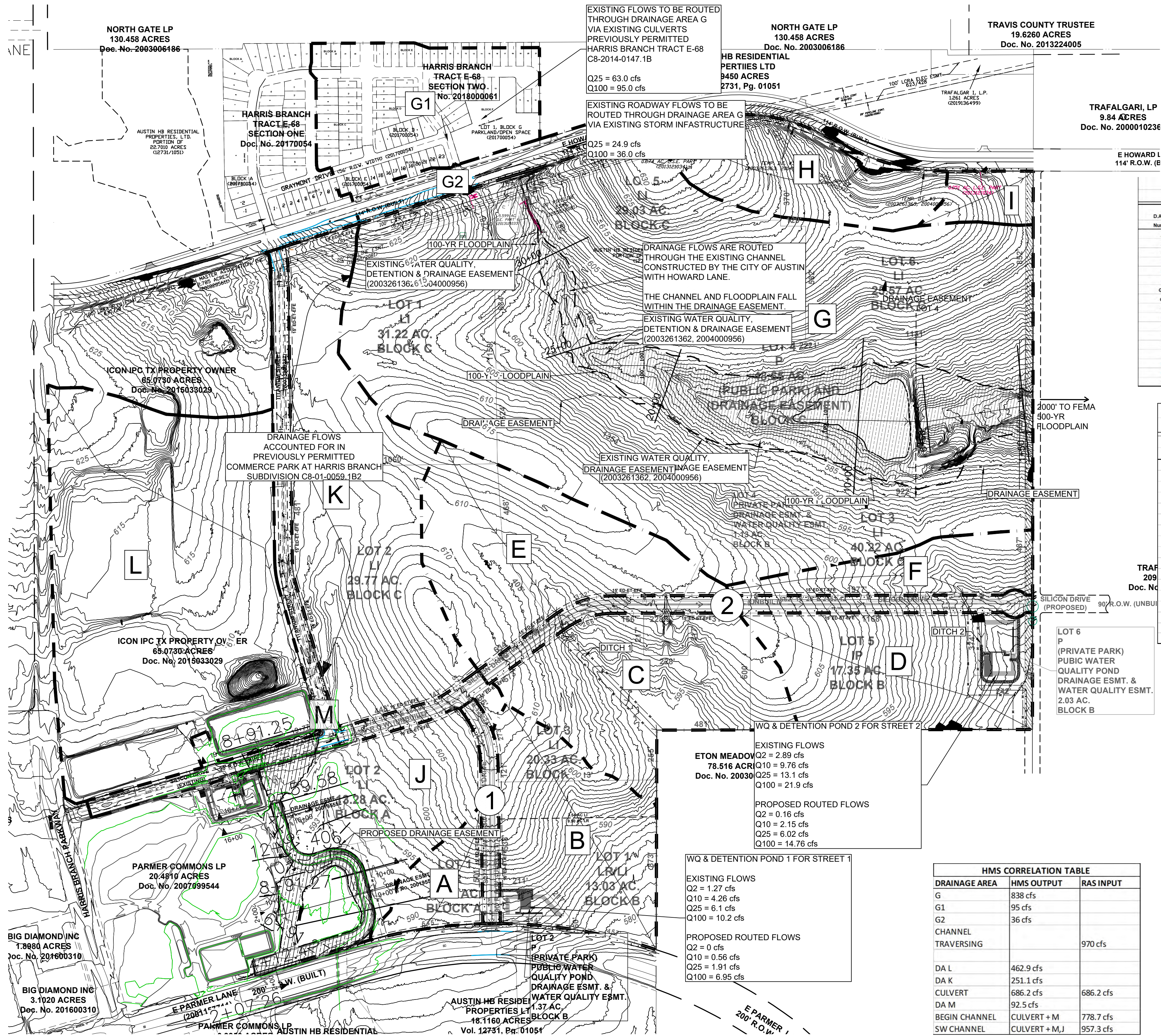




HARRIS BRANCH COMMERCE PARK
SCS CN Calculations - Existing (Atlas 14 Basis)

