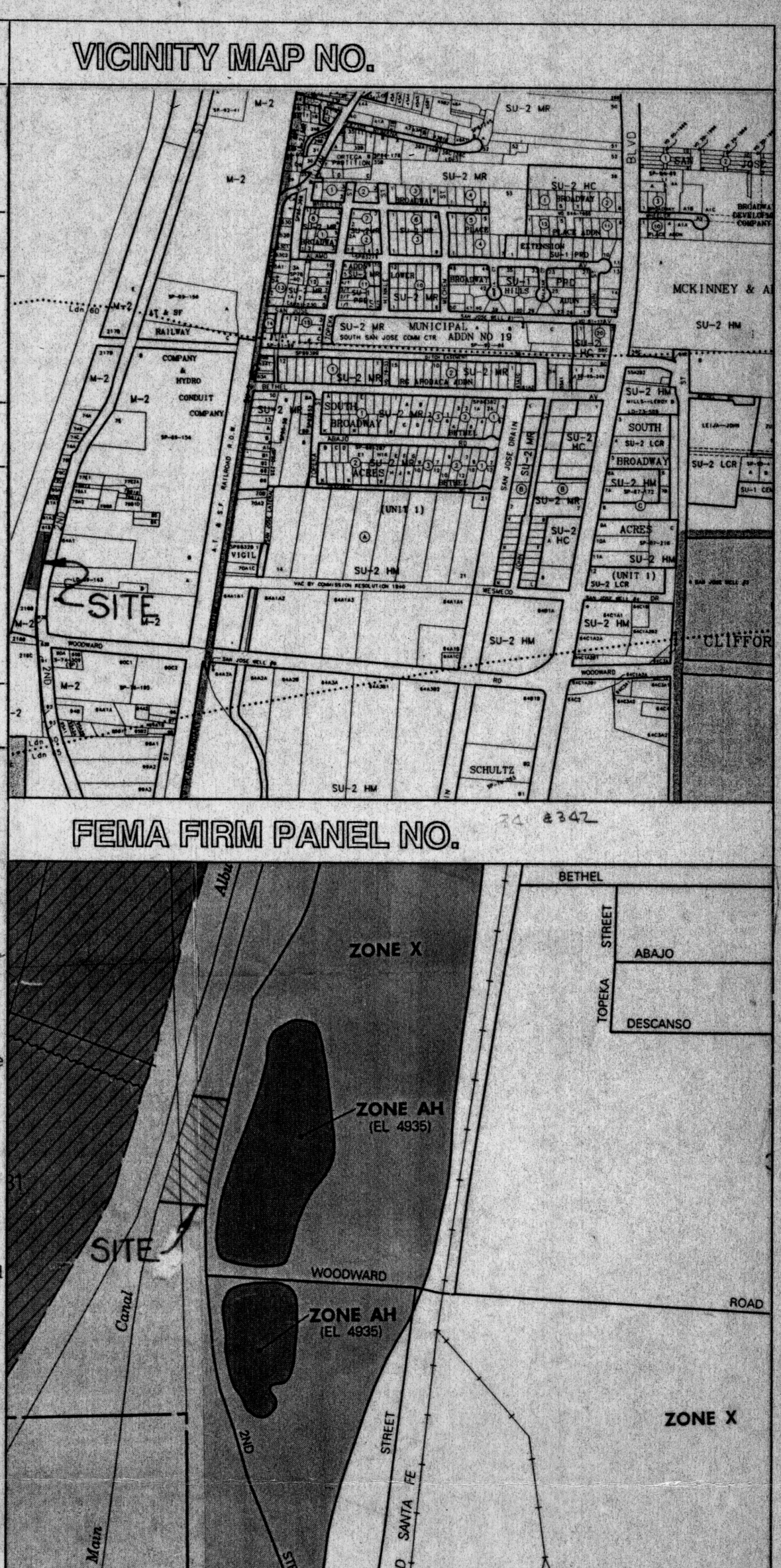
GENERAL NOTES

- The 6 hour runoff volumes for the 10 year and 100 year storms increase by 874 and 1219 cubic feet respectively. The runoff rates are shown on the drainage data table below. The runoff rates are of no importance for this site as the runoff does not exit the site.
- The site is located in the south valley near the intersection of 2nd street and Woodward. The streets in the area do not have curbs and there is no public storm drainage system. All storm water must be retained onsite. In addition public storm water generated within the westerly half of 2nd street has been retained and disposed of in the onsite drainage system.

