



CITY OF COLUMBIA, MISSOURI

COMMUNITY DEVELOPMENT

DEPARTMENT OF PLANNING AND DEVELOPMENT

(573) 874-7239

BUILDING AND SITE DEVELOPMENT

(573) 874-7474

OFFICE OF NEIGHBORHOOD SERVICES

(573) 817-5050

SITE PLAN CHECKLIST

Site Plan Name _____

Address _____

Site Legal Description _____

Project # _____ - _____ Date Reviewed _____ Review Engineer _____

Y | N | N/A

Prior to Review

- _____ Land Disturbance Permit application & \$200 fee (if applicable).
- _____ Proof of MDNR land disturbance permit (if applicable), with MDNR Permit number on cover sheet.
- _____ Transmittal letter/application (future link)
- _____ Three (3) sets of plans drawn on 22" x 34" or 24" x 36" sheets
- _____ All Plans signed and sealed by a Professional Engineer licensed in the state of Missouri

Routing (Internal)

- _____ One copy to City Arborist.
- _____ One copy to Inspector. First submittal only. (Provide 2 copies of final approved plans)
- _____ One copy to Traffic Engineer (if applicable)
- _____ Send proposed easements with exhibits to City Surveyor for checking.

Preliminary Items

- _____ Review Development Agreement, verify that items mentioned in Development Agreement are included in plans (if applicable)
- _____ Review preliminary plat and final plat.
- _____ Review conceptual stormwater management plan (if applicable)
- _____ If a planned development, review Council ordinances for any stipulations attached to the project

Plan Requirements

Cover Sheet

- _____ Developer/Owner's name, mailing address and telephone number
- _____ Survey Benchmark tied to City datum
- _____ Legal description of lot/property
- _____ Note that adjoining property owners must be notified in writing 30 days prior to construction

- _____ Vicinity Map not less than 1" = 1 mile. Must have sufficient landmarks to locate the site
- _____ Table showing impervious area of the site (pre and post development)
- _____ Index of sheets
- _____ One Call phone number
- _____ Project Title
- _____ Utility company contacts and phone numbers
- _____ Zoning of property
- _____ If property is not located within the 100 year floodplain, the following note should be provided:

This tract is not located within the 100 year flood plain as per the Boone County FIRM Map # ____, dated _____.

- _____ If the property does not contain a stream buffer provide the following statement:

This tract is not regulated by the City of Columbia Stream Buffer ordinance as determined by the USGS map for Columbia Quadrangle, Boone County, Missouri and Article X of Chapter 12A of the City of Columbia Code of Ordinances.

- _____ General note provided which reads as follows:

In order to terminate a state operating permit the Missouri Department of Natural Resources (MDNR) requires that the permittee submit a completed Form H (included with the approved permit) to the MDNR. A permit is eligible for termination when either perennial vegetation, pavement, buildings, or structures using permanent materials cover all areas that have been disturbed. Vegetative cover shall be at least 70% of fully established plant density over 100% of the disturbed area. A copy of Form H should be submitted to the City at which time the City will remove the project from its inspection schedule.

- _____ General note provided which reads as follows:

Land disturbance sites should be inspected on a regular schedule and within a reasonable time period (not to exceed 48 hours) following heavy rains. Regularly scheduled inspections shall be at a minimum of once per week. Any deficiencies shall be noted in a weekly report of the inspection and corrected with seven calendar days of the report. Contractors are required to submit to City inspection staff copies of their inspection reports required by the Stormwater Pollution Prevention Plan (SWPPP) on a monthly basis.

Title block

- _____ Project Name, Address (or site location if no address has yet been assigned), Date (and any subsequent revision dates), Plan type (i.e. Land Disturbance, Site Plan)