D.A. Lot Number	Drainage Area (Ac)	Drainage Area (Ac)	SCS CN	Impervious (%)	TOTAL I.C. (%)	Comp. SCS CN
A	202.220	4.64	-	0.00	0%	61.00
B	748.930	17.19	-	0.00	0%	61.00
C	888.837	18.17	-	0.00	0%	61.00
D	791.335	18.17	-	0.00	0%	61.00
E	888.837	20.40	-	0.00	0%	61.00
F	324.225	7.44	-	0.00	0%	61.00
G1*	230.448	6.29	144.888	3.32	63%	84.23
G2	5,735.763	131.48	4,988.806	105.34	80%	90.60
H	558.903	12.78	-	0.00	0%	61.00
I	129.523	2.97	-	0.00	0%	61.00
1	104.165	2.39	-	0.00	0%	61.00
2	287.940	6.15	-	0.00	0%	61.00
J	891.997	20.48	-	0.00	0%	61.00
K	1,352.460	31.12	-	0.00	0%	61.00
L	2,119.772	48.66	-	0.00	0%	61.00
M	432.120	9.92	-	0.00	0%	61.00

HARRIS BRANCH COMMERCE PARK
SCS CN Calculations - Developed (Atlas 14 Basis)

D.A. Lot Number	Drainage Area (Ac)	Drainage Area (Ac)	SCS CN	Impervious (%)	TOTAL I.C. (%)	Comp. SCS CN
A	202.220	4.64	161.776	3.71	80%	90.60
B	748.930	17.19	599.144	13.75	80%	90.60
C	888.837	18.17	695.460	15.97	80%	90.60
D	791.335	18.17	633.068	14.53	80%	90.60
E	888.837	20.40	711.070	16.32	80%	90.60
F	324.225	7.44	259.380	5.95	80%	90.60
G1*	230.448	6.29	144.888	3.32	63%	84.23
G2	5,735.763	131.48	4,988.806	105.34	80%	90.60
H	558.903	12.78	445.522	10.23	80%	90.60
I	129.523	2.97	103.618	2.38	80%	90.60
1	104.165	2.39	88.748	1.58	66%	85.42
2	287.940	6.15	179.519	4.12	67%	85.79
J	891.997	20.48	713.597	16.38	80%	90.60
K	1,352.460	31.12	1,084.368	24.89	80%	90.60
L	2,119.772	48.66	1,695.818	38.53	80%	90.60
M	432.120	9.92	292.977	6.73	68%	86.09

HARRIS BRANCH COMMERCE PARK														
"Tc" Value Calculations - Existing (Atlas 14 Basis)														
D.A. Number	Area (Ac)	Length	Slope	Sheet Flow Tc	Shallow Concentrated Flow (Unpaved) Length	Shallow Concentrated Flow (Unpaved) Slope	Channel/Pipe Flow Slope	Tc	Velocity	Tc	Total Tc			
A	4.64 Ac.	100	2.25%	0.24	13.13 min	815	2.25%	3.0492	4.45 min	0	0.00%	0.0	0.00 min	17.6 min
B	17.19 Ac.	100	2.30%	0.24	13.02 min	1389	2.30%	3.0829	7.51 min	0	0.00%	0.0	0.00 min	20.5 min
C	19.96 Ac.	100	2.50%	0.24	12.59 min	350	2.50%	3.2142	1.81 min	350	2.50%	3.2	1.81 min	16.2 min
D	18.17 Ac.	100	2.50%	0.24	12.59 min	1525	2.50%	3.2142	7.91 min	0	2.50%	3.2	0.00 min	20.5 min
E	20.40 Ac.	100	1.40%	0.24	15.87 min	465	1.40%	2.4053	3.22 min	450	1.40%	2.4	3.12 min	22.2 min
F	7.44 Ac.	100	2.75%	0.24	12.12 min	610	2.75%	3.3711	3.02 min	540	2.75%	3.4	2.67 min	17.8 min
G1*														
G2	5.29 Ac.	125	3.00%	0.24	13.99 min	50	1.50%	2.4897	0.33 min	125	3.00%	3.5	0.59 min	14.9 min
G3	131.68 Ac.	100	1.50%	0.24	15.44 min	1900	1.50%	2.4897	12.72 min	1200	1.50%	2.5	8.03 min	36.2 min
H	12.78 Ac.	100	3.75%	0.24	10.70 min	1098	3.75%	3.9365	4.65 min	0	3.75%	3.9	0.00 min	15.4 min
I	2.97 Ac.	100	4.00%	0.24	10.43 min	549	4.00%	4.0656	2.25 min	0	4.00%	4.1	0.00 min	12.7 min
1	2.39 Ac.	100	1.75%	0.24	14.52 min	1057	1.75%	2.6892	6.55 min	0	1.50%	2.5	0.00 min	21.1 min
2	6.15 Ac.	100	2.00%	0.24	13.76 min	2832	2.00%	2.8748	16.42 min	0	1.75%	2.7	0.00 min	30.2 min
J	20.48 Ac.	100	1.50%	0.24	15.44 min	1114	1.75%	2.6892	6.90 min	708	0.48%	1.4	8.38 min	30.7 min
K	31.12 Ac.	100	4.00%	0.24	10.43 min	1598	0.75%	1.7605	15.13 min	852	0.70%	1.7	8.35 min	33.9 min
L	48.66 Ac.	100	1.33%	0.24	16.20 min	2365	0.89%	1.9178	20.55 min	461	1.30%	2.3	3.31 min	40.1 min
M	9.92 Ac.	100	1.00%	0.24	18.16 min	50	1.00%	2.0328	0.41 min	257	3.00%	3.5	12.10 min	30.7 min

