

E12/0015

*[Faint handwritten notes and signatures]*

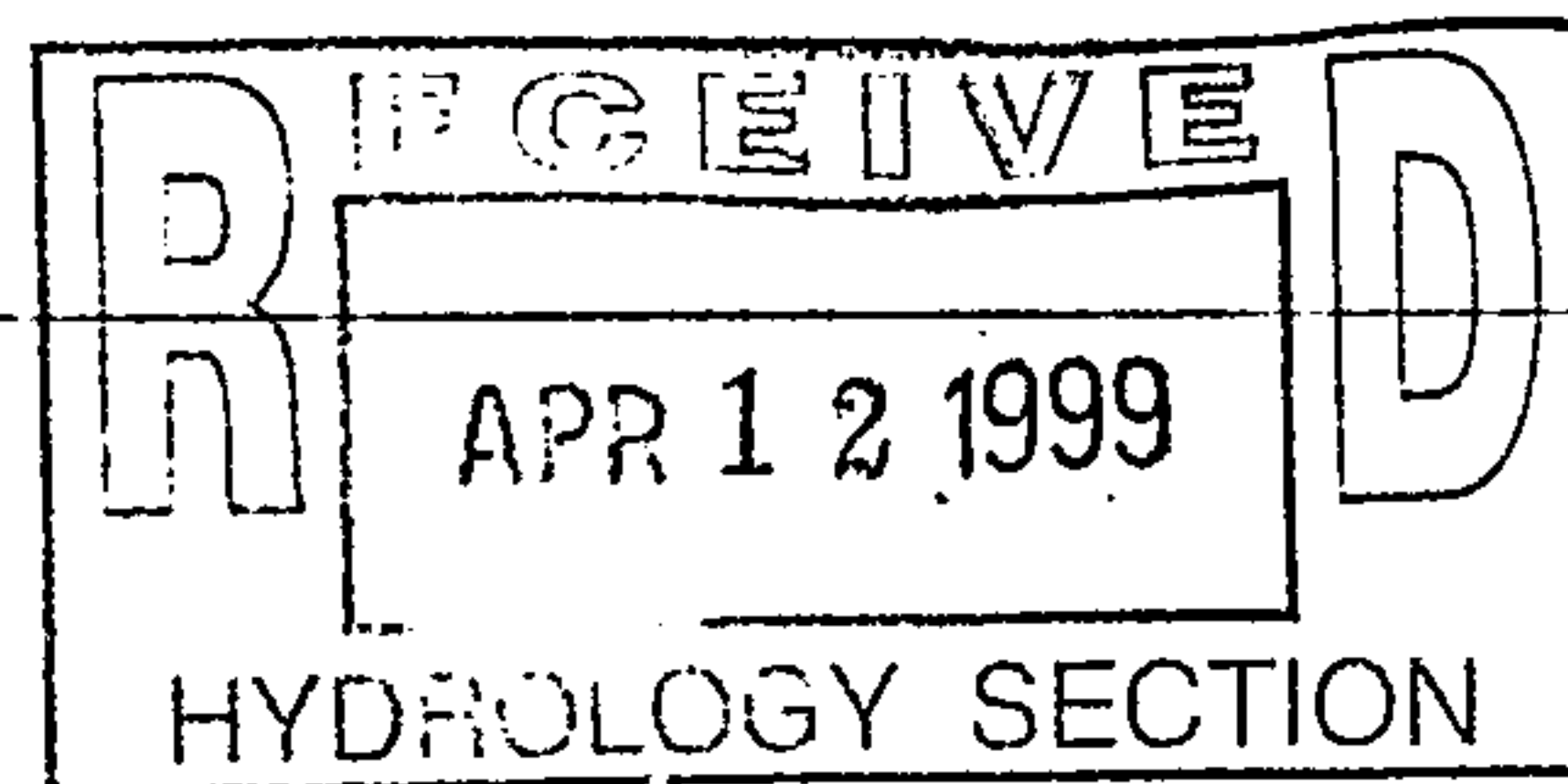
MASTER DRAINAGE

PLAN

FOR

LANDS OF RAY A. GRAHAM III

APRIL, 1999



*[Handwritten signature]*  
04/12/99

PREPARED FOR

RAY A. GRAHAM III  
ONE WIND NW  
ALBUQUERQUE, NM 87120

PREPARED BY

BORDENAVE DESIGNS  
P.O. BOX 91194  
ALBUQUERQUE, NM 87199

*me*

## PURPOSE OF PLAN

THIS PLAN IS BEING DEVELOPED TO ESTABLISH DRAINAGE CRITERIA FOR THE DEVELOPMENT OF ALL LANDS WITHIN THE STUDY AREA. THIS ACTION IS PROMPTED BY THE DESIRE TO IMMEDIATELY DEVELOP A PORTION OF THE AREA AS THE BOSQUE SCHOOL (22.5 ACRES) AND AN ACCESS ROAD WHICH CONNECTS THE SCHOOL PROPERTY TO THE COORS/DELLYNE INTERSECTION. THE CRITERIA SET FORTH HEREIN ARE BASED ON DISCUSSIONS WITH THE SCHOOL'S DESIGN TEAM, THE ORIGINAL LAND OWNER WHO ALSO OWNS ALL LANDS SURROUNDING THE SCHOOL SITE, AND CITY OF ALBUQUERQUE PWD/HYDROLOGY STAFF.

## EXISTING CONDITIONS

THE STUDY AREA IS LOCATED IN THE SOUTHEAST QUADRANT OF THE COORS BLVD/MONTANO ROAD INTERSECTION ON THE WEST SIDE OF ALBUQUERQUE. THE SITE IS BOUNDED BY COORS, MONTANO, LOWER CORRALES RIVERSIDE DRAIN AND A MANMADE RIDGE ALONG THE SOUTH SIDE OF AN OLD IRRIGATED FIELD AND THE SOUTH AND WEST BOUNDARIES OF LA LUZ DEL OESTE. THE SITE HAS AN AREAL EXTENT OF APPROXIMATELY 182 ACRES (SEE SHEET 2).

THE ENTIRE AREA WAS ONCE PART OF THE TAYLOR'S RANCH. THE SOUTHWESTERLY PORTION OF THE STUDY AREA WAS DEVELOPED FOR RESIDENTIAL PURPOSES (LA LUZ DEL OESTE) IN THE EARLY 1970'S AND THE BALANCE OF THE AREA HAS CONTINUED TO BE USED FOR GRAZING PURPOSES. AT PRESENT, THE AREA IS A MIXTURE OF CITY (ZONED SU-1) AND COUNTY (ZONED A-1) PROPERTIES. THE PROPOSED SCHOOL SITE AND ACCESS ROADWAY WERE RECENTLY ANNEXED AND ZONED SU-1 FOR SCHOOL AND RELATED PURPOSES.

ALL OFFSITE DRAINAGE (EXCEPT THE EASTERLY HALF OF COORS BLVD. ROW) TO THE STUDY AREA HAS BEEN INTERCEPTED AT OR ABOVE COORS BLVD. AND EITHER ROUTED NORTH TO AN OUTFALL TO THE RIO GRANDE VIA THE MONTANO ROAD STORM DRAIN OR ROUTED SOUTH TO THE SAN ANTONIO ARROYO OR IN THE CASE OF LA LUZ DEL SOL RETAINED ONSITE (SEE ORTHO-TOPO MAP SHEET 3). THEREFORE, THE OFFSITE DRAINAGE TO THE SITE IS LIMITED TO THE EASTERLY HALF OF COORS RIGHT-OF-WAY (SEE SHEET 2).

COORS BLVD. HAS NO CURB AND GUTTER AND THE ROADWAY DISCHARGES IN A SHEET FLOW CONDITION TO THE ADJOINING PRIVATE PROPERTY. THE CITY TRANSPORTATION DEPARTMENT HAS STATED IN PUBLIC MEETINGS THAT THE ROADWAY WILL BE DEVELOPED WITH CURBS AND ADDITIONAL STORM DRAINAGE FACILITIES IN THE FUTURE AS FUNDING BECOMES AVAILABLE. THE EXISTING LA LUZ DEL OESTE RESIDENTIAL DEVELOPMENT DISCHARGES RUNOFF AT THREE POINTS ALONG ITS EASTERLY BORDER. THE BALANCE OF THE STUDY AREA IS UNDEVELOPED AND RUNS OFF IN AN EASTERLY DIRECTION UNDER SHEET FLOW CONDITIONS. THE RUNOFF THAT REACHES THE EASTERLY BOUNDARY OF THE STUDY AREA IS DAMMED BY THE WEST BANK OF THE LOWER CORRALES RIVERSIDE DRAIN. THE BANK IS OF SUFFICIENT HEIGHT AND WIDTH TO CAUSE RETENTION OF ALL STUDY AREA RUNOFF FOR A STORM IN EXCESS OF THE 100 YEAR, 6 HOUR STORM. A SMALL AREA (LESS THAN 1 ACRE) IN THE EXTREME SOUTHEAST CORNER OF THE STUDY AREA HAS BEEN DESIGNATED BY THE US CORPS OF ENGINEERS AS AN EXISTING WETLAND.

## PROPOSED CONDITIONS

A SMALL PERCENTAGE OF THE STUDY AREA IS PROPOSED FOR DEVELOPMENT AT THIS TIME. IMMEDIATE (PHASE I) DEVELOPMENT IS LIMITED TO THE SCHOOL SITE AND THE ACCESS ROADWAY. NO SITE PLANNING HAS BEEN PREPARED FOR THE BALANCE OF THE STUDY AREA.

THE FOLLOWING DISCUSSION IS BASED ON DIVIDING THE STUDY AREA INTO FOUR DISTINCT BASINS. BASIN 'A' IS COMPOSED OF THE UNDEVELOPED AREA BOUNDED BY COORS ROAD, MONTANO ROAD, LOWER CORRALES RIVERSIDE DRAIN, THE NORTH BOUNDARY OF THE SCHOOL SITE AND THE ACCESS ROAD; AND THE ACCESS ROAD. BASIN 'B' IS COMPOSED OF THE EXISTING LA LUZ DEL OESTE RESIDENTIAL DEVELOPMENT, THE APPROXIMATELY FORTY ACRE PARCEL BETWEEN LA LUZ DEL OESTE AND THE PROPOSED SCHOOL SITE AND THE UNDEVELOPED AREA BETWEEN THE PREVIOUSLY DESCRIBED AREA AND THE ACCESS ROAD. BASIN 'C' IS COMPOSED OF THE PROPOSED BOSQUE SCHOOL SITE. BASIN 'D' IS COMPOSED OF THAT PORTION OF BASIN 'A-3' BETWEEN THE FUTURE ACCESS ROAD EXTENSION AND THE LOWER CORRALES RIVERSIDE DRAIN. SEE SHEETS 3 & 4 FOR BASIN GRAPHIC BASIN DEFINITION. BASINS 'A-2' (THE ACCESS ROAD) AND 'C' (BOSQUE SCHOOL) ARE PROGRAMMED FOR IMMEDIATE DEVELOPMENT. THERE ARE NO PLANS OR TIME FRAMES FOR THE DEVELOPMENT OF THE BALANCE OF THE AREA.

*Need  
sheets*

*3 & 4 - layout*

### BASIN 'A'

#### BASIN 'A-1'

CONTOURS ON THE ORTHO-TOPO MAP ON SHEET 3 INDICATE THAT THE NATURAL FLOW OF THIS AREA IS TOWARD THE TEMPORARY TURN-AROUND AT THE TEMPORARY END OF THE ACCESS ROAD. THE TOP OF CURB ON THE ACCESS ROAD (BEING ABOVE THE ADJACENT GROUND) WILL PROVIDE ASSURANCE THAT THE WATER IN THIS BASIN WILL NOT ENTER THE ROAD SECTION. THE AREA AT THE END OF THE ROADWAY IS A NATURAL PONDING AREA. ~~IT IS PROPOSED THAT THIS AREA BE USED FOR TEMPORARY~~ RETENTION PONDING UNTIL THE BASIN IS DEVELOPED.

DEVELOPMENT IN THE BASIN WILL REQUIRE THE ELIMINATION OF THE TEMPORARY RETENTION POND AND SPLITTING OF THE BASIN INTO BASINS 'A-1A' AND BASIN 'D' WITH THE EXTENSION OF BASIN 'A-2' (SEE SHEET 4). DEVELOPED FLOWS IN THE BASIN ENTERING BASIN 'A-2' (THE ACCESS ROAD) SHALL BE MINIMIZED BY USING INTERNAL ROADS AND CHANNELS. THE FIRST DEVELOPMENT IN THE BASIN SHALL BE RESPONSIBLE FOR DESIGN AND CONSTRUCTION OF A DRAINAGE STRUCTURE TO CROSS THE ACCESS ROAD (BASIN 'A-2'), AN ELEVATED CHANNEL FROM THE ACCESS ROAD TO THE LOWER CORRALES RIVERSIDE DRAIN NEAR THE NORTH BOUNDARY OF BASIN 'C', A FLUME ACROSS THE LOWER CORRALES RIVERSIDE DRAIN, AN EROSION CONTROL STRUCTURE AT THE FLUME OUTLET AND SUFFICIENT GRADING OF BASINS 'A-2' AND 'A-1A' TO PROVIDE POSITIVE DRAINAGE OF THESE BASINS TO THE ELEVATED CHANNEL.

#### BASIN 'A-2'

THE ACCESS ROAD IS TO BE A DEDICATED STREET FROM COORS ROAD TO THE NEW CONNECTION ROAD TO THE EXISTING LA LUZ DEL OESTE ROADWAY SYSTEM. THIS SECTION OF STREET WILL BE CONSTRUCTED IN A RIGHT-OF-

WAY THAT WILL BE AT LEAST 86 FEET IN WIDTH. THE REMAINING PORTION OF THE ACCESS ROAD WILL BE CONSTRUCTED IN A 60 FOOT PRIVATE ACCESS EASEMENT. IT IS PROPOSED THAT THE TOP OF CURB ON THE SOUTH AND WEST SIDES OF THESE ROADWAY SECTIONS BE AT LEAST 1 FOOT HIGHER THAN THE EXISTING OR GRADED GROUND. THE PROPOSED STREET SECTIONS ARE AT LEAST 36 FEET FROM FACE TO FACE OF CURB. A WRITTEN AGREEMENT HAS BEEN COMPLETED WITH THE CITY OF ALBUQUERQUE FOR THE PRIVATE ROADWAY PORTION OF THE ACCESS ROAD. THE AGREEMENT PROVIDES FOR THE FUTURE DEDICATION OF THE RIGHT-OF-WAY AND FACILITIES TO THE CITY OF ALBUQUERQUE.

#### BASIN 'B'

##### BASIN 'B-1'

THIS BASIN IS COMPOSED OF LANDS THAT ARE PRESENTLY DEVELOPED AS RESIDENTIAL UNITS, ASSOCIATED COMMON AREAS AND A PERMANENT OPEN AREA. THE OPEN AREA IS DEFINED BY COVENANT BETWEEN THE LAND OWNER AND THE LA LUZ DEL OESTE HOMEOWNERS AND NO STRUCTURAL DEVELOPMENT OTHER THAN ROADS, UTILITIES AND RELATED FACILITIES ARE TO BE CONSTRUCTED ON THIS PROPERTY. THE DEVELOPMENT IN THIS AREA IS COMPLETE AND AREAS THAT ARE NOW OPEN WILL REMAIN SO. (La Luz)

CONSTRUCTION OF A ROADSIDE CHANNEL ALONG THE EASTERLY SIDE OF THE BASIN SHALL BE THE RESPONSIBILITY OF DEVELOPER OF THE FIRST DEVELOPMENT IN EITHER BASIN 'B-2' OR BASIN 'B-3'. THIS DEVELOPER SHALL ALSO BE RESPONSIBLE FOR THE CONSTRUCTION OF A FLUME ACROSS THE LOWER CORRALES RIVERSIDE DRAIN AND AN EROSION CONTROL STRUCTURE AT IT'S OUTLET. THE FACILITIES SHALL BE DESIGNED FOR DIRECT DISCHARGE FLOWS FROM FULLY DEVELOPED BASINS 'B-1', 'B-2', 'B-3' AND THE FUTURE ACCESS ROAD ALONG THE EASTERLY BOUNDARY OF BASIN 'B'.

##### BASIN 'B-2'

THE ORTHO-TOPO MAP ON SHEET 3 INDICATES THAT THE BULK OF THE BASIN DRAINS TOWARD THE ACCESS ROAD AND THE LA LUZ DEL OESTE CONNECTION ROAD. IT IS PROPOSED THAT NO WORK BE DONE AT THIS TIME TO AFFECT DRAINAGE IN THIS AREA. WHEN THE PARCEL IS DEVELOPED, GRADING SHALL BE DESIGNED TO DIRECT DRAINAGE OF THE ENTIRE AREA TO BASIN 'B-3'. IN THE INTERIM THE ACCESS ROAD, BEING ELEVATED ABOVE THE NATURAL GROUND, WILL PREVENT RUNOFF FROM ENTERING BASIN 'A-1' OR 'A-2'.

##### BASIN 'B-3'

THIS AREA IS TRAVERSED BY A SMALL ARROYO WHOSE UPLAND AREA HAS BEEN CUT OFF BY CONSTRUCTION OF LA LUZ DEL OESTE. THE BASIN PRESENTLY DRAINS TO BASIN 'C' AND WILL CONTINUE TO DO SO UNTIL DEVELOPMENT TAKES PLACE IN EITHER BASIN 'B-2' OR BASIN 'B-3'. NO WORK IS PROPOSED FOR THIS BASIN AT THIS TIME.

EXISTING BASIN 'B-1' RUNOFF TO THIS AREA WILL BE ALLOWED TO CONTINUE UNTIL BASIN 'B-3' IS DEVELOPED. PART OF THE DEVELOPMENT

OF BASIN 'B-3' SHALL BE THE CONSTRUCTION OF A DIKE ALONG THE WEST AND SOUTH SIDES OF BASIN 'B-3', BUT IN BASIN 'B-1', TO MAINTAIN BASIN 'B-1' RUNOFF IN BASIN 'B-1'.

DIRECT DISCHARGE OF BASIN 'B-2' DEVELOPED RUNOFF SHALL BE ACCEPTED BY BASIN 'B-3'. DEVELOPED BASIN 'B-2' AND 'B-3' FLOWS SHALL BE ROUTED VIA ROADSIDE CHANNEL TO A FLUME ACROSS THE LOWER CORRALES RIVERSIDE DRAIN (SEE BASIN 'B-1' NARRATIVE AND SHEET 4).

#### BASIN 'B-4'

THIS ACCESS ROAD WILL BE CONSTRUCTED IN THE FUTURE TO PROVIDE A VEHICULAR LINK TO PROPERTY SOUTH OF THE AREA DESCRIBED AS 'OPEN AREA' IN BASIN 'B-1'. THE ROADWAY WILL ALSO ACT AS A DIKE TO DIRECT FLOW SOUTH TO THE CHANNEL AND FLUME OUTFALL FROM BASIN 'B'.

#### BASIN 'C'

THIS AREA IS ZONED SU-1 FOR SCHOOL AND RELATED FACILITIES AND IS TO BE DEVELOPED AS A PRIVATE SCHOOL IN A PHASED PROGRAM OVER A NUMBER OF YEARS. A DETAILED GRADING AND DRAINAGE PLAN FOR EACH PHASE WILL BE PREPARED BY THE OWNER AND REVIEWED AND APPROVED BY THE CITY OF ALBUQUERQUE USING THE FOLLOWING CRITERIA.

1. IN THE FUTURE WHEN THE ROADSIDE CHANNEL DESCRIBED BASIN 'B' ABOVE IS CONSTRUCTED THERE WILL BE NO OFFSITE DRAINAGE TO THE BASIN. IN THE INTERIM RUNOFF FROM THESE BASINS WILL ENTER BASIN 'C' IN AN HISTORICAL MANNER.
2. THE SITE SHALL UTILIZE WATER HARVESTING AS MUCH AS POSSIBLE IN LANDSCAPING AREAS.
3. THE SITE DRAINAGE SHALL BE DESIGNED AS A RETENTION SYSTEM. THE RETENTION SYSTEM SHALL BE DESIGNED FOR THE LARGER OF 2-100 YEAR, 6 HOUR STORMS OR 1-100 YEAR, 10 DAY STORM. THE WEST BANK OF THE LOWER CORRALES RIVERSIDE DRAIN SHALL SERVE AS AN EMERGENCY SPILLWAY WITH AN APPROXIMATE ELEVATION OF 4975.0.
4. FINISH FLOORS OF ALL BUILDINGS SHALL HAVE A MINIMUM ELEVATION OF 4975.5.

