MASTER DEVELOPMENT

DRAINAGE PLAN

FOR

CROWN HILL MESA SUBDIVISION

Prepared For:
Mr. Chuck Helenberg
1025 Garner Street
Colorado Springs, CO 80905

Prepared By:
Associated Design Professionals, Inc.
118 N. Tejon Street, Suite 400
Colorado Springs, CO 80903
(719) 633-4992

November 15, 1995
950304.1DR

ADP
Associated Design Professionals, Inc.

ENGINEERS STATEMENT:

The attached drainage plan and report were prepared under my direction and supervision and are correct to the best of my knowledge and belief. Said drainage report has been prepared according to the criteria established by the City/County for drainage reports and said report is in conformity with and the master plan of the drainage basin. I accept responsibility for any liability caused by any negligent acts, errors or omissions on my part in preparing this report.

Michael A. Bartusek, P.E. #23329

DEVELOPER'S STATEMENT:

I, the developer have read and will comply with all of the requirements specified in this drainage report and plan.

Crown Hill Mesa LLC
Business Name

By: _____

Title: MANAGER

Address: 1025 Garner Street

Colorado Springs, CO 80905

Filed in accordance with Section 15-3-906 of the Code of the City of Colorado Springs, 1980, as amended.

_____ 11/16/95
City Engineer **Date**

Conditions:

CROWN HILL MESA SUBDIVISION
MASTER DEVELOPMENT DRAINAGE PLAN

GENERAL

The proposed Crown Hill Mesa single-family subdivision site is located on a 54.65 acre parcel. The unplatted parcel is located in west central Colorado Springs near the intersection of Rio Grande Street West and West Moreno Avenue. It is further described as being in the southeast quarter of Section 14, Township 14 South, Range 67 West, of the 6th principal meridian in the City of Colorado Springs, El Paso County, Colorado.

Drainage from the site is tributary to two (2) City designated drainage basins:

Bear Creek Drainage Basin
Miscellaneous Unstudied Basin

No portion of the site is contained within a FEMA 100-year floodplain as delineated on the Flood Insurance Rate Map (FIRM) No. 08006-0276-C, dated September 30, 1992. The soils on the site are classified as the Chaseville-Midway Complex and the Razor-Midway Complex by the "Soil Survey of El Paso County Area, Colorado", prepared by the Soil Conservation Service. Since most of the site will be regraded, a Hydrologic Soil Group "C/D" was used in the hydrologic analysis of the site.

The approved Drainage Basin Planning Study for this area is the Bear Creek Drainage Study by Lincoln DeVore, 1980. Although a new basin study was prepared by Kiowa Engineering in 1991and approved by the Drainage Board, it has not been formally adopted by the City of Colorado Springs or El Paso County to date. Information contained in the newer report regarding hydrology and hydraulics will be used in this report.

METHOD OF COMPUTATION

The methodology utilized for this report is in accordance with the City/County Drainage Criteria Manual. The Rational Method for computation of runoff was used.

$$Q = cia$$

Where Q = maximum rate of runoff in cubic feet per second
- c = runoff coefficient representing drainage area characteristics
- i = average rainfall intensity, in inches per hour, for the duration required for the runoff to become established
- a = drainage basin size in acres

DRAINAGE CHARACTERISTICS

The topography of the site currently splits the flow between the Bear Creek Drainage Basin to the south, and an unstudied miscellaneous basin to the northeast. The grades toward the south and Rio Grande Street are moderately steep with an average slope of approximately 6%. An existing 8-foot deep sump area exists approximately 200 feet north of Rio Grande Street. The existing grades to the northeast are somewhat flatter, in the

range of 4%, until the land drops steeply into an existing bowl area just west of Modoc Street.

A multi-family development currently under construction, Victoria Park Filing No. 1, will be releasing developed flows onto the northwesterly corner of the adjacent parcel. This flow will be released via a 24" rcp with velocities dissipated through a riprap spreading basin. A Statement of Understanding was recorded on this adjacent parcel, tax schedule No. 74144-00-013, to accept the increased storm flows. A berm will be constructed at the property line to protect our subdivision from the increased flows.

RUNOFF

Existing flows generated by the parcel and tributary areas have been calculated and can be found in Table 1. Developed flows from the site can be found in Table 2.

Based on the increased amount of flow generated from the developed site, storm sewer improvements will be needed to properly handle these flows. These improvements are shown on the proposed Drainage Plan. Hydraulic analysis of proposed inlets and storm sewers will be submitted in the Final Drainage Study for each filing of development.