HARRIS BRANCH COMMERCE PARK																		
"Tc" Value Calculations - Developed (Atlas 14 Basis)																		
D.A.	Area	Sheet Flow			Shallow Concentrated Flow (Unpaved)			Shallow Concentrated Flow (Paved)			Channel/Pipe Flow			Total				
Number	Length	Slope	Velocity	Tc	Length	Slope	Velocity	Tc	Length	Slope	Velocity	Tc	Length	Velocity	Tc			
A	17.19	1.9%	2.30	0.24	13.13 min	1389	2.30	3.0629	7.51 min	0	0.00%	0.0	0.00 min	0.00	17.6 min			
B	17.19	1.9%	2.30	0.24	13.02 min	1389	2.30	3.0629	7.51 min	0	0.00%	0.0	0.00 min	0.00	20.5 min			
C	19.96	1.9%	2.50	0.24	12.59 min	350	2.50	3.2142	1.81 min	350	2.50%	3.2	1.81 min	0.00	16.2 min			
D	18.17	1.9%	2.50	0.24	12.59 min	1525	2.50	3.2142	7.91 min	0	2.50%	3.2	0.00 min	0.00	20.5 min			
E	20.40	1.4%	2.40	0.24	15.87 min	465	1.40%	2.4053	3.22 min	450	1.40%	2.4	3.12 min	0.00	22.2 min			
F	7.44	2.7%	3.00	0.24	12.12 min	610	2.75%	3.3711	3.02 min	540	2.75%	3.4	2.67 min	0.00	17.8 min			
G1*	5.29	3.0%	3.25	0.24	13.99 min	50	1.50%	2.4897	0.33 min	125	3.00%	3.5209	0.59 min	0.00	14.9 min			
G2	131.68	1.5%	1.50	0.24	15.44 min	1900	1.50%	2.4897	12.72 min	1200	1.50%	2.5	8.03 min	0.00	36.2 min			
H	12.78	4.0%	3.75	0.24	10.70 min	1098	3.75%	3.9365	4.65 min	0	3.75%	3.9	0.00 min	0.00	15.4 min			
I	2.97	4.0%	4.00	0.24	10.43 min	549	4.00%	4.0656	2.25 min	0	4.00%	4.1	0.00 min	0.00	12.7 min			
J	1.29	1.5%	1.50	0.01	0.20 min					200	1.58%	2.5552	1.30 min	200	2.00%	2.9	5.86 min	7.3 min
K	2.61	1.5%	1.50	0.01	0.21 min					200	1.50%	2.4937	1.34 min	200	1.75%	2.7	6.26 min	7.7 min
L	20.48	0.8%	1.50	0.01	1.27 min	300	3.00%	3.5359	1.42 min	400	1.80%	2.7	2.44 min	0.00	8.1 min			
M	31.12	0.7%	1.50	0.01	2.28 min	300	0.70%	1.7108	2.94 min	1900	1.00%	2.0	15.99 min	0.00	21.2 min			
N	48.66	0.9%	1.50	0.01	1.98 min	300	1.00%	2.0328	2.46 min	800	0.50%	1.4	9.26 min	0.00	13.7 min			
O	9.92	1.0%	1.50	0.01	1.98 min	50	1.00%	2.0328	0.41 min	257	3.00%	3.5	12.10 min	0.00	14.5 min			

