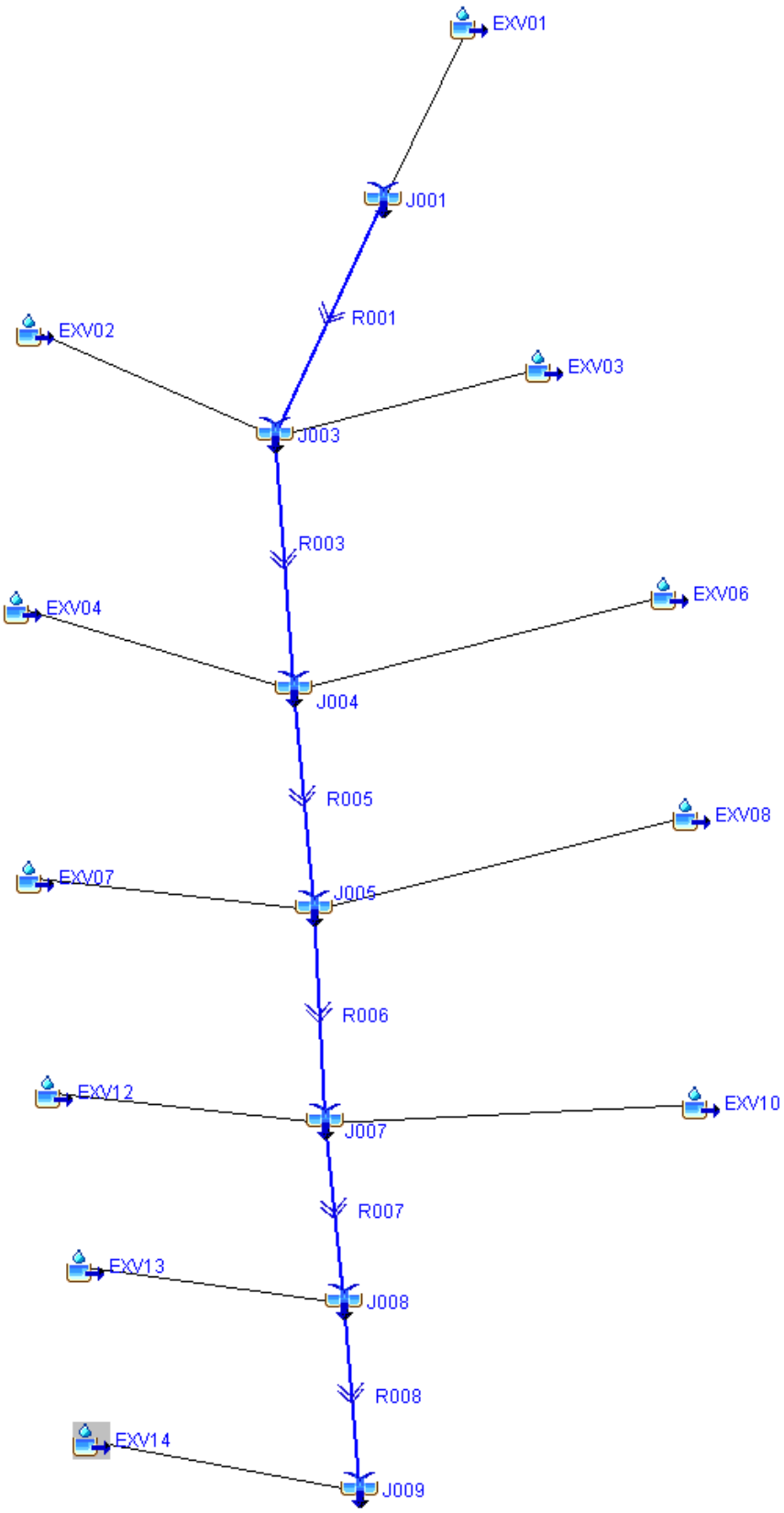
CHAPTER 3

100-Year Unit Hydrograph Hydrologic Model for Existing Conditions

CHAPTER 3

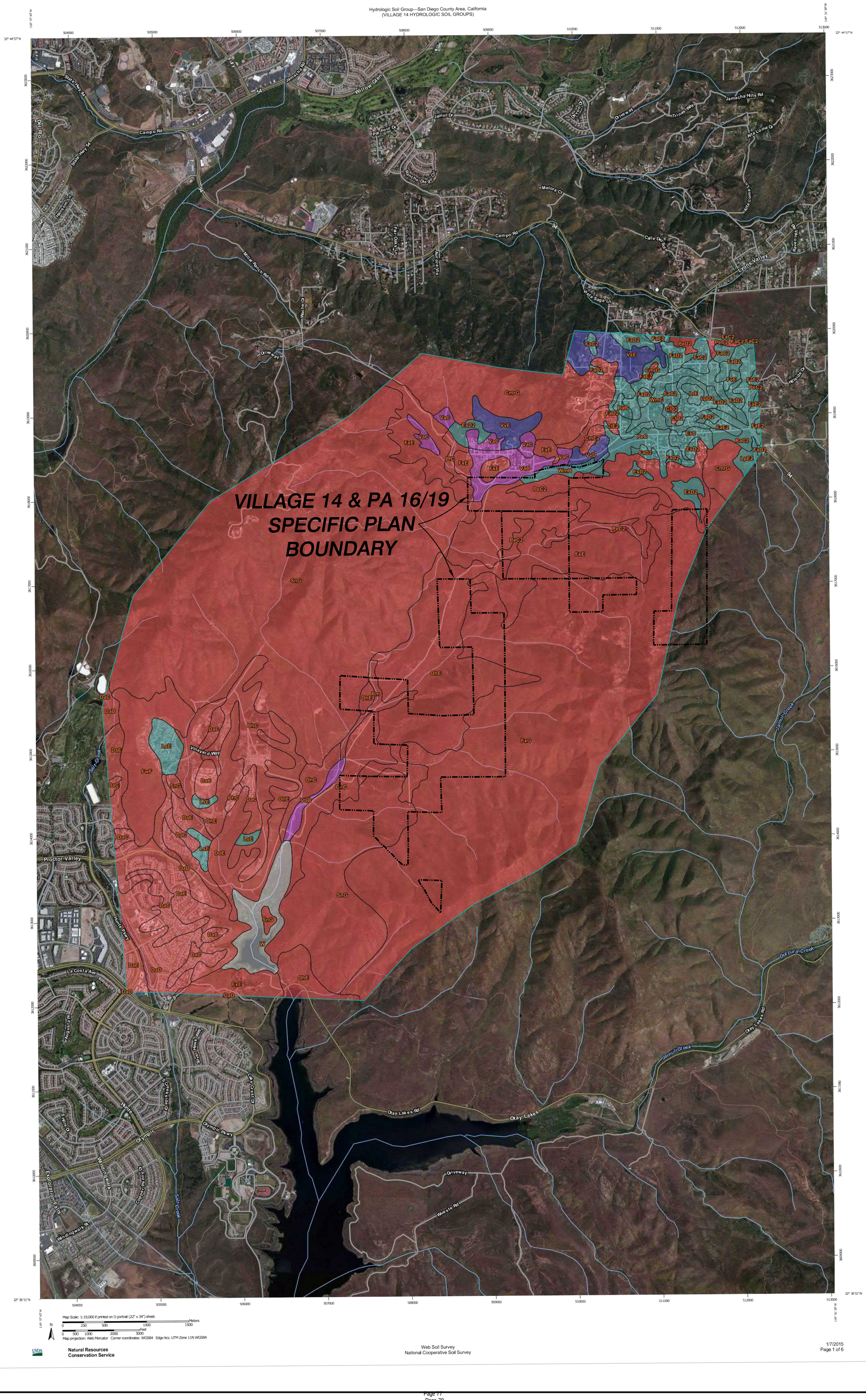
3.1 – Unit Hydrograph Hydrologic Analysis (HEC HMS)


EXV01
J001
R001
EXV02
EXV03
J003
R003
EXV04
EXV06
J004
R005
EXV08
EXV07
J005
R006
EXV12
EXV10
J007
R007
EXV13
J008
R008
EXV14
J009

Existing Conditions

Subarea	Total Acres	Soil Type	Acreage	CN	Soil Type	Acreage	CN	Soil Type	Acreage	CN	Soil Type	Acreage	CN	$CN_{2.0}$	$CN_{2.7}$
EXV01	953.77	A	155.7	41	B	71.7	64	C	591.5	75	D	134.87	85	70	81
EXV02	932.77	A	0	41	B	0	62	C	0	74	D	932.77	85	85	91
EXV03	889.16	A	0	41	B	0	62	C	0	74	D	889.16	85	85	91
EXV04	633.99	A	0	41	B	0	62	C	0	74	D	633.99	85	85	91
EXV06	591.83	A	0	41	B	0	62	C	0	74	D	591.83	85	85	91
EXV07	373.90	A	0	41	B	0	62	C	0	74	D	373.90	85	85	91
EXV08	997.21	A	0	41	B	0	62	C	0	74	D	997.21	85	85	91
EXV09	429.36	A	0	41	B	0	62	C	0	74	D	429.36	85	85	91
EXV11	309.18	A	0	41	B	0	62	C	0	74	D	309.18	85	85	91
EXV12	112.53	A	0	41	B	0	62	C	0	74	D	112.53	85	85	91
EXV13	656.95	A	0	41	B	4.13	62	C	0	74	D	652.82	85	85	91

Hydrologic Soil Group—San Diego County Area, California
(VILLAGE 14 HYDROLOGIC SOIL GROUPS)



HEC-HMS Basin Input-Existing Conditions

Subarea	Area (ft^2)	Area (mi^2)	"n" value	L (ft)	L_c (ft)	L (miles)	L_c (miles)	$Elev_1$ (ft)	$Elev_2$ (ft)	$Elev_{(1-2)}$ (ft)	Slope (ft/mile)	Corps T_1 (hrs)	NRCS T_1 (hrs)	NRCS T_1 (min)
EXV01	41546298.4	1.490	0.050	10200	5571	1.932	1.055	1148.0	868.0	280	144.941	0.61	0.52	31.10
EXV02	40631422.4	1.457	0.050	8232	3865	1.559	0.732	2510.0	820.0	1690	1083.965	0.33	0.28	16.80
EXV03	38731994.7	1.389	0.050	11165	7918	2.115	1.500	2042.0	820.0	1222	577.892	0.56	0.47	28.24
EXV04	27616564.8	0.991	0.050	7749	3323	1.468	0.629	2060.0	618.0	1442	982.547	0.31	0.26	15.76
EXV06	25780074.4	0.925	0.050	11382	5784	2.156	1.095	1910.0	618.0	1292	599.346	0.49	0.42	25.02
EXV07	16286919.6	0.584	0.050	11505	5479	2.179	1.038	2560.0	588.0	1972	905.012	0.45	0.38	22.71
EXV08	43438392.5	1.558	0.050	11576	6847	2.192	1.297	1910.0	588.0	1322	602.985	0.53	0.45	26.85
EXV10	18703089.0	0.671	0.050	9065	6947	1.717	1.316	1870.0	568.0	1302	758.363	0.46	0.39	23.50
EXV11	0.0	0.000	0.050	8973	5061	1.699	0.959	1870.0	580.0	1290	759.077	0.41	0.34	20.69
EXV12	13468052.8	0.483	0.050	6665	4490	1.262	0.850	1095.0	568.0	527	417.488	0.39	0.33	19.76
EXV13	4901874.8	0.176	0.050	2964	2964	0.561	0.561	774.0	558.0	216	384.777	0.25	0.21	12.41
EXV14	28616610.3	1.026	0.050	11978	8327	2.269	1.577	1720.0	515.0	1205	531.174	0.59	0.50	30.08
Total Check	299721293.620	10.751												

Lag Equations from SD County Manual (2003)

Corps $T_1 = 24n((L \times L_c)/(s^{0.5}))^m$

NRCS $T_1 = T_p - 0.5D$

$T_p = 0.862 * \text{Corps } T_1$

HEC-HMS Routing Input-Existing Conditions

Subarea	Reach	U/S Node	D/S Node	Length (ft)	U/S Elev (ft)	D/S Elev (ft)	Slope (ft/ft)	Slope (ft/mi)	"n" value	Channel Type	Dimensions
EXV01	R001	J001	J003	2189	868.0	818.0	0.02284	120.60302	0.05	Trap	50' (W), 3H:1V
EXV04	R003	J003	J004	8460	818.0	618.0	0.02364	124.82270	0.05	Trap	30' (W), 3H:1V
EXV07	R005	J004	J005	2399	618.0	588.0	0.01251	66.02751	0.05	Trap	50' (W), 8H:1V
EXV12	R006	J005	J007	2125	588.0	568.0	0.00941	49.69412	0.05	Trap	50' (W), 8H:1V
EXV13	R007	J007	J008	1409	568.0	558.0	0.00710	37.47339	0.05	Trap	20' (W), 3H:1V
EXV14	R008	J008	J009	4455	558.0	515.0	0.00965	50.96296	0.05	Trap	50' (W), 3H:1V

OTAY RANCH VILLAGE 14

HEC HMS HYETOGRAPH CALCULATIONS

SD COUNTY HYETOGRAPH CALCULATIONS

Area	(sq ft)	(sq mi)	
EXV01	41546298.41	1.49	953.77
EXV02	40631422.43	1.46	932.77
EXV03	38731994.66	1.39	889.16
EXV04	27616564.76	0.99	633.99
EXV06	25780074.4	0.92	591.83
EXV07	16286919.58	0.58	373.90
EXV08	43438392.48	1.56	997.21
EXV10	18703089.01	0.67	429.36
EXV11	0	0.00	0.00
EXV12	13468052.84	0.48	309.18
EXV13	4901874.77	0.18	112.53
EXV14	28616610.28	1.03	656.95
Total	299721293.6	10.75	6880.65

Watershed area	**Rainfall Depth-Area Adjustment Data Points**					
(sq mi)	30	60	180	360	1440	
10	0.9	0.947	0.97	0.98	0.985	Taken from Table 4-1
10.75	**0.895**	**0.943**	**0.969**	**0.979**	**0.984**	Interpolated
20	0.834	0.9	0.952	0.963	0.975	Taken from Table 4-1

P(6)= 3.1 in

RAINFALL DISTRIBUTION SORTED IN ORDER OF INCREASING DURATION

CALCULATED RAINFALL SORTED IN (2/3,1/3) DISTRIBUTION

Duration (min)	Rainfall Precipitation for Duration (in)	Depth Area Adjustment for Duration	Depth-Area Adjusted Precipitation (in)	Hyetograph Ordinate (in)		Sorted Hyetograph Ordinate (in)
5	0.681	0.895	0.609	0.609	1	0.010
10	0.871	0.895	0.779	0.170	2	0.010
15	1.005	0.895	0.900	0.121	3	0.010
20	1.113	0.895	0.997	0.097	4	0.011
25	1.205	0.895	1.079	0.082	5	0.011
30	1.286	0.895	1.151	0.072	6	0.011
35	1.358	0.903	1.227	0.076	7	0.011
40	1.424	0.911	1.298	0.071	8	0.011
45	1.485	0.919	1.365	0.067	9	0.011
50	1.541	0.927	1.429	0.064	10	0.011
55	1.594	0.935	1.491	0.062	11	0.011
60	1.644	0.943	1.552	0.060	12	0.011
65	1.692	0.945	1.598	0.046	13	0.011
70	1.737	0.946	1.642	0.044	14	0.011
75	1.780	0.947	1.685	0.043	15	0.011
80	1.821	0.948	1.726	0.041	16	0.011
85	1.861	0.949	1.765	0.040	17	0.011
90	1.899	0.950	1.804	0.038	18	0.011
95	1.936	0.951	1.841	0.037	19	0.011
100	1.971	0.952	1.877	0.036	20	0.011
105	2.006	0.953	1.911	0.035	21	0.011
110	2.039	0.954	1.945	0.034	22	0.011
115	2.072	0.955	1.979	0.033	23	0.011
120	2.103	0.956	2.011	0.032	24	0.011
125	2.134	0.957	2.042	0.032	25	0.011
130	2.164	0.958	2.073	0.031	26	0.011
135	2.193	0.959	2.104	0.030	27	0.011
140	2.222	0.960	2.133	0.030	28	0.011
145	2.249	0.961	2.162	0.029	29	0.011
150	2.277	0.962	2.191	0.029	30	0.011
155	2.303	0.963	2.219	0.028	31	0.011
160	2.329	0.964	2.247	0.028	32	0.011
165	2.355	0.966	2.274	0.027	33	0.011
170	2.380	0.967	2.300	0.027	34	0.011
175	2.405	0.968	2.327	0.026	35	0.011

180	2.429	0.969	2.353	0.026	36	0.012
185	2.453	0.969	2.376	0.024	37	0.012
190	2.476	0.969	2.400	0.023	38	0.012
195	2.499	0.969	2.423	0.023	39	0.012
200	2.521	0.970	2.445	0.023	40	0.012
205	2.544	0.970	2.467	0.022	41	0.012
210	2.565	0.970	2.489	0.022	42	0.012
215	2.587	0.971	2.511	0.022	43	0.012
220	2.608	0.971	2.532	0.021	44	0.012
225	2.629	0.971	2.553	0.021	45	0.012
230	2.650	0.971	2.574	0.021	46	0.012
235	2.670	0.972	2.595	0.020	47	0.012
240	2.690	0.972	2.615	0.020	48	0.012
245	2.710	0.972	2.635	0.020	49	0.012
250	2.729	0.973	2.654	0.020	50	0.012
255	2.749	0.973	2.674	0.019	51	0.012
260	2.768	0.973	2.693	0.019	52	0.012
265	2.786	0.973	2.712	0.019	53	0.012
270	2.805	0.974	2.731	0.019	54	0.012
275	2.823	0.974	2.750	0.019	55	0.012
280	2.841	0.974	2.768	0.018	56	0.012
285	2.859	0.975	2.786	0.018	57	0.012
290	2.877	0.975	2.804	0.018	58	0.012
295	2.894	0.975	2.822	0.018	59	0.012
300	2.912	0.975	2.840	0.018	60	0.012
305	2.929	0.976	2.858	0.018	61	0.013
310	2.946	0.976	2.875	0.017	62	0.013
315	2.963	0.976	2.892	0.017	63	0.013
320	2.979	0.976	2.909	0.017	64	0.013
325	2.996	0.977	2.926	0.017	65	0.013
330	3.012	0.977	2.943	0.017	66	0.013
335	3.028	0.977	2.959	0.017	67	0.013
340	3.044	0.978	2.976	0.016	68	0.013
345	3.060	0.978	2.992	0.016	69	0.013
350	3.076	0.978	3.008	0.016	70	0.013
355	3.091	0.978	3.024	0.016	71	0.013
360	3.106	0.979	3.040	0.016	72	0.013
365	3.021	0.979	2.957	0.018	73	0.013
370	3.041	0.979	2.977	0.020	74	0.013
375	3.062	0.979	2.997	0.020	75	0.013
380	3.082	0.979	3.017	0.020	76	0.013
385	3.102	0.979	3.037	0.020	77	0.013
390	3.122	0.979	3.057	0.020	78	0.013
395	3.142	0.979	3.076	0.020	79	0.013
400	3.162	0.979	3.096	0.019	80	0.014
405	3.182	0.979	3.115	0.019	81	0.014
410	3.202	0.979	3.134	0.019	82	0.014
415	3.221	0.979	3.153	0.019	83	0.014
420	3.240	0.979	3.172	0.019	84	0.014
425	3.260	0.979	3.191	0.019	85	0.014
430	3.279	0.979	3.210	0.019	86	0.014
435	3.298	0.979	3.229	0.019	87	0.014
440	3.317	0.979	3.247	0.019	88	0.014
445	3.335	0.979	3.266	0.018	89	0.014
450	3.354	0.979	3.284	0.018	90	0.014
455	3.373	0.979	3.303	0.018	91	0.014
460	3.391	0.979	3.321	0.018	92	0.014
465	3.410	0.979	3.339	0.018	93	0.014
470	3.428	0.979	3.357	0.018	94	0.014
475	3.446	0.979	3.375	0.018	95	0.014
480	3.464	0.979	3.393	0.018	96	0.015
485	3.482	0.979	3.410	0.018	97	0.015
490	3.500	0.979	3.428	0.018	98	0.015
495	3.518	0.979	3.445	0.018	99	0.015
500	3.536	0.979	3.463	0.017	100	0.015
505	3.553	0.979	3.480	0.017	101	0.015

510	3.571	0.979	3.497	0.017	102	0.015
515	3.588	0.980	3.515	0.017	103	0.015
520	3.606	0.980	3.532	0.017	104	0.015
525	3.623	0.980	3.549	0.017	105	0.015
530	3.640	0.980	3.566	0.017	106	0.015
535	3.657	0.980	3.583	0.017	107	0.015
540	3.674	0.980	3.599	0.017	108	0.016
545	3.691	0.980	3.616	0.017	109	0.016
550	3.708	0.980	3.633	0.017	110	0.016
555	3.725	0.980	3.649	0.017	111	0.016
560	3.742	0.980	3.666	0.016	112	0.016
565	3.758	0.980	3.682	0.016	113	0.016
570	3.775	0.980	3.699	0.016	114	0.016
575	3.791	0.980	3.715	0.016	115	0.016
580	3.808	0.980	3.731	0.016	116	0.016
585	3.824	0.980	3.747	0.016	117	0.016
590	3.841	0.980	3.763	0.016	118	0.017
595	3.857	0.980	3.779	0.016	119	0.017
600	3.873	0.980	3.795	0.016	120	0.017
605	3.889	0.980	3.811	0.016	121	0.017
610	3.905	0.980	3.827	0.016	122	0.017
615	3.921	0.980	3.843	0.016	123	0.017
620	3.937	0.980	3.858	0.016	124	0.017
625	3.953	0.980	3.874	0.016	125	0.017
630	3.969	0.980	3.890	0.016	126	0.018
635	3.984	0.980	3.905	0.016	127	0.018
640	4.000	0.980	3.921	0.015	128	0.018
645	4.016	0.980	3.936	0.015	129	0.018
650	4.031	0.980	3.951	0.015	130	0.018
655	4.047	0.980	3.967	0.015	131	0.018
660	4.062	0.980	3.982	0.015	132	0.018
665	4.077	0.980	3.997	0.015	133	0.018
670	4.093	0.980	4.012	0.015	134	0.019
675	4.108	0.980	4.027	0.015	135	0.019
680	4.123	0.980	4.042	0.015	136	0.019
685	4.138	0.980	4.057	0.015	137	0.019
690	4.153	0.980	4.072	0.015	138	0.019
695	4.168	0.980	4.087	0.015	139	0.019
700	4.183	0.980	4.102	0.015	140	0.020
705	4.198	0.980	4.116	0.015	141	0.020
710	4.213	0.981	4.131	0.015	142	0.020
715	4.228	0.981	4.146	0.015	143	0.020
720	4.243	0.981	4.160	0.015	144	0.016
725	4.257	0.981	4.175	0.015	145	0.016
730	4.272	0.981	4.189	0.014	146	0.016
735	4.287	0.981	4.204	0.014	147	0.016
740	4.301	0.981	4.218	0.014	148	0.017
745	4.316	0.981	4.232	0.014	149	0.017
750	4.330	0.981	4.247	0.014	150	0.017
755	4.345	0.981	4.261	0.014	151	0.017
760	4.359	0.981	4.275	0.014	152	0.018
765	4.373	0.981	4.289	0.014	153	0.018
770	4.387	0.981	4.303	0.014	154	0.018
775	4.402	0.981	4.317	0.014	155	0.018
780	4.416	0.981	4.331	0.014	156	0.019
785	4.430	0.981	4.345	0.014	157	0.019
790	4.444	0.981	4.359	0.014	158	0.019
795	4.458	0.981	4.373	0.014	159	0.020
800	4.472	0.981	4.387	0.014	160	0.020
805	4.486	0.981	4.401	0.014	161	0.020
810	4.500	0.981	4.415	0.014	162	0.021
815	4.514	0.981	4.428	0.014	163	0.021
820	4.528	0.981	4.442	0.014	164	0.022
825	4.541	0.981	4.456	0.014	165	0.022
830	4.555	0.981	4.469	0.014	166	0.023
835	4.569	0.981	4.483	0.014	167	0.023

OTAY RANCH VILLAGE 14

HEC HMS HYETOGRAPH CALCULATIONS

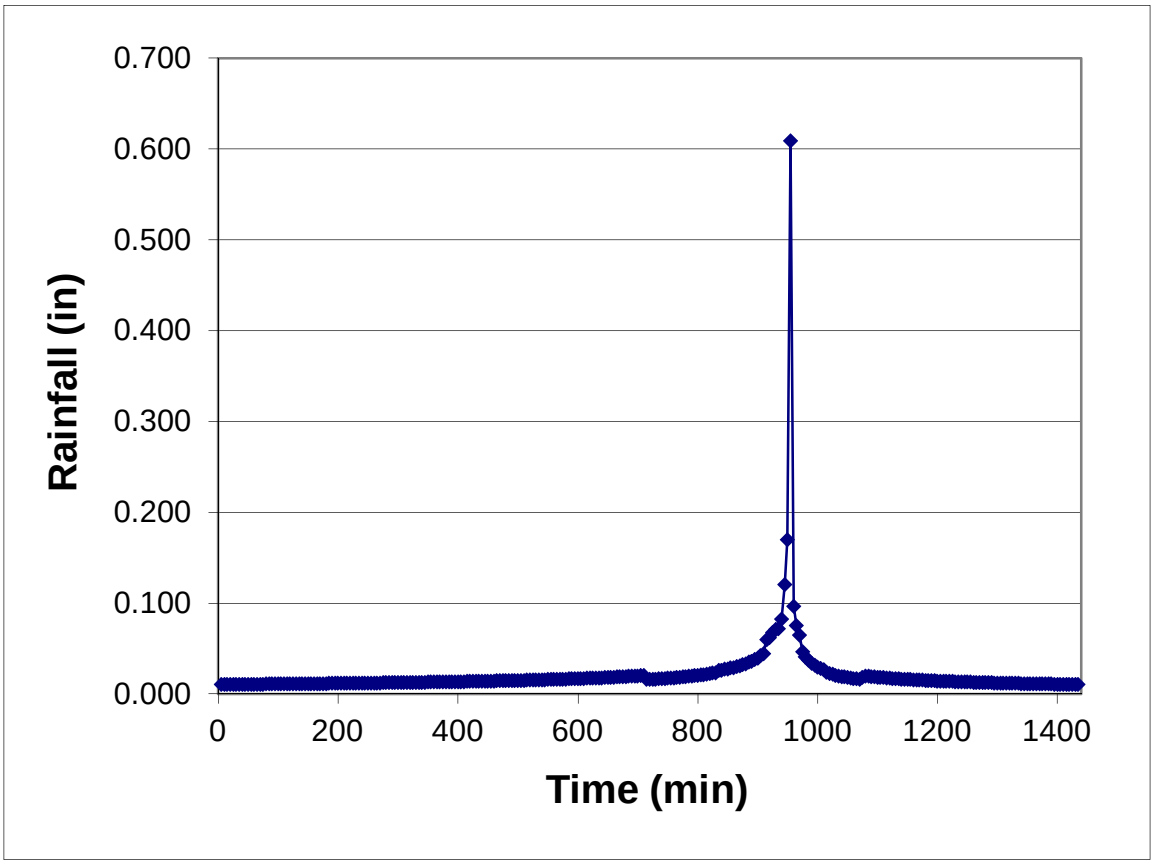
840	4.583	0.981	4.496	0.014	168	0.026
845	4.596	0.981	4.510	0.013	169	0.026
850	4.610	0.981	4.523	0.013	170	0.027
855	4.623	0.981	4.537	0.013	171	0.028
860	4.637	0.981	4.550	0.013	172	0.029
865	4.650	0.981	4.563	0.013	173	0.029
870	4.664	0.981	4.577	0.013	174	0.030
875	4.677	0.981	4.590	0.013	175	0.031
880	4.690	0.981	4.603	0.013	176	0.032
885	4.704	0.981	4.616	0.013	177	0.033
890	4.717	0.981	4.629	0.013	178	0.035
895	4.730	0.981	4.643	0.013	179	0.036
900	4.743	0.981	4.656	0.013	180	0.038
905	4.757	0.982	4.669	0.013	181	0.040
910	4.770	0.982	4.682	0.013	182	0.043
915	4.783	0.982	4.695	0.013	183	0.044
920	4.796	0.982	4.708	0.013	184	0.060
925	4.809	0.982	4.720	0.013	185	0.062
930	4.822	0.982	4.733	0.013	186	0.067
935	4.835	0.982	4.746	0.013	187	0.071
940	4.848	0.982	4.759	0.013	188	0.072
945	4.861	0.982	4.772	0.013	189	0.082
950	4.873	0.982	4.784	0.013	190	0.121
955	4.886	0.982	4.797	0.013	191	0.170
960	4.899	0.982	4.810	0.013	192	0.609
965	4.912	0.982	4.822	0.013	193	0.097
970	4.924	0.982	4.835	0.013	194	0.076
975	4.937	0.982	4.848	0.013	195	0.064
980	4.950	0.982	4.860	0.013	196	0.046
985	4.962	0.982	4.873	0.013	197	0.041
990	4.975	0.982	4.885	0.012	198	0.037
995	4.987	0.982	4.898	0.012	199	0.034
1000	5.000	0.982	4.910	0.012	200	0.032
1005	5.012	0.982	4.922	0.012	201	0.030
1010	5.025	0.982	4.935	0.012	202	0.028
1015	5.037	0.982	4.947	0.012	203	0.027
1020	5.050	0.982	4.959	0.012	204	0.024
1025	5.062	0.982	4.972	0.012	205	0.023
1030	5.074	0.982	4.984	0.012	206	0.022
1035	5.087	0.982	4.996	0.012	207	0.021
1040	5.099	0.982	5.008	0.012	208	0.020
1045	5.111	0.982	5.020	0.012	209	0.019
1050	5.123	0.982	5.033	0.012	210	0.019
1055	5.136	0.982	5.045	0.012	211	0.018
1060	5.148	0.982	5.057	0.012	212	0.018
1065	5.160	0.982	5.069	0.012	213	0.017
1070	5.172	0.982	5.081	0.012	214	0.017
1075	5.184	0.982	5.093	0.012	215	0.016
1080	5.196	0.982	5.105	0.012	216	0.018
1085	5.208	0.982	5.117	0.012	217	0.020
1090	5.220	0.982	5.129	0.012	218	0.020
1095	5.232	0.982	5.140	0.012	219	0.019
1100	5.244	0.983	5.152	0.012	220	0.019
1105	5.256	0.983	5.164	0.012	221	0.019
1110	5.268	0.983	5.176	0.012	222	0.018
1115	5.280	0.983	5.188	0.012	223	0.018
1120	5.292	0.983	5.199	0.012	224	0.018
1125	5.303	0.983	5.211	0.012	225	0.017
1130	5.315	0.983	5.223	0.012	226	0.017
1135	5.327	0.983	5.235	0.012	227	0.017
1140	5.339	0.983	5.246	0.012	228	0.017
1145	5.350	0.983	5.258	0.012	229	0.016
1150	5.362	0.983	5.269	0.012	230	0.016
1155	5.374	0.983	5.281	0.012	231	0.016
1160	5.385	0.983	5.293	0.012	232	0.016
1165	5.397	0.983	5.304	0.012	233	0.016

1170	5.408	0.983	5.316	0.012	234	0.016
1175	5.420	0.983	5.327	0.011	235	0.015
1180	5.431	0.983	5.339	0.011	236	0.015
1185	5.443	0.983	5.350	0.011	237	0.015
1190	5.454	0.983	5.361	0.011	238	0.015
1195	5.466	0.983	5.373	0.011	239	0.015
1200	5.477	0.983	5.384	0.011	240	0.015
1205	5.489	0.983	5.396	0.011	241	0.014
1210	5.500	0.983	5.407	0.011	242	0.014
1215	5.511	0.983	5.418	0.011	243	0.014
1220	5.523	0.983	5.429	0.011	244	0.014
1225	5.534	0.983	5.441	0.011	245	0.014
1230	5.545	0.983	5.452	0.011	246	0.014
1235	5.557	0.983	5.463	0.011	247	0.014
1240	5.568	0.983	5.474	0.011	248	0.013
1245	5.579	0.983	5.486	0.011	249	0.013
1250	5.590	0.983	5.497	0.011	250	0.013
1255	5.601	0.983	5.508	0.011	251	0.013
1260	5.612	0.983	5.519	0.011	252	0.013
1265	5.624	0.983	5.530	0.011	253	0.013
1270	5.635	0.983	5.541	0.011	254	0.013
1275	5.646	0.983	5.552	0.011	255	0.013
1280	5.657	0.983	5.563	0.011	256	0.013
1285	5.668	0.983	5.574	0.011	257	0.013
1290	5.679	0.983	5.585	0.011	258	0.012
1295	5.690	0.984	5.596	0.011	259	0.012
1300	5.701	0.984	5.607	0.011	260	0.012
1305	5.712	0.984	5.618	0.011	261	0.012
1310	5.723	0.984	5.629	0.011	262	0.012
1315	5.734	0.984	5.640	0.011	263	0.012
1320	5.745	0.984	5.651	0.011	264	0.012
1325	5.755	0.984	5.661	0.011	265	0.012
1330	5.766	0.984	5.672	0.011	266	0.012
1335	5.777	0.984	5.683	0.011	267	0.012
1340	5.788	0.984	5.694	0.011	268	0.012
1345	5.799	0.984	5.705	0.011	269	0.012
1350	5.809	0.984	5.715	0.011	270	0.011
1355	5.820	0.984	5.726	0.011	271	0.011
1360	5.831	0.984	5.737	0.011	272	0.011
1365	5.842	0.984	5.747	0.011	273	0.011
1370	5.852	0.984	5.758	0.011	274	0.011
1375	5.863	0.984	5.769	0.011	275	0.011
1380	5.874	0.984	5.779	0.011	276	0.011
1385	5.884	0.984	5.790	0.011	277	0.011
1390	5.895	0.984	5.801	0.011	278	0.011
1395	5.906	0.984	5.811	0.011	279	0.011
1400	5.916	0.984	5.822	0.011	280	0.011
1405	5.927	0.984	5.832	0.011	281	0.011
1410	5.937	0.984	5.843	0.011	282	0.011
1415	5.948	0.984	5.853	0.011	283	0.011
1420	5.958	0.984	5.864	0.010	284	0.011
1425	5.969	0.984	5.874	0.010	285	0.011
1430	5.979	0.984	5.885	0.010	286	0.011
1435	5.990	0.984	5.895	0.010	287	0.010
1440	6.000	0.984	5.905	0.010	288	0.010

OTAY RANCH VILLAGE 14

HEC HMS HYETOGRAPH CALCULATIONS

CALCULATED RAINFALL SORTED IN (2/3,1/3) DISTRIBUTION



CHAPTER 3

3.2 – Existing Condition Hydrology Map

600 0 600 1200 1800

SCALE 1" = 600'

EXV01
953.77 acres

EXV02
932.77 acres

SPECIFIC PLAN
BOUNDARY

J001
Q100 = 1,528 cfs

EX. PROCTOR
VALLEY RD.

J003
Q100 = 4,928 cfs

EXV03
889.16 acres

EXV04
633.99 acres

EXV06
591.83 acres

EXV07
337.90 acres

SPECIFIC PLAN
BOUNDARY

J004
Q100 = 7,076 cfs

EXV12
309.18 acres

EX. PROCTOR
VALLEY RD.

EXV08
997.21 acres

J005
Q100 = 9,660 cfs

EXV013
112.53 acres

J007
Q100 = 10,955 cfs

Q100 = 881 cfs

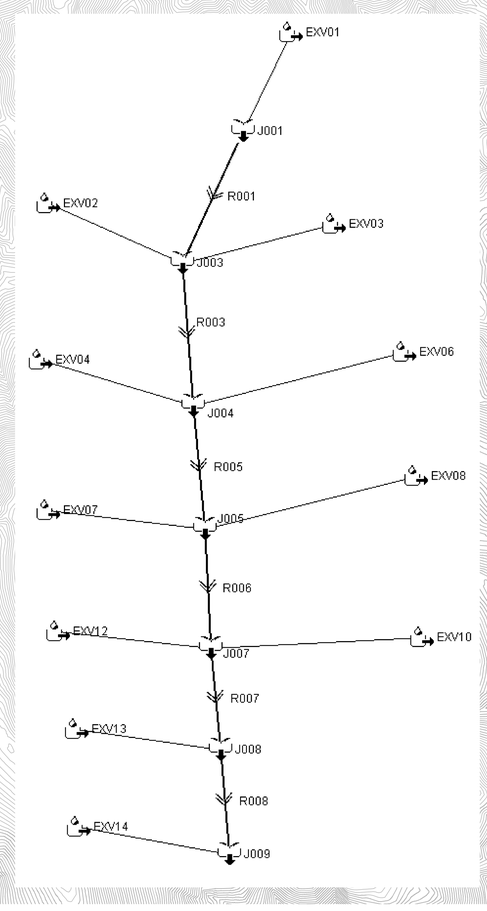
EXV10
429.36 acres

J008
Q100 = 10,991 cfs

EX. PROCTOR
VALLEY RD.

EXV14
656.95 acres

J009
Q100 = 12,036 cfs



LEGEND:

EXVxx
xx.xx acres — DRAINAGE AREA

SUBAREA BOUNDARY

PREPARED BY:

HUNSAKER & ASSOCIATES
SAN DIEGO, INC

PLANNING 9707 Waples Street
ENGINEERING San Diego, Ca 92121
SURVEYING PH(858)558-4500 · FX(858)558-1414

EXHIBIT 3.1
EXISTING CONDITION HEC-HMS HYDROLOGY MAP

LAND EXCHANGE ALTERNATIVE

COUNTY OF SAN DIEGO, CALIFORNIA

W.O.# 2421-0051

R:\1235\Hyd\ACAD\HYDRO\TM- Land Exchange EIR\1235- HEC HMS V14- EX.dwg[]May-16-2017:14:25

600 0 600 1200 1800

SCALE 1" = 600'

EXV01
953.77 acres

EXV02
932.77 acres

SPECIFIC PLAN
BOUNDARY

J001
Q100 = 1,528 cfs

J003
Q100 = 4,928 cfs

EXV03
889.16 acres

EXV04
633.99 acres

EXV06
591.83 acres

EXV07
337.90 acres

J004
Q100 = 7,076 cfs

SPECIFIC PLAN
BOUNDARY

EXV12
309.18 acres

EXV08
997.21 acres

J005
Q100 = 9,660 cfs

EXV013
112.53 acres

J007
Q100 = 10,955 cfs

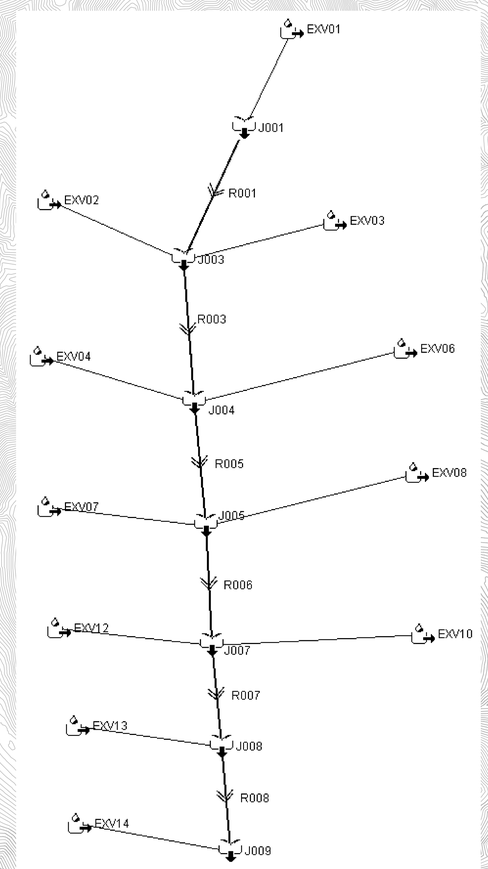
Q100 = 881 cfs

EXV10
429.36 acres

J008
Q100 = 10,991 cfs

EXV14
656.95 acres

J009
Q100 = 12,036 cfs



LEGEND:

EXVxx
xx.xx acres — DRAINAGE AREA

SUBAREA BOUNDARY

PREPARED BY:

HUNSAKER & ASSOCIATES
SAN DIEGO, INC

PLANNING 9707 Waples Street
ENGINEERING San Diego, Ca 92121
SURVEYING PH(858)558-4500 FX(858)558-1414

EXHIBIT 3.1

EXISTING CONDITION HEC-HMS HYDROLOGY MAP

LAND EXCHANGE ALTERNATIVE

COUNTY OF SAN DIEGO, CALIFORNIA

W.O.# 2421-0031

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CHAPTER 4

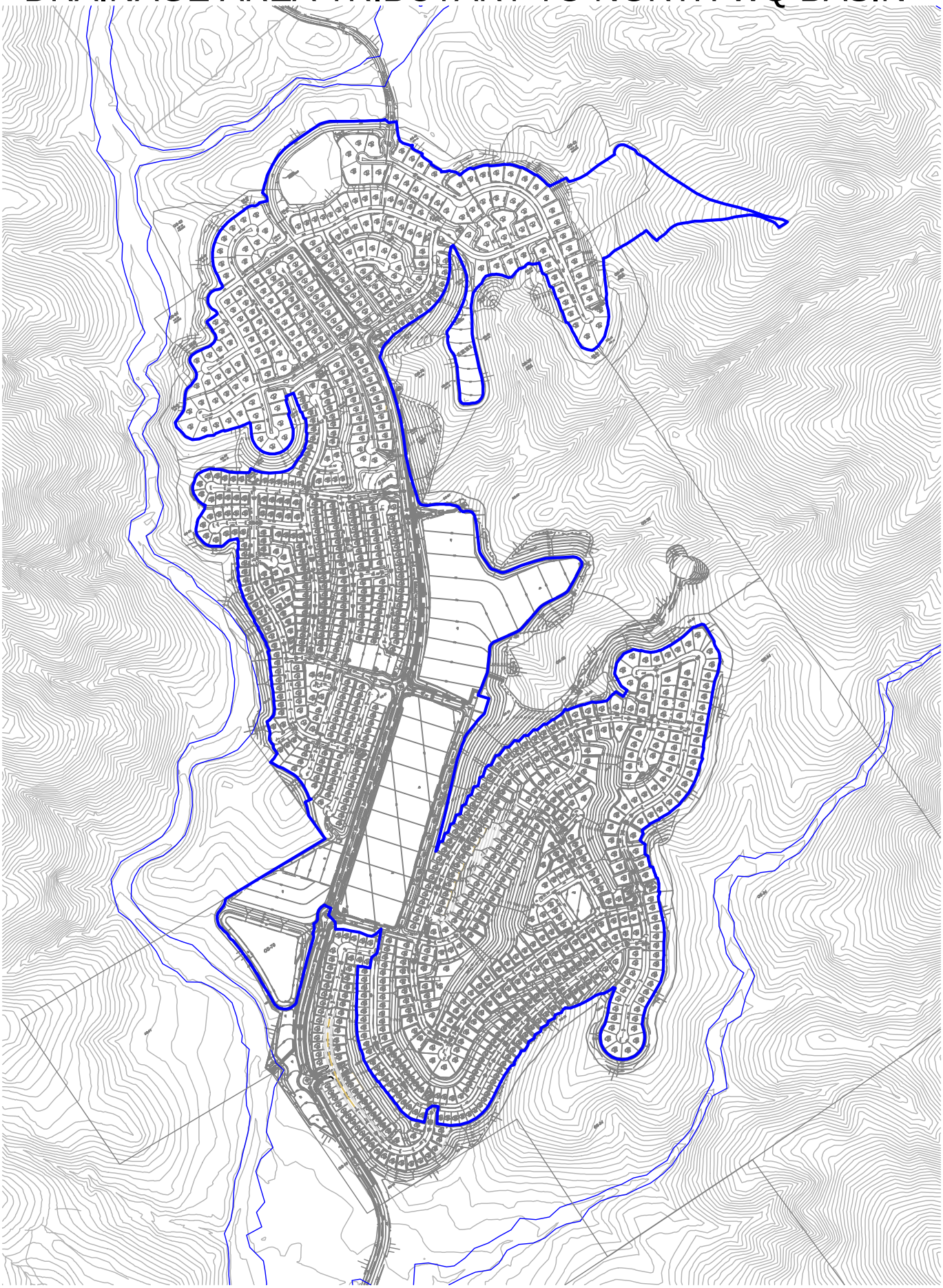
Rational Method Hydrologic Model for Proposed Condition