CONCLUSION

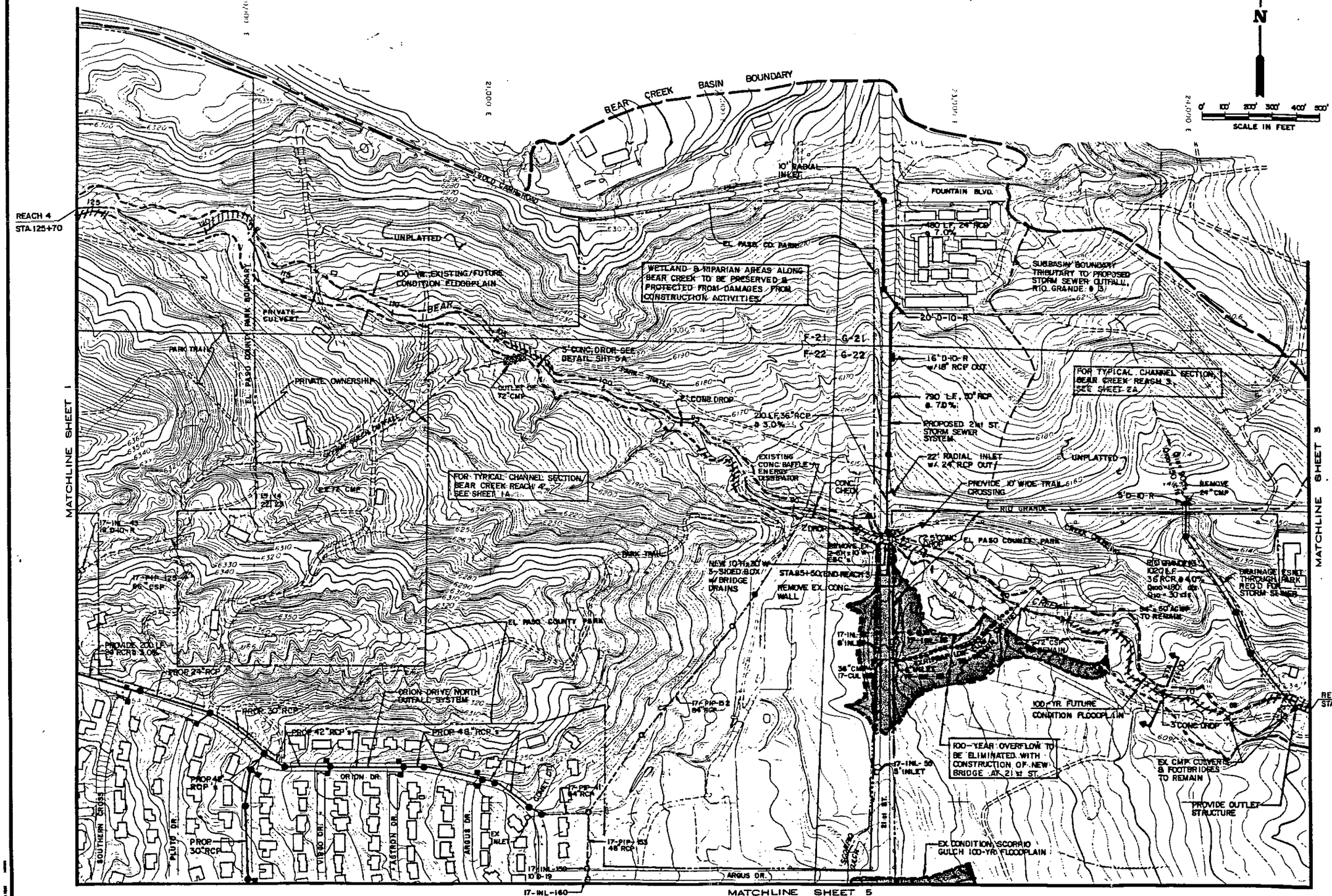
Flows from the improved site will be safely transported to existing outlet points through a series of new storm sewers. All proposed storm sewers will be public facilities. However, only those specified in the Bear Creek DBPS will be submitted for reimbursements. The westerly outlet point is through Bear Creek Park as outlined in the 1991 Drainage Basin Planning Study except that the total flows are less than those listed in the report. The El Paso County Park Department concurrs with the proposed outlet point but they do reserve the right to approve the final plans. The Parks Department would also prefer that the flow be in an open channel instead of the storm sewer shown in the 1991 report(Q100 = 150CFS VS 129CFS). The easterly outlet is proposed through the Penrose Stadium Facility as proposed in the Kiowa Study, instead of along Rio Grande Street, as shown in the 1980 study. The Penrose Stadium agrees with the proposed storm sewer route since it will help to alleviate existing drainage and erosion problems within the facilities. A three party agreement between the City, the County and the Developer to allow for construction and provide for a long term maintenance and access area will need to be executed. Riprap energy dissipaters will be constructed at the Bear Creek outlets of this storm sewer to reduce velocities.

Since this parcel was not previously platted, drainage fees will need to be assessed at this time. The estimated Drainage Fees for this site are as follows:

Bear Creek Drainage Basin
Drainage Fee: 50.45 Acre X ~~$1745~~ = ~~$88,035~~
Bridge Fee : 50.45 Acre X ~~$163~~ = ~~$8,223~~

Miscellaneous Basin
Drainage Fee: 4.20 Acre X ~~$5248~~ = ~~$22,042~~

ALL DRAINAGE FACILITIES SHOWN ARE FOR PLANNING PURPOSES ONLY. THE DESIGNER IS RESPONSIBLE FOR VERIFICATION OF THE HYDROLOGY, THE HYDRAULICS, & THE REQUIRED LOCATIONS OF ALL FACILITIES DURING FINAL DESIGN.



Kiowa Engineering Corporation
418 W. Bijou Street
Colorado Springs, Colorado
80905-1308

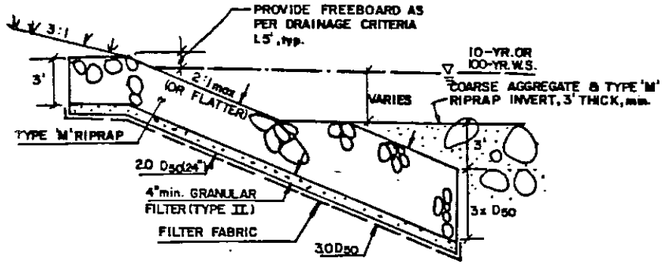
BEAR CREEK DRAINAGE BASIN PLANNING STUDY

BEAR CREEK STA. 63+90 to STA. 125+70

PRELIMINARY PLAN

Project No.	88.12.26
Date	10/89
Design:	RNW
Drawn:	EAK
Check:	
Revisions:	

2



TYPICAL 2:1 RIPRAP BANK SECTION

bts

ALL DRAINAGE FACILITIES SHOWN ARE FOR PLANNING PURPOSES ONLY. THE DESIGNER IS RESPONSIBLE FOR VERIFICATION OF THE HYDROLOGY, THE HYDRAULICS, & THE REQUIRED LOCATIONS OF ALL FACILITIES DURING FINAL DESIGN.

