

July 2, 1996

Martin J. Chávez, Mayor  
Gregory J. Krenik, PE  
Mark Goodwin & Assoc.  
P.O. Box 90606  
Albuquerque, NM 87199

**RE: CIRCLE K - NUNZIO'S (C12-D3A). GRADING AND DRAINAGE PLAN  
SUBMITTAL FOR BUILDING AND SO #19 PERMIT APPROVALS. ENGINEER'S  
STAMP DATED 6-3-96.**

Dear Mr. Krenik:

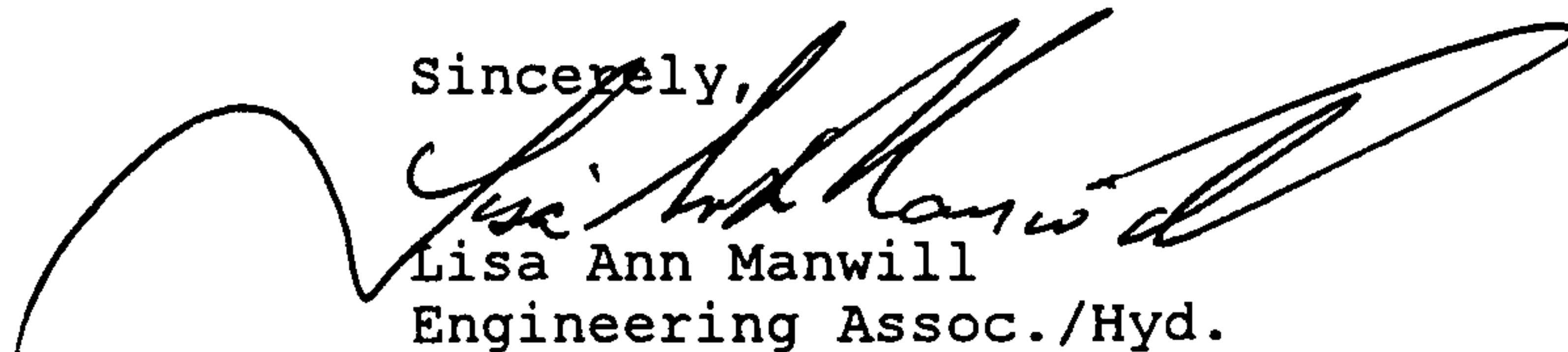
Based on the information provided on your June 4, 1996 submittal, the above referenced project is approved for Building and SO #19 Permits. Please consider the following comments for this project:

1. The detention basin should be lined with cobblestone or landscape rock for removal of floating oils/fuels.
2. The on-site manager should have a regular maintenance schedule for maintaining the detention basin area.
3. The City suggests that the area around the fueling bays and under the canopy be graded so that in the future, the fueling area can be contained and all washdown water collected and routed to an oil/water separator. This separator would be connected directly to the sanitary sewer, not to the storm drain. The City is currently modifying requirements for fueling areas, and the above requirement for containment of washdown areas and canopy areas may become standard.

Prior to Certificate of Occupancy, and Engineer's Certification will be required.

If I can be of further assistance, please feel free to contact me at 768-3622.

Sincerely,



Lisa Ann Manwill  
Engineering Assoc./Hyd.

c: Arlene Portillo  
Andrew Garcia  
File

Good for You, Albuquerque!





# ***City of Albuquerque***

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

April 8, 1996

Gregory J. Krenik, PE  
Mark Goodwin & Assoc.  
P.O. Box 90606  
Albuquerque, NM 87199

**RE: CIRCLE K - NUNZIO'S (C12-D3A) CONCEPTUAL GRADING AND  
DRAINAGE PLAN AND CALCULATION FOR SITE DEVELOPMENT PLAN FOR  
BUILDING PERMIT APPROVAL. ENGINEER'S STAMP DATED 4-2-96.**