CHAPTER 4

4.1.1 – Rational Method Hydrologic Analysis (AES 2015)

Drainage Area Tributary to North WQ Basin

LAND EXCHANGE ALTERNATIVE
DRAINAGE AREA TRIBUTARY TO NORTH WQ BASIN



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W.O.# 3087-0002

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****************************************************************************

           RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                        2003,1985,1981 HYDROLOGY MANUAL
        (c) Copyright 1982-2010 Advanced Engineering Software (aes)
            Ver. 17.0 Release Date: 07/01/2010  License ID 1239

                        Analysis prepared by:

                  Hunsaker & Associates San Diego, Inc.
                           9707 Waples Street
                          San Diego,  CA  92121


 ************************* DESCRIPTION OF STUDY *************************
* VILLAGE 14 TM HYDROLOGY ANALYSIS                                      *
* AREA TO NORTH BASIN                                                   *
* 100-YEAR RETURN INTERVAL.  W.O. 2421-31                               *
 ************************************************************************

  FILE NAME: R:\1235\HYD\CALCS\AES\TM\N100.DAT
  TIME/DATE OF STUDY: 13:11 06/16/2015
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.100
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  =====  ====== =====  =======
  1   16.0      8.0    0.020/0.020/0.020   0.50    2.00 0.0313 0.125 0.0150
  2   12.0      6.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0130
  3   18.0      9.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0130

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE    300.00 TO NODE    301.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    985.95
  DOWNSTREAM ELEVATION(FEET) =    985.25
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      0.80
  TOTAL AREA(ACRES) =      0.27   TOTAL RUNOFF(CFS) =      0.80

****************************************************************************
  FLOW PROCESS FROM NODE    301.00 TO NODE    302.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  984.00  DOWNSTREAM ELEVATION(FEET) =  976.10
  STREET LENGTH(FEET) =   478.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.55
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.30
```

```
    HALFSTREET FLOOD WIDTH(FEET) =    8.56
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.67
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.79
  STREET FLOW TRAVEL TIME(MIN.) =   2.98   Tc(MIN.) =   11.72
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.716
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    3.04      SUBAREA RUNOFF(CFS) =    7.46
  TOTAL AREA(ACRES) =        3.3        PEAK FLOW RATE(CFS) =       8.12

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.35   HALFSTREET FLOOD WIDTH(FEET) =  11.00
  FLOW VELOCITY(FEET/SEC.) =  3.05   DEPTH*VELOCITY(FT*FT/SEC.) =   1.06
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    302.00 =     548.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    302.00 TO NODE    303.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   971.00  DOWNSTREAM(FEET) =   965.00
  FLOW LENGTH(FEET) =   328.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.14
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       8.12
  PIPE TRAVEL TIME(MIN.) =   0.67    Tc(MIN.) =   12.39
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    303.00 =     876.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    303.00 TO NODE    303.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   12.39
  RAINFALL INTENSITY(INCH/HR) =   4.55
  TOTAL STREAM AREA(ACRES) =     3.31
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.12

****************************************************************************
  FLOW PROCESS FROM NODE    305.00 TO NODE    306.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    985.75
  DOWNSTREAM ELEVATION(FEET) =    985.05
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      1.45
  TOTAL AREA(ACRES) =      0.49   TOTAL RUNOFF(CFS) =      1.45

****************************************************************************
  FLOW PROCESS FROM NODE    306.00 TO NODE    307.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  984.00  DOWNSTREAM ELEVATION(FEET) =  969.60
  STREET LENGTH(FEET) =   665.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       7.99
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.32
    HALFSTREET FLOOD WIDTH(FEET) =    9.74
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.74
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.20
  STREET FLOW TRAVEL TIME(MIN.) =   2.96   Tc(MIN.) =   11.69
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.722
  *USER SPECIFIED(SUBAREA):
```

```
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    5.29      SUBAREA RUNOFF(CFS) =   12.99
  TOTAL AREA(ACRES) =        5.8        PEAK FLOW RATE(CFS) =      14.19

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.37   HALFSTREET FLOOD WIDTH(FEET) =  12.41
  FLOW VELOCITY(FEET/SEC.) =  4.28   DEPTH*VELOCITY(FT*FT/SEC.) =   1.60
  LONGEST FLOWPATH FROM NODE    305.00 TO NODE    307.00 =     735.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    307.00 TO NODE    303.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.69
  RAINFALL INTENSITY(INCH/HR) =   4.72
  TOTAL STREAM AREA(ACRES) =     5.78
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     14.19

****************************************************************************
  FLOW PROCESS FROM NODE    310.00 TO NODE    311.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    979.35
  DOWNSTREAM ELEVATION(FEET) =    978.65
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    70.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      0.74
  TOTAL AREA(ACRES) =      0.25   TOTAL RUNOFF(CFS) =      0.74

****************************************************************************
  FLOW PROCESS FROM NODE    311.00 TO NODE    312.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  978.65  DOWNSTREAM ELEVATION(FEET) =  969.60
  STREET LENGTH(FEET) =   330.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.11
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.26
    HALFSTREET FLOOD WIDTH(FEET) =    6.74
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.58
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.94
  STREET FLOW TRAVEL TIME(MIN.) =   1.53   Tc(MIN.) =   10.27
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.134
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    2.52      SUBAREA RUNOFF(CFS) =    6.73
  TOTAL AREA(ACRES) =        2.8        PEAK FLOW RATE(CFS) =       7.40

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.30   HALFSTREET FLOOD WIDTH(FEET) =   8.91
  FLOW VELOCITY(FEET/SEC.) =  4.05   DEPTH*VELOCITY(FT*FT/SEC.) =   1.23
  LONGEST FLOWPATH FROM NODE    310.00 TO NODE    312.00 =     400.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    312.00 TO NODE    303.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
```

```
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.27
  RAINFALL INTENSITY(INCH/HR) =   5.13
  TOTAL STREAM AREA(ACRES) =     2.77
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.40

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        8.12    12.39        4.550          3.31
      2       14.19    11.69        4.722          5.78
      3        7.40    10.27        5.134          2.77

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       26.59    10.27       5.134
      2       28.66    11.69       4.722
      3       28.34    12.39       4.550

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      28.66   Tc(MIN.) =   11.69
  TOTAL AREA(ACRES) =       11.9
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    303.00 =     876.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    303.00 TO NODE    313.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   965.00  DOWNSTREAM(FEET) =   902.00
  FLOW LENGTH(FEET) =   653.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  20.37
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      28.66
  PIPE TRAVEL TIME(MIN.) =   0.53    Tc(MIN.) =   12.23
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    313.00 =    1529.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    313.00 TO NODE    313.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   12.23
  RAINFALL INTENSITY(INCH/HR) =   4.59
  TOTAL STREAM AREA(ACRES) =    11.86
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     28.66

****************************************************************************
  FLOW PROCESS FROM NODE    315.00 TO NODE    316.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    967.95
  DOWNSTREAM ELEVATION(FEET) =    967.25
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      0.92
  TOTAL AREA(ACRES) =      0.31   TOTAL RUNOFF(CFS) =      0.92

****************************************************************************
  FLOW PROCESS FROM NODE    316.00 TO NODE    317.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  967.25  DOWNSTREAM ELEVATION(FEET) =  908.00
  STREET LENGTH(FEET) =   522.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140
```

```
    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.64
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.25
    HALFSTREET FLOOD WIDTH(FEET) =    6.33
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.02
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.77
  STREET FLOW TRAVEL TIME(MIN.) =   1.24   Tc(MIN.) =    9.97
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.232
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    2.00      SUBAREA RUNOFF(CFS) =    5.44
  TOTAL AREA(ACRES) =        2.3        PEAK FLOW RATE(CFS) =       6.28

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.29   HALFSTREET FLOOD WIDTH(FEET) =   8.21
  FLOW VELOCITY(FEET/SEC.) =  7.93   DEPTH*VELOCITY(FT*FT/SEC.) =   2.30
  LONGEST FLOWPATH FROM NODE    315.00 TO NODE    317.00 =     592.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    317.00 TO NODE    313.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.97
  RAINFALL INTENSITY(INCH/HR) =   5.23
  TOTAL STREAM AREA(ACRES) =     2.31
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.28

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       28.66    12.23        4.587         11.86
      2        6.28     9.97        5.232          2.31

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       31.41     9.97       5.232
      2       34.17    12.23       4.587

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      34.17   Tc(MIN.) =   12.23
  TOTAL AREA(ACRES) =       14.2
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    313.00 =    1529.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    313.00 TO NODE    318.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   902.00  DOWNSTREAM(FEET) =   830.00
  FLOW LENGTH(FEET) =   593.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  22.99
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      34.17
  PIPE TRAVEL TIME(MIN.) =   0.43    Tc(MIN.) =   12.66
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    318.00 =    2122.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    318.00 TO NODE    318.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   12.66
  RAINFALL INTENSITY(INCH/HR) =   4.49
  TOTAL STREAM AREA(ACRES) =    14.17
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     34.17

****************************************************************************
  FLOW PROCESS FROM NODE    320.00 TO NODE    321.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
```

```
  UPSTREAM ELEVATION(FEET) =    910.25
  DOWNSTREAM ELEVATION(FEET) =    909.55
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      0.50
  TOTAL AREA(ACRES) =      0.17   TOTAL RUNOFF(CFS) =      0.50

****************************************************************************
  FLOW PROCESS FROM NODE    321.00 TO NODE    322.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  904.55  DOWNSTREAM ELEVATION(FEET) =  835.00
  STREET LENGTH(FEET) =   543.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.85
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.22
    HALFSTREET FLOOD WIDTH(FEET) =    4.81
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.94
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.54
  STREET FLOW TRAVEL TIME(MIN.) =   1.30   Tc(MIN.) =   10.04
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.210
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    3.21      SUBAREA RUNOFF(CFS) =    8.70
  TOTAL AREA(ACRES) =        3.4        PEAK FLOW RATE(CFS) =       9.16

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.26   HALFSTREET FLOOD WIDTH(FEET) =   6.86
  FLOW VELOCITY(FEET/SEC.) =  7.77   DEPTH*VELOCITY(FT*FT/SEC.) =   2.05
  LONGEST FLOWPATH FROM NODE    320.00 TO NODE    322.00 =     613.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    322.00 TO NODE    318.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.04
  RAINFALL INTENSITY(INCH/HR) =   5.21
  TOTAL STREAM AREA(ACRES) =     3.38
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.16

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       34.17    12.66        4.486         14.17
      2        9.16    10.04        5.210          3.38

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       38.58    10.04       5.210
      2       42.05    12.66       4.486

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      42.05   Tc(MIN.) =   12.66
  TOTAL AREA(ACRES) =       17.5
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    318.00 =    2122.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    318.00 TO NODE    323.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   830.00  DOWNSTREAM(FEET) =   742.00
  FLOW LENGTH(FEET) =   637.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  26.07
```

```
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      42.05
  PIPE TRAVEL TIME(MIN.) =   0.41    Tc(MIN.) =   13.07
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    323.00 =    2759.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    323.00 TO NODE    323.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   13.07
  RAINFALL INTENSITY(INCH/HR) =   4.40
  TOTAL STREAM AREA(ACRES) =    17.55
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     42.05

****************************************************************************
  FLOW PROCESS FROM NODE    325.00 TO NODE    326.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    829.95
  DOWNSTREAM ELEVATION(FEET) =    829.25
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      0.86
  TOTAL AREA(ACRES) =      0.29   TOTAL RUNOFF(CFS) =      0.86

****************************************************************************
  FLOW PROCESS FROM NODE    326.00 TO NODE    327.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  820.00  DOWNSTREAM ELEVATION(FEET) =  747.00
  STREET LENGTH(FEET) =   541.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.05
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.24
    HALFSTREET FLOOD WIDTH(FEET) =    5.46
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.27
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.71
  STREET FLOW TRAVEL TIME(MIN.) =   1.24   Tc(MIN.) =    9.97
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.232
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    3.81      SUBAREA RUNOFF(CFS) =   10.37
  TOTAL AREA(ACRES) =        4.1        PEAK FLOW RATE(CFS) =      11.15

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.28   HALFSTREET FLOOD WIDTH(FEET) =   7.45
  FLOW VELOCITY(FEET/SEC.) =  8.29   DEPTH*VELOCITY(FT*FT/SEC.) =   2.28
  LONGEST FLOWPATH FROM NODE    325.00 TO NODE    327.00 =     611.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    327.00 TO NODE    323.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.97
  RAINFALL INTENSITY(INCH/HR) =   5.23
  TOTAL STREAM AREA(ACRES) =     4.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.15

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       42.05    13.07        4.396         17.55
```

```
      2       11.15     9.97        5.232          4.10

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       46.48     9.97       5.232
      2       51.42    13.07       4.396

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      51.42   Tc(MIN.) =   13.07
  TOTAL AREA(ACRES) =       21.6
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    323.00 =    2759.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    323.00 TO NODE    328.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   742.00  DOWNSTREAM(FEET) =   698.00
  FLOW LENGTH(FEET) =   606.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  17.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  21.29
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      51.42
  PIPE TRAVEL TIME(MIN.) =   0.47    Tc(MIN.) =   13.54
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    328.00 =    3365.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    328.00 TO NODE    328.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   13.54
  RAINFALL INTENSITY(INCH/HR) =   4.30
  TOTAL STREAM AREA(ACRES) =    21.65
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     51.42

****************************************************************************
  FLOW PROCESS FROM NODE    330.00 TO NODE    331.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    810.00
  DOWNSTREAM ELEVATION(FEET) =    800.00
  ELEVATION DIFFERENCE(FEET) =     10.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.061
  SUBAREA RUNOFF(CFS) =      0.57
  TOTAL AREA(ACRES) =      0.23   TOTAL RUNOFF(CFS) =      0.57

****************************************************************************
  FLOW PROCESS FROM NODE    331.00 TO NODE    332.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   800.00  DOWNSTREAM(FEET) =   717.00
  FLOW LENGTH(FEET) =   925.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   1.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.76
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.57
  PIPE TRAVEL TIME(MIN.) =   2.28    Tc(MIN.) =    8.55
  LONGEST FLOWPATH FROM NODE    330.00 TO NODE    332.00 =    1025.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    331.00 TO NODE    332.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.779
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =    1.56   SUBAREA RUNOFF(CFS) =    3.16
  TOTAL AREA(ACRES) =        1.8   TOTAL RUNOFF(CFS) =       3.62
  TC(MIN.) =    8.55
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    332.00 TO NODE    328.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   717.00  DOWNSTREAM(FEET) =   698.00
  FLOW LENGTH(FEET) =   110.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   3.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.68
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.62
  PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =    8.67
  LONGEST FLOWPATH FROM NODE    330.00 TO NODE    328.00 =    1135.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    328.00 TO NODE    328.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.67
  RAINFALL INTENSITY(INCH/HR) =   5.73
  TOTAL STREAM AREA(ACRES) =     1.79
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.62

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       51.42    13.54        4.296         21.65
      2        3.62     8.67        5.725          1.79

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       42.20     8.67       5.725
      2       54.14    13.54       4.296

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      54.14   Tc(MIN.) =   13.54
  TOTAL AREA(ACRES) =       23.4
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    328.00 =    3365.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    328.00 TO NODE    333.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   698.00  DOWNSTREAM(FEET) =   696.00
  FLOW LENGTH(FEET) =    75.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  20.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.87
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      54.14
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =   13.62
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    333.00 =    3440.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    333.00 TO NODE    333.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   13.62
  RAINFALL INTENSITY(INCH/HR) =   4.28
  TOTAL STREAM AREA(ACRES) =    23.44
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     54.14

****************************************************************************
  FLOW PROCESS FROM NODE    335.00 TO NODE    336.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    743.35
  DOWNSTREAM ELEVATION(FEET) =    742.65
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
```

```
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    70.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      0.74
  TOTAL AREA(ACRES) =      0.25   TOTAL RUNOFF(CFS) =      0.74

****************************************************************************
  FLOW PROCESS FROM NODE    336.00 TO NODE    337.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  735.00  DOWNSTREAM ELEVATION(FEET) =  701.00
  STREET LENGTH(FEET) =   565.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.28
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.26
    HALFSTREET FLOOD WIDTH(FEET) =    6.86
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.33
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.41
  STREET FLOW TRAVEL TIME(MIN.) =   1.77   Tc(MIN.) =   10.50
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.061
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    4.20      SUBAREA RUNOFF(CFS) =   11.05
  TOTAL AREA(ACRES) =        4.4        PEAK FLOW RATE(CFS) =      11.71

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.31   HALFSTREET FLOOD WIDTH(FEET) =   9.18
  FLOW VELOCITY(FEET/SEC.) =  6.10   DEPTH*VELOCITY(FT*FT/SEC.) =   1.89
  LONGEST FLOWPATH FROM NODE    335.00 TO NODE    337.00 =     635.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    337.00 TO NODE    333.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.50
  RAINFALL INTENSITY(INCH/HR) =   5.06
  TOTAL STREAM AREA(ACRES) =     4.45
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.71

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       54.14    13.62        4.279         23.44
      2       11.71    10.50        5.061          4.45

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       57.48    10.50       5.061
      2       64.04    13.62       4.279

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      64.04   Tc(MIN.) =   13.62
  TOTAL AREA(ACRES) =       27.9
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    333.00 =    3440.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    333.00 TO NODE    338.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   696.00  DOWNSTREAM(FEET) =   695.00
  FLOW LENGTH(FEET) =    65.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  24.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.66
```

```
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      64.04
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =   13.71
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    338.00 =    3505.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    338.00 TO NODE    338.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    345.00 TO NODE    346.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    950.00
  DOWNSTREAM ELEVATION(FEET) =    940.00
  ELEVATION DIFFERENCE(FEET) =     10.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.061
  SUBAREA RUNOFF(CFS) =      0.62
  TOTAL AREA(ACRES) =      0.25   TOTAL RUNOFF(CFS) =      0.62

****************************************************************************
  FLOW PROCESS FROM NODE    346.00 TO NODE    347.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   940.00  DOWNSTREAM(FEET) =   880.00
  FLOW LENGTH(FEET) =   560.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   1.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.34
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.62
  PIPE TRAVEL TIME(MIN.) =   1.27    Tc(MIN.) =    7.54
  LONGEST FLOWPATH FROM NODE    345.00 TO NODE    347.00 =     660.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    346.00 TO NODE    347.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.268
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =    3.51   SUBAREA RUNOFF(CFS) =    7.70
  TOTAL AREA(ACRES) =        3.8   TOTAL RUNOFF(CFS) =       8.25
  TC(MIN.) =    7.54

****************************************************************************
  FLOW PROCESS FROM NODE    347.00 TO NODE    348.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   865.00  DOWNSTREAM(FEET) =   847.00
  FLOW LENGTH(FEET) =   490.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.62
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       8.25
  PIPE TRAVEL TIME(MIN.) =   0.77    Tc(MIN.) =    8.31
  LONGEST FLOWPATH FROM NODE    345.00 TO NODE    348.00 =    1150.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    348.00 TO NODE    348.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.31
  RAINFALL INTENSITY(INCH/HR) =   5.89
  TOTAL STREAM AREA(ACRES) =     3.76
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.25

****************************************************************************
  FLOW PROCESS FROM NODE    350.00 TO NODE    351.00 IS CODE =  21
----------------------------------------------------------------------------
```

```
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    885.35
  DOWNSTREAM ELEVATION(FEET) =    884.65
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    70.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      1.04
  TOTAL AREA(ACRES) =      0.35   TOTAL RUNOFF(CFS) =      1.04

****************************************************************************
  FLOW PROCESS FROM NODE    351.00 TO NODE    352.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
==============================================================================
  UPSTREAM ELEVATION(FEET) =  884.50  DOWNSTREAM ELEVATION(FEET) =  852.00
  STREET LENGTH(FEET) =   693.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       7.44
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.28
    HALFSTREET FLOOD WIDTH(FEET) =    7.92
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.00
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.42
  STREET FLOW TRAVEL TIME(MIN.) =   2.31   Tc(MIN.) =   11.05
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.899
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    5.01      SUBAREA RUNOFF(CFS) =   12.76
  TOTAL AREA(ACRES) =        5.4        PEAK FLOW RATE(CFS) =      13.65

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.33   HALFSTREET FLOOD WIDTH(FEET) =  10.37
  FLOW VELOCITY(FEET/SEC.) =  5.72   DEPTH*VELOCITY(FT*FT/SEC.) =   1.91
  LONGEST FLOWPATH FROM NODE    350.00 TO NODE    352.00 =     763.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    352.00 TO NODE    348.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.05
  RAINFALL INTENSITY(INCH/HR) =   4.90
  TOTAL STREAM AREA(ACRES) =     5.36
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.65

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        8.25     8.31        5.887          3.76
      2       13.65    11.05        4.899          5.36

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       18.52     8.31       5.887
      2       20.52    11.05       4.899

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      20.52   Tc(MIN.) =   11.05
  TOTAL AREA(ACRES) =        9.1
  LONGEST FLOWPATH FROM NODE    345.00 TO NODE    348.00 =    1150.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    348.00 TO NODE    353.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   347.00  DOWNSTREAM(FEET) =   343.00
  FLOW LENGTH(FEET) =    65.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  16.00
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      20.52
  PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =   11.11
  LONGEST FLOWPATH FROM NODE    345.00 TO NODE    353.00 =    1215.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    353.00 TO NODE    353.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.11
  RAINFALL INTENSITY(INCH/HR) =   4.88
  TOTAL STREAM AREA(ACRES) =     9.12
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     20.52

****************************************************************************
  FLOW PROCESS FROM NODE    355.00 TO NODE    356.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    952.85
  DOWNSTREAM ELEVATION(FEET) =    952.15
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    70.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      2.04
  TOTAL AREA(ACRES) =      0.69   TOTAL RUNOFF(CFS) =      2.04

****************************************************************************
  FLOW PROCESS FROM NODE    356.00 TO NODE    357.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  940.00  DOWNSTREAM ELEVATION(FEET) =  853.00
  STREET LENGTH(FEET) =  1012.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       8.88
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.28
    HALFSTREET FLOOD WIDTH(FEET) =    7.45
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.60
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.82
  STREET FLOW TRAVEL TIME(MIN.) =   2.56   Tc(MIN.) =   11.29
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.830
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    5.42      SUBAREA RUNOFF(CFS) =   13.61
  TOTAL AREA(ACRES) =        6.1        PEAK FLOW RATE(CFS) =      15.34

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.32   HALFSTREET FLOOD WIDTH(FEET) =   9.60
  FLOW VELOCITY(FEET/SEC.) =  7.38   DEPTH*VELOCITY(FT*FT/SEC.) =   2.35
  LONGEST FLOWPATH FROM NODE    355.00 TO NODE    357.00 =    1082.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    357.00 TO NODE    353.00 IS CODE =  31
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   848.00  DOWNSTREAM(FEET) =   843.00
  FLOW LENGTH(FEET) =    81.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.06
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      15.34
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =   11.38
  LONGEST FLOWPATH FROM NODE    355.00 TO NODE    353.00 =    1163.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    353.00 TO NODE    353.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
================================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.38
  RAINFALL INTENSITY(INCH/HR) =   4.80
  TOTAL STREAM AREA(ACRES) =     6.11
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     15.34

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       20.52    11.11        4.879          9.12
      2       15.34    11.38        4.805          6.11

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       35.50    11.11       4.879
      2       35.55    11.38       4.805

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      35.55   Tc(MIN.) =   11.38
  TOTAL AREA(ACRES) =       15.2
  LONGEST FLOWPATH FROM NODE    345.00 TO NODE    353.00 =    1215.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    353.00 TO NODE    358.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   843.00  DOWNSTREAM(FEET) =   775.00
  FLOW LENGTH(FEET) =   597.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  12.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  23.32
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      35.55
  PIPE TRAVEL TIME(MIN.) =   0.43    Tc(MIN.) =   11.81
  LONGEST FLOWPATH FROM NODE    345.00 TO NODE    358.00 =    1812.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    358.00 TO NODE    358.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
================================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.81
  RAINFALL INTENSITY(INCH/HR) =   4.69
  TOTAL STREAM AREA(ACRES) =    15.23
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     35.55

****************************************************************************
  FLOW PROCESS FROM NODE    360.00 TO NODE    361.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
================================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    855.05
  DOWNSTREAM ELEVATION(FEET) =    854.35
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      0.59
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.59
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    361.00 TO NODE    362.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  850.00  DOWNSTREAM ELEVATION(FEET) =  778.00
  STREET LENGTH(FEET) =   634.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.81
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.24
    HALFSTREET FLOOD WIDTH(FEET) =    5.57
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.78
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.61
  STREET FLOW TRAVEL TIME(MIN.) =   1.56   Tc(MIN.) =   10.29
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.127
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    3.91      SUBAREA RUNOFF(CFS) =   10.42
  TOTAL AREA(ACRES) =        4.1        PEAK FLOW RATE(CFS) =      10.96

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.28   HALFSTREET FLOOD WIDTH(FEET) =   7.74
  FLOW VELOCITY(FEET/SEC.) =  7.64   DEPTH*VELOCITY(FT*FT/SEC.) =   2.15
  LONGEST FLOWPATH FROM NODE    360.00 TO NODE    362.00 =     704.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    362.00 TO NODE    358.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.29
  RAINFALL INTENSITY(INCH/HR) =   5.13
  TOTAL STREAM AREA(ACRES) =     4.11
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.96

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       35.55    11.81        4.692         15.23
      2       10.96    10.29        5.127          4.11

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       43.49    10.29       5.127
      2       45.58    11.81       4.692

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      45.58   Tc(MIN.) =   11.81
  TOTAL AREA(ACRES) =       19.3
  LONGEST FLOWPATH FROM NODE    345.00 TO NODE    358.00 =    1812.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    358.00 TO NODE    363.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   775.00  DOWNSTREAM(FEET) =   715.00
  FLOW LENGTH(FEET) =   475.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  14.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  25.52
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      45.58
  PIPE TRAVEL TIME(MIN.) =   0.31    Tc(MIN.) =   12.12
  LONGEST FLOWPATH FROM NODE    345.00 TO NODE    363.00 =    2287.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    363.00 TO NODE    363.00 IS CODE =   1
----------------------------------------------------------------------------
```

```
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   12.12
  RAINFALL INTENSITY(INCH/HR) =   4.61
  TOTAL STREAM AREA(ACRES) =    19.34
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     45.58

****************************************************************************
  FLOW PROCESS FROM NODE    365.00 TO NODE    366.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    781.85
  DOWNSTREAM ELEVATION(FEET) =    781.15
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    70.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      0.50
  TOTAL AREA(ACRES) =      0.17   TOTAL RUNOFF(CFS) =      0.50

****************************************************************************
  FLOW PROCESS FROM NODE    366.00 TO NODE    367.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  775.00  DOWNSTREAM ELEVATION(FEET) =  720.00
  STREET LENGTH(FEET) =   732.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.14
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.23
    HALFSTREET FLOOD WIDTH(FEET) =    5.16
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.38
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.24
  STREET FLOW TRAVEL TIME(MIN.) =   2.27   Tc(MIN.) =   11.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.911
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    2.84      SUBAREA RUNOFF(CFS) =    7.25
  TOTAL AREA(ACRES) =        3.0        PEAK FLOW RATE(CFS) =       7.69

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.27   HALFSTREET FLOOD WIDTH(FEET) =   7.21
  FLOW VELOCITY(FEET/SEC.) =  6.02   DEPTH*VELOCITY(FT*FT/SEC.) =   1.63
  LONGEST FLOWPATH FROM NODE    365.00 TO NODE    367.00 =     802.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    367.00 TO NODE    363.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.00
  RAINFALL INTENSITY(INCH/HR) =   4.91
  TOTAL STREAM AREA(ACRES) =     3.01
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.69

****************************************************************************
  FLOW PROCESS FROM NODE    370.00 TO NODE    371.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
```

```
  UPSTREAM ELEVATION(FEET) =    840.00
  DOWNSTREAM ELEVATION(FEET) =    830.00
  ELEVATION DIFFERENCE(FEET) =     10.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.061
  SUBAREA RUNOFF(CFS) =      0.67
  TOTAL AREA(ACRES) =      0.27   TOTAL RUNOFF(CFS) =      0.67

****************************************************************************
  FLOW PROCESS FROM NODE    371.00 TO NODE    372.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   830.00  DOWNSTREAM(FEET) =   730.00
  FLOW LENGTH(FEET) =   855.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   1.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.70
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.67
  PIPE TRAVEL TIME(MIN.) =   1.85    Tc(MIN.) =    8.12
  LONGEST FLOWPATH FROM NODE    370.00 TO NODE    372.00 =     955.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    371.00 TO NODE    372.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.975
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =    4.06   SUBAREA RUNOFF(CFS) =    8.49
  TOTAL AREA(ACRES) =        4.3   TOTAL RUNOFF(CFS) =       9.06
  TC(MIN.) =    8.12

****************************************************************************
  FLOW PROCESS FROM NODE    373.00 TO NODE    372.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.975
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =    1.79   SUBAREA RUNOFF(CFS) =    3.74
  TOTAL AREA(ACRES) =        6.1   TOTAL RUNOFF(CFS) =      12.80
  TC(MIN.) =    8.12

****************************************************************************
  FLOW PROCESS FROM NODE    372.00 TO NODE    363.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   725.00  DOWNSTREAM(FEET) =   715.00
  FLOW LENGTH(FEET) =   156.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.62
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      12.80
  PIPE TRAVEL TIME(MIN.) =   0.18    Tc(MIN.) =    8.30
  LONGEST FLOWPATH FROM NODE    370.00 TO NODE    363.00 =    1111.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    363.00 TO NODE    363.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.30
  RAINFALL INTENSITY(INCH/HR) =   5.89
  TOTAL STREAM AREA(ACRES) =     6.12
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.80

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       45.58    12.12        4.614         19.34
      2        7.69    11.00        4.911          3.01
      3       12.80     8.30        5.892          6.12

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
```

```
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       54.29     8.30       5.892
      2       61.18    11.00       4.911
      3       62.82    12.12       4.614

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      62.82   Tc(MIN.) =   12.12
  TOTAL AREA(ACRES) =       28.5
  LONGEST FLOWPATH FROM NODE    345.00 TO NODE    363.00 =    2287.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    363.00 TO NODE    338.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   715.00  DOWNSTREAM(FEET) =   697.00
  FLOW LENGTH(FEET) =   311.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  19.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  20.56
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      62.82
  PIPE TRAVEL TIME(MIN.) =   0.25    Tc(MIN.) =   12.37
  LONGEST FLOWPATH FROM NODE    345.00 TO NODE    338.00 =    2598.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    338.00 TO NODE    338.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1       62.82    12.37       4.554       28.47
  LONGEST FLOWPATH FROM NODE    345.00 TO NODE    338.00 =    2598.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1       64.04    13.71       4.261       27.89
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    338.00 =    3505.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1     120.60      12.37        4.554
      2     122.83      13.71        4.261

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     122.83   Tc(MIN.) =   13.71
  TOTAL AREA(ACRES) =       56.4

****************************************************************************
  FLOW PROCESS FROM NODE    338.00 TO NODE    338.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    338.00 TO NODE    338.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    390.00 TO NODE    391.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    977.15
  DOWNSTREAM ELEVATION(FEET) =    976.45
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      0.77
  TOTAL AREA(ACRES) =      0.26   TOTAL RUNOFF(CFS) =      0.77

****************************************************************************
  FLOW PROCESS FROM NODE    391.00 TO NODE    392.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
================================================================================
  UPSTREAM ELEVATION(FEET) =  973.00  DOWNSTREAM ELEVATION(FEET) =  951.00
  STREET LENGTH(FEET) =   660.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.69
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.29
    HALFSTREET FLOOD WIDTH(FEET) =    8.15
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.27
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.24
  STREET FLOW TRAVEL TIME(MIN.) =   2.57   Tc(MIN.) =   11.31
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.825
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    4.70      SUBAREA RUNOFF(CFS) =   11.79
  TOTAL AREA(ACRES) =        5.0        PEAK FLOW RATE(CFS) =      12.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.34   HALFSTREET FLOOD WIDTH(FEET) =  10.72
  FLOW VELOCITY(FEET/SEC.) =  4.91   DEPTH*VELOCITY(FT*FT/SEC.) =   1.67
  LONGEST FLOWPATH FROM NODE    390.00 TO NODE    392.00 =     730.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    392.00 TO NODE    393.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   950.00  DOWNSTREAM(FEET) =   887.00
  FLOW LENGTH(FEET) =   851.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.32
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      12.44
  PIPE TRAVEL TIME(MIN.) =   0.93    Tc(MIN.) =   12.23
  LONGEST FLOWPATH FROM NODE    390.00 TO NODE    393.00 =    1581.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    393.00 TO NODE    393.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   12.23
  RAINFALL INTENSITY(INCH/HR) =   4.59
  TOTAL STREAM AREA(ACRES) =     4.96
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.44

****************************************************************************
  FLOW PROCESS FROM NODE    395.00 TO NODE    396.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    955.45
  DOWNSTREAM ELEVATION(FEET) =    954.75
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      1.01
  TOTAL AREA(ACRES) =      0.34   TOTAL RUNOFF(CFS) =      1.01

****************************************************************************
  FLOW PROCESS FROM NODE    396.00 TO NODE    397.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  950.30  DOWNSTREAM ELEVATION(FEET) =  897.00
  STREET LENGTH(FEET) =  1009.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00
```

```
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      11.76
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.32
    HALFSTREET FLOOD WIDTH(FEET) =    9.46
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.81
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.83
  STREET FLOW TRAVEL TIME(MIN.) =   2.89   Tc(MIN.) =   11.63
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.739
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    8.68      SUBAREA RUNOFF(CFS) =   21.39
  TOTAL AREA(ACRES) =        9.0        PEAK FLOW RATE(CFS) =      22.23

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.37   HALFSTREET FLOOD WIDTH(FEET) =  12.41
  FLOW VELOCITY(FEET/SEC.) =  6.70   DEPTH*VELOCITY(FT*FT/SEC.) =   2.51
  LONGEST FLOWPATH FROM NODE    395.00 TO NODE    397.00 =    1079.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    397.00 TO NODE    393.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   898.00  DOWNSTREAM(FEET) =   897.00
  FLOW LENGTH(FEET) =   348.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  22.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.17
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      22.23
  PIPE TRAVEL TIME(MIN.) =   1.12    Tc(MIN.) =   12.75
  LONGEST FLOWPATH FROM NODE    395.00 TO NODE    393.00 =    1427.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    393.00 TO NODE    393.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   12.75
  RAINFALL INTENSITY(INCH/HR) =   4.47
  TOTAL STREAM AREA(ACRES) =     9.02
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     22.23

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       12.44    12.23        4.586          4.96
      2       22.23    12.75        4.466          9.02

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       33.77    12.23       4.586
      2       34.34    12.75       4.466

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      34.34   Tc(MIN.) =   12.75
  TOTAL AREA(ACRES) =       14.0
  LONGEST FLOWPATH FROM NODE    390.00 TO NODE    393.00 =    1581.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    393.00 TO NODE    398.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   897.00  DOWNSTREAM(FEET) =   896.00
  FLOW LENGTH(FEET) =    70.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  21.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.33
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      34.34
  PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =   12.86
```

```
 LONGEST FLOWPATH FROM NODE    390.00 TO NODE    398.00 =    1651.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    398.00 TO NODE    398.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   12.86
 RAINFALL INTENSITY(INCH/HR) =   4.44
 TOTAL STREAM AREA(ACRES) =    13.98
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     34.34

****************************************************************************
 FLOW PROCESS FROM NODE    400.00 TO NODE    401.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 *USER SPECIFIED(SUBAREA):
 RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
 S.C.S. CURVE NUMBER (AMC II) =   0
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
 UPSTREAM ELEVATION(FEET) =    956.95
 DOWNSTREAM ELEVATION(FEET) =    956.25
 ELEVATION DIFFERENCE(FEET) =      0.70
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
 SUBAREA RUNOFF(CFS) =      1.33
 TOTAL AREA(ACRES) =      0.45   TOTAL RUNOFF(CFS) =      1.33

****************************************************************************
 FLOW PROCESS FROM NODE    401.00 TO NODE    402.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) =  954.00  DOWNSTREAM ELEVATION(FEET) =  901.00
 STREET LENGTH(FEET) =   796.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.87
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.29
   HALFSTREET FLOOD WIDTH(FEET) =    8.27
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.08
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.77
 STREET FLOW TRAVEL TIME(MIN.) =   2.18   Tc(MIN.) =   10.92
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.936
 *USER SPECIFIED(SUBAREA):
 RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
 SUBAREA AREA(ACRES) =    2.75      SUBAREA RUNOFF(CFS) =    7.06
 TOTAL AREA(ACRES) =        3.2        PEAK FLOW RATE(CFS) =       8.21

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.34   HALFSTREET FLOOD WIDTH(FEET) =  10.44
 FLOW VELOCITY(FEET/SEC.) =  6.80   DEPTH*VELOCITY(FT*FT/SEC.) =   2.28
 LONGEST FLOWPATH FROM NODE    400.00 TO NODE    402.00 =     866.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    402.00 TO NODE    398.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   10.92
 RAINFALL INTENSITY(INCH/HR) =   4.94
 TOTAL STREAM AREA(ACRES) =     3.20
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.21

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1       34.34    12.86        4.440         13.98
     2        8.21    10.92        4.936          3.20

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
```

```
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       39.11    10.92       4.936
      2       41.73    12.86       4.440

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      41.73   Tc(MIN.) =   12.86
  TOTAL AREA(ACRES) =       17.2
  LONGEST FLOWPATH FROM NODE    390.00 TO NODE    398.00 =    1651.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    398.00 TO NODE    403.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   896.00  DOWNSTREAM(FEET) =   870.00
  FLOW LENGTH(FEET) =   445.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  18.77
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      41.73
  PIPE TRAVEL TIME(MIN.) =   0.40    Tc(MIN.) =   13.26
  LONGEST FLOWPATH FROM NODE    390.00 TO NODE    403.00 =    2096.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    403.00 TO NODE    403.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    405.00 TO NODE    406.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    880.35
  DOWNSTREAM ELEVATION(FEET) =    879.65
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    70.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      0.62
  TOTAL AREA(ACRES) =      0.21   TOTAL RUNOFF(CFS) =      0.62

****************************************************************************
  FLOW PROCESS FROM NODE    406.00 TO NODE    407.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  879.65  DOWNSTREAM ELEVATION(FEET) =  876.70
  STREET LENGTH(FEET) =   136.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.19
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.23
    HALFSTREET FLOOD WIDTH(FEET) =    5.10
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.90
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.66
  STREET FLOW TRAVEL TIME(MIN.) =   0.78   Tc(MIN.) =    9.52
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.392
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    1.12      SUBAREA RUNOFF(CFS) =    3.14
  TOTAL AREA(ACRES) =        1.3        PEAK FLOW RATE(CFS) =       3.73

  END OF SUBAREA STREET FLOW HYDRAULICS:
```

```
  DEPTH(FEET) = 0.26   HALFSTREET FLOOD WIDTH(FEET) =   6.86
  FLOW VELOCITY(FEET/SEC.) =  3.17   DEPTH*VELOCITY(FT*FT/SEC.) =   0.83
  LONGEST FLOWPATH FROM NODE    405.00 TO NODE    407.00 =     206.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    407.00 TO NODE    408.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   871.00  DOWNSTREAM(FEET) =   869.00
  FLOW LENGTH(FEET) =   297.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.61
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.73
  PIPE TRAVEL TIME(MIN.) =   1.07    Tc(MIN.) =   10.59
  LONGEST FLOWPATH FROM NODE    405.00 TO NODE    408.00 =     503.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    408.00 TO NODE    408.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.59
  RAINFALL INTENSITY(INCH/HR) =   5.03
  TOTAL STREAM AREA(ACRES) =     1.33
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.73

****************************************************************************
  FLOW PROCESS FROM NODE    410.00 TO NODE    411.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    900.15
  DOWNSTREAM ELEVATION(FEET) =    899.45
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      1.04
  TOTAL AREA(ACRES) =      0.35   TOTAL RUNOFF(CFS) =      1.04

****************************************************************************
  FLOW PROCESS FROM NODE    411.00 TO NODE    412.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  895.00  DOWNSTREAM ELEVATION(FEET) =  874.20
  STREET LENGTH(FEET) =   333.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.24
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.25
    HALFSTREET FLOOD WIDTH(FEET) =    6.22
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.19
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.30
  STREET FLOW TRAVEL TIME(MIN.) =   1.07   Tc(MIN.) =    9.80
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.290
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    3.05      SUBAREA RUNOFF(CFS) =    8.39
  TOTAL AREA(ACRES) =        3.4        PEAK FLOW RATE(CFS) =       9.35

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.29   HALFSTREET FLOOD WIDTH(FEET) =   8.27
  FLOW VELOCITY(FEET/SEC.) =  5.83   DEPTH*VELOCITY(FT*FT/SEC.) =   1.70
  LONGEST FLOWPATH FROM NODE    410.00 TO NODE    412.00 =     403.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    412.00 TO NODE    408.00 IS CODE =   1
```

```
------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
========================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.80
  RAINFALL INTENSITY(INCH/HR) =   5.29
  TOTAL STREAM AREA(ACRES) =     3.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.35

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        3.73    10.59        5.033          1.33
      2        9.35     9.80        5.290          3.40

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       12.81     9.80       5.290
      2       12.63    10.59       5.033

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      12.81   Tc(MIN.) =    9.80
  TOTAL AREA(ACRES) =        4.7
  LONGEST FLOWPATH FROM NODE    405.00 TO NODE    408.00 =     503.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    408.00 TO NODE    403.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   871.00  DOWNSTREAM(FEET) =   870.00
  FLOW LENGTH(FEET) =    51.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.17
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      12.81
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =    9.90
  LONGEST FLOWPATH FROM NODE    405.00 TO NODE    403.00 =     554.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    403.00 TO NODE    403.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1       12.81     9.90       5.258        4.73
  LONGEST FLOWPATH FROM NODE    405.00 TO NODE    403.00 =     554.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1       41.73    13.26       4.354       17.18
  LONGEST FLOWPATH FROM NODE    390.00 TO NODE    403.00 =    2096.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1      43.96       9.90        5.258
      2      52.34      13.26        4.354

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      52.34   Tc(MIN.) =   13.26
  TOTAL AREA(ACRES) =       21.9

****************************************************************************
  FLOW PROCESS FROM NODE    403.00 TO NODE    403.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    403.00 TO NODE    413.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   870.00  DOWNSTREAM(FEET) =   830.00
  FLOW LENGTH(FEET) =   453.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  23.16
```

```
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      52.34
  PIPE TRAVEL TIME(MIN.) =   0.33    Tc(MIN.) =   13.58
  LONGEST FLOWPATH FROM NODE    390.00 TO NODE    413.00 =    2549.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    413.00 TO NODE    413.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   13.58
  RAINFALL INTENSITY(INCH/HR) =   4.29
  TOTAL STREAM AREA(ACRES) =    21.91
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     52.34

****************************************************************************
  FLOW PROCESS FROM NODE    415.00 TO NODE    416.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    903.35
  DOWNSTREAM ELEVATION(FEET) =    902.65
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    70.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      0.68
  TOTAL AREA(ACRES) =      0.23   TOTAL RUNOFF(CFS) =      0.68

****************************************************************************
  FLOW PROCESS FROM NODE    416.00 TO NODE    417.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  899.00  DOWNSTREAM ELEVATION(FEET) =  835.00
  STREET LENGTH(FEET) =   852.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.28
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.31
    HALFSTREET FLOOD WIDTH(FEET) =    9.04
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.72
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.06
  STREET FLOW TRAVEL TIME(MIN.) =   2.11   Tc(MIN.) =   10.85
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.956
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    4.33      SUBAREA RUNOFF(CFS) =   11.16
  TOTAL AREA(ACRES) =        4.6        PEAK FLOW RATE(CFS) =      11.75

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.36   HALFSTREET FLOOD WIDTH(FEET) =  11.78
  FLOW VELOCITY(FEET/SEC.) =  7.81   DEPTH*VELOCITY(FT*FT/SEC.) =   2.82
  LONGEST FLOWPATH FROM NODE    415.00 TO NODE    417.00 =     922.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    417.00 TO NODE    413.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.85
  RAINFALL INTENSITY(INCH/HR) =   4.96
  TOTAL STREAM AREA(ACRES) =     4.56
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.75
```

```
  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       52.34    13.58        4.287         21.91
      2       11.75    10.85        4.956          4.56

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       53.54    10.85       4.956
      2       62.50    13.58       4.287