#### BASIN 'D'

THIS BASIN WILL BE FORMED IN THE FUTURE WITH THE GRADING OF THE EXTENSION OF THE ACCESS ROAD THROUGH BASIN 'A-3'. THIS CONSTRUCTION WILL SEVER BASIN 'A-3' INTO WHAT WILL BE AN UPLAND AREA (BASIN 'A-3A') WITH AN OUTFALL TO THE BOSQUE AND A LOWLAND AREA (BASIN 'D') WITH CONDITIONS SIMILAR TO BASIN 'C'.

1. THE BASIN SHALL UTILIZE WATER HARVESTING AS MUCH AS POSSIBLE IN LANDSCAPING AREAS.
2. THE SITE DRAINAGE SHALL BE DESIGNED AS A RETENTION ←

SYSTEM. THE RETENTION SYSTEM SHALL BE DESIGNED FOR THE LARGER OF 2-100 YEAR, 6 HOUR STORMS OR A 100 YEAR, 10 DAY STORM. MAXIMUM WATER DEPTH IN PONDS FOR THE COMBINED STORMS SHALL BE ONE FOOT. ~~THE WEST BANK OF THE LOWER CORRALES RIVERSIDE DRAIN SHALL SERVE AS AN EMERGENCY SPILLWAY.~~

3. FINISH FLOORS OF ALL BUILDINGS SHALL HAVE A MINIMUM ELEVATION APPROXIMATELY 0.5 FEET ABOVE THE ADJACENT WEST BANK OF THE LOWER CORRALES RIVERSIDE DRAIN.

### CONCLUSIONS

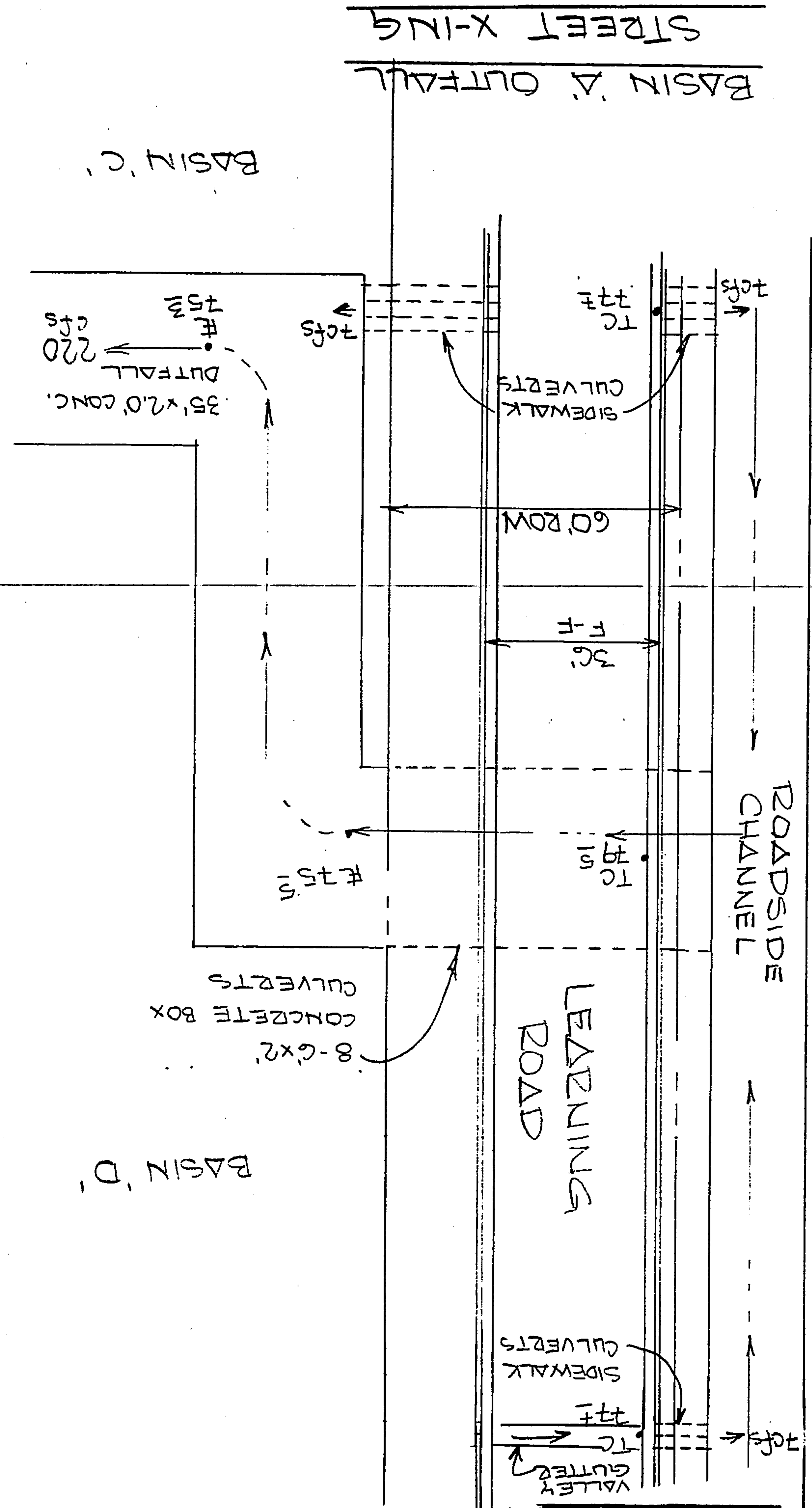
1. OFFSITE DRAINAGE TO THE STUDY AREA IS LIMITED TO THE EASTERLY HALF OF COORS BLVD. THE CITY OF ALBUQUERQUE PLANS TO ELIMINATE THIS RUNOFF WITH FUTURE IMPROVEMENTS TO COORS BLVD.
2. ALL FUTURE SITE PLANS AND DEVELOPMENT PROPOSALS WITHIN THE STUDY AREA SHALL BE REQUIRED TO HAVE DETAILED GRADING AND DRAINAGE REPORTS/PLANS BASED ON THIS MASTER DRAINAGE PLAN.
3. BASINS 'A-1' AND 'A-2' SHALL BE DESIGNED AS A TEMPORARY RETENTION SYSTEM. A BERM SHALL BE CONSTRUCTED ALONG THE NORTH BOUNDARY OF BASIN 'C' TO IMPOUND THE RUNOFF FROM BASINS 'A-1' AND 'A-2' IN BASIN 'A-1'. THE BERM SHALL BE A PART OF THE ROADWAY, UTILITY AND DRAINAGE INFRASTRUCTURE. DEVELOPMENT IN BASIN 'A-1' WILL REQUIRE THE DESIGN AND CONSTRUCTION OF A ROAD CROSSING STRUCTURE, AN ELEVATED CHANNEL, FLUME ACROSS THE LOWER CORRALES RIVER SIDE DRAIN, EROSION CONTROL STRUCTURE AT FLUME OUTLET AND GRADING OF THE BALANCE OF BASIN 'A-2' AND A PORTION OF BASIN 'A-1'. NOTE: THE FLUME WILL REQUIRE MRGCD APPROVAL.
4. BASIN 'B-1' IS PRESENTLY DRAINS IN A SHEET FLOW CONDITION TO THE EAST. NO GRADING IN BASIN 'B-1' IS REQUIRED TO OBTAIN ACCESS TO THE FUTURE ROADSIDE CHANNEL AND FLUME STRUCTURE DISCUSSED IN ITEM-5-BELOW.
5. BASINS 'B-2' AND 'B-3' SHALL BE ALLOWED TO DRAIN IN A NATURAL STATE TO BASIN 'C' UNTIL DEVELOPMENT TAKES PLACE IN EITHER BASIN 'B-2' OR BASIN 'B-3'. DEVELOPMENT IN EITHER BASIN 'B-2' OR 'B-3' WILL REQUIRE THE DESIGN AND CONSTRUCTION OF A BERM IN BASIN 'B-1' ON THE WEST AND SOUTH SIDES OF BASIN 'B-3', A ROADSIDE CHANNEL IN BASINS 'B-3 AND 'B-1', AND A FLUME ACROSS THE LOWER CORRALES RIVER SIDE DRAIN WITH AN EROSION CONTROL STRUCTURE AT THE FLUME OUTLET. NOTE: THE FLUME WILL REQUIRE MRGCD APPROVAL.
6. BASIN 'B-4' IS NOT REQUIRED FOR THE DEVELOPMENT OF PROPERTIES WITHIN THE STUDY AREA. THIS FACILITY WILL BE CONSTRUCTED IN THE FUTURE AS A VEHICULAR LINK BETWEEN PROPERTIES NORTH AND SOUTH OF 'OPEN AREA' PROPERTY IN BASIN 'B-1'.
7. ~~BASIN 'C' SHALL BE DESIGNED AS A PERMANENT RETENTION SYSTEM~~ WITH THE WEST BANK OF THE LOWER CORRALES RIVERSIDE DRAIN ACTING AS AN EMERGENCY SPILLWAY. ALL FINISH FLOORS SHALL HAVE A MINIMUM ELEVATION OF 4975.5.

8. ~~BASIN 'D'~~ SHALL BE DESIGNED AS A PERMANENT RETENTION SYSTEM WITH THE WEST BANK OF THE LOWER CORRALES RIVERSIDE DRAIN ACTING AS AN EMERGENCY SPILLWAY. ALL FINISH FLOORS SHALL HAVE A MINIMUM ELEVATION 0.5 FEET ABOVE THE ADJACENT LOWER CORRALES RIVERSIDE DRAIN BANK.

9. ALL OF BASINS 'A', 'C' & 'D' ARE DESIGNATED FLOOD HAZARD AREA 'X' AND NO BASIN IS LOCATED IN A FLOOD HAZARD AREA DESIGNATED 'A' OR 'AH' PER FEMA FIRM PANELS NO. 114 AND 118, DATED SEPTEMBER 20, 1996.

EXHIBIT A-1

BASIN 'A-1A'



# EXHIBIT A-2

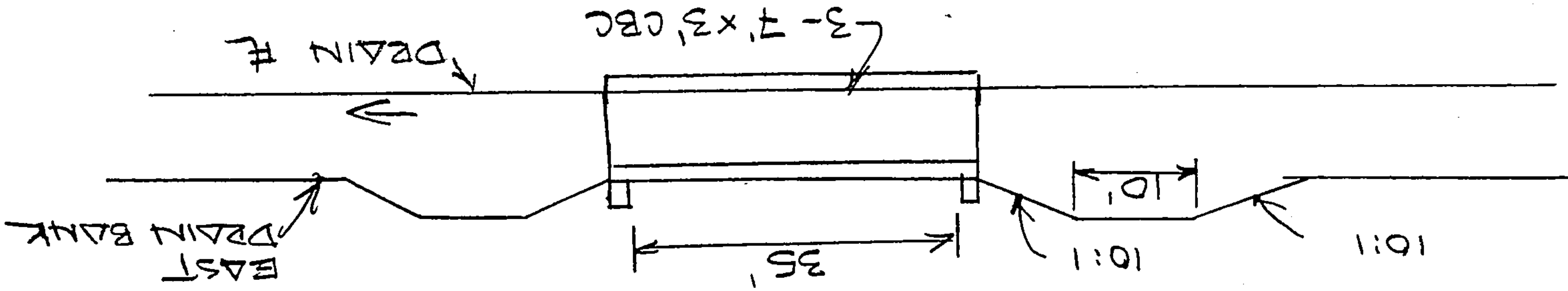
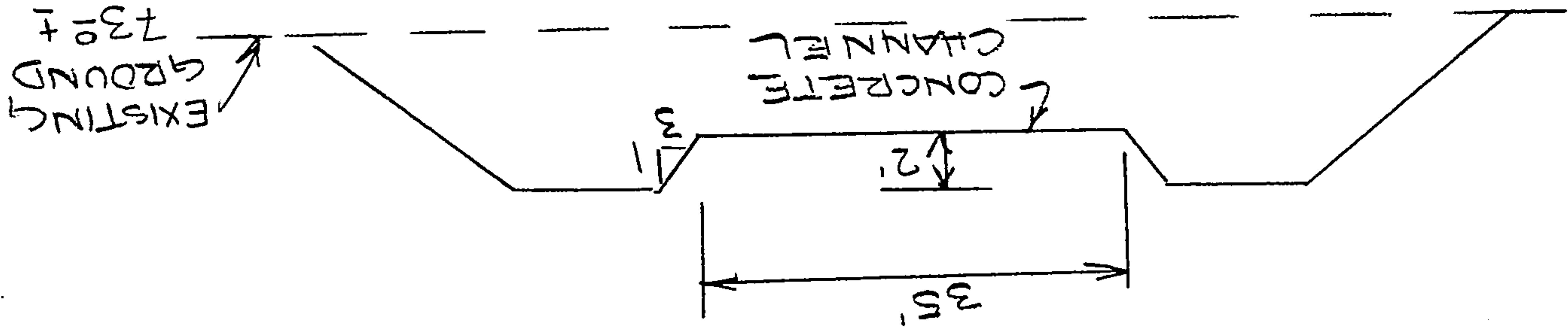
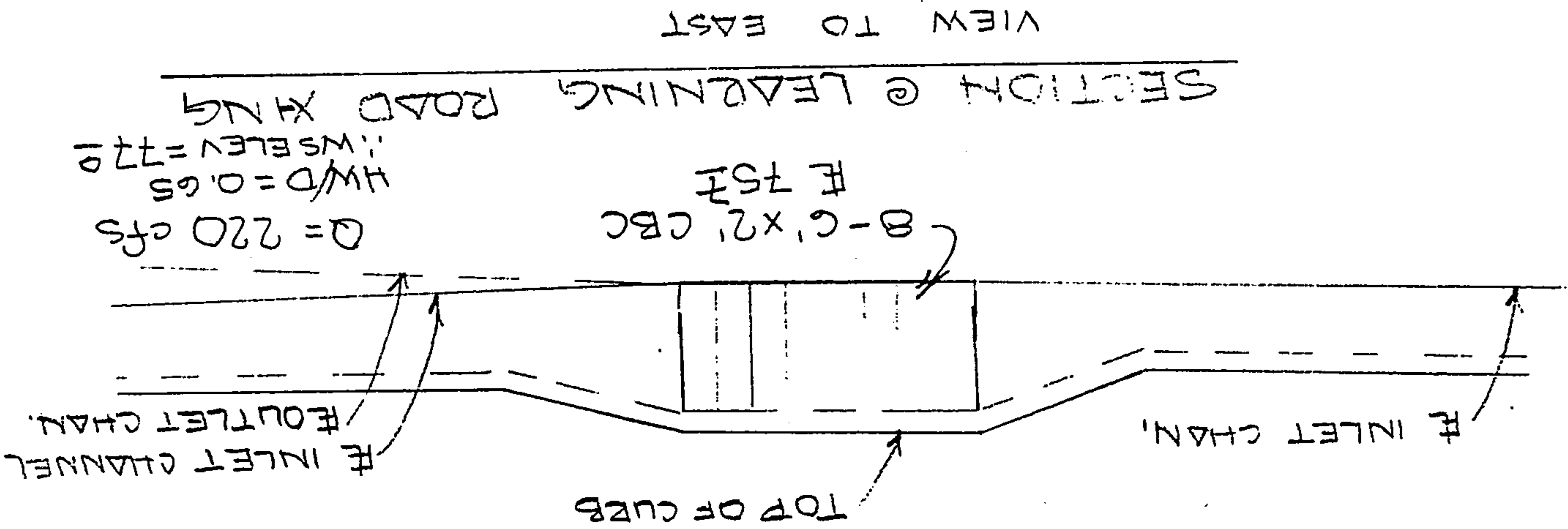
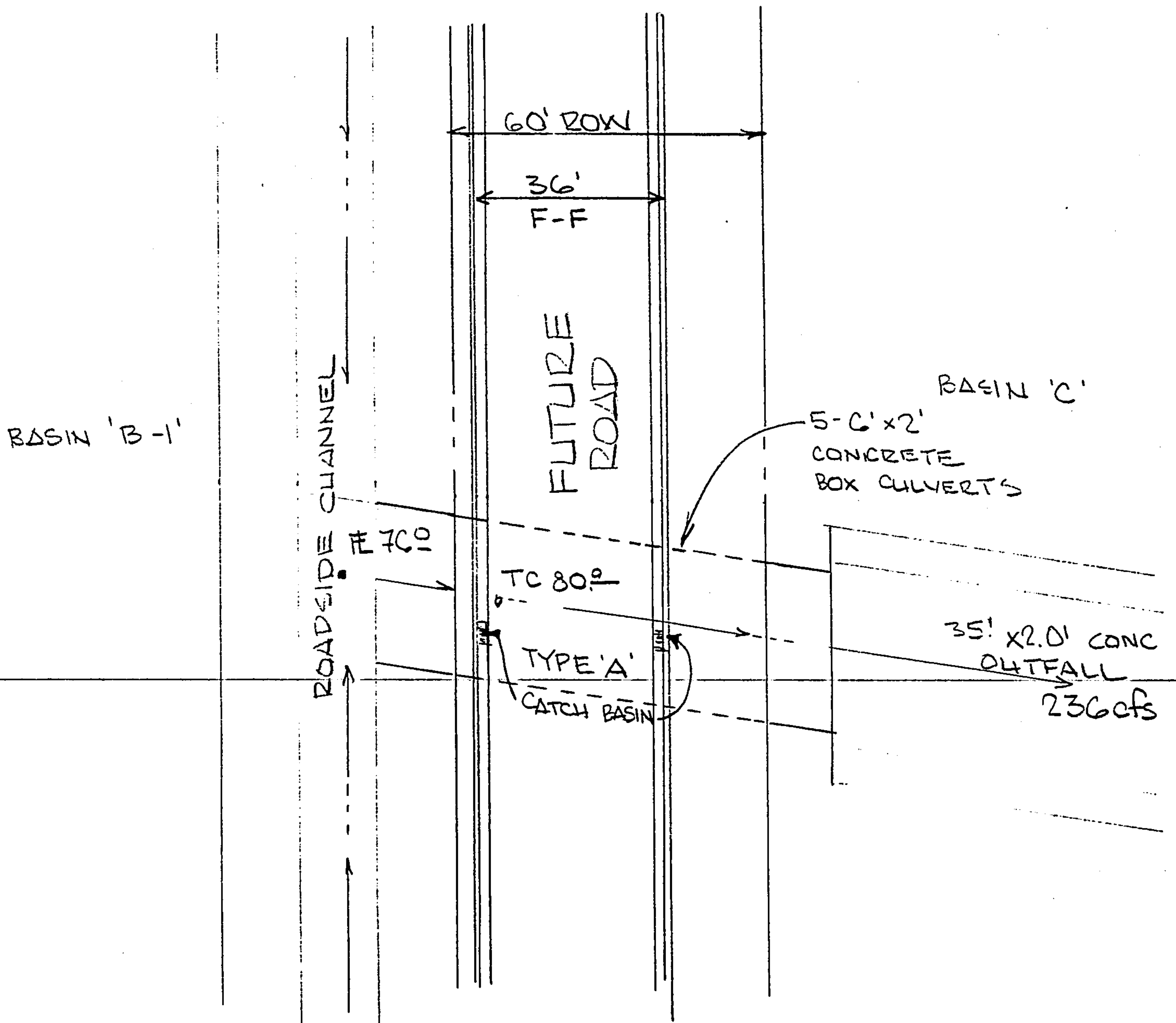
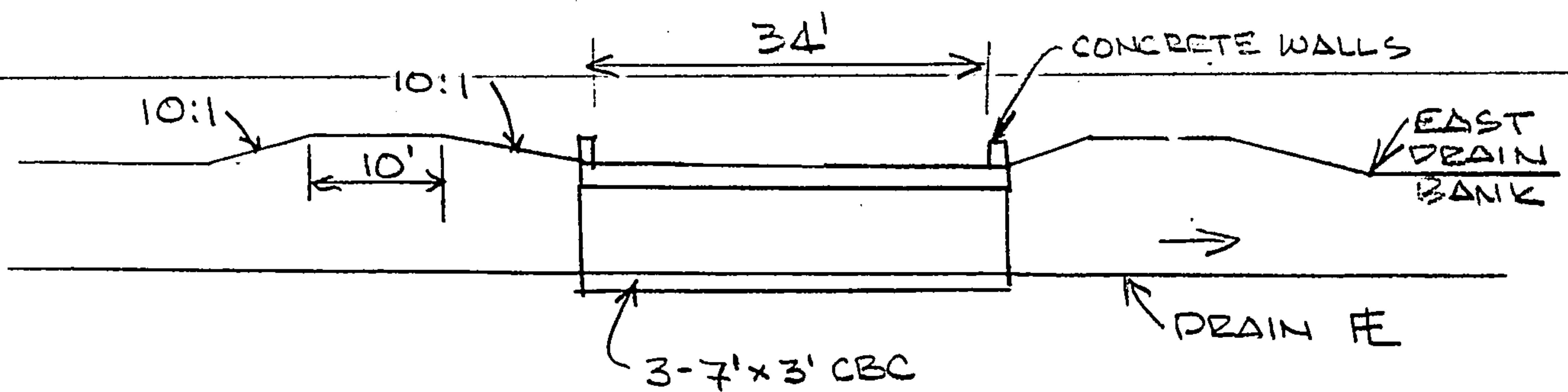
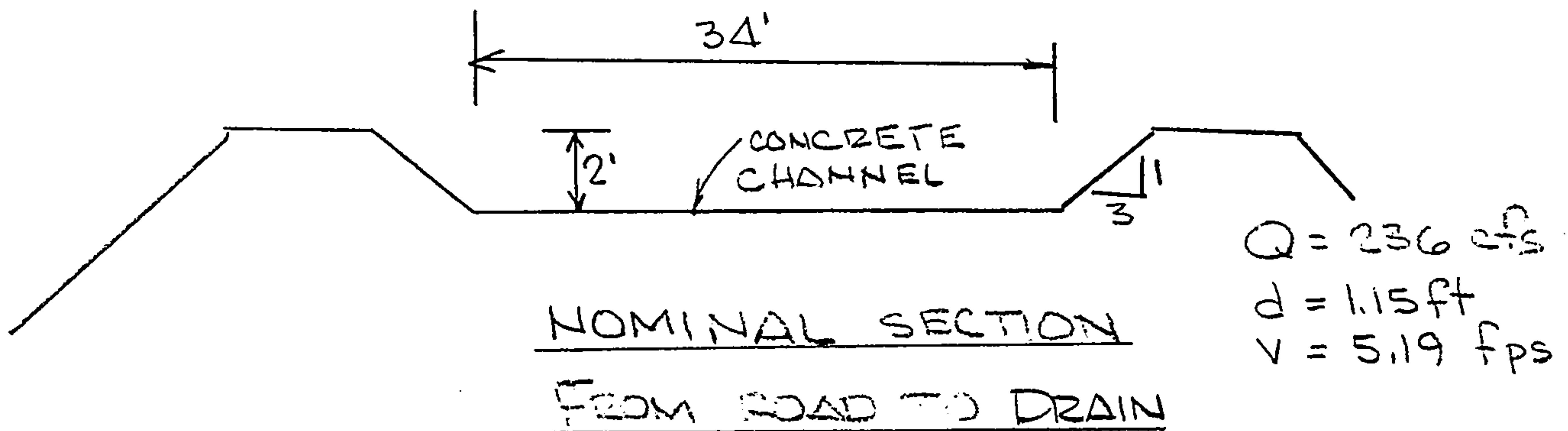
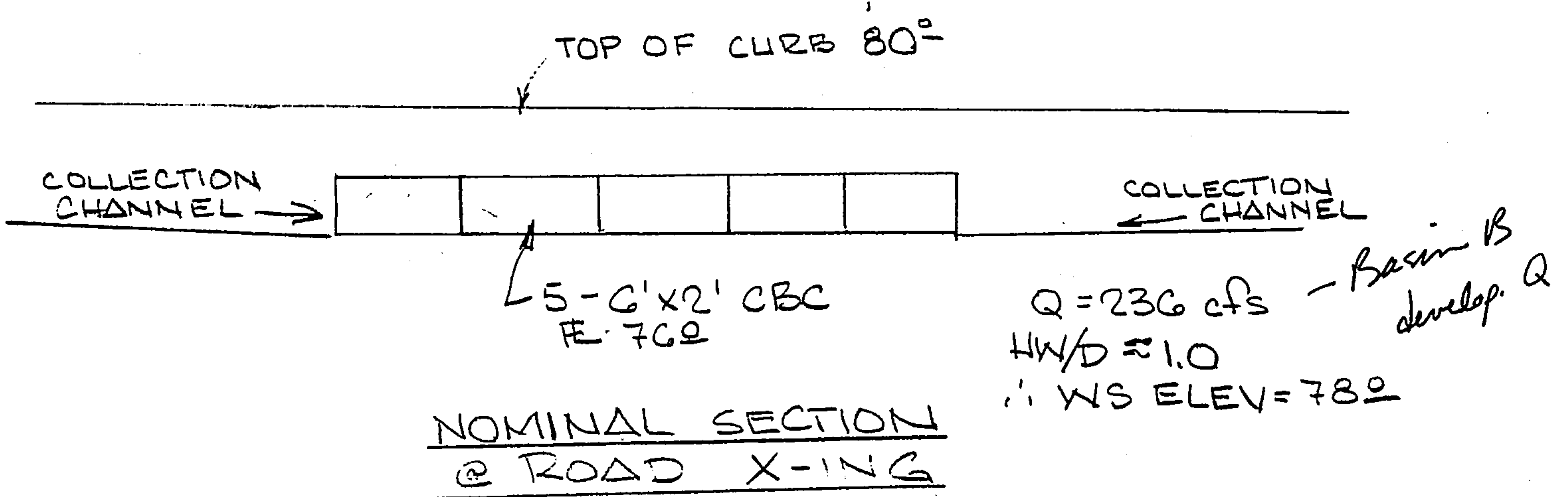


