FILE COPY

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

MAYOR
KEN SCHULTZ

CHIEF ADMINISTRATIVE OFFICER
GENE ROMO

DEPUTY CAO DEVELOPMENT & ENTERPRISE SERVICES
LARRY LARRANAGA

DEPUTY CAO PUBLIC SERVICES
DAN WEAKS

August 3, 1988

Frank Lovelady, P.E.
Lovelady & Associates
7408 Morrow, NE
Albuquerque, New Mexico 87110

RE: ISLETA DRAIN CULVERT EXTENSION, DRAINAGE REPORT
RECEIVED JUNE 29, 1988 FOR REVIEW AND APPROVAL (K-12/D20)

Dear Mr. Lovelady:

I have reviewed the above referenced submittal, dated May 31, 1988, and have no adverse comments. The drainage calculations are consistent with City of Albuquerque requirements.

One suggestion I have for the construction drawings is that on Section A-A, the gravel envelope backfill be shown with a 1:1 side slope, since a contractor would be unable to backfill as the section shows.

Final design and construction approvals must be processed through the M.R.G.C.D., as I assume the City has no maintenance obligations and the right-of-way or easement belongs to the M.R.G.C.D. and not the City.

Should you have any questions, please call me at 768-2650.

Cordially,

Roger A. Green, PE

Roger A. Green, P.E.
C.E./Hydrology Section

RAG/bsj

xc: Subhas K. Shah, M.R.G.C.D.

AN EQUAL OPPORTUNITY EMPLOYER

MAXIMUM COMPUTED UNIT PEAK = 49.4CFS

PRINT HYD ID=1 CODE=10

HYDROGRAPH NUMBER 602.1

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
0.000	0.	2.400	1.	4.800	1.
0.200	44.	2.600	1.	5.000	1.
0.400	27.	2.800	1.	5.200	1.
0.600	10.	3.000	1.	5.400	1.
0.800	7.	3.200	1.	5.600	0.
1.000	5.	3.400	1.	5.800	0.
1.200	3.	3.600	1.	6.000	0.
1.400	2.	3.800	1.	6.200	0.
1.600	2.	4.000	1.	6.400	0.
1.800	2.	4.200	1.	6.600	0.
2.000	1.	4.400	1.	6.800	0.
2.200	1.	4.600	1.	7.000	0.

RUNOFF VOLUME = 1.880 ACRE-FT
PEAK DISCHARGE RATE = 52.4 CFS
PEAK OCCURRED AT 0.26 HRS.

* HYDROGRAPH FOR AREA 603
* BETWEEN ISLETA DRAIN & ATRISCO DITCH, S. OF CENTRAL
COMPUTE HYD ID=1 HYD NO=603.1 DT=.02 DA=.077 CN=76
K=-.29 TP=-.58 MASS RNFL=-1
SHAPE CONSTANT, N = 7.947
UNIT PEAK = 74.9CFS
MAXIMUM COMPUTED UNIT PEAK = 74.9CFS

PRINT HYD ID=1 CODE=10

HYDROGRAPH NUMBER 603.1

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
0.000	0.	3.200	2.	6.400	1.
0.200	1.	3.400	2.	6.600	1.
0.400	10.	3.600	2.	6.800	0.
0.600	19.	3.800	2.	7.000	0.
0.800	18.	4.000	2.	7.200	0.
1.000	13.	4.200	2.	7.400	0.
1.200	9.	4.400	1.	7.600	0.
1.400	7.	4.600	1.	7.800	0.
1.600	6.	4.800	1.	8.000	0.
1.800	5.	5.000	1.	8.200	0.
2.000	4.	5.200	1.	8.400	0.
2.200	4.	5.400	1.	8.600	0.
2.400	3.	5.600	1.	8.800	0.
2.600	3.	5.800	1.	9.000	0.
2.800	3.	6.000	1.		
3.000	3.	6.200	1.		

RUNOFF VOLUME = 2.214 ACRE-FT
PEAK DISCHARGE RATE = 20.1 CFS
PEAK OCCURRED AT 0.66 HRS.

