CITY OF COLUMBIA, MISSOURI SITE PLAN CHECKLIST

Site Plan Name _____

Date Submitted _____ Review Engineer _____

Y	N	N/A	Prior to Review
_____			$200 land disturbance review fee and application (if applicable)
_____			$300 MDNR land disturbance fee and application packet (if applicable)

Submittal includes:

_____			Transmittal letter/application (future link)
_____			Four (4) sets of plans drawn on 22” x 34” or 24” x 36” sheets
_____			Plans signed and sealed by a Professional Engineer licensed in the State of Missouri

Routing (Internal)

_____			Send one copy to City Arborist.
_____			Send one copy to Inspector of appropriate area (first submittal only)
_____			Send one copy to Traffic Engineer (if applicable)
_____			Send proposed easements with exhibits to City Surveyor
_____			Send one copy to Solid Waste (if applicable)

Preliminary Items

_____			Review Development Agreement, verify that items mentioned in Development Agreement are included in plans (if applicable)
_____			Review preliminary plat
_____			Review 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

_____ 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 (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 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)

_____ Legend of line types and symbols

_____ Building to be dimensioned from the property line

_____ Show limits of 100-year floodplain (if applicable)

_____ Show limits of Stream Buffer (if applicable)
_____ Delineate with orange construction fence

_____ Sidewalk and sidewalk ramp type, with elevations to ensure ADA compliance

_____ Location of borings (if applicable)

_____ Low finished floor elevation provided for each proposed structure

_____ Stormwater Access Easement (future link)

_____ Stormwater Management/BMP Covenant, inspection schedule and inspection checklist (if different than standard document submit to the Law Department for review) (future link)

_____ Traffic Control Plan (if necessary)

_____ Plans meet the requirements of the City's Major Roadway Checklist (if applicable) (future link)

Right of way

_____ Plans show existing and proposed right-of-way lines

_____ Existing right-of-way widths ("variable" width right-of-way is unacceptable)

_____ Building setback line

_____ Dimension right-of-way on cul-de-sacs

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

_____ 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)	*874-7250*
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*

Drainage Plan, Map and Calculations

_____ 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)

_____ All onsite/offsite drainage areas shown

_____ Storm Sewer system extended appropriately

- _____ Extended to undeveloped upstream property lines for future service
- _____ Public vs. Private storm sewer system clearly labeled
- _____ Public storm sewer system minimizes length under pavement

_____ 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
- _____ 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 storm 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" values match table 2.2.1.1 of the "Stormwater Management and Water Quality Manual"
- _____ "C" values match table 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)
_____ Hydrographs of 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
_____ Structure size and type
_____ 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%
_____ Pipe System design storm Hydraulic Grade Line (HGL) at each inlet shown

_____ Box Culverts

_____ Built to MoDOT specifications
_____ Calculations with headwater and tailwater depths

_____ Pipes

_____ Appropriate bedding per standard detail
_____ 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
_____ Last pipe section to follow detail 4.6.4.1 of the "Stormwater Management and Water Quality Manual"

_____ Adequate outlet protection provided per of detail 4.6.4.1 of the "Stormwater Management and Water Quality Manual"

_____ Storm drainage easements to be at least 16 feet wide and centered on pipe

Grading Plan

_____ Scale (1"=50' or larger) and north arrow

_____ Grading Limits

_____ Ground Slopes

_____ Maximum slope 33%

_____ Fill slopes must be set back at least 12 inches from any property line

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

_____ Grading in the public street right of way

_____ Finished grade of ¼ to ¾ inch per foot towards the public street

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

_____ Request temporary construction easements (TCE) along roadways indicated on the CATSO Roadway Plan or, if a preliminary alignment/profile is available, verify that the proposed grading matches the future roadway design and request any necessary permanent drainage easements (PDE)

_____ Compliance with stockpile ordinance 12A-71

Erosion and Sediment Control

_____ General Information

_____ Project narrative

_____ Total disturbed area (in acres)

_____ Limits of Disturbance shown

_____ Minimum of 2 rows of silt fence at the toe of all slopes that are next to a stream

_____ Initial BMP Installation Plan

- _____ Perimeter controls
- _____ 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

- _____ BMP plan for all phases/stages of construction
- _____ BMP staging chart or equivalent
- _____ Perimeter BMP's
- _____ Interior site BMP's
- _____ Protection of inlets
- _____ Protection of adjacent properties
- _____ BMP's to remain in place during building construction phase
- _____ Final Stabilization
- _____ Other BMP's as required