EXHIBIT B-1



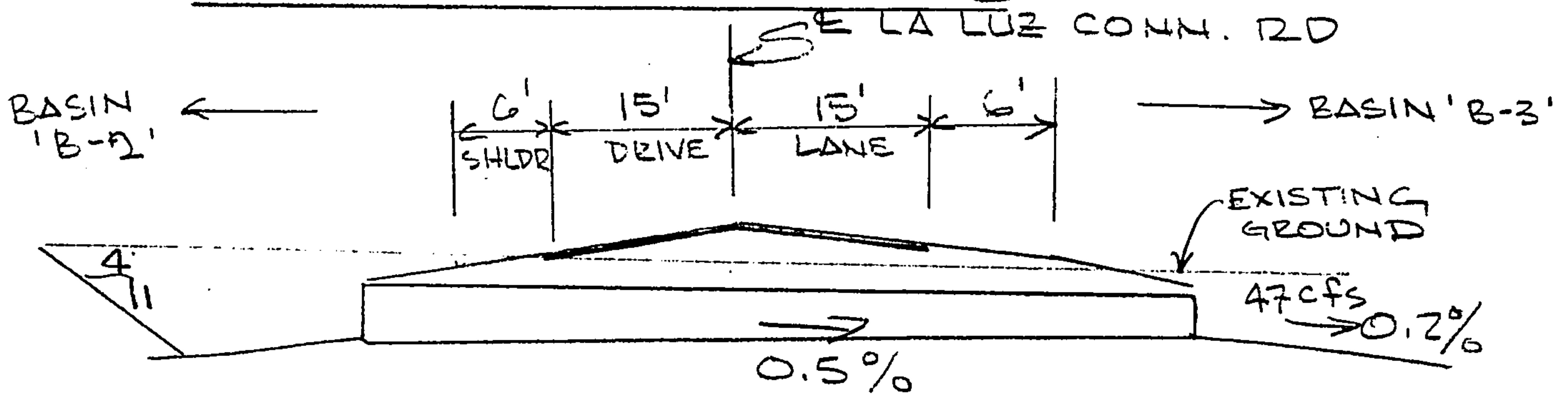
BASIN 'B' OUTFALL  
STREET X-ING

# EXHIBIT B-2



# EXHIBIT C-1

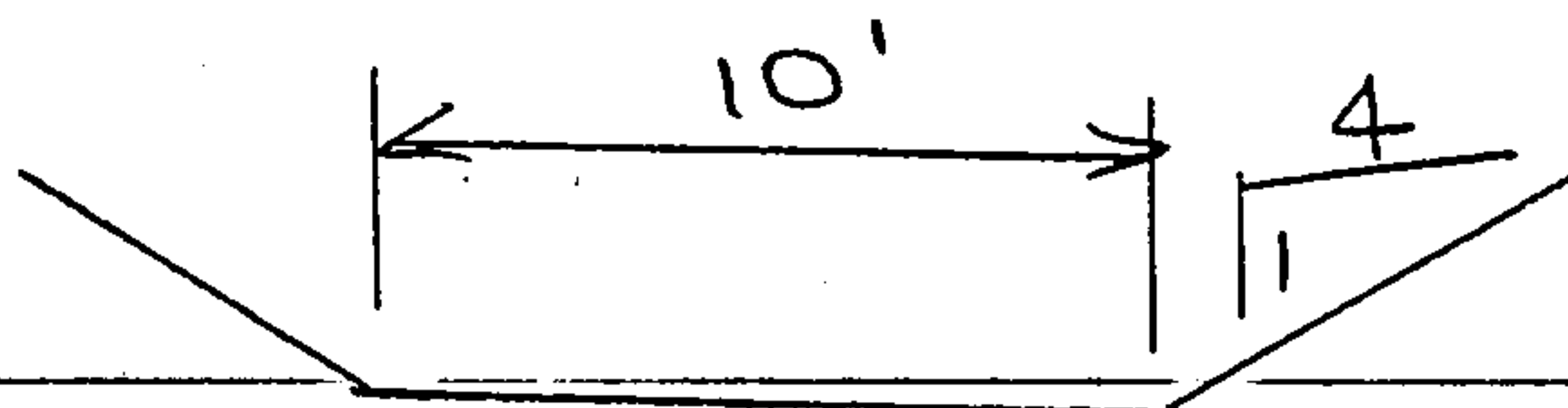
## BASIN 'B-2' CULVERTS



$Q = 47 \text{ cfs}$   
USE 2 PIPE = (30")  
 $HW/D = 1.0 \pm$

## OUTFALL CHANNEL

(temporary earth channel)



$Q = 11.3 \text{ cfs}$  — BASIN B2 (existing Q)  
 $S = 0.2 \%$   
 $n = 0.030$   
 $d = 0.63 \text{ ft.}$   
 $V = 1.43 \text{ fps}$

# EXHIBIT C-2

## BASIN B-2 TEMPORARY OUTFALL Worksheet for Trapezoidal Channel

### Project Description

Project File	c:\hydraul\fmw\9829.fm2
Worksheet	BASIN B-2 UNDEVELOPED
Flow Element	Trapezoidal Channel
Method	Manning's Formula
Solve For	Channel Depth

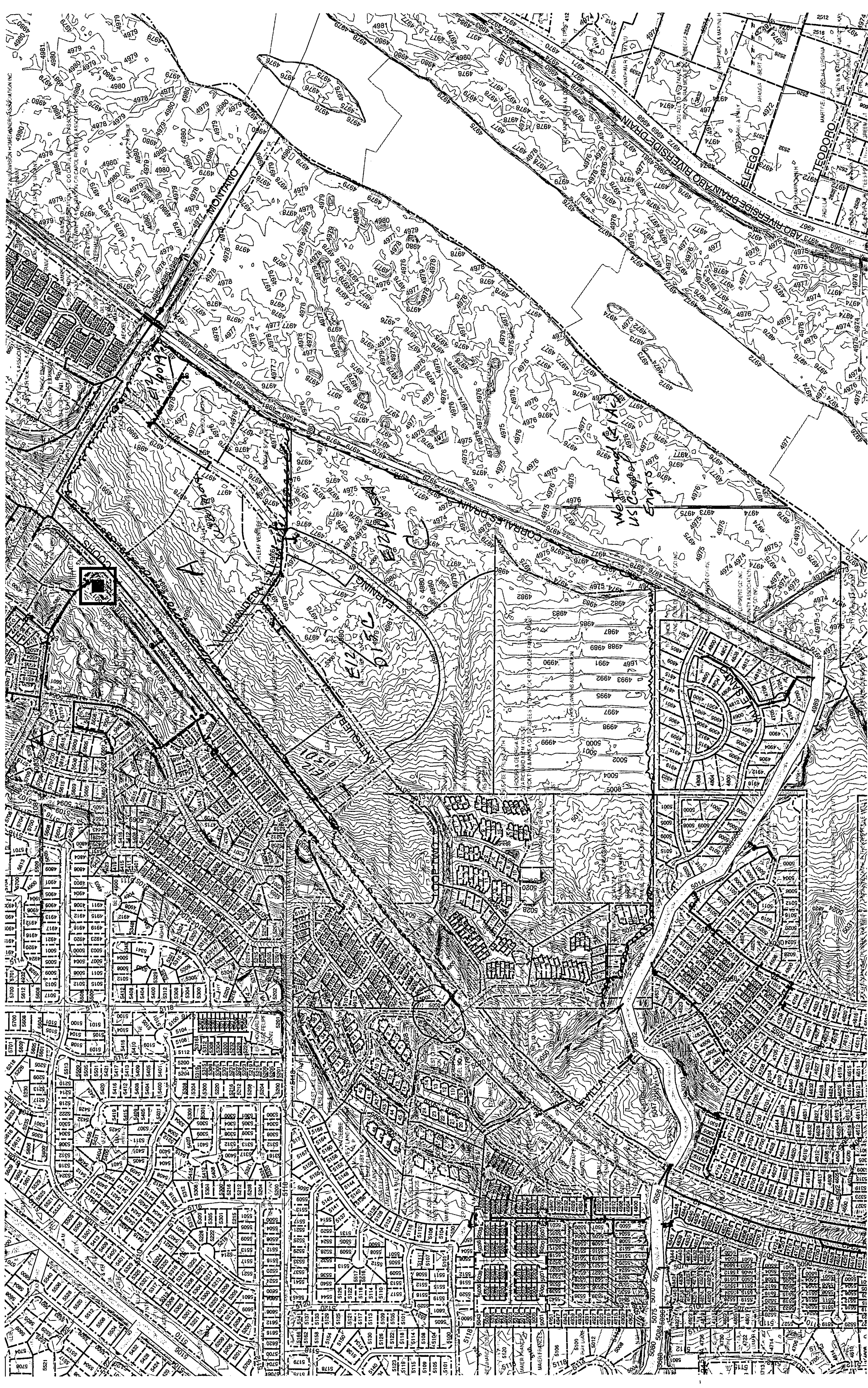
### Input Data

Mannings Coefficient	0.030
Channel Slope	0.002000 ft/ft
Left Side Slope	4.000000 H : V
Right Side Slope	4.000000 H : V
Bottom Width	10.00 ft
Discharge	11.30 cfs

### Results

Depth	0.63	ft
Flow Area	7.89	ft <sup>2</sup>
Wetted Perimeter	15.20	ft
Top Width	15.04	ft
Critical Depth	0.33	ft
Critical Slope	0.019929	ft/ft
Velocity	1.43	ft/s
Velocity Head	0.03	ft
Specific Energy	0.66	ft
Froude Number	0.35	

Flow is subcritical.





# ***City of Albuquerque***

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

February 6, 2002

Jake Bordenave  
Bordenave Designs  
P.O Box 91194  
Albuquerque, New Mexico 87199

**RE: Grading and Drainage Plan for Lands of Ray Graham (E12-D154) Received  
October 1, 2001 and Letter dated January 28, 2002**

Dear Mr. Bordenave:

The above referenced drainage plan is approved for DRB action. Prior to the approval at DRB for Bulk Land Plat the approval of the public drainage easement will need to be finalized.

Sincerely,

Carlos A. Montoya  
City Floodplain Administrator

# **Bordenave Designs**

January 28, 2002

City of Albuquerque  
PWD/Hydrology  
P.O. Box 1293  
Albuquerque, NM 87103

Attn: Carlos Montoya  
Re: E12/D15B

**RECEIVED**  
JAN 29 2002  
**HYDROLOGY SECTION**

Dear Sir,

The following is written in response to your comments dated October 1, 2001. The responses are in the same order as the comments.

- ✓ 1. Namaste Road and La Bienvenida Place are existing public roads. Both roads are unsurfaced and neither road actually drains onto Tract 1. Maintenance grading of the roads over the years has caused the roads to be earth lined channels and they either drain onto one of the lots in West Bank Estates or Tract A-1, Lands of Suzanne H. Poole.
- ✓ 2. The San Antonio Arroyo was designed and constructed by AMAFCA to accommodate the existing City access road to Lift Station 24 (Tract B of the proposed plat). AMAFCA did obtain the land necessary for the detention pond. This land was obtained from S. Poole and is outside the boundary of this plat.
- ✓ 3. These basin boundary lines were based on dividing the flows into reasonably equal values and may be significantly altered when actual site plans for the development of the area are prepared. The intent of this plan was to determine what, if any, easements should be granted on this plat to provide a drainage outlet for the tract.
- ✓ 4. AMAFCA has now reviewed this plan and has written a letter (submitted to you under separate cover) stating they have no negative concerns.
- ✓ 5. Tract 1 does not have a drainage easement across Tract 2 as all runoff from Tract 1 is to be routed to the San Antonio Arroyo (which has an existing easement across Tract 2) before it reaches Tract 2.
- ✓ 6. Tract B (City's tract) does not have an easement across Tract 2. The bulk of the runoff from Tract B (the lift station proper) is presently directed into the Lower Corrales Riverside Drain.
7. Most of the side channel inlets into the San Antonio Arroyo exist. Any new inlets will require AMAFCA approval.

P.O. Box 91194  
Albuquerque, NM 87199-1194  
Phone (505)823-1344 Fax (505)821-9105 Cell 480-6812  
Email [jakebordenave@mindspring.com](mailto:jakebordenave@mindspring.com)

January 28, 2002

Carlos Montoya

E12/D15B

page 2

8. Since there is no impact on adjacent tracts it is requested that the easement for public runoff from Coors Blvd. be granted by the developer of Tract 1 at locations that best fit the actual development of the tract.
9. This land is in private ownership belonging to Ray A. Graham and is outside the boundary of the proposed plat. Documents granting easements across this property will be prepared.

A copy of the report has been made available to MRGCD for comment since the proposed flumes cross the Lower Corrales Riverside Drain. They have reviewed and verbally approved the plan. We understand that the Corps of Engineers will have an opportunity to review and comment on specific construction plans when they are prepared.

10. Tract 3 has an existing filed agreement as noted on the plat that prevents it from being developed and that allows drainage, utilities and roadways.
11. The first 400+ feet east of Coors Blvd is a public road. There is an existing 'temporary blanket' public drainage easement to the outfall.
12. Drainage easements granted by this plat have language regarding maintenance responsibilities.
13. At present Tract 4 runoff enters Lot 4a at the southeast corner of Tract 3. There is an existing drainage easement on Lot 4a at this point.

Thank you for your review and comments.