* HYDROGRAPH FOR AREA 604
* BETWEEN ISLETA DRAIN & ATRISCO, S. OF CENTRAL
COMPUTE HYD ID=1 HYD NO=604.1 DT=.02 DA=.023 CN=78
K=-.14 TP=-.28 MASS RNFL=-1
SHAPE CONSTANT, N = 7.947
UNIT PEAK = 46.4CFS
MAXIMUM COMPUTED UNIT PEAK = 46.4CFS

PRINT HYD ID=1 CODE=10

HYDROGRAPH NUMBER 604.1

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
		2.600	1.	5.200	0.

```
*     HYDROGRAPH FOR AREA 601
*          BETWEEN ISLETA DRAIN & ARENAL CANAL, S. OF CENTRAL
COMPUTE HYD              ID=1   HYD NO=601.1   DT=.02 DA=.049   CN=77
                         K=-.195   TP=-.395   MASS RNFL=-2.25
                         A=0.85   B=0.090521   T=6
     SHAPE CONSTANT, N =   8.081
     UNIT PEAK =          70.8CFS
      RAINFALL TABLE
0.000   1.342   1.429   1.483   1.522   1.553   1.579   1.601   1.620   1.638
1.653   1.668   1.681   1.693   1.704   1.715   1.725   1.735   1.744   1.752
1.760   1.768   1.776   1.783   1.790   1.796   1.803   1.809   1.815   1.820
1.826   1.832   1.837   1.842   1.847   1.852   1.856   1.861   1.866   1.870
1.874   1.878   1.883   1.887   1.890   1.894   1.898   1.902   1.905   1.909
1.913   1.916   1.919   1.923   1.926   1.929   1.932   1.935   1.938   1.941
1.944   1.947   1.950   1.953   1.956   1.958   1.961   1.964   1.966   1.969
1.972   1.974   1.977   1.979   1.982   1.984   1.986   1.989   1.991   1.993
1.996   1.998   2.000   2.002   2.004   2.007   2.009   2.011   2.013   2.015
2.017   2.019   2.021   2.023   2.025   2.027   2.029   2.031   2.033   2.034
2.036   2.038   2.040   2.042   2.044   2.045   2.047   2.049   2.051   2.052
2.054   2.056   2.057   2.059   2.061   2.062   2.064   2.065   2.067   2.069
2.070   2.072   2.073   2.075   2.076   2.078   2.079   2.081   2.082   2.084
2.085   2.087   2.088   2.090   2.091   2.092   2.094   2.095   2.097   2.098
2.099   2.101   2.102   2.103   2.105   2.106   2.107   2.109   2.110   2.111
2.112   2.114   2.115   2.116   2.118   2.119   2.120   2.121   2.122   2.124
2.125   2.126   2.127   2.128   2.130   2.131   2.132   2.133   2.134   2.135
2.137   2.138   2.139   2.140   2.141   2.142   2.143   2.144   2.145   2.147
2.148   2.149   2.150   2.151   2.152   2.153   2.154   2.155   2.156   2.157
2.158   2.159   2.160   2.161   2.162   2.163   2.164   2.165   2.166   2.167
2.168   2.169   2.170   2.171   2.172   2.173   2.174   2.175   2.176   2.177
2.178   2.179   2.180   2.181   2.182   2.182   2.183   2.184   2.185   2.186
2.187   2.188   2.189   2.190   2.191   2.191   2.192   2.193   2.194   2.195
2.196   2.197   2.198   2.198   2.199   2.200   2.201   2.202   2.203   2.203
