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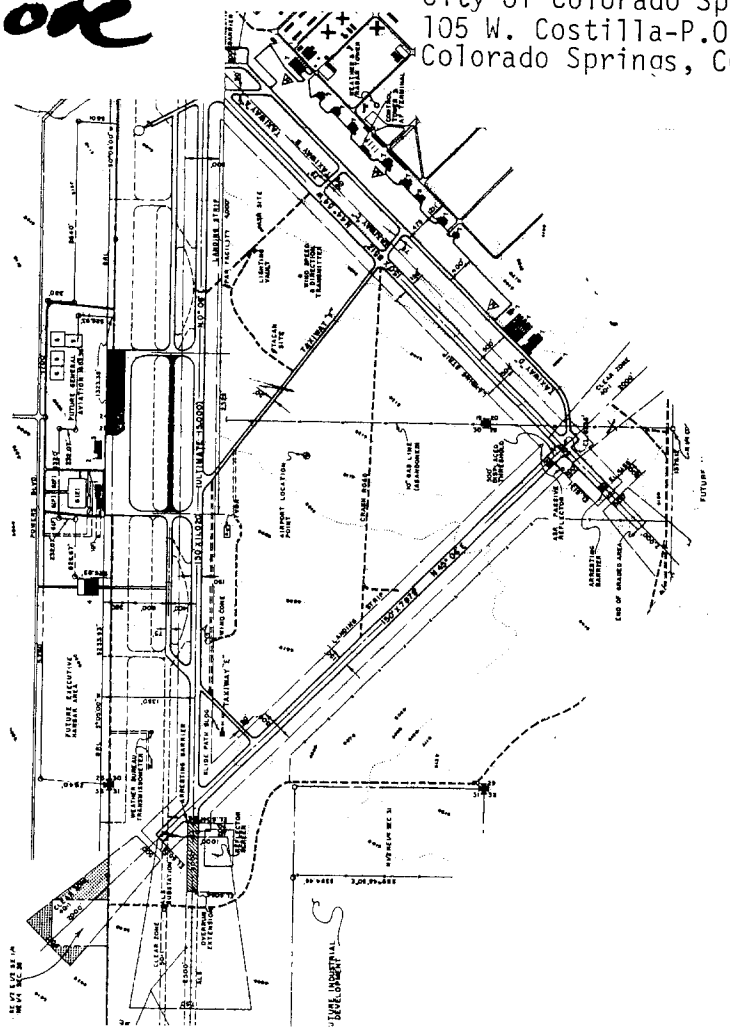

DRAINAGE REPORT
PETERSON FIELD
north - south runway
and facilities west

ARCHITECTS
ENGINEERS
PLANNERS
SURVEYORS

r. keith hook & associates, inc.

TEL. (303) 473-5653 2545 EAST PLATTE PLACE COLORADO SPRINGS, COLORADO 80909

LETTER OF TRANSMITTAL

TO:
City of Colorado Springs
Public Works Department
Engineering Division
30 South Nevada
Colorado Springs, CO 80903

ATTN: Gary Haynes

DATE 10-27-82 | JOB NO.

REF. PROJECT

Peterson Field

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Sent to Bob Coleman @ airport 10/28/82

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R. KEITH HOOK & ASSOC., INC.

By: Lawrence A. Finnerty/pam

DRAINAGE REPORT

PETERSON FIELD AIRPORT

NORTH-SOUTH RUNWAY
AND
FACILITIES WEST

for

DEPARTMENT OF PUBLIC WORKS
COLORADO SPRINGS, COLORADO

July 1973

R. KEITH HOOK & ASSOCIATES, INC.
2545 East Platte Place
Colorado Springs, Colorado 80909

r. keith hook & associates, inc.

TEL. (303) 473-5653 • 2545 EAST PLATTE PLACE • COLORADO SPRINGS, COLORADO 80909

July 9, 1973

Department of Public Works
Municipal Building
Colorado Springs, CO 80902

Attention: Mr. Frank Ladwig, Director of Aviation
Mr. Robert Martin, City Engineer

Gentlemen:

Transmitted herewith is the Drainage Plan & Report of the area of Peterson Field Airport bounded on the East by the main North-South runway 17/35, and on the West, North & South by airport boundaries, as required. The following plan and report is in conformance with our letter of August 1, 1972, with the exception of Item 4 (a). This information cannot be provided until final airport improvement drawings are prepared by others.