Sincerely,



Jean J. (Jake) Bordenave

RONALD D. BROWN, CHAIR  
DANIEL W. COOK, VICE CHAIR  
TIM ECHENOLD, SECRETARY-TREASURER  
LINDA E. HALL, ASST. SECRETARY-TREASURER  
DANNY HERNANDEZ, DIRECTOR

JOHN P. KELLY, P.E.  
EXECUTIVE ENGINEER



**Albuquerque  
Metropolitan  
Arroyo  
Flood  
Control  
Authority**

2800 PROSPECT NE • ALBUQUERQUE, NM 87107

PHONE: (505) 884-2215  
FAX: (505) 884-0214

Post-it® Fax Note

7671

Date	1-22-02	# of pages	1
To	CARLOS MONTAÑA		
From	LYNN MAZUR		
Co./Dept.	HYDROLOGY		
Co.	AMAFCA		
Phone #			
Fax #			

December 18, 2001

Mr. Jake Bordenave  
Bordenave Designs  
P.O. Box 91194  
Albuquerque, NM 87199-1194

Re: Lands of Ray A. Graham, III Master Drainage Report, ZAP E-12

Dear Mr. Bordenave:

AMAFCA approves the referenced conceptual drainage plan for Bulk Land Plat.  
AMAFCA will review the Grading & Drainage Plans as the area develops.

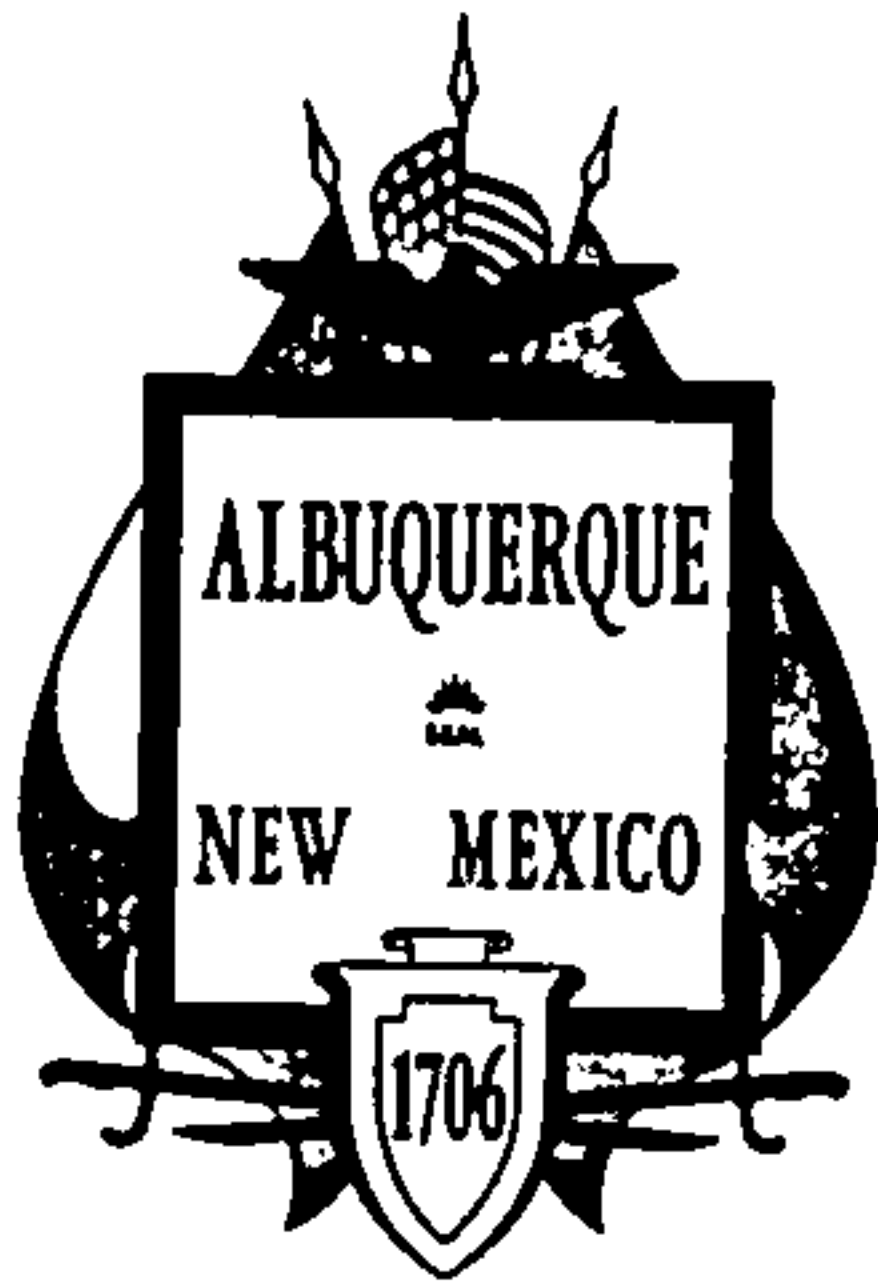
If you have any questions, please call me at 884-2215.

Sincerely,  
AMAFCA

*Lynn M. Mazur*

Lynn M. Mazur, P.E.  
Development Review Engineer

Cc: Brad Bingham, COA Hydrology



# ***City of Albuquerque***

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

November 2, 2001

Jake Bordenave  
Bordenave Designs  
P.O Box 91194  
Albuquerque, New Mexico 87199

**RE: Grading and Drainage Plan for Lands of Ray Graham (E12-D15B) Received  
October 1, 2001**

Dear Mr. Bordenave:

I have reviewed the referenced Drainage Plan for Bulk Land Plat and forward the following comments.

1. I assume that Namaste Road and La Bienvenida Place are public roads. Runoff from these roads enters Tract 1 along the length of the road. Public easements would be needed for flow across Tract 1.
2. The San Antonio Arroyo has an awkward area as La Bienvenida Place meets the 32-foot access easement. Is the curve part of the public roadway? Does AMAFCA have the necessary easement for their detention pond?
3. Please check your drainage basin boundary between basin E and Basin D in Track 1.
4. AMAFCA will have to review this drainage plan because you are affecting the San Antonio Arroyo. Please make a copy available to them if you have not.
5. Does Tract 1 have an easement across Tract 2?
6. Does the City's tract have a drainage easement to get to the San Antonio?
7. Please give us an example of the Channel inlets into the San Antonio Arroyo.
8. Basin A in Tract 1 has offsite public runoff from Coors Road. We would need a public easement for this public water.
9. This comment refers to all the concrete flume crossings over the Lower Corrales Riverside Drain. Do you have all the necessary approval from MRGCD, Rio Grande State Park, and Corp of Engineers? Do you have the drainage easements downstream from these structures? If any of these or other agencies disapproves your outfall the drainage concept will have to be changed.

10. Does Tracts 4 and the existing La Luz del Oeste have drainage easements across Tract 3?
11. Is any part of the existing or proposed Learning Road Public. If there is a public street then you will need a public easement to the outfall.
12. If there are any public or private drainage easements on the plat we would need to designate who will maintain them.
13. Does Tract 4 enter lot 4a? If so is there any drainage easements?

There was a lot of information to review from different drainage files. I may have missed information that you submitted. If you wanted to meet and review my comments please call me 924-3982.

Sincerely,

A handwritten signature in black ink, appearing to read 'Carlos A. Montoya', with a horizontal line extending to the right.

Carlos A. Montoya  
City Floodplain Administrator

# **MASTER DRAINAGE REPORT**

for

**BULK LAND PLAT**

of

**LANDS OF RAY A. GRAHAM, III  
and**

**CITY OF ALBUQUERQUE**

SEPTEMBER 9, 2001

**PREPARED FOR:**

RAY A. GRAHAM, III  
ONE WIND NW  
ALBUQUERQUE, NM 87120

**PREPARED BY:**

BORDENAVE DESIGNS  
PO BOX 91194  
ALBUQUERQUE, NM 87199



## **PURPOSE**

THE PURPOSE OF THIS REPORT IS TO ESTABLISH A GENERAL DRAINAGE PLAN TO DETERMINE THE NEED FOR DRAINAGE EASEMENTS FOR THE PROPOSED BULK LAND PLAT FOR THE AREA. THE PROPERTY IN QUESTION IS PRESENTLY UNPLATTED AND MOST HAS ONLY RECENTLY BEEN ANNEXED AND ZONED. TO ASSIST IN THE EFFORT TO PROVIDE A COMPREHENSIVE PLAN FOR ALL THE PROPERTY IN THE PLAT, TWO PREVIOUSLY APPROVED REPORTS HAVE BEEN INCLUDED IN THIS SUBMITTAL. ALL LANDS BETWEEN NAMASTE/LA BIENVENIDA ON THE SOUTH, MONTANO ROAD ON THE NORTH, COORS BLVD. ON THE WEST AND THE LOWER CORRALES DRAIN ON THE EAST ARE INCLUDED BETWEEN THE THREE REPORTS.

## **CONCLUSIONS**

- THE PURPOSE OF THIS DRAINAGE REPORT IS TO ASCERTAIN THE NEED FOR DRAINAGE EASEMENTS DURING THE BULK LAND PLATTING PROCEDURE.
- NO IMMEDIATE DEVELOPMENT IS PLANNED OR EXPECTED AT THIS TIME.
- THE SAN ANTONIO ARROYO (A FULLY DEVELOPED CONVEYANCE) AND TWO PROPOSED CROSSINGS OF THE LOWER CORRALES RIVERSIDE DRAIN SHOWN IN APPENDIX 'A' PROVIDE DRAINAGE OUTLETS FOR THE AREA IN QUESTION.
- NO DRAINAGE EASEMENTS ARE NEEDED BETWEEN TRACTS ONE AND TWO AS EACH TRACT HAS ACCESS TO THE SAN ANTONIO ARROYO.
- DRAINAGE EASEMENTS HAVE BEEN PROVIDED IN PREVIOUS PLATTING FOR TRACTS THREE THRU SIX. A CHANNEL HAS BEEN PROVIDED ACROSS TRACT 3 TO THE DRAINAGE EASEMENT ACROSS LOT 4A, BOSQUE PREPARATORY SCHOOL FOR THE BENEFIT OF TRACT FOUR.
- AN UNDEFINED (BLANKET) DRAINAGE EASEMENT WILL BE PROVIDED ON TRACT SIX FOR THE BENEFIT OF TRACT A ON THE BULK LAND PLAT.
- THE EXISTING LIFT STATION 24 PRESENTLY DRAINS DIRECTLY TO THE LOWER CORRALES RIVERSIDE DRAIN. NO CHANGES TO THIS DRAINAGE SITUATION ARE PROPOSED IN THIS REPORT.



# City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

April 6, 2001

Jean J, Bordenave, P.E.  
Bordenave Designs  
P.O. Box 91194  
Albuquerque, NM 87199

**RE: WIND/LOOP ROAD AT LA LUZ (F11-D10). Updated GRADING AND DRAINAGE  
PLAN FOR GRADING AND PAVING PERMIT APPROVALS. ENGINEER'S  
STAMP DATED MARCH 14, 2001.**

*Dear Mr. Bordenave:*

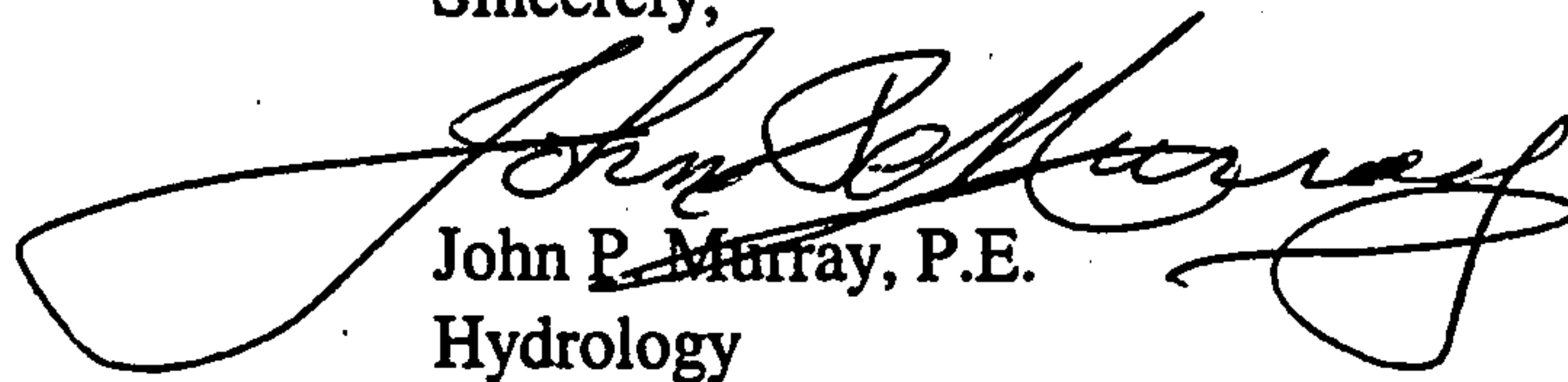
Based on the information provided on your March 22, 2001 submittal, the above referenced project is approved for both Grading and Paving Permits. See also approval letter of 10/13/00.

Please attach a copy of this approved plan - stamped 3/14/01 - to the construction sets prior to sign-off by Hydrology.

Prior to Certificate of Occupancy approval, an Engineer's Certification per the DPM will be required.

If I can be of further assistance, please feel free to contact me at 924-3984.

Sincerely,



John P. Murray, P.E.  
Hydrology

c: Terri Martin  
File



# *City of Albuquerque*

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

October 13, 2000

Jean J. Bordenave, P.E.  
Bordenave Designs  
P.O. Box 91194  
Albuquerque, NM 87199

**RE: WIND/LOOP ROAD AT LA LUZ (F11-D10). Resubmitted GRADING AND DRAINAGE PLAN FOR GRADING AND PAVING PERMIT APPROVALS. ENGINEER'S STAMP DATED OCTOBER 3, 2000.**

*Dear Mr. Bordenave:*

Based on the information provided on your October 3, 2000 resubmittal, the above referenced project is approved for both Grading and Paving Permits.

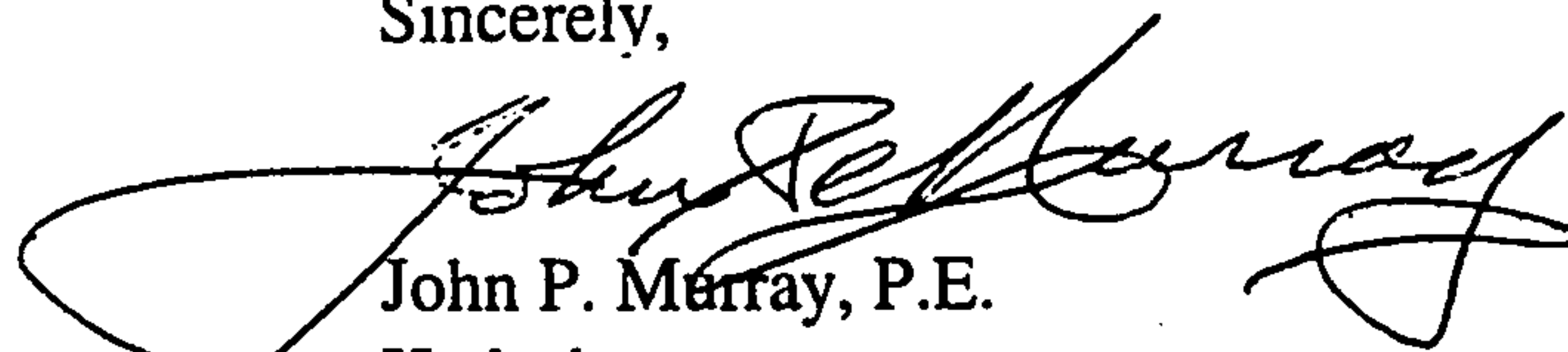
Thank you for the clarifications and added details

Please attach a copy of this approved plan to the construction sets prior to sign-off by Hydrology.

Prior to Certificate of Occupancy approval, an Engineer's Certification per the DPM will be required.

If I can be of further assistance, please feel free to contact me at 924-3984.

Sincerely,

  
John P. Murray, P.E.  
Hydrology

c: Whitney Reiersen  
File



# City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

April 19, 1999

Jake Bordenave, P.E.  
Bordenave Designs  
P. O. Box 91194  
Albuquerque, New Mexico 87199

**RE: Master Drainage Plan for Lands of Ray A. Graham III (E12/D15), Engineer's Stamp  
Dated 4/12/99**

Dear Mr. Bordenave:

The above referenced Master Drainage Plan does not contain an adequate design to confirm that the proposed outfall systems for drainage Basins "A" or "B" will work. However, due to the urgency of the Bosque Prep School project, the roadway design for Learning Road is approved.

The DRC package for the road construction must provide water blocks for all proposed and future driveways and intersections. Plans for the proposed earthen berm, which was identified on the Infrastructure List, must also be provided. The Master Drainage Plan gave no information regarding the location or elevations for this proposed berm.

Prior to any development within drainage Basins "A" or "B," complete hydraulic designs for the concrete outfall channels must be provided. It appears that the preliminary grades provided for the "Basin B crossing" are below the existing topography. The plan is not adequate to confirm the existing grades at the "Basin A crossing." The ultimate outfall systems must be designed to meet City standards for future public dedication.

If you have any questions regarding these comments, please call me at 924-3982.

Sincerely,

Susan M. Calongne, P.E.  
City/County Floodplain Administrator

c: Larry Blair, P.E., COA, Director of Public Works  
John Castillo, P.E., COA, Acting City Engineer  
Jim Strozier, Consensus Planning  
Bill Tappan, Owner  
[File]

RONALD D. BROWN, CHAIR  
DANIEL W. COOK, VICE-CHAIR  
CLIFFORD E. ANDERSON, SECRETARY-TREASURER  
LINDA OLMSTED-STOVER, ASST. SECRETARY-TREASURER  
DANIEL HERNANDEZ, DIRECTOR

FRANK H. MARTINEZ  
EXECUTIVE DIRECTOR



**Albuquerque  
Metropolitan  
Arroyo  
Flood  
Control  
Authority**

2600 PROSPECT N.E. - ALBUQUERQUE, N.M. 87107  
TELEPHONE (505) 884-2215

March 8, 1999

Bordenave Designs  
Jake Bordenave, P.E.  
P.O. Box 91194  
Albuquerque, NM 87199

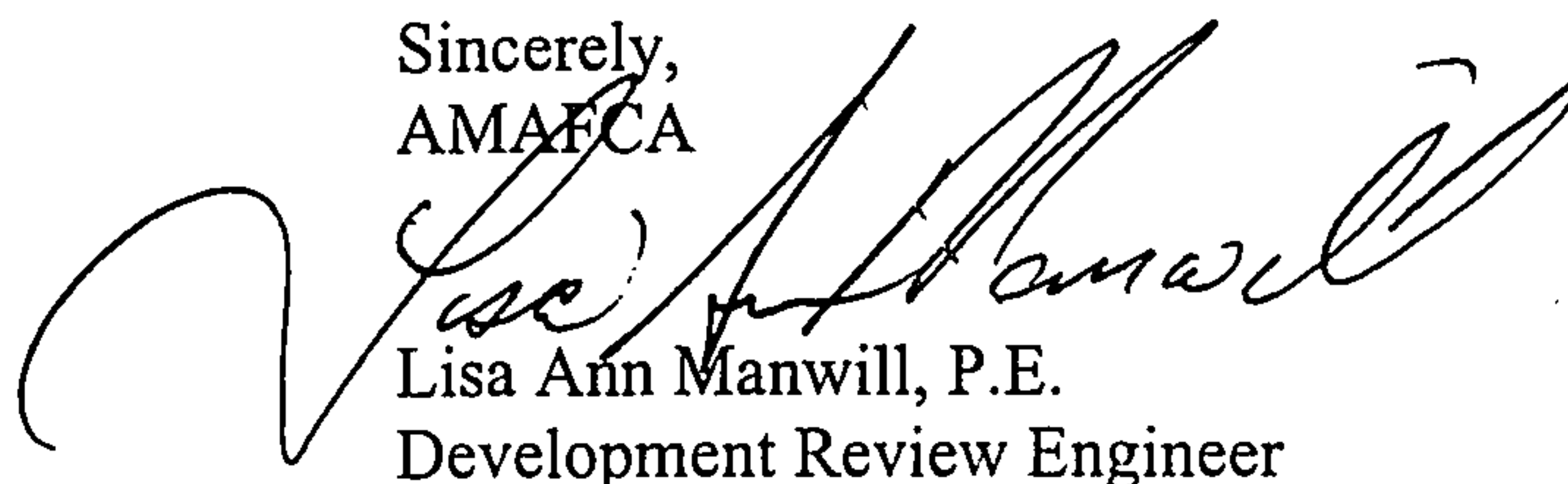
**RE: LANDS OF RAY A. GRAHAM III MASTER DRAINAGE PLAN (ZAP - E12 DRB# 98-133).**

Dear Mr. Bordenave:

Based on the information provided on your March 8, 1999 submittal, AMAFCA has no adverse comments on the above referenced Master Drainage Plan.

