

DRAINAGE PLAN AND SUPPORTING CALCULATIONS

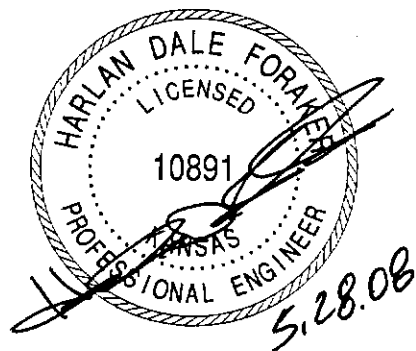
**FOR
TANNER ADDITION
10402 EAST HARRY
WICHITA, KANSAS**

**PREPARED FOR:
SAVOY COMPANY, P.A.
433 SOUTH HYDRAULIC
WICHITA, KS 67211**

MAY 28, 2008

PREPARED BY:

**CERTIFIED ENGINEERING DESIGN, P.A.
810 WEST DOUGLAS, SUITE C
WICHITA, KANSAS 67203-6105
(316)262-8808 PHONE
(316)262-1669 FAX**





Public Works, Engineering Division Final Drainage Plan Submittal Checklist

Reviewer: _____	Date: <u>5-28-08</u>
Subdivision Name: <u>TANNER ADDITION</u>	Location: <u>10402 EAST HARMY</u>
Total Land Area Of Ownership: <u>1.32</u> Acres	
Type: <input type="checkbox"/> Residential <input type="checkbox"/> Commercial <input type="checkbox"/> Industrial <input type="checkbox"/> Recreation <input type="checkbox"/> Municipal <input checked="" type="checkbox"/> Other	<u>NEIGHBORHOOD</u> <u>RETAIN</u>
Applicant: <u>BARBARA BULLOCH</u>	Contact: <u>SAME</u> Phone #: <u>683-9346</u>
Engineer: <u>CERTIFIED ENG. DESIGN</u>	Contact: <u>HARLAN FORAKER</u> Phone #: <u>262-8808</u>

Please check the appropriate box:

I = Included; NA = Non-Applicable; R= Required prior to development
(If "NA" is checked, an explanation must be entered)

Tab 1. Project Narrative	Applicant		Engr	
	I	NA	Explanation / Location in Plan	
A. Site Location Map, using USGS Map	<input checked="" type="checkbox"/>			
B. Discussion of development, existing conditions, and proposed impacts on stormwater, wetland, riparian, and flood plain	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
C. Discussion of offsite conditions		<input checked="" type="checkbox"/>	<u>EXISTING RESIDENTIAL DEVELOPMENT</u> <u>NO OFFSITE CANOFF</u>	
D. Summary of runoff calculations (pre/post development) No increase in peak discharge for all storm series	<input checked="" type="checkbox"/>			
E. Narrative description of the type and function of the permanent best management practices that are incorporated into the site design				
F. Copy of the plat	<input checked="" type="checkbox"/>			
G. Preliminary grading plan (The final grading plan shall be sealed, signed and dated prior to Engineering receiving the final sanitary sewer plans. One plan sheet and PDF shall be submitted to the Subdivision Engineer.)		<input checked="" type="checkbox"/>	<u>PROPOSED SITE PLAN</u> <u>NOT CURRENTLY AVAILABLE</u>	
H. Professional Engineer seal, signature and date on cover of report	<input checked="" type="checkbox"/>			
I. CD of drainage plan in PDF format (one file) and one paper copy bound with this checklist included behind the cover	<input checked="" type="checkbox"/>			

Tab 2. Existing Conditions Runoff Calculations	Applicant		Engr	
	I	NA	Explanation / Location in Plan	
A. Copy of applicable orthophoto showing proposed project boundaries (preferable in color)	<input checked="" type="checkbox"/>			
B. Runoff Method (Rational, Hydrograph Method, or other approved methods by Engineering)	<input checked="" type="checkbox"/>			
C. Existing topography (no greater than 2-foot contours, 1-foot recommend)	<input checked="" type="checkbox"/>			
D. Total Site Area and Total Impervious Area (acres)	<input checked="" type="checkbox"/>			
E. Benchmarks used for site control	<input checked="" type="checkbox"/>			
F. Streams, creeks, and waterway labeled	<input checked="" type="checkbox"/>			
G. Predominant soils from USDA soil surveys, and/or on site soil borings	<input checked="" type="checkbox"/>			
H. Location and boundaries of natural features such as wetlands, lakes, and ponds with the normal water elevation noted	<input checked="" type="checkbox"/>			
I. Location of existing roads, buildings, parking lots and other impervious areas.	<input checked="" type="checkbox"/>			