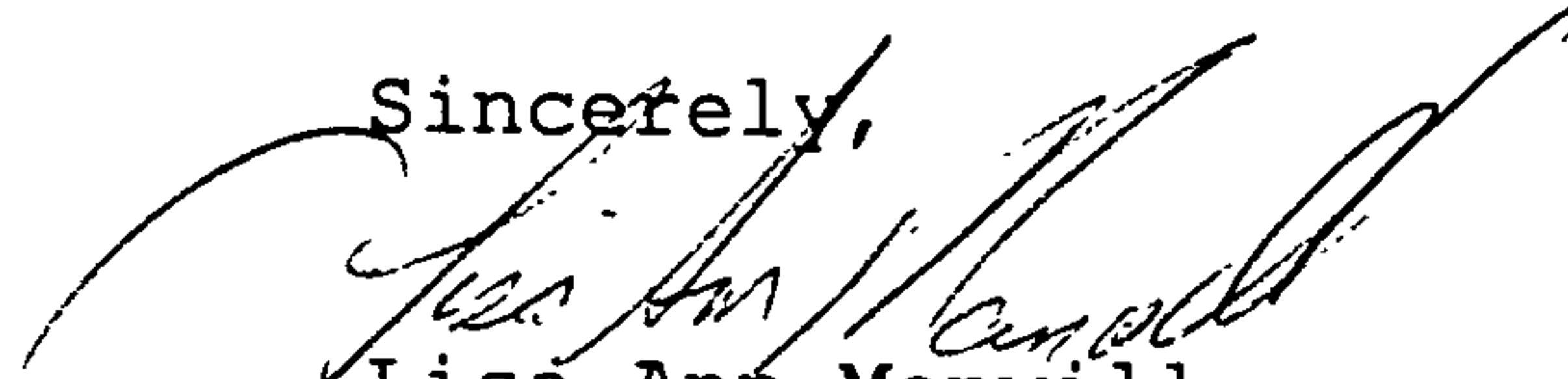
Dear Mr. Krenik:

Based on the information provided on your April 3, 1996  
submittal, the above referenced project is approved for Site  
Development Plan for Building Permit.

With your next submittal, please be certain to show adequate  
grades in ponding area and along existing roadways.

If I can be of further assistance, please feel free to contact me  
at 768-3622.

Sincerely,



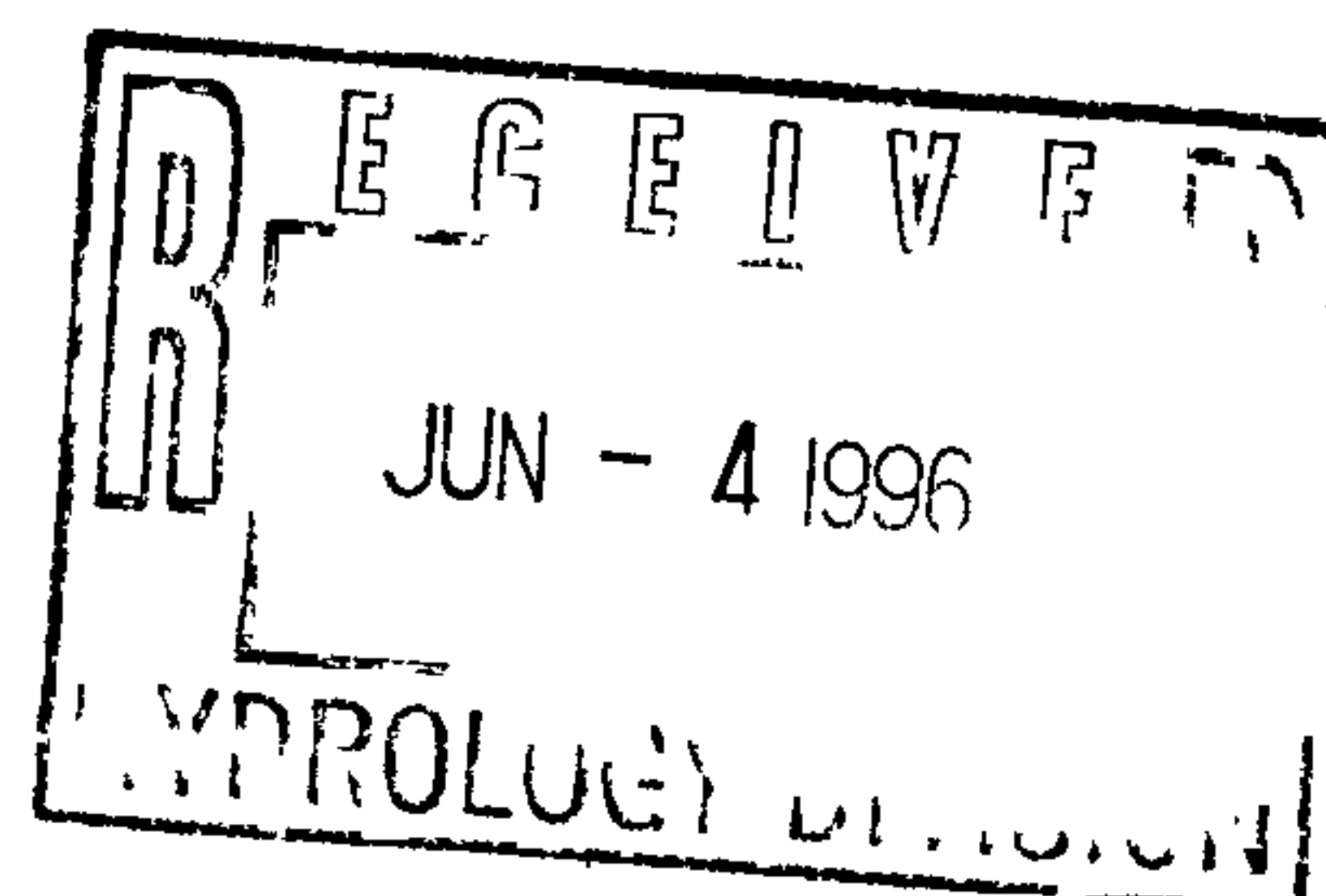
Lisa Ann Manwill  
Engineering Assoc./Hyd.

