Unified Government of Wyandotte County, Kansas City, Kansas

# Planning Engineering Guidance

May 2024

This document was created to provide general guidance to applicants and engineers preparing plans for projects within the UG. This is not an all-inclusive guide and does not include all items necessary for a submittal, rather it highlights items Planning Engineers frequently comment on and request from applicants and engineers. The items identified in this document may not apply to all cases, coordinate further with staff on any questions or comments.

## Overview

UG Planning Engineers provide applicants separate review comments in the following categories:

- General Engineering (GE)
- Erosion Control (EC)
- Retaining Wall (RW)
- Sanitary Sewer (SA)
- Storm Drainage (SD)
- Stormwater Quality (SQ)
- Street (ST)

While reviewing the plans, Planning Engineers may consult with various departments including but not limited to Planning, Public Works, Traffic Engineering, Water Pollution Control, Health Department, Building Inspections, Fire Prevention, etc.

Design criteria and checklists can be found on the UG Planning webpage. Public Works technical provisions and standard details can be found on the UG Public Works webpage:

- Design Criteria and Checklists – Planning Engineering Information
- Technical Provisions – PW Technical Provisions & Standard Drawings

Contact staff with any questions or to set up a pre-application meeting as necessary.

## Professional Services

The UG is impartial and makes no recommendations of specific professional service providers (Architects, Engineers, Surveyors). A list of local providers is maintained by the UG GIS department (Provider List).

Architects and Engineers may perform common technical services including limited surveys (K.S.A. 74-7003(g)(10)). Surveyors shall establish new boundaries.

## General Engineering

A general layout plan is required in each plan set showing street, storm, and sanitary sewer layouts with node numbers and street names labeled and any other existing or proposed utilities. The existing storm and sanitary sewer Unified Government (UG) node numbers should also be labeled. The plans must clearly identify the limits of construction (which must encompass grading and all other temporary and permanent construction), property lines, and easements (existing and proposed); and each should be labeled clearly on the plans and/or the corresponding line types included in a legend.

A general note is also required on the cover sheet that describes the engineer's efforts to determine the existing utilities, the sources of information, and which utility locates were surveyed.

Below are some standard comments provided within General Engineering reviews:

1. On the cover sheet include the following notes:
    a. Project title
    b. Address
    c. Vicinity map
    d. Contact information (for the landowner, developer, engineer, surveyor, contractor, etc)
    e. Date
    f. North arrow and scale
    g. Sheet index
    h. Zoning Classifications
    i. 811 Dig Safe note.
    j. Local utility contact information including UG Sanitary and Storm, Sewer Maintenance, (913) 573-1360, Kevin Swearengin or Kirk Roland
    k. Total parcel/project area (square feet or acres), total area of land disturbed, net increase/decrease in impervious area, net cut/fill quantities (cubic yards).
2. On the cover sheet and other sheets where applicable, include the following notes:
    a. "Work in public easements and right-of-way and for erosion control shall comply with the latest edition of the *Technical Provisions & Standard Drawings for Roads and Sewers*, of the Unified Government of Wyandotte County/Kansas City, Kansas."
    b. "Contractor shall obtain applicable Public Works permits including land disturbance, right-of-way, hauling prior to Construction."
3. All engineering plans and reports shall be signed and sealed by a Kansas Registered Professional.
4. Provide UG node numbers for existing storm and sanitary sewer structures and line sizes, which may be obtained from Ricky Ledgerwood, Public Works Coordinator, (913) 573-5421.

5. Provide any easements as required including access obstruction (retaining wall), off-site discharge of runoff or fill, temporary construction, drainage, sanitary sewer, and cross-access.
6. For projects with new plats or replats, provide the plat in the plan set and list it in the index of sheets on the cover sheet.

## Erosion Control

Sites disturbing 1 acre or more of land are required to submit a Notice of Intent (NOI) to the Kansas Department of Health and Environment (KDHE) Bureau of Water and obtain a Land Disturbance Permit from UG Public Works (701 N 7th Street, 7th Floor, Kansas City, KS 66101) prior to construction permit acquisition. Coordinate further with Public Works and the DRC Coordinator once the project has been submitted for construction permit.

Provide erosion control plan including the following:

1. Note work shall conform to requirements of the Unified Government of Wyandotte County/Kansas City, Kansas (the UG) Specification Section 2150 - Erosion and Sediment Control.
2. Add a "good housekeeping" note, i.e., "Good housekeeping, including spill response shall be performed in accordance with UG Specification Section 2150 - Erosion and Sediment Control."
3. Indicate limits of disturbance.
4. On the erosion control plan, indicate location of temporary material stockpile or onsite waste area(s) in the case that excavated material, or topsoil needs to be temporarily stored or wasted on site, and provide downstream erosion control protection.
5. Personnel responsible for directing installation and maintenance of erosion control measures shall have completed within the previous 24 months a minimum of 7 hours (or 14 hours lifetime) of training in construction site erosion and sediment control.
6. On the erosion control plan add note:

   "All work in public easements and right-of-way and all erosion control work must comply with the latest edition of the Technical Provisions & Standard Drawings for Roads and Sewers, of the Unified Government of Wyandotte County/Kansas City, Kansas. Where notes conflict with the Technical Provisions & Standard Drawings for Roads and Sewers, of the Unified Government of Wyandotte County/Kansas City, Kansas (the UG), the UG's standards shall override."