This plan and report sets forth the existing and future surface drainage requirements as development of the airport proceeds. Current City of Colorado Springs Drainage Ordinance Policy has been used in developing criteria for this study.

We have enjoyed preparing this report and are available to review it with you at your convenience.

Sincerely yours,

R. KEITH HOOK & ASSOCIATES, INC.

Leonard C Becker

Leonard C. Becker, P.E.
Executive Vice-President
and Director of Engineering

LCB/RJS:cim

ARCHITECTS
ENGINEERS
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CERTIFICATION

I, Leonard C. Becker, a Registered Engineer in the State of Colorado, hereby certify that the attached drainage plan and report were prepared under my direction and supervision and are correct to the best of my knowledge and belief. I further certify that said drainage report is in accordance with City of Colorado Springs ordinance, specifications and criteria.

Leonard C Becker

Leonard C. Becker
Registered Engineer
State of Colorado No. 3918

APPROVED:

CITY OF COLORADO SPRINGS
DEPARTMENT OF PUBLIC WORKS

BY: Robert A Hunter DATED: 7/11/73

I. GENERAL DESCRIPTION

Colorado Springs Municipal Airport, Peterson Field, has experienced considerable growth and change in recent years. In an effort to provide a high quality airport facility and meet the demands placed upon it, the City of Colorado Springs has been continually upgrading and planning for improvements to the existing municipal airport facilities. A portion of the improvements to be made will be constructed to convey surface drainage in an acceptable manner to designated outfall points. To date, the airport has not experienced a serious deficiency in drainage facilities but due to future paved and built-up areas, additional structures will be required.

The area of this study has been defined as that which lies West of the East edge of Runway 17/35 and within the airport property boundaries. Drainage areas to the East of Runway 17/35 have been considered in this report as they effect the study areas. The area lies within the Peterson Field Drainage Basin as designated by the City of Colorado Springs and has been included in the Master Drainage Study of the Peterson Field Basin. This current study is intended to define the drainage requirements in greater detail than previously done. A portion of the proposed Southerly extension of Runway 17/35 lies in the Windmill Gulch Drainage Basin as shown on the Drainage Plan.

As outlined in the Peterson Field Drainage Basin Report, the soils in this area are primarily silts and sands. Generally considered, the surficial soils allow a rather high quantity and rate of infiltration by surface water. There have been clay lenses detected at various locations which could tend to limit the vertical movement of water, however these are extremely random

in nature. There has been and will be considerable earthmoving done in the study area. Earthwork being considered is not expected to change the infiltration characteristics of the soils appreciably.

However development of certain areas will affect the ratio of rainfall to runoff. A great percentage of the areas to be developed will be paved and covered with impervious material to serve as runways, taxiways, parking areas, and material handling facilities. The following section of this report outlines the existing drainage pattern and flow and explains what effect the proposed improvements will have on surface drainage.

II. DRAINAGE PATTERN AND FLOW

General Analysis

The surface drainage in the area of the existing runway 17/35 and facilities west, is generally in a southerly direction. The area slopes to the south at approximately one per cent grade. Grass lined and earthern channels convey storm water in a generally southern direction parallel to the existing runway and taxiway "G". Drainage in the area immediately adjacent to the municipal and private aircraft facilities is directed west to the west boundary of the airport property by a series of earthern swales and ditches.

The existing drainage facilities in the area of the runway have proved to be generally acceptable under present conditions. Those in the area of the municipal terminal building and the adjacent parking and roadway areas have not proved as effective for transmitting the surface runoff to the desired outfall point. There are a number of small diameter culverts which have become ineffective due to deposition of silt within the conduits.

The aircraft parking and passenger boarding area immediately east of the municipal terminal has experienced some drainage problems due to insufficient slope of the ramp surface. The extremely flat grades do not allow the runoff to move away at a rate which will prevent ponding and unacceptable water depths. The climatology of Colorado Springs is such that rainstorms of short duration and great intensity are frequent during the summer season. It is this condition which causes the greatest problems in this area.