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      62.50   Tc(MIN.) =   13.58
  TOTAL AREA(ACRES) =       26.5
  LONGEST FLOWPATH FROM NODE    390.00 TO NODE    413.00 =    2549.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    413.00 TO NODE    418.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   830.00  DOWNSTREAM(FEET) =   755.00
  FLOW LENGTH(FEET) =   820.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  18.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  24.13
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      62.50
  PIPE TRAVEL TIME(MIN.) =   0.57    Tc(MIN.) =   14.15
  LONGEST FLOWPATH FROM NODE    390.00 TO NODE    418.00 =    3369.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    418.00 TO NODE    418.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   14.15
  RAINFALL INTENSITY(INCH/HR) =   4.18
  TOTAL STREAM AREA(ACRES) =    26.47
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     62.50

****************************************************************************
  FLOW PROCESS FROM NODE    420.00 TO NODE    421.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    831.35
  DOWNSTREAM ELEVATION(FEET) =    830.65
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    70.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      0.83
  TOTAL AREA(ACRES) =      0.28   TOTAL RUNOFF(CFS) =      0.83

****************************************************************************
  FLOW PROCESS FROM NODE    421.00 TO NODE    422.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  825.00  DOWNSTREAM ELEVATION(FEET) =  759.00
  STREET LENGTH(FEET) =   653.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       9.11
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.27
```

```
    HALFSTREET FLOOD WIDTH(FEET) =    7.27
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.04
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.91
  STREET FLOW TRAVEL TIME(MIN.) =   1.54   Tc(MIN.) =   10.28
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.131
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    6.20      SUBAREA RUNOFF(CFS) =   16.54
  TOTAL AREA(ACRES) =        6.5        PEAK FLOW RATE(CFS) =      17.29

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.32   HALFSTREET FLOOD WIDTH(FEET) =   9.74
  FLOW VELOCITY(FEET/SEC.) =  8.11   DEPTH*VELOCITY(FT*FT/SEC.) =   2.60
  LONGEST FLOWPATH FROM NODE    420.00 TO NODE    422.00 =     723.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    422.00 TO NODE    418.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.28
  RAINFALL INTENSITY(INCH/HR) =   5.13
  TOTAL STREAM AREA(ACRES) =     6.48
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     17.29

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       62.50    14.15        4.175         26.47
      2       17.29    10.28        5.131          6.48

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       68.15    10.28       5.131
      2       76.57    14.15       4.175

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      76.57   Tc(MIN.) =   14.15
  TOTAL AREA(ACRES) =       33.0
  LONGEST FLOWPATH FROM NODE    390.00 TO NODE    418.00 =    3369.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    418.00 TO NODE    423.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   755.00  DOWNSTREAM(FEET) =   700.00
  FLOW LENGTH(FEET) =   867.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  19.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  22.57
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      76.57
  PIPE TRAVEL TIME(MIN.) =   0.64    Tc(MIN.) =   14.79
  LONGEST FLOWPATH FROM NODE    390.00 TO NODE    423.00 =    4236.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    423.00 TO NODE    423.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   14.79
  RAINFALL INTENSITY(INCH/HR) =   4.06
  TOTAL STREAM AREA(ACRES) =    32.95
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     76.57

****************************************************************************
  FLOW PROCESS FROM NODE    425.00 TO NODE    426.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    765.15
  DOWNSTREAM ELEVATION(FEET) =    764.45
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
```

```
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
 SUBAREA RUNOFF(CFS) =      1.01
 TOTAL AREA(ACRES) =      0.34   TOTAL RUNOFF(CFS) =      1.01

****************************************************************************
 FLOW PROCESS FROM NODE    426.00 TO NODE    427.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) =  763.30  DOWNSTREAM ELEVATION(FEET) =  704.40
 STREET LENGTH(FEET) =   825.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      10.54
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.30
   HALFSTREET FLOOD WIDTH(FEET) =    8.44
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.34
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.87
 STREET FLOW TRAVEL TIME(MIN.) =   2.17   Tc(MIN.) =   10.90
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.940
 *USER SPECIFIED(SUBAREA):
 RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
 SUBAREA AREA(ACRES) =    7.39      SUBAREA RUNOFF(CFS) =   18.98
 TOTAL AREA(ACRES) =        7.7        PEAK FLOW RATE(CFS) =      19.86

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.35   HALFSTREET FLOOD WIDTH(FEET) =  11.14
 FLOW VELOCITY(FEET/SEC.) =  7.30   DEPTH*VELOCITY(FT*FT/SEC.) =   2.55
 LONGEST FLOWPATH FROM NODE    425.00 TO NODE    427.00 =     895.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    427.00 TO NODE    423.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   10.90
 RAINFALL INTENSITY(INCH/HR) =   4.94
 TOTAL STREAM AREA(ACRES) =     7.73
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     19.86

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1       76.57    14.79        4.058         32.95
     2       19.86    10.90        4.940          7.73

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF      Tc      INTENSITY
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       82.75    10.90       4.940
     2       92.88    14.79       4.058

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      92.88   Tc(MIN.) =   14.79
 TOTAL AREA(ACRES) =       40.7
 LONGEST FLOWPATH FROM NODE    390.00 TO NODE    423.00 =    4236.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    427.00 TO NODE    338.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   699.00  DOWNSTREAM(FEET) =   697.00
 FLOW LENGTH(FEET) =   158.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  42.0 INCH PIPE IS  29.5 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  12.85
 ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      92.88
 PIPE TRAVEL TIME(MIN.) =   0.20    Tc(MIN.) =   15.00
 LONGEST FLOWPATH FROM NODE    390.00 TO NODE    338.00 =    4394.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    338.00 TO NODE    338.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1       92.88    15.00       4.022       40.68
  LONGEST FLOWPATH FROM NODE    390.00 TO NODE    338.00 =    4394.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1      122.83    13.71       4.261       56.36
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    338.00 =    3505.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1     207.75      13.71        4.261
      2     208.81      15.00        4.022

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     208.81   Tc(MIN.) =   15.00
  TOTAL AREA(ACRES) =       97.0

****************************************************************************
  FLOW PROCESS FROM NODE    338.00 TO NODE    338.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    338.00 TO NODE    428.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   697.00  DOWNSTREAM(FEET) =   695.00
  FLOW LENGTH(FEET) =   168.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  54.0 INCH PIPE IS  44.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.99
  ESTIMATED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     208.81
  PIPE TRAVEL TIME(MIN.) =   0.19    Tc(MIN.) =   15.18
  LONGEST FLOWPATH FROM NODE    390.00 TO NODE    428.00 =    4562.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    428.00 TO NODE    428.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    430.00 TO NODE    431.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    725.00
  DOWNSTREAM ELEVATION(FEET) =    723.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.836
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    75.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.168
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.87
  TOTAL AREA(ACRES) =      0.29   TOTAL RUNOFF(CFS) =      1.87

****************************************************************************
  FLOW PROCESS FROM NODE    431.00 TO NODE    432.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  723.00  DOWNSTREAM ELEVATION(FEET) =  712.00
  STREET LENGTH(FEET) =   736.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
```

```
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.69
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.30
    HALFSTREET FLOOD WIDTH(FEET) =    8.91
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.57
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.78
  STREET FLOW TRAVEL TIME(MIN.) =   4.78   Tc(MIN.) =    8.61
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.752
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .6300
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.656
  SUBAREA AREA(ACRES) =    1.51      SUBAREA RUNOFF(CFS) =    5.47
  TOTAL AREA(ACRES) =        1.8        PEAK FLOW RATE(CFS) =       6.79

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.34   HALFSTREET FLOOD WIDTH(FEET) =  10.44
  FLOW VELOCITY(FEET/SEC.) =  2.81   DEPTH*VELOCITY(FT*FT/SEC.) =   0.94
  LONGEST FLOWPATH FROM NODE    430.00 TO NODE    432.00 =     836.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    432.00 TO NODE    433.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   708.00  DOWNSTREAM(FEET) =   694.00
  FLOW LENGTH(FEET) =   887.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.38
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.79
  PIPE TRAVEL TIME(MIN.) =   2.00    Tc(MIN.) =   10.61
  LONGEST FLOWPATH FROM NODE    430.00 TO NODE    433.00 =    1723.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    433.00 TO NODE    433.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.61
  RAINFALL INTENSITY(INCH/HR) =   5.03
  TOTAL STREAM AREA(ACRES) =     1.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.79

****************************************************************************
  FLOW PROCESS FROM NODE    435.00 TO NODE    436.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .6300
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    712.00
  DOWNSTREAM ELEVATION(FEET) =    710.50
  ELEVATION DIFFERENCE(FEET) =      1.50
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.072
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    67.50
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.206
  SUBAREA RUNOFF(CFS) =      1.13
  TOTAL AREA(ACRES) =      0.25   TOTAL RUNOFF(CFS) =      1.13

****************************************************************************
  FLOW PROCESS FROM NODE    436.00 TO NODE    437.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  710.50  DOWNSTREAM ELEVATION(FEET) =  699.00
  STREET LENGTH(FEET) =   775.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
```

```
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.25
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.29
    HALFSTREET FLOOD WIDTH(FEET) =    7.97
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.82
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.81
  STREET FLOW TRAVEL TIME(MIN.) =   4.58   Tc(MIN.) =   10.65
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.014
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .6300
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.630
  SUBAREA AREA(ACRES) =    1.94      SUBAREA RUNOFF(CFS) =    6.13
  TOTAL AREA(ACRES) =        2.2        PEAK FLOW RATE(CFS) =       6.92

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.33   HALFSTREET FLOOD WIDTH(FEET) =   9.95
  FLOW VELOCITY(FEET/SEC.) =  3.12   DEPTH*VELOCITY(FT*FT/SEC.) =   1.02
  LONGEST FLOWPATH FROM NODE    435.00 TO NODE    437.00 =     875.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    437.00 TO NODE    433.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.65
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =     2.19
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.92

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        6.79    10.61        5.026          1.80
      2        6.92    10.65        5.014          2.19

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       13.68    10.61       5.026
      2       13.69    10.65       5.014

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      13.69   Tc(MIN.) =   10.65
  TOTAL AREA(ACRES) =        4.0
  LONGEST FLOWPATH FROM NODE    430.00 TO NODE    433.00 =    1723.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    433.00 TO NODE    428.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   694.00  DOWNSTREAM(FEET) =   692.00
  FLOW LENGTH(FEET) =    57.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.79
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      13.69
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =   10.73
  LONGEST FLOWPATH FROM NODE    430.00 TO NODE    428.00 =    1780.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    428.00 TO NODE    428.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1       13.69    10.73       4.990        3.99
  LONGEST FLOWPATH FROM NODE    430.00 TO NODE    428.00 =    1780.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1      208.81    15.18       3.990       97.04
  LONGEST FLOWPATH FROM NODE    390.00 TO NODE    428.00 =    4562.00 FEET.
```

```
  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1     161.32      10.73        4.990
      2     219.76      15.18        3.990

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     219.76   Tc(MIN.) =   15.18
  TOTAL AREA(ACRES) =      101.0

****************************************************************************
  FLOW PROCESS FROM NODE    428.00 TO NODE    428.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    428.00 TO NODE    438.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   692.00  DOWNSTREAM(FEET) =   691.00
  FLOW LENGTH(FEET) =   130.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  60.0 INCH PIPE IS  48.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.93
  ESTIMATED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     219.76
  PIPE TRAVEL TIME(MIN.) =   0.17    Tc(MIN.) =   15.35
  LONGEST FLOWPATH FROM NODE    390.00 TO NODE    438.00 =    4692.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    438.00 TO NODE    438.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    440.00 TO NODE    441.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    896.95
  DOWNSTREAM ELEVATION(FEET) =    896.25
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      1.39
  TOTAL AREA(ACRES) =      0.47   TOTAL RUNOFF(CFS) =      1.39

****************************************************************************
  FLOW PROCESS FROM NODE    441.00 TO NODE    442.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  890.00  DOWNSTREAM ELEVATION(FEET) =  814.40
  STREET LENGTH(FEET) =   714.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       8.84
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.27
    HALFSTREET FLOOD WIDTH(FEET) =    7.10
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.11
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.91
  STREET FLOW TRAVEL TIME(MIN.) =   1.67   Tc(MIN.) =   10.41
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.090
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    5.61      SUBAREA RUNOFF(CFS) =   14.85
  TOTAL AREA(ACRES) =        6.1        PEAK FLOW RATE(CFS) =      16.09

  END OF SUBAREA STREET FLOW HYDRAULICS:
```

```
  DEPTH(FEET) = 0.31   HALFSTREET FLOOD WIDTH(FEET) =   9.32
  FLOW VELOCITY(FEET/SEC.) =  8.16   DEPTH*VELOCITY(FT*FT/SEC.) =   2.55
  LONGEST FLOWPATH FROM NODE    440.00 TO NODE    442.00 =     784.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    442.00 TO NODE    443.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   810.00  DOWNSTREAM(FEET) =   735.00
  FLOW LENGTH(FEET) =   623.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  19.60
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      16.09
  PIPE TRAVEL TIME(MIN.) =   0.53    Tc(MIN.) =   10.94
  LONGEST FLOWPATH FROM NODE    440.00 TO NODE    443.00 =    1407.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    443.00 TO NODE    443.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.94
  RAINFALL INTENSITY(INCH/HR) =   4.93
  TOTAL STREAM AREA(ACRES) =     6.08
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     16.09

****************************************************************************
  FLOW PROCESS FROM NODE    445.00 TO NODE    446.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    809.15
  DOWNSTREAM ELEVATION(FEET) =    808.45
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      0.65
  TOTAL AREA(ACRES) =      0.22   TOTAL RUNOFF(CFS) =      0.65

****************************************************************************
  FLOW PROCESS FROM NODE    446.00 TO NODE    447.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  800.00  DOWNSTREAM ELEVATION(FEET) =  738.50
  STREET LENGTH(FEET) =   547.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       7.07
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.25
    HALFSTREET FLOOD WIDTH(FEET) =    6.22
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.00
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.75
  STREET FLOW TRAVEL TIME(MIN.) =   1.30   Tc(MIN.) =   10.04
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.211
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    4.73      SUBAREA RUNOFF(CFS) =   12.82
  TOTAL AREA(ACRES) =        4.9        PEAK FLOW RATE(CFS) =      13.41

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.30   HALFSTREET FLOOD WIDTH(FEET) =   8.50
  FLOW VELOCITY(FEET/SEC.) =  7.97   DEPTH*VELOCITY(FT*FT/SEC.) =   2.36
  LONGEST FLOWPATH FROM NODE    445.00 TO NODE    447.00 =     617.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    447.00 TO NODE    443.00 IS CODE =   1
```

```
------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
========================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.04
  RAINFALL INTENSITY(INCH/HR) =   5.21
  TOTAL STREAM AREA(ACRES) =     4.95
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.41

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       16.09    10.94        4.930          6.08
      2       13.41    10.04        5.211          4.95

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       28.18    10.04       5.211
      2       28.78    10.94       4.930

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      28.78   Tc(MIN.) =   10.94
  TOTAL AREA(ACRES) =       11.0
  LONGEST FLOWPATH FROM NODE    440.00 TO NODE    443.00 =    1407.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    443.00 TO NODE    448.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   735.00  DOWNSTREAM(FEET) =   720.00
  FLOW LENGTH(FEET) =   643.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  17.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.04
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      28.78
  PIPE TRAVEL TIME(MIN.) =   0.89    Tc(MIN.) =   11.83
  LONGEST FLOWPATH FROM NODE    440.00 TO NODE    448.00 =    2050.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    448.00 TO NODE    448.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.83
  RAINFALL INTENSITY(INCH/HR) =   4.69
  TOTAL STREAM AREA(ACRES) =    11.03
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     28.78

****************************************************************************
  FLOW PROCESS FROM NODE    450.00 TO NODE    451.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    740.15
  DOWNSTREAM ELEVATION(FEET) =    739.45
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      0.53
  TOTAL AREA(ACRES) =      0.18   TOTAL RUNOFF(CFS) =      0.53

****************************************************************************
  FLOW PROCESS FROM NODE    451.00 TO NODE    452.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  737.30  DOWNSTREAM ELEVATION(FEET) =  726.00
  STREET LENGTH(FEET) =   597.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
```

```
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.75
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.30
    HALFSTREET FLOOD WIDTH(FEET) =    8.68
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.30
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.99
  STREET FLOW TRAVEL TIME(MIN.) =   3.02   Tc(MIN.) =   11.75
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.707
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    4.23      SUBAREA RUNOFF(CFS) =   10.35
  TOTAL AREA(ACRES) =        4.4        PEAK FLOW RATE(CFS) =      10.79

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.35   HALFSTREET FLOOD WIDTH(FEET) =  11.36
  FLOW VELOCITY(FEET/SEC.) =  3.83   DEPTH*VELOCITY(FT*FT/SEC.) =   1.35
  LONGEST FLOWPATH FROM NODE    450.00 TO NODE    452.00 =     667.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    452.00 TO NODE    448.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.75
  RAINFALL INTENSITY(INCH/HR) =   4.71
  TOTAL STREAM AREA(ACRES) =     4.41
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.79

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       28.78    11.83        4.687         11.03
      2       10.79    11.75        4.707          4.41

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       39.45    11.75       4.707
      2       39.53    11.83       4.687

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      39.53   Tc(MIN.) =   11.83
  TOTAL AREA(ACRES) =       15.4
  LONGEST FLOWPATH FROM NODE    440.00 TO NODE    448.00 =    2050.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    448.00 TO NODE    453.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   720.00  DOWNSTREAM(FEET) =   700.00
  FLOW LENGTH(FEET) =   628.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  17.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.80
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      39.53
  PIPE TRAVEL TIME(MIN.) =   0.71    Tc(MIN.) =   12.54
  LONGEST FLOWPATH FROM NODE    440.00 TO NODE    453.00 =    2678.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    453.00 TO NODE    453.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   12.54
  RAINFALL INTENSITY(INCH/HR) =   4.51
  TOTAL STREAM AREA(ACRES) =    15.44
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     39.53

****************************************************************************
  FLOW PROCESS FROM NODE    455.00 TO NODE    456.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
```

```
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    728.05
  DOWNSTREAM ELEVATION(FEET) =    727.35
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      1.19
  TOTAL AREA(ACRES) =      0.40   TOTAL RUNOFF(CFS) =      1.19

****************************************************************************
  FLOW PROCESS FROM NODE    456.00 TO NODE    457.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  722.00  DOWNSTREAM ELEVATION(FEET) =  704.00
  STREET LENGTH(FEET) =   465.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.46
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.27
    HALFSTREET FLOOD WIDTH(FEET) =    7.15
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.34
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.17
  STREET FLOW TRAVEL TIME(MIN.) =   1.79   Tc(MIN.) =   10.52
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.055
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    3.25      SUBAREA RUNOFF(CFS) =    8.54
  TOTAL AREA(ACRES) =        3.7        PEAK FLOW RATE(CFS) =       9.59

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.31   HALFSTREET FLOOD WIDTH(FEET) =   9.25
  FLOW VELOCITY(FEET/SEC.) =  4.93   DEPTH*VELOCITY(FT*FT/SEC.) =   1.53
  LONGEST FLOWPATH FROM NODE    455.00 TO NODE    457.00 =     535.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    457.00 TO NODE    453.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.52
  RAINFALL INTENSITY(INCH/HR) =   5.05
  TOTAL STREAM AREA(ACRES) =     3.65
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.59

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       39.53    12.54        4.515         15.44
      2        9.59    10.52        5.055          3.65

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       44.90    10.52       5.055
      2       48.10    12.54       4.515

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      48.10   Tc(MIN.) =   12.54
  TOTAL AREA(ACRES) =       19.1
  LONGEST FLOWPATH FROM NODE    440.00 TO NODE    453.00 =    2678.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    453.00 TO NODE    458.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   700.00  DOWNSTREAM(FEET) =   699.00
```

```
  FLOW LENGTH(FEET) =    86.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  23.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.53
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      48.10
  PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =   12.67
  LONGEST FLOWPATH FROM NODE    440.00 TO NODE    458.00 =    2764.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    458.00 TO NODE    458.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   12.67
  RAINFALL INTENSITY(INCH/HR) =   4.48
  TOTAL STREAM AREA(ACRES) =    19.09
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     48.10

****************************************************************************
  FLOW PROCESS FROM NODE    460.00 TO NODE    461.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    742.00
  DOWNSTREAM ELEVATION(FEET) =    732.00
  ELEVATION DIFFERENCE(FEET) =     10.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.061
  SUBAREA RUNOFF(CFS) =      0.40
  TOTAL AREA(ACRES) =      0.16   TOTAL RUNOFF(CFS) =      0.40

****************************************************************************
  FLOW PROCESS FROM NODE    461.00 TO NODE    462.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   732.00  DOWNSTREAM(FEET) =   703.00
  FLOW LENGTH(FEET) =   667.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   1.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.70
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.40
  PIPE TRAVEL TIME(MIN.) =   2.36    Tc(MIN.) =    8.63
  LONGEST FLOWPATH FROM NODE    460.00 TO NODE    462.00 =     767.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    461.00 TO NODE    462.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.743
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =    2.05   SUBAREA RUNOFF(CFS) =    4.12
  TOTAL AREA(ACRES) =        2.2   TOTAL RUNOFF(CFS) =       4.44
  TC(MIN.) =    8.63

****************************************************************************
  FLOW PROCESS FROM NODE    462.00 TO NODE    458.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.63
  RAINFALL INTENSITY(INCH/HR) =   5.74
  TOTAL STREAM AREA(ACRES) =     2.21
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.44

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       48.10    12.67        4.483         19.09
      2        4.44     8.63        5.743          2.21

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.
```

```
  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       41.99     8.63       5.743
      2       51.57    12.67       4.483

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      51.57   Tc(MIN.) =   12.67
  TOTAL AREA(ACRES) =       21.3
  LONGEST FLOWPATH FROM NODE    440.00 TO NODE    458.00 =    2764.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    458.00 TO NODE    463.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   699.00  DOWNSTREAM(FEET) =   687.00
  FLOW LENGTH(FEET) =   652.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  23.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.57
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      51.57
  PIPE TRAVEL TIME(MIN.) =   0.86    Tc(MIN.) =   13.54
  LONGEST FLOWPATH FROM NODE    440.00 TO NODE    463.00 =    3416.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    463.00 TO NODE    463.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   13.54
  RAINFALL INTENSITY(INCH/HR) =   4.30
  TOTAL STREAM AREA(ACRES) =    21.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     51.57

****************************************************************************
  FLOW PROCESS FROM NODE    465.00 TO NODE    466.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    704.45
  DOWNSTREAM ELEVATION(FEET) =    703.75
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      0.83
  TOTAL AREA(ACRES) =      0.28   TOTAL RUNOFF(CFS) =      0.83

****************************************************************************
  FLOW PROCESS FROM NODE    466.00 TO NODE    467.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  700.30  DOWNSTREAM ELEVATION(FEET) =  692.00
  STREET LENGTH(FEET) =   648.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.15
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.32
    HALFSTREET FLOOD WIDTH(FEET) =    9.74
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.88
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.93
  STREET FLOW TRAVEL TIME(MIN.) =   3.75   Tc(MIN.) =   12.48
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.527
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    4.48      SUBAREA RUNOFF(CFS) =   10.55
  TOTAL AREA(ACRES) =        4.8        PEAK FLOW RATE(CFS) =      11.21

  END OF SUBAREA STREET FLOW HYDRAULICS:
```

```
  DEPTH(FEET) = 0.38   HALFSTREET FLOOD WIDTH(FEET) =  12.55
  FLOW VELOCITY(FEET/SEC.) =  3.31   DEPTH*VELOCITY(FT*FT/SEC.) =   1.25
  LONGEST FLOWPATH FROM NODE    465.00 TO NODE    467.00 =     718.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    467.00 TO NODE    463.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   12.48
  RAINFALL INTENSITY(INCH/HR) =   4.53
  TOTAL STREAM AREA(ACRES) =     4.76
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.21

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       51.57    13.54        4.297         21.30
      2       11.21    12.48        4.527          4.76

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       60.14    12.48        4.527
      2       62.20    13.54        4.297

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      62.20   Tc(MIN.) =   13.54
  TOTAL AREA(ACRES) =       26.1
  LONGEST FLOWPATH FROM NODE    440.00 TO NODE    463.00 =    3416.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    463.00 TO NODE    438.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   698.00  DOWNSTREAM(FEET) =   697.00
  FLOW LENGTH(FEET) =   231.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  33.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.64
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      62.20
  PIPE TRAVEL TIME(MIN.) =   0.50    Tc(MIN.) =   14.04
  LONGEST FLOWPATH FROM NODE    440.00 TO NODE    438.00 =    3647.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    438.00 TO NODE    438.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY     AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)   (ACRE)
      1       62.20    14.04        4.197       26.06
  LONGEST FLOWPATH FROM NODE    440.00 TO NODE    438.00 =    3647.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY     AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)   (ACRE)
      1      219.76    15.35        3.962      101.03
  LONGEST FLOWPATH FROM NODE    390.00 TO NODE    438.00 =    4692.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1     263.20      14.04        4.197
      2     278.48      15.35        3.962

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     278.48   Tc(MIN.) =   15.35
  TOTAL AREA(ACRES) =      127.1

****************************************************************************
  FLOW PROCESS FROM NODE    438.00 TO NODE    438.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    438.00 TO NODE    468.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   690.00  DOWNSTREAM(FEET) =   683.00
  FLOW LENGTH(FEET) =   327.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  54.0 INCH PIPE IS  43.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  20.10
  ESTIMATED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     278.48
  PIPE TRAVEL TIME(MIN.) =   0.27    Tc(MIN.) =   15.62
  LONGEST FLOWPATH FROM NODE    390.00 TO NODE    468.00 =    5019.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    468.00 TO NODE    468.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
================================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   15.62
  RAINFALL INTENSITY(INCH/HR) =   3.92
  TOTAL STREAM AREA(ACRES) =   127.09
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    278.48

****************************************************************************
  FLOW PROCESS FROM NODE    470.00 TO NODE    471.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
================================================================================
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    705.50
  DOWNSTREAM ELEVATION(FEET) =    704.00
  ELEVATION DIFFERENCE(FEET) =      1.50
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.005
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    67.50
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.168
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.23
  TOTAL AREA(ACRES) =      0.19   TOTAL RUNOFF(CFS) =      1.23

****************************************************************************
  FLOW PROCESS FROM NODE    471.00 TO NODE    472.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   700.00  DOWNSTREAM(FEET) =   690.00
  FLOW LENGTH(FEET) =   500.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   3.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.98
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.23
  PIPE TRAVEL TIME(MIN.) =   1.67    Tc(MIN.) =    5.68
  LONGEST FLOWPATH FROM NODE    470.00 TO NODE    472.00 =     600.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    471.00 TO NODE    472.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.524
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7900
  SUBAREA AREA(ACRES) =    5.18   SUBAREA RUNOFF(CFS) =   30.79
  TOTAL AREA(ACRES) =        5.4   TOTAL RUNOFF(CFS) =      31.92
  TC(MIN.) =    5.68

****************************************************************************
  FLOW PROCESS FROM NODE    472.00 TO NODE    468.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
================================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    5.68
  RAINFALL INTENSITY(INCH/HR) =   7.52
  TOTAL STREAM AREA(ACRES) =     5.37
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     31.92

****************************************************************************
  FLOW PROCESS FROM NODE    475.00 TO NODE    476.00 IS CODE =  21
----------------------------------------------------------------------------
```

```
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
================================================================================
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    700.60
  DOWNSTREAM ELEVATION(FEET) =    700.00
  ELEVATION DIFFERENCE(FEET) =      0.60
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.322
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    60.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.168
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.61
  TOTAL AREA(ACRES) =      0.25   TOTAL RUNOFF(CFS) =      1.61

****************************************************************************
  FLOW PROCESS FROM NODE    476.00 TO NODE    477.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  700.00  DOWNSTREAM ELEVATION(FEET) =  688.00
  STREET LENGTH(FEET) =   898.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 27.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  14.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      10.37
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.38
    HALFSTREET FLOOD WIDTH(FEET) =   12.78
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.96
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.13
  STREET FLOW TRAVEL TIME(MIN.) =   5.05   Tc(MIN.) =    9.37
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.446
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.790
  SUBAREA AREA(ACRES) =    3.96      SUBAREA RUNOFF(CFS) =   17.04
  TOTAL AREA(ACRES) =        4.2        PEAK FLOW RATE(CFS) =      18.11

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.44   HALFSTREET FLOOD WIDTH(FEET) =  15.93
  FLOW VELOCITY(FEET/SEC.) =  3.41   DEPTH*VELOCITY(FT*FT/SEC.) =   1.52
  LONGEST FLOWPATH FROM NODE    475.00 TO NODE    477.00 =     958.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    477.00 TO NODE    468.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.37
  RAINFALL INTENSITY(INCH/HR) =   5.45
  TOTAL STREAM AREA(ACRES) =     4.21
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     18.11

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1      278.48    15.62        3.917        127.09
      2       31.92     5.68        7.524          5.37
      3       18.11     9.37        5.446          4.21

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1      144.13     5.68       7.524
      2      208.31     9.37       5.446
      3      308.13    15.62       3.917

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     308.13   Tc(MIN.) =   15.62
```

```
  TOTAL AREA(ACRES) =      136.7
  LONGEST FLOWPATH FROM NODE    390.00 TO NODE    468.00 =    5019.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    468.00 TO NODE    479.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   683.00  DOWNSTREAM(FEET) =   682.00
  FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  63.0 INCH PIPE IS  49.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.00
  ESTIMATED PIPE DIAMETER(INCH) =  63.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     308.13
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =   15.70
  LONGEST FLOWPATH FROM NODE    390.00 TO NODE    479.00 =    5099.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    479.00 TO NODE    479.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

+--------------------------------------------------------------------------+
| BEGIN HYDROLOGY MODELING FOR NORTHERN PORTION.                           |
|                                                                          |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE    500.00 TO NODE    501.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1420.00
  DOWNSTREAM ELEVATION(FEET) =   1410.00
  ELEVATION DIFFERENCE(FEET) =     10.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.061
  SUBAREA RUNOFF(CFS) =      0.27
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.27

****************************************************************************
  FLOW PROCESS FROM NODE    501.00 TO NODE    502.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1410.00  DOWNSTREAM(FEET) =   1020.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1781.00   CHANNEL SLOPE =  0.2190
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =       0.27
  FLOW VELOCITY(FEET/SEC) =   2.62 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =  11.33   Tc(MIN.) =   17.59
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    502.00 =    1881.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    501.00 TO NODE    502.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.628
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .4500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.4492
  SUBAREA AREA(ACRES) =   14.51   SUBAREA RUNOFF(CFS) =   23.69
  TOTAL AREA(ACRES) =       14.6   TOTAL RUNOFF(CFS) =      23.83
  TC(MIN.) =   17.59

****************************************************************************
  FLOW PROCESS FROM NODE    502.00 TO NODE    503.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1020.00  DOWNSTREAM(FEET) =   993.00
  FLOW LENGTH(FEET) =   209.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  22.15
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      23.83
  PIPE TRAVEL TIME(MIN.) =   0.16    Tc(MIN.) =   17.75
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    503.00 =    2090.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    503.00 TO NODE    503.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   17.75
  RAINFALL INTENSITY(INCH/HR) =   3.61
  TOTAL STREAM AREA(ACRES) =    14.62
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     23.83

****************************************************************************
  FLOW PROCESS FROM NODE    505.00 TO NODE    506.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (2.9 DU/AC OR LESS) RUNOFF COEFFICIENT = .4900
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =   1049.85
  DOWNSTREAM ELEVATION(FEET) =   1049.15
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    9.187
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    70.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.517
  SUBAREA RUNOFF(CFS) =      1.05
  TOTAL AREA(ACRES) =      0.39   TOTAL RUNOFF(CFS) =      1.05

****************************************************************************
  FLOW PROCESS FROM NODE    506.00 TO NODE    507.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1048.00  DOWNSTREAM ELEVATION(FEET) = 1002.00
  STREET LENGTH(FEET) =   650.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       8.06
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.28
    HALFSTREET FLOOD WIDTH(FEET) =    7.45
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.99
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.65
  STREET FLOW TRAVEL TIME(MIN.) =   1.81   Tc(MIN.) =   11.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.913
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (2.9 DU/AC OR LESS) RUNOFF COEFFICIENT = .4900
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.490
  SUBAREA AREA(ACRES) =    5.81      SUBAREA RUNOFF(CFS) =   13.99
  TOTAL AREA(ACRES) =        6.2        PEAK FLOW RATE(CFS) =      14.93

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.32   HALFSTREET FLOOD WIDTH(FEET) =   9.88
  FLOW VELOCITY(FEET/SEC.) =  6.82   DEPTH*VELOCITY(FT*FT/SEC.) =   2.21
  LONGEST FLOWPATH FROM NODE    505.00 TO NODE    507.00 =     720.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    507.00 TO NODE    503.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.00
  RAINFALL INTENSITY(INCH/HR) =   4.91
  TOTAL STREAM AREA(ACRES) =     6.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     14.93

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       23.83    17.75        3.607         14.62
```

```
     2       14.93    11.00        4.913          6.20

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       29.69    11.00       4.913
      2       34.79    17.75       3.607

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      34.79   Tc(MIN.) =   17.75
  TOTAL AREA(ACRES) =       20.8
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    503.00 =    2090.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    503.00 TO NODE    508.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   993.00  DOWNSTREAM(FEET) =   941.00
  FLOW LENGTH(FEET) =   884.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  16.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.68
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      34.79
  PIPE TRAVEL TIME(MIN.) =   0.83    Tc(MIN.) =   18.58
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    508.00 =    2974.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    508.00 TO NODE    508.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   18.58
  RAINFALL INTENSITY(INCH/HR) =   3.50
  TOTAL STREAM AREA(ACRES) =    20.82
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     34.79

****************************************************************************
  FLOW PROCESS FROM NODE    510.00 TO NODE    511.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (2.9 DU/AC OR LESS) RUNOFF COEFFICIENT = .4900
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =   1000.35
  DOWNSTREAM ELEVATION(FEET) =    999.65
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    9.187
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    70.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.517
  SUBAREA RUNOFF(CFS) =      1.16
  TOTAL AREA(ACRES) =      0.43   TOTAL RUNOFF(CFS) =      1.16

****************************************************************************
  FLOW PROCESS FROM NODE    511.00 TO NODE    512.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  997.00  DOWNSTREAM ELEVATION(FEET) =  946.00
  STREET LENGTH(FEET) =   812.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       8.05
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.28
    HALFSTREET FLOOD WIDTH(FEET) =    7.68
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.68
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.59
  STREET FLOW TRAVEL TIME(MIN.) =   2.38   Tc(MIN.) =   11.57
```

```
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.755
 *USER SPECIFIED(SUBAREA):
 RESIDENTIAL (2.9 DU/AC OR LESS) RUNOFF COEFFICIENT = .4900
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.490
 SUBAREA AREA(ACRES) =    5.89      SUBAREA RUNOFF(CFS) =   13.72
 TOTAL AREA(ACRES) =        6.3        PEAK FLOW RATE(CFS) =      14.72

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.33   HALFSTREET FLOOD WIDTH(FEET) =  10.09
 FLOW VELOCITY(FEET/SEC.) =  6.48   DEPTH*VELOCITY(FT*FT/SEC.) =   2.13
 LONGEST FLOWPATH FROM NODE    510.00 TO NODE    512.00 =     882.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    512.00 TO NODE    508.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   11.57
 RAINFALL INTENSITY(INCH/HR) =   4.75
 TOTAL STREAM AREA(ACRES) =     6.32
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     14.72

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1       34.79    18.58        3.502         20.82
     2       14.72    11.57        4.755          6.32

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF      Tc      INTENSITY
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       40.35    11.57       4.755
     2       45.63    18.58       3.502

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      45.63   Tc(MIN.) =   18.58
 TOTAL AREA(ACRES) =       27.1
 LONGEST FLOWPATH FROM NODE    500.00 TO NODE    508.00 =    2974.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    508.00 TO NODE    513.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   941.00  DOWNSTREAM(FEET) =   938.00
 FLOW LENGTH(FEET) =    65.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  24.0 INCH PIPE IS  18.9 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  17.17
 ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      45.63
 PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =   18.65
 LONGEST FLOWPATH FROM NODE    500.00 TO NODE    513.00 =    3039.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    513.00 TO NODE    513.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   18.65
 RAINFALL INTENSITY(INCH/HR) =   3.49
 TOTAL STREAM AREA(ACRES) =    27.14
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     45.63

****************************************************************************
 FLOW PROCESS FROM NODE    515.00 TO NODE    516.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 *USER SPECIFIED(SUBAREA):
 NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
 S.C.S. CURVE NUMBER (AMC II) =   0
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   154.00
 UPSTREAM ELEVATION(FEET) =    998.00
 DOWNSTREAM ELEVATION(FEET) =    992.00
 ELEVATION DIFFERENCE(FEET) =      6.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.355
 WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
          THE MAXIMUM OVERLAND FLOW LENGTH =    89.48
          (Reference: Table 3-1B of Hydrology Manual)
          THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
```

```
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.168
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) =      1.94
 TOTAL AREA(ACRES) =      0.30   TOTAL RUNOFF(CFS) =      1.94

****************************************************************************
 FLOW PROCESS FROM NODE    516.00 TO NODE    517.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) =  992.00  DOWNSTREAM ELEVATION(FEET) =  943.00
 STREET LENGTH(FEET) =   710.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      12.70
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.31
   HALFSTREET FLOOD WIDTH(FEET) =    9.25
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.52
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.03
 STREET FLOW TRAVEL TIME(MIN.) =   1.81   Tc(MIN.) =    5.17
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.995
 *USER SPECIFIED(SUBAREA):
 RESIDENTIAL (2.9 DU/AC OR LESS) RUNOFF COEFFICIENT = .4900
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.506
 SUBAREA AREA(ACRES) =    5.38      SUBAREA RUNOFF(CFS) =   21.08
 TOTAL AREA(ACRES) =        5.7        PEAK FLOW RATE(CFS) =      22.97

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.36   HALFSTREET FLOOD WIDTH(FEET) =  11.92
 FLOW VELOCITY(FEET/SEC.) =  7.47   DEPTH*VELOCITY(FT*FT/SEC.) =   2.72
 LONGEST FLOWPATH FROM NODE    515.00 TO NODE    517.00 =     864.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    517.00 TO NODE    513.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =    5.17
 RAINFALL INTENSITY(INCH/HR) =   7.99
 TOTAL STREAM AREA(ACRES) =     5.68
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     22.97

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1       45.63    18.65        3.495         27.14
     2       22.97     5.17        7.995          5.68

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF      Tc       INTENSITY
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       42.92     5.17       7.995
     2       55.67    18.65       3.495

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      55.67   Tc(MIN.) =   18.65
 TOTAL AREA(ACRES) =       32.8
 LONGEST FLOWPATH FROM NODE    500.00 TO NODE    513.00 =    3039.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    513.00 TO NODE    518.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   935.00  DOWNSTREAM(FEET) =   932.00
 FLOW LENGTH(FEET) =   216.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  33.0 INCH PIPE IS  24.9 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  11.60
 ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      55.67
 PIPE TRAVEL TIME(MIN.) =   0.31    Tc(MIN.) =   18.96
```

```
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    518.00 =    3255.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    518.00 TO NODE    518.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   18.96
  RAINFALL INTENSITY(INCH/HR) =   3.46
  TOTAL STREAM AREA(ACRES) =    32.82
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     55.67

****************************************************************************
  FLOW PROCESS FROM NODE    520.00 TO NODE    521.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .4900
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    967.20
  DOWNSTREAM ELEVATION(FEET) =    966.50
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    9.186
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.517
  SUBAREA RUNOFF(CFS) =      1.32
  TOTAL AREA(ACRES) =      0.49   TOTAL RUNOFF(CFS) =      1.32

****************************************************************************
  FLOW PROCESS FROM NODE    521.00 TO NODE    522.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   961.00  DOWNSTREAM(FEET) =   935.00
  FLOW LENGTH(FEET) =  1205.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   3.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.24
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.32
  PIPE TRAVEL TIME(MIN.) =   3.83    Tc(MIN.) =   13.02
  LONGEST FLOWPATH FROM NODE    520.00 TO NODE    522.00 =    1275.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    521.00 TO NODE    522.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.406
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .4900
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.4900
  SUBAREA AREA(ACRES) =    3.69   SUBAREA RUNOFF(CFS) =    7.97
  TOTAL AREA(ACRES) =        4.2   TOTAL RUNOFF(CFS) =       9.02
  TC(MIN.) =   13.02

****************************************************************************
  FLOW PROCESS FROM NODE    522.00 TO NODE    518.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   13.02
  RAINFALL INTENSITY(INCH/HR) =   4.41
  TOTAL STREAM AREA(ACRES) =     4.18
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.02

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       55.67    18.96        3.458         32.82
      2        9.02    13.02        4.406          4.18

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       52.71    13.02        4.406
      2       62.76    18.96        3.458

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
```

```
  PEAK FLOW RATE(CFS) =      62.76   Tc(MIN.) =   18.96
  TOTAL AREA(ACRES) =       37.0
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    518.00 =    3255.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    518.00 TO NODE    523.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   932.00  DOWNSTREAM(FEET) =   855.00
  FLOW LENGTH(FEET) =   598.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  27.94
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      62.76
  PIPE TRAVEL TIME(MIN.) =   0.36    Tc(MIN.) =   19.31
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    523.00 =    3853.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    523.00 TO NODE    523.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   19.31
  RAINFALL INTENSITY(INCH/HR) =   3.42
  TOTAL STREAM AREA(ACRES) =    37.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     62.76

****************************************************************************
  FLOW PROCESS FROM NODE    525.00 TO NODE    526.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    75.00
  UPSTREAM ELEVATION(FEET) =    939.20
  DOWNSTREAM ELEVATION(FEET) =    937.70
  ELEVATION DIFFERENCE(FEET) =      1.50
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.836
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.168
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.81
  TOTAL AREA(ACRES) =      0.28   TOTAL RUNOFF(CFS) =      1.81

****************************************************************************
  FLOW PROCESS FROM NODE    526.00 TO NODE    527.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  937.70  DOWNSTREAM ELEVATION(FEET) =  860.50
  STREET LENGTH(FEET) =   662.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       9.36
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.27
    HALFSTREET FLOOD WIDTH(FEET) =    7.10
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.53
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.02
  STREET FLOW TRAVEL TIME(MIN.) =   1.47   Tc(MIN.) =    5.30
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.866
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.539
  SUBAREA AREA(ACRES) =    3.65      SUBAREA RUNOFF(CFS) =   14.93
  TOTAL AREA(ACRES) =        3.9        PEAK FLOW RATE(CFS) =      16.67

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.31   HALFSTREET FLOOD WIDTH(FEET) =   9.32
  FLOW VELOCITY(FEET/SEC.) =  8.45   DEPTH*VELOCITY(FT*FT/SEC.) =   2.64
  LONGEST FLOWPATH FROM NODE    525.00 TO NODE    527.00 =     737.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    527.00 TO NODE    523.00 IS CODE =   1
```

```
------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
========================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    5.30
  RAINFALL INTENSITY(INCH/HR) =   7.87
  TOTAL STREAM AREA(ACRES) =     3.93
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     16.67

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       62.76    19.31        3.416         37.00
      2       16.67     5.30        7.866          3.93

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       43.92     5.30       7.866
      2       70.00    19.31       3.416

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      70.00   Tc(MIN.) =   19.31
  TOTAL AREA(ACRES) =       40.9
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    523.00 =    3853.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    527.00 TO NODE    528.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   855.00  DOWNSTREAM(FEET) =   830.00
  FLOW LENGTH(FEET) =   250.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  17.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  26.23
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      70.00
  PIPE TRAVEL TIME(MIN.) =   0.16    Tc(MIN.) =   19.47
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    528.00 =    4103.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    528.00 TO NODE    528.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    530.00 TO NODE    531.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    924.00
  DOWNSTREAM ELEVATION(FEET) =    919.00
  ELEVATION DIFFERENCE(FEET) =      5.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    7.895
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.083
  SUBAREA RUNOFF(CFS) =      0.81
  TOTAL AREA(ACRES) =      0.38   TOTAL RUNOFF(CFS) =      0.81

****************************************************************************
  FLOW PROCESS FROM NODE    531.00 TO NODE    532.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  919.00  DOWNSTREAM ELEVATION(FEET) =  904.00
  STREET LENGTH(FEET) =   896.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.50
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
```

```
    STREET FLOW DEPTH(FEET) =  0.29
    HALFSTREET FLOOD WIDTH(FEET) =    7.97
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.98
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.85
  STREET FLOW TRAVEL TIME(MIN.) =   5.01   Tc(MIN.) =   12.90
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.431
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .4100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.405
  SUBAREA AREA(ACRES) =    4.03      SUBAREA RUNOFF(CFS) =    7.32
  TOTAL AREA(ACRES) =        4.4        PEAK FLOW RATE(CFS) =       7.91

