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CHAPTER 11

PRIVATE DEVELOPMENT DRAINAGE

11.1 PURPOSE

This chapter delineates the purpose and legal responsibility through KRS Chapter 76 and the Louisville-Jefferson County Planning Commission Development Code whereby MSD reviews and approves private development plans. Drainage systems should be designed in accordance with the applicable provisions of this and other chapters of this Design Manual and the requirements of the Floodplain and Erosion Prevention and Sediment Control (EPSC) Ordinances. Plans and specifications submitted for review should meet or exceed the minimum construction plan standards as outlined in Section 11.4. Procedures and applicable forms may be retrieved from <http://www.msdlouky.org/>.

The review primarily examines the development for the following:

- a. Potential impacts to upstream, downstream, and adjacent properties.
- b. Adequacy of drainage system outlet.
- c. Public or "defined" outlet for drainage.
- d. Floodplain impact.
- e. Erosion Prevention and Sediment Control
- f. Adherence to any applicable composite drainage master plan criteria.

11.2 PLANS SUBJECT TO REVIEW AND APPROVAL

MSD has developed checklists to assist in the submittal process. The checklist forms, which are updated periodically, can be downloaded from the MSD web page. For each situation shown below, the applicable checklist is listed. In all cases, an initial "Plan Review Application" will be submitted.

11.2.1 Preliminary Plans for the Louisville-Jefferson County Planning Commission and Board of Zoning Adjustment

- a. Request for change of zoning plans.
- b. Conditional use permit plans.
- c. General district development plans.

- d. Detailed district development plans.
- e. Preliminary subdivision plans (major subdivision).
- f. Board of Zoning Adjustment plans.
- g. Submit Preliminary Plan Checklist

11.2.2 Technical Review Committee

Reviews preliminary subdivision plans that require no zoning changes.

11.2.3 Minor Subdivision Plats

Subdivision plats dividing tracts of land into two (2) or more lots not designated by the Planning Commission as a major subdivision.

11.2.4 Site Construction Plans

- a. Commercial Tracts
- b. Industrial Tracts
- c. Fills and/or excavations not related to building construction
- d. Floodplain Encroachments
- e. Stream Crossings
- f. Roadway Projects
- g. Submit Site Plan review Checklist

11.2.5 Subdivision Construction Plans (Major Subdivision)

Subdivision construction plans shall be reviewed and approved in accordance with the Louisville and Jefferson County Development Code, Metropolitan Subdivision Regulations. Submit "SUBDIVISION REVIEW CHECKLIST".

11.2.6 Record Plats

Submit in accordance with Metropolitan Subdivision Regulations.

11.2.7 Single Family Construction Plans

- a. Lots located in the 100-year F.E.M.A. or Local Regulatory floodplain.
- b. Lots not in a recorded subdivision.
- c. Lots in a recorded subdivision with geotechnical restrictions or with a note on the record plat which requires separate MSD or "Water Management" approval.
- d. Lots in a recorded subdivision with elevation restrictions (i.e. minimum opening elevations, lowest finished floor elevations, etc.) on the recorded plat.

11.2.8 Industrial Waste/Hazardous Materials Spill Prevention and Control Plans

11.3 LEVELS OF REVIEW

11.3.1 Preliminary Plan Approval

Plans specifically prepared for the Planning Commission or the Board of Zoning Adjustment (BOZA) showing conceptual drainage conditions which identify and address potential impacts on public sewer and drainage facilities shall be submitted for MSD review. If significant features (Reference Chapter 12) exist on a site, a conceptual EPSC plan will also be required. Plans must receive MSD's stamp of approval in order to be placed on the Planning Commission Land Development and Transportation Committee or (BOZA) docket. The **Preliminary Plan Checklist** must be submitted before MSD will review the plans.

11.3.2 Construction Plan Approval

Plans for which building or construction permits are being sought must be reviewed and approved by MSD prior to obtaining these permits. Either the **MSD Subdivision Review Checklist** or the **Site Plan Review Checklist** must be submitted.

11.4 MINIMUM CONSTRUCTION PLAN SUBMITTAL STANDARDS

11.4.1 Major Subdivision Plans

All correspondence and plan submittals should reference the Subdivision or Water Management Number as assigned by MSD's Stormwater Department.

Major Subdivision Plans for the development of more than four (4) lots require dedication of roadways for access.

All plans will be submitted on 24 x 36 inch sheets.

Submit "Extension of Stormwater Boundary Agreement" if applicable.

11.4.1.1 Cover Sheet

- a. Location Map with the site outlined.
- b. Title Block: Title of Subdivision, name and address of developer, name and address of Engineer, date of preparation, revision dates.
- c. Index of Sheets
- d. Engineer's and Land Surveyor's Seals and Signatures
- e. Subdivision or Water Management Number:
As assigned by MSD's Stormwater Department
- f. Utility and EPSC Notes

11.4.1.2 Composite Drainage Plan

- a. Topography: Minimum Scale 1" = 100' with existing contours at 2-foot intervals, NGVD 1929 datum. Contours to extend a minimum of 50 feet beyond property lines.
- b. Proposed Development: Street rights-of-way, street names, street centerline stationing, lot lines, lot numbers, property boundary, existing drainage structures, proposed drainage structures (labeled by number or other designation) and easements with widths shown.
- c. Hydrologic Data: Designate drainage areas (in acres) to individual inlets, and off-site drainage areas (acres), which generate through drainage.