7. Add a note regarding clean streets, and SWPPP (if applicable), etc. For example: The contractor shall provide all materials, tools, equipment, and labor as necessary to install and maintain adequate erosion control, keep the streets clean of mud and debris, and prevent soil from leaving the project site. The contractor's erosion control measures shall conform to the Unified Government of Wyandotte County, Kansas City, KS Technical Provisions specifications, and the project's Stormwater Pollution Prevention Plan, a copy of which shall be maintained and updated on site at all times.

8. Add a note regarding the contractor shall install erosion control devices before starting any construction activity. The note could indicate which types of devices shall be installed, or reference the pre-construction plan, i.e., construction entrance, silt fence perimeter control, inlet protection, etc.
9. Provide a rock construction access on all phases prior to completion of paved surfaces on the site to reduce the tracking or flowing of sediment onto paved roadways (or other impervious surfaces).
10. Provide a concrete washout tank on all phases with concrete deliveries to site.
11. Add a note regarding additional measures, i.e., The contractor shall be responsible for providing additional erosion control measures or modifications when the plan fails to substantially control erosion or offsite sedimentation.
12. Add a note regarding temporary seeding, i.e., The Contractor shall temporarily seed, mulch, or otherwise stabilize any disturbed area where the land disturbance activity has ceased for a period of fourteen (14) calendar days.
13. Add a note regarding 70% vegetation, i.e., The contractor shall be responsible for maintaining erosion control devices and removing sediment until a minimum of 70% of permanent vegetation has become stabilized and established. Erosion control devices shall remain in place until the 70% established vegetation is met, or the duration of the project, whichever is the later date.
14. Add a note the contractor shall inspect erosion control devices every 7 days and within 24 hours of a ½-inch rain. The contractor shall repair damage, clean out sediment, and add additional erosion control devices as needed, or as soon as practicable after inspection.
15. Show vegetation type and location on final stabilization plan. Stabilization shall be installed within 14 days of final grading. Indicate a thickness for proposed topsoil replacement.
16. When applicable, provide erosion control measures for milestones of development: grading, utility, roads, structure erection and final development.

## Retaining Wall

Retaining wall third party inspections may be required during construction. Coordinate further with Building Inspections upon obtaining a construction permit.

Below are some standard comments provided within Retaining Wall reviews:

1. Retaining wall plans and details are required with final plans for any type of retaining wall. Provide retaining wall calculations for walls over 3’-6” high. Review the on-line retaining wall checklist.
2. Retaining wall calculations shall include global stability, vehicular loading, vehicular barrier, building loading, surcharge and/or construction loading, and pedestrian railing as applicable.

3. Pedestrian guardrails shall be provided on retaining walls over 30 inches high adjacent to walking surfaces. Calculations shall include line and concentrated loads of 50 pounds per linear foot and 200 pounds concentrated load applied to top rail. Detail stanchion anchors.
4. Provide retaining wall plans for each wall showing plan layout, begin and end points, top and bottom wall elevations, dimensions, curve or bend data, cross sections, geogrid material and specifications, geogrid length and elevations, railing, posts, post foundations, utility crossings, drain tile location(s) and outlet(s), backfill, etc. Plans shall show limits and location of proposed retaining walls and walls must be dimensioned, tied to property lines, and angles and radius are shown as applicable.
5. Add note: Retaining wall geogrid and/or foundations shall not cross utility easements or right-of-way.
6. Calculations shall include applicable soil parameters utilized in the wall design, including but not limited to allowable soil bearing pressure, equivalent lateral fluid pressure (active and passive), surcharge load, internal angle of friction, coefficient of friction and soil density.
7. Provide cross sections of all proposed walls which indicate materials, wall and footing dimensions, reinforcing, concrete design strength, geogrid material, drainage method, backfill, compaction requirements, vehicular loading, and slope of backfill finish grade.
8. Retaining walls with heights greater than 6 feet should be tiered.

## Sanitary Sewer

Public sanitary sewer shall be designed and constructed in accordance with the UG standards and criteria. Provide five (5) 11x17 hard copies of public sanitary sewer plans with a signature block for the County Engineer. Coordinate further with Public Works, Water Pollution Control and Planning Engineering as necessary. Applicant shall comply with KDHE requirements including Sewer Extension permits.

For nearly all projects, provide PE sealed sanitary sewer memo in accordance with UG standards and criteria.

For any storm or sanitary sewer plans submitted to the UG, horizontal control shall be tied to NAD83, the Kansas State Plane Coordinate System.