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.33   HALFSTREET FLOOD WIDTH(FEET) =  10.23
  FLOW VELOCITY(FEET/SEC.) =  3.40   DEPTH*VELOCITY(FT*FT/SEC.) =   1.12
  LONGEST FLOWPATH FROM NODE    530.00 TO NODE    532.00 =     996.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    532.00 TO NODE    537.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   900.00  DOWNSTREAM(FEET) =   899.00
  FLOW LENGTH(FEET) =    65.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.57
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.91
  PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =   13.05
  LONGEST FLOWPATH FROM NODE    530.00 TO NODE    537.00 =    1061.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    537.00 TO NODE    537.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   13.05
  RAINFALL INTENSITY(INCH/HR) =   4.40
  TOTAL STREAM AREA(ACRES) =     4.41
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.91

****************************************************************************
  FLOW PROCESS FROM NODE    535.00 TO NODE    536.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    941.00
  DOWNSTREAM ELEVATION(FEET) =    938.00
  ELEVATION DIFFERENCE(FEET) =      3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.567
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    85.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.168
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.55
  TOTAL AREA(ACRES) =      0.24   TOTAL RUNOFF(CFS) =      1.55

****************************************************************************
  FLOW PROCESS FROM NODE    536.00 TO NODE    537.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  937.00  DOWNSTREAM ELEVATION(FEET) =  904.00
  STREET LENGTH(FEET) =   723.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       9.01
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.30
    HALFSTREET FLOOD WIDTH(FEET) =    8.68
```

```
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.17
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.55
  STREET FLOW TRAVEL TIME(MIN.) =   2.33   Tc(MIN.) =    5.90
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.343
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (2.9 DU/AC OR LESS) RUNOFF COEFFICIENT = .4900
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.507
  SUBAREA AREA(ACRES) =    4.04      SUBAREA RUNOFF(CFS) =   14.54
  TOTAL AREA(ACRES) =        4.3        PEAK FLOW RATE(CFS) =      15.93

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.35   HALFSTREET FLOOD WIDTH(FEET) =  11.14
  FLOW VELOCITY(FEET/SEC.) =  5.86   DEPTH*VELOCITY(FT*FT/SEC.) =   2.04
  LONGEST FLOWPATH FROM NODE    535.00 TO NODE    537.00 =     823.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    537.00 TO NODE    537.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    5.90
  RAINFALL INTENSITY(INCH/HR) =   7.34
  TOTAL STREAM AREA(ACRES) =     4.28
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     15.93

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        7.91    13.05        4.400          4.41
      2       15.93     5.90        7.343          4.28

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       19.50     5.90       7.343
      2       17.45    13.05       4.400

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      19.50   Tc(MIN.) =    5.90
  TOTAL AREA(ACRES) =        8.7
  LONGEST FLOWPATH FROM NODE    530.00 TO NODE    537.00 =    1061.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    537.00 TO NODE    538.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   899.00  DOWNSTREAM(FEET) =   898.00
  FLOW LENGTH(FEET) =   300.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  21.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.27
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      19.50
  PIPE TRAVEL TIME(MIN.) =   0.95    Tc(MIN.) =    6.85
  LONGEST FLOWPATH FROM NODE    530.00 TO NODE    538.00 =    1361.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    538.00 TO NODE    538.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    6.85
  RAINFALL INTENSITY(INCH/HR) =   6.67
  TOTAL STREAM AREA(ACRES) =     8.69
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     19.50

****************************************************************************
  FLOW PROCESS FROM NODE    540.00 TO NODE    541.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (2.9 DU/AC OR LESS) RUNOFF COEFFICIENT = .4900
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    942.35
  DOWNSTREAM ELEVATION(FEET) =    941.65
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    9.187
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
```

```
          THE MAXIMUM OVERLAND FLOW LENGTH =    70.00
          (Reference: Table 3-1B of Hydrology Manual)
          THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.517
  SUBAREA RUNOFF(CFS) =      1.03
  TOTAL AREA(ACRES) =      0.38   TOTAL RUNOFF(CFS) =      1.03

****************************************************************************
  FLOW PROCESS FROM NODE    541.00 TO NODE    542.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  936.00  DOWNSTREAM ELEVATION(FEET) =  917.00
  STREET LENGTH(FEET) =   439.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.34
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.25
    HALFSTREET FLOOD WIDTH(FEET) =    6.22
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.30
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.08
  STREET FLOW TRAVEL TIME(MIN.) =   1.70   Tc(MIN.) =   10.89
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.945
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (2.9 DU/AC OR LESS) RUNOFF COEFFICIENT = .4900
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.490
  SUBAREA AREA(ACRES) =    2.73      SUBAREA RUNOFF(CFS) =    6.61
  TOTAL AREA(ACRES) =        3.1        PEAK FLOW RATE(CFS) =       7.54

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.29   HALFSTREET FLOOD WIDTH(FEET) =   8.09
  FLOW VELOCITY(FEET/SEC.) =  4.87   DEPTH*VELOCITY(FT*FT/SEC.) =   1.40
  LONGEST FLOWPATH FROM NODE    540.00 TO NODE    542.00 =     509.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    542.00 TO NODE    538.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.89
  RAINFALL INTENSITY(INCH/HR) =   4.94
  TOTAL STREAM AREA(ACRES) =     3.11
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.54

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       19.50     6.85        6.669          8.69
      2        7.54    10.89        4.945          3.11

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       24.24     6.85       6.669
      2       21.99    10.89       4.945

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      24.24   Tc(MIN.) =    6.85
  TOTAL AREA(ACRES) =       11.8
  LONGEST FLOWPATH FROM NODE    530.00 TO NODE    538.00 =    1361.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    538.00 TO NODE    543.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   898.00  DOWNSTREAM(FEET) =   895.00
  FLOW LENGTH(FEET) =   407.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  20.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.41
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
```

```
  PIPE-FLOW(CFS) =      24.24
  PIPE TRAVEL TIME(MIN.) =   0.92    Tc(MIN.) =    7.76
  LONGEST FLOWPATH FROM NODE    530.00 TO NODE    543.00 =    1768.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    543.00 TO NODE    543.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    7.76
  RAINFALL INTENSITY(INCH/HR) =   6.15
  TOTAL STREAM AREA(ACRES) =    11.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     24.24

****************************************************************************
  FLOW PROCESS FROM NODE    545.00 TO NODE    546.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    941.00
  DOWNSTREAM ELEVATION(FEET) =    937.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.335
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    90.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.168
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.61
  TOTAL AREA(ACRES) =      0.25   TOTAL RUNOFF(CFS) =      1.61

****************************************************************************
  FLOW PROCESS FROM NODE    546.00 TO NODE    547.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  937.00  DOWNSTREAM ELEVATION(FEET) =  896.00
  STREET LENGTH(FEET) =   507.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       8.47
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.27
    HALFSTREET FLOOD WIDTH(FEET) =    7.39
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.38
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.75
  STREET FLOW TRAVEL TIME(MIN.) =   1.32   Tc(MIN.) =    4.66
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.168
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.539
  SUBAREA AREA(ACRES) =    3.23      SUBAREA RUNOFF(CFS) =   13.72
  TOTAL AREA(ACRES) =        3.5        PEAK FLOW RATE(CFS) =      15.33

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.32   HALFSTREET FLOOD WIDTH(FEET) =   9.67
  FLOW VELOCITY(FEET/SEC.) =  7.28   DEPTH*VELOCITY(FT*FT/SEC.) =   2.33
  LONGEST FLOWPATH FROM NODE    545.00 TO NODE    547.00 =     607.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    547.00 TO NODE    543.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    4.66
  RAINFALL INTENSITY(INCH/HR) =   8.17
  TOTAL STREAM AREA(ACRES) =     3.48
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     15.33
```

```
  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       24.24     7.76        6.151         11.80
      2       15.33     4.66        8.168          3.48

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       33.59     4.66       8.168
      2       35.79     7.76       6.151

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      35.79   Tc(MIN.) =    7.76
  TOTAL AREA(ACRES) =       15.3
  LONGEST FLOWPATH FROM NODE    530.00 TO NODE    543.00 =    1768.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    543.00 TO NODE    548.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   891.00  DOWNSTREAM(FEET) =   875.00
  FLOW LENGTH(FEET) =   506.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  18.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.15
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      35.79
  PIPE TRAVEL TIME(MIN.) =   0.60    Tc(MIN.) =    8.36
  LONGEST FLOWPATH FROM NODE    530.00 TO NODE    548.00 =    2274.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    548.00 TO NODE    548.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.36
  RAINFALL INTENSITY(INCH/HR) =   5.86
  TOTAL STREAM AREA(ACRES) =    15.28
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     35.79

****************************************************************************
  FLOW PROCESS FROM NODE    550.00 TO NODE    551.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    897.65
  DOWNSTREAM ELEVATION(FEET) =    896.95
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      0.71
  TOTAL AREA(ACRES) =      0.24   TOTAL RUNOFF(CFS) =      0.71

****************************************************************************
  FLOW PROCESS FROM NODE    551.00 TO NODE    552.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  894.50  DOWNSTREAM ELEVATION(FEET) =  880.00
  STREET LENGTH(FEET) =   439.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.81
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.28
    HALFSTREET FLOOD WIDTH(FEET) =    7.68
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.10
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.15
```

```
  STREET FLOW TRAVEL TIME(MIN.) =   1.78   Tc(MIN.) =   10.52
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.056
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    3.87      SUBAREA RUNOFF(CFS) =   10.17
  TOTAL AREA(ACRES) =        4.1        PEAK FLOW RATE(CFS) =      10.81

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.33   HALFSTREET FLOOD WIDTH(FEET) =  10.09
  FLOW VELOCITY(FEET/SEC.) =  4.76   DEPTH*VELOCITY(FT*FT/SEC.) =   1.56
  LONGEST FLOWPATH FROM NODE    550.00 TO NODE    552.00 =     509.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    552.00 TO NODE    548.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.52
  RAINFALL INTENSITY(INCH/HR) =   5.06
  TOTAL STREAM AREA(ACRES) =     4.11
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.81

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       35.79     8.36        5.864         15.28
      2       10.81    10.52        5.056          4.11

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       44.37     8.36       5.864
      2       41.66    10.52       5.056

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      44.37   Tc(MIN.) =    8.36
  TOTAL AREA(ACRES) =       19.4
  LONGEST FLOWPATH FROM NODE    530.00 TO NODE    548.00 =    2274.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    548.00 TO NODE    553.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   875.00  DOWNSTREAM(FEET) =   874.00
  FLOW LENGTH(FEET) =    78.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  24.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.51
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      44.37
  PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =    8.48
  LONGEST FLOWPATH FROM NODE    530.00 TO NODE    553.00 =    2352.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    553.00 TO NODE    553.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.48
  RAINFALL INTENSITY(INCH/HR) =   5.81
  TOTAL STREAM AREA(ACRES) =    19.39
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     44.37

****************************************************************************
  FLOW PROCESS FROM NODE    555.00 TO NODE    556.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    890.00
  DOWNSTREAM ELEVATION(FEET) =    880.00
  ELEVATION DIFFERENCE(FEET) =     10.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.061
  SUBAREA RUNOFF(CFS) =      0.57
```

```
  TOTAL AREA(ACRES) =      0.23   TOTAL RUNOFF(CFS) =      0.57

****************************************************************************
  FLOW PROCESS FROM NODE    556.00 TO NODE    557.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   880.00  DOWNSTREAM(FEET) =   870.00
  FLOW LENGTH(FEET) =   555.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   2.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.84
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.57
  PIPE TRAVEL TIME(MIN.) =   2.41    Tc(MIN.) =    8.68
  LONGEST FLOWPATH FROM NODE    555.00 TO NODE    557.00 =     655.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    556.00 TO NODE    557.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.723
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =    1.06   SUBAREA RUNOFF(CFS) =    2.12
  TOTAL AREA(ACRES) =        1.3   TOTAL RUNOFF(CFS) =       2.58
  TC(MIN.) =    8.68

****************************************************************************
  FLOW PROCESS FROM NODE    557.00 TO NODE    553.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.68
  RAINFALL INTENSITY(INCH/HR) =   5.72
  TOTAL STREAM AREA(ACRES) =     1.29
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.58

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       44.37     8.48        5.809         19.39
      2        2.58     8.68        5.723          1.29

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       46.90     8.48       5.809
      2       46.31     8.68       5.723

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      46.90   Tc(MIN.) =    8.48
  TOTAL AREA(ACRES) =       20.7
  LONGEST FLOWPATH FROM NODE    530.00 TO NODE    553.00 =    2352.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    553.00 TO NODE    558.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   874.00  DOWNSTREAM(FEET) =   859.00
  FLOW LENGTH(FEET) =   142.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  16.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  23.71
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      46.90
  PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =    8.58
  LONGEST FLOWPATH FROM NODE    530.00 TO NODE    558.00 =    2494.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    558.00 TO NODE    558.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.58
  RAINFALL INTENSITY(INCH/HR) =   5.77
  TOTAL STREAM AREA(ACRES) =    20.68
```

```
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     46.90

****************************************************************************
  FLOW PROCESS FROM NODE    560.00 TO NODE    561.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    878.35
  DOWNSTREAM ELEVATION(FEET) =    877.65
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    70.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      0.86
  TOTAL AREA(ACRES) =      0.29   TOTAL RUNOFF(CFS) =      0.86

****************************************************************************
  FLOW PROCESS FROM NODE    561.00 TO NODE    562.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  876.00  DOWNSTREAM ELEVATION(FEET) =  866.00
  STREET LENGTH(FEET) =   237.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.45
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.24
    HALFSTREET FLOOD WIDTH(FEET) =    5.51
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.09
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.97
  STREET FLOW TRAVEL TIME(MIN.) =   0.97   Tc(MIN.) =    9.70
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.326
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    1.87      SUBAREA RUNOFF(CFS) =    5.18
  TOTAL AREA(ACRES) =        2.2        PEAK FLOW RATE(CFS) =       5.98

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.27   HALFSTREET FLOOD WIDTH(FEET) =   7.33
  FLOW VELOCITY(FEET/SEC.) =  4.56   DEPTH*VELOCITY(FT*FT/SEC.) =   1.25
  LONGEST FLOWPATH FROM NODE    560.00 TO NODE    562.00 =     307.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    562.00 TO NODE    558.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.70
  RAINFALL INTENSITY(INCH/HR) =   5.33
  TOTAL STREAM AREA(ACRES) =     2.16
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.98

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       46.90     8.58        5.765         20.68
      2        5.98     9.70        5.326          2.16

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       52.19     8.58       5.765
      2       49.31     9.70       5.326
```

```
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      52.19   Tc(MIN.) =    8.58
  TOTAL AREA(ACRES) =       22.8
  LONGEST FLOWPATH FROM NODE    530.00 TO NODE    558.00 =    2494.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    558.00 TO NODE    563.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   859.00  DOWNSTREAM(FEET) =   830.00
  FLOW LENGTH(FEET) =   416.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  17.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  20.96
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      52.19
  PIPE TRAVEL TIME(MIN.) =   0.33    Tc(MIN.) =    8.91
  LONGEST FLOWPATH FROM NODE    530.00 TO NODE    563.00 =    2910.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    563.00 TO NODE    563.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.91
  RAINFALL INTENSITY(INCH/HR) =   5.63
  TOTAL STREAM AREA(ACRES) =    22.84
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     52.19

****************************************************************************
  FLOW PROCESS FROM NODE    565.00 TO NODE    566.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    879.55
  DOWNSTREAM ELEVATION(FEET) =    878.85
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      0.74
  TOTAL AREA(ACRES) =      0.25   TOTAL RUNOFF(CFS) =      0.74

****************************************************************************
  FLOW PROCESS FROM NODE    566.00 TO NODE    567.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  873.00  DOWNSTREAM ELEVATION(FEET) =  835.00
  STREET LENGTH(FEET) =   545.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.16
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.25
    HALFSTREET FLOOD WIDTH(FEET) =    5.98
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.42
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.33
  STREET FLOW TRAVEL TIME(MIN.) =   1.68   Tc(MIN.) =   10.41
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.089
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    3.33      SUBAREA RUNOFF(CFS) =    8.81
  TOTAL AREA(ACRES) =        3.6        PEAK FLOW RATE(CFS) =       9.47

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.29   HALFSTREET FLOOD WIDTH(FEET) =   8.09
  FLOW VELOCITY(FEET/SEC.) =  6.13   DEPTH*VELOCITY(FT*FT/SEC.) =   1.77
  LONGEST FLOWPATH FROM NODE    565.00 TO NODE    567.00 =     615.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    567.00 TO NODE    563.00 IS CODE =   1
```

```
------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
========================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.41
  RAINFALL INTENSITY(INCH/HR) =   5.09
  TOTAL STREAM AREA(ACRES) =     3.58
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.47

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       52.19     8.91        5.626         22.84
      2        9.47    10.41        5.089          3.58

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       60.30     8.91       5.626
      2       56.68    10.41       5.089

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      60.30   Tc(MIN.) =    8.91
  TOTAL AREA(ACRES) =       26.4
  LONGEST FLOWPATH FROM NODE    530.00 TO NODE    563.00 =    2910.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    563.00 TO NODE    528.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   830.00  DOWNSTREAM(FEET) =   829.00
  FLOW LENGTH(FEET) =    70.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  26.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.82
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      60.30
  PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =    9.01
  LONGEST FLOWPATH FROM NODE    530.00 TO NODE    528.00 =    2980.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    528.00 TO NODE    528.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1       60.30     9.01       5.586       26.42
  LONGEST FLOWPATH FROM NODE    530.00 TO NODE    528.00 =    2980.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1       70.00    19.47       3.398       40.93
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    528.00 =    4103.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1      92.69       9.01        5.586
      2     106.68      19.47        3.398

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     106.68   Tc(MIN.) =   19.47
  TOTAL AREA(ACRES) =       67.3

****************************************************************************
  FLOW PROCESS FROM NODE    528.00 TO NODE    528.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    528.00 TO NODE    568.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   830.00  DOWNSTREAM(FEET) =   826.00
  FLOW LENGTH(FEET) =   120.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  26.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  19.00
```

```
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     106.68
  PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =   19.58
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    568.00 =    4223.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    568.00 TO NODE    568.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   19.58
  RAINFALL INTENSITY(INCH/HR) =   3.39
  TOTAL STREAM AREA(ACRES) =    67.35
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    106.68

****************************************************************************
  FLOW PROCESS FROM NODE    570.00 TO NODE    571.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    855.05
  DOWNSTREAM ELEVATION(FEET) =    854.35
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      1.13
  TOTAL AREA(ACRES) =      0.38   TOTAL RUNOFF(CFS) =      1.13

****************************************************************************
  FLOW PROCESS FROM NODE    571.00 TO NODE    572.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  844.00  DOWNSTREAM ELEVATION(FEET) =  831.00
  STREET LENGTH(FEET) =   273.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.86
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.24
    HALFSTREET FLOOD WIDTH(FEET) =    5.69
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.37
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.05
  STREET FLOW TRAVEL TIME(MIN.) =   1.04   Tc(MIN.) =    9.78
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.300
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    1.98      SUBAREA RUNOFF(CFS) =    5.46
  TOTAL AREA(ACRES) =        2.4        PEAK FLOW RATE(CFS) =       6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.27   HALFSTREET FLOOD WIDTH(FEET) =   7.39
  FLOW VELOCITY(FEET/SEC.) =  4.90   DEPTH*VELOCITY(FT*FT/SEC.) =   1.34
  LONGEST FLOWPATH FROM NODE    570.00 TO NODE    572.00 =     343.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    572.00 TO NODE    568.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.78
  RAINFALL INTENSITY(INCH/HR) =   5.30
  TOTAL STREAM AREA(ACRES) =     2.36
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.50

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1      106.68    19.58        3.386         67.35
```

```
      2        6.50     9.78        5.300          2.36

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       59.77     9.78       5.300
      2      110.83    19.58       3.386

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     110.83   Tc(MIN.) =   19.58
  TOTAL AREA(ACRES) =       69.7
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    568.00 =    4223.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    568.00 TO NODE    573.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   826.00  DOWNSTREAM(FEET) =   825.00
  FLOW LENGTH(FEET) =   107.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  35.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.76
  ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     110.83
  PIPE TRAVEL TIME(MIN.) =   0.15    Tc(MIN.) =   19.73
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    573.00 =    4330.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    573.00 TO NODE    573.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    580.00 TO NODE    581.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    920.00
  DOWNSTREAM ELEVATION(FEET) =    910.00
  ELEVATION DIFFERENCE(FEET) =     10.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.061
  SUBAREA RUNOFF(CFS) =      0.25
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.25

****************************************************************************
  FLOW PROCESS FROM NODE    581.00 TO NODE    582.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   905.00  DOWNSTREAM(FEET) =   890.00
  FLOW LENGTH(FEET) =   773.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   1.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.06
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.25
  PIPE TRAVEL TIME(MIN.) =   4.21    Tc(MIN.) =   10.48
  LONGEST FLOWPATH FROM NODE    580.00 TO NODE    582.00 =     873.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    581.00 TO NODE    582.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.068
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =    2.56   SUBAREA RUNOFF(CFS) =    4.54
  TOTAL AREA(ACRES) =        2.7   TOTAL RUNOFF(CFS) =       4.72
  TC(MIN.) =   10.48

****************************************************************************
  FLOW PROCESS FROM NODE    582.00 TO NODE    583.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
```

```
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   900.00  DOWNSTREAM(FEET) =   892.00
  FLOW LENGTH(FEET) =   177.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   5.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.85
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.72
  PIPE TRAVEL TIME(MIN.) =   0.30    Tc(MIN.) =   10.78
  LONGEST FLOWPATH FROM NODE    580.00 TO NODE    583.00 =    1050.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    583.00 TO NODE    583.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.78
  RAINFALL INTENSITY(INCH/HR) =   4.98
  TOTAL STREAM AREA(ACRES) =     2.66
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.72

****************************************************************************
  FLOW PROCESS FROM NODE    585.00 TO NODE    586.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .6300
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    86.00
  UPSTREAM ELEVATION(FEET) =    921.00
  DOWNSTREAM ELEVATION(FEET) =    919.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.649
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    78.26
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.549
  SUBAREA RUNOFF(CFS) =      1.19
  TOTAL AREA(ACRES) =      0.25   TOTAL RUNOFF(CFS) =      1.19

****************************************************************************
  FLOW PROCESS FROM NODE    586.00 TO NODE    587.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  919.00  DOWNSTREAM ELEVATION(FEET) =  895.00
  STREET LENGTH(FEET) =   475.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.41
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.23
    HALFSTREET FLOOD WIDTH(FEET) =    5.16
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.43
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.02
  STREET FLOW TRAVEL TIME(MIN.) =   1.79   Tc(MIN.) =    7.44
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.322
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .4900
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.511
  SUBAREA AREA(ACRES) =    1.42      SUBAREA RUNOFF(CFS) =    4.40
  TOTAL AREA(ACRES) =        1.7        PEAK FLOW RATE(CFS) =       5.39

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.26   HALFSTREET FLOOD WIDTH(FEET) =   6.69
  FLOW VELOCITY(FEET/SEC.) =  4.77   DEPTH*VELOCITY(FT*FT/SEC.) =   1.24
  LONGEST FLOWPATH FROM NODE    585.00 TO NODE    587.00 =     561.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    587.00 TO NODE    583.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
```

```
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    7.44
  RAINFALL INTENSITY(INCH/HR) =   6.32
  TOTAL STREAM AREA(ACRES) =     1.67
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.39

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        4.72    10.78        4.977          2.66
      2        5.39     7.44        6.322          1.67

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1        8.65     7.44       6.322
      2        8.97    10.78       4.977

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       8.97   Tc(MIN.) =   10.78
  TOTAL AREA(ACRES) =        4.3
  LONGEST FLOWPATH FROM NODE    580.00 TO NODE    583.00 =    1050.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    583.00 TO NODE    588.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   892.00  DOWNSTREAM(FEET) =   830.00
  FLOW LENGTH(FEET) =   851.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.96
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       8.97
  PIPE TRAVEL TIME(MIN.) =   1.02    Tc(MIN.) =   11.79
  LONGEST FLOWPATH FROM NODE    580.00 TO NODE    588.00 =    1901.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    588.00 TO NODE    588.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.79
  RAINFALL INTENSITY(INCH/HR) =   4.70
  TOTAL STREAM AREA(ACRES) =     4.33
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.97

****************************************************************************
  FLOW PROCESS FROM NODE    590.00 TO NODE    591.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    893.00
  DOWNSTREAM ELEVATION(FEET) =    887.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.009
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    96.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.168
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.84
  TOTAL AREA(ACRES) =      0.13   TOTAL RUNOFF(CFS) =      0.84

****************************************************************************
  FLOW PROCESS FROM NODE    591.00 TO NODE    592.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  887.00  DOWNSTREAM ELEVATION(FEET) =  835.00
  STREET LENGTH(FEET) =   735.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
```

```
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.50
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.26
    HALFSTREET FLOOD WIDTH(FEET) =    6.74
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.67
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.48
  STREET FLOW TRAVEL TIME(MIN.) =   2.16   Tc(MIN.) =    5.17
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.994
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.790
  SUBAREA AREA(ACRES) =    1.79      SUBAREA RUNOFF(CFS) =   11.30
  TOTAL AREA(ACRES) =        1.9        PEAK FLOW RATE(CFS) =      12.13

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.31   HALFSTREET FLOOD WIDTH(FEET) =   9.04
  FLOW VELOCITY(FEET/SEC.) =  6.49   DEPTH*VELOCITY(FT*FT/SEC.) =   1.99
  LONGEST FLOWPATH FROM NODE    590.00 TO NODE    592.00 =     835.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    592.00 TO NODE    588.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    5.17
  RAINFALL INTENSITY(INCH/HR) =   7.99
  TOTAL STREAM AREA(ACRES) =     1.92
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.13

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        8.97    11.79        4.696          4.33
      2       12.13     5.17        7.994          1.92

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       17.39     5.17       7.994
      2       16.09    11.79       4.696

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      17.39   Tc(MIN.) =    5.17
  TOTAL AREA(ACRES) =        6.2
  LONGEST FLOWPATH FROM NODE    580.00 TO NODE    588.00 =    1901.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    588.00 TO NODE    573.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   826.00  DOWNSTREAM(FEET) =   825.00
  FLOW LENGTH(FEET) =    88.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.19
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      17.39
  PIPE TRAVEL TIME(MIN.) =   0.18    Tc(MIN.) =    5.35
  LONGEST FLOWPATH FROM NODE    580.00 TO NODE    573.00 =    1989.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    573.00 TO NODE    573.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1       17.39     5.35       7.820        6.25
  LONGEST FLOWPATH FROM NODE    580.00 TO NODE    573.00 =    1989.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1      110.83    19.73       3.370       69.71
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    573.00 =    4330.00 FEET.
```

```
  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1      47.44       5.35        7.820
      2     118.33      19.73        3.370

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     118.33   Tc(MIN.) =   19.73
  TOTAL AREA(ACRES) =       76.0

****************************************************************************
  FLOW PROCESS FROM NODE    573.00 TO NODE    573.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    573.00 TO NODE    573.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    600.00 TO NODE    601.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .4900
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    893.35
  DOWNSTREAM ELEVATION(FEET) =    892.65
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    9.187
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    70.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.517
  SUBAREA RUNOFF(CFS) =      1.51
  TOTAL AREA(ACRES) =      0.56   TOTAL RUNOFF(CFS) =      1.51

****************************************************************************
  FLOW PROCESS FROM NODE    601.00 TO NODE    602.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  891.00  DOWNSTREAM ELEVATION(FEET) =  888.00
  STREET LENGTH(FEET) =   292.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.61
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.32
    HALFSTREET FLOOD WIDTH(FEET) =    9.81
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.60
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.84
  STREET FLOW TRAVEL TIME(MIN.) =   1.87   Tc(MIN.) =   11.06
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.895
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (10.9 DU/AC OR LESS) RUNOFF COEFFICIENT = .4900
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.490
  SUBAREA AREA(ACRES) =    3.41      SUBAREA RUNOFF(CFS) =    8.18
  TOTAL AREA(ACRES) =        4.0        PEAK FLOW RATE(CFS) =       9.52

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.37   HALFSTREET FLOOD WIDTH(FEET) =  12.27
  FLOW VELOCITY(FEET/SEC.) =  2.93   DEPTH*VELOCITY(FT*FT/SEC.) =   1.09
  LONGEST FLOWPATH FROM NODE    600.00 TO NODE    602.00 =     362.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    602.00 TO NODE    603.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   883.00  DOWNSTREAM(FEET) =   882.00
```

```
  FLOW LENGTH(FEET) =   184.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  14.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.30
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       9.52
  PIPE TRAVEL TIME(MIN.) =   0.58    Tc(MIN.) =   11.64
  LONGEST FLOWPATH FROM NODE    600.00 TO NODE    603.00 =     546.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    603.00 TO NODE    603.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.64
  RAINFALL INTENSITY(INCH/HR) =   4.74
  TOTAL STREAM AREA(ACRES) =     3.97
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.52

****************************************************************************
  FLOW PROCESS FROM NODE    605.00 TO NODE    606.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .6300
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    891.10
  DOWNSTREAM ELEVATION(FEET) =    890.40
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    7.078
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    70.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.527
  SUBAREA RUNOFF(CFS) =      1.23
  TOTAL AREA(ACRES) =      0.30   TOTAL RUNOFF(CFS) =      1.23

****************************************************************************
  FLOW PROCESS FROM NODE    606.00 TO NODE    607.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  890.00  DOWNSTREAM ELEVATION(FEET) =  888.00
  STREET LENGTH(FEET) =   174.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.34
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.28
    HALFSTREET FLOOD WIDTH(FEET) =    7.56
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.42
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.67
  STREET FLOW TRAVEL TIME(MIN.) =   1.20   Tc(MIN.) =    8.28
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.900
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .6300
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.630
  SUBAREA AREA(ACRES) =    1.13      SUBAREA RUNOFF(CFS) =    4.20
  TOTAL AREA(ACRES) =        1.4        PEAK FLOW RATE(CFS) =       5.32

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.31   HALFSTREET FLOOD WIDTH(FEET) =   9.32
  FLOW VELOCITY(FEET/SEC.) =  2.70   DEPTH*VELOCITY(FT*FT/SEC.) =   0.84
  LONGEST FLOWPATH FROM NODE    605.00 TO NODE    607.00 =     244.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    607.00 TO NODE    603.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   883.00  DOWNSTREAM(FEET) =   882.00
  FLOW LENGTH(FEET) =   216.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.34
```

```
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.32
  PIPE TRAVEL TIME(MIN.) =   0.83    Tc(MIN.) =    9.11
  LONGEST FLOWPATH FROM NODE    605.00 TO NODE    603.00 =     460.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    603.00 TO NODE    603.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.11
  RAINFALL INTENSITY(INCH/HR) =   5.55
  TOTAL STREAM AREA(ACRES) =     1.43
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.32

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        9.52    11.64        4.736          3.97
      2        5.32     9.11        5.548          1.43

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       12.77     9.11       5.548
      2       14.06    11.64       4.736

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      14.06   Tc(MIN.) =   11.64
  TOTAL AREA(ACRES) =        5.4
  LONGEST FLOWPATH FROM NODE    600.00 TO NODE    603.00 =     546.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    603.00 TO NODE    608.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   882.00  DOWNSTREAM(FEET) =   852.00
  FLOW LENGTH(FEET) =   763.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.40
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      14.06
  PIPE TRAVEL TIME(MIN.) =   1.03    Tc(MIN.) =   12.66
  LONGEST FLOWPATH FROM NODE    600.00 TO NODE    608.00 =    1309.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    608.00 TO NODE    608.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   12.66
  RAINFALL INTENSITY(INCH/HR) =   4.49
  TOTAL STREAM AREA(ACRES) =     5.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     14.06

****************************************************************************
  FLOW PROCESS FROM NODE    610.00 TO NODE    611.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    890.45
  DOWNSTREAM ELEVATION(FEET) =    889.75
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      0.80
  TOTAL AREA(ACRES) =      0.27   TOTAL RUNOFF(CFS) =      0.80

****************************************************************************
  FLOW PROCESS FROM NODE    611.00 TO NODE    612.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  886.30  DOWNSTREAM ELEVATION(FEET) =  856.50
  STREET LENGTH(FEET) =   635.00   CURB HEIGHT(INCHES) =  6.0
```

```
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       7.04
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.28
    HALFSTREET FLOOD WIDTH(FEET) =    7.74
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.90
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.38
  STREET FLOW TRAVEL TIME(MIN.) =   2.16   Tc(MIN.) =   10.89
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.943
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    4.83      SUBAREA RUNOFF(CFS) =   12.41
  TOTAL AREA(ACRES) =        5.1        PEAK FLOW RATE(CFS) =      13.11

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.33   HALFSTREET FLOOD WIDTH(FEET) =  10.16
  FLOW VELOCITY(FEET/SEC.) =  5.70   DEPTH*VELOCITY(FT*FT/SEC.) =   1.88
  LONGEST FLOWPATH FROM NODE    610.00 TO NODE    612.00 =     705.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    612.00 TO NODE    608.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.89
  RAINFALL INTENSITY(INCH/HR) =   4.94
  TOTAL STREAM AREA(ACRES) =     5.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.11

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       14.06    12.66        4.485          5.40
      2       13.11    10.89        4.943          5.10

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       25.87    10.89       4.943
      2       25.95    12.66       4.485

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      25.95   Tc(MIN.) =   12.66
  TOTAL AREA(ACRES) =       10.5
  LONGEST FLOWPATH FROM NODE    600.00 TO NODE    608.00 =    1309.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    608.00 TO NODE    613.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   852.00  DOWNSTREAM(FEET) =   850.00
  FLOW LENGTH(FEET) =    70.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  17.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.37
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      25.95
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =   12.76
  LONGEST FLOWPATH FROM NODE    600.00 TO NODE    613.00 =    1379.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    613.00 TO NODE    613.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    615.00 TO NODE    616.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
```

```
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    888.60
  DOWNSTREAM ELEVATION(FEET) =    888.00
  ELEVATION DIFFERENCE(FEET) =      0.60
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.322
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    60.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.168
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      2.26
  TOTAL AREA(ACRES) =      0.35   TOTAL RUNOFF(CFS) =      2.26

****************************************************************************
  FLOW PROCESS FROM NODE    616.00 TO NODE    617.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  888.00  DOWNSTREAM ELEVATION(FEET) =  868.00
  STREET LENGTH(FEET) =   678.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      13.53
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.35
    HALFSTREET FLOOD WIDTH(FEET) =   11.36
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.81
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.70
  STREET FLOW TRAVEL TIME(MIN.) =   2.35   Tc(MIN.) =    6.67
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.780
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.534
  SUBAREA AREA(ACRES) =    6.24      SUBAREA RUNOFF(CFS) =   22.00
  TOTAL AREA(ACRES) =        6.6        PEAK FLOW RATE(CFS) =      23.87

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.41   HALFSTREET FLOOD WIDTH(FEET) =  14.38
  FLOW VELOCITY(FEET/SEC.) =  5.46   DEPTH*VELOCITY(FT*FT/SEC.) =   2.26
  LONGEST FLOWPATH FROM NODE    615.00 TO NODE    617.00 =     738.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    617.00 TO NODE    618.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   865.00  DOWNSTREAM(FEET) =   864.00
  FLOW LENGTH(FEET) =   112.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  18.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.03
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      23.87
  PIPE TRAVEL TIME(MIN.) =   0.23    Tc(MIN.) =    6.91
  LONGEST FLOWPATH FROM NODE    615.00 TO NODE    618.00 =     850.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    618.00 TO NODE    618.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    6.91
  RAINFALL INTENSITY(INCH/HR) =   6.63
  TOTAL STREAM AREA(ACRES) =     6.59
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     23.87

****************************************************************************
  FLOW PROCESS FROM NODE    620.00 TO NODE    621.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
```

```
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    828.85
  DOWNSTREAM ELEVATION(FEET) =    828.15
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    70.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      1.01
  TOTAL AREA(ACRES) =      0.34   TOTAL RUNOFF(CFS) =      1.01

****************************************************************************
  FLOW PROCESS FROM NODE    621.00 TO NODE    622.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  881.00  DOWNSTREAM ELEVATION(FEET) =  870.00
  STREET LENGTH(FEET) =   471.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.06
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.30
    HALFSTREET FLOOD WIDTH(FEET) =    8.44
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.65
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.08
  STREET FLOW TRAVEL TIME(MIN.) =   2.15   Tc(MIN.) =   10.89
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.945
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    3.92      SUBAREA RUNOFF(CFS) =   10.08
  TOTAL AREA(ACRES) =        4.3        PEAK FLOW RATE(CFS) =      10.95

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.34   HALFSTREET FLOOD WIDTH(FEET) =  10.93
  FLOW VELOCITY(FEET/SEC.) =  4.17   DEPTH*VELOCITY(FT*FT/SEC.) =   1.44
  LONGEST FLOWPATH FROM NODE    620.00 TO NODE    622.00 =     541.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    622.00 TO NODE    618.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   865.00  DOWNSTREAM(FEET) =   864.00
  FLOW LENGTH(FEET) =    70.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.83
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.95
  PIPE TRAVEL TIME(MIN.) =   0.15    Tc(MIN.) =   11.04
  LONGEST FLOWPATH FROM NODE    620.00 TO NODE    618.00 =     611.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    618.00 TO NODE    618.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.04
  RAINFALL INTENSITY(INCH/HR) =   4.90
  TOTAL STREAM AREA(ACRES) =     4.26
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.95

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       23.87     6.91        6.632          6.59
      2       10.95    11.04        4.901          4.26

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.
```

```
  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       30.73     6.91       6.632
      2       28.60    11.04       4.901

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      30.73   Tc(MIN.) =    6.91
  TOTAL AREA(ACRES) =       10.9
  LONGEST FLOWPATH FROM NODE    615.00 TO NODE    618.00 =     850.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    618.00 TO NODE    613.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   864.00  DOWNSTREAM(FEET) =   850.00
  FLOW LENGTH(FEET) =   362.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  14.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.97
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      30.73
  PIPE TRAVEL TIME(MIN.) =   0.40    Tc(MIN.) =    7.31
  LONGEST FLOWPATH FROM NODE    615.00 TO NODE    613.00 =    1212.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    613.00 TO NODE    613.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1       30.73     7.31       6.394       10.85
  LONGEST FLOWPATH FROM NODE    615.00 TO NODE    613.00 =    1212.00 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1       25.95    12.76       4.464       10.50
  LONGEST FLOWPATH FROM NODE    600.00 TO NODE    613.00 =    1379.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1      45.60       7.31       6.394
      2      47.41      12.76       4.464

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      47.41   Tc(MIN.) =   12.76
  TOTAL AREA(ACRES) =       21.4

****************************************************************************
  FLOW PROCESS FROM NODE    613.00 TO NODE    613.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    613.00 TO NODE    623.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   850.00  DOWNSTREAM(FEET) =   840.00
  FLOW LENGTH(FEET) =   142.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  20.74
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      47.41
  PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =   12.87
  LONGEST FLOWPATH FROM NODE    600.00 TO NODE    623.00 =    1521.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    623.00 TO NODE    623.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   12.87
  RAINFALL INTENSITY(INCH/HR) =   4.44
  TOTAL STREAM AREA(ACRES) =    21.35
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     47.41

****************************************************************************
  FLOW PROCESS FROM NODE    625.00 TO NODE    626.00 IS CODE =  21
----------------------------------------------------------------------------
```

```
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   261.00
  UPSTREAM ELEVATION(FEET) =    853.00
  DOWNSTREAM ELEVATION(FEET) =    848.00
  ELEVATION DIFFERENCE(FEET) =      5.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    9.947
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    83.74
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.241
  SUBAREA RUNOFF(CFS) =      0.95
  TOTAL AREA(ACRES) =      0.52   TOTAL RUNOFF(CFS) =      0.95

****************************************************************************
  FLOW PROCESS FROM NODE    626.00 TO NODE    623.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   841.00  DOWNSTREAM(FEET) =   840.00
  FLOW LENGTH(FEET) =    60.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   3.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.36
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.95
  PIPE TRAVEL TIME(MIN.) =   0.23    Tc(MIN.) =   10.18
  LONGEST FLOWPATH FROM NODE    625.00 TO NODE    623.00 =     321.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    623.00 TO NODE    623.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.18
  RAINFALL INTENSITY(INCH/HR) =   5.16
  TOTAL STREAM AREA(ACRES) =     0.52
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.95

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       47.41    12.87        4.438         21.35
      2        0.95    10.18        5.165          0.52

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       38.43    10.18       5.165
      2       48.23    12.87       4.438

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      48.23   Tc(MIN.) =   12.87
  TOTAL AREA(ACRES) =       21.9
  LONGEST FLOWPATH FROM NODE    600.00 TO NODE    623.00 =    1521.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    623.00 TO NODE    627.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   840.00  DOWNSTREAM(FEET) =   828.00
  FLOW LENGTH(FEET) =   178.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  20.43
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      48.23
  PIPE TRAVEL TIME(MIN.) =   0.15    Tc(MIN.) =   13.02
  LONGEST FLOWPATH FROM NODE    600.00 TO NODE    627.00 =    1699.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    627.00 TO NODE    627.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   13.02
```

```
  RAINFALL INTENSITY(INCH/HR) =   4.41
  TOTAL STREAM AREA(ACRES) =    21.87
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     48.23

****************************************************************************
  FLOW PROCESS FROM NODE    630.00 TO NODE    631.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    882.85
  DOWNSTREAM ELEVATION(FEET) =    882.15
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    70.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      0.86
  TOTAL AREA(ACRES) =      0.29   TOTAL RUNOFF(CFS) =      0.86

****************************************************************************
  FLOW PROCESS FROM NODE    631.00 TO NODE    632.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  881.00  DOWNSTREAM ELEVATION(FEET) =  834.50
  STREET LENGTH(FEET) =   687.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       7.66
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.27
    HALFSTREET FLOOD WIDTH(FEET) =    7.39
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.77
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.58
  STREET FLOW TRAVEL TIME(MIN.) =   1.99   Tc(MIN.) =   10.72
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.994
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    5.22      SUBAREA RUNOFF(CFS) =   13.56
  TOTAL AREA(ACRES) =        5.5        PEAK FLOW RATE(CFS) =      14.31

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.32   HALFSTREET FLOOD WIDTH(FEET) =   9.81
  FLOW VELOCITY(FEET/SEC.) =  6.62   DEPTH*VELOCITY(FT*FT/SEC.) =   2.14
  LONGEST FLOWPATH FROM NODE    630.00 TO NODE    632.00 =     757.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    632.00 TO NODE    627.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   829.00  DOWNSTREAM(FEET) =   828.00
  FLOW LENGTH(FEET) =    61.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.96
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      14.31
  PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =   10.83
  LONGEST FLOWPATH FROM NODE    630.00 TO NODE    627.00 =     818.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    627.00 TO NODE    627.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.83
  RAINFALL INTENSITY(INCH/HR) =   4.96
  TOTAL STREAM AREA(ACRES) =     5.51
```

```
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     14.31

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       48.23    13.02        4.406         21.87
      2       14.31    10.83        4.960          5.51

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       57.15    10.83       4.960
      2       60.94    13.02       4.406

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      60.94   Tc(MIN.) =   13.02
  TOTAL AREA(ACRES) =       27.4
  LONGEST FLOWPATH FROM NODE    600.00 TO NODE    627.00 =    1699.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    627.00 TO NODE    633.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   828.00  DOWNSTREAM(FEET) =   826.00
  FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  23.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.67
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      60.94
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =   13.11
  LONGEST FLOWPATH FROM NODE    600.00 TO NODE    633.00 =    1779.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    633.00 TO NODE    633.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   13.11
  RAINFALL INTENSITY(INCH/HR) =   4.39
  TOTAL STREAM AREA(ACRES) =    27.38
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     60.94

****************************************************************************
  FLOW PROCESS FROM NODE    635.00 TO NODE    636.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    882.85
  DOWNSTREAM ELEVATION(FEET) =    882.15
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    70.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      0.86
  TOTAL AREA(ACRES) =      0.29   TOTAL RUNOFF(CFS) =      0.86

****************************************************************************
  FLOW PROCESS FROM NODE    636.00 TO NODE    637.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  881.50  DOWNSTREAM ELEVATION(FEET) =  831.00
  STREET LENGTH(FEET) =  1126.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.61
```

