

NORTH DETENTION POND STAGE-STORAGE-DISCHARGE SUMMARY

Reservoir Number: 1  
Name: North Detention Pond

[RATING CURVE LIMIT]			
Minimum Elevation	=	1380.00 (ft)	
Maximum Elevation	=	1397.00 (ft)	
Elevation Increment	=	0.25 (ft)	

[STAGE STORAGE INFORMATION]  
Storage Method: User-Defined Storage

Input Method: Area

Number	Elevation	Area	Ave Area	Volume
Cumulative	(ft)	(sq ft)	(sq ft)	(cu ft)
1	1380.00	0.00	0.00	0.00
2	1380.10	19.63	9.81	0.98
3	1380.20	19.63	19.63	234.58
4	1383.00	82.00	50.81	285.39
5	1394.00	832.00	457.00	742.39
6	1395.00	2050.00	1441.00	2183.39
7	1396.00	3400.00	2725.00	4908.39
8	1397.00	4875.00	4137.50	9045.89

[DISCHARGE INFORMATION]  
Structure Number: 1  
Type: User-Defined Rating Curve  
Name: Sump Pump

[RESERVOIR STAGE STORAGE/DISCHARGE]

Elevation Discharge (ft)	Stage (ft)	Area (sq ft)	Storage (cu ft)	(cfs)
1380.00	0.00	0.00	0.00	0.29
1380.25	0.25	19.63	2.45	0.29
1380.50	0.50	19.63	7.36	0.29
1380.75	0.75	19.63	12.27	0.29
1381.00	1.00	19.63	17.18	0.29
1381.25	1.25	19.63	22.08	0.29
1381.50	1.50	19.63	26.99	0.29
1381.75	1.75	19.63	31.90	0.29
1382.00	2.00	19.63	36.81	0.29
1382.25	2.25	19.63	41.71	0.29
1382.50	2.50	19.63	46.62	0.29
1382.75	2.75	19.63	51.53	0.29
1383.00	3.00	19.63	56.44	0.29
1383.25	3.25	19.63	61.34	0.29
1383.50	3.50	19.63	66.25	0.29
1383.75	3.75	19.63	71.16	0.29
1384.00	4.00	19.63	76.07	0.29
1384.25	4.25	19.63	80.97	0.29
1384.50	4.50	19.63	85.88	0.29
1384.75	4.75	19.63	90.79	0.29
1385.00	5.00	19.63	95.70	0.29
1385.25	5.25	19.63	100.60	0.29
1385.50	5.50	19.63	105.51	0.29
1385.75	5.75	19.63	110.42	0.29
1386.00	6.00	19.63	115.33	0.29
1386.25	6.25	19.63	120.23	0.29
1386.50	6.50	19.63	125.14	0.29
1386.75	6.75	19.63	130.05	0.29
1387.00	7.00	19.63	134.96	0.29
1387.25	7.25	19.63	139.86	0.29
1387.50	7.50	19.63	144.77	0.29
1387.75	7.75	19.63	149.68	0.29
1388.00	8.00	19.63	154.59	0.29
1388.25	8.25	19.63	159.49	0.29
1388.50	8.50	19.63	164.40	0.29
1388.75	8.75	19.63	169.31	0.29
1389.00	9.00	19.63	174.22	0.29
1389.25	9.25	19.63	179.12	0.29
1389.50	9.50	19.63	184.03	0.29
1389.75	9.75	19.63	188.94	0.29
1390.00	10.00	19.63	193.85	0.29
1390.25	10.25	19.63	198.75	0.29
1390.50	10.50	19.63	203.66	0.29
1390.75	10.75	19.63	208.57	0.29
1391.00	11.00	19.63	213.48	0.29
1391.25	11.25	19.63	218.38	0.29
1391.50	11.50	19.63	223.29	0.29
1391.75	11.75	19.63	228.20	0.29
1392.00	12.00	19.63	233.11	0.29
1392.25	12.25	35.22	239.96	0.29
1392.50	12.50	50.81	250.72	0.29
1392.75	12.75	66.41	265.37	0.29
1393.00	13.00	82.00	283.92	0.29
1393.25	13.25	269.50	327.96	0.29
1393.50	13.50	457.00	418.67	0.29
1393.75	13.75	644.50	556.36	0.29
1394.00	14.00	832.00	740.92	0.29
1394.25	14.25	1136.50	986.98	0.29
1394.50	14.50	1441.00	1309.17	0.29
1394.75	14.75	1745.50	1707.48	0.29
1395.00	15.00	2050.00	2181.92	0.29
1395.25	15.25	2387.50	2736.61	0.29
1395.50	15.50	2725.00	3375.67	0.29
1395.75	15.75	3062.50	4099.11	0.29
1396.00	16.00	3400.00	4906.92	0.29
1396.25	16.25	3768.75	5803.01	0.29
1396.50	16.50	4137.50	6791.30	0.29
1396.75	16.75	4506.25	7871.76	0.29
1397.00	17.00	4875.00	9044.42	0.29