c: Andrew Garcia  
File

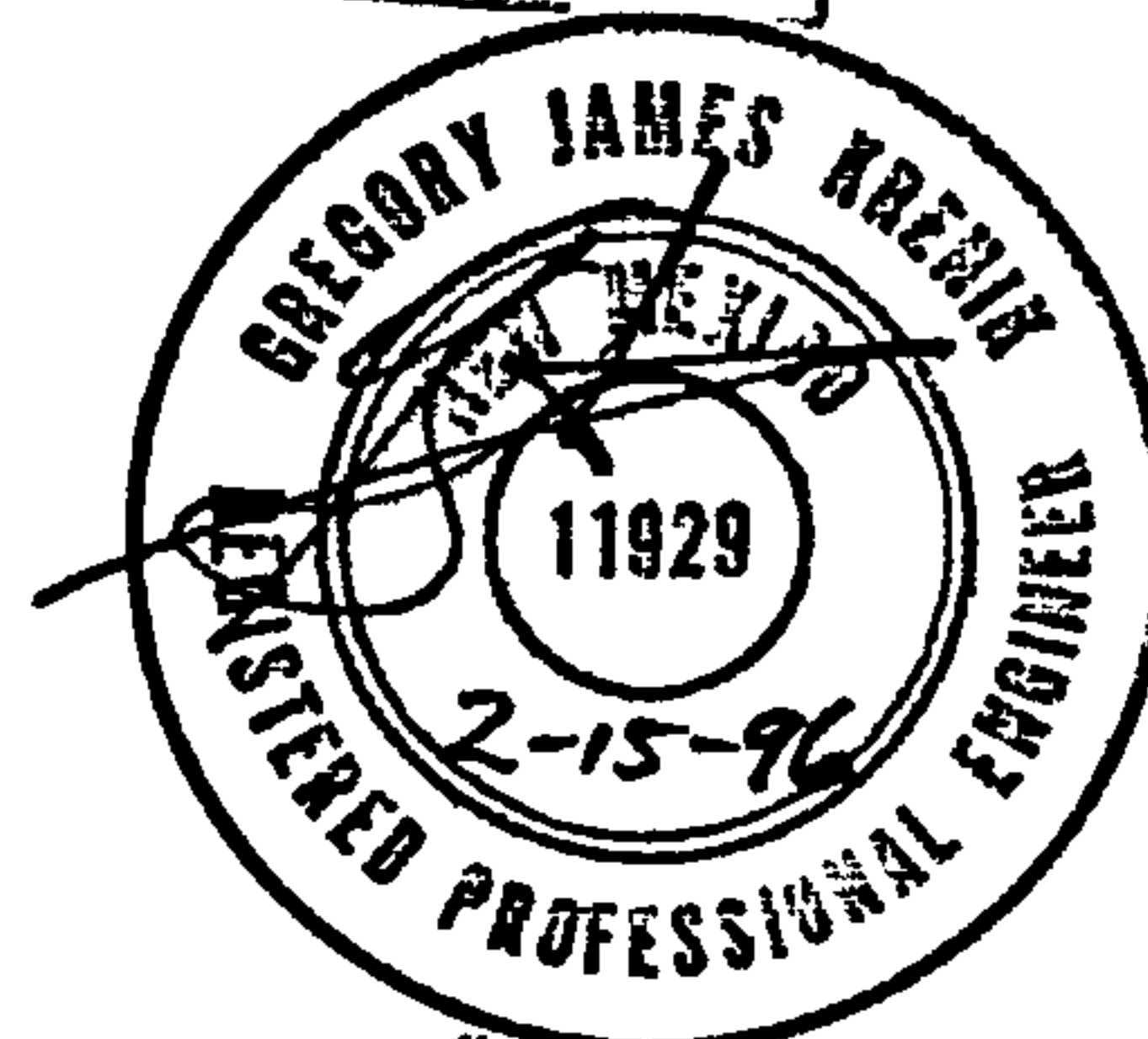
**DRAINAGE CALCULATIONS**

*for*

**CIRCLE K – NUNZIO**



*February 1996*



*4-2-96*  
*6-3-96*



D. Mark Goodwin & Associates, P.A.  
Consulting Engineers and Surveyors

PROJECT CIRCLE K - NUNZIO  
SUBJECT DRAINAGE CALCS  
BY GJK DATE 4-2-96  
CHECKED \_\_\_\_\_ DATE \_\_\_\_\_  
SHEET 9 OF \_\_\_\_\_

- DURING THE DESIGN PROCESS AN ADDITIONAL REQUIREMENT THAT HALF OF PASEO DEL NORTE BE ROUTED TO RUNN DOWN EAGLE RUNCH ROAD.

THIS AREA IS WEST OF EAGLE RUNCH ROAD TO THE RIDGE APPROXIMATELY 950 FEET TO THE WEST.

FIND RUNOFF

$$\text{AREA} = 78 \times 950 = 74,100 \text{ SF} = 1.7011 \text{ AC}$$

FIND TREATMENTS