General

- _____ Sheet number
- _____ North arrow (up or to the right) and scale on each sheet of plans
- _____ All profile stationing reads left to right
- _____ Dimensions of lot including bearings and angles
- _____ Site to be on a legal lot, and access a public street, per ordinance 25-17.
- _____ All existing and proposed easements on or adjacent to development shown. Width and legal reference for all existing easements provided (book and page)
- _____ All existing utilities and drainage pipes shown
- _____ Utilities to be relocated shown with new location
- _____ No items of work "by others" on plans with the exception of retaining walls (future link)
- _____ Retaining walls with a height of 4 feet or greater (measured from bottom-of-footing to top-of-wall), or that support a surcharge, require a submittal of detailed plans and calculations, sealed by a Missouri Professional Engineer, demonstrating compliance with IBC 1807.2. (This can be a deferred submittal.) Retaining walls under 4' in height do not require this submittal but must still be designed to comply with IBC 1807.2.
- _____ Pedestrian guard rail needed for 30" drop or more. If no detail is shown, then all the requirements of I.B.C. 1013 must be listed (i.e., not just the 4" sphere) in the note. These include but are not limited to location required, strength/attachment requirements (see 1607.8), height, opening limitations.
- _____ Legend of line types and symbols
- _____ Show limits of 100-year floodplain (if applicable)

_____ Show limits of Stream Buffer (if applicable). See Stream Buffer Plan section.

_____ Low finished floor elevation provided for each proposed structure

_____ Building to be dimensioned from the property line

Right of way

_____ Plans show existing and proposed street names, & right-of-way lines and widths (“variable” width right-of-way is unacceptable)

_____ Building setback line

_____ Prior consent required for retaining wall to be in City of Columbia right of way

----- **Site and Dimension Plans** -----

_____ Scale: 1”=50’ or larger

_____ All paved areas dimensioned

_____ All curb types/ locations indicated

_____ Curb return radii dimensioned

_____ Intra-site location map or match lines for large sites

_____ Pavement Marking Plan (Temporary and Permanent)

_____ Drive entrances to public streets

_____ Width labeled

_____ Concrete driveway in conformance with City standards

_____ No curb radii shown

_____ Sufficient spot elevation callouts to determine that the drive entrance meets ADA/ City specifications

_____ Standard Details

_____ Adequate notes provided indicating each City standard detail number needed on the project and a general note indicating that the contractor is required to have a copy of the City’s latest edition of the Street and Storm Sewer Specifications and Standards on site at all times during construction.

-OR-

_____ All applicable City standard details provided in the approved set of site plans. Details must include the City’s title block indicating the revision date and detail number.

----- **Grading Plan** -----

_____ Scale (1”=50’ or larger) and north arrow

_____ Grading Limits

_____ Ground Slopes - Maximum ground slope is 3H:1V, unless a long-term slope stability analysis is submitted, performed by a qualified geotechnical engineer, indicating that it is stable. (FS > 1.3). Fill slopes set back at least 12 in. from any property line

_____ Spot elevations, high points, and low points as needed

_____ Ensure adverse impact will not occur on adjacent sites, and no grading on adjacent properties without written permission

_____ Please demonstrate compliance with Ordinance 12A-71, regulating soil stockpiles. At a minimum list the ordinance requirements and their applicability to this site. A designated location for the stockpile would be preferred.

----- **Stormwater Management Plan, Drainage Map, and Calculations (Ord. 12A-85 – 12A-95)** -----