2.204   2.205   2.206   2.207   2.208   2.208   2.209   2.210   2.211   2.212
2.212   2.213   2.214   2.215   2.216   2.216   2.217   2.218   2.219   2.220
2.220   2.221   2.222   2.223   2.223   2.224   2.225   2.226   2.226   2.227
2.228   2.229   2.229   2.230   2.231   2.232   2.232   2.233   2.234   2.235
2.235   2.236   2.237   2.237   2.238   2.239   2.240   2.240   2.241   2.242
2.242   2.243   2.244   2.244   2.245   2.246   2.247   2.247   2.248   2.249

2.249   2.250
     MAXIMUM COMPUTED UNIT PEAK =          70.7CFS

PRINT HYD                ID=1   CODE=10

                         HYDROGRAPH NUMBER   601.1

      TIME      FLOW          TIME      FLOW          TIME      FLOW
       HRS       CFS           HRS       CFS           HRS       CFS
     0.000        0.         2.800        1.         5.600        1.
     0.200        3.         3.000        1.         5.800        1.
     0.400       18.         3.200        1.         6.000        1.
     0.600       15.         3.400        1.         6.200        1.
     0.800        9.         3.600        1.         6.400        0.
     1.000        6.         3.800        1.         6.600        0.
     1.200        5.         4.000        1.         6.800        0.
     1.400        4.         4.200        1.         7.000        0.
     1.600        3.         4.400        1.         7.200        0.
     1.800        3.         4.600        1.         7.400        0.
     2.000        2.         4.800        1.         7.600        0.
     2.200        2.         5.000        1.         7.800        0.
     2.400        2.         5.200        1.         8.000        0.
     2.600        2.         5.400        1.

     RUNOFF VOLUME =        1.510 ACRE-FT
     PEAK DISCHARGE RATE =          19.0 CFS
     PEAK OCCURRED AT   0.44 HRS.

*     HYDROGRAPH FOR AREA 602
*          BETWEEN ISLETA DRAIN & ATRISCO, S. OF CENTRAL
COMPUTE HYD              ID=1   HYD NO=602.1   DT=.02 DA=.021   CN=95
                         K=-.12   TP=-.24   MASS RNFL=-1
     SHAPE CONSTANT, N =   7.947
     UNIT PEAK =          49.4CFS
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ISLETA WATERSHED STUDY
SUMMARY OF HYDROLOGIC ANALYSIS

VALLEY AREA

Subbasin Number	Area (Acres)	2 Year Peak Disch (cfs)	2 Year Volume (ac-ft)	10 Year Peak Disch (cfs)	10 Year Volume (ac-ft)	100 Year Peak Disch (cfs)	100 Year Volume (ac-ft)
601	31	1	0.1	5	0.5	19	1.5
602	13	16	0.6	29	1.1	52	1.9
603	49	1	0.2	5	0.7	20	2.2
604	15	1	0.1	3	0.3	13	0.8
605	31	1	0.1	8	0.5	33	1.5
606	64	1	0.3	9	1.1	35	3.1
607	38	1	0.2	6	0.6	24	1.9
