

## PUBLIC WORKS DEPARTMENT

## UTILITY DEVELOPMENT DIVISION/HYDROLOGY SECTION

## PRE-DESIGN CONFERENCE

DRAINAGE FILE/ZONE ATLAS PAGE NO.: K-11/D14 DATE: 8/1/91

EPC NO.: \_\_\_\_\_ DRB NO.: \_\_\_\_\_ ZONE: \_\_\_\_\_

SUBJECT: Glass on WheelsSTREET ADDRESS: 500 Coors Blvd SWLEGAL DESCRIPTION: Lot 93 1/2 vacated ROW for Custer Road, Las Tres Hermanas Subdivision

APPROVAL REQUESTED:	_____ PRELIMINARY PLAT	_____ FINAL PLAT
	_____ SITE DEVELOPMENT PLAN	<u>X</u> BUILDING PERMIT
	_____ GRADING/PAVING PERMIT	_____ OTHER

## WHO

## REPRESENTING

ATTENDANCE: Frank Lovelady 883-7973Lovelady & AssociatesFred AguirreHydrology Dev Section

## FINDINGS:

An approved drainage plan is required for the subject request.

Modification of the off-site flows coming off Coors across your client's property will require an adequate drainage conveyance system. If it is designed and built to our standards, we will maintain the system. If it does not meet City standards, the system will need to be maintained by the property owner. A drainage covenant will be required if the latter is the direction your client intends to go. In either case a drainage easement to the City will be required. Free discharge is appropriate if you can demonstrate that this is a in-fill site and very little or no development is possible in the basin.

The undersigned agrees that the above findings are summarized accurately and are only subject to change if further investigation reveals that they are not reasonable or that they are based on inaccurate information.

SIGNED: *Fred Aguirre*SIGNED: *Frank D. Lovelady*

TITLE: \_\_\_\_\_

TITLE: \_\_\_\_\_

DATE: 8/1/91DATE: 8/1/91

\*\*NOTE\*\* PLEASE PROVIDE A COPY OF THIS PRE-DESIGN FORM WITH THE DRAINAGE SUBMITTAL.



# City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

August 5, 1991

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

RE: FOR AN ADDITION TO GLASS ON WHEELS  
(K-11/D14) RECEIVED JULY 31, 1991

Dear Mr. Lovelady

Based on the information that you have submitted and the pre-design that you have been provided with, review will not be conducted until you have resubmitted using the guides provided in the Pre-design.

If I can be of further assistance, please feel free to call me at 768-2650.

Cordially,

Bernie J. Montoya, C.E.  
Engineering Assistant

BJM/bsj  
(WP+2819)

PUBLIC WORKS DEPARTMENT

Walter H. Nickerson, Jr., P.E.  
Assistant Director Public Works

ENGINEERING GROUP

Telephone (505) 768-2500

AN EQUAL OPPORTUNITY EMPLOYER

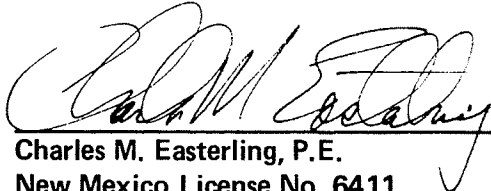
**GARCIA MOBILE  
HOME PARK  
DRAINAGE REPORT**

**JUNE 1979**

Prepared for  
Mr. Donald Keith  
7116 Edwina Court S.E.  
Albuquerque, NM 87110

Prepared by  
Bohannon-Huston, Inc.  
4125 Carlisle Blvd., N.E.  
Albuquerque, NM 87107



  
Charles M. Easterling, P.E.  
New Mexico License No. 6411

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### CALCULATIONS

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PLATE I  
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Location Map  
Plat

**DRAINAGE REPORT**  
**FOR**  
**GARCIA MOBILE HOME PARK**

**PURPOSE**

The purpose of this report is to examine existing and future drainage conditions of the proposed Garcia Mobile Home Park for the 6-hour, 100-year storm.

