



## City of Wichita/Sedgwick County Subdivision Drainage Plan Checklist



Submit completed forms to:  
City of Wichita Public Works & Utilities, 455 N. Main 8th Floor, Wichita KS 67202; or  
Sedgwick County Stormwater Management, 1144 S. Seneca, Wichita KS 67213.

Project Name: <u>CAMPBELL AUTO ADDITION</u>	
Total Area of Project: <u>0.79</u> acres	
Development Type: <u>COMMERCIAL</u>	Other: <u>(FOR CARLOT)</u>
Developer Name: <u>DAVE CAMPBELL</u>	Contact: _____ Phone: <u>(316) 263-1570</u>
Email: _____	
Engineer Name: <u>KIRK MILLER</u>	Contact: _____ Phone: <u>(316) 264-0242</u>
Email: <u>kirk@kemiller.com</u>	

**Directions:**

- (1) Fill-out this checklist completely and include it with the Drainage Plan submittal. This checklist should be included in the bound copy, behind the cover sheet for the submittal. Incomplete Drainage Plans and checklists will not be accepted.
- (2) Indicate whether a plan element is included or not included in the submittal by choosing "Yes" or "No" from the dropdown list in the "Element Included?" column. The question must be answered for every plan element for this checklist to be considered complete. An explanation must be provided for all "No" answers.

#	Plan Element Description	Element Included?	Explanation/Notes
1.0	<b>General</b>		
1.1	Digital copy of drainage plan, including preliminary Master Grading Plan, preliminary plat and proposed plat, in PDF format and one half size, bound, paper copy.	Yes	see drainage plan.
1.2	Professional Engineer's seal, signature and date on plan cover.	Yes	see drainage plan.
1.3	Site location map, using color ortho-imagery and showing the project boundaries, a north arrow and an accurate scale.	Yes	Location map included in drainage plan.
1.4	Narrative of the development type, existing conditions and proposed impacts on stormwater runoff, wetlands, riparian zones and floodplains/floodways.	Yes	Included in drainage plan.
1.5	Discussion of off-site conditions surrounding the proposed development.	Yes	Included in drainage plan.
1.6	Summary table of runoff calculations (pre/post development).	Yes	" " " " .
1.7	Narrative description of the type and function of the permanent structural stormwater management facilities.	NO	NOT applicable.
2.0	<b>Existing Conditions Information</b>		
2.1	<b>Existing Conditions Drainage Map</b>		
2.1.1	On-site and off-site topography: NAVD 88 datum, one-foot contours with spot elevations.	Yes	Drainage plan
2.1.2	On-site and off-site drainage features, including perennial and intermittent streams (with names labeled), conveyance systems such as open channels, ditches, swales and areas of overland flow. Flow direction must be indicated by arrows.	Yes	Drainage plan. Ex. contours and elevations are shown.
2.1.3	Storm sewer system components, including storm drains, inlets, catch basins, gutters, manholes, headwalls, pipes and culverts. Material and size must be noted for all pipes and culverts.	Yes	Ex. features are shown in drainage plan.
2.1.4	Location and boundaries of natural features such as wetlands, lakes, ponds with the normal water elevation noted, rock outcroppings, wooded areas and tree rows.	NO	NO such features.
2.1.5	Location, dimensions and elevations of existing bridges and culvert crossings.	NO	NO such crossings.
2.1.6	Location of existing utilities (e.g., water, sewer, gas, electric, cable, etc.) with labels and easement boundaries.	Yes	Shown on drainage plan.
2.1.7	Groundwater elevations, if applicable.	NO	NOT applicable.
2.1.8	Delineation of predominant soil based on USDA soil surveys and/or on-site soil borings; indicate NRCS soil name and Hydrologic Soil Group for undisturbed surface soils.	Yes	Included in drainage plan.
2.1.9	Land use types per NRCS nomenclature.	NO	NOT applicable. Already developed area.
2.1.10	Footprint of existing impervious areas (labeled, area given in acres).	Yes	Drainage plan. Ex. drainage calculations.
2.1.11	Internal drainage subbasin boundaries used for hydrologic calculations (labeled with ID, total area in acres, impervious area in acres and curve number).	Yes	" " " " " "
2.1.12	Time of concentration flow paths. Indicate and label each segment separately (i.e., overland flow, shallow concentrated, channel1, channel2, etc.). For each segment, provide the appropriate data to calculate Tc (e.g., length, slope, cover type, paved/unpaved, roughness parameters, geometric properties, etc.).	Yes	" " " " " "
2.2	<b>Existing Conditions Hydrology and Hydraulics Analysis</b>		