_____ Silt Basins

- _____ 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

Site and Dimension Plans

_____ Scale: 1"=50' or larger

_____ All paved areas dimensioned

_____ All curb types/ locations indicated

_____ Curb return radii dimensioned

_____ Public Sidewalks

_____ Pavement Marking Plan (Temporary and Permanent)

_____ Drive entrances to public streets

- _____ Width labeled
- _____ Concrete driveway in conformance with City standards
- _____ No curb radii shown
- _____ ADA slope requirements met with elevation callouts
- _____ Sufficient spot elevations to determine that the drive entrance meets City specifications

_____ Sidewalk location shown with adequate elevation information provided to construct the sidewalk

_____ 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.

Stormwater Management

_____ Pre and Post development CN or change in impervious area Calculations

_____ Level of Service Calculations

_____ WQ_v calculated using Sec 2.3 of the "Stormwater Management and Water Quality Manual"

_____ Tributary areas in 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)

_____ Cross section provided for any of the following BMP's utilized

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

Infiltration Basin

_____ Contributing area to be 2 acres or less
_____ Basin to be located 10 feet down gradient and100 feet up gradient from building foundations
_____ Length to width ratio of 3:1 or greater
_____ Ponding time not greater than 72 hours
_____ Temporarily stores and infiltrates the WQ_v

Infiltration Trenches

_____ Trench depth between 3-8 feet
_____ Contributing area of 5 acres or less
_____ Detention time of 6-72 hours
_____ Bottom and sides of trench lined with geotextile fabric
_____ Observation well located at the center of the trench
_____ Pretreatment I.E. grit chamber, swale with check dams, filter strips, or sediment forebay
_____ Bypass flow path

Bioretention

_____ System includes the following:
    _____ Pretreatment
    _____ Ponding Area

_____ Organic Mulch Layer
_____ Planting Soil Bed
_____ Sand Bed
_____ Plants
_____ Water Level Control Structure

_____ WQ_v to be filtered through the planting soil in 1-3 days
_____ Tributary area less than 4 acres
_____ Side slopes of facility 4:1 or flatter
_____ 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
_____ Pretreatment area

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 Detention Wetland

_____ Releases WQ_v over a 40 hour period
_____ Maximum depth of 18 inches
_____ Permanent Pool to have sediment forebay and main pool
_____ Side slopes to be 4:1 or flatter
_____ Sediment forebay shall be 10% of the WQ_v and be 4-6 feet deep
_____ Flows greater than water quality and up to 100 year storm, pass through or around facility
_____ No outlet orifices less than 4 inches in diameter

Sand Filters

_____ Contributing area of 5 acres or less
_____ Porosity of sand and gravel to be 0.4
_____ Flows greater than water quality and up to 100 year storm, pass through or around facility

Wetland Swales

_____ Side slopes to be no steeper than 3:1
_____ Longitudinal slope less than 2% unless check dams are used
_____ Drainage area less than 5 acres
_____ Surface storage of WQ_v with a maximum depth of 18 inches
_____ Velocity less than 4 fps for 2 year storm
_____ Bypass provided for high flows (10 year storm or greater)
_____ WQ_v to be released over 24 hours

Bioswales

_____ Side slopes to be no steeper than 3:1
_____ Longitudinal slopes less than 4% without check dams
_____ WQ_v stored with less than 12 inches of ponding
_____ Maximum ponding time of 40 hours
_____ Velocity less than 5 fps for 2 year storm
_____ Bed of swale to contain a permeable soil layer of at least 30 inches
_____ Bypass provided for high flows (10 year storm or greater)

Extended Wet Detention

_____ Sediment forebay holding at least 10% of WQ_v and 4-6 feet deep
_____ Sediment forebay formed by an 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

Native Vegetation Swale

_____ Side slopes to be no steeper than 3:1
_____ Longitudinal slopes 1% to 2.5% without check dams
_____ Drainage area to be 5 acres or less
_____ WQ_f with a maximum depth of 4 inches and maximum velocity of 1 fps

_____ At least 1 foot freeboard above 100 year storm water surface profile
_____ Outlet protection

Extended Dry Detention Basin

_____ Placed outside of stream corridors and stream buffer zones
_____ WQ_v to discharge over 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 erosive velocity for turf
_____ Drainage area of 5 acres of less
_____ Surface storage of WQ_v maximum depth of 18 inches
_____ Velocity less than 4 fps for 2 year storm

Permits (if applicable)

_____ When doing work near a MoDOT right-of-way provide right-of-way permit or proof that no permit is needed (if includes work within MoDOT right of way)

_____ Floodplain Development permit (link)

_____ Work near water ways provide Corps of Engineers 404 permit or proof that no permit is needed

_____ City of Columbia Right-of-use permit