HARRIS BRANCH COMMERCE PARK
Runoff (Q) Calculations - Existing (Atlas 14 Basis)

D.A. Number	Drainage Area (Ac)	Comp. SCS CN	TOTAL I.C. (%)	Q ₂₅ (cfs)	Q ₁₀₀ (cfs)
A	4.64	61.00	17.6	13.1	21.8
B	17.19	61.00	20.5	45.3	75.1
C	19.96	61.00	16.2	63.8	102.5
D	18.17	61.00	20.5	47.8	79.2
E	20.40	61.00	22.2	51.1	85.3
F	7.44	61.00	17.8	20.7	34.5
G**	131.68	62.06	36.2	356.1	528.7
H	12.78	61.00	15.4	38.7	63.8
I	2.97	61.00	12.7	9.7	16.1
1	2.39	61.00	21.1	6.1	10.2
2	6.15	61.00	30.2	13.1	21.9
J	20.48	61.00	30.7	56.1	93.2
K	31.12	61.00	33.9	82.2	136.1
L	48.66	61.00	40.1	117.5	194.4
M	9.92	61.00	30.7	27.2	45.1

HARRIS BRANCH COMMERCE PARK
Runoff (Q) Calculations - Developed (Atlas 14 Basis)

D.A. Number	Drainage Area (Ac)	Comp. SCS CN	TOTAL I.C. (%)	Q ₂₅ (cfs)	Q ₁₀₀ (cfs)
A	4.64	90.60	17.6	30.3	39.9
B	17.19	90.60	20.5	107.6	141.5
C	19.96	90.60	16.2	133.3	175.4
D	18.17	90.60	20.5	113.6	149.4
E	20.40	90.60	22.2	122.7	161.6
F	7.44	90.60	17.8	48.1	63.3
G**	131.68	90.60	36.2	722.7	970
H	12.78	90.60	15.4	88.6	116.6
I	2.97	90.60	12.7	22.2	29.2
1	2.39	90.60	21.1	19.3	25.6
2	6.15	85.79	7.7	31.6	42.1
J	20.48	90.60	5.2	196.6	258.7
K	31.12	90.60	21.4	190.8	251.1
L	48.66	90.60	13.9	352.0	462.9
M	9.92	86.09	14.6	79.3	92.5

HARRIS BRANCH COMMERCE PARK

Street 1 WQP Preliminary Design

Water Quality Pond Drainage Area	=	104,165 SF	
		2,391 acres	
Impervious Cover	=	68,748 SF	
		1.578 acres	
% Impervious Cover	=	66.6%	
Required Capture Depth	=	0.96 in = 0.5' + (66.6%-20%)*.01	
Minimum Water Quality Volume	=	8,333 CF	

OVERFLOW WEIR DESIGN

Provided Overflow Elevation	=	588.00	
Top of Box Elevation	=	590.00	
Total WQ Pond Volume Provided	=	20,168 CF @ overflow (weir)	

Using the weir flow equation:

$$Q = C \cdot L \cdot H^{3/2}$$

Q = 100 year developed flow into splitter box (cfs)		19.8	
C = Weir coefficient		3.0	
L = Width of weir (feet)		100.0	
H = Depth of flow (feet)		0.16	