If I can be of further assistance, please call me at 884-2215

Sincerely,  
AMAFCA



Lisa Ann Manwill, P.E.  
Development Review Engineer

c: Susan Calongne, PE - COA  
Leonard Utter - MRGCD  
File



# *City of Albuquerque*

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

January 15, 1999

Jake Bordenave, P.E.  
Bordenave Designs  
P. O. Box 91194  
Albuquerque, New Mexico 87199

***RE: Master Grading and Drainage Plan for Portion of Lands of Ray A. Graham,  
(E12/D15), Submitted for Site Development Plan for Subdivision and Preliminary and  
Final Plat Approval, Engineer's Stamp Dated 12/8/98.***

Dear Mr. Bordenave:

The above referenced plan is inadequate to serve as a Master Drainage Plan. A comprehensive report, per the D.P.M., must be provided. All off-site drainage basins must be addressed. All on-site drainage basins must be considered fully developed. The Master Plan must address existing and proposed conditions for the entire site, including phasing. The plan must also identify the existing and proposed street grades, as well as proposed drainage facilities.

A site specific Grading and Drainage plan is required for the proposed school site. This plan must address the existing, interim, and ultimate design for this site.

Please show the new, or proposed, City/County boundaries. It appears that grading is proposed within the County. The site drains to the Corrales Riverside Drain, therefore, AMAFCA and MRGCD approvals are required. The Site plan, Infrastructure List and a copy of the Preliminary Plat must be provided with the resubmittal to my office, as well as to the County and AMAFCA.

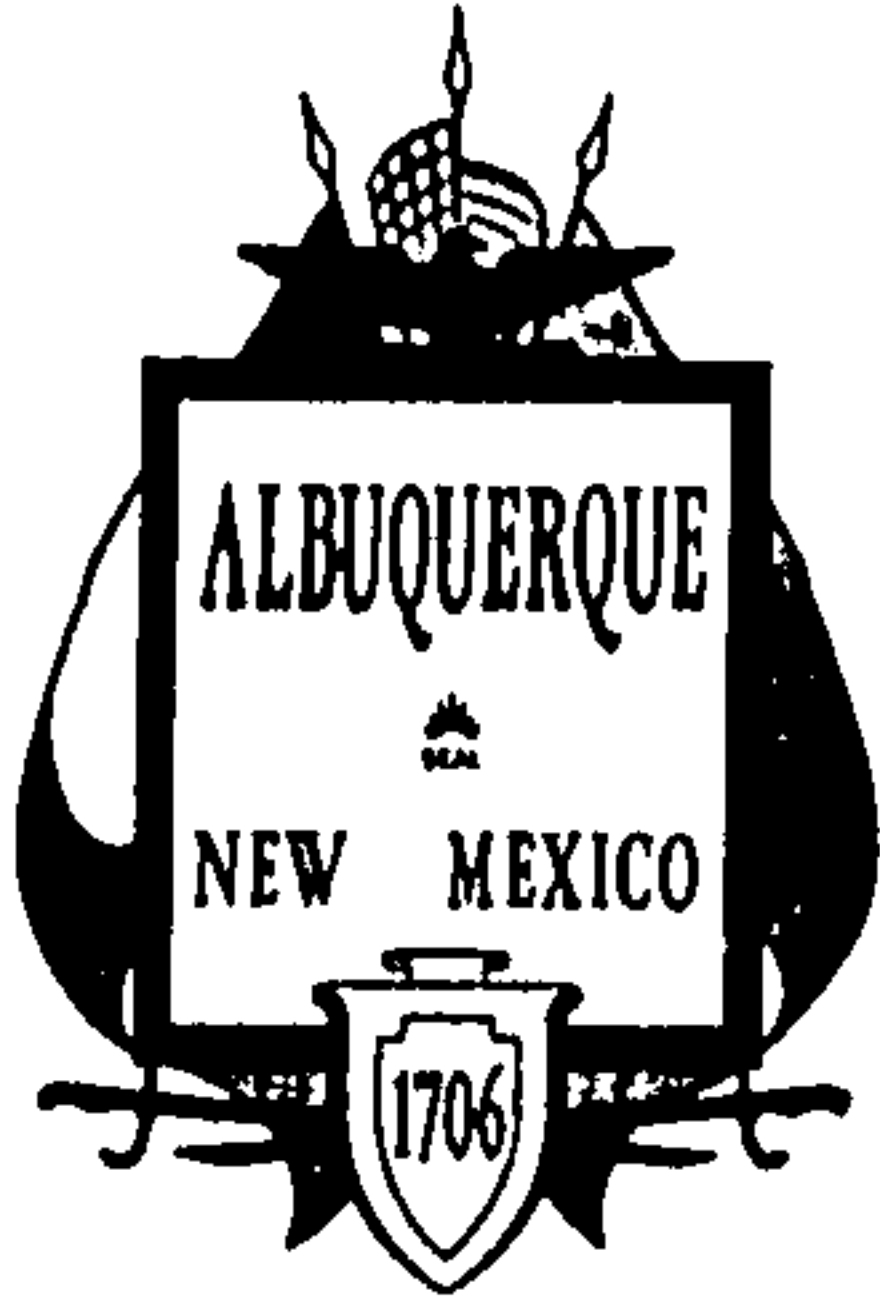
If you have any questions regarding these comments, please call me at 924-3982.

Sincerely,

Susan M. Calongne, P.E.  
City/County Floodplain Administrator

c: Lisa Ann Manwill, P.E., AMAFCA  
Brad Catanach, P.E., Bernalillo County Public Works Division

File



# *City of Albuquerque*

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

April 2, 1999

Jake Bordenave, P.E.  
Bordenave Designs  
P. O. Box 91194  
Albuquerque, New Mexico 87199

***RE: Master Drainage Plan for Lands of Ray A. Graham (E12/D15)***

Dear Mr. Bordenave:

The submittal received on March 12, 1999 for the above referenced site does not comply with my comments of March 8, 1999. A comprehensive drainage report, which incorporates all previous comments and responses, is required for this site. Without approval of the master drainage report, subsequent Site Development plans and Work Order plans cannot be reviewed or approved.

The report must include the subdivision roadway design from Coors to Montano. The grading plan must reflect the actual topographic conditions. The plan must show the top of curb and flow line elevations, especially at existing and proposed intersections, and include complete hydraulic calculations.

The plan must show how the proposed outfall channels will work hydraulically. Exhibits A and B are not sufficient for this design.

The plan must be updated to reflect the latest topography for the area.

County concurrence must be obtained since the proposed road and channels will abut the unincorporated areas.

The revised plans and report must be stamped, signed and re-dated.

Sincerely,

Susan M. Calongne, P.E.  
City/County Floodplain Administrator

c: Jim Strozier, Consensus Planning  
Roger Paul, P.E., Bernalillo County Public Works Division

File

E12/2015  
DOO1

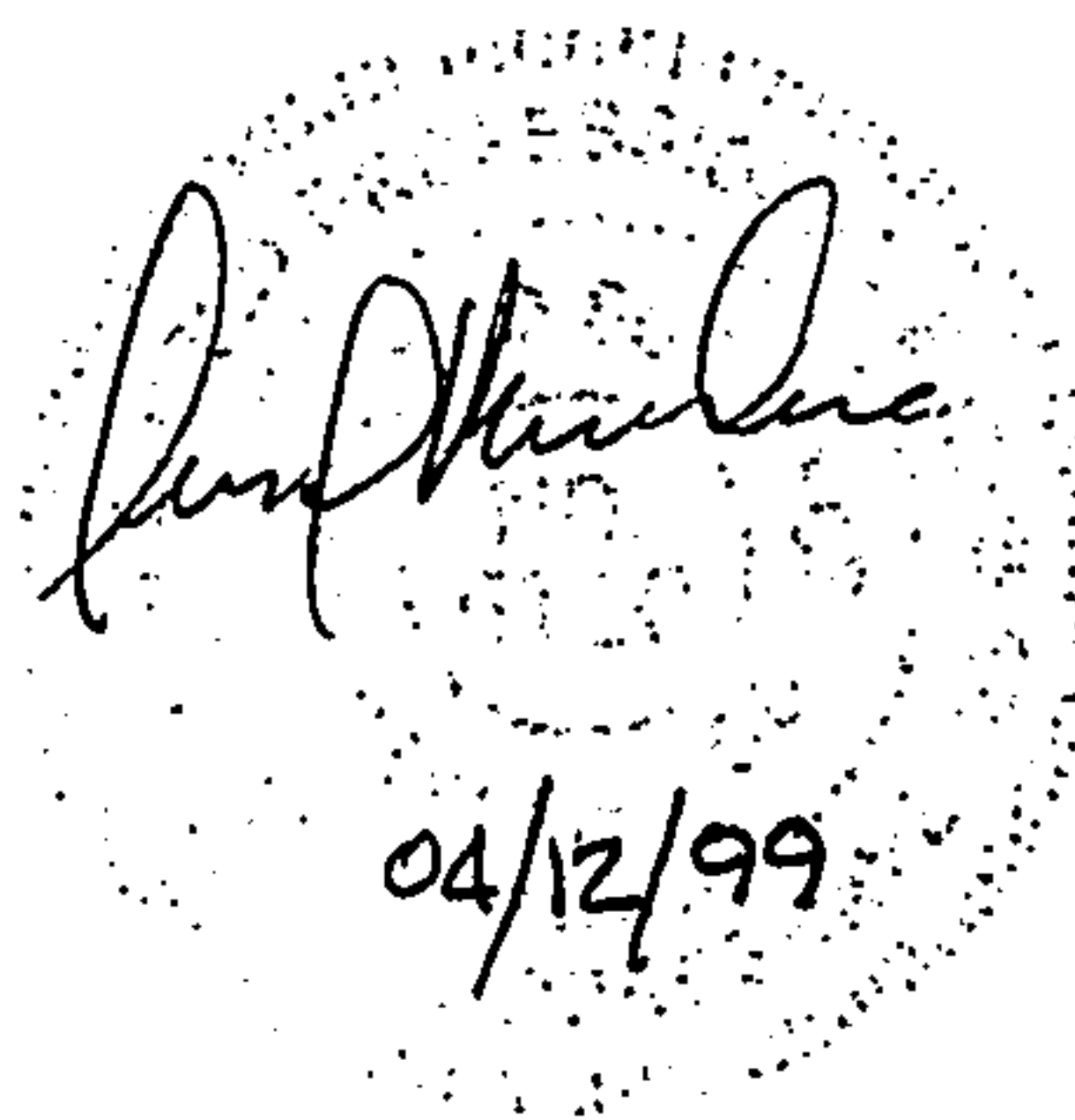
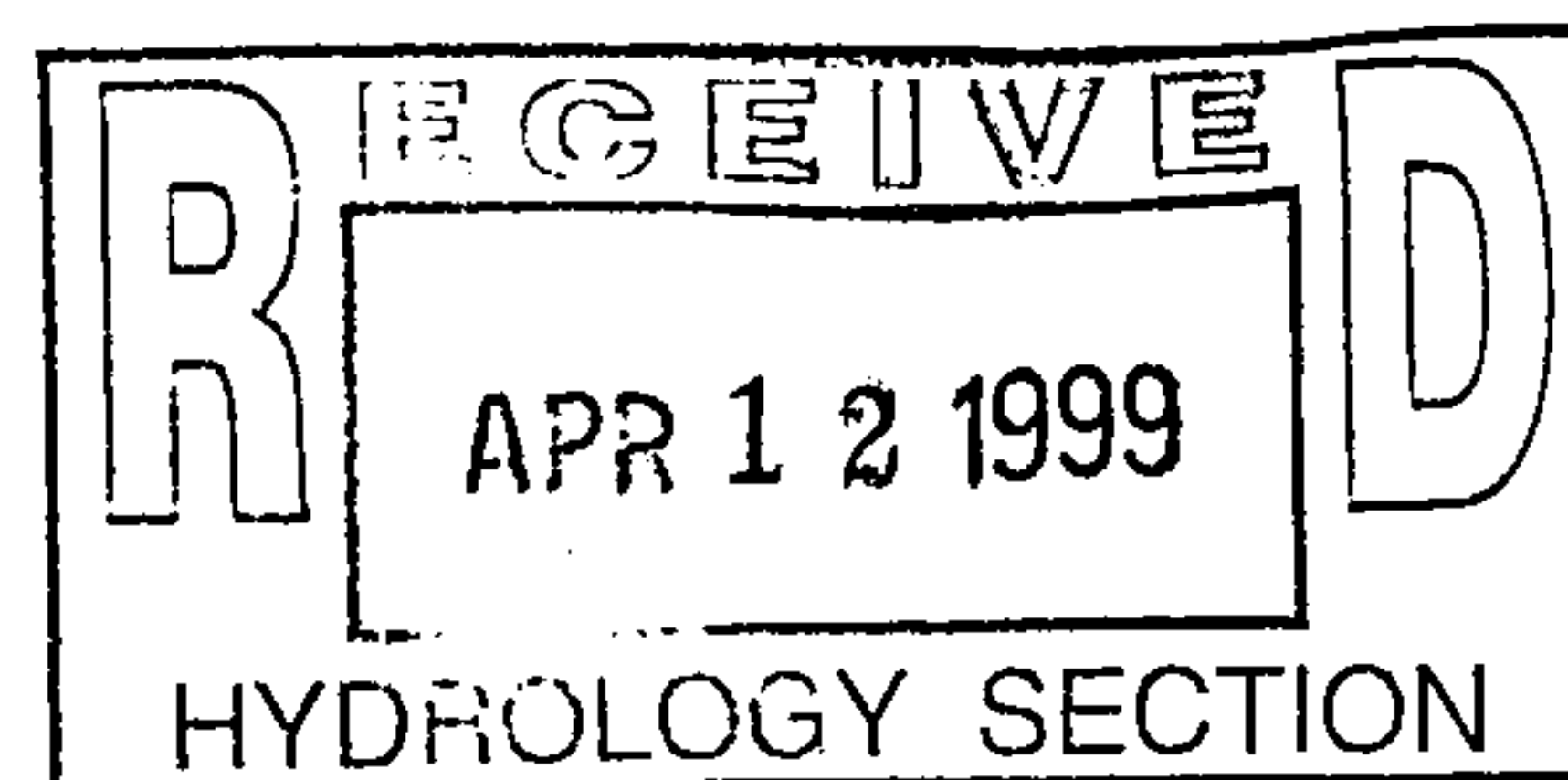
MASTER DRAINAGE

PLAN

FOR

LANDS OF RAY A. GRAHAM III

APRIL, 1999



PREPARED FOR

RAY A. GRAHAM III  
ONE WIND NW  
ALBUQUERQUE, NM 87120

PREPARED BY

BORDENAVE DESIGNS  
P.O. BOX 91194  
ALBUQUERQUE, NM 87199

## PURPOSE OF PLAN

THIS PLAN IS BEING DEVELOPED TO ESTABLISH DRAINAGE CRITERIA FOR THE DEVELOPMENT OF ALL LANDS WITHIN THE STUDY AREA. THIS ACTION IS PROMPTED BY THE DESIRE TO IMMEDIATELY DEVELOP A PORTION OF THE AREA AS THE BOSQUE SCHOOL (22.5 ACRES) AND AN ACCESS ROAD WHICH CONNECTS THE SCHOOL PROPERTY TO THE COORS/DELLYNE INTERSECTION. THE CRITERIA SET FORTH HEREIN ARE BASED ON DISCUSSIONS WITH THE SCHOOL'S DESIGN TEAM, THE ORIGINAL LAND OWNER WHO ALSO OWNS ALL LANDS SURROUNDING THE SCHOOL SITE, AND CITY OF ALBUQUERQUE PWD/HYDROLOGY STAFF.

## EXISTING CONDITIONS

THE STUDY AREA IS LOCATED IN THE SOUTHEAST QUADRANT OF THE COORS BLVD/MONTANO ROAD INTERSECTION ON THE WEST SIDE OF ALBUQUERQUE. THE SITE IS BOUNDED BY COORS, MONTANO, LOWER CORRALES RIVERSIDE DRAIN AND A MANMADE RIDGE ALONG THE SOUTH SIDE OF AN OLD IRRIGATED FIELD AND THE SOUTH AND WEST BOUNDARIES OF LA LUZ DEL OESTE. THE SITE HAS AN AREAL EXTENT OF APPROXIMATELY 182 ACRES (SEE SHEET 2).

THE ENTIRE AREA WAS ONCE PART OF THE TAYLOR'S RANCH. THE SOUTHWESTERLY PORTION OF THE STUDY AREA WAS DEVELOPED FOR RESIDENTIAL PURPOSES (LA LUZ DEL OESTE) IN THE EARLY 1970'S AND THE BALANCE OF THE AREA HAS CONTINUED TO BE USED FOR GRAZING PURPOSES. AT PRESENT, THE AREA IS A MIXTURE OF CITY (ZONED SU-1) AND COUNTY (ZONED A-1) PROPERTIES. THE PROPOSED SCHOOL SITE AND ACCESS ROADWAY WERE RECENTLY ANNEXED AND ZONED SU-1 FOR SCHOOL AND RELATED PURPOSES.

ALL OFFSITE DRAINAGE (EXCEPT THE EASTERLY HALF OF COORS BLVD. ROW) TO THE STUDY AREA HAS BEEN INTERCEPTED AT OR ABOVE COORS BLVD. AND EITHER ROUTED NORTH TO AN OUTFALL TO THE RIO GRANDE VIA THE MONTANO ROAD STORM DRAIN OR ROUTED SOUTH TO THE SAN ANTONIO ARROYO OR IN THE CASE OF LA LUZ DEL SOL RETAINED ONSITE (SEE ORTHO-TOPO MAP SHEET 3). THEREFORE, THE OFFSITE DRAINAGE TO THE SITE IS LIMITED TO THE EASTERLY HALF OF COORS RIGHT-OF-WAY (SEE SHEET 2).

COORS BLVD. HAS NO CURB AND GUTTER AND THE ROADWAY DISCHARGES IN A SHEET FLOW CONDITION TO THE ADJOINING PRIVATE PROPERTY. THE CITY TRANSPORTATION DEPARTMENT HAS STATED IN PUBLIC MEETINGS THAT THE ROADWAY WILL BE DEVELOPED WITH CURBS AND ADDITIONAL STORM DRAINAGE FACILITIES IN THE FUTURE AS FUNDING BECOMES AVAILABLE. THE EXISTING LA LUZ DEL OESTE RESIDENTIAL DEVELOPMENT DISCHARGES RUNOFF AT THREE POINTS ALONG ITS EASTERLY BORDER. THE BALANCE OF THE STUDY AREA IS UNDEVELOPED AND RUNS OFF IN AN EASTERLY DIRECTION UNDER SHEET FLOW CONDITIONS. THE RUNOFF THAT REACHES THE EASTERLY BOUNDARY OF THE STUDY AREA IS DAMMED BY THE WEST BANK OF THE LOWER CORRALES RIVERSIDE DRAIN. THE BANK IS OF SUFFICIENT HEIGHT AND WIDTH TO CAUSE RETENTION OF ALL STUDY AREA RUNOFF FOR A STORM IN EXCESS OF THE 100 YEAR, 6 HOUR STORM. A SMALL AREA (LESS THAN 1 ACRE) IN THE EXTREME SOUTHEAST CORNER OF THE STUDY AREA HAS BEEN DESIGNATED BY THE US CORPS OF ENGINEERS AS AN EXISTING WETLAND.

## PROPOSED CONDITIONS

A SMALL PERCENTAGE OF THE STUDY AREA IS PROPOSED FOR DEVELOPMENT AT THIS TIME. IMMEDIATE (PHASE I) DEVELOPMENT IS LIMITED TO THE SCHOOL SITE AND THE ACCESS ROADWAY. NO SITE PLANNING HAS BEEN PREPARED FOR THE BALANCE OF THE STUDY AREA.