WETLAND & RIPARIAN AREAS ALONG BEAR CREEK TO BE PRESERVED & PROTECTED FROM DAMAGES FROM CONSTRUCTION ACTIVITIES.

100-YR. FLOODPLAIN FOR FUTURE CONDITION FLOWS CONTAINED WITHIN CHANNEL SECTION STA. 0+00 to STA. 2+00. OVERTOPPING AT 8th STREET TO BE ELIMINATED UPON CONSTRUCTION OF NEW BRIDGE.

MATCH SHEET 2

MATCH SHEET 6

G-21 H-21
G-22 H-22

BEAR CREEK BASIN BOUND.

SUB BASIN BOUNDARY TRIBUTARY TO PROP RIO GRANDE AVE. STORM SEWER #2

REMOVE EX. CMP & INLET

Qc = 78 cfs
Qmax = 178 cfs

RIO GRANDE #2
1850 L.F. 36" RCP @ 4.0%, Q=120 cfs

UNPLATTED

RIO GRANDE DR.

JUVENILE CORRECTIONS FACILITY

FOR TYPICAL CHANNEL SECTION, BEAR CREEK REACH 2 & 3, SEE SHEET 2A.

SUB-BASIN BOUNDARY TRIBUTARY TO PROPOSED RIO GRANDE AVE. STORM SEWER OUTFALL #1

Qc = 115 cfs
Qmax = 175 cfs

17-CUL-43G 48" CMP

REMOVE EX. CMP & INLET

PROVIDE 36" RCP

POMROSE STADIUM COMPLEX

CITY OWNERSHIP

REACH 3
STA. 63+90

100-YR. FUTURE CONDITION FLOODPLAIN

100-YEAR EXISTING/FUTURE FLOODPLAIN

PROPOSED MOTOR CITY DRIVE EXTENSION RIO GRANDE #1
838 L.F. 42" RCP @ 3.0% Q=178 cfs

PROVIDE RIPRAP SLOPE PROTECTION AT OUTSIDE BENDS OF SLOUGHED BANKS

5' CONC. DROP

5' CONC DROP

17-CUL-44c CSP

PROVIDE OUTLET STRUCTURE

BEGIN STABILIZATION, FLOW CHANNEL & FLOOD PLAIN PRESERVATION

5' CONC DROP SEE DETAIL SHT. 5A

STA. 63+10

STA. 62+20

FILL SLOUGHED BANK

CONCRETE CHECK

UNIMPROVED DRAINAGE WAY

LOW FLOW TRAIL CROSSING
30 L.F., 2-36" CMP @ 1.5%

OVERLAND FLOW FROM FROM SCORPIO GULCH

APPROXIMATE LOCATION OF FOUNTAIN CREEK 100-YR. FLOODPLAIN

POTENTIAL OVERFLOW AREA FROM FOUNTAIN CREEK

EXISTING 28' GRATED INLET w/24" RCP OUT

EX. 36" RCP C/O-RESUME

EXISTING 42" RCP

20' RADIAL INLET w/60 LF 29"x45" HERCP @ -3.7% OUT

EXISTING 20'D-10-R TO BE MODIFIED

25 LF, 42" RCP TO EX. INLET

20' INLET w/50 LF 29"x45" HERCP @ 2.0%

17-CHA-17 RIPRAP CHANNEL

20'D-10-R w/ 100 LF 24" RCP

HUMANE SOCIETY

ABBOTT LN.

17-CUL-17b

STORM SEWER SYSTEM IN 8th STREET TO BE PROVIDED AS PART OF 8th STREET IMPROVEMENT PROJECT

EXTEND 24" CMP TO RIPRAP CHANNEL

17-CHA-17 RIPRAP CHANNEL

FOUNTAIN CREEK

NEW 50' CLEAR SPAN BRIDGE w/ BRIDGE DRAINS

AUTO CENTER DR.

EX. RIPRAP CHANNEL

17-CUL-17b

120 L.F. 36" RCP @ 1.5% w/ FES @ CREEK

PROTECT EX. POWER POLE ON N. BANK

EX. 100-YR. OVERFLOW AREA

8-10'H x 4'W CBC TO REMAIN

BEAR CREEK & FOUNTAIN CREEK CONFLUENCE, STA. 0+00

STA. 2+30

8,000 N

4' DROP w/ RIPRAP INVERT

5' CONC. DROP

17-RIP-48 48" RCP

DROP STRUCTURE TO REMAIN

15'D-10-R w/ 24" RCP OUT

200 L.F. 48" RCP @ 3.0%

MOTOR CITY DR.

20'D-10-R w/ 24" RCP OUT

100 L.F. 42" RCP @ 3.0%

NEW 100' SPAN BRIDGE

480 L.F. 30" RCP @ 3.0%

8th STREET

17,000 N

FOR TYPICAL CHANNEL SECTION, BEAR CREEK REACH 1, SEE SHEET 3A.

