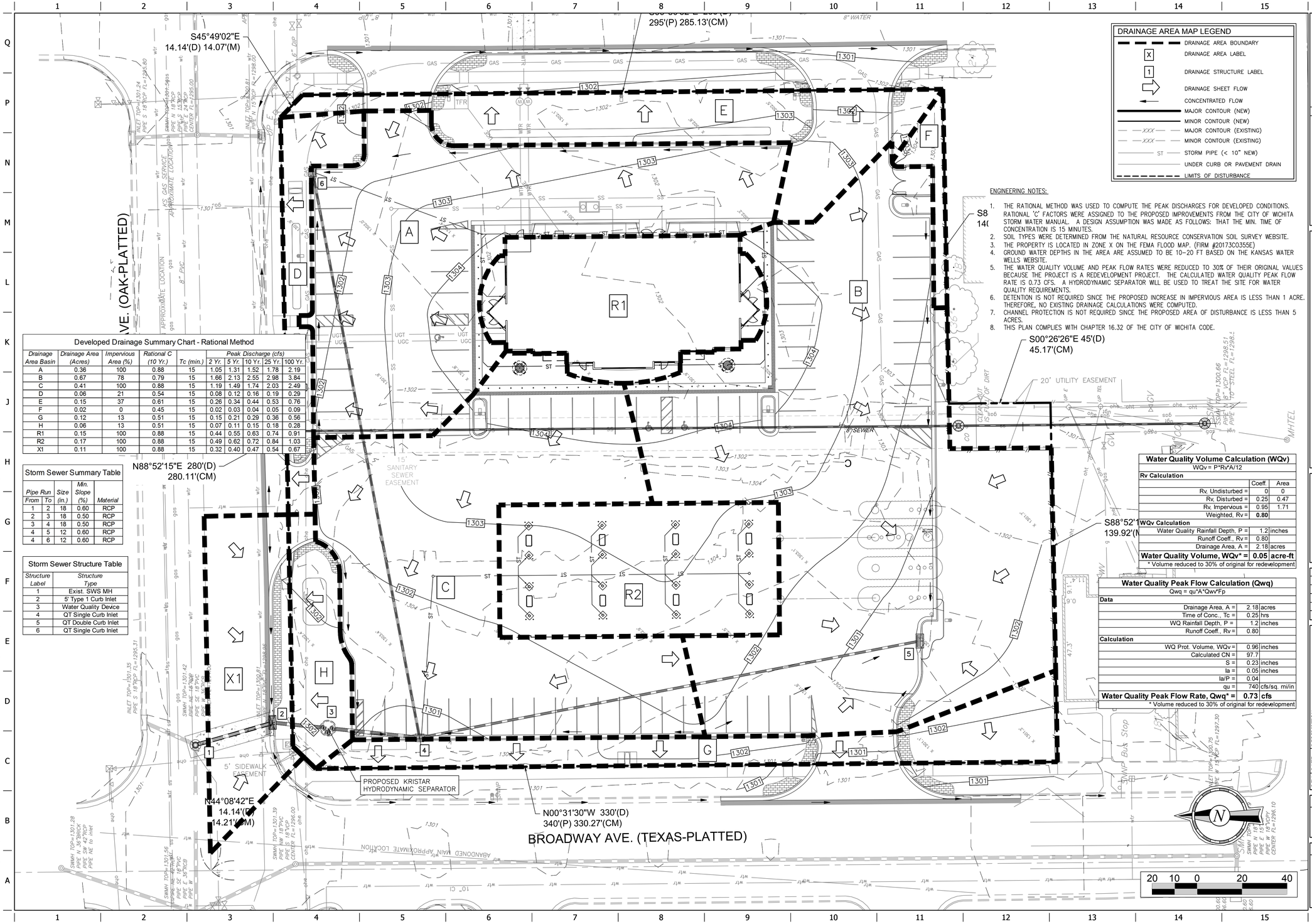

Developed Drainage Summary Chart - Rational Method									
Drainage Area Basin	Drainage Area (Acres)	Impervious Area (%)	Rational C (10 Yr.)	Tc (min.)	Peak Discharge (cfs) 2 Yr.	5 Yr.	10 Yr.	25 Yr.	100 Yr.
A	0.36	100	0.88	15	1.05	1.31	1.52	1.78	2.19
B	0.67	78	0.79	15	1.66	2.13	2.55	2.98	3.84
C	0.41	100	0.88	15	1.19	1.49	1.74	2.03	2.49
D	0.06	21	0.54	15	0.08	0.12	0.16	0.19	0.29
E	0.15	37	0.61	15	0.26	0.34	0.44	0.53	0.76
F	0.02	0	0.45	15	0.02	0.03	0.04	0.05	0.09
G	0.12	13	0.51	15	0.15	0.21	0.29	0.36	0.56
H	0.06	13	0.51	15	0.07	0.11	0.15	0.18	0.28
R1	0.15	100	0.88	15	0.44	0.55	0.63	0.74	0.91
R2	0.17	100	0.88	15	0.49	0.62	0.72	0.84	1.03
X1	0.11	100	0.88	15	0.32	0.40	0.47	0.54	0.67

Storm Sewer Summary Table				
Pipe Run From	To	Size (in.)	Min. Slope (%)	Material
1	2	18	0.60	RCP
2	3	18	0.50	RCP
3	4	18	0.50	RCP
4	5	12	0.60	RCP
4	6	12	0.60	RCP