```
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.28
    HALFSTREET FLOOD WIDTH(FEET) =    7.56
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.79
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.33
  STREET FLOW TRAVEL TIME(MIN.) =   3.92   Tc(MIN.) =   12.65
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.488
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    4.89      SUBAREA RUNOFF(CFS) =   11.41
  TOTAL AREA(ACRES) =        5.2        PEAK FLOW RATE(CFS) =      12.09

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.33   HALFSTREET FLOOD WIDTH(FEET) =   9.95
  FLOW VELOCITY(FEET/SEC.) =  5.45   DEPTH*VELOCITY(FT*FT/SEC.) =   1.77
  LONGEST FLOWPATH FROM NODE    635.00 TO NODE    637.00 =    1196.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    637.00 TO NODE    633.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   12.65
  RAINFALL INTENSITY(INCH/HR) =   4.49
  TOTAL STREAM AREA(ACRES) =     5.18
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.09

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       60.94    13.11        4.387         27.38
      2       12.09    12.65        4.488          5.18

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       71.65    12.65       4.488
      2       72.75    13.11       4.387

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      72.75   Tc(MIN.) =   13.11
  TOTAL AREA(ACRES) =       32.6
  LONGEST FLOWPATH FROM NODE    600.00 TO NODE    633.00 =    1779.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    633.00 TO NODE    573.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   826.00  DOWNSTREAM(FEET) =   825.00
  FLOW LENGTH(FEET) =    96.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  28.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.18
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      72.75
  PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =   13.25
  LONGEST FLOWPATH FROM NODE    600.00 TO NODE    573.00 =    1875.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    573.00 TO NODE    573.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1       72.75    13.25       4.356       32.56
  LONGEST FLOWPATH FROM NODE    600.00 TO NODE    573.00 =    1875.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1      118.33    19.73       3.370       75.96
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    573.00 =    4330.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1     152.22      13.25        4.356
      2     174.61      19.73        3.370
```

```
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     174.61   Tc(MIN.) =   19.73
  TOTAL AREA(ACRES) =      108.5

****************************************************************************
  FLOW PROCESS FROM NODE    573.00 TO NODE    573.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    573.00 TO NODE    638.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   826.00  DOWNSTREAM(FEET) =   770.00
  FLOW LENGTH(FEET) =   966.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  29.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  26.44
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     174.61
  PIPE TRAVEL TIME(MIN.) =   0.61    Tc(MIN.) =   20.34
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    638.00 =    5296.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    638.00 TO NODE    638.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   20.34
  RAINFALL INTENSITY(INCH/HR) =   3.30
  TOTAL STREAM AREA(ACRES) =   108.52
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    174.61

****************************************************************************
  FLOW PROCESS FROM NODE    640.00 TO NODE    641.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   133.00
  UPSTREAM ELEVATION(FEET) =    831.00
  DOWNSTREAM ELEVATION(FEET) =    830.00
  ELEVATION DIFFERENCE(FEET) =      1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.552
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    55.04
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.168
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.55
  TOTAL AREA(ACRES) =      0.24   TOTAL RUNOFF(CFS) =      1.55

****************************************************************************
  FLOW PROCESS FROM NODE    641.00 TO NODE    642.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  830.00  DOWNSTREAM ELEVATION(FEET) =  775.00
  STREET LENGTH(FEET) =   869.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.84
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.26
    HALFSTREET FLOOD WIDTH(FEET) =    6.57
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.31
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.37
  STREET FLOW TRAVEL TIME(MIN.) =   2.73   Tc(MIN.) =    7.28
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.410
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
```

```
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.719
  SUBAREA AREA(ACRES) =    1.86      SUBAREA RUNOFF(CFS) =    8.47
  TOTAL AREA(ACRES) =        2.1        PEAK FLOW RATE(CFS) =       9.68

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.29   HALFSTREET FLOOD WIDTH(FEET) =   8.33
  FLOW VELOCITY(FEET/SEC.) =  5.97   DEPTH*VELOCITY(FT*FT/SEC.) =   1.75
  LONGEST FLOWPATH FROM NODE    640.00 TO NODE    642.00 =    1002.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    642.00 TO NODE    638.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    7.28
  RAINFALL INTENSITY(INCH/HR) =   6.41
  TOTAL STREAM AREA(ACRES) =     2.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.68

****************************************************************************
  FLOW PROCESS FROM NODE    645.00 TO NODE    646.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    833.55
  DOWNSTREAM ELEVATION(FEET) =    832.85
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      0.80
  TOTAL AREA(ACRES) =      0.27   TOTAL RUNOFF(CFS) =      0.80

****************************************************************************
  FLOW PROCESS FROM NODE    646.00 TO NODE    647.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  828.90  DOWNSTREAM ELEVATION(FEET) =  784.50
  STREET LENGTH(FEET) =   671.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       7.85
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.28
    HALFSTREET FLOOD WIDTH(FEET) =    7.51
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.76
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.59
  STREET FLOW TRAVEL TIME(MIN.) =   1.94   Tc(MIN.) =   10.68
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.007
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    5.40      SUBAREA RUNOFF(CFS) =   14.06
  TOTAL AREA(ACRES) =        5.7        PEAK FLOW RATE(CFS) =      14.76

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.33   HALFSTREET FLOOD WIDTH(FEET) =   9.95
  FLOW VELOCITY(FEET/SEC.) =  6.66   DEPTH*VELOCITY(FT*FT/SEC.) =   2.17
  LONGEST FLOWPATH FROM NODE    645.00 TO NODE    647.00 =     741.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    647.00 TO NODE    638.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   780.00  DOWNSTREAM(FEET) =   770.00
  FLOW LENGTH(FEET) =   180.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.34
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      14.76
```

```
  PIPE TRAVEL TIME(MIN.) =   0.21    Tc(MIN.) =   10.89
  LONGEST FLOWPATH FROM NODE    645.00 TO NODE    638.00 =     921.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    638.00 TO NODE    638.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.89
  RAINFALL INTENSITY(INCH/HR) =   4.95
  TOTAL STREAM AREA(ACRES) =     5.67
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     14.76

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1      174.61    20.34        3.304        108.52
      2        9.68     7.28        6.410          2.10
      3       14.76    10.89        4.945          5.67

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       82.05     7.28        6.410
      2      115.68    10.89        4.945
      3      189.46    20.34        3.304

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     189.46   Tc(MIN.) =   20.34
  TOTAL AREA(ACRES) =      116.3
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    638.00 =    5296.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    638.00 TO NODE    648.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   770.00  DOWNSTREAM(FEET) =   755.00
  FLOW LENGTH(FEET) =   266.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  31.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  26.26
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     189.46
  PIPE TRAVEL TIME(MIN.) =   0.17    Tc(MIN.) =   20.51
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    648.00 =    5562.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    648.00 TO NODE    648.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    650.00 TO NODE    651.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    854.65
  DOWNSTREAM ELEVATION(FEET) =    853.95
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      0.50
  TOTAL AREA(ACRES) =      0.17   TOTAL RUNOFF(CFS) =      0.50

****************************************************************************
  FLOW PROCESS FROM NODE    651.00 TO NODE    652.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  852.00  DOWNSTREAM ELEVATION(FEET) =  813.00
  STREET LENGTH(FEET) =   722.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
```

```
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       7.29
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.28
    HALFSTREET FLOOD WIDTH(FEET) =    7.56
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.28
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.47
  STREET FLOW TRAVEL TIME(MIN.) =   2.28   Tc(MIN.) =   11.01
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.908
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    5.30      SUBAREA RUNOFF(CFS) =   13.53
  TOTAL AREA(ACRES) =        5.5        PEAK FLOW RATE(CFS) =      13.96

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.33   HALFSTREET FLOOD WIDTH(FEET) =  10.16
  FLOW VELOCITY(FEET/SEC.) =  6.07   DEPTH*VELOCITY(FT*FT/SEC.) =   2.00
  LONGEST FLOWPATH FROM NODE    650.00 TO NODE    652.00 =     792.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    652.00 TO NODE    653.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   808.00  DOWNSTREAM(FEET) =   780.00
  FLOW LENGTH(FEET) =   468.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.55
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      13.96
  PIPE TRAVEL TIME(MIN.) =   0.54    Tc(MIN.) =   11.55
  LONGEST FLOWPATH FROM NODE    650.00 TO NODE    653.00 =    1260.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    653.00 TO NODE    653.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.55
  RAINFALL INTENSITY(INCH/HR) =   4.76
  TOTAL STREAM AREA(ACRES) =     5.47
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.96

****************************************************************************
  FLOW PROCESS FROM NODE    655.00 TO NODE    656.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    840.00
  DOWNSTREAM ELEVATION(FEET) =    830.00
  ELEVATION DIFFERENCE(FEET) =     10.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.061
  SUBAREA RUNOFF(CFS) =      0.17
  TOTAL AREA(ACRES) =      0.07   TOTAL RUNOFF(CFS) =      0.17

****************************************************************************
  FLOW PROCESS FROM NODE    656.00 TO NODE    657.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   830.00  DOWNSTREAM(FEET) =   785.00
  FLOW LENGTH(FEET) =   878.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   1.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.79
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.17
  PIPE TRAVEL TIME(MIN.) =   3.86    Tc(MIN.) =   10.13
  LONGEST FLOWPATH FROM NODE    655.00 TO NODE    657.00 =     978.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    656.00 TO NODE    657.00 IS CODE =  81
----------------------------------------------------------------------------
```

```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.180
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =    1.70   SUBAREA RUNOFF(CFS) =    3.08
  TOTAL AREA(ACRES) =        1.8   TOTAL RUNOFF(CFS) =       3.21
  TC(MIN.) =   10.13

****************************************************************************
  FLOW PROCESS FROM NODE    657.00 TO NODE    653.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   781.00  DOWNSTREAM(FEET) =   780.00
  FLOW LENGTH(FEET) =    57.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.28
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.21
  PIPE TRAVEL TIME(MIN.) =   0.15    Tc(MIN.) =   10.28
  LONGEST FLOWPATH FROM NODE    655.00 TO NODE    653.00 =    1035.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    653.00 TO NODE    653.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.28
  RAINFALL INTENSITY(INCH/HR) =   5.13
  TOTAL STREAM AREA(ACRES) =     1.77
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.21

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       13.96    11.55        4.760          5.47
      2        3.21    10.28        5.130          1.77

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       15.63    10.28       5.130
      2       16.94    11.55       4.760

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      16.94   Tc(MIN.) =   11.55
  TOTAL AREA(ACRES) =        7.2
  LONGEST FLOWPATH FROM NODE    650.00 TO NODE    653.00 =    1260.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    653.00 TO NODE    658.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   780.00  DOWNSTREAM(FEET) =   761.00
  FLOW LENGTH(FEET) =   258.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  16.49
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      16.94
  PIPE TRAVEL TIME(MIN.) =   0.26    Tc(MIN.) =   11.81
  LONGEST FLOWPATH FROM NODE    650.00 TO NODE    658.00 =    1518.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    658.00 TO NODE    658.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.81
  RAINFALL INTENSITY(INCH/HR) =   4.69
  TOTAL STREAM AREA(ACRES) =     7.24
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     16.94

****************************************************************************
  FLOW PROCESS FROM NODE    660.00 TO NODE    661.00 IS CODE =  21
```

```
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
========================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    90.00
  UPSTREAM ELEVATION(FEET) =    769.50
  DOWNSTREAM ELEVATION(FEET) =    768.50
  ELEVATION DIFFERENCE(FEET) =      1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.500
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    71.11
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.800
  SUBAREA RUNOFF(CFS) =      0.75
  TOTAL AREA(ACRES) =      0.25   TOTAL RUNOFF(CFS) =      0.75

************************************************************************
  FLOW PROCESS FROM NODE    661.00 TO NODE    662.00 IS CODE =  31
------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   763.00  DOWNSTREAM(FEET) =   761.00
  FLOW LENGTH(FEET) =   170.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   3.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.59
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.75
  PIPE TRAVEL TIME(MIN.) =   0.79    Tc(MIN.) =    9.29
  LONGEST FLOWPATH FROM NODE    660.00 TO NODE    662.00 =     260.00 FEET.

************************************************************************
  FLOW PROCESS FROM NODE    661.00 TO NODE    662.00 IS CODE =  81
------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
========================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.478
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5200
  SUBAREA AREA(ACRES) =    0.97   SUBAREA RUNOFF(CFS) =    2.76
  TOTAL AREA(ACRES) =        1.2   TOTAL RUNOFF(CFS) =       3.47
  TC(MIN.) =    9.29

************************************************************************
  FLOW PROCESS FROM NODE    662.00 TO NODE    658.00 IS CODE =   1
------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
========================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.29
  RAINFALL INTENSITY(INCH/HR) =   5.48
  TOTAL STREAM AREA(ACRES) =     1.22
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.47

************************************************************************
  FLOW PROCESS FROM NODE    665.00 TO NODE    666.00 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
========================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    817.85
  DOWNSTREAM ELEVATION(FEET) =    817.15
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    70.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      0.44
  TOTAL AREA(ACRES) =      0.15   TOTAL RUNOFF(CFS) =      0.44

************************************************************************
  FLOW PROCESS FROM NODE    666.00 TO NODE    667.00 IS CODE =  62
------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
========================================================================
  UPSTREAM ELEVATION(FEET) =  814.00  DOWNSTREAM ELEVATION(FEET) =  765.00
  STREET LENGTH(FEET) =   606.00   CURB HEIGHT(INCHES) =  6.0
```

```
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.10
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.21
    HALFSTREET FLOOD WIDTH(FEET) =    4.17
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.31
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.11
  STREET FLOW TRAVEL TIME(MIN.) =   1.90   Tc(MIN.) =   10.64
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.020
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .6300
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.621
  SUBAREA AREA(ACRES) =    1.68      SUBAREA RUNOFF(CFS) =    5.31
  TOTAL AREA(ACRES) =        1.8        PEAK FLOW RATE(CFS) =       5.70

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.25   HALFSTREET FLOOD WIDTH(FEET) =   6.10
  FLOW VELOCITY(FEET/SEC.) =  5.82   DEPTH*VELOCITY(FT*FT/SEC.) =   1.44
  LONGEST FLOWPATH FROM NODE    665.00 TO NODE    667.00 =     676.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    667.00 TO NODE    658.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.64
  RAINFALL INTENSITY(INCH/HR) =   5.02
  TOTAL STREAM AREA(ACRES) =     1.83
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.70

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       16.94    11.81        4.691          7.24
      2        3.47     9.29        5.478          1.22
      3        5.70    10.64        5.020          1.83

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       22.96     9.29       5.478
      2       24.72    10.64       5.020
      3       25.24    11.81       4.691

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      25.24   Tc(MIN.) =   11.81
  TOTAL AREA(ACRES) =       10.3
  LONGEST FLOWPATH FROM NODE    650.00 TO NODE    658.00 =    1518.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    658.00 TO NODE    648.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   761.00  DOWNSTREAM(FEET) =   755.00
  FLOW LENGTH(FEET) =    77.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  18.26
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      25.24
  PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =   11.88
  LONGEST FLOWPATH FROM NODE    650.00 TO NODE    648.00 =    1595.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    648.00 TO NODE    648.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
```

```
      1       25.24    11.88       4.674       10.29
  LONGEST FLOWPATH FROM NODE    650.00 TO NODE    648.00 =    1595.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1      189.46    20.51       3.287      116.29
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    648.00 =    5562.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1     135.01      11.88        4.674
      2     207.21      20.51        3.287

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     207.21   Tc(MIN.) =   20.51
  TOTAL AREA(ACRES) =      126.6

****************************************************************************
  FLOW PROCESS FROM NODE    648.00 TO NODE    648.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    648.00 TO NODE    668.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   755.00  DOWNSTREAM(FEET) =   727.00
  FLOW LENGTH(FEET) =   675.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  32.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  24.46
  ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     207.21
  PIPE TRAVEL TIME(MIN.) =   0.46    Tc(MIN.) =   20.97
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    668.00 =    6237.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    668.00 TO NODE    668.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   20.97
  RAINFALL INTENSITY(INCH/HR) =   3.24
  TOTAL STREAM AREA(ACRES) =   126.58
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    207.21

****************************************************************************
  FLOW PROCESS FROM NODE    670.00 TO NODE    671.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    90.00
  UPSTREAM ELEVATION(FEET) =    774.00
  DOWNSTREAM ELEVATION(FEET) =    765.00
  ELEVATION DIFFERENCE(FEET) =      9.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.457
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.168
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      2.06
  TOTAL AREA(ACRES) =      0.32   TOTAL RUNOFF(CFS) =      2.06

****************************************************************************
  FLOW PROCESS FROM NODE    671.00 TO NODE    672.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  765.00  DOWNSTREAM ELEVATION(FEET) =  732.40
  STREET LENGTH(FEET) =   755.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 36.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  18.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
```

```
    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       9.05
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.31
    HALFSTREET FLOOD WIDTH(FEET) =    9.40
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.52
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.42
  STREET FLOW TRAVEL TIME(MIN.) =   2.78   Tc(MIN.) =    5.24
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.923
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .6300
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.647
  SUBAREA AREA(ACRES) =    2.76      SUBAREA RUNOFF(CFS) =   13.78
  TOTAL AREA(ACRES) =        3.1        PEAK FLOW RATE(CFS) =      15.78

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.36   HALFSTREET FLOOD WIDTH(FEET) =  11.91
  FLOW VELOCITY(FEET/SEC.) =  5.14   DEPTH*VELOCITY(FT*FT/SEC.) =   1.87
  LONGEST FLOWPATH FROM NODE    670.00 TO NODE    672.00 =     845.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    672.00 TO NODE    668.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    5.24
  RAINFALL INTENSITY(INCH/HR) =   7.92
  TOTAL STREAM AREA(ACRES) =     3.08
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     15.78

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1      207.21    20.97        3.240        126.58
      2       15.78     5.24        7.923          3.08

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       67.57     5.24       7.923
      2      213.67    20.97       3.240

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     213.67   Tc(MIN.) =   20.97
  TOTAL AREA(ACRES) =      129.7
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    668.00 =    6237.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    668.00 TO NODE    673.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   728.00  DOWNSTREAM(FEET) =   705.00
  FLOW LENGTH(FEET) =   757.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  48.0 INCH PIPE IS  34.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  21.90
  ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     213.67
  PIPE TRAVEL TIME(MIN.) =   0.58    Tc(MIN.) =   21.54
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    673.00 =    6994.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    673.00 TO NODE    673.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   21.54
  RAINFALL INTENSITY(INCH/HR) =   3.18
  TOTAL STREAM AREA(ACRES) =   129.66
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    213.67

****************************************************************************
  FLOW PROCESS FROM NODE    680.00 TO NODE    681.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .6300
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    95.00
  UPSTREAM ELEVATION(FEET) =    732.40
```

```
  DOWNSTREAM ELEVATION(FEET) =    729.10
  ELEVATION DIFFERENCE(FEET) =      3.30
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.445
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.731
  SUBAREA RUNOFF(CFS) =      1.80
  TOTAL AREA(ACRES) =      0.37   TOTAL RUNOFF(CFS) =      1.80

****************************************************************************
  FLOW PROCESS FROM NODE    681.00 TO NODE    682.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  729.10  DOWNSTREAM ELEVATION(FEET) =  710.59
  STREET LENGTH(FEET) =   658.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 36.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  18.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.84
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.31
    HALFSTREET FLOOD WIDTH(FEET) =    9.14
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.59
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.11
  STREET FLOW TRAVEL TIME(MIN.) =   3.06   Tc(MIN.) =    8.50
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.800
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .6300
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.630
  SUBAREA AREA(ACRES) =    2.73      SUBAREA RUNOFF(CFS) =    9.98
  TOTAL AREA(ACRES) =        3.1        PEAK FLOW RATE(CFS) =      11.33

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.35   HALFSTREET FLOOD WIDTH(FEET) =  11.33
  FLOW VELOCITY(FEET/SEC.) =  4.04   DEPTH*VELOCITY(FT*FT/SEC.) =   1.43
  LONGEST FLOWPATH FROM NODE    680.00 TO NODE    682.00 =     753.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    682.00 TO NODE    673.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.50
  RAINFALL INTENSITY(INCH/HR) =   5.80
  TOTAL STREAM AREA(ACRES) =     3.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.33

****************************************************************************
  FLOW PROCESS FROM NODE    675.00 TO NODE    676.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (10.9 DU/AC OR LESS) RUNOFF COEFFICIENT = .6000
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    80.00
  UPSTREAM ELEVATION(FEET) =    723.60
  DOWNSTREAM ELEVATION(FEET) =    722.00
  ELEVATION DIFFERENCE(FEET) =      1.60
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.389
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    80.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.973
  SUBAREA RUNOFF(CFS) =      1.80
  TOTAL AREA(ACRES) =      0.43   TOTAL RUNOFF(CFS) =      1.80

****************************************************************************
  FLOW PROCESS FROM NODE    676.00 TO NODE    677.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   718.00  DOWNSTREAM(FEET) =   713.00
  FLOW LENGTH(FEET) =   222.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   4.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.82
```

```
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.80
  PIPE TRAVEL TIME(MIN.) =   0.64    Tc(MIN.) =    7.02
  LONGEST FLOWPATH FROM NODE    675.00 TO NODE    677.00 =     302.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    676.00 TO NODE    677.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.559
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .6300
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.6212
  SUBAREA AREA(ACRES) =    1.04   SUBAREA RUNOFF(CFS) =    4.30
  TOTAL AREA(ACRES) =        1.5   TOTAL RUNOFF(CFS) =       5.99
  TC(MIN.) =    7.02

****************************************************************************
  FLOW PROCESS FROM NODE    677.00 TO NODE    673.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   713.00  DOWNSTREAM(FEET) =   705.00
  FLOW LENGTH(FEET) =   126.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   5.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.89
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.99
  PIPE TRAVEL TIME(MIN.) =   0.18    Tc(MIN.) =    7.20
  LONGEST FLOWPATH FROM NODE    675.00 TO NODE    673.00 =     428.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    673.00 TO NODE    673.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =    7.20
  RAINFALL INTENSITY(INCH/HR) =   6.46
  TOTAL STREAM AREA(ACRES) =     1.47
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.99

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1      213.67    21.54        3.184        129.66
      2       11.33     8.50        5.800          3.10
      3        5.99     7.20        6.455          1.47

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1      120.97     7.20       6.455
      2      133.99     8.50       5.800
      3      222.84    21.54       3.184

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     222.84   Tc(MIN.) =   21.54
  TOTAL AREA(ACRES) =      134.2
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    673.00 =    6994.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    673.00 TO NODE    683.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   705.00  DOWNSTREAM(FEET) =   703.00
  FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  51.0 INCH PIPE IS  36.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  20.61
  ESTIMATED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     222.84
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =   21.61
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    683.00 =    7074.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    683.00 TO NODE    683.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    690.00 TO NODE    691.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    818.45
  DOWNSTREAM ELEVATION(FEET) =    817.75
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      0.56
  TOTAL AREA(ACRES) =      0.19   TOTAL RUNOFF(CFS) =      0.56

****************************************************************************
  FLOW PROCESS FROM NODE    691.00 TO NODE    692.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  816.50  DOWNSTREAM ELEVATION(FEET) =  810.00
  STREET LENGTH(FEET) =   363.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.30
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.26
    HALFSTREET FLOOD WIDTH(FEET) =    6.74
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.88
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.75
  STREET FLOW TRAVEL TIME(MIN.) =   2.10   Tc(MIN.) =   10.83
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.960
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    2.12      SUBAREA RUNOFF(CFS) =    5.47
  TOTAL AREA(ACRES) =        2.3        PEAK FLOW RATE(CFS) =       5.96

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.30   HALFSTREET FLOOD WIDTH(FEET) =   8.91
  FLOW VELOCITY(FEET/SEC.) =  3.27   DEPTH*VELOCITY(FT*FT/SEC.) =   0.99
  LONGEST FLOWPATH FROM NODE    690.00 TO NODE    692.00 =     433.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    692.00 TO NODE    693.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   805.00  DOWNSTREAM(FEET) =   793.00
  FLOW LENGTH(FEET) =   245.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.81
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.96
  PIPE TRAVEL TIME(MIN.) =   0.38    Tc(MIN.) =   11.21
  LONGEST FLOWPATH FROM NODE    690.00 TO NODE    693.00 =     678.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    693.00 TO NODE    693.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.21
  RAINFALL INTENSITY(INCH/HR) =   4.85
  TOTAL STREAM AREA(ACRES) =     2.31
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.96

****************************************************************************
  FLOW PROCESS FROM NODE    695.00 TO NODE    696.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
```

```
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    818.45
  DOWNSTREAM ELEVATION(FEET) =    817.75
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      0.56
  TOTAL AREA(ACRES) =      0.19   TOTAL RUNOFF(CFS) =      0.56

****************************************************************************
  FLOW PROCESS FROM NODE    696.00 TO NODE    697.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  817.00  DOWNSTREAM ELEVATION(FEET) =  798.50
  STREET LENGTH(FEET) =   520.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.03
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.23
    HALFSTREET FLOOD WIDTH(FEET) =    5.34
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.75
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.87
  STREET FLOW TRAVEL TIME(MIN.) =   2.31   Tc(MIN.) =   11.04
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.899
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    1.93      SUBAREA RUNOFF(CFS) =    4.92
  TOTAL AREA(ACRES) =        2.1        PEAK FLOW RATE(CFS) =       5.40

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.27   HALFSTREET FLOOD WIDTH(FEET) =   7.27
  FLOW VELOCITY(FEET/SEC.) =  4.17   DEPTH*VELOCITY(FT*FT/SEC.) =   1.13
  LONGEST FLOWPATH FROM NODE    695.00 TO NODE    697.00 =     590.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    697.00 TO NODE    693.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.04
  RAINFALL INTENSITY(INCH/HR) =   4.90
  TOTAL STREAM AREA(ACRES) =     2.12
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.40

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        5.96    11.21        4.852          2.31
      2        5.40    11.04        4.899          2.12

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       11.27    11.04       4.899
      2       11.31    11.21       4.852

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      11.31   Tc(MIN.) =   11.21
  TOTAL AREA(ACRES) =        4.4
  LONGEST FLOWPATH FROM NODE    690.00 TO NODE    693.00 =     678.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    693.00 TO NODE    698.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
```

```
  ELEVATION DATA: UPSTREAM(FEET) =   793.00  DOWNSTREAM(FEET) =   785.00
  FLOW LENGTH(FEET) =   174.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.52
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      11.31
  PIPE TRAVEL TIME(MIN.) =   0.23    Tc(MIN.) =   11.44
  LONGEST FLOWPATH FROM NODE    690.00 TO NODE    698.00 =     852.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    698.00 TO NODE    698.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.44
  RAINFALL INTENSITY(INCH/HR) =   4.79
  TOTAL STREAM AREA(ACRES) =     4.43
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.31

****************************************************************************
  FLOW PROCESS FROM NODE    700.00 TO NODE    701.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    817.65
  DOWNSTREAM ELEVATION(FEET) =    816.95
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      0.86
  TOTAL AREA(ACRES) =      0.29   TOTAL RUNOFF(CFS) =      0.86

****************************************************************************
  FLOW PROCESS FROM NODE    701.00 TO NODE    702.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  811.80  DOWNSTREAM ELEVATION(FEET) =  792.00
  STREET LENGTH(FEET) =   571.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.96
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.29
    HALFSTREET FLOOD WIDTH(FEET) =    8.21
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.40
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.28
  STREET FLOW TRAVEL TIME(MIN.) =   2.17   Tc(MIN.) =   10.90
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.941
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    4.74      SUBAREA RUNOFF(CFS) =   12.18
  TOTAL AREA(ACRES) =        5.0        PEAK FLOW RATE(CFS) =      12.92

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.34   HALFSTREET FLOOD WIDTH(FEET) =  10.79
  FLOW VELOCITY(FEET/SEC.) =  5.04   DEPTH*VELOCITY(FT*FT/SEC.) =   1.72
  LONGEST FLOWPATH FROM NODE    700.00 TO NODE    702.00 =     641.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    702.00 TO NODE    698.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.90
  RAINFALL INTENSITY(INCH/HR) =   4.94
  TOTAL STREAM AREA(ACRES) =     5.03
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.92
```

```
  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       11.31    11.44        4.788          4.43
      2       12.92    10.90        4.941          5.03

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       23.88    10.90       4.941
      2       23.83    11.44       4.788

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      23.88   Tc(MIN.) =   10.90
  TOTAL AREA(ACRES) =        9.5
  LONGEST FLOWPATH FROM NODE    690.00 TO NODE    698.00 =     852.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    698.00 TO NODE    703.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   785.00  DOWNSTREAM(FEET) =   765.00
  FLOW LENGTH(FEET) =   350.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.78
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      23.88
  PIPE TRAVEL TIME(MIN.) =   0.37    Tc(MIN.) =   11.27
  LONGEST FLOWPATH FROM NODE    690.00 TO NODE    703.00 =    1202.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    703.00 TO NODE    703.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.27
  RAINFALL INTENSITY(INCH/HR) =   4.84
  TOTAL STREAM AREA(ACRES) =     9.46
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     23.88

****************************************************************************
  FLOW PROCESS FROM NODE    705.00 TO NODE    706.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    784.95
  DOWNSTREAM ELEVATION(FEET) =    784.25
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      1.13
  TOTAL AREA(ACRES) =      0.38   TOTAL RUNOFF(CFS) =      1.13