Maximum Storage = 9044.42 (cu ft)  
Maximum Discharge = 0.29 (cfs)

Storm Sewer Chart for 5-year Design Storm

LINE A	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	P1	18 inch	0.012	100	101	4.29	7.91	15.67	8.89	86.00	0.0190	1,392.7500	1,391.1200	1,395.3300	1,394.7500	1,393.8400	1,392.9200	1,394.3500	1,393.2300
	P2	18 inch	0.013	101	102	4.45	9.08	15.00	8.89	25.50	0.0204	1,391.0200	1,390.5000	1,394.7500	1,395.5000	1,392.1900	1,391.4100	1,392.7800	1,392.4300

Storm Sewer Chart for 100-year Check Storm

LINE A	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	P1	18 inch	0.012	100	101	4.29	13.91	15.67	7.87	86.00	0.0190	1,392.75	1,391.12	1,395.33	1,394.75	1,395.38	1,394.09	1,396.34	1,395.05
	P2	18 inch	0.013	101	102	4.47	15.96	15.00	9.55	25.50	0.0204	1,391.02	1,390.50	1,394.75	1,395.50	1,392.44	1,391.87	1,393.76	1,393.25

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	Tc (MINUTES) (MIN. PER CITY STANDARD)	RAINFALL INTENSITY, 5-YEAR, 15 (IN./HR.)	RAINFALL INTENSITY, 100-YEAR, 100 (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	CLOGGING FACTOR	INLET DESIGN			
DA1	103	1.121	0.80	0.88	5.00	5.41	8.53	4.88	8.50	ROOF AND PAVING RUNOFFS TO DETENTION POND. REFER STAGE/STORAGE/DISCHARGE CURVE OF THE DETENTION POND										
DA2+DA3	100	1.489	0.79	0.88	4.29	6.67	10.53	7.91	13.91	1.00 (SUMP)	0.50	0.23	16.80	0.50	0.35	0.50	DES. 7-4 INLET (8 GRATES)			
DA4	101	0.229	0.79	0.88	2.76	6.97	10.98	1.27	2.23	2.00 (SUMP)	0.50	0.18	4.20	0.50	0.25	0.50	DES. 6 INLET (2 GRATES)			

SUMP PUMP STAGE-DISCHARGE SUMMARY

Structure Number : 1  
Type : User-Defined Rating Curve  
Name : Sump Pump

[RATING CURVE LIMIT]

Minimum Elevation	=	1380.00 (ft)
Maximum Elevation	=	1397.00 (ft)
Elevation Increment	=	0.10 (ft)

[USER-DEFINED ELEVATION AND DISCHARGE]

Elevation (ft)	Discharge (cfs)
1380.00	0.29
1397.00	0.29

[MAXIMUM DISCHARGE]

Q = 0.29 (cfs)

[USER-DEFINED STAGE VS. DISCHARGE]

Elevation (ft)	Stage (ft)	Discharge (cfs)
1380.00	0.00	0.29
1381.00	1.00	0.29
1382.00	2.00	0.29
1383.00	3.00	0.29
1384.00	4.00	0.29
1385.00	5.00	0.29
1386.00	6.00	0.29
1387.00	7.00	0.29
1388.00	8.00	0.29
1389.00	9.00	0.29
1390.00	10.00	0.29
1391.00	11.00	0.29
1392.00	12.00	0.29
1393.00	13.00	0.29
1394.00	14.00	0.29
1395.00	15.00	0.29
1396.00	16.00	0.29
1397.00	17.00	0.29

PROP. STORMWATER SUBMERSIBLE SUMP PUMP PERFORMANCE SPECIFICATIONS

DISCHARGE RATE = ±130 GPM (±0.29 CFS)  
SUMP PUMP DISCHARGE PIPE SIZE = 4"x90° BEND (SCH. 40 STD. STEEL PIPE)  
BUTTERFLY VALVE TO REGULATE MAX. DISCHARGE (REFER SUMP PUMP DETAILS)  
DISCHARGE VELOCITY AT 4"x90° BEND = 3.27 FPS  
SUMP PUMP DISCHARGE PIPE ELEV = 1396.75  
CONCRETE FLUME CREST ELEVATION AT SUMP PUMP DISCHARGE PIPE = 1396.44 (REFER STORM PLANS)  
SUMP PUMP 'ON' ELEV = 1386.00  
SUMP PUMP 'OFF' ELEV = 1380.00  
SUMP PUMP INTAKE ELEV = 1377.00  
WET WELL BOTTOM ELEV = 1374.00

