PUBLIC WORKS/HYDROLOGY

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DRAINAGE REPORT

FOR

KIRKPATRICK MOTOR DEVELOPMENT

PORTION OF TRACTS A-1 & A-2, RUST ADDITION

March, 1978

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DETENTION/RETENTION REQUIREMENTS

UPLAND DRAINAGE CHANNEL

PLATES

I Location Map E - 18 - Z

II Site Plan

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DRAINAGE REPORT

FOR

KIRKPATRICK MOTOR DEVELOPMENT

PORTION OF TRACTS A - 1 & A - 2, RUST ADDITION

PURPOSE

The purpose of this report is to present to governing agencies a reasonable method of complying with AMAFCA Drainage Resolution 1972 - 2 and thereby lessen runoff from the proposed development to anaamount not in excess of the flow to be expected from the property in it's present state. The report is composed of a narrative of existing and proposed conditions and computations concerning the drainage channel and recommended runoff control structures.

LOCATION AND TERRAIN

The proposed development is located on the east side of San Mateo Blvd. between Academy Road and the East Frontage Road in the northeast quadrant of the city (see Plate I for the exact location).

The property has been filled approximately five (5) feet maximum and now slopes northwesterly at approximately two (2) percent with the previous slope being in excess of four (4) percent in a northerly direction. The area indicated as a drainage right-of-way on Plate II (Site Plan) is the site of an existing drainage channel with an approximated section as shown on computation sheet 2/2. There is an area of the Far North Shopping Center (see Plate II for location) that now drains onto the property through a ditch and dike section which is no more than one (1) foot deep.

The soil is composed of silty sands and vegetative cover is quite sparse, being composed of common weeds.

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PROPOSED DEVELOPMENT

It is proposed to construct a showroom, maintenance area, paved parking area and earth surface storage area. Small landscaped islands will be located in the paved parking area at the front of the development. All drainage will be diverted to the southeast corner of the tract; the location of a detention pond.

UPLAND DRAINAGE

The channel along the northeast boundary of the tract drains a long narrow basin extending to Wyoming Blvd. (see Plate I for basin boundary). Development within the basin is predominantly single family housing with small amounts of multi-family housing and commercial use. The bulk of the area was developed after 1972 and should therefore, have onsite retention/detention of stormwater runoff. A runoff factor of six/tenths (0.60) was used in the computation of maximum channel flow, and it is felt that this is quite conservative.

The upper reaches of the channel are lined with concrete with the lower reaches being lined only at bends or at grade street crossings. The channel is not lined in the vicinity of the proposed development in either the upstream or downstream direction.

INTERNAL DRAINAGE

Stormwater runoff developed within the tract will be diverted through the use of swales to a detention basin to be located at the southeast corner of the development. The basin is sized based on a six (6) hour 100 year frequency storm. Flow in excess of that amount now exiting the property for the same storm will be retained in the pond.

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INTERNAL DRAINAGE (cont.)

A lined overflow channel is to be constructed from the retention pond to the drainage channel. The opening to the channel to be designed as a broadcrested weir with a twenty (20) degree transition to a section designed as an open channel. The overflow is approximately five (5) feet higher in elevation than the high water surface in the drainage channel, thereby eliminating interference between the two.

CONCLUSIONS

The drainage channel along the northeast boundary of the development is adequate to carry the 100 year frequency storm without further improvement. It is not recommended that this portion of the channel be improved in ant way at this time as it would, in all probability, not be congruent with future improvements in the upper and lower reaches of the channel.

Onsite drainage will be channeled to a retention area at the southeast corner of the development with an overflow section to the drainage channel. In order for this retention area to function properly, the ditch and dike section from the adjacent property must be eliminated. The elimination of the this unlawful practice will require action by the City of Albuquerque, as they must enforce the recommendations of the drainage report submitted for that development as well as City Ordinances pertaining to the diversion of stormwater runoff.