608	72	2	0.3	11	1.2	41	3.5
609	16	1	0.1	4	0.3	16	.8
610	10	1	0.04	2	0.2	9	.5
611	7.0	1	0.03	2	0.1	6	.3
620	8.3	1	0.03	2	0.1	7	.4
624	36	1	0.2	7	0.7	25	1.9
625	29	1	0.1	7	0.5	29	1.4
626	37	1	0.2	4	0.6	15	1.8
627	67	1	0.3	9	1.1	36	3.2
628	64	1	0.3	7	1.1	26	3.1
630	13	1	0.1	4	0.2	19	.6
631	22	1	0.1	3	0.4	13	1.1
632	26	1	0.1	6	0.4	24	1.2
633	22	1	0.1	4	0.4	17	1.0
634	57	1	0.2	10	0.9	38	2.8
635	47	1	0.2	8	0.8	33	2.3
636	61	1	0.3	10	1.0	40	3.0
637	12	1	0.1	3	0.2	14	0.6
638*	14	1	0.1	3	0.2	14	0.6
639*	5.1	1	0.1	2	0.1	8	0.2
640	35	1	0.1	4	0.5	17	1.6
641	41	1	0.1	6	0.6	25	1.8
642	11	1	0.1	4	0.2	14	0.6
643	50	1	0.2	5	0.8	17	2.4
644	38	1	0.2	7	0.6	26	1.9

*Not modeled.

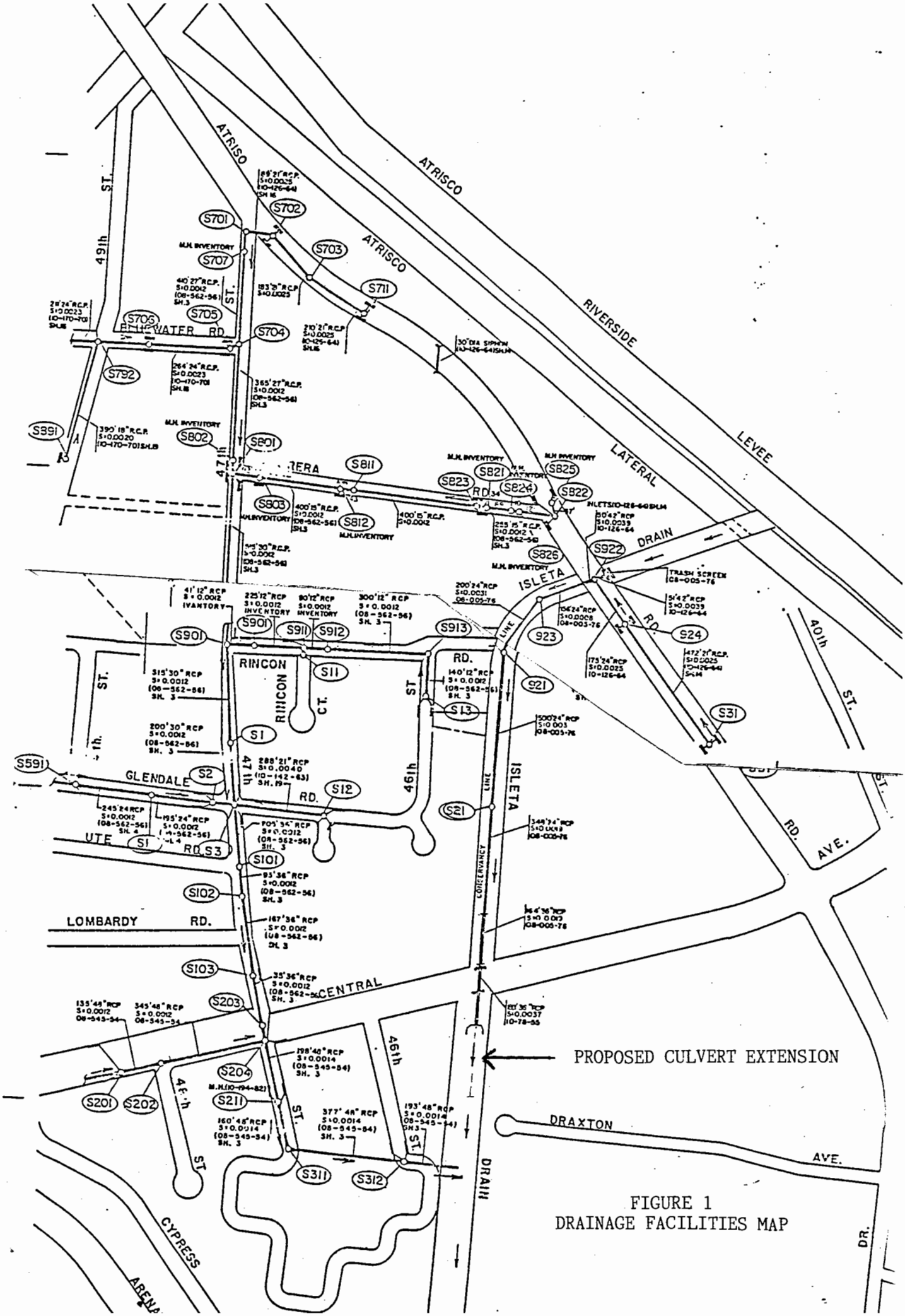


FIGURE 1
DRAINAGE FACILITIES MAP

G. SELECTION OF PIPE DIAMETER, INLET NO. 2 TO OUTLET:

Q = 85.58 cfs Slope = 0.0025 ft./ft.

Try 54" RCP $A = \pi(4.5)^2 / 4 = 15.9$ SF

$P = \pi(4.5) = 14.14$ $R = A/P = 15.9 / 14.14 = 1.12$ cfs

$Q = AV = 15.9\ (1.486 / 0.015)(1.12)^{2/3}\ (0.0025)^{1/2} = 84.94$ cfs < 85.58

close enough

use 54" DIA.

Use 60" Diameter RCP

D. FLOW AT ANALYSIS POINTS:

1. Analysis Point No. 1 - South end of existing 36" RCP (South of Central Avenue).

Origin	Flow (cfs)
Entrance of Closed System	5.5
Atrisco Plaza Shopping Center	1.66
Central Avenue West	24.0
Inlet No. 1 (Future)	1.72
Total	32.88

2. Analysis Point No. 2 (Inlet No. 2 , Where K-Mart storm sewer outfall enters the Isleta Drain.)

Origin	Flow (cfs)
Isleta Drain (From Inlet No. 1)	32.88
Proposed Shopping Center Expansion	8.70
Existing K-Mart	44.00
Total	85.58

E. DEPTH OF TAILWATER DOWNSTREAM OF OUTLET:

Use Manning's Equation $V = (1.486/N)R^{2/3}S^{1/2}$ N = 0.0225 For earth channel, fair. Channel is roughly 8' wide at the bottom, 40' wide at the top and an average of 10 feet deep. Side slopes are roughly 1.6:1, horizontal to vertical.

Assume depth of tailwater$_2$= 1.9 feet.
Area = 8 X 1.9 + $1.6(1.9)^2$ = 90.98 SF
Perimeter = $8 + 2(1.9^2 + (1.6 \times 1.9)^2)^{1/2}$ = 15.17'
R = A/P = 20.98 / 15.17 = 1.38
$Q = AV = A\ (1.486/N)R^{2/3}S^{1/2}$
$= 20.98\ (1.486/0.0225)(1.38)^{2/3}(0.0025)^{1/2}$ = 85.88 CFS > 85.58

F. SELECTION OF PIPE DIAMETER - INLET NO. 1 TO INLET NO. 2 :

Q = 32.88 cfs Slope = 0.0025 ft./ft. N = 0.015 Try 36" RCP
$A = \pi D^2/4 = \pi(3)^2/4$ = 7.07 SF
$P = \pi D = \pi(3)$ = 9.42 R = A/P = 7.07 / 9.42 = 0.75

$Q = AV = 7.07\ (1.486/0.015)(0.75)^{2/3}\ (0.0025)^{1/2}$ = 28.9 CFS < 32.28
Try 42" $A = \pi(3.5)^2 / 4$ = 9.62 SF P = $\pi(3.5)$ = 11.0'
R = A/P = 9.62 / 11 = 0.8745
$Q = AV = 9.62\ (1.486/0.015)(0.8745)^{2/3}(0.0025)^{1/2}$ = 43.57 cfs > 32.28