- _____ Existing/Proposed Contours shown at no more than 2' interval. Sufficient spacing must be provided to show topography of site.
- _____ Scale 1"=100' or larger for onsite areas (smaller scale allowed for large offsite drainages)
- _____ Drainage area maps, including all onsite areas and all offsite areas that drain to the site.
- _____ Storm Sewer system extended appropriately
 - _____ Public vs. Private storm sewer system clearly labeled
 - _____ Public storm sewer system minimizes length under pavement. Pipes should be perpendicular or parallel to street alignment unless otherwise unavoidable.
- _____ Existing/Proposed storm sewers shown
- _____ Storm sewer structures
 - _____ Structure numbers labeled
 - _____ Stationing shown
 - _____ Inverts/top elevations indicated
 - _____ Adequate side clearance for pipes provided
 - _____ Minimum length and width provided
 - _____ Minimum structure depth provided
- _____ Direction of flow on roofs and downspouts shown on plan
- _____ Drainage Calculations
 - _____ 10% design storm required
 - _____ 1% Storm overflow system provided – per Section 4.7 of the Stormwater Management and Quality Manual.
 - _____ Can't cause backwater onto adjacent property for 1% and lesser storm event.
 - _____ Must discharge to appropriate downstream drainage system – can't shift, concentrate or increase flow unless adequate stm. sewer facilities are available
 - _____ Information provided must be equivalent to Figures 7.3.1 – 7.3.3 of the "Stormwater Management and Water Quality Manual"
 - _____ "K" and "C" values match table 2.2.1.1 and 2.2.1.2 of the "Stormwater Management and Water Quality Manual"
 - _____ Time of Concentration (T_c) based on 100' max overland flow length (Calculations required for $T_c > 5$ min)
 - _____ Manning's "n" (RCP=.013, HDPE = 0.011, CMP=0.024 typ.)
 - _____ Hydrographs required for all submittals that require detention, for all drainage areas for the 1, 2, 10 and 100 year design storms.
- _____ Storm Sewer Profiles
 - _____ Profile required for storms sewers with two or more pipe runs
 - _____ Existing/proposed ground line indicated
 - _____ Stationing / Elevation (inverts and top) / Structure numbers
 - _____ Pipe length, diameter, slope and type
 - _____ Pipe orientation for structures with two or more pipes. Max 90° angle change.
 - _____ Structure size and type. No discharging a larger pipe into a smaller one.
 - _____ Top of pipe doesn't encroach into inlet throat
 - _____ Adequate vertical drop through the manhole (0.2')
 - _____ Minimum cover of 12 inches on top of the pipe
 - _____ Maximum pipe run of 500 feet between access points

- _____ Minimum pipe slope of 0.4% / Velocity in system between 2 and 15 fps. No appreciable decrease in velocity at inlets, bends, etc.
- _____ Pipe System design storm Hydraulic Grade Line (HGL) at each inlet shown. HGL to be 0.5' below any openings to the ground or street at all locations. (Even if designed for open channel flow, need to demonstrate energy losses haven't pushed it into pressure flow.)
- _____ No bends in pipes smaller than 33 inches.
- _____ Pipe crown elev's entering a structure above/at crown of existing pipe.
- _____ Box Culverts
 - _____ Built to MoDOT specifications
 - _____ Calculations with headwater and tailwater depths
- _____ Pipes
 - _____ Appropriate embedment (per std details 540.01 or 540.02 for Public system)
 - _____ Cover not less than manufacturer recommendation or 1', whichever is greater
 - _____ Minimum pipe size in public system = 12", 15" under pavement
 - _____ Toe walls
 - _____ Flared end sections
- _____ Outlets
 - _____ Grade for positive drainage shown
 - _____ Flowline indicated for end of pipe and end section
 - _____ Adequate outlet protection provided (per std detail 530.03 for Public system)
- _____ Engineered Channels
 - _____ 16' wide easement
 - _____ 1% storm completely contained, w/ freeboard of 1' below FFE of structures
 - _____ Velocity: max 6 fps (flow depth > 6"); 15 fps or limit of lining (depth < 6")
 - _____ Lining material – permissible shear stress within limits of Table 5.2.7.1
 - _____ Lining height : design storm profile +0.5'.
 - _____ Side slopes 2.5:1 max, for turf 3:1 max
- _____ Storm drainage easements to be at least 16 feet wide and centered on pipe
- _____ Tributary areas in non -R-1, R-2 or planned district equivalents must not allow 3,000 square feet of impervious area to drain across sidewalks (or 9,000 square feet of sodded area)
- _____ For redevelopment sites over an acre that have post-dev. flows greater than pre-development flows, need a note stating that analysis was performed and it indicates that the increase in impervious area resulting from this project will not have any adverse effects on adjoining or neighboring property.
- _____ A Stormwater Pollution Prevention Plan (SWPPP) is required if disturbed area > 1 acre

Detention/Retention* -- Ch 6.4 through 6.7 of Stormwater Manual – *see separate detention checklist*

*The default detention requirement is Flood Prevention Detention, which is assumed. If Channel Protection detention is selected, need to show applicability and meet requirements of Ch. 6.1

- _____ Detention Calculations with hydrographs. The maximum release rate from any development and redevelopment shall be controlled by limiting the post-development storm water release rates to the predevelopment rates for the 1, 2, 10 and 100 year storms.