Storm Sewer Structure Table	
Structure Label	Structure Type
1	Exist. SWS MH
2	5' Type 1 Curb Inlet
3	Water Quality Device
4	QT Single Curb Inlet
5	QT Double Curb Inlet
6	QT Single Curb Inlet

DRAINAGE AREA MAP LEGEND

- DRAINAGE AREA BOUNDARY
- X — DRAINAGE AREA LABEL
- 1 — DRAINAGE STRUCTURE LABEL
- DRAINAGE SHEET FLOW
- CONCENTRATED FLOW
- MAJOR CONTOUR (NEW)
- MINOR CONTOUR (NEW)
- XXX — MAJOR CONTOUR (EXISTING)
- XXX — MINOR CONTOUR (EXISTING)
- ST — STORM PIPE (< 10" NEW)
- UNDER CURB OR PAVEMENT DRAIN
- LIMITS OF DISTURBANCE

ENGINEERING NOTES:

1. THE RATIONAL METHOD WAS USED TO COMPUTE THE PEAK DISCHARGES FOR DEVELOPED CONDITIONS. RATIONAL 'C' FACTORS WERE ASSIGNED TO THE PROPOSED IMPROVEMENTS FROM THE CITY OF WICHITA STORM WATER MANUAL. A DESIGN ASSUMPTION WAS MADE AS FOLLOWS: THAT THE MIN. TIME OF CONCENTRATION IS 15 MINUTES.
2. SOIL TYPES WERE DETERMINED FROM THE NATURAL RESOURCE CONSERVATION SOIL SURVEY WEBSITE.
3. THE PROPERTY IS LOCATED IN ZONE X ON THE FEMA FLOOD MAP. (FIRM #20173C0355E)
4. GROUND WATER DEPTHS IN THE AREA ARE ASSUMED TO BE 10-20 FT BASED ON THE KANSAS WATER WELLS WEBSITE.
5. THE WATER QUALITY VOLUME AND PEAK FLOW RATES WERE REDUCED TO 30% OF THEIR ORIGINAL VALUES BECAUSE THE PROJECT IS A REDEVELOPMENT PROJECT. THE CALCULATED WATER QUALITY PEAK FLOW RATE IS 0.73 CFS. A HYDRODYNAMIC SEPARATOR WILL BE USED TO TREAT THE SITE FOR WATER QUALITY REQUIREMENTS.
6. DETENTION IS NOT REQUIRED SINCE THE PROPOSED INCREASE IN IMPERVIOUS AREA IS LESS THAN 1 ACRE. THEREFORE, NO EXISTING DRAINAGE CALCULATIONS WERE COMPUTED.
7. CHANNEL PROTECTION IS NOT REQUIRED SINCE THE PROPOSED AREA OF DISTURBANCE IS LESS THAN 5 ACRES.
8. THIS PLAN COMPLIES WITH CHAPTER 16.32 OF THE CITY OF WICHITA CODE.

Water Quality Volume Calculation (WQv)		
WQv = P*Rv*A/12		
Rv Calculation	Coeff.	Area
Rv, Undisturbed =	0	0
Rv, Disturbed =	0.25	0.47
Rv, Impervious =	0.95	1.71
Weighted, Rv =	**0.80**	
WQv Calculation		
Water Quality Rainfall Depth, P =	1.2	inches
Runoff Coeff., Rv =	0.80	
Drainage Area, A =	2.18	acres
Water Quality Volume, WQv* =	**0.05**	**acre-ft**
* Volume reduced to 30% of original for redevelopment		

Water Quality Peak Flow Calculation (Qwq)		
Qwq = qu*A*Qwv*Fp		
Data		
Drainage Area, A =	2.18	acres
Time of Conc., Tc =	0.25	hrs
WQ Rainfall Depth, P =	1.2	inches
Runoff Coeff., Rv =	0.80	
Calculation		
WQ Prot. Volume, WQv =	0.96	inches
Calculated CN =	97.7	
S =	0.23	inches
Ia =	0.05	inches
Ia/P =	0.04	
qu =	740	cfs/sq. mi/in
Water Quality Peak Flow Rate, Qwq* =	**0.73**	**cfs**
* Volume reduced to 30% of original for redevelopment		

CHARLAN DALE FORMELLER — LICENSED — 10891 — 10.27.14 — KANSAS — PROFESSIONAL ENGINEER

PROJECT NO.:20142192

CED
CERTIFIED ENGINEERING DESIGN, P.A.
1935 W. MAPLE STREET
WICHITA, KANSAS 67213
PH.(316)262-8808
FAX.(316)262-1669

QuikTrip 18th Addition

730 NORTH BROADWAY STREET
WICHITA, KS

PROTOTYPE:	P-80 (08/01/14)
DIVISION:	
VERSION:	001
DESIGNED BY:	
DRAWN BY:	
REVIEWED BY:	

REV	DATE	DESCRIPTION
		ORIGINAL ISSUE DATE:

SHEET TITLE:
DRAINAGE PLAN

SHEET NUMBER:
1

FILE LOCATION:S:\Drawing Files\Project AMG 9-16-13\QT #0391R\DWG\03-0391 Drainage Plan.dwg TAB NAME:DRAINAGE PLAN USER:eng2 SAVED:10/27/2014 11:28 AM PLOTTED:10/27/2014 11:34 AM