RUGGLES &BOHM

ENGINEERING
SURVEYING
LANDSCAPE ARCHITECTURE
GOVERNMENT

TRANSMITTAL MEMO

Date: 12-7-12

To: Scott Lindebak
City of Wichita

From: Will Clevenger

Project: Johnson Estates

RB Project No.: 4058P

Other Project Reference No.:

Description:
- ☐ Confirmation
- ☒ Transmittal
- ☐ Transmittal under separate cover by

Purpose:
- ☐ Approval
- ☒ Review & comment
- ☐ Use
- ☐ Other :
- ☐ Distribution
- ☐ Information
- ☐ Record

Enclosures/Attachments:
- ☒ Prints
- ☐ Originals
- ☐ Diskettes containing:
- ☐ Other:
- ☐ Change Order
- ☐ Shop Drawings

Copies	Description
1	Drainage Plan
1	Drainage Plan Checklist

Remarks:

Copies to:
file

If checked below, please:
- ☐ Acknowledge receipt of enclosures
- ☐ Return enclosures to us.

Signed

If Enclosures are not as noted above, please inform us immediately
Phone (316) 264-8008 Fax (316) 264-4621

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Wichita, Kansas 67203
Phone 316-264-8008
E-mail info@rbkansas.com
Web www.rbkansas.com

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:	Johnson Estates				
Total Area of Project:	1.0 acres				
Development Type:	Residential	**Other:**			
Developer Name:	Jay & Bonnie Johnson	**Contact:**	Jay Johnson	**Phone:**	316-218-1192
Email:	N/A				
Engineer Name:	Ruggles & Bohm PA	**Contact:**	Kenneth Lee	**Phone:**	316-264-8008
Email:	klee@rbkansas.com				

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.*

Drainage Plan Checklist

#	Plan Element Description	Element Included?	Explanation/Notes
1.0	**General Information**		
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	
1.2	Professional Engineer's seal, signature and date on plan cover.	Yes	
1.3	Site location map, using color ortho-imagery and showing the project boundaries, a north arrow and an accurate scale.	No	Vicinity Map included but no color ortho-imagery provided
1.4	Narrative of the development type, existing conditions and proposed impacts on stormwater runoff, wetlands, riparian zones and floodplains/floodways.	Yes	
1.5	Discussion of off-site conditions surrounding the proposed development.	Yes	
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.	Yes	
2.0	**Existing Conditions Information**		
2.1	**Existing Conditions Drainage Map**		
2.1.1	On-site and off-site topography: NAVD 88 datum, one-foot contours with spot elevations		
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	No streams or swales exist on property. None are proposed.
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.	No	Not Applicable
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	Not Applicable
2.1.5	Location, dimensions and elevations of existing bridges and culvert crossings.	Yes	
2.1.6	Location of existing utilities (e.g., water, sewer, gas, electric, cable, etc.) with labels and easement boundaries.	Yes	
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	
2.1.9	Land use types per NRCS nomenclature.	Yes	
2.1.10	Footprint of existing impervious areas (labeled, area given in acres).	Yes	
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.).	No	Drainage Paths are below threshold for minimum time. 15 minutes used.

Drainage Plan Checklist			
#	Plan Element Description	Element Included?	Explanation/Notes
2.2	**Existing Conditions Hydrology and Hydraulics Analysis**		
2.2.1	Narrative of the hydrologic analysis methodology used (e.g., unit hydrograph or other approved methods).	Yes	
2.2.2	A summary table of drainage subbasin hydrologic parameters (subbasin ID, area in acres, curve number, Tc, etc.).	Yes	
2.2.3	Table of existing condition runoff curve numbers with supporting data and calculations.	Yes	
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	City of Wichita Stormwater Manual Used
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	Not Applicable
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	
3.0	**postdevelopment Conditions Information**		
3.1	**postdevelopment Conditions Drainage Map**		
3.1.1	Proposed project boundary.	Yes	
3.1.2	on-site and off-site topography: NAVD 88 datum, one-foot contours with spot elevations.	Yes	Elevations shown. No contours provided
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	
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	
3.1.6	Location of proposed utilities (e.g., water, sewer, gas, electric, cable, etc.) with labels and easement boundaries.	No	
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.	Yes	
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	
3.1.10	Proposed limits of land disturbing activity (i.e., grading limits).	No	Not Applicable - No grading proposed with this project
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.).	No	Drainage Paths are below threshold for minimum time. 15 minutes used.
3.2	**Proposed Conveyances Map**		
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	
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.	No	Not Applicable
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	Not Applicable
3.2.7	Normal pool and 100-year pool elevations for ponds and lakes.	No	Not Applicable
3.2.8	Permanent concrete outfall control structure(s) for ponds.	No	Not Applicable
3.2.9	Emergency overflow spillways and top of berm elevations for ponds and other volume/peak discharge control facilities.	No	Not Applicable
3.2.10	Floodplains, ponds, and stormwater management facilities located in reserves.	No	Not Applicable
3.3	**postdevelopment Conditions Hydrology & Hydraulics**		