Inflow to Study Area

There is no appreciable runoff which enters the study area from the north since the East Fork of Sand Creek lies a short distance away. Basin B contributes 38.6 CFS which is directed beneath runway 17/35 to the ditch between the runway and taxiway G. Basin A contributes approximately 90 CFS to a series of grated inlets and storm sewer beneath the runway and taxiway which directs storm runoff in a southwesterly direction.

A major channel of the Peterson Field Drainage Basin (shown in Basin C) enters the study area south of runway 21/03. As given in the Peterson Field Master Drainage Basin study by Karcich and Weber, Inc., of January 1971, this channel contributes a design flow of 3,050 CFS. At present, a grated inlet and a 48 inch diameter storm sewer direct existing flows beneath the runway 17/35 runout area in a southwesterly direction. There are no substantially improved channel facilities in this area.

Interior Drainage

The Drainage Plan outlines the existing facilities within the study area. Existing earthern and grass lined ditches parallel to taxiway "G" and runway 17/35 have proved quite satisfactory in conveying runoff under existing conditions. The ditches have become somewaht stabilized and erosion is at a minimum. The culverts which serve as crossings beneath the taxiways have also served satisfactorily under existing conditions. For the most part, they are in good condition reflecting good construction and maintenance. A few isolated installations show some accumulation of sand and silt within the conduit.

Basins D, H, N, and P constitute the area tributary to the channel between runway 17/35 and taxiway G. Under existing conditions, a design

storm produces a peak flow of approximately 62 CFS. This runoff currently flows in a southwesterly direction in an unimproved swale after crossing beneath taxiway H. The surface drainage in this area has no distinct channel to follow and, under high flow conditions, inundates a wide area. The storm sewers which drain Basin A (previously described) exit in this area as well as the channel west of taxiway G. These three drainage systems contribute a total peak flow of approximately 244 CFS at the present western boundary of the airport.

As explained previously, the existing drainage facilities west of the municipal terminal are not efficient and do not have the desired hydraulic capacity under existing conditions. Rehabilitation and new facilities are required in this area. At present, the majority of the flow created in this area is discharged out of the airport boundary at the southwest corner of Basin J. Flow from Basins E, T, and U which lies east of the aircraft facility area also flows to this outfall point. In an effort to alleviate the drainage problem, this flow should be routed to a different outfall point upon future development.

III. DRAINAGE FACILITY IMPROVEMENTS

Major Improvements

The major item of drainage facility improvement is the structure required to convey the design flow in Basin C to the desired outfall point. This major structure has been considered from the existing grated inlet at the East side of Runway 17/35 to the future West property line of the airport. To convey the additional flow expected, an inlet structure in conjunction with a conduit having 100 square feet of opening will be required to pass a flow of 3050 CFS beneath Runway 17/35. For cost estimating purposes, a 3 cell reinforced concrete box culvert with each cell being 6' x 6' has been considered. The channel extending West will be approximately 48' x 28' x 5' in the configuration shown on the Drainage Plan.

In the area bounded by Runway 17/35 and Taxiway G, earthen and grass lined ditches will be sufficient to carry future runoff. Those in Basins D and H are satisfactory in their present condition. It is suggested that the channel in Basin N be relocated to a mid-point between the Runway and Taxiway in an effort to minimize culvert costs and potential damage to the Taxiway. As shown on the drainage plan, additional culverts will be required upon construction of the indicated high speed turnoffs. Where no existing definite channel exists, as in Basin P, it is proposed that concrete or rip-rap lined channels be constructed of the size indicated. It is strongly suggested that upon completion of final grading plans for these areas, that the slopes of the proposed channels be checked and if necessary, the cross-sectional areas be revised to allow for the most economical structure possible.

Basins T, I, F, L, and Q will be improved in much the same manner. The existing channels in Basins T, I, and F, are sufficient but some enlargement of culverts will be necessary. Basin L and Q will require enlarging and

improvement of the channel to carry the design flows to the junction with the large ditch previously described.