****************************************************************************
  FLOW PROCESS FROM NODE    706.00 TO NODE    707.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  783.00  DOWNSTREAM ELEVATION(FEET) =  770.00
  STREET LENGTH(FEET) =   296.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.82
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.26
    HALFSTREET FLOOD WIDTH(FEET) =    6.51
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.44
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.14
```

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  STREET FLOW TRAVEL TIME(MIN.) =   1.11   Tc(MIN.) =    9.84
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.276
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    2.69      SUBAREA RUNOFF(CFS) =    7.38
  TOTAL AREA(ACRES) =        3.1        PEAK FLOW RATE(CFS) =       8.42

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.30   HALFSTREET FLOOD WIDTH(FEET) =   8.50
  FLOW VELOCITY(FEET/SEC.) =  5.01   DEPTH*VELOCITY(FT*FT/SEC.) =   1.48
  LONGEST FLOWPATH FROM NODE    705.00 TO NODE    707.00 =     366.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    707.00 TO NODE    703.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.84
  RAINFALL INTENSITY(INCH/HR) =   5.28
  TOTAL STREAM AREA(ACRES) =     3.07
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.42

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       23.88    11.27        4.836          9.46
      2        8.42     9.84        5.276          3.07

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       30.31     9.84       5.276
      2       31.60    11.27       4.836

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      31.60   Tc(MIN.) =   11.27
  TOTAL AREA(ACRES) =       12.5
  LONGEST FLOWPATH FROM NODE    690.00 TO NODE    703.00 =    1202.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    703.00 TO NODE    708.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   765.00  DOWNSTREAM(FEET) =   743.00
  FLOW LENGTH(FEET) =   540.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  14.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.37
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      31.60
  PIPE TRAVEL TIME(MIN.) =   0.59    Tc(MIN.) =   11.86
  LONGEST FLOWPATH FROM NODE    690.00 TO NODE    708.00 =    1742.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    708.00 TO NODE    708.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.86
  RAINFALL INTENSITY(INCH/HR) =   4.68
  TOTAL STREAM AREA(ACRES) =    12.53
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     31.60

****************************************************************************
  FLOW PROCESS FROM NODE    710.00 TO NODE    711.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    771.45
  DOWNSTREAM ELEVATION(FEET) =    770.75
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      0.62
  TOTAL AREA(ACRES) =      0.21   TOTAL RUNOFF(CFS) =      0.62
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    711.00 TO NODE    712.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  768.00  DOWNSTREAM ELEVATION(FEET) =  748.00
  STREET LENGTH(FEET) =   450.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.09
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.26
    HALFSTREET FLOOD WIDTH(FEET) =    6.69
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.51
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.17
  STREET FLOW TRAVEL TIME(MIN.) =   1.66   Tc(MIN.) =   10.40
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.093
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    3.37      SUBAREA RUNOFF(CFS) =    8.92
  TOTAL AREA(ACRES) =        3.6        PEAK FLOW RATE(CFS) =       9.48

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.31   HALFSTREET FLOOD WIDTH(FEET) =   8.97
  FLOW VELOCITY(FEET/SEC.) =  5.14   DEPTH*VELOCITY(FT*FT/SEC.) =   1.57
  LONGEST FLOWPATH FROM NODE    710.00 TO NODE    712.00 =     520.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    712.00 TO NODE    708.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.40
  RAINFALL INTENSITY(INCH/HR) =   5.09
  TOTAL STREAM AREA(ACRES) =     3.58
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.48

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       31.60    11.86        4.680         12.53
      2        9.48    10.40        5.093          3.58

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       38.52    10.40       5.093
      2       40.31    11.86       4.680

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      40.31   Tc(MIN.) =   11.86
  TOTAL AREA(ACRES) =       16.1
  LONGEST FLOWPATH FROM NODE    690.00 TO NODE    708.00 =    1742.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    708.00 TO NODE    713.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   743.00  DOWNSTREAM(FEET) =   732.00
  FLOW LENGTH(FEET) =   270.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  17.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  16.04
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      40.31
  PIPE TRAVEL TIME(MIN.) =   0.28    Tc(MIN.) =   12.14
  LONGEST FLOWPATH FROM NODE    690.00 TO NODE    713.00 =    2012.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    713.00 TO NODE    713.00 IS CODE =  10
```

```
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    715.00 TO NODE    716.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    814.65
  DOWNSTREAM ELEVATION(FEET) =    813.95
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      0.50
  TOTAL AREA(ACRES) =      0.17   TOTAL RUNOFF(CFS) =      0.50

****************************************************************************
  FLOW PROCESS FROM NODE    716.00 TO NODE    717.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  811.80  DOWNSTREAM ELEVATION(FEET) =  790.00
  STREET LENGTH(FEET) =   482.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.25
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.23
    HALFSTREET FLOOD WIDTH(FEET) =    5.22
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.16
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.96
  STREET FLOW TRAVEL TIME(MIN.) =   1.93   Tc(MIN.) =   10.67
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.010
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    2.10      SUBAREA RUNOFF(CFS) =    5.47
  TOTAL AREA(ACRES) =        2.3        PEAK FLOW RATE(CFS) =       5.91

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.27   HALFSTREET FLOOD WIDTH(FEET) =   7.15
  FLOW VELOCITY(FEET/SEC.) =  4.69   DEPTH*VELOCITY(FT*FT/SEC.) =   1.26
  LONGEST FLOWPATH FROM NODE    715.00 TO NODE    717.00 =     552.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    717.00 TO NODE    718.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   785.00  DOWNSTREAM(FEET) =   734.00
  FLOW LENGTH(FEET) =   595.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   5.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.19
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.91
  PIPE TRAVEL TIME(MIN.) =   0.75    Tc(MIN.) =   11.42
  LONGEST FLOWPATH FROM NODE    715.00 TO NODE    718.00 =    1147.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    718.00 TO NODE    718.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.42
  RAINFALL INTENSITY(INCH/HR) =   4.79
  TOTAL STREAM AREA(ACRES) =     2.27
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.91

****************************************************************************
  FLOW PROCESS FROM NODE    720.00 TO NODE    721.00 IS CODE =  21
```

```
--------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
================================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    786.35
  DOWNSTREAM ELEVATION(FEET) =    785.65
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    70.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      0.53
  TOTAL AREA(ACRES) =      0.18   TOTAL RUNOFF(CFS) =      0.53

****************************************************************************
  FLOW PROCESS FROM NODE    721.00 TO NODE    722.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  780.00  DOWNSTREAM ELEVATION(FEET) =  738.00
  STREET LENGTH(FEET) =   515.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.52
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.24
    HALFSTREET FLOOD WIDTH(FEET) =    5.92
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.88
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.44
  STREET FLOW TRAVEL TIME(MIN.) =   1.46   Tc(MIN.) =   10.19
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.159
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    3.71      SUBAREA RUNOFF(CFS) =    9.95
  TOTAL AREA(ACRES) =        3.9        PEAK FLOW RATE(CFS) =      10.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.29   HALFSTREET FLOOD WIDTH(FEET) =   8.15
  FLOW VELOCITY(FEET/SEC.) =  6.67   DEPTH*VELOCITY(FT*FT/SEC.) =   1.93
  LONGEST FLOWPATH FROM NODE    720.00 TO NODE    722.00 =     585.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    722.00 TO NODE    718.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.19
  RAINFALL INTENSITY(INCH/HR) =   5.16
  TOTAL STREAM AREA(ACRES) =     3.89
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.44

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        5.91    11.42        4.795          2.27
      2       10.44    10.19        5.159          3.89

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       15.71    10.19       5.159
      2       15.61    11.42       4.795

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      15.71   Tc(MIN.) =   10.19
  TOTAL AREA(ACRES) =        6.2
  LONGEST FLOWPATH FROM NODE    715.00 TO NODE    718.00 =    1147.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    718.00 TO NODE    713.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   733.00  DOWNSTREAM(FEET) =   732.00
  FLOW LENGTH(FEET) =    78.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.23
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      15.71
  PIPE TRAVEL TIME(MIN.) =   0.16    Tc(MIN.) =   10.35
  LONGEST FLOWPATH FROM NODE    715.00 TO NODE    713.00 =    1225.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    713.00 TO NODE    713.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1       15.71    10.35       5.108        6.16
  LONGEST FLOWPATH FROM NODE    715.00 TO NODE    713.00 =    1225.00 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1       40.31    12.14       4.610       16.11
  LONGEST FLOWPATH FROM NODE    690.00 TO NODE    713.00 =    2012.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1      50.10      10.35        5.108
      2      54.50      12.14        4.610

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      54.50   Tc(MIN.) =   12.14
  TOTAL AREA(ACRES) =       22.3

****************************************************************************
  FLOW PROCESS FROM NODE    713.00 TO NODE    713.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    713.00 TO NODE    723.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   732.00  DOWNSTREAM(FEET) =   720.00
  FLOW LENGTH(FEET) =   247.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  18.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  18.67
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      54.50
  PIPE TRAVEL TIME(MIN.) =   0.22    Tc(MIN.) =   12.36
  LONGEST FLOWPATH FROM NODE    690.00 TO NODE    723.00 =    2259.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    723.00 TO NODE    723.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    730.00 TO NODE    731.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (7.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5700
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    768.45
  DOWNSTREAM ELEVATION(FEET) =    767.75
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    7.691
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    65.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.187
  SUBAREA RUNOFF(CFS) =      0.78
```

```
  TOTAL AREA(ACRES) =      0.22   TOTAL RUNOFF(CFS) =      0.78

****************************************************************************
  FLOW PROCESS FROM NODE    731.00 TO NODE    732.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  765.00  DOWNSTREAM ELEVATION(FEET) =  743.00
  STREET LENGTH(FEET) =   495.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.26
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.27
    HALFSTREET FLOOD WIDTH(FEET) =    7.39
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.71
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.29
  STREET FLOW TRAVEL TIME(MIN.) =   1.75   Tc(MIN.) =    9.44
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.420
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (7.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.570
  SUBAREA AREA(ACRES) =    3.54      SUBAREA RUNOFF(CFS) =   10.94
  TOTAL AREA(ACRES) =        3.8        PEAK FLOW RATE(CFS) =      11.62

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.32   HALFSTREET FLOOD WIDTH(FEET) =   9.81
  FLOW VELOCITY(FEET/SEC.) =  5.38   DEPTH*VELOCITY(FT*FT/SEC.) =   1.73
  LONGEST FLOWPATH FROM NODE    730.00 TO NODE    732.00 =     565.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    732.00 TO NODE    733.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   735.00  DOWNSTREAM(FEET) =   715.00
  FLOW LENGTH(FEET) =   590.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.22
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      11.62
  PIPE TRAVEL TIME(MIN.) =   0.88    Tc(MIN.) =   10.32
  LONGEST FLOWPATH FROM NODE    730.00 TO NODE    733.00 =    1155.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    733.00 TO NODE    733.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.32
  RAINFALL INTENSITY(INCH/HR) =   5.12
  TOTAL STREAM AREA(ACRES) =     3.76
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.62

****************************************************************************
  FLOW PROCESS FROM NODE    735.00 TO NODE    736.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (7.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5700
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    743.45
  DOWNSTREAM ELEVATION(FEET) =    742.75
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    7.691
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    65.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.187
  SUBAREA RUNOFF(CFS) =      0.56
  TOTAL AREA(ACRES) =      0.16   TOTAL RUNOFF(CFS) =      0.56

****************************************************************************
```

```
 FLOW PROCESS FROM NODE    736.00 TO NODE    737.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) =  740.00  DOWNSTREAM ELEVATION(FEET) =  719.00
 STREET LENGTH(FEET) =   471.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       8.04
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.29
   HALFSTREET FLOOD WIDTH(FEET) =    8.33
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.95
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.45
 STREET FLOW TRAVEL TIME(MIN.) =   1.58   Tc(MIN.) =    9.28
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.483
 *USER SPECIFIED(SUBAREA):
 RESIDENTIAL (7.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5700
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.570
 SUBAREA AREA(ACRES) =    4.77      SUBAREA RUNOFF(CFS) =   14.91
 TOTAL AREA(ACRES) =        4.9        PEAK FLOW RATE(CFS) =      15.41

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.35   HALFSTREET FLOOD WIDTH(FEET) =  11.00
 FLOW VELOCITY(FEET/SEC.) =  5.80   DEPTH*VELOCITY(FT*FT/SEC.) =   2.01
 LONGEST FLOWPATH FROM NODE    735.00 TO NODE    737.00 =     541.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    737.00 TO NODE    733.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =    9.28
 RAINFALL INTENSITY(INCH/HR) =   5.48
 TOTAL STREAM AREA(ACRES) =     4.93
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     15.41

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1       11.62    10.32        5.119          3.76
     2       15.41     9.28        5.483          4.93

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF      Tc      INTENSITY
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       25.85     9.28       5.483
     2       26.00    10.32       5.119

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      26.00   Tc(MIN.) =   10.32
 TOTAL AREA(ACRES) =        8.7
 LONGEST FLOWPATH FROM NODE    730.00 TO NODE    733.00 =    1155.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    733.00 TO NODE    728.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   715.00  DOWNSTREAM(FEET) =   714.00
 FLOW LENGTH(FEET) =   200.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  30.0 INCH PIPE IS  22.7 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   6.53
 ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      26.00
 PIPE TRAVEL TIME(MIN.) =   0.51    Tc(MIN.) =   10.83
 LONGEST FLOWPATH FROM NODE    730.00 TO NODE    728.00 =    1355.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    728.00 TO NODE    728.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
```

```
================================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.83
  RAINFALL INTENSITY(INCH/HR) =   4.96
  TOTAL STREAM AREA(ACRES) =     8.69
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     26.00

****************************************************************************
  FLOW PROCESS FROM NODE    725.00 TO NODE    726.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (7.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5700
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    794.65
  DOWNSTREAM ELEVATION(FEET) =    793.98
  ELEVATION DIFFERENCE(FEET) =      0.67
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    7.727
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    63.72
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.168
  SUBAREA RUNOFF(CFS) =      0.77
  TOTAL AREA(ACRES) =      0.22   TOTAL RUNOFF(CFS) =      0.77

****************************************************************************
  FLOW PROCESS FROM NODE    726.00 TO NODE    727.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  792.00  DOWNSTREAM ELEVATION(FEET) =  760.00
  STREET LENGTH(FEET) =   511.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.32
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.26
    HALFSTREET FLOOD WIDTH(FEET) =    6.86
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.37
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.41
  STREET FLOW TRAVEL TIME(MIN.) =   1.59   Tc(MIN.) =    9.31
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.468
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (7.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.570
  SUBAREA AREA(ACRES) =    3.55      SUBAREA RUNOFF(CFS) =   11.06
  TOTAL AREA(ACRES) =        3.8        PEAK FLOW RATE(CFS) =      11.75

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.31   HALFSTREET FLOOD WIDTH(FEET) =   9.11
  FLOW VELOCITY(FEET/SEC.) =  6.20   DEPTH*VELOCITY(FT*FT/SEC.) =   1.91
  LONGEST FLOWPATH FROM NODE    725.00 TO NODE    727.00 =     581.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    727.00 TO NODE    728.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   755.00  DOWNSTREAM(FEET) =   715.00
  FLOW LENGTH(FEET) =   466.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.94
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      11.75
  PIPE TRAVEL TIME(MIN.) =   0.49    Tc(MIN.) =    9.80
  LONGEST FLOWPATH FROM NODE    725.00 TO NODE    728.00 =    1047.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    728.00 TO NODE    728.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
```

```
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.80
  RAINFALL INTENSITY(INCH/HR) =   5.29
  TOTAL STREAM AREA(ACRES) =     3.77
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.75

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       26.00    10.83        4.962         8.69
      2       11.75     9.80        5.291         3.77

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       36.13     9.80       5.291
      2       37.02    10.83       4.962

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      37.02   Tc(MIN.) =   10.83
  TOTAL AREA(ACRES) =       12.5
  LONGEST FLOWPATH FROM NODE    730.00 TO NODE    728.00 =    1355.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    728.00 TO NODE    738.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   715.00  DOWNSTREAM(FEET) =   714.00
  FLOW LENGTH(FEET) =    62.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  21.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.98
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      37.02
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =   10.92
  LONGEST FLOWPATH FROM NODE    730.00 TO NODE    738.00 =    1417.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    738.00 TO NODE    738.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.92
  RAINFALL INTENSITY(INCH/HR) =   4.93
  TOTAL STREAM AREA(ACRES) =    12.46
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     37.02

****************************************************************************
  FLOW PROCESS FROM NODE    740.00 TO NODE    741.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (7.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5700
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    758.15
  DOWNSTREAM ELEVATION(FEET) =    757.45
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    7.691
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    65.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.187
  SUBAREA RUNOFF(CFS) =      0.92
  TOTAL AREA(ACRES) =      0.26   TOTAL RUNOFF(CFS) =      0.92

****************************************************************************
  FLOW PROCESS FROM NODE    741.00 TO NODE    742.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  751.00  DOWNSTREAM ELEVATION(FEET) =  721.00
  STREET LENGTH(FEET) =   450.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
```

```
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.56
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.25
    HALFSTREET FLOOD WIDTH(FEET) =    6.28
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.43
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.37
  STREET FLOW TRAVEL TIME(MIN.) =   1.38   Tc(MIN.) =    9.07
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.562
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (7.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.570
  SUBAREA AREA(ACRES) =    2.93      SUBAREA RUNOFF(CFS) =    9.29
  TOTAL AREA(ACRES) =        3.2        PEAK FLOW RATE(CFS) =      10.11

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.30   HALFSTREET FLOOD WIDTH(FEET) =   8.44
  FLOW VELOCITY(FEET/SEC.) =  6.08   DEPTH*VELOCITY(FT*FT/SEC.) =   1.80
  LONGEST FLOWPATH FROM NODE    740.00 TO NODE    742.00 =     520.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    742.00 TO NODE    738.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.07
  RAINFALL INTENSITY(INCH/HR) =   5.56
  TOTAL STREAM AREA(ACRES) =     3.19
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.11

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       37.02    10.92        4.934         12.46
      2       10.11     9.07        5.562          3.19

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       42.96     9.07       5.562
      2       45.99    10.92       4.934

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      45.99   Tc(MIN.) =   10.92
  TOTAL AREA(ACRES) =       15.6
  LONGEST FLOWPATH FROM NODE    730.00 TO NODE    738.00 =    1417.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    738.00 TO NODE    723.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   714.00  DOWNSTREAM(FEET) =   713.00
  FLOW LENGTH(FEET) =   186.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  28.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.68
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      45.99
  PIPE TRAVEL TIME(MIN.) =   0.40    Tc(MIN.) =   11.33
  LONGEST FLOWPATH FROM NODE    730.00 TO NODE    723.00 =    1603.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    723.00 TO NODE    723.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY     AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)   (ACRE)
      1       45.99    11.33        4.820       15.65
  LONGEST FLOWPATH FROM NODE    730.00 TO NODE    723.00 =    1603.00 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY     AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)   (ACRE)
      1       54.50    12.36        4.557       22.27
  LONGEST FLOWPATH FROM NODE    690.00 TO NODE    723.00 =    2259.00 FEET.
```

```
  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1      95.95      11.33        4.820
      2      97.98      12.36        4.557

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      97.98   Tc(MIN.) =   12.36
  TOTAL AREA(ACRES) =       37.9

****************************************************************************
  FLOW PROCESS FROM NODE    723.00 TO NODE    723.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    723.00 TO NODE    743.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   720.00  DOWNSTREAM(FEET) =   706.00
  FLOW LENGTH(FEET) =   267.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  22.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  22.22
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      97.98
  PIPE TRAVEL TIME(MIN.) =   0.20    Tc(MIN.) =   12.56
  LONGEST FLOWPATH FROM NODE    690.00 TO NODE    743.00 =    2526.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    743.00 TO NODE    743.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    745.00 TO NODE    746.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    748.45
  DOWNSTREAM ELEVATION(FEET) =    747.75
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      0.62
  TOTAL AREA(ACRES) =      0.21   TOTAL RUNOFF(CFS) =      0.62

****************************************************************************
  FLOW PROCESS FROM NODE    746.00 TO NODE    747.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  745.00  DOWNSTREAM ELEVATION(FEET) =  731.00
  STREET LENGTH(FEET) =   500.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.28
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.22
    HALFSTREET FLOOD WIDTH(FEET) =    4.87
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.21
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.72
  STREET FLOW TRAVEL TIME(MIN.) =   2.59   Tc(MIN.) =   11.33
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.820
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    1.32      SUBAREA RUNOFF(CFS) =    3.31
  TOTAL AREA(ACRES) =        1.5        PEAK FLOW RATE(CFS) =       3.83

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.26   HALFSTREET FLOOD WIDTH(FEET) =   6.51
```

```
  FLOW VELOCITY(FEET/SEC.) =  3.54   DEPTH*VELOCITY(FT*FT/SEC.) =   0.91
  LONGEST FLOWPATH FROM NODE    745.00 TO NODE    747.00 =     570.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    747.00 TO NODE    748.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   727.00  DOWNSTREAM(FEET) =   719.00
  FLOW LENGTH(FEET) =   273.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   5.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.95
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.83
  PIPE TRAVEL TIME(MIN.) =   0.57    Tc(MIN.) =   11.90
  LONGEST FLOWPATH FROM NODE    745.00 TO NODE    748.00 =     843.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    748.00 TO NODE    748.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.90
  RAINFALL INTENSITY(INCH/HR) =   4.67
  TOTAL STREAM AREA(ACRES) =     1.53
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.83

****************************************************************************
  FLOW PROCESS FROM NODE    750.00 TO NODE    751.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (7.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    745.15
  DOWNSTREAM ELEVATION(FEET) =    744.45
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.417
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    65.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.837
  SUBAREA RUNOFF(CFS) =      0.58
  TOTAL AREA(ACRES) =      0.19   TOTAL RUNOFF(CFS) =      0.58

****************************************************************************
  FLOW PROCESS FROM NODE    751.00 TO NODE    752.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  742.00  DOWNSTREAM ELEVATION(FEET) =  723.50
  STREET LENGTH(FEET) =   627.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.39
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.28
    HALFSTREET FLOOD WIDTH(FEET) =    7.56
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.90
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.08
  STREET FLOW TRAVEL TIME(MIN.) =   2.68   Tc(MIN.) =   11.10
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.885
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    3.77      SUBAREA RUNOFF(CFS) =    9.58
  TOTAL AREA(ACRES) =        4.0        PEAK FLOW RATE(CFS) =      10.06

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.33   HALFSTREET FLOOD WIDTH(FEET) =  10.02
  FLOW VELOCITY(FEET/SEC.) =  4.48   DEPTH*VELOCITY(FT*FT/SEC.) =   1.46
  LONGEST FLOWPATH FROM NODE    750.00 TO NODE    752.00 =     697.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    752.00 TO NODE    748.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   720.00  DOWNSTREAM(FEET) =   719.00
  FLOW LENGTH(FEET) =    56.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.46
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.06
  PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =   11.21
  LONGEST FLOWPATH FROM NODE    750.00 TO NODE    748.00 =     753.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    748.00 TO NODE    748.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.21
  RAINFALL INTENSITY(INCH/HR) =   4.85
  TOTAL STREAM AREA(ACRES) =     3.96
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.06

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        3.83    11.90        4.669          1.53
      2       10.06    11.21        4.854          3.96

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       13.67    11.21       4.854
      2       13.51    11.90       4.669

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      13.67   Tc(MIN.) =   11.21
  TOTAL AREA(ACRES) =        5.5
  LONGEST FLOWPATH FROM NODE    745.00 TO NODE    748.00 =     843.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    748.00 TO NODE    753.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   719.00  DOWNSTREAM(FEET) =   714.00
  FLOW LENGTH(FEET) =   206.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.15
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      13.67
  PIPE TRAVEL TIME(MIN.) =   0.34    Tc(MIN.) =   11.54
  LONGEST FLOWPATH FROM NODE    745.00 TO NODE    753.00 =    1049.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    753.00 TO NODE    753.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.54
  RAINFALL INTENSITY(INCH/HR) =   4.76
  TOTAL STREAM AREA(ACRES) =     5.49
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.67

****************************************************************************
  FLOW PROCESS FROM NODE    755.00 TO NODE    756.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    734.05
  DOWNSTREAM ELEVATION(FEET) =    733.35
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
```

```
  SUBAREA RUNOFF(CFS) =      0.98
  TOTAL AREA(ACRES) =      0.33   TOTAL RUNOFF(CFS) =      0.98

****************************************************************************
  FLOW PROCESS FROM NODE    756.00 TO NODE    757.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  731.00  DOWNSTREAM ELEVATION(FEET) =  716.00
  STREET LENGTH(FEET) =   490.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.51
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.28
    HALFSTREET FLOOD WIDTH(FEET) =    7.62
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.94
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.10
  STREET FLOW TRAVEL TIME(MIN.) =   2.07   Tc(MIN.) =   10.81
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.968
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    3.50      SUBAREA RUNOFF(CFS) =    9.04
  TOTAL AREA(ACRES) =        3.8        PEAK FLOW RATE(CFS) =       9.89

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.32   HALFSTREET FLOOD WIDTH(FEET) =   9.88
  FLOW VELOCITY(FEET/SEC.) =  4.52   DEPTH*VELOCITY(FT*FT/SEC.) =   1.46
  LONGEST FLOWPATH FROM NODE    755.00 TO NODE    757.00 =     560.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    757.00 TO NODE    753.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.81
  RAINFALL INTENSITY(INCH/HR) =   4.97
  TOTAL STREAM AREA(ACRES) =     3.83
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.89

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       13.67    11.54        4.761          5.49
      2        9.89    10.81        4.968          3.83

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       22.99    10.81       4.968
      2       23.15    11.54       4.761

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      23.15   Tc(MIN.) =   11.54
  TOTAL AREA(ACRES) =        9.3
  LONGEST FLOWPATH FROM NODE    745.00 TO NODE    753.00 =    1049.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    753.00 TO NODE    758.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   714.00  DOWNSTREAM(FEET) =   713.00
  FLOW LENGTH(FEET) =    54.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.54
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      23.15
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =   11.63
  LONGEST FLOWPATH FROM NODE    745.00 TO NODE    758.00 =    1103.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    758.00 TO NODE    758.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.63
  RAINFALL INTENSITY(INCH/HR) =   4.74
  TOTAL STREAM AREA(ACRES) =     9.32
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     23.15

****************************************************************************
  FLOW PROCESS FROM NODE    760.00 TO NODE    761.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    723.15
  DOWNSTREAM ELEVATION(FEET) =    722.45
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      0.56
  TOTAL AREA(ACRES) =      0.19   TOTAL RUNOFF(CFS) =      0.56

****************************************************************************
  FLOW PROCESS FROM NODE    761.00 TO NODE    762.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  721.00  DOWNSTREAM ELEVATION(FEET) =  716.00
  STREET LENGTH(FEET) =   500.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.21
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.30
    HALFSTREET FLOOD WIDTH(FEET) =    8.91
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.43
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.74
  STREET FLOW TRAVEL TIME(MIN.) =   3.43   Tc(MIN.) =   12.17
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.602
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    1.37      SUBAREA RUNOFF(CFS) =    3.28
  TOTAL AREA(ACRES) =        1.6        PEAK FLOW RATE(CFS) =       3.73

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.35   HALFSTREET FLOOD WIDTH(FEET) =  11.14
  FLOW VELOCITY(FEET/SEC.) =  2.74   DEPTH*VELOCITY(FT*FT/SEC.) =   0.96
  LONGEST FLOWPATH FROM NODE    760.00 TO NODE    762.00 =     570.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    765.00 TO NODE    766.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.602
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5033
  SUBAREA AREA(ACRES) =    0.17   SUBAREA RUNOFF(CFS) =    0.27
  TOTAL AREA(ACRES) =        1.7   TOTAL RUNOFF(CFS) =       4.01
  TC(MIN.) =   12.17

****************************************************************************
  FLOW PROCESS FROM NODE    766.00 TO NODE    758.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
```

```
  TIME OF CONCENTRATION(MIN.) =   12.17
  RAINFALL INTENSITY(INCH/HR) =   4.60
  TOTAL STREAM AREA(ACRES) =     1.73
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.01

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       23.15    11.63        4.739          9.32
      2        4.01    12.17        4.602          1.73

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       26.98    11.63        4.739
      2       26.49    12.17        4.602

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      26.98   Tc(MIN.) =   11.63
  TOTAL AREA(ACRES) =       11.0
  LONGEST FLOWPATH FROM NODE    745.00 TO NODE    758.00 =    1103.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    758.00 TO NODE    767.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   711.00  DOWNSTREAM(FEET) =   706.00
  FLOW LENGTH(FEET) =   493.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  19.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.64
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      26.98
  PIPE TRAVEL TIME(MIN.) =   0.95    Tc(MIN.) =   12.58
  LONGEST FLOWPATH FROM NODE    745.00 TO NODE    767.00 =    1596.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    767.00 TO NODE    767.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   12.58
  RAINFALL INTENSITY(INCH/HR) =   4.50
  TOTAL STREAM AREA(ACRES) =    11.05
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     26.98

****************************************************************************
  FLOW PROCESS FROM NODE    770.00 TO NODE    771.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    740.00
  DOWNSTREAM ELEVATION(FEET) =    730.00
  ELEVATION DIFFERENCE(FEET) =     10.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.061
  SUBAREA RUNOFF(CFS) =      0.86
  TOTAL AREA(ACRES) =      0.35   TOTAL RUNOFF(CFS) =      0.86

****************************************************************************
  FLOW PROCESS FROM NODE    771.00 TO NODE    772.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  722.00  DOWNSTREAM ELEVATION(FEET) =  710.00
  STREET LENGTH(FEET) =  1000.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.81
```

```
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.33
    HALFSTREET FLOOD WIDTH(FEET) =   10.30
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.89
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.96
  STREET FLOW TRAVEL TIME(MIN.) =   5.78   Tc(MIN.) =   12.04
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.633
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.509
  SUBAREA AREA(ACRES) =    4.92      SUBAREA RUNOFF(CFS) =   11.85
  TOTAL AREA(ACRES) =        5.3        PEAK FLOW RATE(CFS) =      12.42

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.39   HALFSTREET FLOOD WIDTH(FEET) =  13.25
  FLOW VELOCITY(FEET/SEC.) =  3.31   DEPTH*VELOCITY(FT*FT/SEC.) =   1.30
  LONGEST FLOWPATH FROM NODE    770.00 TO NODE    772.00 =    1100.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    772.00 TO NODE    767.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   12.04
  RAINFALL INTENSITY(INCH/HR) =   4.63
  TOTAL STREAM AREA(ACRES) =     5.27
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.42

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       26.98    12.58        4.504         11.05
      2       12.42    12.04        4.633          5.27

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       38.65    12.04       4.633
      2       39.06    12.58       4.504

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      39.06   Tc(MIN.) =   12.58
  TOTAL AREA(ACRES) =       16.3
  LONGEST FLOWPATH FROM NODE    745.00 TO NODE    767.00 =    1596.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    767.00 TO NODE    743.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   706.00  DOWNSTREAM(FEET) =   705.00
  FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  21.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.26
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      39.06
  PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =   12.71
  LONGEST FLOWPATH FROM NODE    745.00 TO NODE    743.00 =    1676.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    743.00 TO NODE    743.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1       39.06    12.71       4.475        16.32
  LONGEST FLOWPATH FROM NODE    745.00 TO NODE    743.00 =    1676.00 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1       97.98    12.56       4.510        37.92
  LONGEST FLOWPATH FROM NODE    690.00 TO NODE    743.00 =    2526.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1     136.56      12.56        4.510
      2     136.27      12.71        4.475
```

```
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     136.56   Tc(MIN.) =   12.56
  TOTAL AREA(ACRES) =       54.2

****************************************************************************
  FLOW PROCESS FROM NODE    743.00 TO NODE    743.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    743.00 TO NODE    773.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   705.00  DOWNSTREAM(FEET) =   704.00
  FLOW LENGTH(FEET) =   117.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  51.0 INCH PIPE IS  37.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.13
  ESTIMATED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     136.56
  PIPE TRAVEL TIME(MIN.) =   0.16    Tc(MIN.) =   12.72
  LONGEST FLOWPATH FROM NODE    690.00 TO NODE    773.00 =    2643.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    773.00 TO NODE    773.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   12.72
  RAINFALL INTENSITY(INCH/HR) =   4.47
  TOTAL STREAM AREA(ACRES) =    54.24
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    136.56

****************************************************************************
  FLOW PROCESS FROM NODE    775.00 TO NODE    776.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    731.75
  DOWNSTREAM ELEVATION(FEET) =    731.05
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      1.10
  TOTAL AREA(ACRES) =      0.37   TOTAL RUNOFF(CFS) =      1.10

****************************************************************************
  FLOW PROCESS FROM NODE    776.00 TO NODE    777.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  729.00  DOWNSTREAM ELEVATION(FEET) =  708.00
  STREET LENGTH(FEET) =   663.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.85
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.25
    HALFSTREET FLOOD WIDTH(FEET) =    6.33
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.71
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.94
  STREET FLOW TRAVEL TIME(MIN.) =   2.98   Tc(MIN.) =   11.71
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.717
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    2.24      SUBAREA RUNOFF(CFS) =    5.49
  TOTAL AREA(ACRES) =        2.6        PEAK FLOW RATE(CFS) =       6.40

  END OF SUBAREA STREET FLOW HYDRAULICS:
```

```
  DEPTH(FEET) = 0.29   HALFSTREET FLOOD WIDTH(FEET) =   8.09
  FLOW VELOCITY(FEET/SEC.) =  4.14   DEPTH*VELOCITY(FT*FT/SEC.) =   1.19
  LONGEST FLOWPATH FROM NODE    775.00 TO NODE    777.00 =     733.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    777.00 TO NODE    773.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.71
  RAINFALL INTENSITY(INCH/HR) =   4.72
  TOTAL STREAM AREA(ACRES) =     2.61
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.40

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1      136.56    12.72        4.473         54.24
      2        6.40    11.71        4.717          2.61

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1      132.17    11.71       4.717
      2      142.63    12.72       4.473

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     142.63   Tc(MIN.) =   12.72
  TOTAL AREA(ACRES) =       56.8
  LONGEST FLOWPATH FROM NODE    690.00 TO NODE    773.00 =    2643.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    773.00 TO NODE    683.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY     AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)   (ACRE)
      1      142.63    12.72       4.473        56.85
  LONGEST FLOWPATH FROM NODE    690.00 TO NODE    683.00 =    2643.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY     AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)   (ACRE)
      1      222.84    21.61       3.178       134.23
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    683.00 =    7074.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1     273.77      12.72        4.473
      2     324.16      21.61        3.178

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     324.16   Tc(MIN.) =   21.61
  TOTAL AREA(ACRES) =      191.1

****************************************************************************
  FLOW PROCESS FROM NODE    683.00 TO NODE    683.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    683.00 TO NODE    778.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   704.00  DOWNSTREAM(FEET) =   703.00
  FLOW LENGTH(FEET) =    70.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  63.0 INCH PIPE IS  48.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  18.15
  ESTIMATED PIPE DIAMETER(INCH) =  63.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     324.16
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =   21.67
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    778.00 =    7144.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    778.00 TO NODE    778.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
```

```
==========================================================================

**************************************************************************
  FLOW PROCESS FROM NODE    780.00 TO NODE    781.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .6300
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    726.00
  DOWNSTREAM ELEVATION(FEET) =    725.00
  ELEVATION DIFFERENCE(FEET) =      1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.553
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    60.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.860
  SUBAREA RUNOFF(CFS) =      1.47
  TOTAL AREA(ACRES) =      0.34   TOTAL RUNOFF(CFS) =      1.47

**************************************************************************
  FLOW PROCESS FROM NODE    781.00 TO NODE    782.00 IS CODE =  62
--------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
==========================================================================
  UPSTREAM ELEVATION(FEET) =  725.00  DOWNSTREAM ELEVATION(FEET) =  707.00
  STREET LENGTH(FEET) =   450.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.88
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.25
    HALFSTREET FLOOD WIDTH(FEET) =    5.98
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.08
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.00
  STREET FLOW TRAVEL TIME(MIN.) =   1.84   Tc(MIN.) =    8.39
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.848
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.692
  SUBAREA AREA(ACRES) =    1.16      SUBAREA RUNOFF(CFS) =    4.82
  TOTAL AREA(ACRES) =        1.5        PEAK FLOW RATE(CFS) =       6.07

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.28   HALFSTREET FLOOD WIDTH(FEET) =   7.45
  FLOW VELOCITY(FEET/SEC.) =  4.51   DEPTH*VELOCITY(FT*FT/SEC.) =   1.24
  LONGEST FLOWPATH FROM NODE    780.00 TO NODE    782.00 =     550.00 FEET.

**************************************************************************
  FLOW PROCESS FROM NODE    782.00 TO NODE    782.00 IS CODE =   1
--------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==========================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.39
  RAINFALL INTENSITY(INCH/HR) =   5.85
  TOTAL STREAM AREA(ACRES) =     1.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.07

**************************************************************************
  FLOW PROCESS FROM NODE    785.00 TO NODE    786.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    85.00
  UPSTREAM ELEVATION(FEET) =    772.55
  DOWNSTREAM ELEVATION(FEET) =    770.00
  ELEVATION DIFFERENCE(FEET) =      2.55
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.567
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.168
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.81
```

```
  TOTAL AREA(ACRES) =      0.28   TOTAL RUNOFF(CFS) =      1.81

****************************************************************************
  FLOW PROCESS FROM NODE    786.00 TO NODE    787.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   765.00  DOWNSTREAM(FEET) =   725.00
  FLOW LENGTH(FEET) =  1422.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   3.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.31
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.81
  PIPE TRAVEL TIME(MIN.) =   3.76    Tc(MIN.) =    7.32
  LONGEST FLOWPATH FROM NODE    785.00 TO NODE    787.00 =    1507.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    785.00 TO NODE    786.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.385
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7900
  SUBAREA AREA(ACRES) =   20.23   SUBAREA RUNOFF(CFS) =  102.04
  TOTAL AREA(ACRES) =       20.5   TOTAL RUNOFF(CFS) =     103.45
  TC(MIN.) =    7.32

****************************************************************************
  FLOW PROCESS FROM NODE    787.00 TO NODE    782.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   725.00  DOWNSTREAM(FEET) =   702.00
  FLOW LENGTH(FEET) =   152.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  19.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  33.33
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     103.45
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =    7.40
  LONGEST FLOWPATH FROM NODE    785.00 TO NODE    782.00 =    1659.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    782.00 TO NODE    782.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    7.40
  RAINFALL INTENSITY(INCH/HR) =   6.34
  TOTAL STREAM AREA(ACRES) =    20.51
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    103.45

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        6.07     8.39        5.848          1.50
      2      103.45     7.40        6.342         20.51

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1      108.80     7.40       6.342
      2      101.46     8.39       5.848

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     108.80   Tc(MIN.) =    7.40
  TOTAL AREA(ACRES) =       22.0
  LONGEST FLOWPATH FROM NODE    785.00 TO NODE    782.00 =    1659.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    782.00 TO NODE    778.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   702.00  DOWNSTREAM(FEET) =   701.00
  FLOW LENGTH(FEET) =   124.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  48.0 INCH PIPE IS  34.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.26
```

```
  ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     108.80
  PIPE TRAVEL TIME(MIN.) =   0.18    Tc(MIN.) =    7.58
  LONGEST FLOWPATH FROM NODE    785.00 TO NODE    778.00 =    1783.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    778.00 TO NODE    778.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1      108.80     7.58       6.243       22.01
  LONGEST FLOWPATH FROM NODE    785.00 TO NODE    778.00 =    1783.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1      324.16    21.67       3.171      191.08
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    778.00 =    7144.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1     222.24       7.58        6.243
      2     379.43      21.67        3.171

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     379.43   Tc(MIN.) =   21.67
  TOTAL AREA(ACRES) =      213.1

****************************************************************************
  FLOW PROCESS FROM NODE    778.00 TO NODE    778.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    778.00 TO NODE    788.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   701.00  DOWNSTREAM(FEET) =   695.00
  FLOW LENGTH(FEET) =   782.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  75.0 INCH PIPE IS  57.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.94
  ESTIMATED PIPE DIAMETER(INCH) =  75.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     379.43
  PIPE TRAVEL TIME(MIN.) =   0.87    Tc(MIN.) =   22.55
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    788.00 =    7926.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    788.00 TO NODE    788.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   22.55
  RAINFALL INTENSITY(INCH/HR) =   3.09
  TOTAL STREAM AREA(ACRES) =   213.09
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    379.43

****************************************************************************
  FLOW PROCESS FROM NODE    790.00 TO NODE    791.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .8200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    85.00
  UPSTREAM ELEVATION(FEET) =    712.50
  DOWNSTREAM ELEVATION(FEET) =    711.50
  ELEVATION DIFFERENCE(FEET) =      1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.779
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    62.65
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.168
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      2.14
  TOTAL AREA(ACRES) =      0.32   TOTAL RUNOFF(CFS) =      2.14

****************************************************************************
  FLOW PROCESS FROM NODE    791.00 TO NODE    792.00 IS CODE =  31
```

```
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   706.00  DOWNSTREAM(FEET) =   698.00
  FLOW LENGTH(FEET) =   725.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   5.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.75
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.14
  PIPE TRAVEL TIME(MIN.) =   2.55    Tc(MIN.) =    6.33
  LONGEST FLOWPATH FROM NODE    790.00 TO NODE    792.00 =     810.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    791.00 TO NODE    792.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.019
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .8200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.8200
  SUBAREA AREA(ACRES) =    8.31   SUBAREA RUNOFF(CFS) =   47.83
  TOTAL AREA(ACRES) =        8.6   TOTAL RUNOFF(CFS) =      49.67
  TC(MIN.) =    6.33

****************************************************************************
  FLOW PROCESS FROM NODE    792.00 TO NODE    788.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   698.00  DOWNSTREAM(FEET) =   696.00
  FLOW LENGTH(FEET) =   135.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  22.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.71
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      49.67
  PIPE TRAVEL TIME(MIN.) =   0.19    Tc(MIN.) =    6.52
  LONGEST FLOWPATH FROM NODE    790.00 TO NODE    788.00 =     945.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    788.00 TO NODE    788.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    6.52
  RAINFALL INTENSITY(INCH/HR) =   6.88
  TOTAL STREAM AREA(ACRES) =     8.63
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     49.67

****************************************************************************
  FLOW PROCESS FROM NODE    795.00 TO NODE    796.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .8500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    90.00
  UPSTREAM ELEVATION(FEET) =    709.50
  DOWNSTREAM ELEVATION(FEET) =    708.50
  ELEVATION DIFFERENCE(FEET) =      1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.412
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    61.67
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.168
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      2.22
  TOTAL AREA(ACRES) =      0.32   TOTAL RUNOFF(CFS) =      2.22

****************************************************************************
  FLOW PROCESS FROM NODE    796.00 TO NODE    797.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  708.50  DOWNSTREAM ELEVATION(FEET) =  701.00
  STREET LENGTH(FEET) =   742.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
```

```
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       7.00
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.34
    HALFSTREET FLOOD WIDTH(FEET) =   10.79
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.73
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.93
  STREET FLOW TRAVEL TIME(MIN.) =   4.53   Tc(MIN.) =    7.95
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.058
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.798
  SUBAREA AREA(ACRES) =    1.96      SUBAREA RUNOFF(CFS) =    9.38
  TOTAL AREA(ACRES) =        2.3        PEAK FLOW RATE(CFS) =      11.03

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.39   HALFSTREET FLOOD WIDTH(FEET) =  13.04
  FLOW VELOCITY(FEET/SEC.) =  3.03   DEPTH*VELOCITY(FT*FT/SEC.) =   1.17
  LONGEST FLOWPATH FROM NODE    795.00 TO NODE    797.00 =     832.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    797.00 TO NODE    788.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =    7.95
  RAINFALL INTENSITY(INCH/HR) =   6.06
  TOTAL STREAM AREA(ACRES) =     2.28
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.03

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1      379.43    22.55        3.092        213.09
      2       49.67     6.52        6.884          8.63
      3       11.03     7.95        6.058          2.28

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1      168.40     6.52       6.884
      2      188.45     7.95       6.058
      3      407.37    22.55       3.092

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     407.37   Tc(MIN.) =   22.55
  TOTAL AREA(ACRES) =      224.0
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    788.00 =    7926.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    788.00 TO NODE    798.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   695.00  DOWNSTREAM(FEET) =   692.00
  FLOW LENGTH(FEET) =   377.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  75.0 INCH PIPE IS  60.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.26
  ESTIMATED PIPE DIAMETER(INCH) =  75.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     407.37
  PIPE TRAVEL TIME(MIN.) =   0.41    Tc(MIN.) =   22.96
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    798.00 =    8303.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    798.00 TO NODE    798.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   22.96
  RAINFALL INTENSITY(INCH/HR) =   3.06
  TOTAL STREAM AREA(ACRES) =   224.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    407.37

****************************************************************************
  FLOW PROCESS FROM NODE    800.00 TO NODE    801.00 IS CODE =  21
```

```
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    85.00
  UPSTREAM ELEVATION(FEET) =    708.20
  DOWNSTREAM ELEVATION(FEET) =    706.50
  ELEVATION DIFFERENCE(FEET) =      1.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    9.879
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.264
  SUBAREA RUNOFF(CFS) =      0.37
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.37

****************************************************************************
  FLOW PROCESS FROM NODE    801.00 TO NODE    802.00 IS CODE =  31
------------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   701.00  DOWNSTREAM(FEET) =   695.00
  FLOW LENGTH(FEET) =   410.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   2.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.12
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.37
  PIPE TRAVEL TIME(MIN.) =   2.19    Tc(MIN.) =   12.07
  LONGEST FLOWPATH FROM NODE    800.00 TO NODE    802.00 =     495.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    801.00 TO NODE    802.00 IS CODE =  81
------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.627
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =    4.01   SUBAREA RUNOFF(CFS) =    6.49
  TOTAL AREA(ACRES) =        4.2   TOTAL RUNOFF(CFS) =       6.82
  TC(MIN.) =   12.07

****************************************************************************
  FLOW PROCESS FROM NODE    802.00 TO NODE    798.00 IS CODE =  31
------------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   693.00  DOWNSTREAM(FEET) =   692.00
  FLOW LENGTH(FEET) =   110.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.97
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.82
  PIPE TRAVEL TIME(MIN.) =   0.31    Tc(MIN.) =   12.38
  LONGEST FLOWPATH FROM NODE    800.00 TO NODE    798.00 =     605.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    798.00 TO NODE    798.00 IS CODE =   1
------------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   12.38
  RAINFALL INTENSITY(INCH/HR) =   4.55
  TOTAL STREAM AREA(ACRES) =     4.21
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.82

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1      407.37    22.96        3.056        224.00
      2        6.82    12.38        4.552          4.21

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1      280.28    12.38       4.552
      2      411.94    22.96       3.056

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     411.94   Tc(MIN.) =   22.96
```

```
  TOTAL AREA(ACRES) =      228.2
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    798.00 =    8303.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    798.00 TO NODE    803.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   692.00  DOWNSTREAM(FEET) =   688.00
  FLOW LENGTH(FEET) =   355.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  72.0 INCH PIPE IS  55.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.62
  ESTIMATED PIPE DIAMETER(INCH) =  72.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     411.94
  PIPE TRAVEL TIME(MIN.) =   0.34    Tc(MIN.) =   23.29
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    803.00 =    8658.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    803.00 TO NODE    803.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   23.29
  RAINFALL INTENSITY(INCH/HR) =   3.03
  TOTAL STREAM AREA(ACRES) =   228.21
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    411.94

****************************************************************************
  FLOW PROCESS FROM NODE    805.00 TO NODE    806.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    702.60
  DOWNSTREAM ELEVATION(FEET) =    702.00
  ELEVATION DIFFERENCE(FEET) =      0.60
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.322
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    60.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.168
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.61
  TOTAL AREA(ACRES) =      0.25   TOTAL RUNOFF(CFS) =      1.61

****************************************************************************
  FLOW PROCESS FROM NODE    806.00 TO NODE    807.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   697.00  DOWNSTREAM(FEET) =   693.00
  FLOW LENGTH(FEET) =   253.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   4.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.98
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.61
  PIPE TRAVEL TIME(MIN.) =   0.85    Tc(MIN.) =    5.17
  LONGEST FLOWPATH FROM NODE    805.00 TO NODE    807.00 =     313.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    806.00 TO NODE    807.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.994
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7900
  SUBAREA AREA(ACRES) =    1.66   SUBAREA RUNOFF(CFS) =   10.48
  TOTAL AREA(ACRES) =        1.9   TOTAL RUNOFF(CFS) =      12.06
  TC(MIN.) =    5.17

****************************************************************************
  FLOW PROCESS FROM NODE    807.00 TO NODE    803.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   690.00  DOWNSTREAM(FEET) =   689.00
  FLOW LENGTH(FEET) =    75.00   MANNING'S N =  0.013
```

```
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  12.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.96
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      12.06
  PIPE TRAVEL TIME(MIN.) =   0.16    Tc(MIN.) =    5.33
  LONGEST FLOWPATH FROM NODE    805.00 TO NODE    803.00 =     388.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    803.00 TO NODE    803.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    5.33
  RAINFALL INTENSITY(INCH/HR) =   7.84
  TOTAL STREAM AREA(ACRES) =     1.91
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.06

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1      411.94    23.29        3.027        228.21
      2       12.06     5.33        7.841          1.91

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1      171.12     5.33       7.841
      2      416.60    23.29       3.027

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     416.60   Tc(MIN.) =   23.29
  TOTAL AREA(ACRES) =      230.1
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    803.00 =    8658.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    803.00 TO NODE    478.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   689.00  DOWNSTREAM(FEET) =   686.00
  FLOW LENGTH(FEET) =   182.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  66.0 INCH PIPE IS  53.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  20.16
  ESTIMATED PIPE DIAMETER(INCH) =  66.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     416.60
  PIPE TRAVEL TIME(MIN.) =   0.15    Tc(MIN.) =   23.44
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    478.00 =    8840.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    478.00 TO NODE    478.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1      416.60    23.44       3.015      230.12
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    478.00 =    8840.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1      308.13    15.70       3.905      136.67
  LONGEST FLOWPATH FROM NODE    390.00 TO NODE    478.00 =    5099.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1     587.12      15.70        3.905
      2     654.51      23.44        3.015

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     654.51   Tc(MIN.) =   23.44
  TOTAL AREA(ACRES) =      366.8

****************************************************************************
  FLOW PROCESS FROM NODE    478.00 TO NODE    478.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
```

```
  FLOW PROCESS FROM NODE    478.00 TO NODE    808.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   686.00  DOWNSTREAM(FEET) =   680.00
  FLOW LENGTH(FEET) =   190.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  69.0 INCH PIPE IS  56.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  28.75
  ESTIMATED PIPE DIAMETER(INCH) =  69.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     654.51
  PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =   23.55
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    808.00 =    9030.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    808.00 TO NODE    808.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   23.55
  RAINFALL INTENSITY(INCH/HR) =   3.01
  TOTAL STREAM AREA(ACRES) =   366.79
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    654.51

****************************************************************************
  FLOW PROCESS FROM NODE    810.00 TO NODE    811.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    697.10
  DOWNSTREAM ELEVATION(FEET) =    696.50
  ELEVATION DIFFERENCE(FEET) =      0.60
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.322
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.168
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.42
  TOTAL AREA(ACRES) =      0.22   TOTAL RUNOFF(CFS) =      1.42

****************************************************************************
  FLOW PROCESS FROM NODE    811.00 TO NODE    812.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   691.00  DOWNSTREAM(FEET) =   687.00
  FLOW LENGTH(FEET) =   380.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   4.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.14
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.42
  PIPE TRAVEL TIME(MIN.) =   1.53    Tc(MIN.) =    5.85
  LONGEST FLOWPATH FROM NODE    810.00 TO NODE    812.00 =     440.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    811.00 TO NODE    812.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.381
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (43. DU/AC OR LESS) RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7900
  SUBAREA AREA(ACRES) =    4.24   SUBAREA RUNOFF(CFS) =   24.72
  TOTAL AREA(ACRES) =        4.5   TOTAL RUNOFF(CFS) =      26.00
  TC(MIN.) =    5.85

****************************************************************************
  FLOW PROCESS FROM NODE    812.00 TO NODE    808.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   681.00  DOWNSTREAM(FEET) =   680.00
  FLOW LENGTH(FEET) =    65.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  18.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.91
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      26.00
  PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =    5.96
  LONGEST FLOWPATH FROM NODE    810.00 TO NODE    808.00 =     505.00 FEET.

****************************************************************************
```

```
  FLOW PROCESS FROM NODE    808.00 TO NODE    808.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    5.96
  RAINFALL INTENSITY(INCH/HR) =   7.29
  TOTAL STREAM AREA(ACRES) =     4.46
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     26.00

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1      654.51    23.55        3.006        366.79
      2       26.00     5.96        7.293          4.46

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc       INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1      191.62     5.96       7.293
      2      665.23    23.55       3.006

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     665.23   Tc(MIN.) =   23.55
  TOTAL AREA(ACRES) =      371.3
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    808.00 =    9030.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    808.00 TO NODE    813.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   680.00  DOWNSTREAM(FEET) =   648.00
  FLOW LENGTH(FEET) =   150.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  51.0 INCH PIPE IS  37.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  60.41
  ESTIMATED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     665.23
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =   23.60
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    813.00 =    9180.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    813.00 TO NODE    814.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   648.00  DOWNSTREAM(FEET) =   647.00
  FLOW LENGTH(FEET) =   495.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN 120.0 INCH PIPE IS  90.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.46
  ESTIMATED PIPE DIAMETER(INCH) = 120.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     665.23
  PIPE TRAVEL TIME(MIN.) =   0.79    Tc(MIN.) =   24.38
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    814.00 =    9675.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    813.00 TO NODE    814.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.939
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5440
  SUBAREA AREA(ACRES) =    7.49   SUBAREA RUNOFF(CFS) =    7.71
  TOTAL AREA(ACRES) =      378.7   TOTAL RUNOFF(CFS) =     665.23
  TC(MIN.) =   24.38
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE    814.00 TO NODE    883.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   647.00  DOWNSTREAM(FEET) =   645.00
  FLOW LENGTH(FEET) =    95.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  75.0 INCH PIPE IS  61.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  24.81
  ESTIMATED PIPE DIAMETER(INCH) =  75.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     665.23
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =   24.45
```

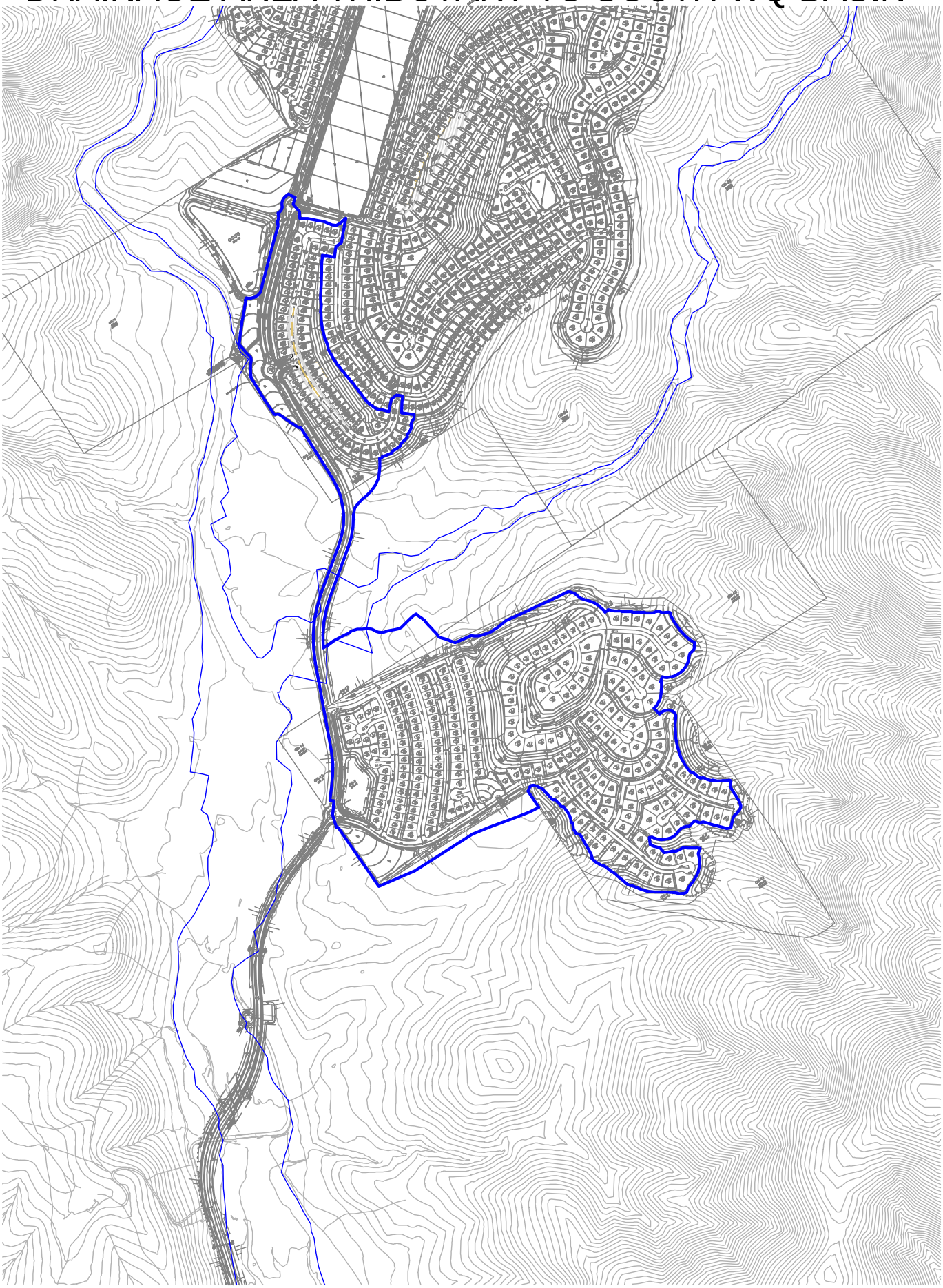
```
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    883.00 =    9770.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    883.00 TO NODE    883.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   24.45
  RAINFALL INTENSITY(INCH/HR) =   2.93
  TOTAL STREAM AREA(ACRES) =   378.74
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    665.23

+--------------------------------------------------------------------------+
| The following data taken from the offsite model which inlcudes the       |
| eastern slopes which were separately piped to bypass basin.              |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE    883.00 TO NODE    883.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =  19.67   RAIN INTENSITY(INCH/HOUR) =  3.38
  TOTAL AREA(ACRES) =   313.68   TOTAL RUNOFF(CFS) =    421.36

****************************************************************************
  FLOW PROCESS FROM NODE    883.00 TO NODE    883.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   19.67
  RAINFALL INTENSITY(INCH/HR) =   3.38
  TOTAL STREAM AREA(ACRES) =   313.68
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    421.36

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1      665.23    24.45        2.934        378.74
      2      421.36    19.67        3.376        313.68

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1      999.54    19.67       3.376
      2     1031.45    24.45       2.934

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    1031.45   Tc(MIN.) =   24.45
  TOTAL AREA(ACRES) =      692.4
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    883.00 =    9770.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    883.00 TO NODE    884.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   645.00  DOWNSTREAM(FEET) =   618.00
  FLOW LENGTH(FEET) =   550.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  78.0 INCH PIPE IS  58.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  38.67
  ESTIMATED PIPE DIAMETER(INCH) =  78.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    1031.45
  PIPE TRAVEL TIME(MIN.) =   0.24    Tc(MIN.) =   24.68
  LONGEST FLOWPATH FROM NODE    500.00 TO NODE    884.00 =   10320.00 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =      692.4  TC(MIN.) =     24.68
  PEAK FLOW RATE(CFS)   =    1031.45
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

CHAPTER 4

4.1.2 – Rational Method Hydrologic Analysis (AES 2015)

Drainage Area Tributary to South WQ Basin

LAND EXCHANGE ALTERNATIVE
DRAINAGE AREA TRIBUTARY TO SOUTH WQ BASIN



R:\1235\Hyd\ACAD\HYDRO\TM- Land Exchange EIR\1235- HYDRO V14- PROP.dwg[]May-02-2017:18:06

W.O.# 3087-0002