**PROJECT LOCATION AND DESCRIPTION**

Garcia Mobile Home Park consists of 10 acres within the City of Albuquerque. Located on lots 209 and 210 at the southwest corner of Sunset Gardens Road and Corregidor Drive. The soil is gently sloping, sandy loam with very little vegetation. The soil on the parcel is identified in the Bernalillo County Soils Report as being in the hydrologic soil group "B".

**METHODS OF ANALYSIS**

Drainage analyses for the 100-year peak storm runoff were computed using the rational method as described in Master Drainage Plan done by Gordan Herkenhoff & Associates (1963).

Runoff volume from the property was calculated using the SCS runoff curve number (CN) method to transform rainfall data to runoff. In this study, it was determined that the CN for undeveloped conditions = 75 and for developed conditions CN = 80. A rainfall intensity value of 2.4"/6 hour for the 100-year storm was used for the SCS method.

**EXISTING DRAINAGE**

With the existing drainage conditions, the 10 acre tract of land for Garcia Mobile Home Park does not have any on-site ponding. At present, all runoff goes from the property onto existing dirt streets and into vacant lots.

For the 100-year frequency storm there will be a peak flow of 16 cfs and a runoff volume of .51 AC/FT, none of which is retained.

**DEVELOPED CONDITIONS**

In the developed condition, the peak flow increases from 16 cfs to 26 cfs and the volume increases from .51 AC/FT to .68 AC/FT.

## CONCLUSION

As a result of this parcel of land being developed, the runoff volume has increased .17 AC/FT and the peak flow rate has increased by 10 cfs.

A solution to this problem would be to make the proposed park area also into a retention pond. By limiting the drainage area to 3.75 acres which drains into the park area, the peak flow out of the Mobile Home Park will remain the same (as existing conditions of 16 cfs) and the volume of runoff will decrease .08 AC/FT to .43 AC/FT.

The park area is approximately 12,888 ft.<sup>2</sup> with a depth of 1.5 feet, side slopes of 10:1 (max) and the bottom area of the park being 2212.80 ft.<sup>2</sup>, the park will retain .26 AC/FT and a peak flow of 10.0 cfs.

## Appendix A

### Existing Conditions

Using Rational Formular to find peak flow

$$\begin{aligned} Q &= C.I.A. \\ &= (.30)(5.40)(10.00) \\ &= 16.20 \text{ CFS} \\ &(\text{Use } 16 \text{ CFS}) \end{aligned}$$

$$C = 0.3$$

$$T_c \leq 15 \text{ min} \Rightarrow i = 5.40 \text{ in/hr}$$

$$\text{Area} = 10.0 \text{ Acres}$$

### Volume

Using SCS method

$$CN = 75$$

$$\text{Rainfall intensity} = 2.4''$$

$$\text{Volume} = .61''/12 \times 10 \text{ Acres}$$

$$\text{Volume} = .51 \text{ Ac/ft.}$$

### Future Conditions

#### Peak flow

$$\begin{aligned} Q &= CIA \\ &= (.48)(5.40)(10.0) \\ &= 25.92 \text{ CFS} \\ &(\text{Use } 26 \text{ CFS}) \end{aligned}$$

$$T_c \leq 15 \text{ min} \Rightarrow i = 5.40 \text{ in/hr}$$

$$C = .85 \text{ for } 39\% \text{ of Area}$$

$$C = .25 \text{ for } 61\% \text{ of Area}$$

$$\text{Average } C = .48$$

#### Volume

$$CN = 69 \text{ for } 61\% \text{ of Area (Pervious)}$$

$$CN = 98 \text{ for } 39\% \text{ of Area (Impervious)}$$



PROJECT NAME

PROJECT NO.