$$39' + 6' \text{ SOWK} = 45' = 58\% \text{ TYPE "D"} \\ 42\% \text{ TYPE "C"}$$

FROM HYMO SHEETS 10-12

$$Q = 6.47 \text{ CFS}$$

$$V = 0.2220 \text{ AC-FT}$$

- FIND TOTAL FLOW AT INTERSECTION OF WESTSIDE OF EAGLE RUNCH ROAD AT PARADISE BLVD.

FROM HEDGES REPORT

$$\text{FLOW FROM NUNZIO} = 2.19 \text{ CFS}$$

$$\text{FLOW FROM EAGLE RUNCH RD.} = 7.95 \text{ CFS}$$

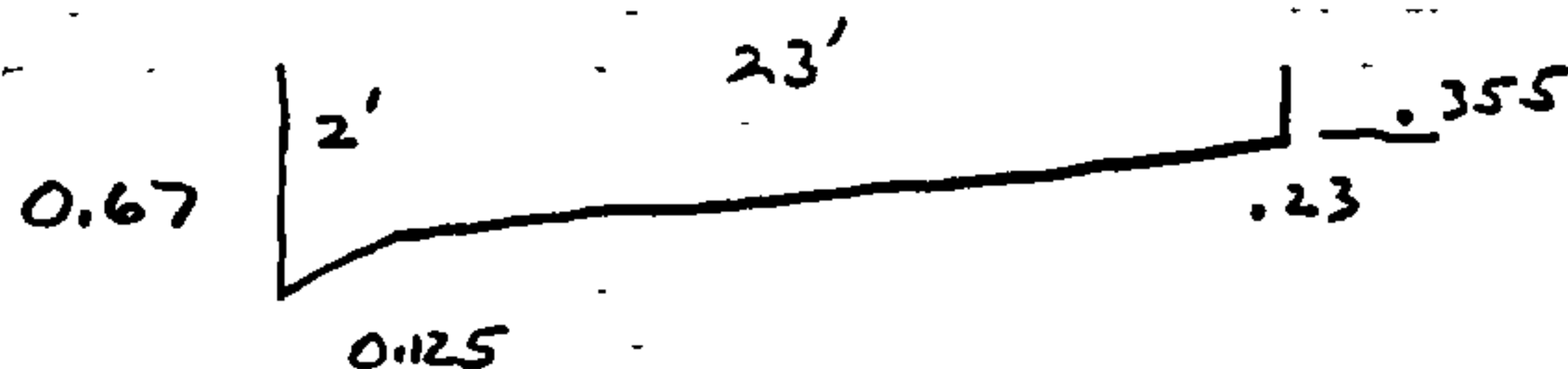
$$\text{FLOW FROM LOT 10-A} = 2.19 \text{ CFS}$$

$$\text{FLOW FROM 30\% OF TRACT C ALB WEST} = 1.12 \text{ CFS}$$

$$\text{FLOW FROM PASEO DEL NORTE} = 6.47 \text{ CFS}$$

$$\text{TOTAL} \quad \underline{19.92 \text{ CFS}}$$

- DETERMINE IF ROADWAY SECTION CAN HANDLE FLOW.