```
****************************************************************************

           RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                        2003,1985,1981 HYDROLOGY MANUAL
        (c) Copyright 1982-2010 Advanced Engineering Software (aes)
            Ver. 17.0 Release Date: 07/01/2010  License ID 1239

                        Analysis prepared by:

                  Hunsaker & Associates San Diego, Inc.
                           9707 Waples Street
                          San Diego,  CA  92121


 ************************* DESCRIPTION OF STUDY *************************
* VILLAGE 14 TM HYDROLOGY ANALYSIS                                      *
* AREA TO SOUTH WQ BASIN                                                *
* 100-YEAR RETURN INTERVAL.   W.O. 2421-31                              *
 ************************************************************************

  FILE NAME: R:\1235\HYD\CALCS\AES\TM\S100R.DAT
  TIME/DATE OF STUDY: 14:20 05/22/2015
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.100
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   16.0      8.0    0.020/0.020/0.020   0.50    2.00 0.0313 0.125 0.0150
  2   12.0      6.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0130
  3   18.0      9.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0130

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    101.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    784.20
  DOWNSTREAM ELEVATION(FEET) =    783.15
  ELEVATION DIFFERENCE(FEET) =      1.05
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    7.631
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.218
  SUBAREA RUNOFF(CFS) =      1.13
  TOTAL AREA(ACRES) =      0.35   TOTAL RUNOFF(CFS) =      1.13

****************************************************************************
  FLOW PROCESS FROM NODE    101.00 TO NODE    102.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  781.50  DOWNSTREAM ELEVATION(FEET) =  766.60
  STREET LENGTH(FEET) =   547.66   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       7.19
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.31
```

```
    HALFSTREET FLOOD WIDTH(FEET) =    9.39
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.60
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.13
  STREET FLOW TRAVEL TIME(MIN.) =   2.54   Tc(MIN.) =   10.17
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.167
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    4.49      SUBAREA RUNOFF(CFS) =   12.06
  TOTAL AREA(ACRES) =        4.8        PEAK FLOW RATE(CFS) =      13.01

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.37   HALFSTREET FLOOD WIDTH(FEET) =  12.06
  FLOW VELOCITY(FEET/SEC.) =  4.14   DEPTH*VELOCITY(FT*FT/SEC.) =   1.52
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    102.00 =     617.66 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    102.00 TO NODE    103.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   761.00  DOWNSTREAM(FEET) =   730.00
  FLOW LENGTH(FEET) =   599.04   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.54
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      13.01
  PIPE TRAVEL TIME(MIN.) =   0.74    Tc(MIN.) =   10.91
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    103.00 =    1216.70 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    103.00 TO NODE    103.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.91
  RAINFALL INTENSITY(INCH/HR) =   4.94
  TOTAL STREAM AREA(ACRES) =     4.84
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.01

****************************************************************************
  FLOW PROCESS FROM NODE    105.00 TO NODE    106.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (2.9 DU/AC OR LESS) RUNOFF COEFFICIENT = .4900
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    763.85
  DOWNSTREAM ELEVATION(FEET) =    763.15
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    9.187
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    70.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.517
  SUBAREA RUNOFF(CFS) =      0.87
  TOTAL AREA(ACRES) =      0.32   TOTAL RUNOFF(CFS) =      0.87

****************************************************************************
  FLOW PROCESS FROM NODE    106.00 TO NODE    107.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  761.50  DOWNSTREAM ELEVATION(FEET) =  735.00
  STREET LENGTH(FEET) =   655.30   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.16
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.27
    HALFSTREET FLOOD WIDTH(FEET) =    7.39
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.89
```

```
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.06
  STREET FLOW TRAVEL TIME(MIN.) =   2.81   Tc(MIN.) =   12.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.644
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (2.9 DU/AC OR LESS) RUNOFF COEFFICIENT = .4900
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.490
  SUBAREA AREA(ACRES) =    3.76      SUBAREA RUNOFF(CFS) =    8.56
  TOTAL AREA(ACRES) =        4.1        PEAK FLOW RATE(CFS) =       9.29

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.32   HALFSTREET FLOOD WIDTH(FEET) =   9.67
  FLOW VELOCITY(FEET/SEC.) =  4.41   DEPTH*VELOCITY(FT*FT/SEC.) =   1.41
  LONGEST FLOWPATH FROM NODE    105.00 TO NODE    107.00 =     725.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    107.00 TO NODE    103.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   12.00
  RAINFALL INTENSITY(INCH/HR) =   4.64
  TOTAL STREAM AREA(ACRES) =     4.08
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.29

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       13.01    10.91        4.939          4.84
      2        9.29    12.00        4.644          4.08

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       21.45    10.91       4.939
      2       21.51    12.00       4.644

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      21.51   Tc(MIN.) =   12.00
  TOTAL AREA(ACRES) =        8.9
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    103.00 =    1216.70 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    103.00 TO NODE    108.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   730.00  DOWNSTREAM(FEET) =   720.00
  FLOW LENGTH(FEET) =   165.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  16.02
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      21.51
  PIPE TRAVEL TIME(MIN.) =   0.17    Tc(MIN.) =   12.17
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    108.00 =    1381.70 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    108.00 TO NODE    108.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   12.17
  RAINFALL INTENSITY(INCH/HR) =   4.60
  TOTAL STREAM AREA(ACRES) =     8.92
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     21.51

****************************************************************************
  FLOW PROCESS FROM NODE    110.00 TO NODE    111.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    742.35
  DOWNSTREAM ELEVATION(FEET) =    741.65
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    70.00
```

```
          (Reference: Table 3-1B of Hydrology Manual)
          THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      0.92
  TOTAL AREA(ACRES) =      0.31   TOTAL RUNOFF(CFS) =      0.92

****************************************************************************
  FLOW PROCESS FROM NODE    111.00 TO NODE    112.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  741.50  DOWNSTREAM ELEVATION(FEET) =  724.50
  STREET LENGTH(FEET) =   476.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.37
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.27
    HALFSTREET FLOOD WIDTH(FEET) =    7.21
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.20
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.14
  STREET FLOW TRAVEL TIME(MIN.) =   1.89   Tc(MIN.) =   10.62
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.024
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    3.40      SUBAREA RUNOFF(CFS) =    8.88
  TOTAL AREA(ACRES) =        3.7        PEAK FLOW RATE(CFS) =       9.69

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.32   HALFSTREET FLOOD WIDTH(FEET) =   9.46
  FLOW VELOCITY(FEET/SEC.) =  4.79   DEPTH*VELOCITY(FT*FT/SEC.) =   1.51
  LONGEST FLOWPATH FROM NODE    110.00 TO NODE    112.00 =     546.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    112.00 TO NODE    108.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.62
  RAINFALL INTENSITY(INCH/HR) =   5.02
  TOTAL STREAM AREA(ACRES) =     3.71
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.69

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       21.51    12.17        4.602          8.92
      2        9.69    10.62        5.024          3.71

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       29.40    10.62        5.024
      2       30.39    12.17        4.602

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      30.39   Tc(MIN.) =   12.17
  TOTAL AREA(ACRES) =       12.6
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    108.00 =    1381.70 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    108.00 TO NODE    113.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   720.00  DOWNSTREAM(FEET) =   719.00
  FLOW LENGTH(FEET) =    72.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  19.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.05
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      30.39
```

```
  PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =   12.29
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    113.00 =    1453.70 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    113.00 TO NODE    113.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   12.29
  RAINFALL INTENSITY(INCH/HR) =   4.57
  TOTAL STREAM AREA(ACRES) =    12.63
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     30.39

****************************************************************************
  FLOW PROCESS FROM NODE    115.00 TO NODE    116.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    760.00
  DOWNSTREAM ELEVATION(FEET) =    759.00
  ELEVATION DIFFERENCE(FEET) =      1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.322
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    60.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.168
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.97
  TOTAL AREA(ACRES) =      0.15   TOTAL RUNOFF(CFS) =      0.97

****************************************************************************
  FLOW PROCESS FROM NODE    116.00 TO NODE    117.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  757.00  DOWNSTREAM ELEVATION(FEET) =  724.00
  STREET LENGTH(FEET) =   497.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.00
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.27
    HALFSTREET FLOOD WIDTH(FEET) =    7.04
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.89
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.31
  STREET FLOW TRAVEL TIME(MIN.) =   1.69   Tc(MIN.) =    6.02
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.248
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .6300
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.640
  SUBAREA AREA(ACRES) =    2.18      SUBAREA RUNOFF(CFS) =    9.95
  TOTAL AREA(ACRES) =        2.3        PEAK FLOW RATE(CFS) =      10.81

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.31   HALFSTREET FLOOD WIDTH(FEET) =   9.25
  FLOW VELOCITY(FEET/SEC.) =  5.56   DEPTH*VELOCITY(FT*FT/SEC.) =   1.73
  LONGEST FLOWPATH FROM NODE    115.00 TO NODE    117.00 =     597.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    117.00 TO NODE    113.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    6.02
  RAINFALL INTENSITY(INCH/HR) =   7.25
  TOTAL STREAM AREA(ACRES) =     2.33
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.81

****************************************************************************
  FLOW PROCESS FROM NODE    120.00 TO NODE    121.00 IS CODE =  21
```

```
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (2.9 DU/AC OR LESS) RUNOFF COEFFICIENT = .4900
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    770.35
  DOWNSTREAM ELEVATION(FEET) =    769.65
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    9.187
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    70.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.517
  SUBAREA RUNOFF(CFS) =      1.08
  TOTAL AREA(ACRES) =      0.40   TOTAL RUNOFF(CFS) =      1.08

****************************************************************************
  FLOW PROCESS FROM NODE    121.00 TO NODE    122.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  769.00  DOWNSTREAM ELEVATION(FEET) =  730.00
  STREET LENGTH(FEET) =   469.36   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      11.41
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.31
    HALFSTREET FLOOD WIDTH(FEET) =    9.04
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.11
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.87
  STREET FLOW TRAVEL TIME(MIN.) =   1.28   Tc(MIN.) =   10.47
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.071
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (2.9 DU/AC OR LESS) RUNOFF COEFFICIENT = .4900
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.490
  SUBAREA AREA(ACRES) =    8.30      SUBAREA RUNOFF(CFS) =   20.63
  TOTAL AREA(ACRES) =        8.7        PEAK FLOW RATE(CFS) =      21.62

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.36   HALFSTREET FLOOD WIDTH(FEET) =  11.85
  FLOW VELOCITY(FEET/SEC.) =  7.10   DEPTH*VELOCITY(FT*FT/SEC.) =   2.58
  LONGEST FLOWPATH FROM NODE    120.00 TO NODE    122.00 =     539.36 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    122.00 TO NODE    113.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   725.00  DOWNSTREAM(FEET) =   717.00
  FLOW LENGTH(FEET) =   329.85   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.31
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      21.62
  PIPE TRAVEL TIME(MIN.) =   0.49    Tc(MIN.) =   10.95
  LONGEST FLOWPATH FROM NODE    120.00 TO NODE    113.00 =     869.21 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    113.00 TO NODE    113.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.95
  RAINFALL INTENSITY(INCH/HR) =   4.93
  TOTAL STREAM AREA(ACRES) =     8.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     21.62

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       30.39    12.29        4.573         12.63
```

```
     2       10.81     6.02        7.248          2.33
     3       21.62    10.95        4.925          8.70

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       41.86     6.02       7.248
      2       57.19    10.95       4.925
      3       57.29    12.29       4.573

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      57.29   Tc(MIN.) =   12.29
  TOTAL AREA(ACRES) =       23.7
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    113.00 =    1453.70 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    113.00 TO NODE    124.30 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   717.00  DOWNSTREAM(FEET) =   710.00
  FLOW LENGTH(FEET) =   220.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  20.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  16.15
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      57.29
  PIPE TRAVEL TIME(MIN.) =   0.23    Tc(MIN.) =   12.52
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    124.30 =    1673.70 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    124.30 TO NODE    124.30 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   12.52
  RAINFALL INTENSITY(INCH/HR) =   4.52
  TOTAL STREAM AREA(ACRES) =    23.66
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     57.29

****************************************************************************
  FLOW PROCESS FROM NODE    124.10 TO NODE    124.20 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    731.65
  DOWNSTREAM ELEVATION(FEET) =    730.95
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      0.86
  TOTAL AREA(ACRES) =      0.29   TOTAL RUNOFF(CFS) =      0.86

****************************************************************************
  FLOW PROCESS FROM NODE    124.20 TO NODE    124.30 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  729.00  DOWNSTREAM ELEVATION(FEET) =  714.00
  STREET LENGTH(FEET) =   672.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.42
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.26
    HALFSTREET FLOOD WIDTH(FEET) =    6.51
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.16
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.81
  STREET FLOW TRAVEL TIME(MIN.) =   3.55   Tc(MIN.) =   12.28
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.575
  *USER SPECIFIED(SUBAREA):
```

```
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    2.14      SUBAREA RUNOFF(CFS) =    5.09
  TOTAL AREA(ACRES) =        2.4        PEAK FLOW RATE(CFS) =       5.78

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.29   HALFSTREET FLOOD WIDTH(FEET) =   8.38
  FLOW VELOCITY(FEET/SEC.) =  3.52   DEPTH*VELOCITY(FT*FT/SEC.) =   1.03
  LONGEST FLOWPATH FROM NODE    124.10 TO NODE    124.30 =     742.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    124.30 TO NODE    124.30 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   12.28
  RAINFALL INTENSITY(INCH/HR) =   4.58
  TOTAL STREAM AREA(ACRES) =     2.43
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.78

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       57.29    12.52        4.519         23.66
      2        5.78    12.28        4.575          2.43

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       62.37    12.28       4.575
      2       63.00    12.52       4.519

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      63.00   Tc(MIN.) =   12.52
  TOTAL AREA(ACRES) =       26.1
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    124.30 =    1673.70 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    124.30 TO NODE    123.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   710.00  DOWNSTREAM(FEET) =   705.00
  FLOW LENGTH(FEET) =    67.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  17.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  22.84
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      63.00
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =   12.56
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    123.00 =    1740.70 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    123.00 TO NODE    123.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    125.00 TO NODE    126.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (2.9 DU/AC OR LESS) RUNOFF COEFFICIENT = .4900
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    753.35
  DOWNSTREAM ELEVATION(FEET) =    752.65
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    9.187
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    70.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.517
  SUBAREA RUNOFF(CFS) =      0.76
  TOTAL AREA(ACRES) =      0.28   TOTAL RUNOFF(CFS) =      0.76

****************************************************************************
  FLOW PROCESS FROM NODE    126.00 TO NODE    127.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  750.00  DOWNSTREAM ELEVATION(FEET) =  724.30
  STREET LENGTH(FEET) =   625.05   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       7.59
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.30
    HALFSTREET FLOOD WIDTH(FEET) =    8.79
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.26
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.29
  STREET FLOW TRAVEL TIME(MIN.) =   2.45   Tc(MIN.) =   11.63
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.737
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (2.9 DU/AC OR LESS) RUNOFF COEFFICIENT = .4900
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.490
  SUBAREA AREA(ACRES) =    5.86      SUBAREA RUNOFF(CFS) =   13.60
  TOTAL AREA(ACRES) =        6.1        PEAK FLOW RATE(CFS) =      14.25

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.36   HALFSTREET FLOOD WIDTH(FEET) =  11.50
  FLOW VELOCITY(FEET/SEC.) =  4.95   DEPTH*VELOCITY(FT*FT/SEC.) =   1.76
  LONGEST FLOWPATH FROM NODE    125.00 TO NODE    127.00 =     695.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    127.00 TO NODE    128.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   717.00  DOWNSTREAM(FEET) =   706.00
  FLOW LENGTH(FEET) =   618.82   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  12.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.24
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      14.25
  PIPE TRAVEL TIME(MIN.) =   1.12    Tc(MIN.) =   12.75
  LONGEST FLOWPATH FROM NODE    125.00 TO NODE    128.00 =    1313.87 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    128.00 TO NODE    128.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   12.75
  RAINFALL INTENSITY(INCH/HR) =   4.47
  TOTAL STREAM AREA(ACRES) =     6.14
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     14.25

****************************************************************************
  FLOW PROCESS FROM NODE    130.00 TO NODE    131.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    80.00
  UPSTREAM ELEVATION(FEET) =    731.30
  DOWNSTREAM ELEVATION(FEET) =    729.50
  ELEVATION DIFFERENCE(FEET) =      1.80
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.749
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    77.50
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.168
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.03
  TOTAL AREA(ACRES) =      0.16   TOTAL RUNOFF(CFS) =      1.03

****************************************************************************
  FLOW PROCESS FROM NODE    131.00 TO NODE    132.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
```

```
  UPSTREAM ELEVATION(FEET) =  730.00  DOWNSTREAM ELEVATION(FEET) =  713.50
  STREET LENGTH(FEET) =   890.57   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       8.02
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.34
    HALFSTREET FLOOD WIDTH(FEET) =   10.72
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.16
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.08
  STREET FLOW TRAVEL TIME(MIN.) =   4.69   Tc(MIN.) =    8.44
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.827
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (2.9 DU/AC OR LESS) RUNOFF COEFFICIENT = .4900
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.500
  SUBAREA AREA(ACRES) =    4.63      SUBAREA RUNOFF(CFS) =   13.22
  TOTAL AREA(ACRES) =        4.8        PEAK FLOW RATE(CFS) =      13.96

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.40   HALFSTREET FLOOD WIDTH(FEET) =  13.46
  FLOW VELOCITY(FEET/SEC.) =  3.61   DEPTH*VELOCITY(FT*FT/SEC.) =   1.43
  LONGEST FLOWPATH FROM NODE    130.00 TO NODE    132.00 =     970.57 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    132.00 TO NODE    128.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.44
  RAINFALL INTENSITY(INCH/HR) =   5.83
  TOTAL STREAM AREA(ACRES) =     4.79
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.96

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       14.25    12.75        4.465          6.14
      2       13.96     8.44        5.827          4.79

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       23.39     8.44        5.827
      2       24.95    12.75        4.465

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      24.95   Tc(MIN.) =   12.75
  TOTAL AREA(ACRES) =       10.9
  LONGEST FLOWPATH FROM NODE    125.00 TO NODE    128.00 =    1313.87 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    128.00 TO NODE    123.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   706.00  DOWNSTREAM(FEET) =   705.00
  FLOW LENGTH(FEET) =    65.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  18.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.87
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      24.95
  PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =   12.86
  LONGEST FLOWPATH FROM NODE    125.00 TO NODE    123.00 =    1378.87 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    123.00 TO NODE    123.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY     AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)   (ACRE)
```

```
      1       24.95    12.86       4.441       10.93
  LONGEST FLOWPATH FROM NODE    125.00 TO NODE    123.00 =    1378.87 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1       63.00    12.56       4.508       26.09
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    123.00 =    1740.70 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1      87.37      12.56        4.508
      2      87.01      12.86        4.441

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      87.37   Tc(MIN.) =   12.56
  TOTAL AREA(ACRES) =       37.0

****************************************************************************
  FLOW PROCESS FROM NODE    123.00 TO NODE    123.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    123.00 TO NODE    123.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   12.56
  RAINFALL INTENSITY(INCH/HR) =   4.51
  TOTAL STREAM AREA(ACRES) =    37.02
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     87.37

****************************************************************************
  FLOW PROCESS FROM NODE    135.00 TO NODE    136.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (2.9 DU/AC OR LESS) RUNOFF COEFFICIENT = .4900
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    732.95
  DOWNSTREAM ELEVATION(FEET) =    732.25
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    9.186
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.517
  SUBAREA RUNOFF(CFS) =      1.41
  TOTAL AREA(ACRES) =      0.52   TOTAL RUNOFF(CFS) =      1.41

****************************************************************************
  FLOW PROCESS FROM NODE    136.00 TO NODE    137.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  730.00  DOWNSTREAM ELEVATION(FEET) =  711.00
  STREET LENGTH(FEET) =   901.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.01
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.35
    HALFSTREET FLOOD WIDTH(FEET) =   11.43
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.52
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.25
  STREET FLOW TRAVEL TIME(MIN.) =   4.27   Tc(MIN.) =   13.45
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.314
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (2.9 DU/AC OR LESS) RUNOFF COEFFICIENT = .4900
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.490
  SUBAREA AREA(ACRES) =    3.38      SUBAREA RUNOFF(CFS) =    7.14
  TOTAL AREA(ACRES) =        3.9        PEAK FLOW RATE(CFS) =       8.24

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.41   HALFSTREET FLOOD WIDTH(FEET) =  14.03
```

```
  FLOW VELOCITY(FEET/SEC.) =  3.95   DEPTH*VELOCITY(FT*FT/SEC.) =   1.61
  LONGEST FLOWPATH FROM NODE    135.00 TO NODE    137.00 =     971.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    137.00 TO NODE    123.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   13.45
  RAINFALL INTENSITY(INCH/HR) =   4.31
  TOTAL STREAM AREA(ACRES) =     3.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.24

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       87.37    12.56        4.508         37.02
      2        8.24    13.45        4.314          3.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       95.07    12.56       4.508
      2       91.84    13.45       4.314

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      95.07   Tc(MIN.) =   12.56
  TOTAL AREA(ACRES) =       40.9
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    123.00 =    1740.70 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    123.00 TO NODE    138.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   705.00  DOWNSTREAM(FEET) =   692.00
  FLOW LENGTH(FEET) =   304.93   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  24.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  20.26
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      95.07
  PIPE TRAVEL TIME(MIN.) =   0.25    Tc(MIN.) =   12.82
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    138.00 =    2045.63 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    138.00 TO NODE    138.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    140.00 TO NODE    141.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    798.35
  DOWNSTREAM ELEVATION(FEET) =    797.65
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    70.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      0.95
  TOTAL AREA(ACRES) =      0.32   TOTAL RUNOFF(CFS) =      0.95

****************************************************************************
  FLOW PROCESS FROM NODE    141.00 TO NODE    142.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  796.00  DOWNSTREAM ELEVATION(FEET) =  734.00
  STREET LENGTH(FEET) =   607.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
```

```
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       7.19
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.26
    HALFSTREET FLOOD WIDTH(FEET) =    6.92
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.02
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.59
  STREET FLOW TRAVEL TIME(MIN.) =   1.68   Tc(MIN.) =   10.42
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.088
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (2.9 DU/AC OR LESS) RUNOFF COEFFICIENT = .4900
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.492
  SUBAREA AREA(ACRES) =    4.99      SUBAREA RUNOFF(CFS) =   12.44
  TOTAL AREA(ACRES) =        5.3        PEAK FLOW RATE(CFS) =      13.29

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.31   HALFSTREET FLOOD WIDTH(FEET) =   9.25
  FLOW VELOCITY(FEET/SEC.) =  6.83   DEPTH*VELOCITY(FT*FT/SEC.) =   2.12
  LONGEST FLOWPATH FROM NODE    140.00 TO NODE    142.00 =     677.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    142.00 TO NODE    143.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   730.00  DOWNSTREAM(FEET) =   695.00
  FLOW LENGTH(FEET) =   614.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.12
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      13.29
  PIPE TRAVEL TIME(MIN.) =   0.72    Tc(MIN.) =   11.14
  LONGEST FLOWPATH FROM NODE    140.00 TO NODE    143.00 =    1291.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    143.00 TO NODE    143.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.14
  RAINFALL INTENSITY(INCH/HR) =   4.87
  TOTAL STREAM AREA(ACRES) =     5.31
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.29

****************************************************************************
  FLOW PROCESS FROM NODE    145.00 TO NODE    146.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    729.85
  DOWNSTREAM ELEVATION(FEET) =    729.15
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    70.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      0.77
  TOTAL AREA(ACRES) =      0.26   TOTAL RUNOFF(CFS) =      0.77

****************************************************************************
  FLOW PROCESS FROM NODE    146.00 TO NODE    147.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  728.50  DOWNSTREAM ELEVATION(FEET) =  699.00
  STREET LENGTH(FEET) =   600.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
```

```
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.21
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.27
    HALFSTREET FLOOD WIDTH(FEET) =    7.10
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.19
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.12
  STREET FLOW TRAVEL TIME(MIN.) =   2.39   Tc(MIN.) =   11.12
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.878
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    3.49      SUBAREA RUNOFF(CFS) =    8.85
  TOTAL AREA(ACRES) =        3.8        PEAK FLOW RATE(CFS) =       9.51

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.31   HALFSTREET FLOOD WIDTH(FEET) =   9.32
  FLOW VELOCITY(FEET/SEC.) =  4.82   DEPTH*VELOCITY(FT*FT/SEC.) =   1.51
  LONGEST FLOWPATH FROM NODE    145.00 TO NODE    147.00 =     670.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    147.00 TO NODE    143.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.12
  RAINFALL INTENSITY(INCH/HR) =   4.88
  TOTAL STREAM AREA(ACRES) =     3.75
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.51

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       13.29    11.14        4.872          5.31
      2        9.51    11.12        4.878          3.75

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       22.77    11.12       4.878
      2       22.79    11.14       4.872

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      22.79   Tc(MIN.) =   11.14
  TOTAL AREA(ACRES) =        9.1
  LONGEST FLOWPATH FROM NODE    140.00 TO NODE    143.00 =    1291.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    143.00 TO NODE    138.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   695.00  DOWNSTREAM(FEET) =   692.00
  FLOW LENGTH(FEET) =    53.98   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.54
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      22.79
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =   11.20
  LONGEST FLOWPATH FROM NODE    140.00 TO NODE    138.00 =    1344.98 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    138.00 TO NODE    138.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1       22.79    11.20       4.856        9.06
  LONGEST FLOWPATH FROM NODE    140.00 TO NODE    138.00 =    1344.98 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1       95.07    12.82       4.451       40.92
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    138.00 =    2045.63 FEET.
```

```
  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1     105.86      11.20        4.856
      2     115.96      12.82        4.451

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     115.96   Tc(MIN.) =   12.82
  TOTAL AREA(ACRES) =       50.0

****************************************************************************
  FLOW PROCESS FROM NODE    138.00 TO NODE    138.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    138.00 TO NODE    148.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   692.00  DOWNSTREAM(FEET) =   660.00
  FLOW LENGTH(FEET) =   447.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  23.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  26.02
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     115.96
  PIPE TRAVEL TIME(MIN.) =   0.29    Tc(MIN.) =   13.10
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    148.00 =    2492.63 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    175.00 TO NODE    148.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.388
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .6300
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5087
  SUBAREA AREA(ACRES) =    0.69   SUBAREA RUNOFF(CFS) =    1.91
  TOTAL AREA(ACRES) =       50.7   TOTAL RUNOFF(CFS) =     115.96
  TC(MIN.) =   13.10
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE    148.00 TO NODE    148.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   13.10
  RAINFALL INTENSITY(INCH/HR) =   4.39
  TOTAL STREAM AREA(ACRES) =    50.67
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    115.96

****************************************************************************
  FLOW PROCESS FROM NODE    150.00 TO NODE    151.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    720.00
  DOWNSTREAM ELEVATION(FEET) =    710.00
  ELEVATION DIFFERENCE(FEET) =     10.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.061
  SUBAREA RUNOFF(CFS) =      0.52
  TOTAL AREA(ACRES) =      0.21   TOTAL RUNOFF(CFS) =      0.52

****************************************************************************
  FLOW PROCESS FROM NODE    151.00 TO NODE    152.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   710.00  DOWNSTREAM(FEET) =   650.00
  FLOW LENGTH(FEET) =   780.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   1.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.17
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.52
```

```
  PIPE TRAVEL TIME(MIN.) =   2.11    Tc(MIN.) =    8.37
  LONGEST FLOWPATH FROM NODE    150.00 TO NODE    152.00 =     880.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    151.00 TO NODE    152.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.857
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =    3.30   SUBAREA RUNOFF(CFS) =    6.76
  TOTAL AREA(ACRES) =        3.5   TOTAL RUNOFF(CFS) =       7.19
  TC(MIN.) =    8.37

****************************************************************************
  FLOW PROCESS FROM NODE    153.00 TO NODE    152.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.857
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =    1.09   SUBAREA RUNOFF(CFS) =    2.23
  TOTAL AREA(ACRES) =        4.6   TOTAL RUNOFF(CFS) =       9.43
  TC(MIN.) =    8.37

****************************************************************************
  FLOW PROCESS FROM NODE    152.00 TO NODE    148.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   645.00  DOWNSTREAM(FEET) =   644.00
  FLOW LENGTH(FEET) =   209.60   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.01
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        9.43
  PIPE TRAVEL TIME(MIN.) =   0.70    Tc(MIN.) =    9.07
  LONGEST FLOWPATH FROM NODE    150.00 TO NODE    148.00 =    1089.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    148.00 TO NODE    148.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.07
  RAINFALL INTENSITY(INCH/HR) =   5.56
  TOTAL STREAM AREA(ACRES) =     4.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.43

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1      115.96    13.10        4.388         50.67
      2        9.43     9.07        5.562          4.60

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       89.72     9.07       5.562
      2      123.40    13.10       4.388

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     123.40   Tc(MIN.) =   13.10
  TOTAL AREA(ACRES) =       55.3
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    148.00 =    2492.63 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    148.00 TO NODE    154.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   644.00  DOWNSTREAM(FEET) =   643.00
  FLOW LENGTH(FEET) =   220.81   MANNING'S N =  0.013
  DEPTH OF FLOW IN  54.0 INCH PIPE IS  42.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.23
  ESTIMATED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
```

```
  PIPE-FLOW(CFS) =     123.40
  PIPE TRAVEL TIME(MIN.) =   0.40    Tc(MIN.) =   13.50
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    154.00 =    2713.44 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    154.00 TO NODE    154.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   13.50
  RAINFALL INTENSITY(INCH/HR) =   4.30
  TOTAL STREAM AREA(ACRES) =    55.27
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    123.40

****************************************************************************
  FLOW PROCESS FROM NODE    155.00 TO NODE    156.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    85.00
  UPSTREAM ELEVATION(FEET) =    710.00
  DOWNSTREAM ELEVATION(FEET) =    706.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.070
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.168
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.84
  TOTAL AREA(ACRES) =      0.13   TOTAL RUNOFF(CFS) =      0.84

****************************************************************************
  FLOW PROCESS FROM NODE    156.00 TO NODE    157.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  706.00  DOWNSTREAM ELEVATION(FEET) =  653.00
  STREET LENGTH(FEET) =   838.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.43
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.27
    HALFSTREET FLOOD WIDTH(FEET) =    7.10
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.51
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.48
  STREET FLOW TRAVEL TIME(MIN.) =   2.53   Tc(MIN.) =    5.60
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.589
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.790
  SUBAREA AREA(ACRES) =    0.86      SUBAREA RUNOFF(CFS) =    5.16
  TOTAL AREA(ACRES) =        1.0        PEAK FLOW RATE(CFS) =       5.94

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.31   HALFSTREET FLOOD WIDTH(FEET) =   9.18
  FLOW VELOCITY(FEET/SEC.) =  6.18   DEPTH*VELOCITY(FT*FT/SEC.) =   1.91
  LONGEST FLOWPATH FROM NODE    155.00 TO NODE    157.00 =     923.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    157.00 TO NODE    154.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    5.60
  RAINFALL INTENSITY(INCH/HR) =   7.59
  TOTAL STREAM AREA(ACRES) =     0.99
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.94

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1      123.40    13.50        4.304         55.27
```

```
      2        5.94     5.60        7.589          0.99

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       75.92     5.60       7.589
      2      126.76    13.50       4.304

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     126.76   Tc(MIN.) =   13.50
  TOTAL AREA(ACRES) =       56.3
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    154.00 =    2713.44 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    154.00 TO NODE    154.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    160.00 TO NODE    161.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    768.70
  DOWNSTREAM ELEVATION(FEET) =    767.50
  ELEVATION DIFFERENCE(FEET) =      1.20
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.168
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    63.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.168
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.55
  TOTAL AREA(ACRES) =      0.24   TOTAL RUNOFF(CFS) =      1.55

****************************************************************************
  FLOW PROCESS FROM NODE    161.00 TO NODE    162.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  762.00  DOWNSTREAM ELEVATION(FEET) =  666.00
  STREET LENGTH(FEET) =  1065.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       8.79
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.27
    HALFSTREET FLOOD WIDTH(FEET) =    7.33
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.71
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.83
  STREET FLOW TRAVEL TIME(MIN.) =   2.65   Tc(MIN.) =    6.81
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.690
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.790
  SUBAREA AREA(ACRES) =    2.72      SUBAREA RUNOFF(CFS) =   14.37
  TOTAL AREA(ACRES) =        3.0        PEAK FLOW RATE(CFS) =      15.64

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.32   HALFSTREET FLOOD WIDTH(FEET) =   9.53
  FLOW VELOCITY(FEET/SEC.) =  7.62   DEPTH*VELOCITY(FT*FT/SEC.) =   2.42
  LONGEST FLOWPATH FROM NODE    160.00 TO NODE    162.00 =    1165.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    163.00 TO NODE    162.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.690
  *USER SPECIFIED(SUBAREA):
```

```
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5738
  SUBAREA AREA(ACRES) =    2.86   SUBAREA RUNOFF(CFS) =    6.70
  TOTAL AREA(ACRES) =        5.8   TOTAL RUNOFF(CFS) =      22.34
  TC(MIN.) =    6.81

****************************************************************************
  FLOW PROCESS FROM NODE    162.00 TO NODE    164.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   660.00  DOWNSTREAM(FEET) =   650.00
  FLOW LENGTH(FEET) =   796.79   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  17.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.90
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      22.34
  PIPE TRAVEL TIME(MIN.) =   1.49    Tc(MIN.) =    8.31
  LONGEST FLOWPATH FROM NODE    160.00 TO NODE    164.00 =    1961.79 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    164.00 TO NODE    164.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.31
  RAINFALL INTENSITY(INCH/HR) =   5.89
  TOTAL STREAM AREA(ACRES) =     5.82
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     22.34

****************************************************************************
  FLOW PROCESS FROM NODE    170.00 TO NODE    171.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (7.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    662.55
  DOWNSTREAM ELEVATION(FEET) =    661.85
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.417
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    65.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.837
  SUBAREA RUNOFF(CFS) =      0.82
  TOTAL AREA(ACRES) =      0.27   TOTAL RUNOFF(CFS) =      0.82

****************************************************************************
  FLOW PROCESS FROM NODE    171.00 TO NODE    172.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  660.20  DOWNSTREAM ELEVATION(FEET) =  655.00
  STREET LENGTH(FEET) =   757.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.45
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.32
    HALFSTREET FLOOD WIDTH(FEET) =    9.67
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.11
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.68
  STREET FLOW TRAVEL TIME(MIN.) =   5.97   Tc(MIN.) =   14.39
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.130
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    3.32      SUBAREA RUNOFF(CFS) =    7.13
  TOTAL AREA(ACRES) =        3.6        PEAK FLOW RATE(CFS) =       7.71

  END OF SUBAREA STREET FLOW HYDRAULICS:
```

```
  DEPTH(FEET) = 0.37   HALFSTREET FLOOD WIDTH(FEET) =  12.20
  FLOW VELOCITY(FEET/SEC.) =  2.40   DEPTH*VELOCITY(FT*FT/SEC.) =   0.89
  LONGEST FLOWPATH FROM NODE    170.00 TO NODE    172.00 =     827.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    172.00 TO NODE    164.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   14.39
  RAINFALL INTENSITY(INCH/HR) =   4.13
  TOTAL STREAM AREA(ACRES) =     3.59
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.71

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       22.34     8.31        5.888          5.82
      2        7.71    14.39        4.130          3.59

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       26.79     8.31        5.888
      2       23.38    14.39        4.130

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      26.79   Tc(MIN.) =    8.31
  TOTAL AREA(ACRES) =        9.4
  LONGEST FLOWPATH FROM NODE    160.00 TO NODE    164.00 =    1961.79 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    164.00 TO NODE    173.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   650.00  DOWNSTREAM(FEET) =   645.00
  FLOW LENGTH(FEET) =   411.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  18.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.31
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      26.79
  PIPE TRAVEL TIME(MIN.) =   0.74    Tc(MIN.) =    9.04
  LONGEST FLOWPATH FROM NODE    160.00 TO NODE    173.00 =    2372.79 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    173.00 TO NODE    173.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.04
  RAINFALL INTENSITY(INCH/HR) =   5.57
  TOTAL STREAM AREA(ACRES) =     9.41
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     26.79

****************************************************************************
  FLOW PROCESS FROM NODE    180.00 TO NODE    181.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    711.65
  DOWNSTREAM ELEVATION(FEET) =    710.95
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      0.92
  TOTAL AREA(ACRES) =      0.31   TOTAL RUNOFF(CFS) =      0.92

****************************************************************************
  FLOW PROCESS FROM NODE    181.00 TO NODE    182.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  706.00  DOWNSTREAM ELEVATION(FEET) =  650.50
  STREET LENGTH(FEET) =   892.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00
```

```
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.98
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.28
    HALFSTREET FLOOD WIDTH(FEET) =    7.68
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.93
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.38
  STREET FLOW TRAVEL TIME(MIN.) =   3.02   Tc(MIN.) =   11.75
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.706
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    4.92      SUBAREA RUNOFF(CFS) =   12.04
  TOTAL AREA(ACRES) =        5.2        PEAK FLOW RATE(CFS) =      12.80

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.33   HALFSTREET FLOOD WIDTH(FEET) =  10.09
  FLOW VELOCITY(FEET/SEC.) =  5.63   DEPTH*VELOCITY(FT*FT/SEC.) =   1.85
  LONGEST FLOWPATH FROM NODE    180.00 TO NODE    182.00 =     962.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    182.00 TO NODE    173.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.75
  RAINFALL INTENSITY(INCH/HR) =   4.71
  TOTAL STREAM AREA(ACRES) =     5.23
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.80

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       26.79     9.04        5.574          9.41
      2       12.80    11.75        4.706          5.23

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       36.64     9.04       5.574
      2       35.42    11.75       4.706

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      36.64   Tc(MIN.) =    9.04
  TOTAL AREA(ACRES) =       14.6
  LONGEST FLOWPATH FROM NODE    160.00 TO NODE    173.00 =    2372.79 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    173.00 TO NODE    154.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   645.00  DOWNSTREAM(FEET) =   644.00
  FLOW LENGTH(FEET) =   100.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  22.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.24
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      36.64
  PIPE TRAVEL TIME(MIN.) =   0.18    Tc(MIN.) =    9.22
  LONGEST FLOWPATH FROM NODE    160.00 TO NODE    154.00 =    2472.79 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    154.00 TO NODE    154.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1       36.64     9.22       5.504       14.64
  LONGEST FLOWPATH FROM NODE    160.00 TO NODE    154.00 =    2472.79 FEET.
```

```
  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1      126.76    13.50       4.304       56.26
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    154.00 =    2713.44 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1     123.22       9.22        5.504
      2     155.41      13.50        4.304

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     155.41   Tc(MIN.) =   13.50
  TOTAL AREA(ACRES) =       70.9

****************************************************************************
  FLOW PROCESS FROM NODE    154.00 TO NODE    154.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    154.00 TO NODE    183.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   644.00  DOWNSTREAM(FEET) =   620.00
  FLOW LENGTH(FEET) =   506.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  28.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  23.86
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     155.41
  PIPE TRAVEL TIME(MIN.) =   0.35    Tc(MIN.) =   13.85
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    183.00 =    3219.44 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    183.00 TO NODE    183.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    185.00 TO NODE    186.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    648.00
  DOWNSTREAM ELEVATION(FEET) =    638.00
  ELEVATION DIFFERENCE(FEET) =     10.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.590
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.168
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.87
  TOTAL AREA(ACRES) =      0.29   TOTAL RUNOFF(CFS) =      1.87

****************************************************************************
  FLOW PROCESS FROM NODE    186.00 TO NODE    187.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  638.00  DOWNSTREAM ELEVATION(FEET) =  630.00
  STREET LENGTH(FEET) =   597.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      10.32
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.37
    HALFSTREET FLOOD WIDTH(FEET) =   11.99
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.32
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.21
  STREET FLOW TRAVEL TIME(MIN.) =   3.00   Tc(MIN.) =    5.59
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.602
  *USER SPECIFIED(SUBAREA):
```

```
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.538
  SUBAREA AREA(ACRES) =    4.14      SUBAREA RUNOFF(CFS) =   16.37
  TOTAL AREA(ACRES) =        4.4        PEAK FLOW RATE(CFS) =      18.11

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.43   HALFSTREET FLOOD WIDTH(FEET) =  15.08
  FLOW VELOCITY(FEET/SEC.) =  3.78   DEPTH*VELOCITY(FT*FT/SEC.) =   1.62
  LONGEST FLOWPATH FROM NODE    185.00 TO NODE    187.00 =     697.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    187.00 TO NODE    188.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   625.00  DOWNSTREAM(FEET) =   620.00
  FLOW LENGTH(FEET) =   585.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  17.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.33
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      18.11
  PIPE TRAVEL TIME(MIN.) =   1.33    Tc(MIN.) =    6.92
  LONGEST FLOWPATH FROM NODE    185.00 TO NODE    188.00 =    1282.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    188.00 TO NODE    188.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    6.92
  RAINFALL INTENSITY(INCH/HR) =   6.62
  TOTAL STREAM AREA(ACRES) =     4.43
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     18.11

****************************************************************************
  FLOW PROCESS FROM NODE    190.00 TO NODE    191.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    631.75
  DOWNSTREAM ELEVATION(FEET) =    631.05
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      0.71
  TOTAL AREA(ACRES) =      0.24   TOTAL RUNOFF(CFS) =      0.71

****************************************************************************
  FLOW PROCESS FROM NODE    191.00 TO NODE    192.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  629.75  DOWNSTREAM ELEVATION(FEET) =  624.50
  STREET LENGTH(FEET) =   515.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.01
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.33
    HALFSTREET FLOOD WIDTH(FEET) =   10.09
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.64
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.87
  STREET FLOW TRAVEL TIME(MIN.) =   3.25   Tc(MIN.) =   11.98
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.648
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    4.35      SUBAREA RUNOFF(CFS) =   10.51
  TOTAL AREA(ACRES) =        4.6        PEAK FLOW RATE(CFS) =      11.09

  END OF SUBAREA STREET FLOW HYDRAULICS:
```

```
  DEPTH(FEET) = 0.39   HALFSTREET FLOOD WIDTH(FEET) =  13.04
  FLOW VELOCITY(FEET/SEC.) =  3.05   DEPTH*VELOCITY(FT*FT/SEC.) =   1.18
  LONGEST FLOWPATH FROM NODE    190.00 TO NODE    192.00 =     585.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    192.00 TO NODE    188.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.98
  RAINFALL INTENSITY(INCH/HR) =   4.65
  TOTAL STREAM AREA(ACRES) =     4.59
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.09

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       18.11     6.92        6.624          4.43
      2       11.09    11.98        4.648          4.59

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       24.51     6.92        6.624
      2       23.80    11.98        4.648

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      24.51   Tc(MIN.) =    6.92
  TOTAL AREA(ACRES) =        9.0
  LONGEST FLOWPATH FROM NODE    185.00 TO NODE    188.00 =    1282.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    188.00 TO NODE    183.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   621.00  DOWNSTREAM(FEET) =   620.00
  FLOW LENGTH(FEET) =    96.49   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  18.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.58
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      24.51
  PIPE TRAVEL TIME(MIN.) =   0.19    Tc(MIN.) =    7.11
  LONGEST FLOWPATH FROM NODE    185.00 TO NODE    183.00 =    1378.49 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    183.00 TO NODE    183.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY     AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)   (ACRE)
      1       24.51     7.11        6.511        9.02
  LONGEST FLOWPATH FROM NODE    185.00 TO NODE    183.00 =    1378.49 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY     AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)   (ACRE)
      1      155.41    13.85        4.233       70.90
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    183.00 =    3219.44 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1     104.23       7.11        6.511
      2     171.35      13.85        4.233

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     171.35   Tc(MIN.) =   13.85
  TOTAL AREA(ACRES) =       79.9