SUBJECT

SHEET 1

OF 3

BY B M

DATE

CH'D

DATE

Average CN = 80

.82 From SCS curve

Rainfall Volume = 2.4"

$$\begin{aligned}\text{Volume} &= .82"/12 \times 10 \text{ Acres} \\ &= .68 \text{ Ac/ft}\end{aligned}$$

To maintain the same peak flow out of Mobile Home Park as existing conditions

Determine the size of Drainage Area into retention pond (using existing conditions of 16.20 cfs)  
out of mobile Home Park

Peak flow to retention pond

$$Q = CIA$$

$$16.0 = (.48)(5.40)(\text{Area})$$

$$\text{Area} = 6.25 \text{ Acres (to drain out of property)}$$

$$10.0 - 6.25 = 3.75 \text{ Acres to retention pond}$$

$$Q = CIA$$

$$= (.48)(5.40)(3.75)$$

$$= 9.72 \text{ CFS to pond}$$

(Use 10 CFS)

Volume to retention pond @ CN = 80

$$\begin{aligned}\text{Volume} &= .82"/12 \times 3.75 \text{ Acres} \\ &= .26 \text{ Acre/ft to be stored}\end{aligned}$$



PROJECT NAME

SHEET 2

OF 3

PROJECT NO.

BY BM

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Volume (runoff not to be retained)

$$\begin{aligned}\text{Volume} &= .82 \frac{\text{in}}{12} \times 6.25 \\ &= .43 \text{ Ac/ft}\end{aligned}$$

Determine Ponding Area required to retain .26 Ac/ft.

Requirements - .26 Ac/ft storage = 11,325.60 ft<sup>3</sup>  
1.5 ft max. depth  
10:1 max. side slopes  
12,888.0 ft<sup>2</sup> top area

$$V = \left( \frac{\text{top area} + \text{Bottom area}}{2} \right) \times \text{Depth}$$

$$11,325.60 = \left( \frac{12,888.0 + \text{Bottom area}}{2} \right) \times 1.5$$

$$\text{Bottom Area} = 2212.80 \text{ ft}^2$$

Check Side Slopes

$$\frac{\sqrt{12,888.0} - \sqrt{2212.80}}{2} > 15$$

$$66.48 > 15$$

side slopes are  
greater than 10:1



PROJECT NAME

PROJECT NO.