- d. Pipe Chart: Pipe number, drainage area, coefficient of runoff (c), time of concentration, intensity, discharge (Q), size, length, slope, capacity, velocity, and headwater depth for both the 10-year and 100-year Qs.
- f. 100-year FEMA and Local Regulatory floodplain and conveyance zone, if applicable, with flood elevations noted.
- g. Identification of Outlet System.

11.4.1.3 Grading and Erosion Prevention and Sediment Control Plan

- a. Existing and Proposed Contours
- b. Erosion Prevention and Sediment Measures (Reference Chapter 12).
- c. Proposed Development: Street rights-of-way, street names, street centerline stationing, lot lines, lot numbers, property boundary, existing drainage structures, proposed drainage structures (labeled by number or other designation) and easements.
- d. Grading Plan may be combined with Composite Drainage Plan provided the plan remains legible.
- e. Areas of slope greater than or equal to 20% shall be identified.
- f. Stream Buffers if applicable.

11.4.1.4 Plan and Profile (Road) Sheets

Plan View

- a. Catch Basins: Line and station number (structure number), grate type and elevation, invert elevation(s).
- b. Pipes: Length, size, type, slope, pipe number or designation.

- c. Headwalls: Type, invert elevation.
- d. Ditches and Swales: Number or designation, type, stations
- e. Easements: Type, size, existing with deed book and page numbers, proposed.
- f. Utilities: Existing and proposed (including sanitary sewers).
- g. Other drainage structures to be labeled accordingly.

Profile View

- a. Storm lines and structures to be shown on road profiles.
- b. Utility and sanitary sewer crossings.

11.4.1.5 Storm Drainage Profiles (pipes, ditches, box culverts)

- a. Catch Basins: Station or number, type, grate type and elevation, invert elevation(s).
- b. Pipes: Length, size, type, class, grade, line number if applicable, HGL (10 and 100 year).
- c. Ditches:
 - Type
 - Grade
 - Flow line elevation at grade changes (P.V.I)
 - Design Depth
 - Mannings “n”
 - Slope
 - 10 and 100 year discharge depths
- d. Headwalls: Type and invert elevation.
- e. Existing and proposed ground surfaces.

11.4.1.6 Standard Detail Sheet

MSD’s prior Typical Drainage Detail sheet is no longer used.

Reference sections 4.4.1 and 4.4.6 for the incorporation of MSD Standard Drawings and Special Details unique to the project. If pre-cast structures are used from sources not on the current MSD Pre-approved source list, then shop drawings of the structures must be approved by MSD prior to construction.

11.4.1.7 Additional Submittal Items

a. **Specifications**

All storm drainage construction is expected to conform to MSD Standard Specifications. Any deviations from MSD specifications must be noted on the plans and be approved by MSD.

b. **Quantities** - Detailed breakdown of all items, related to storm drainage construction needed by MSD to determine the amount of the subdivision bond.

c. **Approved Preliminary Plan** - (including sanitary sewer layout).

d. **Clearing and Grading Plan** - (required if site clearing and grading is to precede approval).

e. **Detention Basin Calculations** - (if applicable and in accordance with the provisions of Chapters 10 and 12).

f. **Highway Encroachment Permit** - (if applicable).
All construction plans for major subdivisions shall conform to Article 6 of the Louisville and Jefferson County Planning Commission Subdivision Regulations.

g. **Section 404 Permit** - (if applicable) from the U.S. Army Corps of Engineers.

h. **Application for Water Quality Certification** - (if applicable) from the Commonwealth of Kentucky, Natural Resources & Environmental Protection Cabinet, Department for Environmental Protection, Division of Water - Water Quality Branch.

i. **Application for Permit to Construct Across or Along a Stream** - (if applicable) from the Commonwealth of Kentucky,

Natural Resources & Environmental Protection Cabinet,
Department for Environmental Protection, Division of Water -
Floodplain Management Section - Water Resources Branch.

11.4.1.8 Submittal

Two sets of construction plans and specifications are to be submitted for initial review by MSD. Variations from the Minimum Construction Plan Submittal Standards will require prior approval from MSD. Any conditions of the Approved Preliminary Plan (such as geotechnical report, state approvals, etc.) must be addressed at the time of construction plan submittal to MSD.

11.4.2 All Other Development Plans (Site, etc.)

Submit "Extension of Stormwater Boundary Agreement" if applicable.

11.4.2.1 Existing Topography Plan

This plan shall conform to Development Code Section 8.1.B.4 requirements with the following additional data:

- a. Spot elevations at critical points.
- b. 100-year FEMA and Local Regulatory floodplain and conveyance zone, if applicable, with flood elevations noted.
- c. Off-site drainage area in acres, which generate through drainage.