4. Area, continued. (See Figure 3)

Area Designation	Size (Acres)
B	0.67
C	0.44
D	0.84
Central Ave. (100' X 1650')	3.79
Total Area	5.80

5. Runoff Coefficient - (See "Notice of Emergency Rule, Ken Schultz, Mayor, 1/14/86).

Streets, Drives, Walks C = 0.95
Landscaping C = 0.25

Assume the area has a total of 5% landscaping.

C = (5.51 X 0.95) + (0.29 X 0.25) / 5.80 = 0.92

6. Peak Discharge. (Use Rational Equation, Q = CIA)

Q = 0.92 X 4.31 X 5.80 = 23.0 CFS (24.0 CFS including Pep Boys and Taco Bell.

C. RUNOFF FROM EXPANSION OF K-MART SHOPPING CENTER:

(The flows shown below are estimates only since the development of the detailed site plan is contingent upon approval of the culvert extension.)

1. Time of Concentration - Use same as Central Avenue.

2. Intensity - Use same as Central Avenue.

3. Runoff Coefficient. (Assume 30% buildings, 10% Landscaping and and 60% pavement.)

C = (0.90 X 30 + 0.95 X 60 + 0.25 X 10)/100 = 0.87

4. Runoff.

a. Runoff to Inlet No. 1 Area = 0.46 Acres.

Q = CIA = 0.87 X 4.31 X 0.46 = 1.72 CFS

b. Runoff to Inlet No. 2 Area = (2.78 - 0.46) = 2.32 acres

Q = CIA = 0.87 X 4.31 X 2.32 = 8.70 CFS

DRAINAGE CALCULATIONS

FOR

PROPOSED CULVERT EXTENSION

ISLETA DRAIN SOUTH OF CENTRAL AVENUE

A. ASSUMPTIONS:

1. The flow entering the enclosed portion of the Isleta Drain at Atrisco Drive is limited to the capacity of the 24" RCP at a slope of 0.0008 ft./ft., or 5.5 CFS.

2. The flow entering the Isleta Drain from the Atrisco Shopping Center is only 1.6 cfs due to the orifice plates provided for catch basin covers.

3. The total flow from Pep Boys and Taco Bell (west side of Isleta Drain on the north side of Central Avenue) is assumed to be 0.5 cfs for each site. Both sites drain to sumps and discharge to Central Avenue by means of pumps. The drainage plans for these two sites were missing from the files at City Hydrology.

B. Central Avenue Runoff:

1. 6-hour Rainfall Volume. (See City of Albuquerque Development Process Manual (DPM), Plate 22.2 D-1. Six-hour, 100-year rainfall R_6 = 2.2 inches.

2. Time of Concentration.

   a. By street flow method. Street slope = (54.0 - 50.16)/1150 S = 0.0033 ft./ft. (See DPM Plate 22.2 B-2). For the above street slope, the velocity is 1.65 fps.
   Tc = 1150/(1.65 X 60) = 11.62 Minutes.

   b. By Kirpich Equation. $Tc = 0.0078(L^{0.77}/ S^{0.385})$

   $Tc = 0.0078(1150^{0.77}/0.0033^{0.385}) = 16.00$ Minutes.
   Use most conservative value, 11.62 minutes.

3. Rainfall Intensity. (See DPM, Plate 22.2 D-2)
   $I = R_6 (6.84)(Tc)^{-0.51} = (2.2)(6.84)(11.62)^{-0.51} = 4.31$ in./hr.