N

0' 100' 200' 300' 400' 900'

SCALE IN FEET

Kiowa Engineering Corporation
419 W. Bijou Street
Colorado Springs, Colorado
80905-1308

BEAR CREEK DRAINAGE BASIN PLANNING STUDY

BEAR CREEK STA. 0+00 to STA. 63+90

PRELIMINARY PLAN

Project No.	88.12.26
Date:	10/89
Design:	RNW
Drawn:	EAK
Check:	
Revisions:	

3

CROWN HILL MESA SUBDIVISION TABLE 1
EXISTING FLOW CONDITIONS

AREA DESIG.	SUBBASIN FLOWS 5-YR	100-YR	ACCUMULATED FLOWS 5-YR	100-YR
OS-1	12.10	22.18		
OS-2	6.12	15.39		
OS-3	3.99	7.56		
A1	18.14	46.51	34.43	80.41
B1	3.06	7.96		
B2	5.88	14.87	10.35	26.91
B3	5.75	14.60	13.41	34.87
B4	8.70	22.50	11.14	27.00
B5	5.23	13.22	15.66	38.70
B6	8.02	20.41		

CROWN HILL MESA SUBDIVISION TABLE 2
DEVELOPED FLOW CONDITIONS

AREA DESIG.	SUBBASIN FLOWS 5-YR	100-YR	ACCUMULATED FLO 5-YR	100-YR
OS-1	12.10	22.18		
OS-2	18.06	27.36		
A1A	19.66	39.17	44.44	85.54
A1B	12.20	24.27	66.64	129.42
A1C	8.32	16.20	12.94	25.20
A1D	4.83	9.36		
OS-4	0.94	1.71		
A1E	1.40	2.57		
A1F	1.87	3.42		
B1A	12.34	24.77	30.28	63.73
B1B	5.42	10.80	40.25	83.33
B1C	1.26	2.24	40.95	84.71
B1D	11.88	23.56	37.10	77.14
B1E	12.10	24.32	52.15	106.73
B1F	6.11	12.17	55.30	112.92
OS-3	4.03	7.56		
B2A	7.94	15.98	11.47	22.64
B2B	11.48	23.04	30.13	67.54
B2C	5.10	15.29	19.11	45.73
B2D	9.10	18.00	37.31	73.70
B3A	8.29	16.38		
B4A	6.05	15.88		

CROWN HILL MESA SUBDIVISION
DRAINAGE CALCULATION SHEET
EXISTING CONDITIONS

AREA DESIG.	AREA (acre)	C5 (5 yr)	C100 (100 yr)	C5 X A	C100 X A	L (ft)	Slope (%)	ti (min)	L (ft)	Slope (%)	V (fps)	Tt (min)	TC (min)	I5 (in/hr)	I100 (in/hr)	Q5 (cfs)	Q100 (cfs)
OS-1	4.80	0.72	0.77	3.46	3.70	300	1.0	12.31	500	3.0	5.0	1.67	13.97	3.50	6.00	12.10	22.18
OS-2	6.00	0.30	0.45	1.80	2.70	300	6.0	14.35	500	7.2	5.5	1.52	15.86	3.40	5.70	6.12	15.39
A1	19.50	0.30	0.45	5.85	8.78	250	11.6	10.53	1300	3.5	2.9	7.47	18.01	3.10	5.30	18.14	46.51
				11.11	15.17								18.01	3.10	5.30	34.43	80.41
B1	3.40	0.30	0.45	1.02	1.53	350	8.3	13.92	800	3.0	2.6	5.13	19.05	3.00	5.20	3.06	7.96
B2	5.60	0.30	0.45	1.68	2.52	250	6.4	12.82	450	7.5	5.5	1.36	14.18	3.50	5.90	5.88	14.87
B3	5.90	0.30	0.45	1.77	2.66	300	10.0	12.12	900	3.8	3.0	5.00	17.12	3.25	5.50	5.75	14.60
				3.45	5.18								19.05	3.00	5.20	10.35	26.91
				4.47	6.71								19.05	3.00	5.20	13.41	34.87
OS-3	1.20	0.70	0.75	0.84	0.90	50	1.0	5.29	400	5.0	4.5	1.48	6.77	4.75	8.40	3.99	7.56
B4	10.00	0.30	0.45	3.00	4.50	400	6.0	16.56	650	3.8	3.0	3.61	20.18	2.90	5.00	8.70	22.50
				3.84	5.4								20.18	2.90	5.00	11.14	27.00
B5	5.20	0.30	0.45	1.56	2.34	200	4.0	13.39	650	6.3	4.0	2.71	16.10	3.35	5.65	5.23	13.22
				5.40	7.74								20.18	2.90	5.00	15.66	38.70
B6	8.10	0.30	0.45	2.43	3.65	200	3.0	14.72	500	12.2	5.5	1.52	16.24	3.30	5.60	8.02	20.41