It should be noted that a major change in drainage flow is proposed in Basin T. At present, the runoff from this basin is directed Westerly and ultimately to the outfall point at the Southwest corner of Basin J. It is proposed that this runoff be routed in a Southerly direction parallel to Taxiway G to outfall in Basin C. This will eliminate some runoff to convey through the congested aircraft facility area. This will result in the abandonment of one culvert in Basin U and the enlargement of other culverts in Basins I, F_1, L, and Q. Their enlargement is also necessitated by additional runoff produced by the future paving of large apron, parking, and taxiway areas.

Municipal Terminal Facilities

As previously described, the ramp area immediately in front of the Municipal terminal building has some difficulty in draining storm water efficiently. Realizing the impossibility of channelizing or extensive sloping of this area, it is proposed that a series of grated inlets and storm sewers be used to collect and convey this water to the channel in Basin I. The exact configuration and location of the catch basins cannot be detailed at this time. It would serve best to locate these facilities outside of the normal aircraft parking areas to eliminate any interference they might have with activities immediately surrounding waiting aircraft. It is suggested that these inlets be long and narrow, oriented with the long dimension in an East-West direction. This configuration should result in the best compromise between hydraulic efficiency and structural economy.

It is understood that an overlay program will be carried out to strengthen the existing apron. When this is done, it is strongly suggested that a detailed grading plan be followed in lieu of placing a uniform lift on existing

pavement. Such a grading plan should be created with adequate surface drainage as a main emphasis of design as well as caring for the structural requirements of the pavement.

Roadway and Parking Lot Facilities

As discussed in Section II, the roadway and parking lot areas to the West have not operated, drainage-wise, as efficiently as possible. Near the terminal building, the roadways have been constructed with concrete curb and gutter. It is proposed that all future roadways be improved with similar vertical curb. This serves to contain and direct the surface runoff more efficiently than the existing roadside borrow ditches. Curb opening catch basins and storm sewers are to be utilized when the hydraulic capacity of the roadways has been exceeded. The proposed catch basins and storm sewer piping has been shown on the Drainage Plan.

With excellent maintenance, the existing borrow ditches and culverts may continue to serve the drainage needs of the existing areas. There are some locations where culvert replacement is essential, such as in Basin D, for the system to operate properly. An alternative to the existing ditches would be fully improved roadways with catch basins and storm sewers to contain and convey the runoff to the desired outfall points.

Future Runway and Taxiway Extension

It is proposed that Runway 17/35 and Taxiway G be extended Southerly. The major drainage structure requirement was discussed at the beginning of this section of the report, being a structure to convey a flow of 3050 CFS beneath the runway. Not having any proposed grading plans available, it is thought that perhaps a portion of the proposed extension will slope Southerly into the Windmill Gulch Drainage Basin. Under normal practices, culverts will be required beneath Taxiway G at the point where it crosses over to

the runway. Depending on the slope of the runway in this area, minimal channel improvements between the taxiway and runway may be required. The Windmill Gulch Drainage Basin Study indicates a 30 inch diameter culvert beneath both the runway and taxiway. Upon final grading for the runway extension, it will be determined as to whether this structure is necessary. This possible structure is not included in the cost estimate.

IV. Cost Estimate

Following is the estimate of construction costs related to the proposed drainage facilities as outlined on the Drainage Plan. The costs are itemized by drainage basins shown and are based on June 1973 construction costs. The lined channels are considered with concrete lining.