J. Location of existing utilities (e.g., water, sewer, gas, electric) and easements	✓				
K. Location of existing conveyance systems such as storm drains, inlets, catch basins, channels, swales, and areas of overland flow	✓				
L. Flow paths	✓				
M. Location and dimensions of existing channels, bridges or culvert crossings		✓			
N. Existing conditions hydrologic analysis for runoff rates, volumes and velocities showing methodologies used and supporting calculations (2, 5, 10, 25 & 100 year, 24-hour storm events) or Critical Duration	✓				
O. Assumed pre-developed runoff curve numbers	✓				
P. Existing time of concentrations used in calculations	✓				
Q. Evaluate immediate downstream drainage capacity, not to exceed more than 0.25 miles downstream of site		✓			
R. Existing structural elevations (e.g., invert of pipes, manholes, etc.)		✓			
S. Cross-section data for open channels		✓			
T. Ground water elevations, if applicable		✓			

Tab 3. Post-Development Hydrologic Analysis	Applicant			Engr	
	I	NA	Explanation / Location in Plan	I	NA
A. Proposed (post-development) conditions hydrologic and hydraulic analysis for runoff rates, volumes, HGL, and velocities showing the methodologies used and supporting calculations for all applicable design storms (2, 5, 10, 25 & 100 year, 24-hour storm events)	✓				
B. Proposed time of concentrations used in calculations	✓				
C. Assumed post-developed runoff curve numbers	✓				
D. Proposed contours for detention facilities (to equal area used in outlet rating curves)		✓			
E. Preliminary sizing calculations for stormwater controls including contributing drainage area, storage, and outlet configuration	✓				
F. Stage-storage-discharge or outlet rating curves and inflow and outflow hydrographs for storage facilities		✓			
G. Final analysis of potential upstream/downstream impact/effects of project, where necessary	✓				
H. Existing and proposed structural elevations (e.g., invert of pipes, manholes, etc.)					
I. Design water surface elevations and normal pool elevation for ponds.		✓			
J. Typical detail for outlet structures, embankments, spillways, grade control structures, conveyance channels, etc. To include height, width, elevation, and/or diameter.		✓			
K. Proposed limits of clearing and grading		✓			
L. Location of existing and proposed roads, buildings, parking lots and other impervious areas.	✓				
M. Location of existing and proposed utilities (e.g., water, sewer) and easements	✓				
N. Location of existing and proposed conveyance systems such as storm drains, inlets, catch basins, channels, swales, and areas of overland flow	✓				
O. Preliminary location and dimensions of proposed channel modifications, such as bridge or culvert crossings		✓			



P. Preliminary selection and location of stormwater controls	✓				
Q. Emergency overflow structure's flow path	✓				
R. Detention facility provides one-foot of freeboard above the HWL and emergency outfall shown (top of berm elevation shown)		✓			
S. The 100-year 24-hour HWL delineated on the plan for detention pond	✓				
T. Lowest opening elevations table on the plat for structures located adjacent to channels or ponds					
U. Stormwater Management Facilities located within a Reserve		✓			
V. Maintenance responsibility of stormwater management facility shall be specified in the platters text. (e.g. HOA, Lot Owners Association, or lot)		✓			
W. Off-site drainage easements or agreements required, where necessary		✓			

Tab 4. Floodplain Submittal	Applicant			Engr	
	I	NA	Explanation / Location in Plan	I	NA
A. Provide source of flood profile		✓			
B. Nearest base flood elevations		✓			
C. Delineation of pre-developed regulatory floodplain/floodway limits		✓			
D. Delineation of post-developed regulatory floodplain and floodway limits		✓			
E. Floodplain boundary determination per elevation (project limits shown)		✓			
F. Provide source of floodway data table and discharges		✓			
G. Provide all hydrologic and hydraulic study information for site-specific floodplain studies, unnumbered Zone A area elevation determinations and flood plain map revisions or required permits		✓			
H. Provide regulatory floodway and four natural profile models (10,50,100, and 500-yr) for existing and future watershed conditions		✓			
I. Location of floodplain/floodway limits and relationship of site to upstream/downstream properties (floodplain limits to be per elevation and scaled location)		✓			
J. Flood plains and floodways located within a Reserve, where necessary		✓			