SUBJECT

SHEET 3

BY BM

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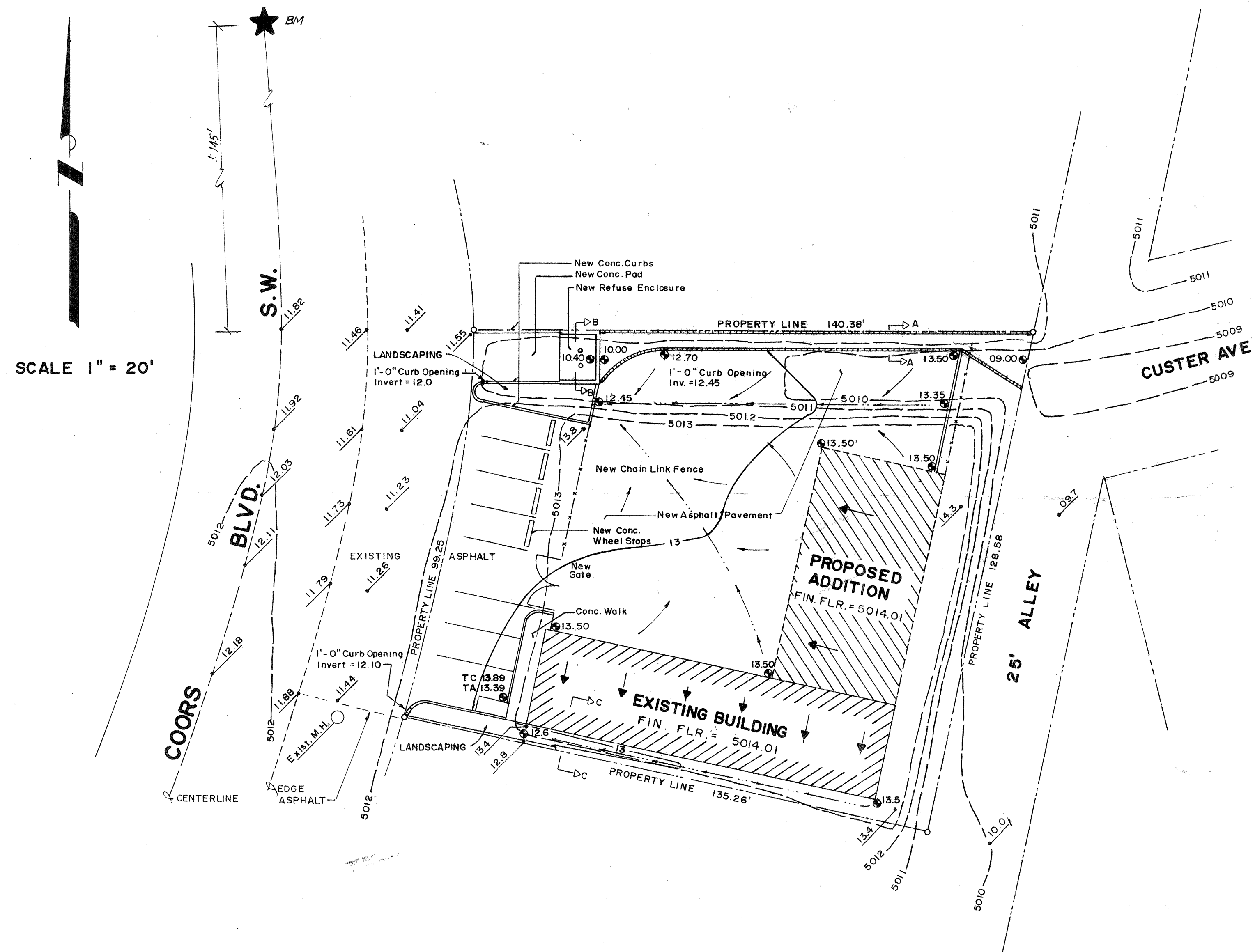
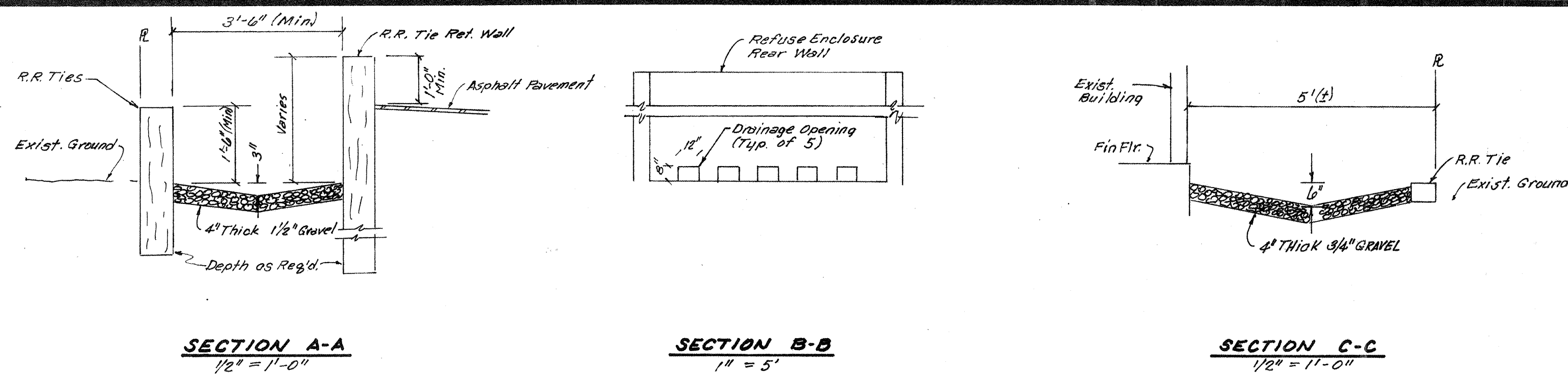