PETERSON FIELD AIRPORT DRAINAGE IMPROVEMENTS

Cost Estimate

Basin	Description	Amount	Unit	Unit Price	Total Cost
A	———	—	—	—	—
B	———	—	—	—	—
C	a. Reinforced Concrete Inlet Structure 108 square feet clear opening	1	Ea.	$ 38,600.00	$ 38,600.00
	b. Reinforced Concrete Culvert 6' x 6', 3 cells	930	L.F.	670.00	623,100.00
	c. Lined Channel 45' x 25' x 5'	600	L.F.	73.75	44,250.00
	d. Lined Channel 26' x 10' x 4'	300	L.F.	43.50	13,050.00
D	Reinforced Concrete Pipe culvert 18" Dia., Class V	150	L.F.	13.50	2,025.00
E	Reinforced Concrete Pipe Culvert 18" Dia., Class V	250	L.F.	13.50	3,375.00
F	a. Lined Channel 8' x 2' x 1.5'	600	L.F.	13.50	8,100.00
	b. Reinforced Concrete Pipe 27" Dia., Class III	350	L.F.	18.00	6,300.00
	c. Catch Basin, 12.0' Curb Opening	1	Ea.	1,500.00	1,500.00
G	a. Catch Basin, 8.0' Curb Opening	1	Ea.	1,200.00	1,200.00
	b. Reinforced Concrete Pipe 24" Dia., Class III	75	L.F.	17.00	1,275.00
H	Reinforced Concrete Pipe				
	a. 24" Dia., Class V	55	L.F.	17.50	962.50
	b. 33" Dia., Class V	300	L.F.	24.00	7,200.00
I	Reinforced Concrete Pipe 42" Dia., Class V	240	L.F.	36.00	8,640.00
J	a. Reinforced Concrete Pipe 48" Dia., Class III	100	L.F.	35.00	3,500.00
	b. Lined Channel, 13' x 3' x 2.5'	200	L.F.	22.20	4,440.00
K	a. Reinforced Concrete Pipe 36" Dia., Class III	210	L.F.	21.25	4,462.50

Cost Estimate, continued

Basin	Description	Amount	Unit	Unit Price	Total Cost
K	b. Lined Channel, 10' x 2' x 2'	950	L.F.	$ 17.00	$ 16,150.00
L	a. Reinforced Concrete Pipe 48" Dia., Class V	250	L.F.	41.50	10,375.00
	b. Lined Channel, 19' x 3' x 4'	900	L.F.	32.50	29,250.00
M	a. Catch Basin, 12.0' Curb Opening	1	Ea.	1,500.00	1,500.00
	b. Reinforced Concrete Pipe 30" Dia., Class III	75	L.F.	19.00	1,425.00
N	Reinforced Concrete Pipe				
	a. 33" Dia., Class V	300	L.F.	24.00	7,200.00
	b. 36" Dia., Class V	300	L.F.	30.00	9,000.00
	Unlined Ditch, 38' x 6' x 3'	1080	L.F.	2.00	2,160.00
P	Reinforced Concrete Pipe				
	a. 18" Dia., Class V	300	L.F.	13.50	4,050.00
	b. 36" Dia., Class V	300	L.F.	30.00	9,000.00
	c. 48" Dia., Class V	200	L.F.	41.50	8,300.00
	Corrugated Steel Pipe 30" Dia., 12 gage	300	L.F.	26.00	7,800.00
	Lined Channel, 14' x 4' x 3'	750	L.F.	27.10	20,325.00
Q	Reinforced Concrete Pipe 66" Dia., Class V	250	L.F.	70.00	17,500.00
	Remove existing 30" Dia. RCP	394	L.F.	7.15	2,817.10
	Lined Channel,19' x 3' x 4'	1330	L.F.	32.50	74,750.00
	Lined Channel, 26' x 10' x 4'	970	L.F.	43.50	42,195.00
R	Reinforced Concrete Pipe 27" Dia., Class III	75	L.F.	18.00	1,350.00
	Catch Basin, 10.0' Curb Opening	1	Ea.	1,300.00	1,300.00
	Lined Channel, 48' x 28' x 5'	800	L.F.	78.30	62,640.00