$$n = 0.017$$

$$S = 1.28\%$$

$$d = 0.45$$

$$WP = 25.545$$

$$A = 5.605$$

$$V = 3.5977 \text{ F/S}$$

$$Q = 20.16 \text{ CFS} \approx 19.92 \text{ CFS} \quad \underline{\text{OK}}$$

$$d + \frac{V^2}{2g} = 0.45 + 0.2 = 0.65 < 0.87 \quad \underline{\text{OK}}$$

- FIND CAPACITY OF INLET - DOUBLE "A" IN SUMP

$$Q/P = 3.0 H^{3/2}$$

$$19.92/3.0 = 3.0 H^{3/2}$$

$$H = 0.53 < 0.67 \quad \underline{\text{OK}}$$

THIS INLET WILL BE INSTALLED IN PLACE OF INLET ON HEDGES PLANS, BUT WILL BE INSTALLED WITH HEDGES PROTECT





D. Mark Goodwin & Associates, P.A.  
Consulting Engineers and Surveyors

PROJECT CIRCLE K - Nunzio  
SUBJECT DRAINAGE CALCS  
BY GJK DATE 4-2-96  
CHECKED \_\_\_\_\_ DATE \_\_\_\_\_  
SHEET 13 OF \_\_\_\_\_

- DETERMINE FLOWS IN PARADISE STORM DRAIN.

TOTAL FLOW IN PIPE

$$\begin{array}{r} 19.92 \text{ FROM HEDGES REPORT} \\ + 10.61 \text{ FROM WESTPARK} \\ \hline 30.53 \text{ CFS} \end{array}$$

AT FIRST INLET IN PARADISE - 18" RCP ALLOWS 7.5 CFS

TOTAL FLOW THAT WILL COME UP OUT OF INLET

$$30.53 - 7.5 = 23.03 \text{ CFS}$$

CAPACITY OF NORTH SIDE OF PARADISE BLVD  
= 13.873 CFS

AMOUNT THAT SPILLS OVER TO SOUTHSIDE

$$23.03 - 13.873 + 1.45 + 4.16 = 14.767 \text{ CFS}$$

COMBINED SURFACE FLOW IN PARADISE

FROM THIS WE CAN SEE THAT

14.767 CFS GOES SOUTH UNDER PASSED DEL NORTE

21.373 CFS GOES INTO THE POND TO THE NORTH  
OF PARADISE.

## DIVISION C: DRAINAGE CONCEPTS

The area involved in this plan is almost completely covered by the Albuquerque Metropolitan Flood Control Authority, North Coors Drainage Management Plan. The basic development of our drainage plan is to conform to and utilize the accepted drainage management plan, while at the same time provide the required protection until the Coors Drainage Plan is fully implemented.

The basic feature of the plan is to utilize the Corrales Main Canal as a combination storm water and irrigation facility. The areas of concern at the Coors/Paseo del Norte crossing are 10.1W, 10.2E, 11.1W, and 11.2E. Areas 10.1W and 11.1W north to the Calabacillas Arroyo. This plan reduces the drainage areas considerably and tends to offset the increase in runoff that can be expected when the areas are fully developed. Copies of Table 1 and 2 of the Drainage Management Plan are included for reference (see Plates CII and CIII).

These two areas presently drain water under Coors Road as follows: Area 10.1W crosses at Station 18+48 in a 36" C.M.P., Area 11.1W crosses Coors Road at Station 9+84 in a 24 R.C.P. The present drainage Area 10.1W is 238.42 acres with a 100-year Q of 71.6 cfs which is also the maximum allowable flow under the plan. Area 11.1 is 107.44 acres with a 100-year Q of 44.3 cfs which is also the maximum allowable flow.

### 1. Urban Interchange Plan

Our recommendation for the SW Quadrant of the Interchange which is Area 11.1W is to drain the roadway in a storm sewer flow plus the overland flow into a combination detention and sediment pond left at Station 10 to Station 12 on Coors Road. This detention pond would have a capacity at 1.47 Ac. Ft. of water and 0.25 Ac. Ft. of sediment storage. This pond would be drained across Coors Road by two 30" diameter culvert pipes at Station 11+00 set to allow only a head to the top of the pipes for a Q of 44.3 cfs, i.e., a H/D of 1.0. This flow would then be carried in an open lined ditch to 2-30" culvert pipes under Frontage Road "A" and thence into the Corrales Main Canal via a 9' wide side Inlet (Plate CIV). This system is shown on the plans.