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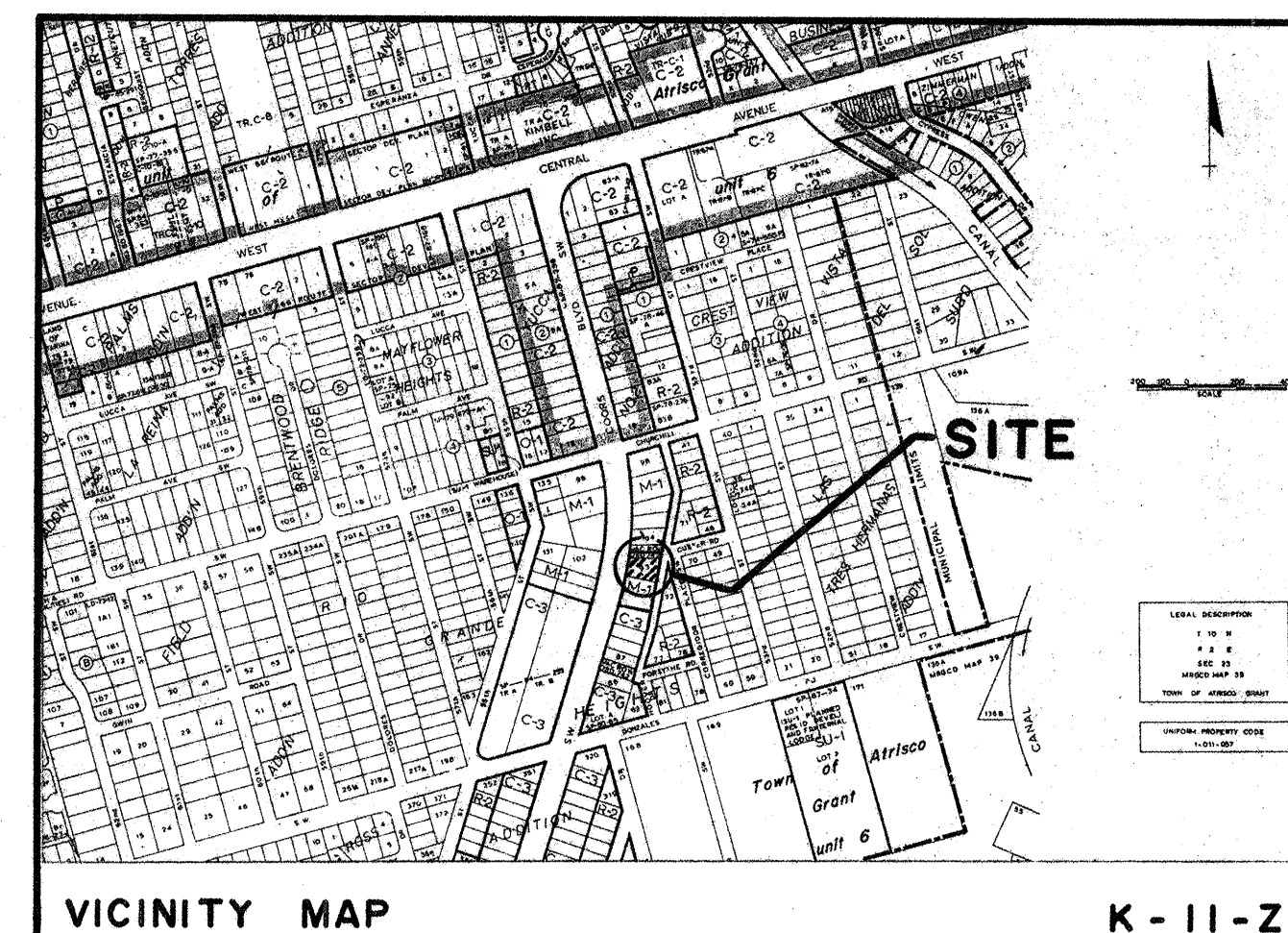
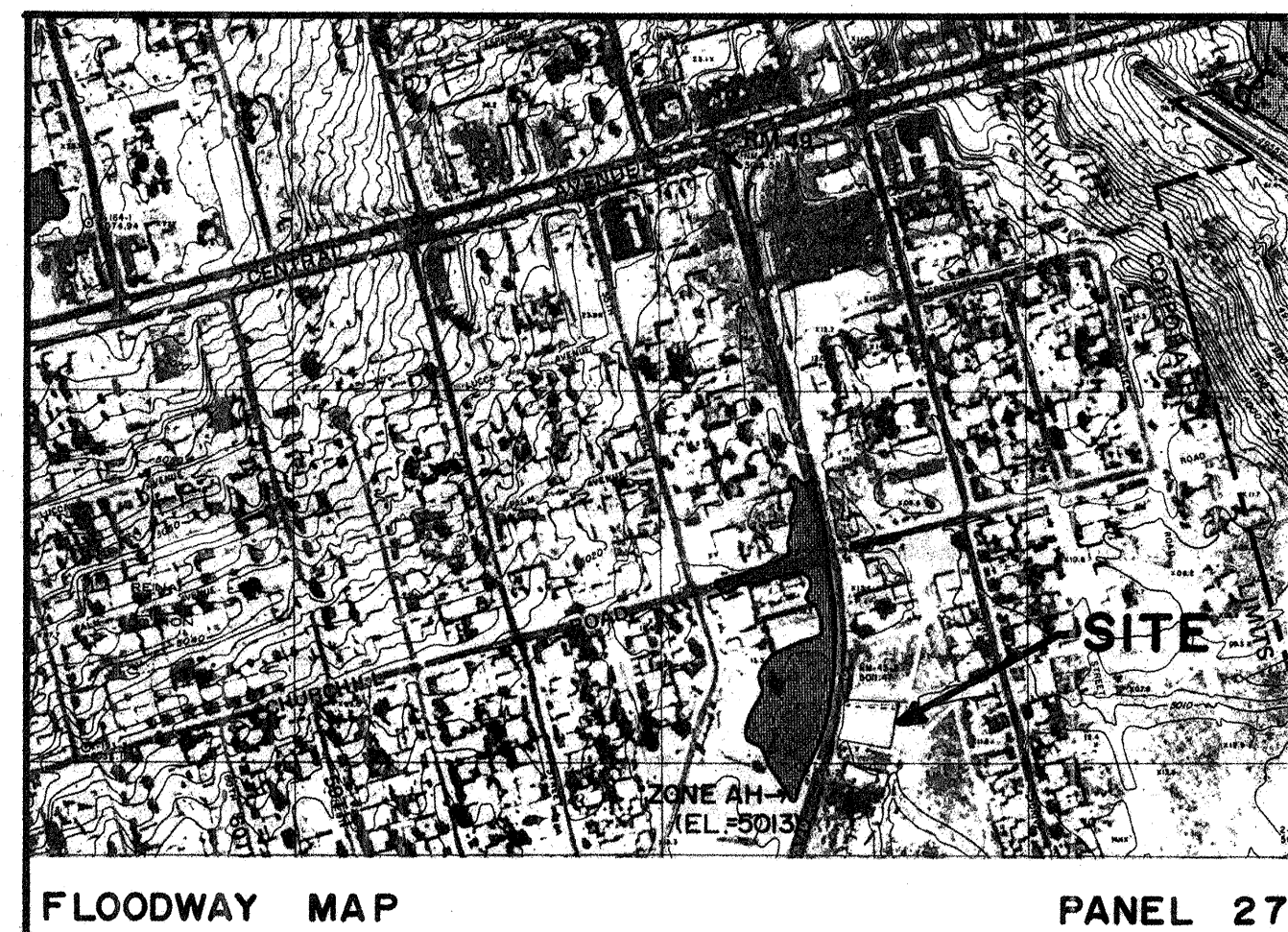
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EXISTING	NEW	DESCRIPTION
5013	13	CONTOUR
13.00	13.00	SPOT ELEVATION
		SWALE
		SHEET FLOW
		ROOF FLOW
		PROPERTY LINE
	TA	TOP OF ASPHALT
	TC	TOP OF CURB
	FL	FLOW LINE