Tab 5. Federal, State and Local Permits (to be provided prior to construction unless otherwise specified)	Applicant			Engr	
	I/R	NA	Explanation / Location in Plan	I/R	NA
A. US Army Corps of Engineers - Regulatory program permits (404 water quality certification)		✓			
B. Kansas Department of Agriculture - Division of Water Resources Permits (Stream Obstruction, Channel Change, Flood Plain Fill, Levee, Water Appropriations, Dam safety permit, etc.)		✓			
C. Federal Emergency Management Agency (FEMA) Letter of Map Changes (LOMA, LOMR, LOMR-f, CLOMR, etc.) Shall be included and approved when project modifies the limits of the floodway.		✓			
D. Kansas Department of Transportation		✓			
E. Sedgwick County Right-of-way Permit		✓			

DRAINAGE PLAN AND SUPPORTING CALCULATIONS

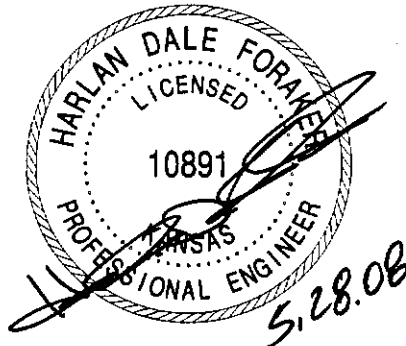
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Tanner Addition Drainage Plan(Con't)
Ms. Julianne Kallman, P.E.
May 28, 2008

CERTIFIED ENGINEERING DESIGN, P.A
810 West Douglas, Suite C
Wichita, KS 67203-6105
(316)262-8808 Office
(316)262-1669 Fax

LETTER OF TRANSMITTAL

DATE: May 28, 2008

TO: Ms. Julianne Kallman, P.E.
Engineering Division
455 North Main
Wichita, KS 67202

RE: Revised Drainage Plan
Tanner Addition
Wichita, KS

FROM: Harlan D. Foraker, P.E. *HDF*

I. PROJECT NARRATIVE

The site is located on east Harry Street between Webb and Greenwich Road on the north side of Harry Street at an address of 10402 East Harry Street and is currently residentially developed with native grass cover, some trees and the original farmhouse and a few outbuildings on the property. The predominant SCS soil type present within Tanner Addition is Elandco Silt Loam which is a SCS Type B Soil.

II. EXISTING CONDITIONS RUNOFF CALCULATIONS

The rational method will be used to determine the peak discharges from the study area. Rational 'C' Factors were assigned to the existing site and proposed improvements from "Interim Drainage and Storm Sewer Policy for Design Criteria and Documentation" for the City of Wichita, Kansas. Rainfall Intensity tables from the same policy were utilized to determine the rainfall intensity for the 5 and 100 year design storms.

The Soil Conservation Service TR-55 manual was used to compute the Time of Concentration for the drainage subareas. A design assumption was made as follows that the minimum subarea time of concentration is 15 minutes

Soil types were determined from the SCS Soil Survey for Sedgwick County, Kansas.

Tanner Addition Drainage Plan(Con't)

Ms. Julianne Kallman, P.E.

May 28, 2008

The developed drainage subareas have been delineated on the 1" = 50' site and topographic mapping survey performed for this site.

Design Storm Events Evaluated: 2, 5, 10, 25, 50 and 100 yr. storm events

The runoff calculations for the street, drainage channel design, drainage pipe design and detention pond storage have been completed utilizing the 5 year storm. A check of the drainage system has been made using the 100 year storm event.

The following tables summarize the peak discharge for the drainage area within Tanner Addition which have a total area of 1.32 acres.

EXISTING PEAK RUNOFF					
Description	C	Tc	I	Area	Q(cfs)
Existing Drainage Area(2 yr.)	.33	15	4.06	1.32	1.8
Existing Drainage Area(5 yr.)	.35	15	5.21	1.32	2.4
Existing Drainage Area(10 yr.)	.40	15	6.08	1.32	3.2
Existing Drainage Area(25 yr.)	.44	15	6.95	1.32	4.0
Existing Drainage Area(50 yr.)	.47	15	7.97	1.32	4.9
Existing Drainage Area(100 yr.)	.51	15	8.98	1.32	6.0

The existing site drains to the east and north and likely drains to an existing drainage channel location to the north of the site proposed for platting. An existing storm sewer curb inlet is present along the north side of Harry Street at the southeast corner of the site.

III. POST DEVELOPMENT HYDROLOGIC ANALYSIS

Design Storm Events Evaluated: 2, 5, 10, 25, 50 and 100 yr. storm events

The runoff calculations for the street, drainage channel design, drainage pipe design and detention pond storage have been completed utilizing the 5 year storm. A check of the drainage system has been made using the 100 year storm event.