4. Area. (See Figure 3)

Area Designation	Size (Acres)
A	0.67

for storage in the event the grate becomes clogged. This also provides storage in the event the incoming flows are greater than the capacity of the 24" RCP west of Atrisco Drive.

Downstream from Atrisco Drive, the only flow entering the Isleta Drain is the controlled outlet System for Atrisco Plaza Shopping Center. This system was designed to pond runoff in the parking lots and release the total flow over a 24 hour period by use of orifice plates. The total peak flow entering the Isleta Drain from the shopping center is 1.66 CFS, according to the plan on file with the City of Albuquerque. The Isleta Drain is a 24" RCP to a point 164 feet north of Central Avenue where it transitions to a 36" RCP.

Curb inlets are provided at Central Avenue. According to the City of Albuquerque Orthophoto Topographic Map, there is a drainage break approximately 400 feet west of the Isleta Drain. To the east, the flow boundary lies at the east side of Atrisco Drive. See Drainage Area 602 of the Isleta Watershed Study (Figure 2). A total of approximately 1650 lineal feet of Central Avenue drains to the Isleta Drain. In addition some of the property fronting Central Avenue drains into it. The drainage boundary is shown in Figure 3.

The K-Mart shopping center also drains into the Isleta Drain. The shopping center is served by a storm drainage system. A recent drainage plan for an addition to the shopping center showed an existing peak flow of 55.5 cfs. However, the 36" RCP outfall pipe that flows into the Isleta drain has a slope of 0.006 ft./ft. At this slope, the capacity of the pipe (N = 0.015) is only 44 CFS. Some minor ponding may occur in the parking lot during peak flow.

Figure 2 shows Drainage Area 602 of the Isleta Watershed Study which is essentially the area served by the proposed culvert extension. The Isleta Watershed Study computer printouts relative to Area 602 are included in this report for information. The 100-year peak runoff for Area 602 is only 52 cfs in contrast to the figure of 85.6 cfs used in this report for sizing the outfall pipe. Therefore, it would appear that the discharge quantities used in the design of the culvert extension are conservative.

PROPOSED IMPROVEMENTS:

The calculations contained in this report indicate that two pipe sizes are required for the proposed extension. From Inlet No. 1 to Inlet No. 2, a 42" RCP will be required. From Inlet No. 2 to the proposed pipe outlet, a 60" RCP will be required. Due to the established grade, it will be necessary to match inverts at manholes rather than matching tops of pipes.