**EXISTING CONDITIONS:**

The site is located on Coors Road SW approximately 400' south of Churchill Road. The site is presently developed with a 24' X 90' building and a fenced, unpaved area that comprises most of Lot 93. The area between the front of the building and Coors Road is paved with a flow line about 10' east of the roadway pavement. The flowline is blocked by the driveway of the property north of the site. The entire site consists of Lot 93 and the south half of the vacated right-of-way of Custer Avenue. The vacated right-of-way is presently undeveloped and serves as an overflow for the runoff that ponds in the Coors east flowline. Reportedly, the flow rarely enters the vacated right-of-way because most of the flow enters the sanitary sewer manhole located in the Coors Boulevard flowline.

**DEVELOPED CONDITIONS:**

It is proposed to construct a 32' X 60' building addition and pave the interior of the lot including the vacated right-of-way which has been deeded to the owner. Provision must be made for conveying off-site flow through the site. Therefore, a portion of the vacated right-of-way must be used for a channel.

**DOWNSTREAM CAPACITY:**

The site is an "infill" site and the increase in runoff generated by the proposed development is minimal. Runoff from the site that is discharged to Coors Boulevard presently flows east through the vacated right-of-way of Custer Avenue. It then flows east on Custer Avenue (unpaved) to 53rd Street (paved with curb and gutter) which is drained by two inlets approximately midway between Custer Road and Churchill Road. The system discharges approximately 4400 feet downstream just west of 46th Street SW.

**SOIL INFORMATION:**

(Refer to "Soil Survey of Bernalillo County", June 1977.) Soil is MWA, Madurez-Wink association, gently sloping. The hydrologic soil group is "B".

**TIME OF CONCENTRATION:**

Use ten (10) minutes, minimum time of concentration.

**RAINFALL, 100-YEAR, 6-HOUR:**

(Refer to D.P.M., Plate 22.2 D-1;  $R_6 = 2.2$  inches.)

**RAINFALL INTENSITY:**

$I = R_6 \times 6.84 \times T_c^{-0.51} = 2.2 \times 6.84 \times 10^{-0.51} = 4.65$  inches per hour.

**SITE IMPERVIOUSNESS:**

Surface Type	"C"	"CN"	DIRECT RUNOFF	EXISTING AREA (SF)	DEVELOPED AREA (SF)
Building Roof	0.90	98	2.00	2160	4080
Alphalt	0.95	98	2.00	2250	8400
Landscaping	0.25	61	0.18	-	510
Unpaved	0.40	82	0.80	11345	2765
Totals				15755	15755

**GENERAL NOTES:**

- No search has been made for easements of record within the subject site other than those shown on the plat of record.
- Refer to the Architectural Site Plan for dimensional layout of the proposed improvements.

**BENCH MARK:**

City of Albuquerque Bench Mark Station "NM 45-2A" located at the centerline of Coors Boulevard S.W. approximately 255' south of Churchill Road S.W. Elevation = 5011.843.

**LEGAL DESCRIPTION:**

Lot numbered ninety-three (93), of the Rio Grande Heights Addition, an addition to the City of Albuquerque, Bernalillo County, New Mexico.

**WEIGHTED "C" VALUES:**

Existing:  $C_w = (0.90 \times 2160 + 0.95 \times 2250 + 0.40 \times 11345) / 15766 = 0.55$

Developed:

$C_w = (0.90 \times 4080 + 0.95 \times 8400 + 0.25 \times 510 + 0.40 \times 2765) / 15755 = 0.82$

**PEAK DISCHARGE:**

Existing:  $Q_{100} = CIA = 0.55 \times 4.65 \times 0.3617 = 0.93$  cfs

$Q_{10} = 0.657 \times 0.93 = 0.61$  cfs

Developed:  $Q_{100} = CIA = 0.82 \times 4.65 \times 0.3617 = 1.38$  cfs

$Q_{10} = 0.657 \times 1.38 = 0.91$  cfs

**VOLUME, 100-YEAR, 6-HOUR:**

Existing:  $V_{100} = (2.0 (2160 + 2250) + 0.80 \times 11345) = 1123$  cf

$V_{10} = 0.657 \times 1123 = 739$  cfs

Developed:  $V_{100} = (2.0 (4080 + 8400) + 0.18 \times 510 + 0.80 \times 2765) = 2272$  cf