Drainage Plan Checklist			
#	Plan Element Description	Element Included?	Explanation/Notes
3.3.1	Narrative of the hydrologic analysis methodology used (e.g., unit hydrograph or other approved methods).	Yes	
3.3.2	A summary table of drainage subbasin hydrologic parameters (subbasin ID, area in acres, curve number, Tc, etc.).	Yes	
3.3.3	Table of postdevelopment condition runoff curve numbers with supporting data and calculations.	Yes	
3.3.4	Table of postdevelopment condition times of concentration with supporting data and calculations.	Yes	
3.3.5	Cross-sections and other diagrams of existing open channels, bridge and culvert sections and other hydraulic features as	No	Not Applicable
3.3.6	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	
3.3.7	Downstream peak discharge assessment (10% Rule) results and supporting data and calculations. Provide digital copies of any computer files and models used.	No	Not Applicable for this site
3.3.8	Stage-storage-discharge or other outlet rating curves and inflow/outflow hydrographs for all ponds.	No	Not Applicable
3.3.9	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	Not Applicable
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.	Yes	No changes in grading
3.4	**Stormwater Quantity Control Sizing**		
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	Not Applicable
3.5	**Stormwater Quality Management Facilities**		
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
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	
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	
4.0	**Floodplains**		
4.1	Reference the source of flood profile, floodplain, floodway and stream discharge information.	No	Not Applicable
4.2	Delineation of nearest base flood elevations.	No	
4.3	Delineation of predevelopment regulatory floodplain/floodway limits using FEMA's current GIS database; limits to be per elevation and scaled location.	No	
4.4	Delineation of postdevelopment regulatory floodplain/floodway limits; limits to be per elevation and scaled location, with project limits shown.	No	
4.5	Floodway data table and discharges.	No	
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	

Drainage Plan Checklist			
#	Plan Element Description	Element Included?	Explanation/Notes
4.9	Floodplain cut and fill calculations for volume sensitive basins.	No	
4.10	Demonstrate that floodway elevations and velocities do not increase due to construction in the floodway ("No Rise Certification").	No	
5.0	**Federal, State and Local Permits**		
5.1	US Army Corps of Engineers regulatory program permits (Section 404 permit)	No	
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	
6.0	**Half Scale Preliminary Master Grading Plan**		
6.1	One set of plans and associated PDF of plans.	Yes	Grades shown on Drainage Plan. No Proposed grading on site.
6.2	Professional Engineer's seal, signature and date.	Yes	
6.3	Title block including subdivision name and phase and dated revision documentation.	Yes	
6.4	Future phases shown but cross-hatched as information only.	No	Not Applicable
6.5	Scale, not greater than 1-inch = 60 feet.	Yes	
6.6	North arrow.	Yes	
6.7	Index or legend key.	No	
6.8	Benchmarks (minimum of 2) used for site control (NAVD 88 vertical datum).	Yes	
6.9	Existing contours of entire site with contour interval of one foot.	No	Spot Grades provided
6.10	Proposed contours for channels, ponds, and other permanent stormwater management facilities, with contour interval of one foot.	No	No proposed grading
6.11	Spot elevations shown to the nearest tenth of a foot for critical locations, including lot and property boundaries.	Yes	
6.12	Proposed lot and street layout.	No	No proposed streets
6.13	Locations of underground storm drains.	No	None Proposed
6.14	Overflow locations for storms exceeding storm drain capacity, with elevations.	No	Not Applicable
6.15	Top elevations of storm drains at all inlets, manholes, and flow line elevations for all outfalls.	No	Not Applicable
6.16	Locations of open ditches and lakes.	No	Not Applicable
6.17	Flow direction arrows.	Yes	
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	Not Applicable
6.20	Proposed top-of-curb elevations at points where drainage will be required to flow over the curb.	No	Not Applicable
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	Not Applicable
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	Not Applicable
6.25	Indicate that all lots are above the 100-year flood elevation.	No	Not Applicable
6.26	Indicate that grading around structures conforms to perimeter drainage requirements.	Yes	
6.27	Indicate that backyard drainage grading conforms to backyard drainage requirements.	Yes	
6.28	Adjacent subdivision lot lines, with lot labels and subdivision names.	Yes	
6.29	Boundaries and labels for all easements, rights-of-way and reserves.	Yes	
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	
End of Checklist			