THE FOLLOWING DISCUSSION IS BASED ON DIVIDING THE STUDY AREA INTO FOUR DISTINCT BASINS. BASIN 'A' IS COMPOSED OF THE UNDEVELOPED AREA BOUNDED BY COORS ROAD, MONTANO ROAD, LOWER CORRALES RIVERSIDE DRAIN, THE NORTH BOUNDARY OF THE SCHOOL SITE AND THE ACCESS ROAD; AND THE ACCESS ROAD. BASIN 'B' IS COMPOSED OF THE EXISTING LA LUZ DEL OESTE RESIDENTIAL DEVELOPMENT, THE APPROXIMATELY FORTY ACRE PARCEL BETWEEN LA LUZ DEL OESTE AND THE PROPOSED SCHOOL SITE AND THE UNDEVELOPED AREA BETWEEN THE PREVIOUSLY DESCRIBED AREA AND THE ACCESS ROAD. BASIN 'C' IS COMPOSED OF THE PROPOSED BOSQUE SCHOOL SITE. BASIN 'D' IS COMPOSED OF THAT PORTION OF BASIN 'A-3' BETWEEN THE FUTURE ACCESS ROAD EXTENSION AND THE LOWER CORRALES RIVERSIDE DRAIN. SEE SHEETS 3 & 4 FOR BASIN GRAPHIC BASIN DEFINITION. BASINS 'A-2' (THE ACCESS ROAD) AND 'C' (BOSQUE SCHOOL) ARE PROGRAMMED FOR IMMEDIATE DEVELOPMENT. THERE ARE NO PLANS OR TIME FRAMES FOR THE DEVELOPMENT OF THE BALANCE OF THE AREA.

### BASIN 'A'

#### BASIN 'A-1'

CONTOURS ON THE ORTHO-TOPO MAP ON SHEET 3 INDICATE THAT THE NATURAL FLOW OF THIS AREA IS TOWARD THE TEMPORARY TURN-AROUND AT THE TEMPORARY END OF THE ACCESS ROAD. THE TOP OF CURB ON THE ACCESS ROAD (BEING ABOVE THE ADJACENT GROUND) WILL PROVIDE ASSURANCE THAT THE WATER IN THIS BASIN WILL NOT ENTER THE ROAD SECTION. THE AREA AT THE END OF THE ROADWAY IS A NATURAL PONDING AREA. IT IS PROPOSED THAT THIS AREA BE USED FOR TEMPORARY RETENTION PONDING UNTIL THE BASIN IS DEVELOPED.

DEVELOPMENT IN THE BASIN WILL REQUIRE THE ELIMINATION OF THE TEMPORARY RETENTION POND AND SPLITTING OF THE BASIN INTO BASINS 'A-1A' AND BASIN 'D' WITH THE EXTENSION OF BASIN 'A-2' (SEE SHEET 4). DEVELOPED FLOWS IN THE BASIN ENTERING BASIN 'A-2' (THE ACCESS ROAD) SHALL BE MINIMIZED BY USING INTERNAL ROADS AND CHANNELS. THE FIRST DEVELOPMENT IN THE BASIN SHALL BE RESPONSIBLE FOR DESIGN AND CONSTRUCTION OF A DRAINAGE STRUCTURE TO CROSS THE ACCESS ROAD (BASIN 'A-2'), AN ELEVATED CHANNEL FROM THE ACCESS ROAD TO THE LOWER CORRALES RIVERSIDE DRAIN NEAR THE NORTH BOUNDARY OF BASIN 'C', A FLUME ACROSS THE LOWER CORRALES RIVERSIDE DRAIN, AN EROSION CONTROL STRUCTURE AT THE FLUME OUTLET AND SUFFICIENT GRADING OF BASINS 'A-2' AND 'A-1A' TO PROVIDE POSITIVE DRAINAGE OF THESE BASINS TO THE ELEVATED CHANNEL.

#### BASIN 'A-2'

THE ACCESS ROAD IS TO BE A DEDICATED STREET FROM COORS ROAD TO THE NEW CONNECTION ROAD TO THE EXISTING LA LUZ DEL OESTE ROADWAY SYSTEM. THIS SECTION OF STREET WILL BE CONSTRUCTED IN A RIGHT-OF-

WAY THAT WILL BE AT LEAST 86 FEET IN WIDTH. THE REMAINING PORTION OF THE ACCESS ROAD WILL BE CONSTRUCTED IN A 60 FOOT PRIVATE ACCESS EASEMENT. IT IS PROPOSED THAT THE TOP OF CURB ON THE SOUTH AND WEST SIDES OF THESE ROADWAY SECTIONS BE AT LEAST 1 FOOT HIGHER THAN THE EXISTING OR GRADED GROUND. THE PROPOSED STREET SECTIONS ARE AT LEAST 36 FEET FROM FACE TO FACE OF CURB. A WRITTEN AGREEMENT HAS BEEN COMPLETED WITH THE CITY OF ALBUQUERQUE FOR THE PRIVATE ROADWAY PORTION OF THE ACCESS ROAD. THE AGREEMENT PROVIDES FOR THE FUTURE DEDICATION OF THE RIGHT-OF-WAY AND FACILITIES TO THE CITY OF ALBUQUERQUE.

## BASIN 'B'

### BASIN 'B-1'

THIS BASIN IS COMPOSED OF LANDS THAT ARE PRESENTLY DEVELOPED AS RESIDENTIAL UNITS, ASSOCIATED COMMON AREAS AND A PERMANENT OPEN AREA. THE OPEN AREA IS DEFINED BY COVENANT BETWEEN THE LAND OWNER AND THE LA LUZ DEL OESTE HOMEOWNERS AND NO STRUCTURAL DEVELOPMENT OTHER THAN ROADS, UTILITIES AND RELATED FACILITIES ARE TO BE CONSTRUCTED ON THIS PROPERTY. THE DEVELOPMENT IN THIS AREA IS COMPLETE AND AREAS THAT ARE NOW OPEN WILL REMAIN SO.

CONSTRUCTION OF A ROADSIDE CHANNEL ALONG THE EASTERLY SIDE OF THE BASIN SHALL BE THE RESPONSIBILITY OF DEVELOPER OF THE FIRST DEVELOPMENT IN EITHER BASIN 'B-2' OR BASIN 'B-3'. THIS DEVELOPER SHALL ALSO BE RESPONSIBLE FOR THE CONSTRUCTION OF A FLUME ACROSS THE LOWER CORRALES RIVERSIDE DRAIN AND AN EROSION CONTROL STRUCTURE AT IT'S OUTLET. THE FACILITIES SHALL BE DESIGNED FOR DIRECT DISCHARGE FLOWS FROM FULLY DEVELOPED BASINS 'B-1', 'B-2', 'B-3' AND THE FUTURE ACCESS ROAD ALONG THE EASTERLY BOUNDARY OF BASIN 'B'.

### BASIN 'B-2'

THE ORTHO-TOPO MAP ON SHEET 3 INDICATES THAT THE BULK OF THE BASIN DRAINS TOWARD THE ACCESS ROAD AND THE LA LUZ DEL OESTE CONNECTION ROAD. IT IS PROPOSED THAT NO WORK BE DONE AT THIS TIME TO AFFECT DRAINAGE IN THIS AREA. WHEN THE PARCEL IS DEVELOPED, GRADING SHALL BE DESIGNED TO DIRECT DRAINAGE OF THE ENTIRE AREA TO BASIN 'B-3'. IN THE INTERIM THE ACCESS ROAD, BEING ELEVATED ABOVE THE NATURAL GROUND, WILL PREVENT RUNOFF FROM ENTERING BASIN 'A-1' OR 'A-2'.

### BASIN 'B-3'

THIS AREA IS TRAVERSED BY A SMALL ARROYO WHOSE UPLAND AREA HAS BEEN CUT OFF BY CONSTRUCTION OF LA LUZ DEL OESTE. THE BASIN PRESENTLY DRAINS TO BASIN 'C' AND WILL CONTINUE TO DO SO UNTIL DEVELOPMENT TAKES PLACE IN EITHER BASIN 'B-2' OR BASIN 'B-3'. NO WORK IS PROPOSED FOR THIS BASIN AT THIS TIME.

EXISTING BASIN 'B-1' RUNOFF TO THIS AREA WILL BE ALLOWED TO CONTINUE UNTIL BASIN 'B-3' IS DEVELOPED. PART OF THE DEVELOPMENT

OF BASIN 'B-3' SHALL BE THE CONSTRUCTION OF A DIKE ALONG THE WEST AND SOUTH SIDES OF BASIN 'B-3', BUT IN BASIN 'B-1', TO MAINTAIN BASIN 'B-1' RUNOFF IN BASIN 'B-1'.

DIRECT DISCHARGE OF BASIN 'B-2' DEVELOPED RUNOFF SHALL BE ACCEPTED BY BASIN 'B-3'. DEVELOPED BASIN 'B-2' AND 'B-3' FLOWS SHALL BE ROUTED VIA ROADSIDE CHANNEL TO A FLUME ACROSS THE LOWER CORRALES RIVERSIDE DRAIN (SEE BASIN 'B-1' NARRATIVE AND SHEET 4).

#### BASIN 'B-4'

THIS ACCESS ROAD WILL BE CONSTRUCTED IN THE FUTURE TO PROVIDE A VEHICULAR LINK TO PROPERTY SOUTH OF THE AREA DESCRIBED AS 'OPEN AREA' IN BASIN 'B-1'. THE ROADWAY WILL ALSO ACT AS A DIKE TO DIRECT FLOW SOUTH TO THE CHANNEL AND FLUME OUTFALL FROM BASIN 'B'.

#### BASIN 'C'

THIS AREA IS ZONED SU-1 FOR SCHOOL AND RELATED FACILITIES AND IS TO BE DEVELOPED AS A PRIVATE SCHOOL IN A PHASED PROGRAM OVER A NUMBER OF YEARS. A DETAILED GRADING AND DRAINAGE PLAN FOR EACH PHASE WILL BE PREPARED BY THE OWNER AND REVIEWED AND APPROVED BY THE CITY OF ALBUQUERQUE USING THE FOLLOWING CRITERIA.

1. IN THE FUTURE WHEN THE ROADSIDE CHANNEL DESCRIBED BASIN 'B' ABOVE IS CONSTRUCTED THERE WILL BE NO OFFSITE DRAINAGE TO THE BASIN. IN THE INTERIM RUNOFF FROM THESE BASINS WILL ENTER BASIN 'C' IN AN HISTORICAL MANNER.
2. THE SITE SHALL UTILIZE WATER HARVESTING AS MUCH AS POSSIBLE IN LANDSCAPING AREAS.
3. THE SITE DRAINAGE SHALL BE DESIGNED AS A RETENTION SYSTEM. THE RETENTION SYSTEM SHALL BE DESIGNED FOR THE LARGER OF 2-100 YEAR, 6 HOUR STORMS OR 1-100 YEAR, 10 DAY STORM. THE WEST BANK OF THE LOWER CORRALES RIVERSIDE DRAIN SHALL SERVE AS AN EMERGENCY SPILLWAY WITH AN APPROXIMATE ELEVATION OF 4975.0.
4. FINISH FLOORS OF ALL BUILDINGS SHALL HAVE A MINIMUM ELEVATION OF 4975.5.

#### BASIN 'D'

THIS BASIN WILL BE FORMED IN THE FUTURE WITH THE GRADING OF THE EXTENSION OF THE ACCESS ROAD THROUGH BASIN 'A-3'. THIS CONSTRUCTION WILL SEVER BASIN 'A-3' INTO WHAT WILL BE AN UPLAND AREA (BASIN 'A-3A') WITH AN OUTFALL TO THE BOSQUE AND A LOWLAND AREA (BASIN 'D') WITH CONDITIONS SIMILAR TO BASIN 'C'.

1. THE BASIN SHALL UTILIZE WATER HARVESTING AS MUCH AS POSSIBLE IN LANDSCAPING AREAS.
2. THE SITE DRAINAGE SHALL BE DESIGNED AS A RETENTION

SYSTEM. THE RETENTION SYSTEM SHALL BE DESIGNED FOR THE LARGER OF 2-100 YEAR, 6 HOUR STORMS OR A 100 YEAR, 10 DAY STORM. MAXIMUM WATER DEPTH IN PONDS FOR THE COMBINED STORMS SHALL BE ONE FOOT. THE WEST BANK OF THE LOWER CORRALES RIVERSIDE DRAIN SHALL SERVE AS AN EMERGENCY SPILLWAY.

3. FINISH FLOORS OF ALL BUILDINGS SHALL HAVE A MINIMUM ELEVATION APPROXIMATELY 0.5 FEET ABOVE THE ADJACENT WEST BANK OF THE LOWER CORRALES RIVERSIDE DRAIN.

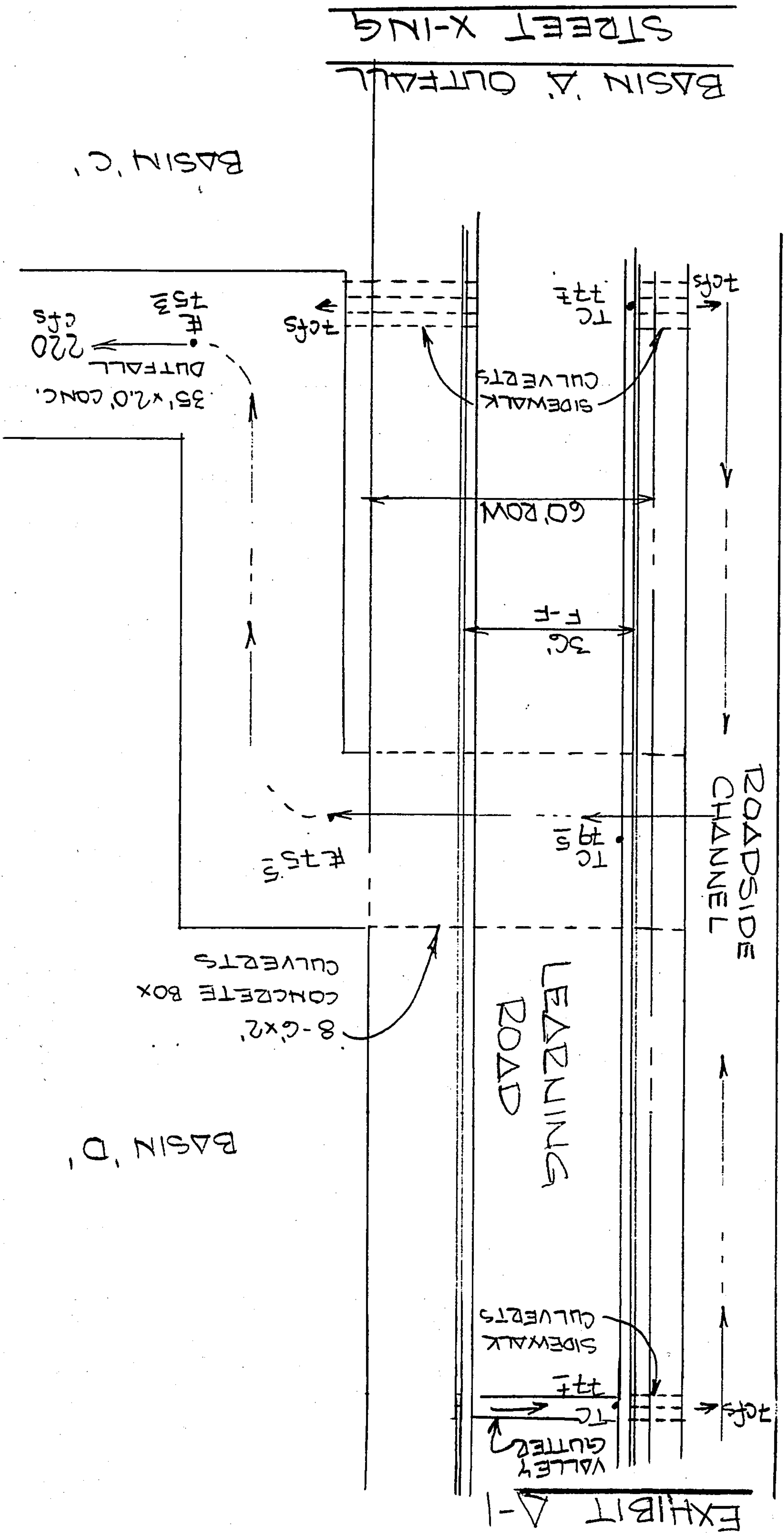
### CONCLUSIONS

1. OFFSITE DRAINAGE TO THE STUDY AREA IS LIMITED TO THE EASTERLY HALF OF COORS BLVD. THE CITY OF ALBUQUERQUE PLANS TO ELIMINATE THIS RUNOFF WITH FUTURE IMPROVEMENTS TO COORS BLVD.
2. ALL FUTURE SITE PLANS AND DEVELOPMENT PROPOSALS WITHIN THE STUDY AREA SHALL BE REQUIRED TO HAVE DETAILED GRADING AND DRAINAGE REPORTS/PLANS BASED ON THIS MASTER DRAINAGE PLAN.
3. BASINS 'A-1' AND 'A-2' SHALL BE DESIGNED AS A TEMPORARY RETENTION SYSTEM. A BERM SHALL BE CONSTRUCTED ALONG THE NORTH BOUNDARY OF BASIN 'C' TO IMPOUND THE RUNOFF FROM BASINS 'A-1' AND 'A-2' IN BASIN 'A-1'. THE BERM SHALL BE A PART OF THE ROADWAY, UTILITY AND DRAINAGE INFRASTRUCTURE. DEVELOPMENT IN BASIN 'A-1' WILL REQUIRE THE DESIGN AND CONSTRUCTION OF A ROAD CROSSING STRUCTURE, AN ELEVATED CHANNEL, FLUME ACROSS THE LOWER CORRALES RIVER SIDE DRAIN, EROSION CONTROL STRUCTURE AT FLUME OUTLET AND GRADING OF THE BALANCE OF BASIN 'A-2' AND A PORTION OF BASIN 'A-1'. NOTE: THE FLUME WILL REQUIRE MRGCD APPROVAL.
4. BASIN 'B-1' IS PRESENTLY DRAINS IN A SHEET FLOW CONDITION TO THE EAST. NO GRADING IN BASIN 'B-1' IS REQUIRED TO OBTAIN ACCESS TO THE FUTURE ROADSIDE CHANNEL AND FLUME STRUCTURE DISCUSSED IN ITEM 5 BELOW.
5. BASINS 'B-2' AND 'B-3' SHALL BE ALLOWED TO DRAIN IN A NATURAL STATE TO BASIN 'C' UNTIL DEVELOPMENT TAKES PLACE IN EITHER BASIN 'B-2' OR BASIN 'B-3'. DEVELOPMENT IN EITHER BASIN 'B-2' OR 'B-3' WILL REQUIRE THE DESIGN AND CONSTRUCTION OF A BERM IN BASIN 'B-1' ON THE WEST AND SOUTH SIDES OF BASIN 'B-3', A ROADSIDE CHANNEL IN BASINS 'B-3 AND 'B-1', AND A FLUME ACROSS THE LOWER CORRALES RIVER SIDE DRAIN WITH AN EROSION CONTROL STRUCTURE AT THE FLUME OUTLET. NOTE: THE FLUME WILL REQUIRE MRGCD APPROVAL.
6. BASIN 'B-4' IS NOT REQUIRED FOR THE DEVELOPMENT OF PROPERTIES WITHIN THE STUDY AREA. THIS FACILITY WILL BE CONSTRUCTED IN THE FUTURE AS A VEHICULAR LINK BETWEEN PROPERTIES NORTH AND SOUTH OF 'OPEN AREA' PROPERTY IN BASIN 'B-1'.
7. BASIN 'C' SHALL BE DESIGNED AS A PERMANENT RETENTION SYSTEM WITH THE WEST BANK OF THE LOWER CORRALES RIVERSIDE DRAIN ACTING AS AN EMERGENCY SPILLWAY. ALL FINISH FLOORS SHALL HAVE A MINIMUM ELEVATION OF 4975.5.