Storm sewer was analyzed for full flow conditions was using "Flowmaster" by Haestad Methods Inc.

A detention analysis shall be performed in conjunction with design of the site grading plan during preparation of construction documents using the computer program by Hydraflow Hydrographs by Intellisolve.

The following tables summarizes the peak discharge for developed conditions for the within the drainage subbasin of 1.32 acres of Tanner Addition.

DEVELOPED PEAK RUNOFF					
Description	C	Tc	I	Area	Q(cfs)
South Drainage Subarea					
Developed Drainage Area(2 yr.)	.68	15	4.06	0.69	1.9
Developed Drainage Area(5 yr.)	.69	15	5.21	0.69	2.5
Developed Drainage Area(10 yr.)	.73	15	6.08	0.69	3.1
Developed Drainage Area(25 yr.)	.75	15	6.95	0.69	3.6
Developed Drainage Area(50 yr.)	.78	15	7.97	0.69	4.3
Developed Drainage Area(100 yr.)	.80	15	8.98	0.69	5.0
North Drainage Subarea					
Developed Drainage Area(2 yr.)	.68	15	4.06	0.63	1.7
Developed Drainage Area(5 yr.)	.69	15	5.21	0.63	2.3
Developed Drainage Area(10 yr.)	.73	15	6.08	0.63	2.8
Developed Drainage Area(25 yr.)	.75	15	6.95	0.63	3.3
Developed Drainage Area(50 yr.)	.78	15	7.97	0.63	3.9
Developed Drainage Area(100 yr.)	.80	15	8.98	0.63	4.5

The platting of Tanner Addition is a requirement of granting of a change of zoning to Neighborhood Retail for this property. A site plan for the proposed development of this site is not available at the time of platting. The developed site is proposed to be subdivided into a north subarea of 0.63 acres and a south subarea of 0.69 acres. In coordination with the development of the site a storm sewer and inlet will be constructed at the northeast and southeast corner of the proposed subareas. The proposed developed runoff for each subarea will be directed east to a proposed drainage easement and then routed south and north along the east side of the property to the future area inlets and storm sewer. The area inlet at the southeast corner will be drained through a proposed 15" storm sewer from the area inlet to an existing curb inlet in the north curb line of Harry Street. The storm sewer will be a 15" diameter pipe installed at a slope of 0.50% and will convey the peak discharge of 4.6 cfs into the storm sewer on the north side of Harry Street. The area inlet at the northeast corner of the site will be drained through a proposed 15" storm sewer to the north into an existing drainage channel which is located in a drainage reserve north of this property. The storm sewer will be a 15" diameter pipe installed at a slope of 0.50% and will convey the peak discharge of 4.6 cfs to the existing drainage ditch. An offsite drainage easement will be required to convey this drainage across the adjacent property to the north of this site.

IV. FLOODPLAIN SUBMITTAL – No FEMA floodplain is located on this plat.

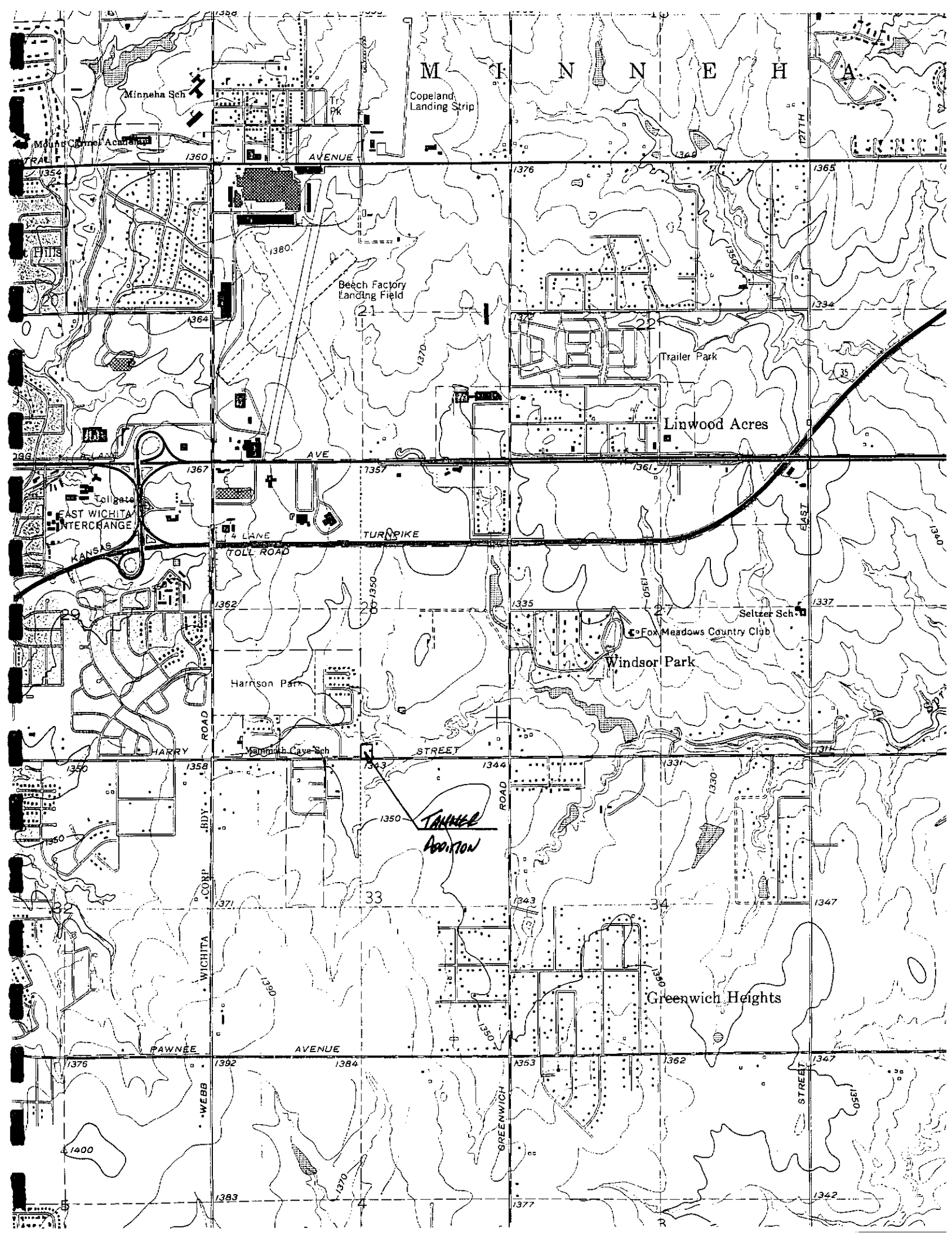
V. FEDERAL, STATE AND LOCAL PERMITS

- A. US Army Corp of Engineers-Not Applicable
- B. Kansas Dept. of Agriculture-Not Applicable
- C. FEMA- Not Applicable
- D. Kansas Department of Transportation-Not Applicable
- E. Sedgwick County Right-of-Way Permit-Not Applicable

Tanner Addition Drainage Plan(Con't)
Ms. Julianne Kallman, P.E.
May 28, 2008

VII. APPENDIX I:

All charts, graphs, tables including a 1"=50' scale drainage plan map are included for review.



MINNEHAHA

Minneha Sch

Copeland Landing Strip

AVENUE

Beech Factory Landing Field

Trailer Park

Linwood Acres

EAST WICHITA INTERCHANGE

TURNPIKE

Seltzer Sch

Fox Meadows Country Club

Windsor Park

Harrison Park

Yarnish Cove Sch

STREET

Tanner Addition

Greenwich Heights

PAWNEE AVENUE

GREENWICH STREET

STREET

1400

1370

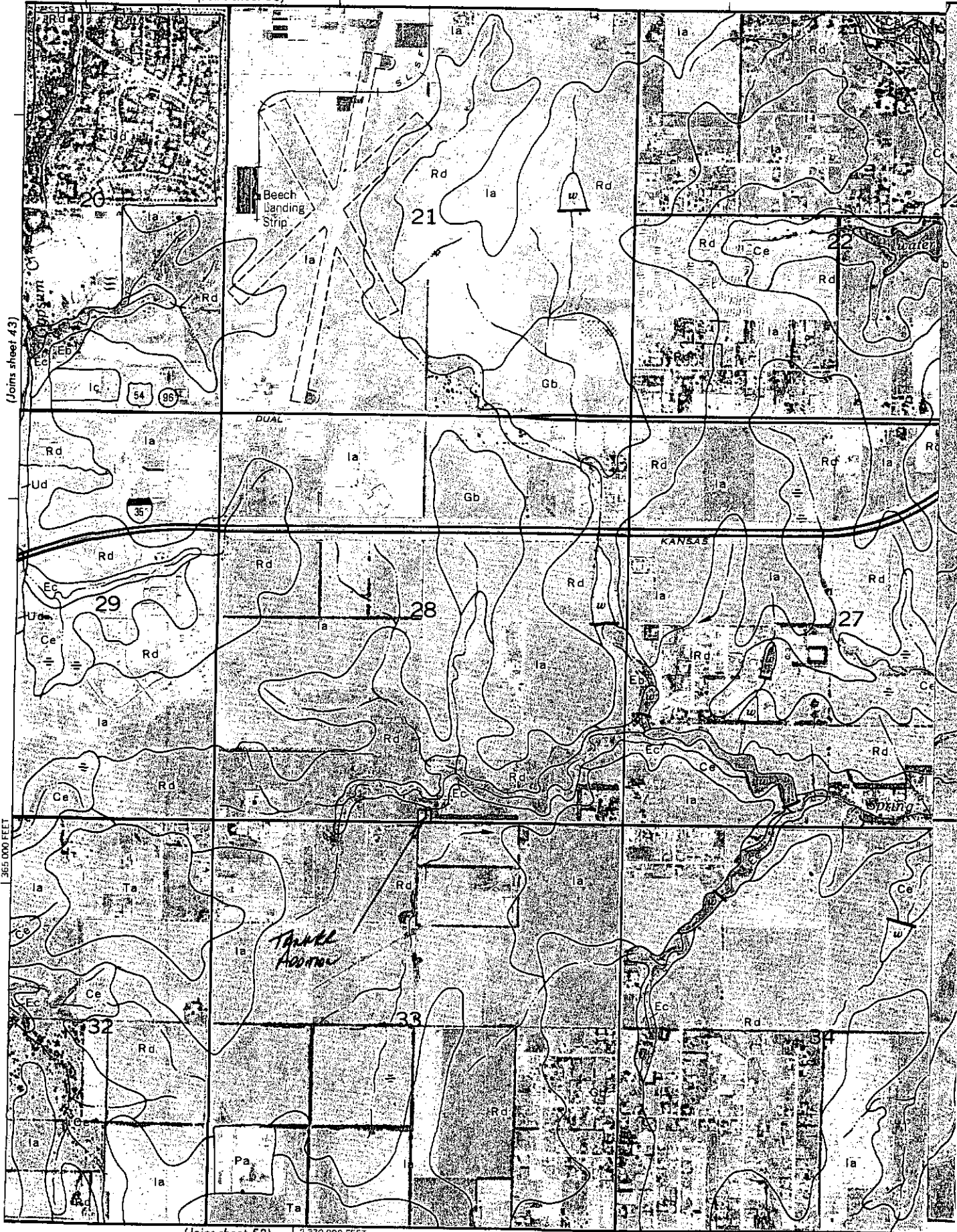
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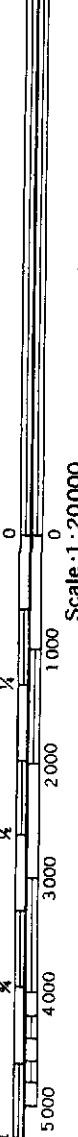
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Ec (Joins sheet 36)