$V_{10} = 0.657 \times 2272 = 1493$  @P

**OFF-SITE FLOW:**

The drainage plan for the original development of this site identified an off-site flow area of 3.4 acres. Assuming a "C" value of 0.7 and a time of concentration of 10 minutes, the peak off-site flow is as follows:

$Q_{100} = 0.7 \times 4.65 \times 3.4 = 10.71$  cfs

This flow will have to be conveyed to Custer Avenue as it presently is. It is proposed to have a channel with gravel bottom and RR ties on both sides.  $N = 0.035$   $S = 0.01$  ft./ft. Flow depth = 1.0' Width = 3.5'  $P = 5.5'$

$R = 3.5 / 5.5 = 0.64$   $Q = 3.5 (1.486 / 0.035) (0.64)^{2/3} (0.01)^{1/2} = 11.03$  cfs

It is proposed to have the flow enter the channel through openings in the east wall of the refuse enclosure. The water will pond to elevation 11.4 before it flows across the driveway to the north. The elevation of the refuse enclosure is 10.4. The depth is 1.0'. Use the Orifice equation.

$Q = CA(2GH)^{1/2}$  Use 8" X 12" openings,  $A = 0.67$  sf  $H = 1.0 - 0.33 = 0.67'$

$C = 0.6$   $Q = 0.6 \times 0.67 (2 \times 32.2 \times 0.67)^{1/2} = 2.64$  cfs

Number of openings =  $10.71 / 2.64 = 4.06$ . Use 5 openings.

**NOTICE TO CONTRACTOR:**

- An excavation/construction permit will be required before beginning any work within city right-of-way. An approved copy of these plans must be submitted at the time of application for this permit.
- All work detailed on these plans to be performed under contract, except as otherwise stated or provided hereon, shall be constructed in accordance with the City of Albuquerque Standard Specifications for Public Works Construction, 1986.
- Two (2) working days prior to any excavation, contractor must contact New Mexico One Call System, Inc. (200-1990), for location of existing utilities.
- Prior to construction, the contractor shall excavate and verify the horizontal and vertical locations of all obstructions. Should a conflict exist, the contractor shall notify the engineer or surveyor so that the conflict can be resolved with a minimum amount of delay.

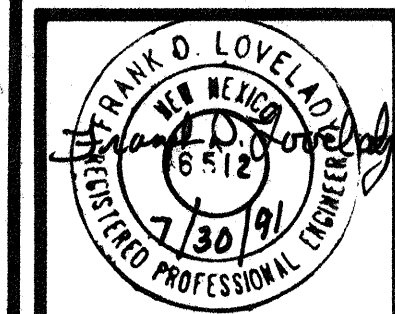
**EROSION CONTROL NOTES:**

The contractor shall be responsible for compliance with the following:

- No sediment-bearing water shall be allowed to discharge from the site.
- During grading operations and until the project has been completed, adjacent property, rights-of-way and easements shall be protected from flooding by runoff from the site.
- Should the contractor fail to prevent sediment-bearing water from entering public right-of-way or adjacent private property, he shall promptly remove all sediment originating from the site.
- Control of sediment-bearing waters will be accomplished by use of a compacted earth berm of adequate height. The berm shall be located along the downstream perimeter of the property.

**CUSTER-BASARICH LTD**  
Architects-Planners AIA

215 CENTRAL AVE. NW SUITE 3-B  
ALBUQUERQUE, NEW MEXICO 87102  
TELEPHONE (505) 768-1020



**GLASS ON WHEELS**

**PROJECT**

**REVISIONS**

**DATE**

**SHEET TITLE**

**RECEIVED**

**JUL 31 1991**

**HYDROLOGY DIVISION**

**SHEET NO.**

**C-2**