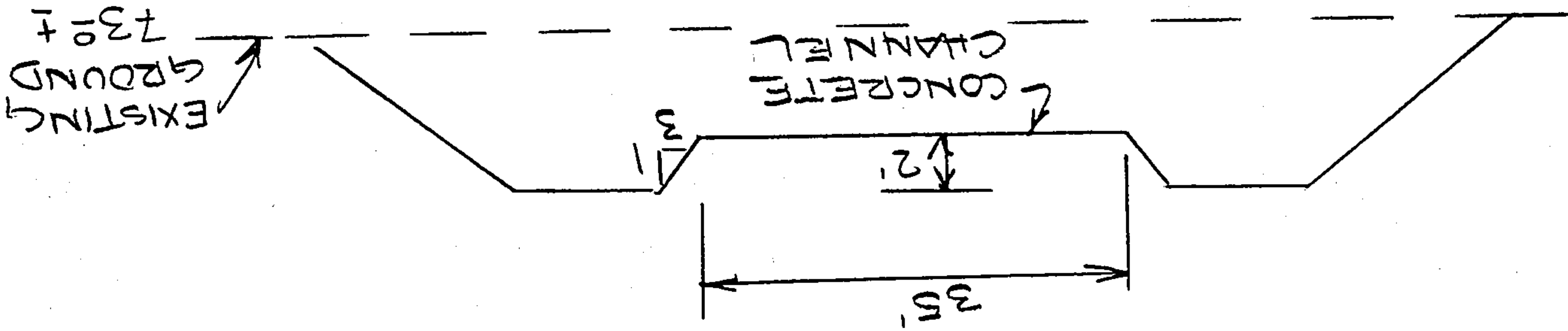
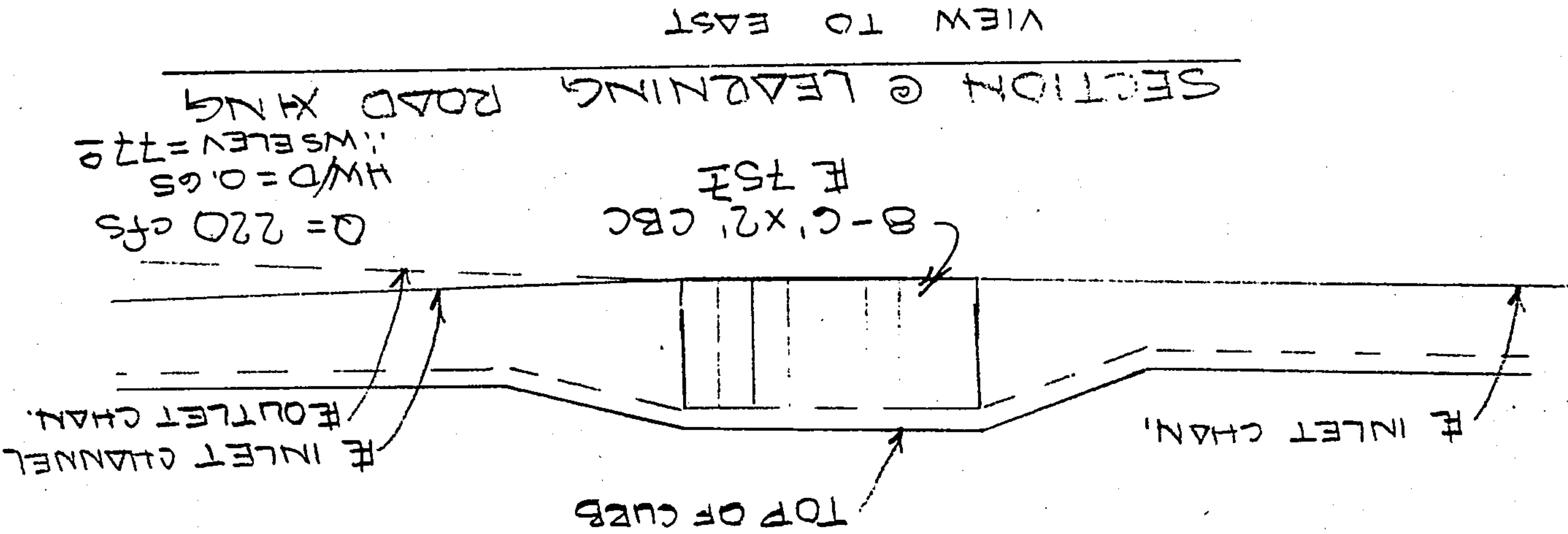
8. BASIN 'D' SHALL BE DESIGNED AS A PERMANENT RETENTION SYSTEM WITH THE WEST BANK OF THE LOWER CORRALES RIVERSIDE DRAIN ACTING AS AN EMERGENCY SPILLWAY. ALL FINISH FLOORS SHALL HAVE A MINIMUM ELEVATION 0.5 FEET ABOVE THE ADJACENT LOWER CORRALES RIVERSIDE DRAIN BANK.

9. ALL OF BASINS 'A', 'C' & 'D' ARE DESIGNATED FLOOD HAZARD AREA 'X' AND NO BASIN IS LOCATED IN A FLOOD HAZARD AREA DESIGNATED 'A' OR 'AH' PER FEMA FIRM PANELS NO. 114 AND 118, DATED SEPTEMBER 20, 1996.

71-7, NISDCL



# EXHIBIT A-2



Q = 220 cfs

D = 1.18 ft

V = 5.30 fps

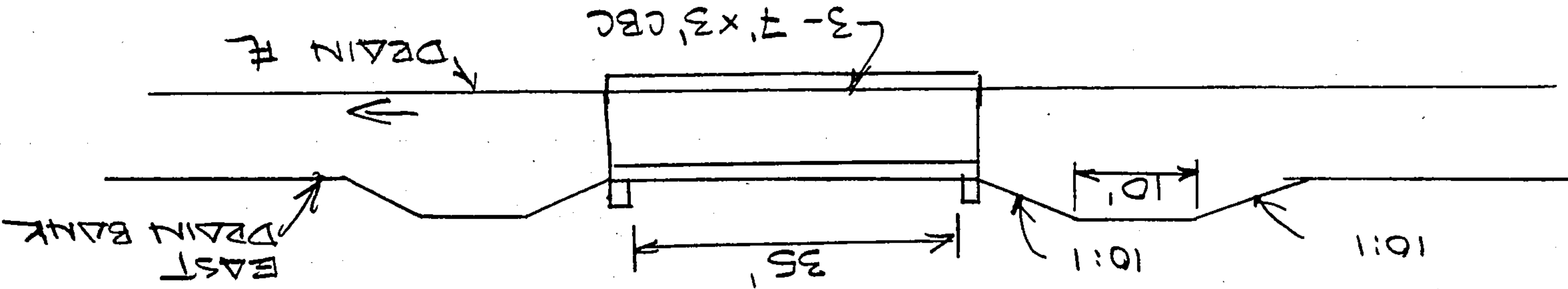


EXHIBIT B-1

BASIN 'B-1'

ROADSIDE CHANNEL

60' ROW

36'  
F-F

FUTURE  
ROAD

EL 70.0

TC 80.0

TYPE 'A'  
CATCH BASIN

BASIN 'C'

5-6' x 2'  
CONCRETE  
BOX CULVERTS

35' x 2.0' CONC  
OUTFALL  
236 cfs

BASIN 'B' OUTFALL

STREET X-ING

# EXHIBIT B-2

TOP OF CURB 80'

COLLECTION CHANNEL

5'-6" x 2' CBC

E 76.9

Q = 236 cfs

H<sub>W</sub>/D ≈ 1.0

WS ELEV = 78.2

NOMINAL SECTION  
@ ROAD X-ING

NOMINAL SECTION

FROM ROAD TO DRAIN

Q = 236 cfs  
D = 1.15 ft  
V = 5.19 fps

CONCRETE CHANNEL

34'

2'

3/1

NOMINAL SECTION

AT DRAIN X-ING

3-7' x 3' CBC

CONCRETE WALLS

34'

10:1

10' 10'

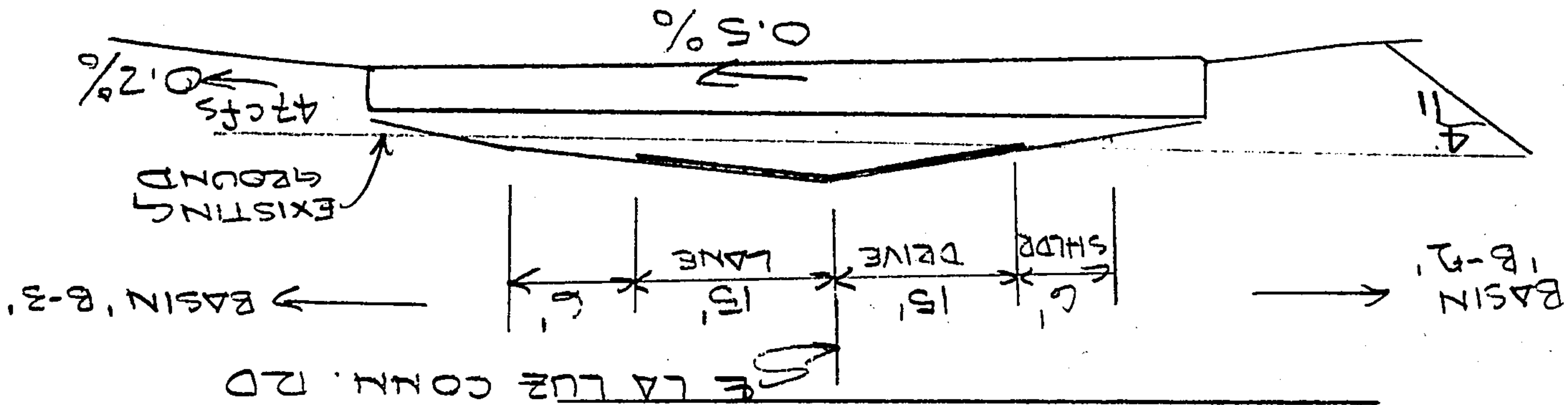
10:1

EAST DRAIN BANK

DRAIN #

EXHIBIT C-1

BASIN, B-2, CULVERTS



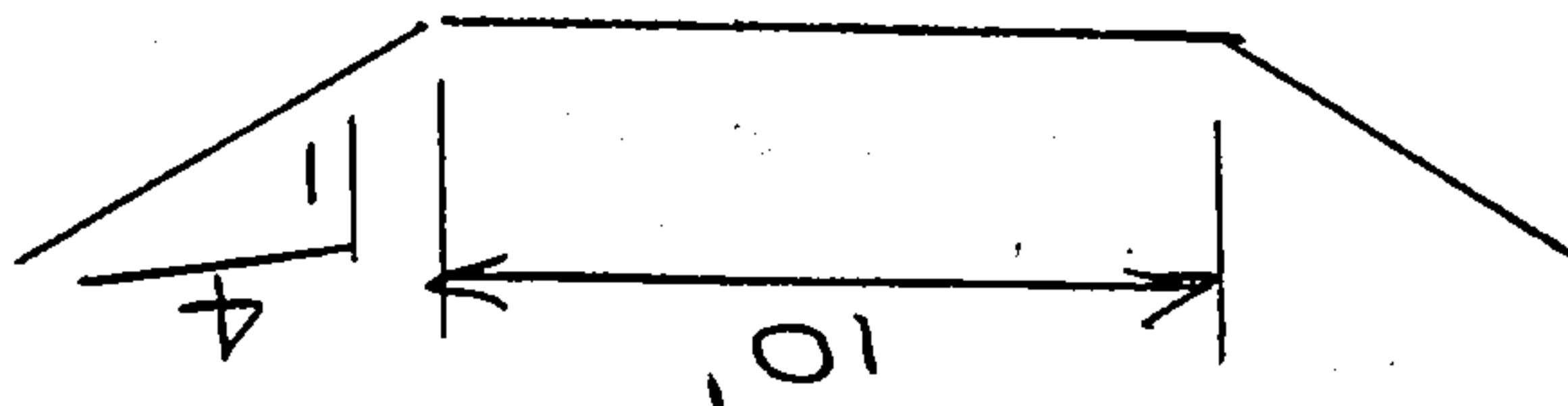
$$\text{Sfz } \pm \nabla = 0$$

USE 2. PIPE = (30")

$$\Gamma_{0.1} = 0.1 \text{ mH}$$

OUTFALL CHANNEL

(Temporary earth channel)



② = 11.3 cfs — BASIN B2 (existing @)

# EXHIBIT C-2

## BASIN B-2 TEMPORARY OUTFALL Worksheet for Trapezoidal Channel

### Project Description

Project File	c:\hydraul\fmw\9829.fm2
Worksheet	BASIN B-2 UNDEVELOPED
Flow Element	Trapezoidal Channel
Method	Manning's Formula
Solve For	Channel Depth

### Input Data

Mannings Coefficient	0.030
Channel Slope	0.002000 ft/ft
Left Side Slope	4.000000 H : V
Right Side Slope	4.000000 H : V
Bottom Width	10.00 ft
Discharge	11.30 cfs

### Results

Depth	0.63	ft
Flow Area	7.89	ft <sup>2</sup>
Wetted Perimeter	15.20	ft
Top Width	15.04	ft
Critical Depth	0.33	ft
Critical Slope	0.019929	ft/ft
Velocity	1.43	ft/s
Velocity Head	0.03	ft
Specific Energy	0.66	ft
Froude Number	0.35	

Flow is subcritical.



# ***City of Albuquerque***

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

March 8, 1999

Jake Bordenave, P.E.  
Bordenave Designs  
P. O. Box 91194  
Albuquerque, New Mexico 87199

***RE: Master Grading and Drainage Plan for Portion of Lands of Ray A. Graham,  
(E12/D15), Submitted for Site Development Plan for Subdivision and Preliminary and  
Final Plat Approval, Engineer's Stamp Dated 3/1/99.***

Dear Mr. Bordenave:

It appears that the information presented in the submittal of March 4, 1999 is conceptually feasible for master plan approval, however, the design cannot be verified with the information provided. Therefore, prior to Site Development plan approval or Building Permit approval for the school site and prior to Work Order approval for the road improvements, the following comments must be addressed:

1. A comprehensive drainage report is required. Please clean up this report so that it incorporates all concepts and details for the design and reflects all of my comments.
2. County approval must be obtained for the proposed road and channels to be built within the unincorporated areas.
3. The plan is deficient in elevations along the west bank of the Lower Corrales Riverside Drain. It appears from the plans that the top of bank is at 77.5 adjacent to the school site, however the proposed pad elevations are at 75.5. It is the responsibility of the subsequent developments to determine the existing bank elevations, and thus the spillway and finish floor elevations, for Basins "C" and "D."
4. MRGCD concurrence will be required prior to development of Basins "C" or "D" for the concept of using the bank of the drain as the spillway.
5. The detail for the Basin "A" outfall is not acceptable. A sufficient design for the proposed street, culverts and roadside channel must be provided. Development of Basin "A" will not be allowed until a design of this outfall meeting the D.P.M. criteria is provided. The Basin "B" outfall must also be designed in detail prior to development of Basin "B."

Jake Bordenave, P.E.  
page 2

March 8, 1999

6. Easements and Agreement and Covenants will be required for the proposed ponding areas. These must be in place prior to sign-off of the Work Order drawings.

If you have any questions regarding these comments, please call me at 924-3982.

Sincerely,



Susan M. Calongne, P.E.  
City/County Floodplain Administrator

c: Jim Strozier, Consensus Planning  
Lisa Ann Manwill, P.E., AMAFCA  
Brad Catanach, P.E., Bernalillo County Public Works Division  
File

## **TEMPORARY EASEMENT**

### **No.1 (Road)**

THIS GRANT OF EASEMENT between Ray A. Graham III, a married man dealing in his sole and separate property ("Grantor"), and the CITY OF ALBUQUERQUE, a New Mexico municipal corporation ("City"), whose address is P.O. Box 1293, Albuquerque, New Mexico, 87103.

1. **Grant of Easement.** The Grantor grants to the City an exclusive temporary easement for a ("Public Improvement") on, over, across and through the property described below ("Property"), together with the right of the City to operate, maintain, repair, replace and construct the Public Improvement and the right to remove trees, bushes, undergrowth and any other obstacles upon the Property if the City determines they interfere with the appropriate use of the easement. This Temporary Easement is for drainage flows from Learning Road and from future improvements on Grantor's property. Grantor's property is described on Exhibit A and attached hereto.

2. **Warranties.** Grantor covenants and warrants that it is the owner in fee simple of the Property and that it has a good lawful right to convey the Property or any part thereof and that the Grantor will forever warrant and defend the title to the Property against all claims from all persons or entities.

3. **Binding on Grantor's Property.** The grant and other provisions of this Easement constitute covenants running with title to the Property for the benefit of the City and its successors and assigns until terminated.

City Hydrology  
Copies

4. **Temporary.** This easement will be released by the City when the City Engineer determines that the Easement is no longer required.

WITNESS my hand and seal this 8<sup>th</sup> Day of MARCH 1999

GRANTOR:

By: Ray A. Graham

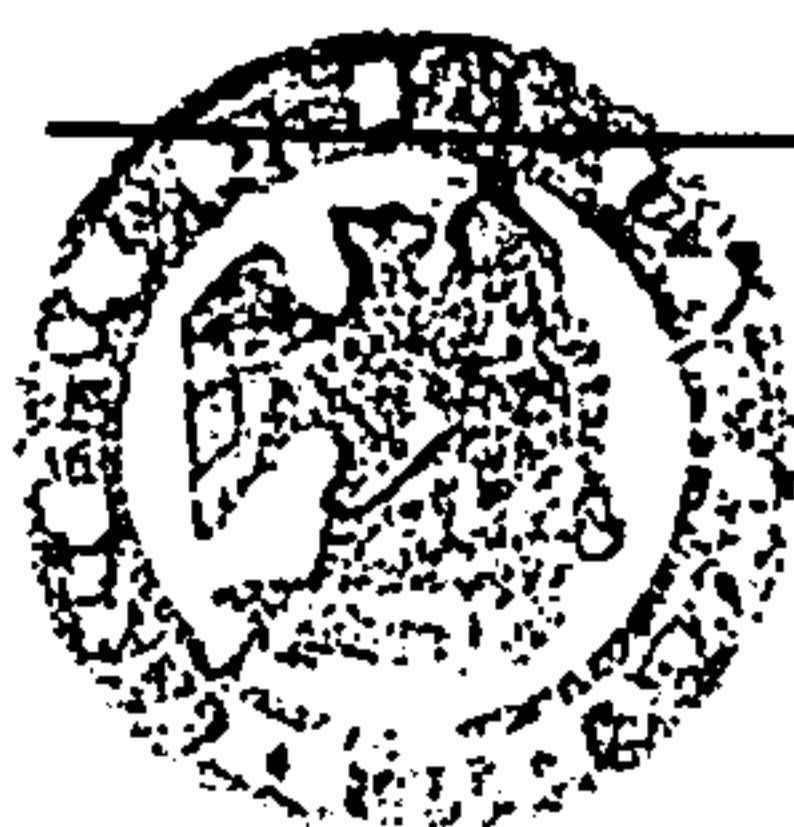
STATE OF NEW MEXICO )

COUNTY OF BERNALILLO )ss.  
)

This instrument was acknowledged before me on March 8, 1999  
by RAY A. GRAHAM, on behalf of said individual:

Veronica E. Lewis  
Notary Public

My Commission Expires:



OFFICIAL SEAL

Signature

Veronica E. Lewis  
VERONICA E. LEWIS

NOTARY PUBLIC - NEW MEXICO

Notary Public Filed with Secretary of State

My Commission Expires 7-1-99

# EXHIBIT A

## LEGAL DESCRIPTION FOR TEMPORARY DRAINAGE EASEMENT

No.1 (Road)

A CERTAIN TRACT OF LAND SITUATED IN SECTION 36, T11N, R2E, N.M.P.M., BERNALILLO COUNTY, NEW MEXICO AND BEING MORE PARTICULARLY DESCRIBED, USING NEW MEXICO STATE PLANE GRID BEARINGS (BEARING BASIS ACS NM448-6A (X=366640.72, Y=1507308.30) TO ACS NM448-7A(X=369804.62, Y=1510014.99) N49 27'12''W ) AND GROUND DISTANCES, AS FOLLOWS:

BEGINNING AT THE NORTHWEST CORNER OF THE HEREIN DESCRIBED TRACT, FROM WHENCE THE ACS MONUMENT NM448-7A BEARS N10 39'53''E A DISTANCE OF 1598.24 FEET; THENCE,

S89 42'31''E, 64.94 FEET TO A POINT; THENCE,

S22 46'48''W, 183.08 FEET TO A POINT; THENCE,

SOUTHWESTERLY 272.27 FEET ALONG THE ARC OF A CURVE RIGHT, HAVING A RADIUS OF 1040.00 FEET AND A LONG CHORD BEARING S30 16'48''W A DISTANCE OF 271.49 FEET TO A POINT; THENCE,

S37 46'48''W, 481.09 FEET TO A POINT; THENCE,

SOUTHWESTERLY 963.95 FEET ALONG THE ARC OF A CURVE RIGHT, HAVING A RADIUS OF 530.00 FEET AND A LONG CHORD BEARING S89 53'02''W A DISTANCE OF 836.47 FEET TO A POINT; THENCE,

N38 00'45''W, 174.10 FEET TO A POINT; THENCE

N51 59'15''E, 75.36 FEET TO A POINT; THENCE,

S28 37'56''E, 94.25 FEET TO A POINT; THENCE,

S38 00'45''E, 81.10 FEET TO A POINT; THENCE,

NORTHEASTERLY 854.82 FEET ALONG THE ARC OF A CURVE LEFT, HAVING A RADIUS OF 470.00 FEET AND A LONG CHORD BEARING N89 53'02''E A DISTANCE OF 741.78 FEET TO A POINT; THENCE,

N37 46'48''E, 481.09 FEET TO A POINT; THENCE,

NORTHEASTERLY 256.56 FEET ALONG THE ARC OF A CURVE LEFT, HAVING A RADIUS OF 980.00 FEET AND A LONG CHORD BEARING N30 16'48''E A DISTANCE OF 255.83 FEET TO A POINT; THENCE,

N22 46'48''E, 158.24 FEET TO A POINT; SAID POINT BEING THE POINT OF BEGINNING.