Water Quality - Ch 6.8 of Stormwater Manual

- _____ Pre and Post development CN or change in impervious area Calculations
- _____ Level of Service Calculations. Permanent BMP's adequate to meet required LOS. (See Permanent BMP section for individual checklists)
- _____ Cross section provided for any BMP's utilized
- _____ WQ_v calculated using Sec 2.3 of the "Stormwater Management and Water Quality Manual"

Permanent Access And Buffers For Detention And/or Water Quality Facility - Ch. 6.2

- _____ The water surface of the design storage pool minimum 20' from structures, or greater if bldg. foundations or if slope stability is a consideration.
- _____ Min. 2' separation between the maximum ponding elevation and the lowest floor of applicable surrounding structures.
- _____ Min. 15' wide access strip for maintenance, with access from a street or parking area. Access needed for structures, inlet pipes, outlet pipes, spillways, etc.
- _____ Right-of-use agreement needed where a public street crosses top of a permanent dam.
- _____ Stormwater Management/BMP Covenant, with inspection schedule and inspection checklist. Please send original, executed and notarized document. Ensure the covenant date and notary date match exactly. If different than std. document submit to the Law Department for review.

----- Erosion and Sediment Control Plan (ordinance 12A-66 – 12A-71)-----

- _____ Project Narrative (Ord 12A-68) – Req'd for all projects needing Land Disturbance Permit.
 - _____ Project description, explanation of existing significant problems.
 - _____ Factors affecting runoff - existing & post-development
 - _____ Total disturbed area (in acres or sq. feet)
 - _____ Limits of Disturbance shown
 - _____ Calc of peak runoff from 10-year freq., 24-hr. duration storm
 - _____ Explanation of selection of BMPs.
 - _____ Minimum of 2 rows of silt fence at the toe of all slopes that are next to a stream
- _____ Initial BMP Installation Plan – temporary erosion control measures (Ord. 12A-70)
 - _____ Perimeter control BMPs
 - _____ Ditch checks – straw bales not effective.
 - _____ Protection of inlets
 - _____ Protection of adjacent properties
 - _____ Stabilized Construction entrance
 - _____ Stabilized parking/delivery/staging area
 - _____ Diversion of offsite water around disturbance when feasible
 - _____ Sediment basins (when required)
 - _____ Concrete wash out area
 - _____ Other BMP's
- _____ Staged BMP Plan - Please provide a separate or staged plan or notes that clearly indicate required BMPs for each stage of construction, e.g. grading, paving, building construction, final stabilization.

- _____ Silt Basins – required for common, disturbed drainage areas over 10 acres.
 - _____ Design information shown in accordance with Standard Details
 - _____ Permanent Emergency Spillway provided with adequate protection
 - _____ All inflow pipe flowlines above cleanout level
 - _____ Riser pipe size/perforations indicated (when applicable)
 - _____ Anti-floatation device size indicated (when applicable)
 - _____ Baffles provided when necessary (when applicable)
 - _____ Plan shown for ultimate removal of basin
 - _____ Notes regarding basin removal
 - _____ Notes regarding basin clean out

----- **Stream Buffer Plans (Ord 12A-231 – 12A-242)** -----

- _____ Site plan at a minimum scale of one (1) inch equals two hundred (200) feet.
- _____ Field delineated and surveyed streams, springs, seeps, bodies of water, sink holes, and wetlands (include a minimum of two hundred (200) feet into adjacent properties).
- _____ Limits of delineated stream buffers. Streamside zone and outer zone must be shown.
- _____ Limits of the ultimate 100-year floodplain as shown on the adopted floodplain maps for the City.
- _____ Steep slopes greater than fifteen (15) percent for areas adjacent to and within two hundred (200) feet of streams, wetlands, or other waterbodies.