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COMPUTATIONS

DETENTION/RETENTION REQUIREMENTS

UPLAND DRAINAGE AND CHANNEL

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DRAINAGE REPORT

3400 San Mateo NE — KIRKPATRICK MOTOR CO.

JJE/E/73
1/2

RUNOFF SOURCE

	Area	C	Equiv. Area
Roof (metal, pitched)	11,200 ft	1.00	11,200
(built up, flat)	10,100 ft	0.90	9,090
Asphalt & Conc. Pavement	55,400 ft	0.95	52,630
Landscaped	2,700 ft	0.00	0
Storage Area	27,000 ft	0.45	12,150
Ponding Area	10,500 ft	1.00	10,500
	117,000 ft		95,570

Composite Runoff Factor = 0.82

POND VOLUME REQ'D

design pond to retain 6hr excess

$\frac{2.9}{12}(117{,}000)(0.82 - 0.45) = 10{,}101\ ft^3$

Use ≈ 11,000 ft³

OVERFLOW SECTION

pond fills @

$\frac{x}{12}(117{,}000)(0.82) = 11{,}000$, $x = 1.38$ in

$\left(\frac{189}{t+25}\right)\left(\frac{t}{60}\right) = 1.38$, $t = 19$ min. + 5 min. initial

@ time = 19 min.

$Q = (0.82)\left(\frac{189}{24+25}\right)(117{,}000/43560) = 8.5$ cfs

provide concrete overflow section (broadcrested weir)

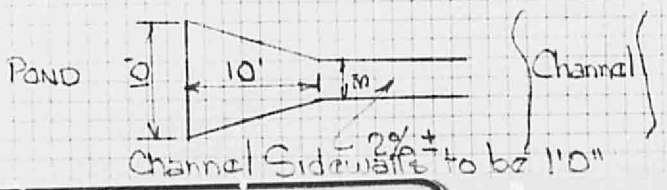
$8.5 = (2.63)(10)H^{3/2}$, $H = 0.47$ ft

@ 2% slope , $d = 0.50$

Manning's $8.5 = \frac{1.486}{0.013}(0.5)(b)\left(\frac{.5b}{b+1}\right)^{2/3}(.02)^{1/2}$

Use $b = 3'$ w/ 20° taper

$(10-3)/2/\tan 20° = 9.6$ use 10'



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DRAINAGE REPORT

6400 San Mateo NE KIRKPATRICK MOTOR CO.

UPLAND DRAINAGE (See Plate I)

CHANNEL FLOW

Approx. 300 acres (Single Family, Multifamily, Commercial)

Use: C = 0.60

Street Flow 2262 L.F. @ 8.5 fps. -

Channel Flow 5302 L.F. @ 10 fps. -

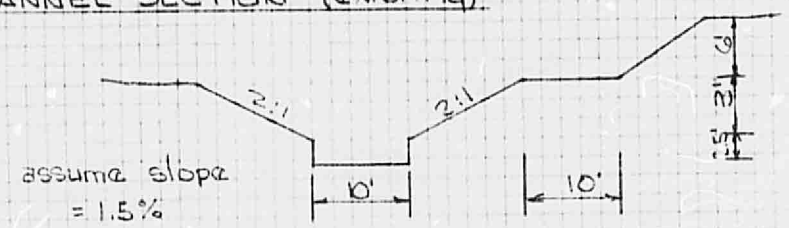
flow time = 27 min.

t_c = 32 min

$Q = (0.60)(189/(32+25))(300) = 600$ cfs

Rice Report indicates = 900 cfs @ intersection of trib. w/ Pino Arroyo ∴ 600 cfs appears conservative.

CHANNEL SECTION (existing)



assume slope = 1.5%

@ Q = 600 cfs

$$Q = \frac{1.49}{0.035} A R^{2/3} S^{1/2}$$

$AR^{2/3} = 115$

depth = 5.1 ft

Velocity = 9.3 fps

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PLATES

LOCATION MAP AND UPLAND DRAINAGE

SITE PLAN AND ONSITE DRAINAGE PLAN

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PLANS/PLATS ON FILE

FILE DESC: E18/D19A1

PLANS/PLATS 1

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