CROWN HILL MESA SUBDIVISION
DRAINAGE CALCULATION SHEET
DEVELOPED CONDITIONS

AREA DESIG.	AREA (acre)	C5 (5 yr)	C100 (100 yr)	C5 X A	C100 X A	L (ft)	Slope (%)	ti (min)	L (ft)	Slope (%)	V (fps)	Tt (min)	TC (min)	I5 (in/hr)	I100 (in/hr)	Q5 (cfs)	Q100 (cfs)	length L (feet)	velocity V (fps)	^t (min)
OS-1	4.80	0.72	0.77	3.46	3.70	300	1.0	12.31	500	3.0	5.0	1.67	13.97	3.50	6.00	12.10	22.18			
OS-2	6.00	0.70	0.80	4.20	4.80	300	6.0	7.17	500	7.2	5.5	1.52	8.69	4.30	5.70	18.06	27.36	100	10.0	0.2
A1A	7.20	0.70	0.80	5.04	5.76	100	2.0	5.95	1300	4.9	4.6	4.71	10.66	3.90	6.80	19.66	39.17			
				12.70	14.26								13.97	3.50	6.00	44.44	85.54	290	10.0	0.5
A1D	1.50	0.70	0.80	1.05	1.20	100	2.0	5.95	400	5.0	4.5	1.48	7.43	4.60	7.80	4.83	9.36	240	10.0	0.4
A1C	2.70	0.70	0.80	1.89	2.16	100	2.0	5.95	500	5.0	4.5	1.85	7.80	4.40	7.50	8.32	16.20			
				2.94	3.36								7.80	4.40	7.50	12.94	25.20			
A1B	4.10	0.70	0.80	2.87	3.28	100	2.0	5.95	700	5.7	5.0	2.33	8.28	4.25	7.40	12.20	24.27			
				5.81	6.64								8.28	4.25	7.40	24.69	49.14			
				18.51	20.90								14.46	3.45	5.95	63.85	124.33			
OS-4	0.20	0.90	0.95	0.18	0.19	30	2.0	1.63	275	5.7	5.0	0.92	2.55	5.20	9.00	0.94	1.71			
A1E	0.30	0.90	0.95	0.27	0.29	30	2.0	1.63	390	5.7	5.0	1.30	2.93	5.20	9.00	1.40	2.57			
A1F	0.40	0.90	0.95	0.36	0.38	30	2.0	1.63	550	5.7	5.0	1.83	3.46	5.20	9.00	1.87	3.42			
				19.32	21.75								14.46	3.45	5.95	66.64	129.42			
OS-3	1.20	0.70	0.75	0.84	0.90	50	1.0	5.29	400	5.0	4.5	1.48	6.77	4.80	8.40	4.03	7.56			
B2A	2.70	0.70	0.80	1.89	2.16	50	2.0	4.21	1200	5.0	4.5	4.44	8.65	4.20	7.40	7.94	15.98			
				2.73	3.06								8.65	4.20	7.40	11.47	22.64			
B2C	5.20	0.35	0.60	1.82	3.12	500	7.0	16.50	350	2.2	1.2	4.86	21.36	2.80	4.90	5.10	15.29	150	4.5	0.6
				4.55	6.18								8.65	4.20	7.40	19.11	45.73	850	2.8	5.1
B2B	4.00	0.70	0.80	2.80	3.20	100	2.0	5.95	900	4.6	4.2	3.57	9.52	4.10	7.20	11.48	23.04			
				7.35	9.38								9.52	4.10	7.20	30.13	67.54			
B2D	2.50	0.70	0.80	1.75	2.00	100	4.0	4.73	700	6.5	7.0	1.67	5.00	5.20	9.00	9.10	18.00			
				9.10	11.38								9.52	4.10	6.50	37.31	73.97			
B1A	4.30	0.70	0.80	3.01	3.44	50	2.0	4.21	850	3.2	2.8	5.06	9.27	4.10	7.20	12.34	24.77			
				12.11	14.82								26.98	2.50	4.30	30.28	63.73			
B1D	3.90	0.70	0.80	2.73	3.12	100	2.0	5.95	550	4.0	4.0	2.29	8.24	4.35	7.55	11.88	23.56	600	3.0	3.3
				14.84	17.94								26.98	2.50	4.30	37.10	77.14			
B1B	1.80	0.70	0.80	1.26	1.44	100	2.0	5.95	600	4.0	4.0	2.50	8.45	4.30	7.50	5.42	10.80	200	3.0	1.1
				16.10	19.38								26.98	2.50	4.30	40.25	83.33			
B1C	0.40	0.70	0.80	0.28	0.32	30	2.0	3.26	300	2.2	1.2	4.17	7.43	4.50	7.00	1.26	2.24			
				16.38	19.70								26.98	2.50	4.30	40.95	84.71			
B1E	6.40	0.70	0.80	4.48	5.12	100	2.0	5.95	1350	2.2	1.2	18.75	24.70	2.70	4.75	12.10	24.32			
				20.86	24.82								26.98	2.50	4.30	52.15	106.73			
B1F	1.80	0.70	0.80	1.26	1.44	100	4.0	4.73	400	4.0	4.0	1.67	6.40	4.85	8.45	6.11	12.17			
				22.12	26.26								26.98	2.50	4.30	55.30	112.92			
B3A	3.20	0.70	0.80	2.24	2.56	250	4.8	7.05	350	2.0	1.0	5.83	12.88	3.70	6.40	8.29	16.38			
B4A	4.20	0.30	0.45	1.26	1.89	150	20.0	6.82	0	0.0	1.0	0.00	6.82	4.80	8.40	6.05	15.88			

094120219

94 AUG 30 PM 1:36

AROIS W. SCHMITT
EL PASO COUNTY CLERK & RECORDER

BOOK 6516 PAGE 222

5.00

STATEMENT OF UNDERSTANDING FOR STORM WATER ACCEPTANCE ONTO THE LANDS WITH TAX SCHEDULE NO. 74144 00 005

Future developed storm water runoff from Victoria Park Filing No. 1 as shown in the Drainage Plan and Report for Victoria Park Filing No. 1 will flow onto the land with Tax Schedule No. 74144 00 005. The owner of said land will accept the storm water runoff flows which are greater than historic storm water runoff flows and accepts the responsibility to maintain erosion control in the areas effected by the increased historical runoff flows. The undersigned owner hereby accepts the responsibility for making this agreement binding on the heirs and assigns and subsequent owners of said lands. This Statement of Understanding will be recorded with the County Clerk and will run with the land.

OWNER
S & S WESTERN PROPERTIES, INC.