The pipe should be backfilled with gravel to the springline to permit groundwater to flow along the outside of the pipe to the outlet.

DRAINAGE REPORT

FOR

PROPOSED CULVERT EXTENSION

ISLETA DRAIN SOUTH OF CENTRAL AVENUE

PURPOSE:

The purpose of this report is to evaluate the peak runoff conditions for the Isleta Drain at its crossing of Central Avenue West, and to determine the required pipe size for enclosing the drain for a distance of approximately 220 feet further south. The extension of the pipe will reduce the right-of-way requirements from a width of approximately 120 feet to a 25' easement, thus permitting the sale of the property by the Middle Rio Grande Conservancy District for development as commercial property.

REFERENCES:

Information relative to the watershed which the Isleta Drain serves is available from the following sources:

1. Isleta Watershed Study, CH_2MHILL, October, 1986.
2. Drainage Facility Maps, City of Albuquerque.
3. Drainage Plan - Addition to K-Mart Center, 1-31-86
4. Drainage Plan - Atrisco Plaza Shopping Center, 1-28-76.

EXISTING CONDITIONS:

The Isleta Drain begins approximately 0.9 mile north of the proposed culvert extension. The most northerly portion of the drain parallels the river and is heavily vegitated. The ditch bottom is very wide. Runoff from the area will be minimal due to the vegitation and will be restricted by the size and slope of the first run of pipe in the enclosed portion of the drain which begins at Atrisco Drive. The facilities map shows a 24" pipe with a slope of 0.0008 ft./ft. Assuming Manning's N = 0.015 for reinforced concrete pipe, the capacity is approximately 5.5 cfs, according to the Manning's formula. The Drainage Facilities Map is shown in Figure 1.

Atrisco Drive from Central Avenue to about 100 feet north of the Isleta Drain, is drained by a storm drainage system that discharges into the Isleta Drain at Atrisco Drive. The drain under Atrisco drive is a 42" RCP with a Trash Screen on the inlet side. The drain upstream from the trash grate is very wide at the bottom, apparently designed

7408 Morrow Ave. NE
Albuquerque, NM 87110
June 29, 1988

RECEIVED
JUN 29 1988
HYDROLOGY SECTION

Subhas K. Shah
District Engineer
Middle Rio Grande Conservancy District
P.O. Box 581
Albuquerque, NM 87103

RE: ISLETA DRAIN CULVERT EXTENSION.

Dear Mr. Shah:

Per your request, enclosed is a Drainage Report which addresses the design flows for the referenced culvert extension. The report has also been submitted to the City of Albuquerque Hydrology Section for their review and approval.