PETERSON FIELD AIRPORT DRAINAGE IMPROVEMENTS

Cost Estimate, continued

Basin	Description	Amount	Unit	Unit Price	Total Cost
S	———	———	———	———	———
T	Reinforced Concrete Pipe 30" Dia., Class V	250	L.F.	$ 21.60	$ 5,400.00
	Lined Channel, 13' x 3' x 2.5'	2150	L.F.	22.10	47,515.00
U	———	———	———	———	———
V	———	———	———	———	———
W	Reinforced Concrete Pipe 33" Dia., Class V	150	L.F.	24.00	3,600.00
	Lined Channel, 10' x 2' x 2'	2200	L.F.	17.00	37,400.00
X	———	———	———	———	———
Y	Reinforced Concrete Pipe				
	a. 27" Dia., Class III	50	L.F.	18.00	900.00
	b. 48" Dia., Class III	75	L.F.	35.00	2,625.00
	Lined Channel, 14' x 6' x 2'	270	L.F.	23.25	6,277.50
	Catch Basin, 10' Curb Opening	1	Ea.	1,300.00	1,300.00
Z	Reinforced Concrete Pipe				
	a. 30" Dia., Class V	80	L.F.	21.60	1,728.00
	b. 42" Dia., Class V	80	L.F.	36.00	2,880.00
	Lined Channel, 13' x 3' x 2.5'	1250	L.F.	22.10	27,625.00
A_1	Reinforced Concrete Pipe				
	a. 18" Dia., Class V	350	L.F.	13.50	4,725.00
	b. 30" Dia., Class V	350	L.F.	21.60	7,560.00
	Catch Basins, Grated Opening				
	a. 8.0 square feet clear opening	1	Ea.	1,200.00	1,200.00
	b. 3.0 square feet clear opening	1	Ea.	600.00	600.00

PETERSON FIELD AIRPORT DRAINAGE IMPROVEMENTS

Cost Estimate , continued

Basin	Description	Amount	Unit	Unit Price	Total Cost
B_1	———	—	—	—	—
C_1	Reinforced Concrete Pipe 21" Dia., Class III	60	L.F.	$ 15.00	$ 900.00
D_1	Reinforced Concrete Pipe 30" Dia., Class III	60	L.F.	19.00	1,140.00
	Lined Channel, 13' x 3' x 2.5'	250	L.F.	22.10	5,525.00
E_1	———	—	—	—	—
F_1	Reinforced Concrete Pipe 48" Dia., Class V	150	L.F.	41.50	6,225.00
G_1	———	—	—	—	—
H_1	Reinforced Concrete Pipe 30" Dia., Class III	75	L.F.	19.00	1,425.00
	Catch Basin, 16.0' Curb Opening	1	Ea.	1,800.00	1,800.00
I_1	———	—	—	—	—
J_1	———	—	—	—	—
K_1	Lined Channel, 48' x 28' x 5'	300	L.F.	78.30	23,490.00
L_1	Reinforced Concrete Pipe 24" Dia., Class V	100	L.F.	17.50	1,750.00
M_1	Reinforced Concrete Pipe 18" Dia., Class V	100	L.F.	13.50	1,350.00
	TOTAL ESTIMATED COST OF DRAINAGE IMPROVEMENTS				$1,296,007.60

V. RUNOFF CALCULATIONS

The Soil Conservation Service Synthetic Hydrograph Method has been used to calculate the peak flows in this study. A design storm of 50 year return frequency, two inches in intensity, and one hour in duration has been applied to the runoff calculations. The peak flow Qp is calculated using the equation

$$Qp = \frac{484\ A\ Q}{Tp}$$

where

A = Tributary drainage area in square inches

Q = Direct runoff in inches

Tp = Time to peak of hydrograph in hours (Tp = 0.5 + 0.6 Tc, where Tc = time of concentration)

The following calculation sheets show the pertinant parameters used including the SCS curve number used to calculate the direct runoff Q.