Stanley J. Bujalski, President

S & S WESTERN PROPERTIES, INC. SEAL COLORADO

ATTEST: Stanley B. Bujalski

Stanley B. Bujalski

50767-A.swa-d30

Parcel	Master	Exmpt	TxD	Mill	Neigh	Plat	CreateDate
74144-00-005			11C	65.199	229	0	

Mail Addr:

********** P R O P E R T Y **********

Location: 0 TWENTY FIRST ST

Legal Description: TRACT IN SE4 SEC 14-14-67 AS FOLS, BEG AT SE COR OF GOLD HILL PLAZA FIL NO 1, RUN SLY TO A LN THAT IS 30.0 FT NLY OF AND PARA WITH S SEC LN, ANG R 89<59'28" WLY 448.39 FT TO AN ANG PT, ANG R 18<02'02" NWLY 44.26 FT TO AN ANG PT, ANG R 49<29'24" NWLY 38.84 FT TO ELY R/W LN OF S 21ST ST, ANG R 23<42'34" NLY ALG SD ELY R/W LN TO SW COR OF GOLD HILL PLAZA FIL NO 1, TH ELY ON S LN THEREOF TO POB

**** NEW PARCEL NUMBER IN 1991 WILL BE 74144-00-013 ****

TOTAL:	0	0

SALES: SaleDate	SalePrice	DocFee	Book	Page	SalCd	#Sales	Vfy
03/01/1989		50000				0	

Taxing Entities	Mill Rate
EL PASO COUNTY	12.000
CITY OF COLORADO SPRINGS	6.869
COLO. SPGS. SCHOOL DIST. NO. 11	40.930
PIKES PEAK LIBRARY DISTRICT	4.431
SOUTHEASTERN COLO WTR CONSERVANCY	0.969
1994 Tax Rate	65.199 Mills

Initials _____ Date _____

21ST STREET

FOUNTAIN BLVD.

(2075)

00 004

(3044-82)

50' DEDICATED FOR R.O.W.

(1944-2132 GILTSHIRE DR.)

GOLD HILL CONDOS PHASE 2, SUPPLEMENT NO. 1 (SEE DETAIL SHEET)

GOLD HILL CONDO'S

GOLD HILL CONDOS PHASE 1, SUPPLEMENT 1 (SEE DETAIL SHEET)

PHASE 1, SUPPLEMENT 2 AMENDED

GOLD HILL CONDO'S PHASE 2, SUPPLEMENT NO. 2 (SEE DETAIL SHEET)

PHASE 2 SUPP NO. 3

GOLD HILL CONDO PHASE 3, SUPP. (SEE DETAIL SHEET)

085

GOLD HILL CONDO'S, PHASE 2, SUPPLEMENT NO. 3 (SEE DETAIL SHEET)

GOLD HILL CONDO'S

PHASE 3, SUPP. 2 (SEE DETAIL SHEET)

GOLD HILL PLAZA FIL. NO. 1

COSTILLA ST VAC. ORD NO (83-271)

GOLD HILL PLAZA FIL. NO. 2

086

1

2

00 013

(3044-82)

STORMWATER ACCEPTANCE LAND

00 007

(2914-282)

00 010

00 014

00 001

(2269-488)

00 011

(3208-481)

CROWN HILL MESA SUBDIV.