It is requested that you review this drainage report and plan at your earliest opportunity. If you have any questions, please call me at 883-7973.

Cordially,

Frank D. Lovelady

Frank D. Lovelady

DRAINAGE INFORMATION SHEET

PROJECT TITLE: Isleta Drain Culvert Exten **ZONE ATLAS/DRNG. FILE #:** K-12/D-20

LEGAL DESCRIPTION: Portion of M.R.G.C.D. right of way to be vacated.

CITY ADDRESS: 4208 Central Ave NW A

ENGINEERING FIRM: Lovelady & Associates **CONTACT:** Frank Lovelady

ADDRESS: 7408 Morrow Ave. NE 87110 **PHONE:** 883-7973

OWNER: Kirrary Limited **CONTACT:** Jerry Torr

ADDRESS 3900 Juan Tabo NE 87111 **PHONE:**

ARCHITECT: Jerry Torr **CONTACT:** Jerry Torr

ADDRESS: 3900 Juan Tabo **PHONE:** 293-7978

SURVEYOR: **CONTACT:**

ADDRESS: **PHONE:**

CONTRACTOR: **CONTACT:**

ADDRESS: **PHONE:**

RECEIVED
SEP 22 1988
HYDROLOGY SECTION

PRE-DESIGN MEETING:

_____ **YES**

_____ **NO**

_____ **COPY OF CONFERENCE RECAP SHEET PROVIDED**
With Original Submittal

DRB NO. _____

EPC NO. _____

PROJECT NO. _____

TYPE OF SUBMITTAL:

_____ **DRAINAGE REPORT**

_____ **DRAINAGE PLAN**

_____ **CONCEPTUAL GRADING & DRAIN. PLAN**

_____ **GRADING PLAN**

_____ **EROSION CONTROL PLAN**

_____ **ENGINEER'S CERTIFICATION**

_____ Resubmittal of grading and drainage plan to correct elevations

CHECK TYPE OF APPROVAL SOUGHT:

_____ **SKETCH PLAT APPROVAL**

_____ **PRELIMINARY PLAT APPROVAL**

_____ **SITE DEVELOPMENT PLAN APPROVAL**

_____ **FINAL PLAT APPROVAL**

_____ **BUILDING PERMIT APPROVAL**

_____ **FOUNDATION PERMIT APPROVAL**

_____ **CERTIFICATE OF OCCUPANCY APPROVAL**

_____ **ROUGH GRADING PERMIT APPROVAL**

_____ **GRADING/PAVING PERMIT APPROVAL**

_____ **OTHER** _____ **(SPECIFY)**

DATE SUBMITTED: September 20, 1988

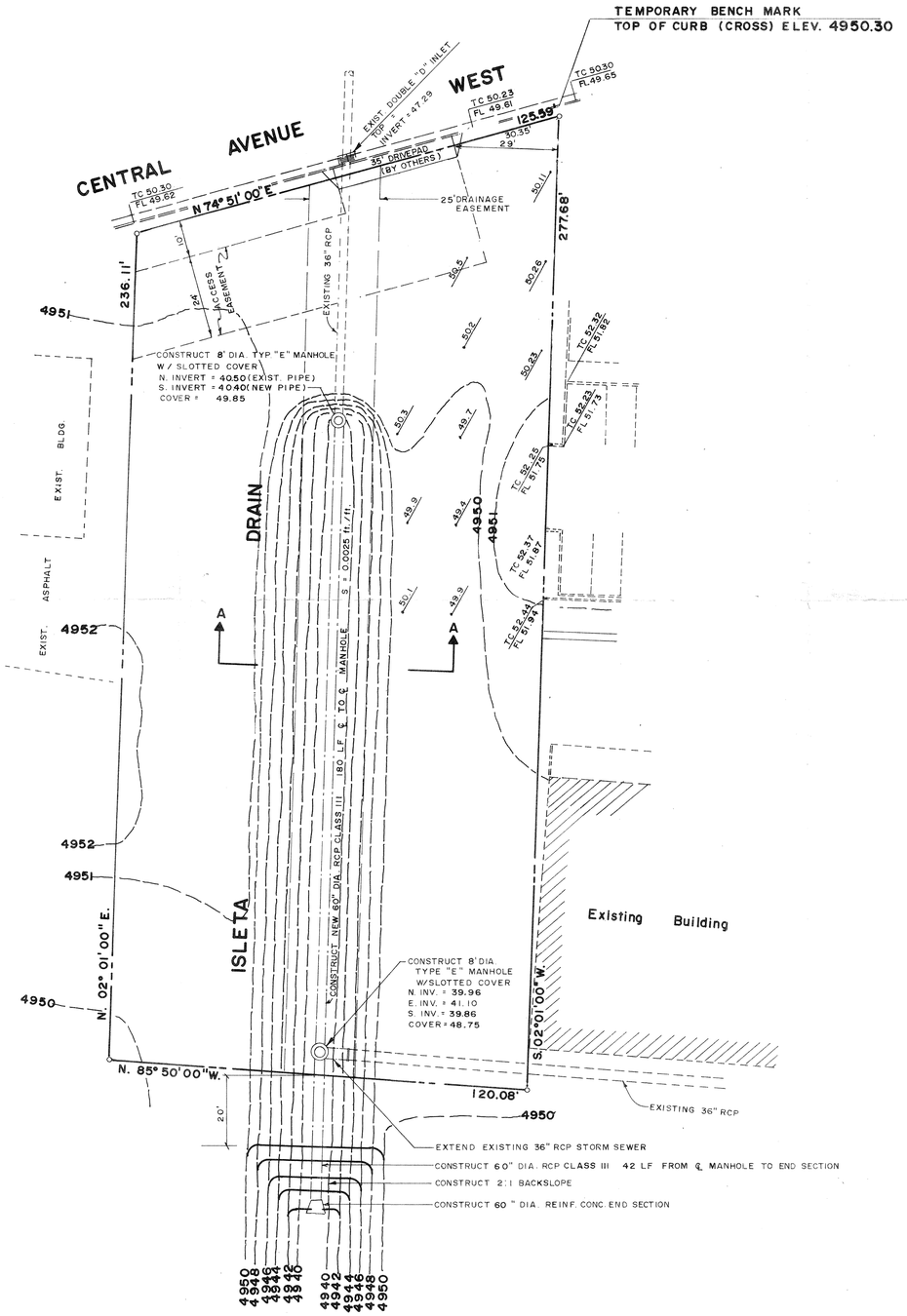
BY: _____
Frank D. Lovelady, P.E.

Rev. 11/84

103

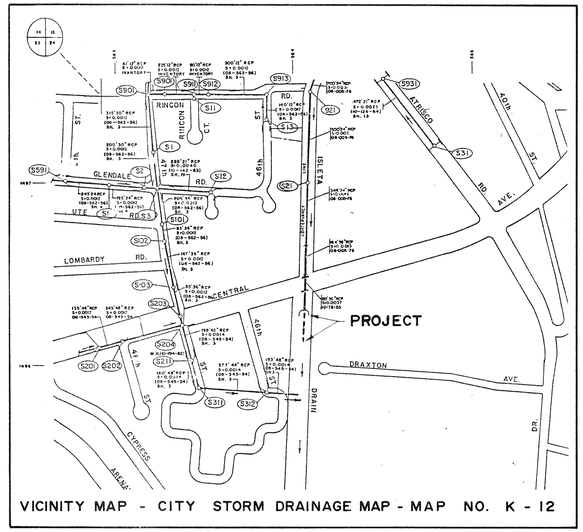
No Response Required.
Pam Haas 10/3/88

102156

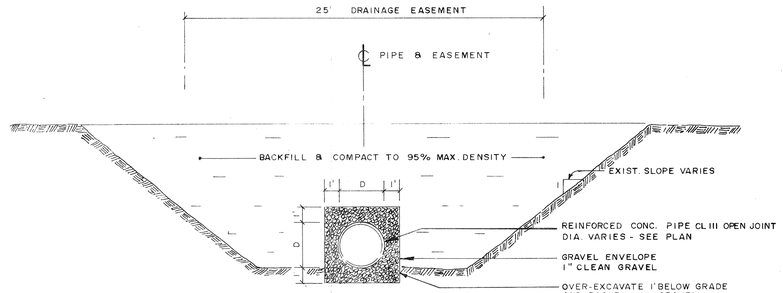


SCALE 1" = 20'

K12-D20



VICINITY MAP - CITY STORM DRAINAGE MAP - MAP NO. K - 12



SECTION A - A
1" = 5'

LOVELADY & ASSOCIATES
7408 MORROW AVE., N.E.
ALBUQUERQUE, NEW MEXICO 87110
PHONE 883-7973

REGISTERED PROFESSIONAL ENGINEER — RICHARD D. LOVELADY — NEW MEXICO — 5/31/88

MIDDLE RIO GRANDE CONSERVANCY DISTRICT

PROJECT
ISLETA DRAIN CULVERT EXTENSION
FROM CENTRAL AVE. TO A POINT 290' SOUTH
ALBUQUERQUE, NEW MEXICO

REVISIONS
8/4/88
1. REV. 42" TO 60" RCP

DATE
MAY 31, 1988

SHEET TITLE

RECEIVED
SEP 22 1988
HYDROLOGY SECTION

PLAN

SHEET NO.
1 of 1