DRAINAGE NOTES:

- THE WEIGHTED RUNOFF COEFFICIENTS FOR THE DRAINAGE AREAS ARE OBTAINED FROM APPENDIX C, VOLUME 2 OF THE CITY OF WICHITA STORM WATER MANUAL.
- THE TIME OF CONCENTRATION FOR THE SHEET AND SHALLOW FLOWS IS CALCULATED PER THE CITY OF WICHITA STANDARD PROCEDURES.
- THE INTENSITY DURATION FREQUENCY DATA FOR THE SEDGWICK COUNTY IS OBTAINED FROM APPENDIX B, VOLUME 2 OF THE CITY OF WICHITA STORM WATER MANUAL.
- 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.
- THE ALLOWABLE DEPTH OF RUNOFF AND THE CLOGGING FACTORS FOR THE CURB AND THE AREA INLETS ARE IN ACCORDANCE WITH HEC-22 CIRCULAR.
- DOUBLE DROP INLET IS THE CITY OF WICHITA STANDARD AREA INLET. THE INLET CAPACITY IS CALCULATED PER HEC-22 CIRCULAR FOR GRATE INLET IN SAG LOCATIONS.
- DES. 7-4 AND DES. 6 INLETS ARE DETAILED IN PROJECT PLANS. THE INLET CAPACITY IS CALCULATED PER HEC-22 CIRCULAR FOR GRATE INLET IN SAG LOCATIONS.
- THE HYDRAULIC GRADE LINES OF THE STORM SEWER SYSTEM FOR THE 5-YEAR DESIGN STORM AND THE 100-YEAR CHECK STORM ARE BELOW THE EMERGENCY OVERFLOW RELIEF LOCATIONS.
- THE STORM WATER RUNOFF FROM FRONT CANOPY OF THE BUILDING THRU THE STORM SEWER LINE ARE INCLUDED IN DESIGN OF THE DETENTION POND.
- THE STORM WATER RUNOFF FROM THE ROOF OF THE BUILDING SHEET FLOWS THRU THE BUILDING DOWNSPOUT TO THE DETENTION POND.

ROUTED RUNOFF SUMMARY OF THE DRAINAGE AREA DA1

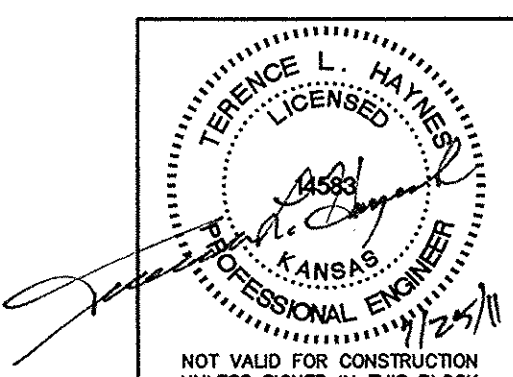
STORM FREQUENCY (YEAR)	PROPOSED RUNOFF TO DETENTION POND (CFS)	PROPOSED ROUTED RUNOFF FROM DETENTION POND TO 14TH STREET NORTH USING THE STORMWATER SUMP PUMP (CFS)	DETENTION POND ELEVATION AT ROUTED RUNOFF (FEET)	DETENTION POND BERM ELEVATION (FEET)
Q2	4.00	0.29	1395.04	1397.00
Q5	4.88	0.29	1395.28	1397.00
Q10	5.69	0.29	1395.44	1397.00
Q25	6.76	0.29	1395.70	1397.00
Q50	7.57	0.29	1395.86	1397.00
Q100	8.50	0.29	1396.03	1397.00

PROPOSED WATERSHED & STORM SEWER SUMMARY

WALMART MARKET #5873-01

13TH STREET NORTH & OLIVER AVENUE  
WICHITA, KANSAS

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No.	Revision	By	Date
1	SMC review comments	MDS	07/20/11

DATE: 05/04/11  
DRAWN BY: MDS  
PROJECT NO.: 4936.30

SCALE: NTS

SHEET NO. C-9.4

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