Drainage Plan Checklist			
#	Plan Element Description	Element Included?	Explanation/Notes
2.2.1	Narrative of the hydrologic analysis methodology used (e.g., unit hydrograph or other approved methods).	Yes	Drainage plan. Engineer's note.
2.2.2	A summary table of drainage subbasin hydrologic parameters (subbasin ID, area in acres, curve number, Tc, etc.).	Yes	Drainage plan.
2.2.3	Table of existing condition runoff curve numbers with supporting data and calculations.	Yes	Drainage plan.
2.2.4	Table of existing condition times of concentration with supporting data and calculations.	Yes	" "
2.2.5	A summary table of rainfall data used in the hydrologic analysis, and a reference for the source of the data.	Yes	" "
2.2.6	Cross-sections and other diagrams of existing open channels, bridge and culvert sections and other hydraulic features as required to illustrate the basis for hydraulic analysis.	NO	NO such features.
2.2.7	Hydrologic and hydraulic analyses for runoff rates, volumes, velocities and elevations. Provide supporting data not specified above and identify assumptions. Include detailed calculations for the 2, 5, 10, 25 & 100-year, 24-hour storm events. Provide results in a tabular form. Provide digital copies of any computer files and models used.	Yes	Drainage plan. Existing drainage calculation table.
<b>3.0 postdevelopment Conditions Information</b>			
<b>3.1 postdevelopment Conditions Drainage Map</b>			
3.1.1	Proposed project boundary.	Yes	Drainage plan.
3.1.2	on-site and off-site topography: NAVD 88 datum, one-foot contours with spot elevations.	Yes	" "
3.1.3	Existing on-site and off-site drainage features that are to remain after development, including perennial and intermittent streams (with names labeled), conveyance systems such as open channels, ditches, swales and areas of overland flow. Flow direction must be indicated by arrows.	Yes	Drainage plan. NO conveyance system except conveyance system on Broadway.
3.1.4	Location and description of off-site through-drainage conveyances which are confined to an easement, dedication and/or reserve.	NO	Not applicable.
3.1.5	Footprint of proposed impervious areas, including roads, parking lots, buildings and other structures.	Yes	Drainage plan.
3.1.6	Location of proposed utilities (e.g., water, sewer, gas, electric, cable, etc.) with labels and easement boundaries.	Yes	" "
3.1.7	Delineation of predominant soils, based on anticipated soil textures and NRCS guidelines if different from predevelopment soil conditions; indicate NRCS soil name and Hydrologic Soil Group for surface soils.	Yes	" "
3.1.8	Land use cover per NRCS nomenclature.	NO	Not applicable.
3.1.9	Internal drainage subbasin boundaries used for hydrologic calculations (labeled with ID, total area in acres, impervious area in acres and curve number).	Yes	Drainage plan. Developed drainage calculations.
3.1.10	Proposed limits of land disturbing activity (i.e., grading limits).	Yes	whole site will be disturbed
3.1.11	Time of concentration flow paths. Indicate and label each segment separately (i.e., overland flow, shallow concentrated, channel1, channel2, etc.). For each segment, provide the appropriate data to calculate Tc (e.g., length, slope, cover type, paved/unpaved, roughness parameters, geometric properties, etc.).	Yes	Drainage plan.
<b>3.2 Proposed Conveyances Map</b>			
3.2.1	on-site and off-site drainage features, including perennial and intermittent streams (with names labeled), proposed conveyance systems (such as open channels, ditches, swales and areas of overland flow, including backyard drainage). Flow direction must be indicated by arrows.	Yes	Drainage plan.
3.2.2	Storm sewer system components, including storm drains, inlets, catchbasins, gutters, manholes, headwalls, pipes and culverts. Material and size must be noted for all pipes and culverts.	Yes	" "
3.2.3	For any subbasin or drainage area > 40 acres, show that the stormwater flow is confined to an open channel with required side benches and freeboard, or conformance to applicable policy and design requirements if partially enclosed.	NO	not applicable.
3.2.4	Location(s) of stormwater management facilities and any associated drainage easements.	NO	not applicable.
3.2.5	Proposed energy dissipaters and other channel protection devices.	NO	not applicable.
3.2.6	Location(s) and dimension(s) of proposed channel, bridge and culvert crossings.	NO	NO such crossings.
3.2.7	Normal pool and 100-year pool elevations for ponds and lakes.	NO	NO ponds or lakes.
3.2.8	Permanent concrete outfall control structure(s) for ponds.	NO	NO outfall structures.
3.2.9	Emergency overflow spillways and top of berm elevations for ponds and other volume/peak discharge control facilities.	NO	NO such features
3.2.10	Floodplains, ponds, and stormwater management facilities located in reserves.	NO	NO such features.
<b>3.3 postdevelopment Conditions Hydrology &amp; Hydraulics</b>			
3.3.1	Narrative of the hydrologic analysis methodology used (e.g., unit hydrograph or other approved methods).		