ADJOINING 74133

ADJOINING 74000

74144

APPENDIX A
Design Charts

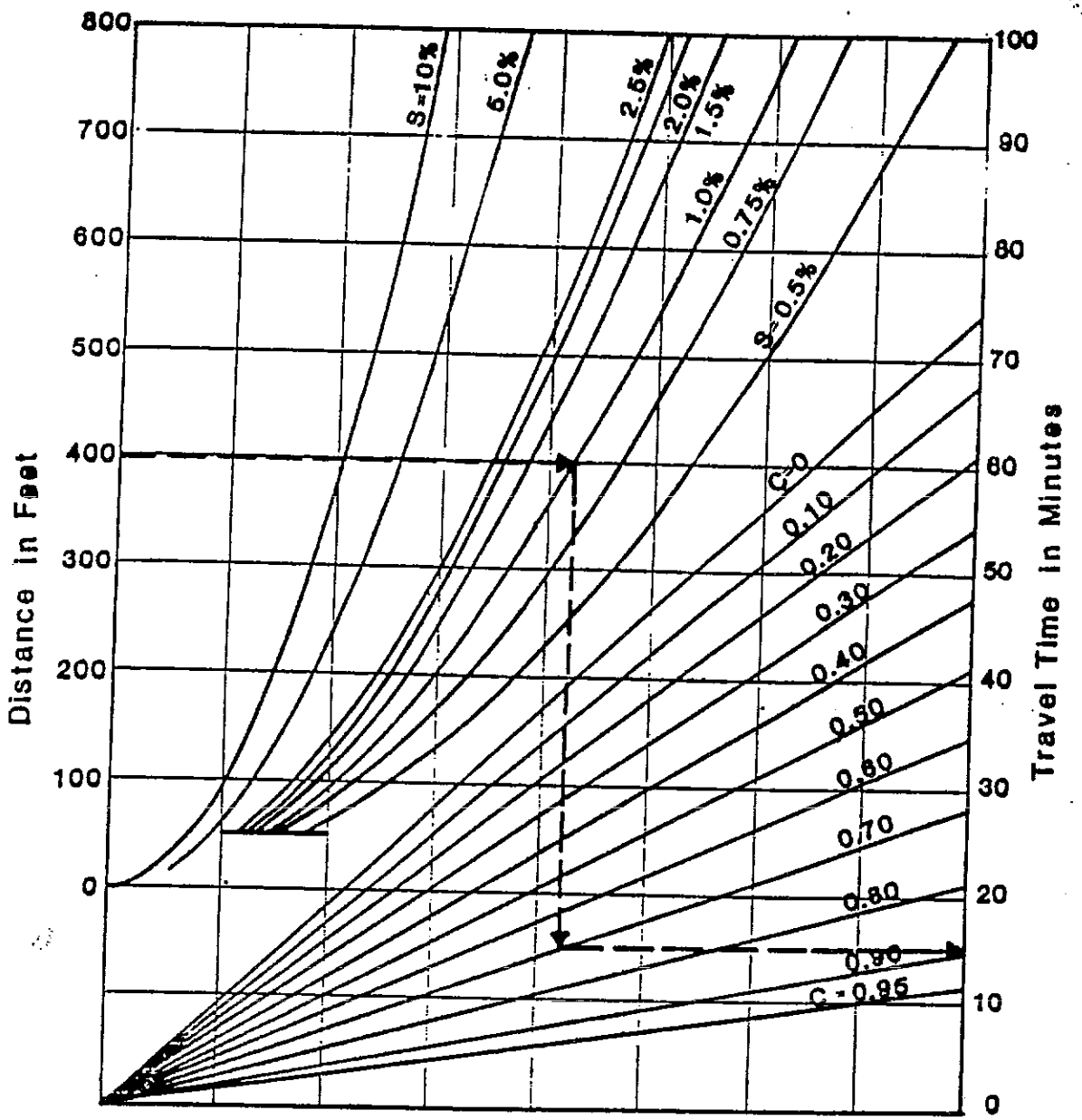
TABLE 5-1

RECOMMENDED AVERAGE RUNOFF COEFFICIENTS AND PERCENT IMPERVIOUS

LAND USE OR SURFACE CHARACTERISTICS	PERCENT IMPERVIOUS	"C" FREQUENCY 10 A&B*	"C" FREQUENCY 10 C&D*	"C" FREQUENCY 100 A&B*	"C" FREQUENCY 100 C&D*
Business					
Commercial Areas	95	0.90	0.90	0.90	0.90
Neighborhood Areas	70	0.75	0.75	0.80	0.80
Residential					
1/8 Acre or less	65	0.60	0.70	0.70	0.80
1/4 Acre	40	0.50	0.60	0.60	0.70
1/3 Acre	30	0.40	0.50	0.55	0.60
1/2 Acre	25	0.35	0.45	0.45	0.55
1 Acre	20	0.30	0.40	0.40	0.50
Industrial					
Light Areas	80	0.70	0.70	0.80	0.80
Heavy Areas	90	0.80	0.80	0.90	0.90
Parks and Cemeteries	7	0.30	0.35	0.55	0.60
Playgrounds	13	0.30	0.35	0.60	0.65
Railroad Yard Areas	40	0.50	0.55	0.60	0.65
Undeveloped Areas					
Historic Flow Analysis- Greenbelts, Agricultural	2	0.15	0.25	0.20	0.30
Pasture/Meadow	0	0.25	0.30	0.35	0.45
Forest	0	0.10	0.15	0.15	0.20
Exposed Rock	100	0.90	0.90	0.95	0.95
Offsite Flow Analysis (when land use not defined)	45	0.55	0.60	0.65	0.70
Streets					
Paved	100	0.90	0.90	0.95	0.95
Gravel	80	0.80	0.80	0.85	0.85
Drive and Walks	100	0.90	0.90	0.95	0.95
Roofs	90	0.90	0.90	0.95	0.95
Lawns	0	0.25	0.30	0.35	0.45

* Hydrologic Soil Group

9/30/90



REFERENCE : Wright – McLaughlin Engineers, Urban Storm Drainage Criteria Manual, Vol. 1, Denver Regional Council of Governments, Denver, Co. 1977

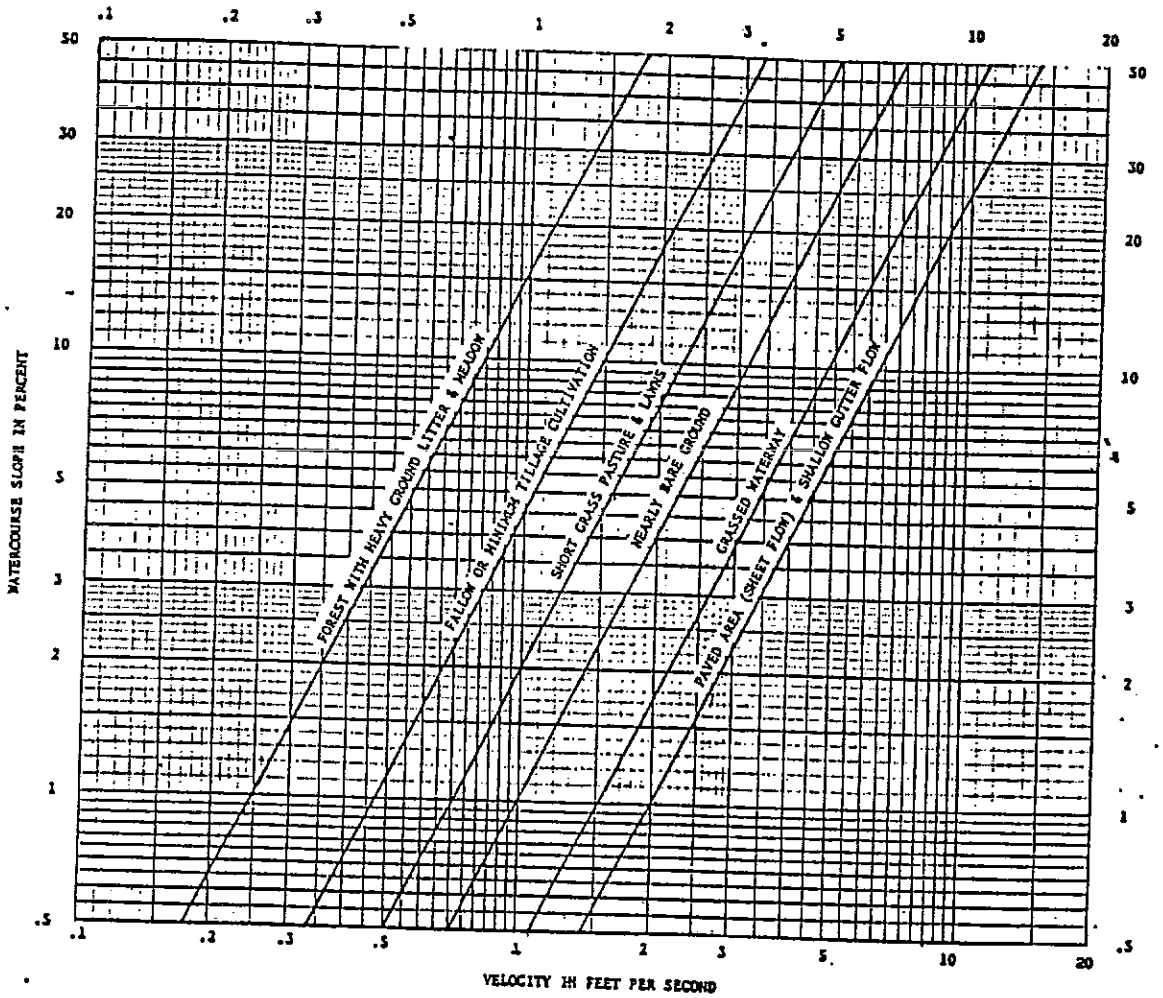
HDR Infrastructure, Inc.
A Centerra Company