----- **New Public Street or Sidewalk Plans** -----

- _____ Plans meet the requirements of the City’s Major Roadway Checklist.
- _____ For projects w/ a new building or building expansion: Sidewalks required along ALL streets – otherwise must go through Council via Planning’s variance process. (Ord 24-35 and 25-48 to 51)
- _____ Sidewalk and sidewalk ramp type per city standards, with elevations to ensure ADA compliance at ramps, across drive approaches, etc.
- _____ Temporary Traffic Control Plan, that meets MUTCD requirements. (This can be a deferred submittal, however no right-of-way permit will be issued until this plan is accepted.)
- _____ Pedestrian Traffic Control Plan, that meets MUTCD requirements.
- _____ General note provided which reads as follows:
 - Contractor is responsible for notifying the following agencies, as required, immediately prior to closure of street, during construction for inspections and again when work is complete and street is reopened:*
 - Site Development (ROW Inspections) 874-7474*
 - Building Safety (Plumbing/Building Inspections) 874-7474*
 - Joint Communications (Emergency Services) 874-8471*
 - Columbia Transit (City Buses) 874-7282*
 - Parking Enforcement (Parking Meters) 874-7674*
 - Public Works Street Division (Street Patching) 874-6289*
- _____ Grading in the public street ROW - Finished grade of ¼ to ¾ inch per foot towards the public street.
- _____ Pavement patches per city standards. Make cuts parallel or perpendicular to traffic flow and avoid patch edges in wheelpaths.

Note--If any work in the ROW, contractor must obtain a Right of Way permit. If any lane closures or restrictions, contractor must also submit “Application for Short-Term Restrictions & Closures for Construction Projects & Repairs”, prior to any lane closure/restriction. Available at 3rd Floor Service Counter, or by calling 874-7474. (Not submitted w/ plans, contractor must obtain)

----- **Permanent BMP Plans** -----

Rain Gardens

- _____ Maximum contributing area of 1 acre
- _____ Maximum ponding in depressional area of 3 days
- _____ Placement of rain gardens is to be 10 feet away from building foundations
- _____ No perforated outlet pipes
- _____ Soils test to be provided (percolation test)

Bioretention

- _____ Pretreatment
- _____ Ponding Area
- _____ Organic Mulch Layer
- _____ Planting Soil Bed - < 10% clay. With sufficient permeability.
- _____ Sand Bed
- _____ Plants
- _____ Water Level Control Structure
- _____ Side Slopes to be 4:1 or flatter
- _____ WQ_v to be filtered through the planting soil in 1-3 days
- _____ Tributary area less than 4 acres
- _____ 1 cleanout per run and every 50 feet or less
- _____ Overflow that safely passes up to and including the 100 year storm event
- _____ Planting depth at least 2.5 feet deep
- _____ Ponding area at least 6 inches deep
- _____ K value to be between 1 and 2

Pervious Pavement Systems

- _____ Water Quality storm infiltrates into soil
- _____ Contributing area to pervious pavement to be less than a 3:1 ratio
- _____ 12 hour drain time used

Extended Wet Detention

- _____ Sediment forebay holding at least 10% of WQ_v and 4-6 feet deep, formed by acceptable barrier
- _____ Permanent pool depths between 4-12 feet
- _____ WQ_v above the permanent pool
- _____ WQ_v to discharge over a period of 40 hours
- _____ Flow path to have a minimum length of three times the facility width, as measured across the center of the facility in the smallest dimension at the permanent pool elevation
- _____ Erosion protection provided at facility's outfall

Extended Dry Detention Basin

- _____ Placed outside of stream corridors and stream buffer zones
- _____ WQ_v to discharge between 12 - 40 hours
- _____ Sediment forebay that captures 10% of the WQ_v and is 4-6 feet deep
- _____ Basin depth between 2-5 feet for the WQ_v
- _____ Side slopes at least 4:1 for WQ_v
- _____ 1 foot of freeboard when detaining the WQ_v
- _____ Erosion protection to be provided at facility's outfall

Turf Swale

- _____ Side slopes to be no steeper than 3:1
- _____ Longitudinal slope at least 1%
- _____ Velocity for 2 year storm must not exceed 4 fps or erosive velocity for turf
- _____ Drainage area of 5 acres or less
- _____ Surface storage of WQ_v maximum depth of 18 inches

----- **Other Permits (if applicable)** -----

- _____ Provide MoDOT right-of-way permit (when applicable) or proof one is not needed
- _____ Floodplain Development permit needed if regulated floodplain encroaches the site (even if outside limits of disturbance).
- _____ City of Columbia Right-of-use permit (signs, retaining walls in ROW, etc)