Drainage Plan Checklist			
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3.3.2	A summary table of drainage subbasin hydrologic parameters (subbasin ID, area in acres, curve number, Tc, etc.)	NO	Not applicable.
3.3.3	Table of postdevelopment condition runoff curve numbers with supporting data and calculations.	Yes	Drainage plan. Developed drainage calculations.
3.3.4	Table of postdevelopment condition times of concentration with supporting data and calculations.	Yes	Drainage plan.
3.3.5	Cross-sections and other diagrams of existing open channels, bridge and culvert sections and other hydraulic features as Hydrologic and hydraulic analyses for runoff rates, volumes, velocities and elevations. Provide supporting data not specified above and identify assumptions. Include detailed calculations for the 2, 5, 10, 25 & 100-year, 24-hour storm events. Provide results in a tabular form. Provide digital copies of any computer files and models used.	NO	NO such features
3.3.6	Downstream peak discharge assessment (10% Rule) results and supporting data and calculations. Provide digital copies of any computer files and models used.	Yes	Drainage plan. Developed drainage calculations.
3.3.7	Stage-storage-discharge or other outlet rating curves and inflow/outflow hydrographs for all ponds.	NO	Not applicable.
3.3.8	Demonstrate that the pond contours on the master grading plan and the stage-storage-discharge data are consistent for all ponds.	NO	Not applicable.
3.3.10	Demonstrate that all ponds have one foot of freeboard above the 100-year, 24-hour high water level.	NO	" " "
3.3.11	Demonstrate that runoff from the proposed project site is discharged in the same manner as prior to development, using level spreaders, energy dissipaters, other devices or grading as required, or identify an appropriate flowage easement.	NO	" " "
<b>3.4 Stormwater Quantity Control Sizing</b>			
3.4.1	Hydraulic sizing calculations for all stormwater management controls.	NO	Not applicable.
3.4.2	Table(s) listing all stormwater management controls. Present the types, sizes, elevations, flows, velocities and depths for each control, as applicable. Verify that velocities are self-cleaning and non-erosive.	NO	Not applicable.
3.4.3	Typical details (including cross-sections where applicable) for outlet structures, embankments, spillways, grade control structures, conveyance channels, etc.	NO	" " "
<b>3.5 Stormwater Quality Management Facilities</b>			
3.5.1	Table(s) listing all stormwater management facilities. Present the description, % TSS removal value, water quality volume handled, contributing drainage area in acres and contributing impervious area in acres.	NO	Not applicable as site is less than 1.0 acre.
3.5.2	Indicate the responsible party for maintenance, as shown in the plat text (i.e., Home Owners Association, Lot Owners Association, property owner, etc.).	NO	N/A: site less than 1.0 acre.
3.5.3	Water quality volume (total and by facility), with supporting data and calculations.	NO	" " " " " "
3.5.4	% TSS removal value (total and by facility) with supporting data and calculation. Must be equal to or greater than 80%.	NO	" " " " " "
3.5.5	Channel protection volume with supporting data and calculations.	NO	" " " " " "
3.5.6	Water quality volume and channel protection volume orifice size calculations.	NO	" " " " " "
3.5.7	Other calculations required for each stormwater management facility as specified in the Wichita/Sedgwick County Stormwater Manual.	NO	" " " " " "
3.5.8	Typical details (including cross-sections where applicable) for outlet structures, embankments, internal grading, forebays and other siltation prefilters, filtration/infiltration media, vegetation, check dams, operational controls, etc.	NO	Not applicable.
<b>4.0 Floodplains</b>			
4.1	Reference the source of flood profile, floodplain, floodway and stream discharge information.	Yes	<del>Not applicable</del> - Drainage plan.
4.2	Delineation of nearest base flood elevations.		
4.3	Delineation of predevelopment regulatory floodplain/floodway limits using FEMA's current GIS database; limits to be per elevation and scaled location.	Yes	Drainage plan, engineer's note for zone 'x' info.
4.4	Delineation of postdevelopment regulatory floodplain/floodway limits; limits to be per elevation and scaled location, with project limits shown.	NO	N/A. Not in 100-yr floodplain.
4.5	Floodway data table and discharges.	NO	Not applicable.
4.6	Hydrologic and hydraulic study information for local floodplain analysis, unnumbered Zone A elevation determinations and floodplain map revisions or required permits.	NO	" " "
4.7	Regulatory floodway and four natural profile models (10, 50, 100 and 500-year) for existing and postdevelopment conditions.	NO	" " "
4.8	Floodplains and floodways located within a reserve, where necessary.	NO	" " "
4.9	Floodplain cut and fill calculations for volume sensitive basins.	NO	" " "