Our recommendation for the NW Quadrant of the Interchange which is Area 10.1W

is to drain the roadway in a storm sewer system to a 36" culvert at Station 18+00 Coors Road. The existing 36" culvert at Station 18+48 will be extended and both culverts will be discharged into a common outlet ditch in the NE Quadrant. We do not recommend that a detention pond be built at this time in the NW Quadrant due to the imminent construction of the regional shopping center in that area. The two 36" culverts will handle the projected drainage of 71.6 cfs with a H/D of 1.0 and can be incorporated into the future drainage plan for the shopping center.

Our recommendations for the NE Quadrant of the Interchange which is Area 10.2E, is to carry the flow from the NW Quadrant in an open ditch to a sediment pond located opposite Station 18+00 on the canal baseline and thence into the canal channel by a 22' wide side inlet. The capacity of the 22' side inlet is 117 cfs which is the allowable into the canal at this point. We recommend improving the canal to the attached typical section (Plate CV) from Station 19+00 to Station 17+20 at which point a concrete transition (Plate CVI) will begin which will carry the flow to a double 8'x5' CBC. The two 8'x5' CBC is sized to carry the projected flow in the canal (241 cfs) at approximately the same depth at the entrance in order to provide a smooth flow in the canal and transition.

The two 8'x5' CBC will continue across Paseo del Norte at Station 23+84 and terminate approximately 710 feet downstream as it passes under Frontage Road. At this point the CBC will transition into the canal section by a concrete lined transition similar to the one upstream. The concrete lined canal section (Plate CV) will continue downstream approximately 120 ft. where it will again transition to match the existing canal lining at that point.

Our recommendation for the SE Quadrant Area 11.2E, approximately half of which is taken up by the Interchange and Frontage Road is to place the flow from the few drop inlets in the area into the box culvert. The remaining portion at the southerly end is to be passed under Frontage Road by a 30' culvert and into the existing canal by a 6' wide side inlet.

The remaining portion of the project from approximately Station 25+00 to the EOP at Station 50+00 is below the Corrales main canal and will be as follows. The area north of Paseo del Norte and east of the Canal is flat irrigated farm land presently with no existing drainage channels. The slope is gradual and



generally from north to south. The area is cut by a field ditch and road which traps the water north of the field road, leaving about 27 acres which will drain south across Paseo del Norte. This area remaining is also divided into an east and west section by the existing dedicated dirt road crossing at Station 43+00±, giving about 6.9 acres east of Station 43+00 and about 20.1 acres west of Station 43+00.

The SCS method of computing the runoff from these areas follows:

From the Coors Road Plan, the 100-year 6-hour rainfall is 2.2 inches. From Figure 6, 84% accumulation in 1 hour which gives  $.84 \times 2.2 = 1.848$  inches.

In the area of concern, SD-1 gives 75% of the 24-hour rain in one hour. Backing into the 24-hour precipitation we would get  $1.848 \div .75 = 2.464$  inches in 24 hours.

The length of the west area is 1000 ft. and the vertical drop is 2-1/2 ft.

Using the overland velocity method for cultivated straight row fields and the minimum slope, we arrive at a velocity of 0.65 ft. per second.

For a length at 1000 ft., the  $T_c$  would be  $1000 \div 0.65 = 1538$  sec. or 0.42 hrs. This can be used for both the west and east sections.

Referring to Table 2-1 for the curve Nos. Row Crops in poor condition the CN is 72. From Figure 2-4, the direct runoff is 0.5. The distribution curve is 75.

From Figure 2-5, the cfs/ac/in = 1.2 S. for the west area.

D.A. = 20.1 acres

$Q = 20.1 \times 1.2 \times 0.5 = 12$  cfs

For the east area:

D.A. = 6.9 acres

$Q = 6.9 \times 1.2 \times 0.5 = 4$  cfs

Since there are future proposals for a grade separation at the road crossing at Station 43+00±, we recommend that culverts be placed on either side of this proposed road far enough way to clear the future fill. The one on the west should be at Station 40+75, and the one on the east should be at Station 43+40. The culverts should be skewed the same as the proposed future overcrossing. We recommend a 24" culvert at both locations. Since the property owner indicates that he will not farm these fields, we do not recommend any provision for irrigation structures here. A list of the recommended structures for the Urban concept follows: