

Storm Sewer Chart for 5-year Design Storm

	Pipe ID	Pipe Size	Mann 'n'	Up Node	Dn Node	Sys Flow Time (min)	Total Sys Flow (cfs)	Capacity (cfs)	Average Velocity (fps)	Length (ft)	Const Slope (ft/ft)	Up Invert Elev (ft)	Dn Invert Elev (ft)	Up Ground Elev (ft)	Dn Ground Elev (ft)	HGL In (ft)	HGL Out (ft)	EGL In (ft)	EGL Out (ft)
LINE A	P-1	18 inch	0.012	100	101	1.62	3.42	11.61	5.72	48.00	0.0104	1281.00	1280.50	1284.88	1283.50	1281.71	1281.48	1281.98	1281.60
	P-2	24 inch	0.012	101	102	1.760	6.00	13.42	4.15	103.00	0.0030	1280.00	1279.69	1283.50	1283.50	1281.31	1281.26	1281.42	1281.34
	P-3	24 inch	0.012	102	103	2.17	7.69	13.42	4.42	100.50	0.0030	1279.59	1279.29	1283.50	1285.00	1281.10	1281.03	1281.24	1281.14
	P-4	24 inch	0.012	103	104	2.55	9.91	11.00	3.96	36.50	0.0020	1279.29	1279.22	1285.00	1285.00	1280.80	1280.73	1281.03	1280.96
	P-5	24 inch	0.012	104	105	2.71	9.83	13.84	4.78	175.00	0.0032	1279.22	1278.66	1285.00	1285.12	1280.47	1280.04	1280.82	1280.32
	P-6	24 inch	0.012	105	106	3.32	9.52	13.36	4.62	330.00	0.0030	1278.46	1277.48	1285.12	1284.45	1279.71	1279.05	1280.04	1279.25
	P-7	30 inch	0.013	106	111	5.74	19.41	37.57	7.72	64.00	0.0084	1276.78	1276.24	1284.45	1282.50	1278.27	1277.53	1278.90	1278.43
LINE E	P-8	12 inch	0.012	107	103	1.46	2.52	11.47	11.71	33.50	0.0884	1282.75	1279.79	1285.75	1285.00	1283.43	1281.03	1283.73	1281.19
LINE B	P-9	24 inch	0.012	108	109	4.71	5.63	13.42	4.09	60.50	0.0030	1279.94	1279.76	1283.44	1284.00	1280.87	1280.77	1281.11	1280.97
	P-10	24 inch	0.012	109	110	4.96	5.57	13.42	4.07	48.00	0.0030	1279.76	1279.61	1284.00	1283.62	1280.66	1280.52	1280.91	1280.77
	P-11	30 inch	0.012	110	106	5.65	10.95	81.52	11.57	63.50	0.0337	1279.11	1276.98	1283.62	1284.45	1280.22	1279.05	1280.65	1279.15

Storm Sewer Chart for 100-year Check Storm

	Pipe ID	Pipe Size	Mann 'n'	Up Node	Dn Node	Sys Flow Time (min)	Total Sys Flow (cfs)	Capacity (cfs)	Average Velocity (fps)	Length (ft)	Const Slope (ft/ft)	Up Invert Elev (ft)	Dn Invert Elev (ft)	Up Ground Elev (ft)	Dn Ground Elev (ft)	HGL In (ft)	HGL Out (ft)	EGL In (ft)	EGL Out (ft)
LINE A	P-1	18 inch	0.012	100	101	1.62	5.26	11.61	2.98	48.00	0.0104	1281.00	1280.50	1284.88	1283.50	1283.57	1283.47	1283.71	1283.61
	P-2	24 inch	0.012	101	102	1.89	9.09	13.42	2.89	103.00	0.0030	1280.00	1279.69	1283.50	1283.50	1283.28	1283.13	1283.41	1283.26
	P-3	24 inch	0.012	102	103	2.48	11.57	13.42	3.68	100.50	0.0030	1279.59	1279.29	1283.50	1285.00	1282.90	1282.68	1283.11	1282.89
	P-4	24 inch	0.012	103	104	2.94	14.96	11.00	4.76	36.50	0.0020	1279.29	1279.22	1285.00	1285.00	1282.33	1282.19	1282.68	1282.54
	P-5	24 inch	0.012	104	105	3.06	14.88	13.84	4.74	175.00	0.0032	1279.22	1278.66	1285.00	1285.12	1281.93	1281.28	1282.28	1281.63
	P-6	24 inch	0.012	105	106	3.68	14.50	13.36	4.62	330.00	0.0030	1278.46	1277.48	1285.12	1284.45	1280.95	1279.80	1281.28	1280.13
	P-7	30 inch	0.012	106	111	5.73	30.33	37.57	8.52	64.00	0.0084	1276.78	1276.24	1284.45	1282.50	1278.65	1277.95	1279.57	1279.07
LINE E	P-8	18 inch	0.012	107	103	1.46	3.86	11.47	13.18	33.50	0.0884	1282.75	1279.79	1285.75	1285.00	1283.59	1282.68	1284.06	1283.06
LINE B	P-9	24 inch	0.012	108	109	4.71	8.68	13.42	4.54	60.50	0.0030	1279.94	1279.76	1283.44	1284.00	1281.21	1281.12	1281.47	1281.34
	P-10	24 inch	0.012	109	110	4.93	8.61	13.42	4.54	48.00	0.0030	1279.76	1279.61	1284.00	1283.62	1280.99	1280.91	1281.27	1281.16
	P-11	30 inch	0.012	110	106	5.65	17.00	81.52	13.12	63.50	0.0337	1279.11	1276.98	1283.62	1284.45	1280.51	1279.80	1281.08	1279.98

DRAINAGE NOTES:

1. THE WEIGHTED RUNOFF COEFFICIENTS FOR THE DRAINAGE AREAS ARE OBTAINED FROM APPENDIX C, VOLUME 2 OF THE CITY OF WICHITA STORM WATER MANUAL.
2. THE TIME OF CONCENTRATIONS FOR SHEET AND SHALLOW FLOWS ARE CALCULATED IN ACCORDANCE WITH THE METHOD SPECIFIED IN VOLUME 2, CHAPTER 4 OF THE CITY OF WICHITA STORM WATER MANUAL.
3. THE INTENSITY DURATION FREQUENCY DATA FOR THE SEDGWICK COUNTY IS OBTAINED FROM APPENDIX B, VOLUME 2 OF THE CITY OF WICHITA STORM WATER MANUAL.
4. THE RUNOFF VALUES FOR THE STORM SEWER DESIGN ARE CALCULATED PER RATIONAL FORMULA USING MANNING'S METHOD IN ACCORDANCE WITH THE CITY OF WICHITA STORM WATER MANUAL.
5. THE ALLOWABLE DEPTH OF RUNOFF AND THE CLOGGING FACTORS FOR THE CURB AND THE AREA INLETS ARE IN ACCORDANCE WITH HEC-22 CIRCULAR.
6. TYPE 1 CURB INLET AND THE DOUBLE DROP INLET ARE THE CITY OF WICHITA STANDARD INLETS. THE INLET CAPACITY IS CALCULATED PER HEC-22 CIRCULAR FOR CURB INLET IN SAG LOCATIONS.
7. DES. 6 INLET IS A GRATE INLET IN SAG LOCATION WITH 2 GRATES. REFER ATTACHED PLANS FOR DESIGN 6 INLET DETAILS. THE INLET CAPACITY IS CALCULATED PER HEC-22 CIRCULAR FOR GRATE INLET IN SAG LOCATIONS.
8. THE HYDRAULIC GRADE LINES OF THE STORM SEWER SYSTEM FOR THE 5-YEAR DESIGN STORM AND THE 100-YEAR CHECK STORM ARE BELOW THE PAVING GRADES.
9. THE STORM WATER RUNOFF FROM FRONT CANOPY OF THE BUILDING THRU THE STORM SEWER LINE 'C' ARE INCLUDED IN DESIGN OF THE STORM SEWER LINE 'A'.
10. THE STORM WATER RUNOFF FROM THE ROOF OF THE BUILDING THRU THE STORM SEWER LINE 'D' ARE INCLUDED IN DESIGN OF THE STORM SEWER LINE 'A'.

PROPOSED CONDITIONS, DRAINAGE SUMMARY TABLE

DRAINAGE AREA BASIN	RECEIVING STRUCTURE IDENTIFICATION	DRAINAGE AREA (ACRES)	WEIGHTED RUNOFF COEFFICIENT FOR 5-YEAR DESIGN STORM, C5	WEIGHTED RUNOFF COEFFICIENT FOR 100-YEAR CHECK STORM, C100	TIME OF CONCENTRATION OVERALL REACH LENGTH (FEET)	TIME OF CONCENTRATION OVERALL REACH SLOPE (%)	Tc (MINUTES) (SUM OF SHEET AND SHALLOW FLOWS)	RAINFALL INTENSITY, 5-YEAR, I5 (IN./HR.)	RAINFALL INTENSITY, 100-YEAR, I100 (IN./HR.)	RUNOFF, Q5 (CFS)	RUNOFF, Q100 (CFS)	% GROUND SLOPE AT INLET	ALLOWABLE DEPTH OF RUNOFF AT INLET FOR DESIGN STORM (FEET)	CALCULATED RUNOFF DEPTH AT INLET (FEET) FOR Q5	INLET CAPACITY AT 6" DEPTH OF RUNOFF AT INLET (CFS)	ALLOWABLE DEPTH OF RUNOFF AT INLET FOR CHECK STORM (FEET)	CALCULATED RUNOFF DEPTH AT INLET (FEET) FOR Q100	INLET CAPACITY AT 12" DEPTH OF RUNOFF AT INLET (CFS)	CLOGGING FACTOR	INLET DESIGN
DA3	100	0.505	0.85	0.93	180.00	2.00	1.62	7.91	11.62	3.42	5.26	SUMP	RUNOFF FROM ROOF THRU ROOF DRAINS TO MANHOLE							
DA6	101	0.378	0.87	0.89	104.00	1.68	1.73	7.87	11.56	2.61	3.92	SUMP	0.50	0.10	9.74	1.0	0.12	13.76	0.50	DOUBLE DROP INLET
DA5	102	0.271	0.87	0.89	71.00	1.00	1.57	7.94	11.65	1.89	2.83	SUMP	0.50	0.22	4.20	1.0	0.29	5.94	0.50	DES 6 INLET
DA4	107	0.368	0.85	0.93	153.00	2.00	1.46	7.99	11.71	2.52	3.86	SUMP	RUNOFF FROM ROOF THRU ROOF DRAINS TO 24" PIPE							
DA2	108	0.950	0.87	0.89	367.00	0.80	4.71	6.76	10.19	5.63	8.68	SUMP	0.50	0.32	10.81	0.50	0.43	10.81	0.50	TYPE 1 CURB INLET (L=10')
DA1	110	0.977	0.87	0.89	378.00	0.56	5.65	6.48	9.83	5.55	8.62	SUMP	0.50	0.32	10.81	0.50	0.43	10.81	0.50	TYPE 1 CURB INLET (L=10')

PROPOSED WATERSHED & STORM SEWER SUMMARY
WALMART MARKET #5991-00
31st STREET & S. SENECA STREET WICHITA, KANSAS

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 KANSAS CERTIFICATE OF AUTHORIZATION NO. E-335 EXP. DEC. 2011



No.	Revision	By	Date
1	City review comments	MDS	03/29/11
2	SMC review comments	MDS	04/12/11

DATE: 03/01/11	SCALE: NTS	SHEET NO. C-9.4
DRAWN BY: TN		
PROJECT NO.: 4966.00		
ENGINEER: TERENCE L. HAYNES, P.E. #14583		



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