11.4.2.2 Proposed Development and Grading Plan

This plan may be combined with the plan described in paragraph 11.4.2.1 if existing features can still be discerned. This plan shall also conform to the requirements of Section 8.1.B.4 of the Development Code with the following additional data:

- a. Revised hydrologic data, runoff calculations, and detention basin design, if applicable.
- b. Hydraulic data, such as pipe charts and ditch data on profiles, showing quantity of flow, velocities, and degree of protection.
- c. Erosion prevention and sediment control measures and details.

- d. Show public outlet and evaluate capacity of downstream facilities.
- e. Proposed easements for through drainage, detention facilities, and/or offsite increase in runoff.
- f. Note specific conflicts with other utilities.
- g. Written explanation of any proposed deviation from Planning Commission or MSD policies, standards, or design criteria and any supplemental data that would aid the understanding of the proposed plan work.
- h. The stamp of a professional engineer licensed in Kentucky shall be affixed to the plan when the proposed facilities affect public drainage or downstream properties.

11.5 INSPECTION OF MAJOR SUBDIVISION CONSTRUCTION

11.5.1 General

MSD has a program of on-site inspection for the construction of drainage systems in all subdivisions within MSD's designated service area. This includes subdivisions with multiple tracts with drainage facilities in public rights-of-way or public easements. Drainage construction may begin following MSD approval of the construction plans for the subdivision and issuance of a work order by the City of Louisville or Jefferson County.

11.5.2 Inspector Assignment

Construction of drainage structures and pipes shall not begin in a development until a MSD inspector has been assigned to the construction site. In certain situations, which will be identified during construction plan review, full-time inspection may be required. In the event that MSD personnel are not available to provide the level of inspection necessitated by a contractor's schedule, the owner may retain (at the owner's expense) an independent inspector working under the direct supervision of a professional engineer approved by MSD. The independent inspector will be required to certify to MSD that the materials and methods of construction are in compliance with the approved plans and specifications. Arrangements for owner-provided inspection including schedule and level of effort must be approved by MSD in advance. MSD inspector shall be present during testing.

MSD requires three (3) working days advance notice to schedule an inspector for a project. To schedule an inspector, please fax the “Notice of Construction Form” to the appropriate Area Team Coordinator.

11.5.3 Construction Plan Revisions

MSD will require the final approved construction plans bearing the Engineer's original seal, signature, and date prior to beginning storm drainage construction. Deviations from approved construction plans as a result of unexpected field conditions will require documentation and approval by MSD. To obtain this approval, the developer's engineer should submit a marked print of the plans showing the proposed revisions to MSD for review.

11.5.4 Subdivision Bond

In accordance with the Metropolitan Subdivision Regulations, MSD sets the drainage portion of the subdivision bond at 100% of the estimated construction cost consistent with past practice. When projects constructed under MSD drainage inspection are completed, they may have the drainage bond reduced to 20% of the estimated construction cost. When a subdivision is finished and at least 80% of the lots have been developed, the subdivision bond may be released following satisfactory inspections by the Board of Health, the local Fire Department, MSD and the Public Works Department.

11.5.5 Construction Initiation

Recognizing the developer's need to initiate construction in a timely fashion, MSD will allow certain construction activities to proceed prior to the approval of the entire set of construction plans. General clearing and site grading, not involving construction of drainage structures, roadway grading, nor significantly affecting existing drainage in the area, may be performed following approval of a Grading and EPSC Plan by MSD, Jefferson County Department of Public Works and the Planning Commission and the issuance of the necessary work order. A Grading Plan, prepared by a licensed engineer, must be submitted if site clearing and grading is to proceed prior to construction plan approval. The three working days notice of construction form must also be submitted before clearing and grading can begin. Erosion prevention and sediment control measures in accordance with Chapter 12 of this design manual must be clearly described on the plan and MUST be installed prior to initiating ANY construction at the project site. Application for approval of a Clearing and Grading Plan may be made at the time of construction plan submittal to MSD. A notice of violation and stop-work order may be issued for failure to implement proper EPSC measures.

11.6 FEES

11.6.1 Plan Review Fees

Only applicable to development outside MSD stormwater service area including the Cities of Anchorage, Jeffersontown, Prospect, Shively, and St. Matthews. These fees must be paid prior to MSD's approval of the plans. Additionally, fees may be required for sites with extensive review of hydrologic and hydraulic modeling.

11.6.2 Stormwater Fees

11.6.2.1 Regional Facility Fee

This is a stormwater impact fee, paid by the developer on sites where MSD has determined on-site detention will not be required. This fee allows the developer to pay a proportionate share of MSD's cost of constructing Regional Stormwater Detention Facilities. For development outside MSD's drainage service area, a twenty percent (20%) surcharge will be added to the regional facility fee.

11.6.3 Compensation Fees

Applicable to sites in floodprone watersheds where runoff volume compensation is required.