1 Mile
5,000 Feet



(Joins sheet 52) | 2 370 000 FEET

SOIL LEGEND

<u>SYMBOL</u>	<u>HYDROLOGIC GROUP</u>	<u>NAME</u>
Aa	B	Albion-Shellabarger sandy loams, 1 to 4 percent slopes
Ab	B	Albion and Shellabarger sandy loams, 7 to 15 percent slopes
Ba	C	Blanket silt loam, 0 to 1 percent slopes
Bb	C	Blanket silt loam, 1 to 3 percent slopes
Ca	B	Canadian fine sandy loam
Cb	B	Canadian-Waldeck fine sandy loams
Cc	D	Carwile fine sandy loam
Cd	B	Clark-Ost clay loams, 1 to 4 percent slopes
Ce	C	Clime silty clay, 3 to 6 percent slopes
Ea	B	Elandco silt loam
Eb	B	Elandco silt loam, occasionally flooded
Ec	B	Elandco silt loam, frequently flooded
Fa	B	Farnum loam, 0 to 1 percent slopes
Fb	B	Farnum loam, 1 to 3 percent slopes
Fc	B	Farnum loam, sandy substratum, 0 to 1 percent slopes
Ga	D	Goessel silty clay, 0 to 1 percent slopes
Gb	D	Goessel silty clay, 1 to 2 percent slopes
Ia	D	Irwin silty clay loam, 1 to 3 percent slopes
Ib	D	Irwin silty clay loam, 3 to 6 percent slopes
Ic	D	Irwin silty clay loam, 2 to 6 percent slopes, eroded
La	C	Lesho loam
Lb	A	Lincoln soils
Ma	B	Milan loam, 1 to 3 percent slopes
Mb	B	Milan form, 3 to 6 percent slopes
Mc	B	Milan clay loam, 2 to 6 percent slopes, eroded
Na	B	Naron fine sandy loam
Oc	D	Owens clay loam, 1 to 3 percent slopes
Od	D	Owens-Rock outcrop complex, 3 to 10 percent slopes
Pa		Pits
Pb	D	Plevna fine sandy loam
Pc	A	Pratt loamy fine sand, undulating
Pd	A	Pratt-Tivoli complex, rolling
Ra	D	Renfrow silty clay loam, 1 to 3 percent slopes
Rb	D	Renfrow silty clay loam, 3 to 6 percent slopes
Rc	D	Renfrow-Owens clay loams, 1 to 4 percent slopes
Rd	D	Rosehill silty clay, 1 to 3 percent slopes
Sa	B	Shellabarger sandy loam, 1 to 3 percent slopes
Sb	B	Shellabarger sandy loam, 3 to 6 percent slopes
Sc	B	Shellabarger sandy loam, 3 to 6 percent slopes, eroded
Ta	D	Tabler silty clay loam
Tb	D	Tabler-Drummond complex
Ua	B	Urban land-Canadian complex
Ub	B	Urban land-Elandco complex
Uc	B	Urban land-Farnum complex, 0 to 3 percent slopes
Ud	D	Urban land-Irwin complex, 1 to 3 percent slopes
Ue	D	Urban land-Tabler complex
Va	B	Vanoss silt loam, 0 to 1 percent slopes
Vb	B	Vanoss silt loam, 1 to 3 percent slopes
Vc	B	Vanoss silt loam, 3 to 6 percent slopes
Vd	B	Vanoss silt loam, 3 to 6 percent slopes, eroded
Ve	D	Vernon sandy loam, 1 to 3 percent slopes
Vf	D	Vernon sandy loam, 3 to 6 percent slopes
Wa	C	Waldeck sandy loam
Wb	D	Waurika silt loam

ATTACHMENT D

DRAINAGE CRITERIA

CITY OF WICHITA, KANSAS

RECOMMENDED RUNOFF COEFFICIENTS FOR RATIONAL METHOD
AND PERCENT IMPERVIOUS FOR UNIT HYDROGRAPH METHOD

Land Use or Surface Characteristics	Percent Impervious	Frequency			
		2	5	10	100
1. Business:					
Downtown Areas	95	0.84	0.85	0.87	0.91
Neighborhood Areas	70	0.68	0.69	0.73	0.80
2. Residential:					
Single Family (Soil Group D)					
1/8 Acre	50	0.57	0.61	0.66	0.79
1/4 Acre	38	0.50	0.54	0.62	0.76
1/3 Acre	30	0.46	0.50	0.59	0.73
1/2 Acre	25	0.42	0.48	0.56	0.72
3/4 Acre	22	0.42	0.46	0.55	0.71
1 Acre	20	0.41	0.45	0.54	0.71
Multi-Family (Soil Group D)					
Multi-Unit (detached)	60	0.62	0.66	0.72	0.82
Multi-Unit (attached)	65	0.64	0.68	0.73	0.83
Apartments	75	0.70	0.73	0.79	0.86
Single Family (Soil Group C)					
1/8 Acre	50	0.55	0.58	0.64	0.73
1/4 Acre	38	0.48	0.51	0.57	0.68
1/3 Acre	30	0.43	0.46	0.53	0.65
1/2 Acre	25	0.40	0.43	0.50	0.63
3/4 Acre	22	0.39	0.42	0.49	0.62
1 Acre	20	0.37	0.40	0.48	0.61
Multi-Family (Soil Group C)					
Multi-Unit (detached)	60	0.60	0.63	0.69	0.77
Multi-Unit (attached)	65	0.63	0.66	0.71	0.79
Apartments	75	0.68	0.72	0.77	0.83
Single-Family (Soil Group B)					
1/8 Acre	50	0.52	0.54	0.59	0.67
1/4 Acre	38	0.44	0.46	0.52	0.61
1/3 Acre	30	0.39	0.41	0.47	0.57
1/2 Acre	25	0.36	0.38	0.44	0.54
3/4 Acre	22	0.34	0.36	0.42	0.52
1 Acre	20	0.33	0.35	0.40	0.51
Multi-Family (Soil Group B)					
Multi-Unit (detached)	60	0.58	0.60	0.65	0.72
Multi-Unit (attached)	65	0.61	0.64	0.68	0.75
Apartments	75	0.67	0.70	0.74	0.80

FIGURE 5-3

RAINFALL INTENSITY TABLE for SEDGWICK COUNTY, KANSAS

The following tabulation contains rainfall intensity in inches per hour as derived from ESSA Weather Bureau Technical Paper 40.