Onsite Basins A, B and C are self contained and expected to percolate within the respective basin. Basin D and the offsite basin are disposed of via the onsite subsurface drainage system.

The onsite drainage system is not capable of percolating the storm water at the rate it is being generated and the excess flow is held onsite in a detention pond. The pond capacity is 833 cubic feet below ground and 728 cubic feet above ground with depth of 0.4 feet and a water surface elevation of 36.70. The pond requirement will be significantly reduced (from 1416 cf to 423 cf), when and if, 2nd street is developed so that it no longer contributes to the volume. The pond volume is evacuated via percolation in approximately 18 minutes.

- The site is not located in a designated flood hazard area per FEMA FIRM Panel No's 341 and 342, dated September 20, 1996.
- Topography shown on this sheet was obtained by Harris Surveying, Inc., dated October, 1996.



| DRAINAGE DATA | | | | | | | | | | | |
|---------------|--------|-----------|-----------|---------------|-------|--------|--------|--|--|--|--|
| CON | STORM | TREATMENT | TREATMENT | EXCESS | PEAK | RUNOFF | RUNOFF | | | | |
| NO. | PERIOD | TYPE | AREA | PRECIPITATION | DISCH | VOLUME | RATE | | | | |
| DEVELOPED | AREA | TYPE | AREA | PRECIPITATION | DISCH | VOLUME | RATE | | | | |
| A | 100 | 10 | 0.13 | 0.36 | 0.00 | 0.00 | 0.00 | | | | |
| B | 100 | 10 | 0.13 | 0.36 | 0.00 | 0.00 | 0.00 | | | | |
| C | 100 | 10 | 0.13 | 0.36 | 0.00 | 0.00 | 0.00 | | | | |
| D | 100 | 10 | 0.13 | 0.36 | 0.00 | 0.00 | 0.00 | | | | |
| E | 100 | 10 | 0.13 | 0.36 | 0.00 | 0.00 | 0.00 | | | | |

STORM DRAIN SYSTEM

INFLOW HYDROGRAPH (BASIN D & OFFSITE)

VOLUME = 2824+1176 = 4000 cf

RATE = 1.75+0.79 = 2.54 cfs

$t_p = (0.7) (0.2) + (1.6 - ((15345+4416) / ((17091+9384) / 12)) / 12 = 0.21$ hr

$t_{pd} = 0.25 ((15345+4416) / ((17091+9384) / 12)) = 0.19$ hr

$E = ((2482) (0.79+1.13) + (4416) (2.12) + (1746) (0.78) + (15345) (2.12)) / ((17091+9384) / 12) = 1.813$ in

$t_b = (2.107) (1.813) ((17091+9384) / 2.54) - t_{pd} = 0.72$ hr

OUTFLOW HYDROGRAPH

permeability rate = 0.010 cm/sec, factor of safety = 1.5

effective trench depth = 5 ft, width = 1 ft, length = 555 ft

discharge capacity = $((11) (555) (0.010 / 2.54 / 12) / 1.5 = 1.33$ cfs

POND

time when outflow hyd. intersects rising limb of inflow hyd.
 $t_1 = (1.33 / 2.54) (0.21) = 0.11$ hr

time when outflow hyd. intersects falling limb of inflow hyd.
 $t_2 = 0.72 - (1.33 / 2.54) (0.72 - 0.19 - 0.21) = 0.55$ hr

storage volume required
 $V = (2.54 - 1.33) ((0.21 + 0.55 - 0.11) / 2) (3600) = 1416$ cf

STORM DRAIN

inlet grates (orifice flow)
 $Q = CA(2gh)^{0.5}$, where $Q = 1.33$ cfs, $C = 0.6$, $H = 0.3$
therefore: $A = 0.50$ sf (plugging factor = 2 and 2 grates, therefore $A = 0.5$ sf).