Drainage Plan Checklist			
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4.10	Demonstrate that floodway elevations and velocities do not increase due to construction in the floodway ("No Rise Certification")	NO	Not applicable.
<b>5.0 Federal, State and Local Permits</b>			
5.1	US Army Corps of Engineers regulatory program permits (Section 404 permit)	NO	Not applicable.
5.2	Kansas Department of Agriculture - Division of Water Resources Permits (Stream Obstruction, Channel Change, Floodplain Fill, Levee, Water Appropriations, Dam Safety permit, etc.)	NO	" " "
5.3	FEMA letters of map change/revision - LOMA, LOMR, LOMR-f, CLOMR, etc.; shall be included and approved when project modifies the limits of the floodplain/floodway.	NO	" " "
<b>6.0 Half Scale Preliminary Master Grading Plan</b>			
6.1	One set of plans and associated PDF of plans.	NO	Grading will follow the proposed drainage.
6.2	Professional Engineer's seal, signature and date.	Yes	Drainage plan.
6.3	Title block including subdivision name and phase and dated revision documentation.	Yes	Drainage plan.
6.4	Future phases shown but cross-hatched as information only.	NO	NO future phases.
6.5	Scale, not greater than 1-inch = 60 feet.	Yes	Scale 1 inch = 20 ft.
6.6	North arrow.	Yes	Drainage plan.
6.7	Index or legend key.	NO	N/A
6.8	Benchmarks (minimum of 2) used for site control (NAVD 88 vertical datum).	Yes	Drainage plan (NAVD 88)
6.9	Existing contours of entire site with contour interval of one foot.	NO	Not applicable. Small site.
6.10	Proposed contours for channels, ponds, and other permanent stormwater management facilities, with contour interval of one foot.	NO	NO SWS management facilities.
6.11	Spot elevations shown to the nearest tenth of a foot for critical locations, including lot and property boundaries.	NO	Not applicable.
6.12	Proposed lot and street layout.	Yes	Drainage plan. Only lot layout.
6.13	Locations of underground storm drains.	NO	Not applicable.
6.14	Overflow locations for storms exceeding storm drain capacity, with elevations.	NO	" " "
6.15	Top elevations of storm drains at all inlets, manholes, and flow line elevations for all outfalls.	NO	Will be after grading plan.
6.16	Locations of open ditches and lakes.	NO	NO such feature.
6.17	Flow direction arrows.	Yes	Drainage plan.
6.18	Proposed flow line elevations of all open ditches at maximum 100 foot intervals, and 100-year flood elevations thereon.	NO	Not applicable.
6.19	Ponds: Location, bottom elevation, normal pool elevation, 100-year flood elevation, emergency overflow elevation.	NO	" " "
6.20	Proposed top-of-curb elevations at points where drainage will be required to flow over the curb.	Yes	Drainage plan. Engineer's Note.
6.21	Platted minimum building opening elevation for each lot, in table form for all lots (excluding basement floor elevations).	NO	Not applicable.
6.22	Standard foundation and elevation detail for slab on grade, full basement, view-out, partial view-out and/or walk-out construction.	NO	Not applicable.
6.23	Top of foundation elevation for each lot.	NO	" " "
6.24	Notation for builders for each lot as to the type of structure that may be constructed and the view-out, walk-out or pad elevation, as applicable.	NO	" " "
6.25	Indicate that all lots are above the 100-year flood elevation.	NO	" " "
6.26	Indicate that grading around structures conforms to perimeter drainage requirements.	NO	" " "
6.27	Indicate that backyard drainage grading conforms to backyard drainage requirements.	NO	" " "
6.28	Adjacent subdivision lot lines, with lot labels and subdivision names.	NO	" " "
6.29	Boundaries and labels for all easements, rights-of-way and reserves.	Yes	NO such easements. R/W is in drainage plan.
6.30	Statement on proposed final plat: "A drainage plan has been developed for the subdivision and all drainage easements, rights-of-way, or reserves shall remain at the established grades and remain unobstructed to allow for the conveyance of stormwater."	Yes	IN Final plat.
<b>End of Checklist</b>			