## Storm Drainage

Detention is required for most sites. Refer to the Kansas City Metro Chapter "APWA 5600 – Storm Drainage Systems & Facilities" for detention requirements, exemption criteria, and the qualifications for minor developments. For large sites and/or sites with known downstream flooding problems, Public Works and/or Water Pollution Control may require special detention criteria. A pre-application meeting is required in these instances.

For small storm sewer systems (less than or equal to 25 acres for single family or 20 acres for multifamily or commercial developments), refer to "Table 2" for the storm sewer design validation chart in accordance with the UG's Storm Drainage Checklist standards and requirements.

For large storm sewer systems (greater than 25 acres for single family or 20 acres for multifamily or commercial developments), the 100-year energy grade line shall not exceed the ground surface at any node in accordance with the UG's Storm Drainage Checklist standards and requirements. Use HEC No. 22 (Urban Drainage Design Manual) for the EGL computational procedure (or a more conservative method).

Drainage area map(s) are required and must be at an appropriate, standard engineering scale on full-size sheet(s). The drainage area map(s) may be included with the plan set or submitted under separate cover as exhibits in a storm water drainage study. The drainage area map(s) must include sufficient topographic information (existing and proposed contours) to verify the areas to each inlet or design node, including any upstream, offsite area (except upstream limits of a stream that flows through the site need not be shown). Also, a continuous system (i.e., engineered conveyance) from an existing receiving stream, storm sewer, or improved channel to the most upstream inlets is required and must be shown in the plans and/or report exhibits.

Provide public storm sewer plans as a separate plan set (street and storm sets can be combined) with a signature block for the County Engineer. Coordinate further with Public Works, Water Pollution Control and Planning Engineering as necessary.

In accordance the design criteria:

- The rational method shall be used for all basins or sub-basins of 60 acres or less and may be used for basins not greater than 400 acres.
- Runoff coefficients shall be based on zoning of the land in conformance with the table in the criteria.
- The 100-year rainfall intensity in inches/hour for durations up to 40 minutes is given by the equation in the criteria.
- The UG's flood protection requirements identified, 1.5 feet of freeboard is required between the 100-year flood hydraulic grade line and the lowest elevation at which water may enter the building where flood water is on a paved surface. One foot of freeboard is required otherwise if flood water is not on a paved surface. The plans and/or drainage report must confirm that downstream structures are not exposed to increase flooding.

For nearly all projects, provide PE sealed storm drainage memo in accordance with UG standards and criteria. The storm drainage memo can include the stormwater quality requirements as well.

Applicant shall identify if site is within a drainage district or within the FEMA floodplain and coordinate further with staff as required.

For any storm or sanitary sewer plans submitted to the UG, horizontal control shall be tied to NAD83, the Kansas State Plane Coordinate System.

## Stormwater Quality

In 2009, the UG adopted the Stormwater Treatment Ordinance which identifies stormwater quality requirements for projects. In general, sites disturbing greater than 1 acre of land are required to meet the 2012 Mid-America Regional Council (MARC) Best Management Practices (BMP) Manual.

The applicant shall provide the BMP worksheets, calculations, BMP drainage area map, and detailed plans to illustrate the site is meeting all requirements.

With final development plans, applicants are required to provide an Operation and Maintenance (O&M) Manual. The O&M Manual shall be a separate site-specific document which discusses the operation and maintenance of the proposed BMPs in accordance with the MARC BMP Manual. In addition to operation and maintenance instructions and details, the manual shall include the site address, property owner contact information, sample inspection forms/logs, and statement UG staff has inspection authorization.

Projects containing the following site uses are considered "hotspots" and are subject to the requirements of the UG Stormwater Treatment Ordinance covered by the MARC BMP Manual.

- Fuel Dispensing Facilities
- Above Ground Storage of Liquid Materials
- Solid Waste Storage Areas
- Exterior Storage of Bulk Materials
- Material Transfer Areas and Loading Docks
- Equipment and Vehicle Washing Facilities
- Covered Vehicle Parking Areas
- High-Use Vehicle and Equipment Traffic Areas, Parking and Vehicle Storage
- Dog Kennels/Doggie Day Care, and Veterinary Clinics

Applicants shall include a hotspot analysis to indicate how the development is meeting the requirements of Appendix B of the MARC BMP Manual. Pollution controls required for these types of projects apply to all new development and redevelopment projects.

## Street

When proposing new public streets or modifications to public streets, a pre-application meeting with Public Works and Planning Engineering is recommended. Street design and construction shall meet the UG standards and criteria. Identify the street classification in accordance with the Code of Ordinances, these can be found in Chapter 27, Article VIII, Division 12.

Traffic impact studies may be required with the plan submittal. Coordinate with Planning Engineering and Public Works on the traffic impact study scope and requirements.

Low impact projects may require a Traffic memo discussing driveway commercial standards, trash and fire access including turning templates.

Street continuity is preferred unless applicant demonstrates compelling rational for redirecting traffic (existing structures, or topography).