Soil Conservation Service – USBR
SYNTHETIC HYDROGRAPH CALCULATIONS

Calc. by WCS

Date 4-11-73

JOB NO.: 720582 PROJECT: Peterson Field Airport Drainage

Sheet 1 of 2

Basin	AREA				Length of Water Course	Elevation Difference	Time of Concentration (hrs)	Time to Peak Flow(hrs)	Direct Runoff Q, inches	Peak Runoff Rate Q_p, cfs	Curve No.'s Remarks	
	Sq.in.	Acres Prelim.	Acres Adjusted	Sq. Miles							E	F
A		425.3	425	0.664	5800	100	0.491	0.795	0.217	90.2	69	69
B		187.6	188	0.294	5300	75	0.494	0.797	0.217	38.6	69	69
C		531.3	531	0.829	11600	150	0.936	1.06	0.217	82.1/3050	69	--
D		39.9	40	0.062	4000	52	0.411	0.747	0.217	8.8	69	69
E		34.0	34	0.053	1900	30	0.215	0.629	0.217	9.0	69	69
F		17.2	17	0.026	1400	40	0.135	0.581	0.217/1.57	4.8/35	69	96
G		13.5	13	0.020	2000	20	0.267	0.660	0.217/1.57	3.2/23.4	69	96
H		23.6	24	0.037	2360	35	0.260	0.656	0.241/0.414	6.4/11.4	70	76
I		33.3	33	0.051	1419	21	0.176	0.605	0.216	8.9	69	69
J		7.2	7.0	0.011	850	15	0.111	0.566	1.40/2.0	13.0/18.9	94	100
K		18.6	19	0.029	1300	25	0.148	0.589	0.216/2.0	5.3/48.8	69	100
L		14.0	14	0.021	1100	10	0.174	0.604	0.217	3.8	69	69
M		14.7	15	0.023	1100	18	0.139	0.583	0.216/2.0	4.2/38.8	69	100
N		24.2	24	0.037	2360	34	0.263	0.658	0.241/0.414	6.6/11.4	70	76
P		21.1	21	0.033	2300	20	0.313	0.688	0.217/0.414	5.0/9.5	69	76
Q		33.7	34	0.053	2450	30	0.288	0.673	0.217	8.2	69	69
R		73.2	73	0.114	2800	30	0.336	0.702	0.216/0.413	17.0/32.5	69	76
S		17.6	18	0.028	1000	7	0.179	0.608	0.217	5.0	69	69
T		29.2	29	0.0453	2200	35	0.240	0.644	0.217	7.0	69	69

Soil Conservation Service – USBR
SYNTHETIC HYDROGRAPH CALCULATIONS

Calc. by WCS
Date 4-11-73
Sheet 2 of 2

JOB NO.: 720582 PROJECT: Peterson Field Airport Drainage

Basin	AREA Acres Sq.In.	AREA Acres Prelim.	AREA Acres Adjusted	AREA Sq. Miles	Length of Water Course	Elevation Difference	Time of Concentration (hrs)	Time to Peak Flow(hrs)	Direct Runoff Q, inches	Peak Runoff Rate Q_p, cfs	Curve No.'s Remarks E	Curve No.'s Remarks F
U		9.6	10	0.016	2150	38	0.226	0.636	0.217/2.0	2.6/23.7	69	100
V		9.9	10	0.016	2150	38	0.226	0.636	0.217/2.0	2.6/23.7	69	100
W		13.8	14	0.021	2400	40	0.252	0.651	0.217/1.57	3.5/25.6	69	96
X		16.5	16	0.025	2400	20	0.329	0.697	0.217	3.8	69	69
Y		19.5	19	0.029	1900	33	0.207	0.624	1.40	5.0/32.0	70	94
Z		25.7	26	0.040	1700	26	0.199	0.619	0.217/1.77	6.8/56.2	69	98
A_1		20.3	20	0.031	2300	32.5	0.260	0.656	2.0	46.1	100	100
B_1		3.3	3	0.004	250	2.8	0.051	0.530	1.77	7.5	98	98
C_1		9.5	10	0,015	900	5.	0.181	0.608	1.40	17.3	94	94
D_1		8.3	8	0.012	900	6	0.169	0.601	1.40/2.0	140/20.1	94	100
E_1		8.4	8.4	0.013	1150	16	0.153	0.592	0.216/2.0	2.3/21.4	69	100
F_1		14.0	14	0.021	1100	10	0.174	0.604	0.216	3.8	69	69
G_1		8.4	8.4	0.013	1150	16	0.153	0.592	0.216/20	2.3/21.4	69	100
H_1		20.6	21	0.032	1100	16	0.145	0.587	0.216/2.0	5.8/54.0	69	100
I_1		19.7	20	0.031	2450	35	0.0271	0.663	0.216/2.0	5.0/45.6	69	100
J_1		4.6	4.6	0.007	600	7	0.099	0.559	0.216/2.0	1.3/12.4	69	100
K_1		9.4	9.4	0.014	500	3	0.111	0.567	0.216	2.7	69	69
L_1		22.9	23	0.036	2500	20 (F)	0.330	0.698	0.216	5.4	69	69
M_1		3.8	4	0.0063	400	5(F)	0.070	0.542	0.216	1.2	69	69