The City of Colorado Springs / El Paso County
Drainage Criteria Manual

Overland Flow Curves

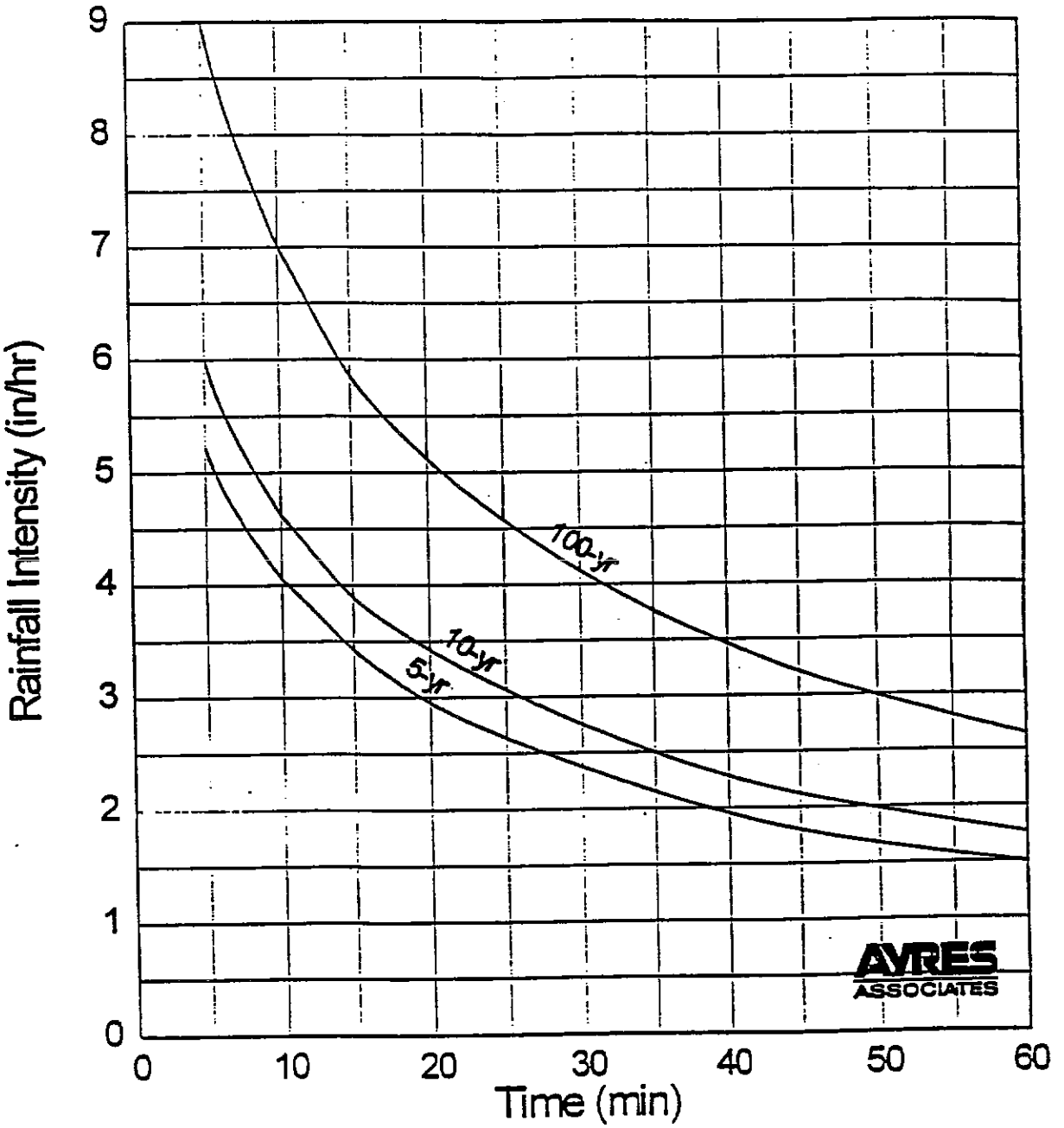
Date: OCT. 1987

Figure: 5-2



--Average velocities for estimating travel time for overland flow.

FIGURE 4



Interim Release October 12, 1994 , Rainfall Intensity Curves
City Of Colorado Springs Drainage Criteria Manual