Max. WSE₁₀₀ in Box = 588.16

HARRIS BRANCH COMMERCE PARK

Street 2 WQP Preliminary Design

Water Quality Pond Drainage Area	=	267,940 SF	
		6.151 acres	
Impervious Cover	=	179,519 SF	
		4.121 acres	
% Impervious Cover	=	67.0%	
Required Capture Depth	=	0.97 ft = 0.5' + (67.0%-20%)*0.1	
Minimum Water Quality Volume	=	21,658 CF	

OVERFLOW WEIR DESIGN

Provided Overflow Elevation	=	581.00	
Top of Box Elevation	=	583.00	
Total WQ Pond Volume Provided	=	35,431 CF @ overflow (weir)	

Using the weir flow equation:

$$Q = C \cdot L \cdot H^{3/2}$$

Q = 100 year developed flow into splitter box (cfs)	=	51.0	
C = Weir coefficient	=	3.0	
L = Width of weir (feet)	=	110.0	
H = Depth of flow (feet)	=	0.29	

Max. WSE₁₀₀ in Box = 581.29

HARRIS BRANCH COMMERCE PARK
Post Developed Flows (Q) Leaving Pond

POND 1	Q ₂₅	Q ₁₀	Q ₂₅	Q ₁₀₀
	0	0.56	1.91	6.95
POND 2	0.16	2.15	6.02	14.8

HARRIS BRANCH COMMERCE PARK
Runoff (Q) Calculations (Proposed Conditions)

D.A. Number	Drainage Area (Ac)	Comp. SCS CN	TOTAL I.C. (%)	Q ₂₅ (cfs)	Q ₁₀₀ (cfs)	avg. slope
DRAINAGE AREA E TO DITCH	20.40	90.60	22.2	126.910	1.40%	
DRAINAGE AREA F TO DITCH	7.44	90.60	17.8	50.070	2.75%	

HMS CORRELATION TABLE

DRAINAGE AREA	HMS OUTPUT	RAS INPUT
G	838 cfs	
G1	95 cfs	
G2	36 cfs	
CHANNEL TRAVERSING		970 cfs
DA L	462.9 cfs	
DA K	251.1 cfs	
CULVERT	686.2 cfs	686.2 cfs
DA M	92.5 cfs	
BEGIN CHANNEL	CULVERT + M	778.7 cfs
SW CHANNEL	CULVERT + M/J	957.3 cfs

HARRIS BRANCH COMMERCE PARK
Ditch Easement Width Calculation

Ditch Number	Btm. Width (ft)	Slope	Depth (ft)	Q ₁₀₀ (cfs)	Area (sqft)	Veloc. (ft/s)	Wp (ft)	Yc (ft)	Top Width (ft)	Energy (ft)	Min. Ditch Easement (ft)
DITCH 1	25	2.00%	2.84	126.91	1.46	38.00	0.91	36.36	2.87	41	
DITCH 2	25	0.50%	2.50	50.07	75.00	0.88	36.44	0.50	35.00	2.51	41

WETLANDS & CEF NOTE

1) SEE EXHIBIT 'G' FOR EXISTING WETLANDS, AND EXHIBIT 'H' FOR PROPOSED WETLAND SETBACKS AND MITIGATION.

PRELIMINARY SUBDIVISION APPROVAL SHEET ____ OF ____
FILE NUMBER ____ APPLICATION DATE ____
APPROVED BY LAND USE COMMISSION ON ____
EXPIRATION DATE (LDC 25-4-62) ____
CASE MANAGER: ____

JUAN ENRIQUEZ for:
Jose Roig, Interim Director, Development Services Department

Final plans must be recorded by the expiration date. Subsequent Site Plans which do not comply with the Code current at the time of filing, and require Building permits or notice of construction (if a building permit is not required), must also be approved prior to the Project Expiration Date.

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HARRIS BRANCH COMMERCE PARK
ONSITE FLOODPLAIN AND DRAINAGE
AREA MAP

HARRIS BRANCH
AUSTIN HB RESIDENTIAL PROPERTIES, LTD

Project No.: 10502.02
SHEET
F1