

DRAINAGE REPORT FOR:

RIVERVIEW PLAZA

**PARCEL H-9
RIVERVIEW SUBDIVISION**

APRIL, 1988



**COMMUNITY
SCIENCES
CORPORATION**

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A) Purpose and Scope

Charter Oak Development, is currently planning for the development of Parcel H-9 Riverview. The proposed development consists of approximately 13.9 acres on which a commercial shopping plaza is to be constructed. This report presents an overall Drainage Management and Conceptual Grading Plan for approval by the City of Albuquerque and A.M.A.F.C.A. so that subsequent development may commence.

B) Site Location and Topography

Parcel H-9 is located at the southwest corner of Golf Course Road, N.W. and Paseo Del Norte, N.W., north and east of the Piedras Marcadas Arroyo. Parcel H-9 of the Riverview subdivision has been pre-graded with a slope of approximately 4% from north to south. This grading took place with the mass grading plan for the Riverview Subdivision. It is presently undeveloped with native grasses on gravelly, sandy and silty type soil.

The soils were representative of SCS Soil Hydrologic groups A and B as shown in the "Piedras Marcadas Basin Drainage

Management Plan" Fig. 3, prepared by Tom Mann & Associates, Inc., for A.M.A.F.C.A. in February, 1983. Since most of the unpaved surface of the site is contained within a type "B" soil group and will be landscaped, a CN value of 65 is used.

For the pervious area.

Please see Plate 3 for the SCS Bernalillo County Soils Survey Map of area.

C) Design Criteria

1. Flood Control Regulations

The drainage plan presented in this report has been designed to comply with AMAFCA resolution 80-15 which requires that proposed land development projects be designed such that no flooding of private properties will occur during any storm up to and including the 100 year frequency event.

Additionally, this drainage plan has been designed to comply with current City of Albuquerque Drainage Ordinance.

This site is included in the approved "Master Drainage Plan for Riverview" as Parcel H-9. The estimated percent impervious by the Master Drainage Plan was assumed to be 85%, with a CN

Value of 61. The actual overall percent
impervious is

$$\frac{.0035(.88+.0039(.79)+.0029(.77)+.0015(.88)+.0003(.05)}{(.0035+.0034+.0029+.0115+.003)} = 84\%$$

with a CN Value of 65.

The Master Drainage Plan implied a composite runoff curve number of 94 (See Plate 22.2 C-3 of the DPM) while the actual resultant composite runoff curve number is 93.5. This indicates that approximately the same flow will actually leave this site as estimated in the Master Drainage Plan.

2. Engineering Parameters

In accordance with AMAFCA criteria all hydrological analysis is based on the 100 year frequency - 6 hour duration storm as represented in the NOAA Atlas for New Mexico.

The two rainfalls pertinent to the study are as follows:

	<u>100 Year</u>
One Hour	1.9"
Six Hour	2.2"

D. Computational Procedures

The analysis approach utilized follows standard engineering practice. Key points of confluence were selected, and subsequently the associated individual and aggregate contributing basins were defined.

Hydrological computations were accomplished by means of our MODSCS computer model. This model is based upon the Soil Conservation Service triangular unit hydrograph method, but the method has been modified to be more applicable to developed watershed conditions. The model avoids the common pitfall of grappling for an appropriate developed curve number by including percent impervious as an input variable. This fraction of the watershed is then modeled at a curve number of 95. An assigned curve number is applied to the balance of the watershed, and the runoffs are combined to yield the composite hydrograph. In addition the model has the capacity to route hydrographs through reservoirs and channels, or to translate hydrographs in time for summation with other sub-basins.

Times of concentration were estimated by using overland flow velocities from the upper subcatchment reaches to the confluence point of interest. A convenient formula for overland flow velocity takes the form:

$$V_o = KY^{0.5}$$

where V_o = overland flow velocities

Y = average ground slope in percent

K = a ground cover factor

All the characteristic hydrological parameters for each subcatchment are contained in Appendix A as part of the computer model output, and a summary of parameters and peak flow rates are given in Table 1.

Flow Characteristics for conveyance swales, channels and streets were analyzed based on the Manning Equation for uniform flow.

E) Offsite Drainage

No offsite drainage will occur since the site is sided by curbed streets on the north and west and a 6' deep concrete paved channel on the remainder of the site boundary. 100 year flows are contained by the adjacent facilities indicated. Water blocks at the entrances ensure that no storm runoff will flow from Golf Course Road onto this site.

F) Onsite Drainage

Developed runoff will be contained within the site until the point of release to the concrete lined Piedras Marcadas

channel. Runoff from drainage basin "E" will be collected a type "A" catch basin and routed into an 18" RCP storm drain. This storm sewer flows westerly meeting a second type "A" catch basin in the service road and merging with flows developed by drainage basin "A". Drainage basin "A" slopes to the south along 8" curb and gutter into the type A inlet mentioned above. From here both developed flows will travel into the Piedras Marcadas lined channel via an 18" RCP. This pipe will intersect the channel at 90 degrees.

Drainage basin "B" flows southeast to the double "C" catch basin located in a sump condition, and exits into an 18 inch RCP. Runoff is then conveyed to a junction manhole combining flows with drainage basin "D".

Drainage basin "D" also flows southeast to a single "A" catch basin and exits into an 18 inch RCP. Runoff is then conveyed to the junction manhole mentioned above with drainage basin "C". These flows then enter the Piedras Marcadas lined channel via a 24" RCP. This pipe will also intersect the channel at 90 degrees.

Drainage basin "C" sheet flows into the Piedras Marcadas lined channel.

G) Erosion Control

Control of excessive soil erosion into City Streets and drainage improvements during construction will be accomplished by use of temporary lot line, water-trap berms. These will be windrowed into place following mass grading operations and left in place until the site is constructed. Plate 2 illustrates the dimensions of these berms, and they will be located along those boundaries which are common to City rights of way or public easement.