DURATION IN MINUTES	RETURN PERIODS OF						
	1-YR	2-YR	5-YR	10-YR	25-YR	50-YR	100-YR
5	4.67	6.23	8.00	9.34	10.67	12.23	13.79
6	4.35	5.80	7.45	8.70	9.94	11.39	12.84
7	4.09	5.46	7.02	8.19	9.36	10.72	12.09
8	3.88	5.18	6.66	7.77	8.89	10.18	11.48
9	3.71	4.95	6.36	7.43	8.49	9.72	10.96
10	3.56	4.75	6.11	7.13	8.15	9.33	10.52
11	3.43	4.58	5.89	6.87	7.85	8.99	10.14
12	3.32	4.40	5.69	6.64	7.59	8.69	9.80
13	3.21	4.29	5.51	6.43	7.35	8.42	9.50
14	3.12	4.17	5.36	6.25	7.14	8.18	9.23
15	3.04	4.06	5.21	6.08	6.95	7.97	8.98
16	2.96	3.96	5.09	5.93	6.78	7.77	8.76
17	2.90	3.86	4.97	5.79	6.62	7.59	8.55
18	2.83	3.78	4.86	5.67	6.48	7.42	8.37
19	2.77	3.70	4.76	5.55	6.34	7.27	8.19
20	2.72	3.63	4.66	5.44	6.22	7.12	8.03
21	2.67	3.56	4.57	5.34	6.10	6.99	7.88
22	2.62	3.49	4.49	5.24	5.99	6.86	7.74
23	2.57	3.43	4.41	5.15	5.89	6.74	7.60
24	2.53	3.38	4.34	5.07	5.79	6.63	7.48
25	2.49	3.32	4.27	4.99	5.70	6.53	7.36
26	2.45	3.23	4.21	4.91	5.61	6.43	7.25
27	2.42	3.18	4.15	4.84	5.53	6.33	7.14
28	2.38	3.05	4.09	4.77	5.45	6.25	7.04
29	2.35	2.97	4.02	4.68	5.38	6.16	6.95
30	2.32	2.89	3.92	4.56	5.31	6.08	6.79
31	2.29	2.82	3.82	4.44	5.19	6.00	6.62
32	2.26	2.75	3.73	4.33	5.07	5.87	6.45
33	2.24	2.68	3.64	4.23	4.95	5.73	6.30
34	2.19	2.62	3.55	4.13	4.83	5.60	6.16
35	2.14	2.57	3.47	4.04	4.73	5.47	6.02
36	2.09	2.51	3.40	3.95	4.62	5.35	5.89
37	2.05	2.46	3.33	3.87	4.52	5.23	5.76
38	2.00	2.41	3.26	3.79	4.43	5.13	5.64
39	1.96	2.36	3.19	3.71	4.34	5.02	5.53
40	1.92	2.32	3.13	3.64	4.26	4.92	5.42
41	1.89	2.27	3.07	3.57	4.18	4.83	5.32
42	1.85	2.23	3.01	3.51	4.10	4.74	5.22
43	1.82	2.19	2.96	3.44	4.02	4.65	5.13
44	1.78	2.15	2.91	3.38	3.95	4.56	5.03
45	1.75	2.11	2.86	3.32	3.88	4.48	4.95

**Proposed SWS size for North and South Inlets at Tanner Addition
Worksheet for Circular Channel**

Project Description	
Worksheet	Circular Channel
Flow Element	Circular Channel
Method	Manning's Formu
Solve For	Full Flow Capacit

Input Data	
Mannings Coeffic	0.013
Slope	005000 ft/ft
Diameter	15 In

Results	
Depth	1.25 ft
Discharge	4.57 cfs
Flow Area	1.2 ft ²
Wetted Perime	3.93 ft
Top Width	0.00 ft
Critical Depth	0.87 ft
Percent Full	100.0 %
Critical Slope	007321 ft/ft
Velocity	3.72 ft/s
Velocity Head	0.22 ft
Specific Energ	1.47 ft
Froude Numbe	0.00
Maximum Disc	4.91 cfs
Discharge Full	4.57 cfs
Slope Full	005000 ft/ft
Flow Type	N/A