USE NEENAH R-2112 or equal ($A = 0.6$ sf min.)

pipe between inlets (orifice flow)
discharge capacity = $(1.33) (185/555) = 0.44$ cfs
pipe size
 $Q = CA(2gh)^{0.5}$, where $Q = 0.44$ cfs, $C = 0.6$, $H = 2$ ft
therefore: $A = 0.06$ sf, $R = 0.14$ ft
USE 4" PERFORATED PVC PIPE

pipe to drain field (orifice flow)
discharge capacity = $1.33 - 0.44 = 0.89$ cfs
pipe size
 $Q = CA(2gh)^{0.5}$, where $Q = 0.89$ cfs, $C = 0.6$, $H = 2$ ft
therefore: $A = 0.13$ sf, $R = 0.20$ ft
USE 6" SOLID WALL PVC PIPE

drain field pipe (orifice flow)
discharge capacity = $(1.33) (57/555) = 0.14$ cfs
available head = $2 - ((0.89 / (0.6) (0.196) ((2g)^{0.5}))^2) / (0.025) (55) + ((0.02) (55)) = 0.836$ ft

pipe size
 $Q = CA(2gh)^{0.5}$, where $Q = 0.14$ cfs, $C = 0.60$, $H = 0.836$ ft
therefore: $A = 0.032$ sf, $R = 0.10$ ft
USE 3" PERFORATED PVC PIPE

LEGEND

| | |
|-----|------------------------|
| TBM | TEMPORARY BENCHMARK |
| FF | FINISH FLOOR |
| FG | FINISH GRADE |
| FL | FLOWLINE |
| TA | TOP OF ASPHALT |
| TCP | TOP OF CONCRETE |
| TC | TOP OF CURB |
| TP | TOP OF EARTH PAD |
| TS | TOP OF SIDEWALK |
| TW | TOP OF WALL |
| FH | FIRE HYDRANT |
| WM | WATER METER |
| WV | WATER VALVE |
| MH | MANHOLE |
| CB | CATCH BASIN GRATE |
| GM | GAS METER |
| GV | GAS VALVE |
| LP | LIGHT POLE |
| PP | POWER POLE |
| GW | GUY WIRE |
| PED | ELEC. OR TEL. PEDESTAL |
| RD | ROOF DRAINAGE POINT |

GRADING NOTES

- TWO (2) WORKING DAYS PRIOR TO ANY EXCAVATION, THE CONTRACTOR MUST CONTACT THE NEW MEXICO ONE CALL SYSTEM AT 260-1990 FOR LOCATION OF EXISTING UTILITIES.
- PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATION 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.
- ALL WORK ON THIS PROJECT SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL LAWS, RULES AND REGULATIONS CONCERNING CONSTRUCTION SAFETY AND HEALTH.
- ALL CONSTRUCTION WITHIN THE PUBLIC RIGHT-OF-WAY SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE CITY OF ALBUQUERQUE STANDARDS AND PROCEDURES.

EROSION CONTROL NOTES

- THE CONTRACTOR SHALL ENSURE THAT NO SOIL ERODES FROM THE SITE ONTO PUBLIC RIGHT-OF-WAY OR PRIVATE PROPERTY. THIS CAN BE ACHIEVED BY THE CONSTRUCTION OF TEMPORARY SOIL BERMS OR SILT FENCES AT PROPERTY LINES AND BY SOIL TO PREVENT IT FROM BLOWING.
- 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.
- THE CONTRACTOR SHALL SECURE A TOPSOIL DISTURBANCE PERMIT PRIOR TO BEGINNING CONSTRUCTION.

REVISIONS

| no. | date | remarks | by |
|-----|------|---------|----|
| | | | |

AAA SEPTIC TANK
2nd STREET SW
ALBUQUERQUE, NM

GRADING & DRAINAGE PLAN

| sheet date | design by | project no. |
|------------|-----------|-------------|
| 01/13/98 | JJB | 9729 |

BORDENAVE DESIGNS
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