SAID TRACT CONTAINS 2.7707 ACRES MORE OR LESS.

I, JEAN J. BORDENAVE, A DULY REGISTERED PROFESSIONAL ENGINEER AND LAND SURVEYOR IN THE STATE OF NEW MEXICO HEREBY CERTIFY THAT THE ABOVE LEGAL DESCRIPTION WAS PREPARED BY ME FROM ACTUAL FIELD SURVEYS AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

 03/06/99  
JEAN J. BORDENAVE NMPE & LS NO. 5110



**Exhibit A-1**

## **TEMPORARY EASEMENT**

### **No. 2 (North)**

THIS GRANT OF EASEMENT between Ray A. Graham III, a married man dealing in his sole and separate property ("Grantor"), and the CITY OF ALBUQUERQUE, a New Mexico municipal corporation ("City"), whose address is P.O. Box 1293, Albuquerque, New Mexico, 87103.

1. **Grant of Easement.** The Grantor grants to the City an exclusive temporary easement for a ("Public Improvement") on, over, across and through the property described below ("Property"), together with the right of the City to operate, maintain, repair, replace and construct the Public Improvement and the right to remove trees, bushes, undergrowth and any other obstacles upon the Property if the City determines they interfere with the appropriate use of the easement. This Temporary Easement is for drainage flows from Learning Road and from future improvements on Grantor's property. Grantor's property is described on Exhibit A and attached hereto.

2. **Warranties.** Grantor covenants and warrants that it is the owner in fee simple of the Property and that it has a good lawful right to convey the Property or any part thereof and that the Grantor will forever warrant and defend the title to the Property against all claims from all persons or entities.

3. **Binding on Grantor's Property.** The grant and other provisions of this Easement constitute covenants running with title to the Property for the benefit of the City and its successors and assigns until terminated.

4. Temporary. This easement will be released by the City when the City Engineer determines that the Easement is no longer required.

WITNESS my hand and seal this 8<sup>th</sup> Day of March 1999

GRANTOR:

By: Ray A. Graham

STATE OF NEW MEXICO )

)ss.

COUNTY OF BERNALILLO )

This instrument was acknowledged before me on March 8, 1999  
by RAY A. GRAHAM III, on behalf of said individual.

Veronica E. Lewis  
Notary Public

My Commission Expires



OFFICIAL SEAL

SECRETARY

VERONICA E. LEWIS

NOTARY PUBLIC - NEW MEXICO

My Commission Expires

7-1-99

# EXHIBIT A

## LEGAL DESCRIPTION FOR TEMPORARY DRAINAGE EASEMENT

No. 2 (North)

A CERTAIN TRACT OF LAND SITUATED IN SECTIONS 25 AND 36, T11N, R2E, N.M.P.M., BERNALILLO COUNTY, NEW MEXICO AND BEING MORE PARTICULARLY DESCRIBED, USING NEW MEXICO STATE PLANE GRID BEARINGS (BEARING BASIS ACS NM448-6A (X=366640.72, Y=1507308.30) TO ACS NM448-7A(X=369804.62, Y=1510014.99) N49 27'12''W ) AND GROUND DISTANCES, AS FOLLOWS:

BEGINNING AT THE SOUTHEAST CORNER OF THE HEREIN DESCRIBED TRACT, FROM WHENCE THE ACS MONUMENT NM448-7A BEARS N13 11'57''W A DISTANCE OF 1616.73 FEET; THENCE,

N8942'31''W, 664.94 FEET TO A POINT; THENCE,

S22 46'48''W, 158.24 FEET TO A POINT; THENCE,

SOUTHWESTERLY 256.56 FEET ALONG THE ARC OF A CURVE RIGHT, HAVING A RADIUS OF 980.00 FEET AND A LONG CHORD BEARING S30 16'48''W A DISTANCE OF 255.83 FEET TO A POINT; THENCE,

N52 13'12''W, 200.00 FEET TO A POINT; THENCE,

NORTHEASTERLY 204.20 FEET ALONG THE ARC OF A CURVE LEFT, HAVING A RADIUS OF 780.00 FEET AND A LONG CHORD BEARING N30 16'48''E A DISTANCE OF 203.62 FEET TO A POINT; THENCE,

N51 04'10''E, 1291.71 FEET TO A POINT; THENCE,

S58 14'39''E, 401.29 FEET TO A POINT; THENCE

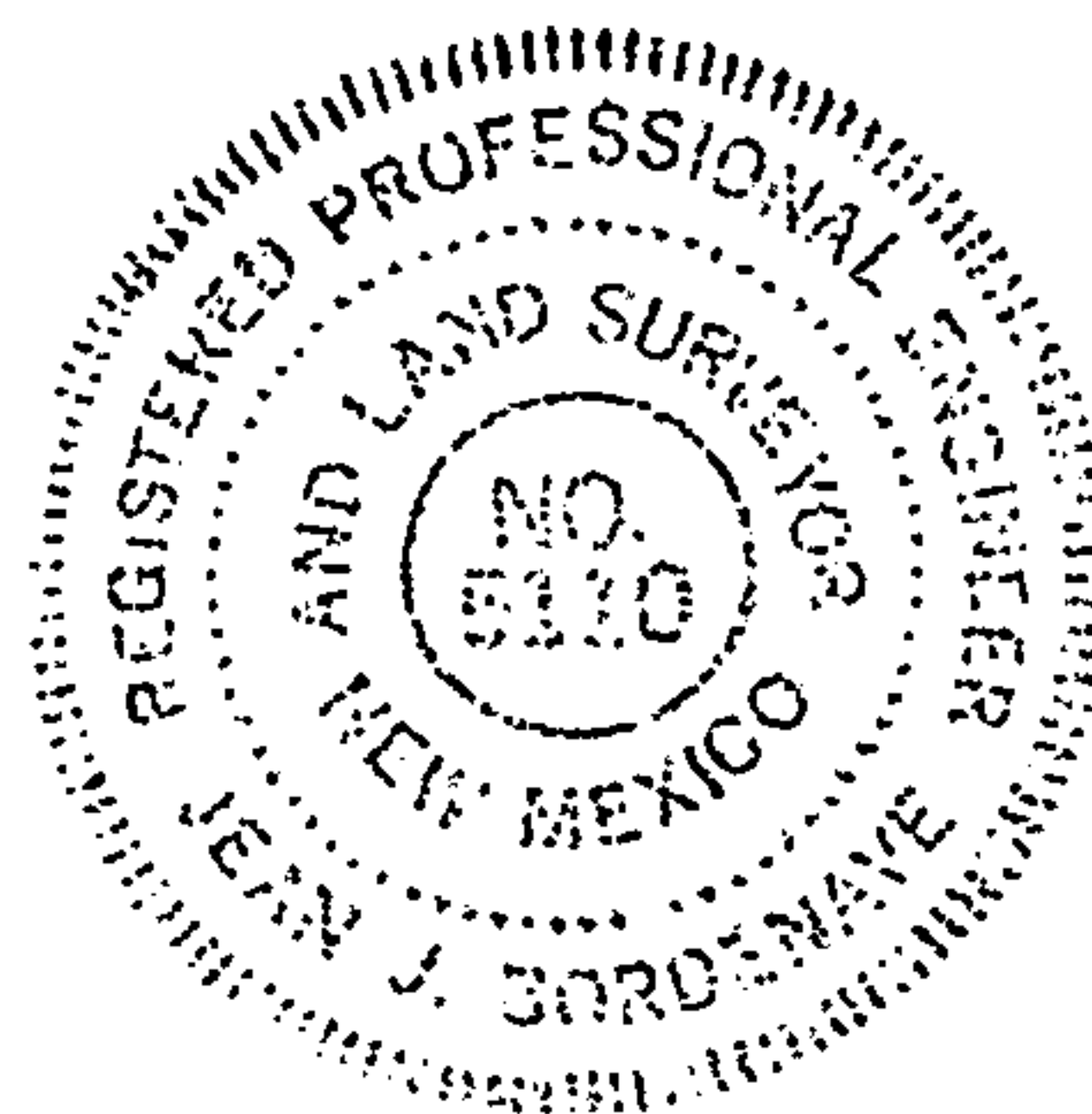
S36 20'44''W, 827.92 FEET TO A POINT; THENCE,

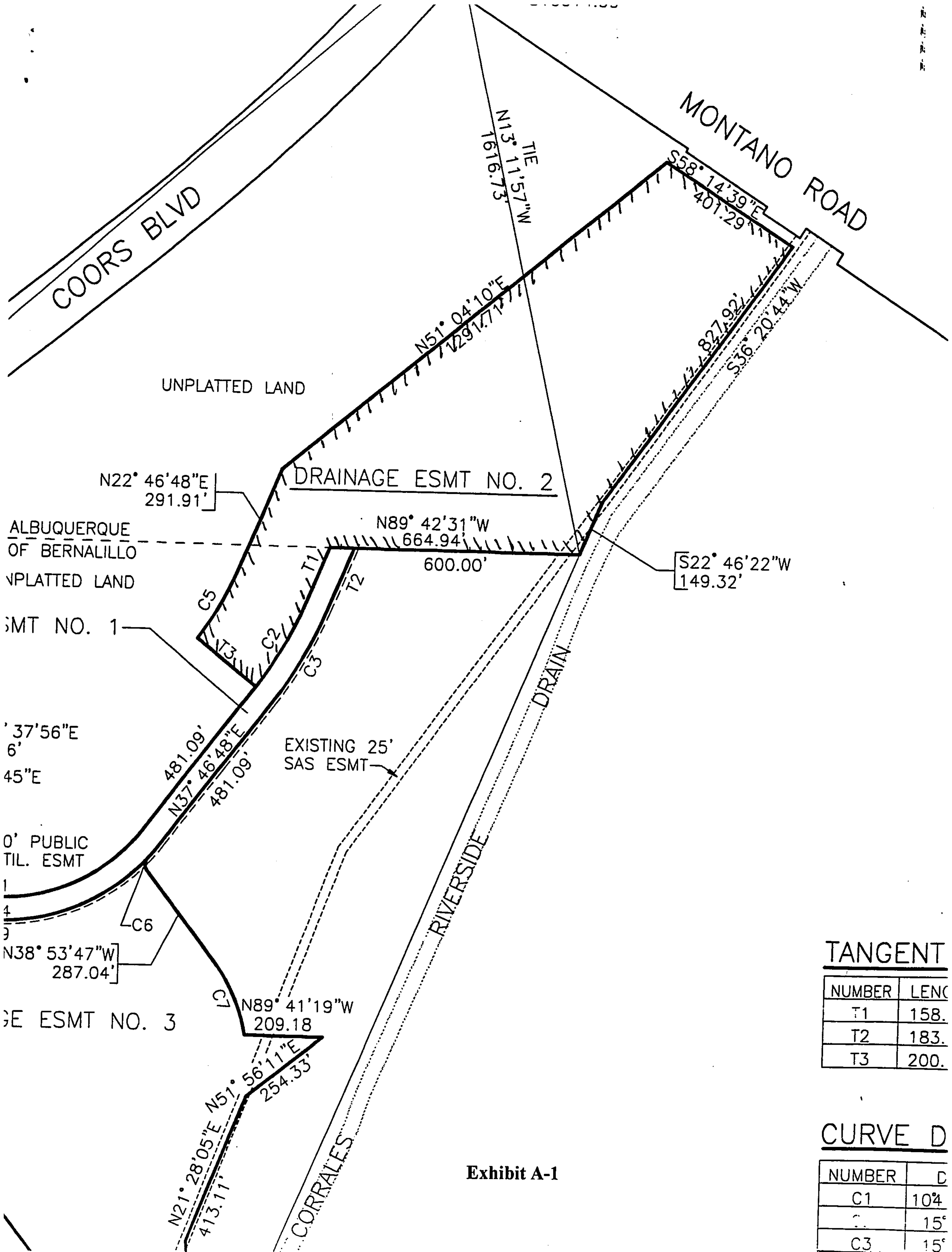
S22 46'22''W, 149.32 FEET TO A POINT; SAID POINT BEING THE POINT OF BEGINNING.

SAID TRACT CONTAINS 17.5498 ACRES MORE OR LESS.

I, JEAN J. BORDENAVE, A DULY REGISTERED PROFESSIONAL ENGINEER AND LAND SURVEYOR IN THE STATE OF NEW MEXICO HEREBY CERTIFY THAT THE ABOVE LEGAL DESCRIPTION WAS PREPARED BY ME FROM ACTUAL FIELD SURVEYS AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

 03/06/99  
JEAN J. BORDENAVE NMPE & LS NO. 5110





# TANGENT

NUMBER	LENG
T1	158.
T2	183.
T3	200.

# CURVE D

NUMBER	D
C1	104°
C2	15°
C3	15°

Exhibit A-1

# **TEMPORARY EASEMENT**

## **No. 3 (South)**

THIS GRANT OF EASEMENT between Ray A. Graham III, a married man dealing in his sole and separate property ("Grantor"), and the CITY OF ALBUQUERQUE, a New Mexico municipal corporation ("City"), whose address is P.O. Box 1293, Albuquerque, New Mexico, 87103.

1. **Grant of Easement.** The Grantor grants to the City an exclusive temporary easement for a ("Public Improvement") on, over, across and through the property described below ("Property"), together with the right of the City to operate, maintain, repair, replace and construct the Public Improvement and the right to remove trees, bushes, undergrowth and any other obstacles upon the Property if the City determines they interfere with the appropriate use of the easement. This Temporary Easement is for drainage flows from Learning Road and from future improvements on Grantor's property. Grantor's property is described on Exhibit A and attached hereto.

2. **Warranties.** Grantor covenants and warrants that it is the owner in fee simple of the Property and that it has a good lawful right to convey the Property or any part thereof and that the Grantor will forever warrant and defend the title to the Property against all claims from all persons or entities.

3. **Binding on Grantor's Property.** The grant and other provisions of this Easement constitute covenants running with title to the Property for the benefit of the City and its successors and assigns until terminated.

4. Temporary. This easement will be released by the City when the City Engineer determines that the Easement is no longer required.

WITNESS my hand and seal this 8<sup>th</sup> Day of March 1999

GRANTOR:

By: Ray A Graham

STATE OF NEW MEXICO )

)ss.

COUNTY OF BERNALILLO )

This instrument was acknowledged before me on March 8, 1999  
by RAY A. GRAHAM III, on behalf of said individual:

Veronica E. Lewis  
Notary Public

My Commission Expires:



OFFICIAL SEAL  
Signature Veronica E. Lewis  
VERONICA E. LEWIS  
NOTARY PUBLIC - NEW MEXICO  
Notary Board Filed with Secretary of State  
My Commission Expires 7-1-99

# EXHIBIT A

## LEGAL DESCRIPTION FOR TEMPORARY DRAINAGE EASEMENT

No. 3 (South)

A CERTAIN TRACT OF LAND SITUATED IN SECTION 36, T11N, R2E, N.M.P.M., BERNALILLO COUNTY, NEW MEXICO AND BEING MORE PARTICULARLY DESCRIBED, USING NEW MEXICO STATE PLANE GRID BEARINGS (BEARING BASIS ACS NM448-6A (X=366640.72, Y=1507308.30) TO ACS NM448-7A(X=369804.62, Y=1510014.99) N49 27'12"W ) AND GROUND DISTANCES, AS FOLLOWS:

BEGINNING AT THE SOUTHEAST CORNER OF THE HEREIN DESCRIBED TRACT, FROM WHENCE THE ACS MONUMENT NM448-6A BEARS N66 02'00"W A DISTANCE OF 2798.71 FEET; THENCE,

S89 41'27"W, 477.50 FEET TO A POINT; THENCE,

N21 28'05"E, 328.44 FEET TO A POINT; THENCE,

N38 00'45"W, 2006.41 FEET TO A POINT; THENCE,

N51 59'15"E, 220.00 FEET TO A POINT; THENCE,

SOUTHEASTERLY 47.12 FEET ALONG THE ARC OF A CURVE RIGHT, HAVING A RADIUS OF 30.00 FEET AND A LONG CHORD BEARING S83 00'45"E A DISTANCE OF 42.43 FEET TO A POINT; THENCE,

S38 00'45"E, 671.10 FEET TO A POINT; THENCE

SOUTHEASTERLY 915.52 FEET ALONG THE ARC OF A CURVE LEFT, HAVING A RADIUS OF 530.00 FEET AND A LONG CHORD BEARINGS87 29'55"E A DISTANCE OF 805.86 FEET TO A POINT; THENCE,

SOUTHWESTERLY 35.74 FEET ALONG THE ARC OF A CURVE LEFT, HAVING A RADIUS OF 25.00 FEET AND A LONG CHORD BEARING S02 03'34"W A DISTANCE OF 32.77 FEET TO A POINT; THENCE,

S38 53'47"E, 287.04 FEET TO A POINT; THENCE,

SOUTHEASTERLY 219.22 FEET ALONG THE ARC OF A CURVE RIGHT, HAVING A RADIUS OF 440.00.00 FEET AND A LONG CHORD BEARINGS24 37'23"E A DISTANCE OF 216.96 FEET TO A POINT; THENCE,

S89 41'19"E, 209.18 FEET TO A POINT; THENCE,

S51 56'11"W, 254.33 FEET TO A POINT; THENCE,

S21 28'05"W, 413.11 FEET TO A POINT; THENCE,

S0345'22"E, 458.29 FEET TO A POINT; SAID POINT BEING THE POINT OF BEGINNING.

SAID TRACT CONTAINS 26.6750 ACRES MORE OR LESS.

I, JEAN J. BORDENAVE, A DULY REGISTERED PROFESSIONAL ENGINEER AND LAND SURVEYOR IN THE STATE OF NEW MEXICO HEREBY CERTIFY THAT THE ABOVE LEGAL DESCRIPTION WAS PREPARED BY ME FROM ACTUAL FIELD SURVEYS AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

  
JEAN J. (BORDENAVE NMPE & LS NO. 5110