****************************************************************************
  FLOW PROCESS FROM NODE    183.00 TO NODE    183.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    183.00 TO NODE    193.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   620.00  DOWNSTREAM(FEET) =   605.00
  FLOW LENGTH(FEET) =   378.61   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  30.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  22.88
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     171.35
  PIPE TRAVEL TIME(MIN.) =   0.28    Tc(MIN.) =   14.13
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    193.00 =    3598.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    193.00 TO NODE    193.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    195.00 TO NODE    196.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    620.85
  DOWNSTREAM ELEVATION(FEET) =    620.15
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    70.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      0.36
  TOTAL AREA(ACRES) =      0.12   TOTAL RUNOFF(CFS) =      0.36

****************************************************************************
  FLOW PROCESS FROM NODE    196.00 TO NODE    197.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  619.50  DOWNSTREAM ELEVATION(FEET) =  614.50
  STREET LENGTH(FEET) =   570.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.50
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.34
    HALFSTREET FLOOD WIDTH(FEET) =   10.72
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.17
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.74
  STREET FLOW TRAVEL TIME(MIN.) =   4.38   Tc(MIN.) =   13.12
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.384
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    4.45      SUBAREA RUNOFF(CFS) =   10.15
  TOTAL AREA(ACRES) =        4.6        PEAK FLOW RATE(CFS) =      10.42

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.40   HALFSTREET FLOOD WIDTH(FEET) =  13.89
  FLOW VELOCITY(FEET/SEC.) =  2.55   DEPTH*VELOCITY(FT*FT/SEC.) =   1.03
  LONGEST FLOWPATH FROM NODE    195.00 TO NODE    197.00 =     640.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    197.00 TO NODE    198.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   611.00  DOWNSTREAM(FEET) =   603.00
  FLOW LENGTH(FEET) =   555.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.81
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.42
  PIPE TRAVEL TIME(MIN.) =   1.19    Tc(MIN.) =   14.30
```

```
 LONGEST FLOWPATH FROM NODE    195.00 TO NODE    198.00 =    1195.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    198.00 TO NODE    198.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   14.30
 RAINFALL INTENSITY(INCH/HR) =   4.15
 TOTAL STREAM AREA(ACRES) =     4.57
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.42

****************************************************************************
 FLOW PROCESS FROM NODE    200.00 TO NODE    201.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 *USER SPECIFIED(SUBAREA):
 RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
 S.C.S. CURVE NUMBER (AMC II) =   0
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
 UPSTREAM ELEVATION(FEET) =    618.35
 DOWNSTREAM ELEVATION(FEET) =    617.65
 ELEVATION DIFFERENCE(FEET) =      0.70
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
 WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
          THE MAXIMUM OVERLAND FLOW LENGTH =    70.00
          (Reference: Table 3-1B of Hydrology Manual)
          THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
 SUBAREA RUNOFF(CFS) =      0.50
 TOTAL AREA(ACRES) =      0.17   TOTAL RUNOFF(CFS) =      0.50

****************************************************************************
 FLOW PROCESS FROM NODE    201.00 TO NODE    202.00 IS CODE =  61
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) =  617.30  DOWNSTREAM ELEVATION(FEET) =  608.00
 STREET LENGTH(FEET) =   721.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.90
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.33
   HALFSTREET FLOOD WIDTH(FEET) =   10.16
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.57
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.85
 STREET FLOW TRAVEL TIME(MIN.) =   4.68   Tc(MIN.) =   13.42
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.321
 *USER SPECIFIED(SUBAREA):
 RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
 S.C.S. CURVE NUMBER (AMC II) =   0
 AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
 SUBAREA AREA(ACRES) =    4.74      SUBAREA RUNOFF(CFS) =   10.65
 TOTAL AREA(ACRES) =        4.9        PEAK FLOW RATE(CFS) =      11.03

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.39   HALFSTREET FLOOD WIDTH(FEET) =  13.18
 FLOW VELOCITY(FEET/SEC.) =  2.97   DEPTH*VELOCITY(FT*FT/SEC.) =   1.16
 LONGEST FLOWPATH FROM NODE    200.00 TO NODE    202.00 =     791.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    202.00 TO NODE    198.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   13.42
 RAINFALL INTENSITY(INCH/HR) =   4.32
 TOTAL STREAM AREA(ACRES) =     4.91
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.03

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
```

```
     1       10.42    14.30        4.147          4.57
     2       11.03    13.42        4.321          4.91

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       20.81    13.42       4.321
     2       21.01    14.30       4.147

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      21.01   Tc(MIN.) =   14.30
  TOTAL AREA(ACRES) =        9.5
  LONGEST FLOWPATH FROM NODE    195.00 TO NODE    198.00 =    1195.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    198.00 TO NODE    193.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   606.00  DOWNSTREAM(FEET) =   605.00
  FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  17.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.81
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      21.01
  PIPE TRAVEL TIME(MIN.) =   0.15    Tc(MIN.) =   14.45
  LONGEST FLOWPATH FROM NODE    195.00 TO NODE    193.00 =    1275.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    193.00 TO NODE    193.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1       21.01    14.45       4.119        9.48
  LONGEST FLOWPATH FROM NODE    195.00 TO NODE    193.00 =    1275.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1      171.35    14.13       4.179       79.92
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    193.00 =    3598.05 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
     1     191.89      14.13        4.179
     2     189.86      14.45        4.119

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     191.89   Tc(MIN.) =   14.13
  TOTAL AREA(ACRES) =       89.4

****************************************************************************
  FLOW PROCESS FROM NODE    193.00 TO NODE    193.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    193.00 TO NODE    203.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   600.00  DOWNSTREAM(FEET) =   590.00
  FLOW LENGTH(FEET) =   318.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  33.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  21.47
  ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     191.89
  PIPE TRAVEL TIME(MIN.) =   0.25    Tc(MIN.) =   14.38
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    203.00 =    3916.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    203.00 TO NODE    203.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   14.38
  RAINFALL INTENSITY(INCH/HR) =   4.13
```

```
  TOTAL STREAM AREA(ACRES) =    89.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    191.89

****************************************************************************
  FLOW PROCESS FROM NODE    205.00 TO NODE    206.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    95.00
  UPSTREAM ELEVATION(FEET) =    647.51
  DOWNSTREAM ELEVATION(FEET) =    642.00
  ELEVATION DIFFERENCE(FEET) =      5.51
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.027
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.168
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.81
  TOTAL AREA(ACRES) =      0.28   TOTAL RUNOFF(CFS) =      1.81

****************************************************************************
  FLOW PROCESS FROM NODE    206.00 TO NODE    207.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  642.00  DOWNSTREAM ELEVATION(FEET) =  594.00
  STREET LENGTH(FEET) =   978.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.70
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.28
    HALFSTREET FLOOD WIDTH(FEET) =    7.45
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.98
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.37
  STREET FLOW TRAVEL TIME(MIN.) =   3.27   Tc(MIN.) =    6.30
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.036
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.790
  SUBAREA AREA(ACRES) =    1.75      SUBAREA RUNOFF(CFS) =    9.73
  TOTAL AREA(ACRES) =        2.0        PEAK FLOW RATE(CFS) =      11.28

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.32   HALFSTREET FLOOD WIDTH(FEET) =   9.46
  FLOW VELOCITY(FEET/SEC.) =  5.57   DEPTH*VELOCITY(FT*FT/SEC.) =   1.76
  LONGEST FLOWPATH FROM NODE    205.00 TO NODE    207.00 =    1073.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    207.00 TO NODE    203.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    6.30
  RAINFALL INTENSITY(INCH/HR) =   7.04
  TOTAL STREAM AREA(ACRES) =     2.03
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.28

****************************************************************************
  FLOW PROCESS FROM NODE    210.00 TO NODE    211.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    664.00
  DOWNSTREAM ELEVATION(FEET) =    661.00
  ELEVATION DIFFERENCE(FEET) =      3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    9.361
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.451
  SUBAREA RUNOFF(CFS) =      0.40
  TOTAL AREA(ACRES) =      0.21   TOTAL RUNOFF(CFS) =      0.40

****************************************************************************
```

```
  FLOW PROCESS FROM NODE    211.00 TO NODE    212.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   661.00  DOWNSTREAM(FEET) =   639.00
  FLOW LENGTH(FEET) =   890.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   2.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.85
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.40
  PIPE TRAVEL TIME(MIN.) =   3.85    Tc(MIN.) =   13.21
  LONGEST FLOWPATH FROM NODE    210.00 TO NODE    212.00 =     990.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    211.00 TO NODE    212.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.364
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =    1.90   SUBAREA RUNOFF(CFS) =    2.90
  TOTAL AREA(ACRES) =        2.1   TOTAL RUNOFF(CFS) =       3.22
  TC(MIN.) =   13.21

****************************************************************************
  FLOW PROCESS FROM NODE    212.00 TO NODE    213.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   639.00  DOWNSTREAM(FEET) =   608.00
  FLOW LENGTH(FEET) =   647.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   4.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.01
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.22
  PIPE TRAVEL TIME(MIN.) =   1.20    Tc(MIN.) =   14.41
  LONGEST FLOWPATH FROM NODE    210.00 TO NODE    213.00 =    1637.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    212.00 TO NODE    213.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.127
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =    3.00   SUBAREA RUNOFF(CFS) =    4.33
  TOTAL AREA(ACRES) =        5.1   TOTAL RUNOFF(CFS) =       7.38
  TC(MIN.) =   14.41

****************************************************************************
  FLOW PROCESS FROM NODE    212.00 TO NODE    203.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   14.41
  RAINFALL INTENSITY(INCH/HR) =   4.13
  TOTAL STREAM AREA(ACRES) =     5.11
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.38

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1      191.89    14.38        4.133         89.40
      2       11.28     6.30        7.036          2.03
      3        7.38    14.41        4.127          5.11

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       98.62     6.30       7.036
      2      205.88    14.38       4.133
      3      205.59    14.41       4.127

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
```

```
  PEAK FLOW RATE(CFS) =     205.88   Tc(MIN.) =   14.38
  TOTAL AREA(ACRES) =       96.5
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    203.00 =    3916.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    203.00 TO NODE    208.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   589.00  DOWNSTREAM(FEET) =   585.00
  FLOW LENGTH(FEET) =    70.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  30.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  27.48
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     205.88
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =   14.42
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    208.00 =    3986.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    208.00 TO NODE    208.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   14.42
  RAINFALL INTENSITY(INCH/HR) =   4.13
  TOTAL STREAM AREA(ACRES) =    96.54
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    205.88

****************************************************************************
  FLOW PROCESS FROM NODE    220.00 TO NODE    221.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    595.00
  DOWNSTREAM ELEVATION(FEET) =    585.00
  ELEVATION DIFFERENCE(FEET) =     10.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.061
  SUBAREA RUNOFF(CFS) =      0.49
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.49

****************************************************************************
  FLOW PROCESS FROM NODE    221.00 TO NODE    208.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   585.00  DOWNSTREAM(FEET) =   584.00
  FLOW LENGTH(FEET) =   241.00   MANNING'S N =  0.010
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   2.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   2.63
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.49
  PIPE TRAVEL TIME(MIN.) =   1.52    Tc(MIN.) =    7.79
  LONGEST FLOWPATH FROM NODE    220.00 TO NODE    208.00 =     341.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    221.00 TO NODE    208.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.135
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =    1.79   SUBAREA RUNOFF(CFS) =    3.84
  TOTAL AREA(ACRES) =        2.0   TOTAL RUNOFF(CFS) =       4.27
  TC(MIN.) =    7.79

****************************************************************************
  FLOW PROCESS FROM NODE    208.00 TO NODE    208.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    7.79
  RAINFALL INTENSITY(INCH/HR) =   6.14
  TOTAL STREAM AREA(ACRES) =     1.99
```

```
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.27

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1      205.88    14.42        4.125         96.54
      2        4.27     7.79        6.135          1.99

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1      142.69     7.79       6.135
      2      208.75    14.42       4.125

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     208.75   Tc(MIN.) =   14.42
  TOTAL AREA(ACRES) =       98.5
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    208.00 =    3986.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    208.00 TO NODE    208.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    230.00 TO NODE    231.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    75.00
  UPSTREAM ELEVATION(FEET) =    724.55
  DOWNSTREAM ELEVATION(FEET) =    722.00
  ELEVATION DIFFERENCE(FEET) =      2.55
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.214
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.168
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.81
  TOTAL AREA(ACRES) =      0.28   TOTAL RUNOFF(CFS) =      1.81

****************************************************************************
  FLOW PROCESS FROM NODE    231.00 TO NODE    232.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  717.00  DOWNSTREAM ELEVATION(FEET) =  660.00
  STREET LENGTH(FEET) =   645.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      11.04
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.29
    HALFSTREET FLOOD WIDTH(FEET) =    8.21
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.97
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.02
  STREET FLOW TRAVEL TIME(MIN.) =   1.54   Tc(MIN.) =    4.76
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.168
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.536
  SUBAREA AREA(ACRES) =    4.35      SUBAREA RUNOFF(CFS) =   18.48
  TOTAL AREA(ACRES) =        4.6        PEAK FLOW RATE(CFS) =      20.28

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.34   HALFSTREET FLOOD WIDTH(FEET) =  10.72
  FLOW VELOCITY(FEET/SEC.) =  8.00   DEPTH*VELOCITY(FT*FT/SEC.) =   2.73
  LONGEST FLOWPATH FROM NODE    230.00 TO NODE    232.00 =     720.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    232.00 TO NODE    233.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   655.00  DOWNSTREAM(FEET) =   641.00
  FLOW LENGTH(FEET) =   422.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.73
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      20.28
  PIPE TRAVEL TIME(MIN.) =   0.55    Tc(MIN.) =    5.31
  LONGEST FLOWPATH FROM NODE    230.00 TO NODE    233.00 =    1142.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    233.00 TO NODE    233.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    5.31
  RAINFALL INTENSITY(INCH/HR) =   7.86
  TOTAL STREAM AREA(ACRES) =     4.63
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     20.28

****************************************************************************
  FLOW PROCESS FROM NODE    235.00 TO NODE    236.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    690.00
  DOWNSTREAM ELEVATION(FEET) =    680.00
  ELEVATION DIFFERENCE(FEET) =     10.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.061
  SUBAREA RUNOFF(CFS) =      0.64
  TOTAL AREA(ACRES) =      0.26   TOTAL RUNOFF(CFS) =      0.64

****************************************************************************
  FLOW PROCESS FROM NODE    236.00 TO NODE    237.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   680.00  DOWNSTREAM(FEET) =   650.00
  FLOW LENGTH(FEET) =   515.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   2.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.01
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.64
  PIPE TRAVEL TIME(MIN.) =   1.43    Tc(MIN.) =    7.70
  LONGEST FLOWPATH FROM NODE    235.00 TO NODE    237.00 =     615.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    236.00 TO NODE    237.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.185
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =    2.38   SUBAREA RUNOFF(CFS) =    5.15
  TOTAL AREA(ACRES) =        2.6   TOTAL RUNOFF(CFS) =       5.71
  TC(MIN.) =    7.70

****************************************************************************
  FLOW PROCESS FROM NODE    237.00 TO NODE    233.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   645.00  DOWNSTREAM(FEET) =   641.00
  FLOW LENGTH(FEET) =   140.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.79
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.71
  PIPE TRAVEL TIME(MIN.) =   0.27    Tc(MIN.) =    7.96
  LONGEST FLOWPATH FROM NODE    235.00 TO NODE    233.00 =     755.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    233.00 TO NODE    233.00 IS CODE =   1
----------------------------------------------------------------------------
```

```
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
================================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    7.96
  RAINFALL INTENSITY(INCH/HR) =   6.05
  TOTAL STREAM AREA(ACRES) =     2.64
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.71

****************************************************************************
  FLOW PROCESS FROM NODE    240.00 TO NODE    241.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    661.55
  DOWNSTREAM ELEVATION(FEET) =    660.85
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      0.50
  TOTAL AREA(ACRES) =      0.17   TOTAL RUNOFF(CFS) =      0.50

****************************************************************************
  FLOW PROCESS FROM NODE    241.00 TO NODE    242.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  658.00  DOWNSTREAM ELEVATION(FEET) =  646.00
  STREET LENGTH(FEET) =   352.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.04
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.28
    HALFSTREET FLOOD WIDTH(FEET) =    7.74
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.21
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.18
  STREET FLOW TRAVEL TIME(MIN.) =   1.39   Tc(MIN.) =   10.13
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.180
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    4.10      SUBAREA RUNOFF(CFS) =   11.04
  TOTAL AREA(ACRES) =        4.3        PEAK FLOW RATE(CFS) =      11.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.33   HALFSTREET FLOOD WIDTH(FEET) =  10.30
  FLOW VELOCITY(FEET/SEC.) =  4.88   DEPTH*VELOCITY(FT*FT/SEC.) =   1.62
  LONGEST FLOWPATH FROM NODE    240.00 TO NODE    242.00 =     422.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    242.00 TO NODE    233.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.13
  RAINFALL INTENSITY(INCH/HR) =   5.18
  TOTAL STREAM AREA(ACRES) =     4.27
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.50

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       20.28     5.31        7.859          4.63
      2        5.71     7.96        6.051          2.64
      3       11.50    10.13        5.180          4.27

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
```

```
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       30.12     5.31       7.859
      2       30.37     7.96       6.051
      3       29.76    10.13       5.180

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      30.37   Tc(MIN.) =    7.96
  TOTAL AREA(ACRES) =       11.5
  LONGEST FLOWPATH FROM NODE    230.00 TO NODE    233.00 =    1142.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    233.00 TO NODE    243.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   641.00  DOWNSTREAM(FEET) =   640.00
  FLOW LENGTH(FEET) =    76.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  19.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.82
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      30.37
  PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =    8.09
  LONGEST FLOWPATH FROM NODE    230.00 TO NODE    243.00 =    1218.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    243.00 TO NODE    243.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.09
  RAINFALL INTENSITY(INCH/HR) =   5.99
  TOTAL STREAM AREA(ACRES) =    11.54
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     30.37

****************************************************************************
  FLOW PROCESS FROM NODE    250.00 TO NODE    251.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    694.05
  DOWNSTREAM ELEVATION(FEET) =    693.35
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      0.89
  TOTAL AREA(ACRES) =      0.30   TOTAL RUNOFF(CFS) =      0.89

****************************************************************************
  FLOW PROCESS FROM NODE    251.00 TO NODE    252.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  691.00  DOWNSTREAM ELEVATION(FEET) =  668.00
  STREET LENGTH(FEET) =   657.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.73
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.28
    HALFSTREET FLOOD WIDTH(FEET) =    7.51
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.20
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.16
  STREET FLOW TRAVEL TIME(MIN.) =   2.61   Tc(MIN.) =   11.34
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.816
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    3.85      SUBAREA RUNOFF(CFS) =    9.64
  TOTAL AREA(ACRES) =        4.2        PEAK FLOW RATE(CFS) =      10.39

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.32   HALFSTREET FLOOD WIDTH(FEET) =   9.81
```

```
  FLOW VELOCITY(FEET/SEC.) =  4.81   DEPTH*VELOCITY(FT*FT/SEC.) =   1.55
  LONGEST FLOWPATH FROM NODE    250.00 TO NODE    252.00 =     727.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    252.00 TO NODE    243.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   665.00  DOWNSTREAM(FEET) =   640.00
  FLOW LENGTH(FEET) =   495.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.69
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.39
  PIPE TRAVEL TIME(MIN.) =   0.65    Tc(MIN.) =   11.99
  LONGEST FLOWPATH FROM NODE    250.00 TO NODE    243.00 =    1222.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    243.00 TO NODE    243.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.99
  RAINFALL INTENSITY(INCH/HR) =   4.65
  TOTAL STREAM AREA(ACRES) =     4.15
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.39

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       30.37     8.09        5.988         11.54
      2       10.39    11.99        4.646          4.15

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       37.38     8.09       5.988
      2       33.96    11.99       4.646

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      37.38   Tc(MIN.) =    8.09
  TOTAL AREA(ACRES) =       15.7
  LONGEST FLOWPATH FROM NODE    250.00 TO NODE    243.00 =    1222.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    243.00 TO NODE    253.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   640.00  DOWNSTREAM(FEET) =   639.00
  FLOW LENGTH(FEET) =   130.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  22.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.51
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      37.38
  PIPE TRAVEL TIME(MIN.) =   0.25    Tc(MIN.) =    8.34
  LONGEST FLOWPATH FROM NODE    250.00 TO NODE    253.00 =    1352.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    253.00 TO NODE    253.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.34
  RAINFALL INTENSITY(INCH/HR) =   5.87
  TOTAL STREAM AREA(ACRES) =    15.69
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     37.38

****************************************************************************
  FLOW PROCESS FROM NODE    255.00 TO NODE    256.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    668.85
  DOWNSTREAM ELEVATION(FEET) =    668.15
```

```
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.735
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    70.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.699
  SUBAREA RUNOFF(CFS) =      0.59
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.59

****************************************************************************
  FLOW PROCESS FROM NODE    256.00 TO NODE    257.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  664.00  DOWNSTREAM ELEVATION(FEET) =  643.00
  STREET LENGTH(FEET) =   504.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0140

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.84
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.24
    HALFSTREET FLOOD WIDTH(FEET) =    5.87
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.16
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.01
  STREET FLOW TRAVEL TIME(MIN.) =   2.02   Tc(MIN.) =   10.76
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.983
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.520
  SUBAREA AREA(ACRES) =    2.50      SUBAREA RUNOFF(CFS) =    6.48
  TOTAL AREA(ACRES) =        2.7        PEAK FLOW RATE(CFS) =       7.00

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.28   HALFSTREET FLOOD WIDTH(FEET) =   7.92
  FLOW VELOCITY(FEET/SEC.) =  4.70   DEPTH*VELOCITY(FT*FT/SEC.) =   1.34
  LONGEST FLOWPATH FROM NODE    255.00 TO NODE    257.00 =     574.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    257.00 TO NODE    253.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.76
  RAINFALL INTENSITY(INCH/HR) =   4.98
  TOTAL STREAM AREA(ACRES) =     2.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.00

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       37.38     8.34        5.870         15.69
      2        7.00    10.76        4.983          2.70

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       42.81     8.34       5.870
      2       38.74    10.76       4.983

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      42.81   Tc(MIN.) =    8.34
  TOTAL AREA(ACRES) =       18.4
  LONGEST FLOWPATH FROM NODE    250.00 TO NODE    253.00 =    1352.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    253.00 TO NODE    258.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   639.00  DOWNSTREAM(FEET) =   638.00
  FLOW LENGTH(FEET) =    88.00   MANNING'S N =  0.013
```

```
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  21.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.23
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      42.81
  PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =    8.49
  LONGEST FLOWPATH FROM NODE    250.00 TO NODE    258.00 =    1440.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    258.00 TO NODE    258.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    260.00 TO NODE    261.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .8200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    691.00
  DOWNSTREAM ELEVATION(FEET) =    687.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.012
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    90.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.168
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      2.28
  TOTAL AREA(ACRES) =      0.34   TOTAL RUNOFF(CFS) =      2.28

****************************************************************************
  FLOW PROCESS FROM NODE    261.00 TO NODE    262.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  687.00  DOWNSTREAM ELEVATION(FEET) =  656.00
  STREET LENGTH(FEET) =   665.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 30.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       9.09
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.31
    HALFSTREET FLOOD WIDTH(FEET) =    9.28
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.64
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.45
  STREET FLOW TRAVEL TIME(MIN.) =   2.39   Tc(MIN.) =    5.40
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.772
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.794
  SUBAREA AREA(ACRES) =    2.21      SUBAREA RUNOFF(CFS) =   13.57
  TOTAL AREA(ACRES) =        2.5        PEAK FLOW RATE(CFS) =      15.74

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.36   HALFSTREET FLOOD WIDTH(FEET) =  11.70
  FLOW VELOCITY(FEET/SEC.) =  5.29   DEPTH*VELOCITY(FT*FT/SEC.) =   1.91
  LONGEST FLOWPATH FROM NODE    260.00 TO NODE    262.00 =     765.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    262.00 TO NODE    263.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   650.00  DOWNSTREAM(FEET) =   641.00
  FLOW LENGTH(FEET) =   472.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.70
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      15.74
  PIPE TRAVEL TIME(MIN.) =   0.81    Tc(MIN.) =    6.21
  LONGEST FLOWPATH FROM NODE    260.00 TO NODE    263.00 =    1237.00 FEET.

****************************************************************************
```

```
  FLOW PROCESS FROM NODE    263.00 TO NODE    263.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    6.21
  RAINFALL INTENSITY(INCH/HR) =   7.10
  TOTAL STREAM AREA(ACRES) =     2.55
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     15.74

****************************************************************************
  FLOW PROCESS FROM NODE    265.00 TO NODE    266.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    656.00
  DOWNSTREAM ELEVATION(FEET) =    652.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.494
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    97.50
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.900
  SUBAREA RUNOFF(CFS) =      0.29
  TOTAL AREA(ACRES) =      0.08   TOTAL RUNOFF(CFS) =      0.29

****************************************************************************
  FLOW PROCESS FROM NODE    266.00 TO NODE    267.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  652.00  DOWNSTREAM ELEVATION(FEET) =  645.00
  STREET LENGTH(FEET) =   364.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 30.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.92
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.23
    HALFSTREET FLOOD WIDTH(FEET) =    5.22
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.36
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.54
  STREET FLOW TRAVEL TIME(MIN.) =   2.57   Tc(MIN.) =    9.06
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.566
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.732
  SUBAREA AREA(ACRES) =    0.29      SUBAREA RUNOFF(CFS) =    1.28
  TOTAL AREA(ACRES) =        0.4        PEAK FLOW RATE(CFS) =       1.51

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.26   HALFSTREET FLOOD WIDTH(FEET) =   6.80
  FLOW VELOCITY(FEET/SEC.) =  2.60   DEPTH*VELOCITY(FT*FT/SEC.) =   0.68
  LONGEST FLOWPATH FROM NODE    265.00 TO NODE    267.00 =     464.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    267.00 TO NODE    263.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.06
  RAINFALL INTENSITY(INCH/HR) =   5.57
  TOTAL STREAM AREA(ACRES) =     0.37
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.51

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       15.74     6.21        7.101          2.55
      2        1.51     9.06        5.566          0.37
```

```
  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       16.77     6.21       7.101
      2       13.84     9.06       5.566

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      16.77   Tc(MIN.) =    6.21
  TOTAL AREA(ACRES) =        2.9
  LONGEST FLOWPATH FROM NODE    260.00 TO NODE    263.00 =    1237.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    263.00 TO NODE    258.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   641.00  DOWNSTREAM(FEET) =   638.00
  FLOW LENGTH(FEET) =   120.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  12.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.94
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      16.77
  PIPE TRAVEL TIME(MIN.) =   0.18    Tc(MIN.) =    6.39
  LONGEST FLOWPATH FROM NODE    260.00 TO NODE    258.00 =    1357.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    258.00 TO NODE    258.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1       16.77     6.39       6.969        2.92
  LONGEST FLOWPATH FROM NODE    260.00 TO NODE    258.00 =    1357.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1       42.81     8.49       5.806       18.39
  LONGEST FLOWPATH FROM NODE    250.00 TO NODE    258.00 =    1440.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1      49.02       6.39        6.969
      2      56.78       8.49        5.806

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      56.78   Tc(MIN.) =    8.49
  TOTAL AREA(ACRES) =       21.3

****************************************************************************
  FLOW PROCESS FROM NODE    258.00 TO NODE    258.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    258.00 TO NODE    268.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   638.00  DOWNSTREAM(FEET) =   632.00
  FLOW LENGTH(FEET) =   365.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  23.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.51
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      56.78
  PIPE TRAVEL TIME(MIN.) =   0.49    Tc(MIN.) =    8.97
  LONGEST FLOWPATH FROM NODE    250.00 TO NODE    268.00 =    1805.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    268.00 TO NODE    268.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.97
  RAINFALL INTENSITY(INCH/HR) =   5.60
  TOTAL STREAM AREA(ACRES) =    21.31
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     56.78
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    269.10 TO NODE    269.20 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    653.00
  DOWNSTREAM ELEVATION(FEET) =    652.00
  ELEVATION DIFFERENCE(FEET) =      1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =   11.295
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    70.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.829
  SUBAREA RUNOFF(CFS) =      0.63
  TOTAL AREA(ACRES) =      0.37   TOTAL RUNOFF(CFS) =      0.63

****************************************************************************
  FLOW PROCESS FROM NODE    269.20 TO NODE    269.30 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   652.00  DOWNSTREAM(FEET) =   636.00
  FLOW LENGTH(FEET) =   908.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   2.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.93
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.63
  PIPE TRAVEL TIME(MIN.) =   3.85    Tc(MIN.) =   15.14
  LONGEST FLOWPATH FROM NODE    269.10 TO NODE    269.30 =    1008.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    269.20 TO NODE    269.30 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.996
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =    2.42   SUBAREA RUNOFF(CFS) =    3.38
  TOTAL AREA(ACRES) =        2.8   TOTAL RUNOFF(CFS) =       3.90
  TC(MIN.) =   15.14

****************************************************************************
  FLOW PROCESS FROM NODE    269.30 TO NODE    268.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   15.14
  RAINFALL INTENSITY(INCH/HR) =   4.00
  TOTAL STREAM AREA(ACRES) =     2.79
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.90

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       56.78     8.97        5.601         21.31
      2        3.90    15.14        3.996          2.79

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       59.09     8.97       5.601
      2       44.42    15.14       3.996

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      59.09   Tc(MIN.) =    8.97
  TOTAL AREA(ACRES) =       24.1
  LONGEST FLOWPATH FROM NODE    250.00 TO NODE    268.00 =    1805.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    268.00 TO NODE    269.40 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
```

```
  ELEVATION DATA: UPSTREAM(FEET) =   632.00  DOWNSTREAM(FEET) =   625.00
  FLOW LENGTH(FEET) =   510.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  26.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.59
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      59.09
  PIPE TRAVEL TIME(MIN.) =   0.73    Tc(MIN.) =    9.71
  LONGEST FLOWPATH FROM NODE    250.00 TO NODE    269.40 =    2315.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    269.40 TO NODE    269.40 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.71
  RAINFALL INTENSITY(INCH/HR) =   5.32
  TOTAL STREAM AREA(ACRES) =    24.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     59.09

****************************************************************************
  FLOW PROCESS FROM NODE    270.00 TO NODE    271.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    85.00
  UPSTREAM ELEVATION(FEET) =    644.00
  DOWNSTREAM ELEVATION(FEET) =    642.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.718
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    78.53
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.168
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.68
  TOTAL AREA(ACRES) =      0.26   TOTAL RUNOFF(CFS) =      1.68

****************************************************************************
  FLOW PROCESS FROM NODE    271.00 TO NODE    272.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  642.00  DOWNSTREAM ELEVATION(FEET) =  630.25
  STREET LENGTH(FEET) =   829.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 30.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.97
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.33
    HALFSTREET FLOOD WIDTH(FEET) =   10.02
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.66
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.87
  STREET FLOW TRAVEL TIME(MIN.) =   5.19   Tc(MIN.) =    8.91
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.628
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .6000
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.618
  SUBAREA AREA(ACRES) =    2.44      SUBAREA RUNOFF(CFS) =    8.24
  TOTAL AREA(ACRES) =        2.7        PEAK FLOW RATE(CFS) =       9.40

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.37   HALFSTREET FLOOD WIDTH(FEET) =  12.07
  FLOW VELOCITY(FEET/SEC.) =  2.98   DEPTH*VELOCITY(FT*FT/SEC.) =   1.10
  LONGEST FLOWPATH FROM NODE    270.00 TO NODE    272.00 =     914.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    271.00 TO NODE    269.40 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
```

```
  TIME OF CONCENTRATION(MIN.) =    8.91
  RAINFALL INTENSITY(INCH/HR) =   5.63
  TOTAL STREAM AREA(ACRES) =     2.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.40

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       59.09     9.71        5.324         24.10
      2        9.40     8.91        5.628          2.70

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       65.30     8.91       5.628
      2       67.98     9.71       5.324

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      67.98   Tc(MIN.) =    9.71
  TOTAL AREA(ACRES) =       26.8
  LONGEST FLOWPATH FROM NODE    250.00 TO NODE    269.40 =    2315.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    269.40 TO NODE    273.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   625.00  DOWNSTREAM(FEET) =   617.00
  FLOW LENGTH(FEET) =   885.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  28.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.42
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      67.98
  PIPE TRAVEL TIME(MIN.) =   1.42    Tc(MIN.) =   11.12
  LONGEST FLOWPATH FROM NODE    250.00 TO NODE    273.00 =    3200.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    273.00 TO NODE    273.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.12
  RAINFALL INTENSITY(INCH/HR) =   4.88
  TOTAL STREAM AREA(ACRES) =    26.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     67.98

****************************************************************************
  FLOW PROCESS FROM NODE    274.00 TO NODE    275.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    670.00
  DOWNSTREAM ELEVATION(FEET) =    660.00
  ELEVATION DIFFERENCE(FEET) =     10.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.061
  SUBAREA RUNOFF(CFS) =      1.46
  TOTAL AREA(ACRES) =      0.59   TOTAL RUNOFF(CFS) =      1.46

****************************************************************************
  FLOW PROCESS FROM NODE    275.00 TO NODE    276.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  630.00  DOWNSTREAM ELEVATION(FEET) =  621.50
  STREET LENGTH(FEET) =   898.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 30.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.83
```

```
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.33
    HALFSTREET FLOOD WIDTH(FEET) =    9.96
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.18
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.71
  STREET FLOW TRAVEL TIME(MIN.) =   6.88   Tc(MIN.) =   13.15
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.378
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .6000
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.553
  SUBAREA AREA(ACRES) =    2.58      SUBAREA RUNOFF(CFS) =    6.78
  TOTAL AREA(ACRES) =        3.2        PEAK FLOW RATE(CFS) =       7.68

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.37   HALFSTREET FLOOD WIDTH(FEET) =  12.07
  FLOW VELOCITY(FEET/SEC.) =  2.44   DEPTH*VELOCITY(FT*FT/SEC.) =   0.90
  LONGEST FLOWPATH FROM NODE    274.00 TO NODE    276.00 =     998.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    276.00 TO NODE    273.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   13.15
  RAINFALL INTENSITY(INCH/HR) =   4.38
  TOTAL STREAM AREA(ACRES) =     3.17
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.68

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       67.98    11.12        4.876         26.80
      2        7.68    13.15        4.378          3.17

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       74.48    11.12       4.876
      2       68.72    13.15       4.378

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      74.48   Tc(MIN.) =   11.12
  TOTAL AREA(ACRES) =       30.0
  LONGEST FLOWPATH FROM NODE    250.00 TO NODE    273.00 =    3200.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    273.00 TO NODE    277.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   617.00  DOWNSTREAM(FEET) =   602.00
  FLOW LENGTH(FEET) =   903.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  26.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.39
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      74.48
  PIPE TRAVEL TIME(MIN.) =   1.12    Tc(MIN.) =   12.25
  LONGEST FLOWPATH FROM NODE    250.00 TO NODE    277.00 =    4103.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    277.00 TO NODE    277.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   12.25
  RAINFALL INTENSITY(INCH/HR) =   4.58
  TOTAL STREAM AREA(ACRES) =    29.97
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     74.48

****************************************************************************
  FLOW PROCESS FROM NODE    278.00 TO NODE    279.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    620.60
  DOWNSTREAM ELEVATION(FEET) =    620.00
```

```
  ELEVATION DIFFERENCE(FEET) =      0.60
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.322
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    60.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.168
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.29
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      1.29

****************************************************************************
  FLOW PROCESS FROM NODE    279.00 TO NODE    280.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  620.00  DOWNSTREAM ELEVATION(FEET) =  607.00
  STREET LENGTH(FEET) =   780.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 30.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.28
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.29
    HALFSTREET FLOOD WIDTH(FEET) =    8.33
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.64
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.77
  STREET FLOW TRAVEL TIME(MIN.) =   4.93   Tc(MIN.) =    9.26
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.490
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.790
  SUBAREA AREA(ACRES) =    1.35      SUBAREA RUNOFF(CFS) =    5.86
  TOTAL AREA(ACRES) =        1.6        PEAK FLOW RATE(CFS) =       6.72

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.33   HALFSTREET FLOOD WIDTH(FEET) =  10.17
  FLOW VELOCITY(FEET/SEC.) =  2.91   DEPTH*VELOCITY(FT*FT/SEC.) =   0.96
  LONGEST FLOWPATH FROM NODE    278.00 TO NODE    280.00 =     840.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    280.00 TO NODE    277.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.26
  RAINFALL INTENSITY(INCH/HR) =   5.49
  TOTAL STREAM AREA(ACRES) =     1.55
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.72

****************************************************************************
  FLOW PROCESS FROM NODE    281.00 TO NODE    282.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    663.00
  DOWNSTREAM ELEVATION(FEET) =    653.00
  ELEVATION DIFFERENCE(FEET) =     10.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.061
  SUBAREA RUNOFF(CFS) =      0.49
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.49

****************************************************************************
  FLOW PROCESS FROM NODE    282.00 TO NODE    283.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    653.00  DOWNSTREAM(FEET) =    601.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   873.00   CHANNEL SLOPE =  0.0596
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =       0.49
```

```
  FLOW VELOCITY(FEET/SEC) =   3.66 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   3.97   Tc(MIN.) =   10.24
  LONGEST FLOWPATH FROM NODE    281.00 TO NODE    283.00 =     973.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    282.00 TO NODE    283.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.144
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =    7.41   SUBAREA RUNOFF(CFS) =   13.34
  TOTAL AREA(ACRES) =        7.6   TOTAL RUNOFF(CFS) =      13.70
  TC(MIN.) =   10.24

****************************************************************************
  FLOW PROCESS FROM NODE    283.00 TO NODE    277.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   605.00  DOWNSTREAM(FEET) =   602.00
  FLOW LENGTH(FEET) =   125.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.10
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      13.70
  PIPE TRAVEL TIME(MIN.) =   0.21    Tc(MIN.) =   10.45
  LONGEST FLOWPATH FROM NODE    281.00 TO NODE    277.00 =    1098.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    277.00 TO NODE    277.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.45
  RAINFALL INTENSITY(INCH/HR) =   5.08
  TOTAL STREAM AREA(ACRES) =     7.61
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.70

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       74.48    12.25        4.583         29.97
      2        6.72     9.26        5.490          1.55
      3       13.70    10.45        5.078          7.61

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       81.03     9.26       5.490
      2       87.14    10.45       5.078
      3       92.46    12.25       4.583

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      92.46   Tc(MIN.) =   12.25
  TOTAL AREA(ACRES) =       39.1
  LONGEST FLOWPATH FROM NODE    250.00 TO NODE    277.00 =    4103.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    277.00 TO NODE    284.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   602.00  DOWNSTREAM(FEET) =   601.00
  FLOW LENGTH(FEET) =    60.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  28.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.15
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      92.46
  PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =   12.32
  LONGEST FLOWPATH FROM NODE    250.00 TO NODE    284.00 =    4163.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    284.00 TO NODE    284.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
```

```
  TIME OF CONCENTRATION(MIN.) =   12.32
  RAINFALL INTENSITY(INCH/HR) =   4.57
  TOTAL STREAM AREA(ACRES) =    39.13
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     92.46

****************************************************************************
  FLOW PROCESS FROM NODE    285.00 TO NODE    286.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .6000
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    666.00
  DOWNSTREAM ELEVATION(FEET) =    662.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.379
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    90.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.792
  SUBAREA RUNOFF(CFS) =      0.94
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.94

****************************************************************************
  FLOW PROCESS FROM NODE    286.00 TO NODE    287.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  662.00  DOWNSTREAM ELEVATION(FEET) =  605.00
  STREET LENGTH(FEET) =   890.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 20.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.05
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.24
    HALFSTREET FLOOD WIDTH(FEET) =    5.78
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.47
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.08
  STREET FLOW TRAVEL TIME(MIN.) =   3.32   Tc(MIN.) =    8.70
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.715
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.766
  SUBAREA AREA(ACRES) =    1.38      SUBAREA RUNOFF(CFS) =    6.23
  TOTAL AREA(ACRES) =        1.6        PEAK FLOW RATE(CFS) =       6.92

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.28   HALFSTREET FLOOD WIDTH(FEET) =   7.64
  FLOW VELOCITY(FEET/SEC.) =  4.92   DEPTH*VELOCITY(FT*FT/SEC.) =   1.37
  LONGEST FLOWPATH FROM NODE    285.00 TO NODE    287.00 =     990.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    287.00 TO NODE    284.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   602.00  DOWNSTREAM(FEET) =   601.00
  FLOW LENGTH(FEET) =   100.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.22
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.92
  PIPE TRAVEL TIME(MIN.) =   0.27    Tc(MIN.) =    8.97
  LONGEST FLOWPATH FROM NODE    285.00 TO NODE    284.00 =    1090.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    284.00 TO NODE    284.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.97
  RAINFALL INTENSITY(INCH/HR) =   5.60
```

```
  TOTAL STREAM AREA(ACRES) =     1.58
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.92

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       92.46    12.32        4.566         39.13
      2        6.92     8.97        5.604          1.58

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       82.24     8.97       5.604
      2       98.09    12.32       4.566

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      98.09   Tc(MIN.) =   12.32
  TOTAL AREA(ACRES) =       40.7
  LONGEST FLOWPATH FROM NODE    250.00 TO NODE    284.00 =    4163.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    284.00 TO NODE    288.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   601.00  DOWNSTREAM(FEET) =   590.00
  FLOW LENGTH(FEET) =   630.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  29.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.55
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      98.09
  PIPE TRAVEL TIME(MIN.) =   0.72    Tc(MIN.) =   13.04
  LONGEST FLOWPATH FROM NODE    250.00 TO NODE    288.00 =    4793.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    288.00 TO NODE    288.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   13.04
  RAINFALL INTENSITY(INCH/HR) =   4.40
  TOTAL STREAM AREA(ACRES) =    40.71
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     98.09

****************************************************************************
  FLOW PROCESS FROM NODE    290.00 TO NODE    291.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    85.00
  UPSTREAM ELEVATION(FEET) =    605.00
  DOWNSTREAM ELEVATION(FEET) =    604.00
  ELEVATION DIFFERENCE(FEET) =      1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.184
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    62.65
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.168
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      2.00
  TOTAL AREA(ACRES) =      0.31   TOTAL RUNOFF(CFS) =      2.00

****************************************************************************
  FLOW PROCESS FROM NODE    291.00 TO NODE    292.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  604.00  DOWNSTREAM ELEVATION(FEET) =  595.00
  STREET LENGTH(FEET) =   598.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 30.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
```

```
    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.46
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.32
    HALFSTREET FLOOD WIDTH(FEET) =    9.49
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.68
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.85
  STREET FLOW TRAVEL TIME(MIN.) =   3.72   Tc(MIN.) =    7.91
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.078
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.790
  SUBAREA AREA(ACRES) =    1.42      SUBAREA RUNOFF(CFS) =    6.82
  TOTAL AREA(ACRES) =        1.7        PEAK FLOW RATE(CFS) =       8.31

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.35   HALFSTREET FLOOD WIDTH(FEET) =  11.33
  FLOW VELOCITY(FEET/SEC.) =  2.96   DEPTH*VELOCITY(FT*FT/SEC.) =   1.04
  LONGEST FLOWPATH FROM NODE    290.00 TO NODE    292.00 =     683.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    292.00 TO NODE    288.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    7.91
  RAINFALL INTENSITY(INCH/HR) =   6.08
  TOTAL STREAM AREA(ACRES) =     1.73
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.31

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       98.09    13.04        4.401         40.71
      2        8.31     7.91        6.078          1.73

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       79.34     7.91       6.078
      2      104.11    13.04       4.401

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     104.11   Tc(MIN.) =   13.04
  TOTAL AREA(ACRES) =       42.4
  LONGEST FLOWPATH FROM NODE    250.00 TO NODE    288.00 =    4793.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    288.00 TO NODE    208.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   590.00  DOWNSTREAM(FEET) =   585.00
  FLOW LENGTH(FEET) =   100.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  24.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  21.97
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     104.11
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =   13.12
  LONGEST FLOWPATH FROM NODE    250.00 TO NODE    208.00 =    4893.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    208.00 TO NODE    208.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY     AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)   (ACRE)
      1      104.11    13.12        4.385        42.44
  LONGEST FLOWPATH FROM NODE    250.00 TO NODE    208.00 =    4893.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY     AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)   (ACRE)
      1      208.75    14.42        4.125        98.53
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    208.00 =    3986.05 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
```

```
      1     294.00      13.12        4.385
      2     306.69      14.42        4.125

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     306.69   Tc(MIN.) =   14.42
  TOTAL AREA(ACRES) =      141.0

****************************************************************************
  FLOW PROCESS FROM NODE    208.00 TO NODE    208.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =      141.0  TC(MIN.) =     14.42
  PEAK FLOW RATE(CFS)   =     306.69
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```