

## **Chapter 405. Zoning Regulations**

### **Article III. Definitions**

#### **Section 405.390. Definitions**

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B. Definitions. As used in this Chapter, unless the context otherwise indicates, the following terms mean:

[NOTE: Subsection (A) and those definitions in subsection (B) not set out here are not altered, amended or affected in any way by this amendment and remain in full force and effect. For that reason, those materials are not set forth here in full.]

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**GREENSPACE.** An area designed and maintained for landscape, planting, lawn or vegetation supporting natural or cultivated growth that has not been compacted and is open to the sky above. Calculation of greenspace shall not include impervious materials, permeable pavements, decks, pools or other water features. The area below a deck, pergola, roof or similar structure shall not count as greenspace regardless of the perforations in the structure or the permeability at ground surface.

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**HARDSCAPE MITIGATION FEATURE.** An engineered system to mitigate impacts of impervious coverage including, but not limited to, storm water runoff, urban heat island effects, loss of natural habitat, and loss of carbon dioxide sequestration capacity. Qualifying systems are permeable pavements (interlocking blocks or grid pavers), rain gardens, bioretention cells, and green roofs. Qualifying systems shall measure a minimum of fifty (50) square feet in surface area and be designed per the MSD Technology Matrix.

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**IMPERVIOUS MATERIAL.** A surface that has been compacted or covered with a layer of material so that it is highly resistant to infiltration by water. It includes, but is not limited to, surfaces such as compacted sand, limerock or clay, asphalt concrete, driveways, retaining walls, stair wells, stairways, walkways, decks and patios, pergolas, pools and water features and other similar structures.

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## **Article XII. R-1 Large Lot Single-Family Dwelling District**

### **Section 405.1720 Greenspace Ratio.**

- A. A minimum of fifty-five percent (55%) of the required front yard setback shall be covered by greenspace. A minimum of fifty-five percent (55%) of the total lot shall be covered by greenspace. Properties located within an urban design district must comply with the requirements for the specific urban design district.
- B. In instances where an applicant can demonstrate just cause and subject to approval of plans for the installation and maintenance of an approved hardscape mitigation feature, the Plan Commission shall have the authority to approve up to a two percent (2%) reduction in the greenspace ratio requirement; that is down to fifty-three percent (53%) in the front yard setback and down to fifty-three percent (53%) overall greenspace; unless the property is located within an urban design district, then the requirements found therein shall apply.

## **Article XIII R-2 Single-Family Dwelling District**

### **Section 405.1890 Greenspace Ratio**

- A. A minimum of fifty-five percent (55%) of the required front yard setback shall be covered by greenspace. A minimum of fifty percent (50%) of the total lot shall be covered by greenspace. Properties located within an urban design district must comply with the requirements for the specific urban design district.
- B. In instances where an applicant can demonstrate just cause and subject to approval of plans for the installation and maintenance of an approved hardscape mitigation feature, the Plan Commission shall have the authority to approve up to a two percent (2%) reduction from the greenspace ratio requirement; that is down to fifty-three percent (53%) in the front yard setback and down to forty-eight percent (48%) overall lot coverage; unless the property is located within an urban design district, then the requirements found therein shall apply.

#### **Article XIV R-3 One and Two-Family Dwelling District**

##### **Section 405.2040 Greenspace Ratio**

- A. A minimum of fifty-five percent (55%) of the required front yard setback shall be covered by greenspace. A minimum of forty-five percent (45%) of the total lot shall be covered by greenspace. Properties located within an urban design district must comply with the requirements for the specific urban design district.
- B. In instances where an applicant can demonstrate just cause and subject to approval of plans for the installation and maintenance of an approved hardscape mitigation feature, the Plan Commission shall have the authority to approve a up to a two percent (2%) reduction from the greenspace ratio requirement; that is down to fifty-three percent (53%) in the front yard setback and down to forty-three percent (43%) overall lot coverage; unless the property is located within an urban design district, then the requirements found therein shall apply.

#### **Article XV R-4 Low Density Multiple-Family Dwelling District**

##### **Section 405.2200 Greenspace Ratio**

- A. A minimum of fifty-five percent (55%) of the required front yard setback shall be covered by greenspace. A minimum of forty-five percent (45%) of the total lot shall be covered by greenspace. Properties located within an urban design district must comply with the requirements for the specific urban design district.
- B. In instances where an applicant can demonstrate just cause and subject to approval of plans for the installation and maintenance of an approved hardscape mitigation feature, the Plan Commission shall have the authority to approve up to a two percent (2%) reduction from the greenspace ratio requirement; that is down to fifty-three percent (53%) in the front yard and down to forty-three percent (43%) overall lot coverage; unless the property is located within an urban design district, then the requirements found therein shall apply.

#### **Article XVI R-5 Medium-Low Density Multiple-Family Dwelling District**

##### **Section 405.2380 Greenspace Ratio**

- A. A minimum of fifty-five percent (55%) of the required front yard setback shall be covered by greenspace. A minimum of forty-five percent (45%) of the total lot shall be covered by greenspace. Properties located within an urban design district must comply with the requirements for the specific urban design district.
- B. In instances where an applicant can demonstrate just cause and subject to approval of plans for the installation and maintenance of an approved hardscape mitigation feature, the Plan Commission shall have the authority to approve up to a two percent (2%) reduction from the greenspace ratio requirement; that is down to fifty-three percent (53%)

in the front yard and down to forty-three percent (43%) overall lot coverage; unless the property is located within an urban design district, then the requirements found therein shall apply.

## **Article XVII R-6 Medium Density Multiple-Family Dwelling District**

### **Section 405.2550 Greenspace Ratio**

- A. A minimum of fifty-five percent (55%) of the required front yard setback shall be covered by greenspace. A minimum of forty-five percent (45%) of the total lot shall be covered by greenspace. Properties located within an urban design district must comply with the requirements for the specific urban design district.
- B. In instances where an applicant can demonstrate just cause and subject to approval of plans for the installation and maintenance of an approved hardscape mitigation feature, the Plan Commission shall have the authority to approve up to a two percent (2%) reduction from the greenspace ratio requirement; that is down to fifty-three percent (53%) in the front yard and down to forty-three percent (43%) overall lot coverage; unless the property is located within an urban design district, then the requirements found therein shall apply.

## **Chapter 410. Overlay and Urban Design Zoning Districts**

### **Article VII Clayton Gardens and Clayshire Subdivision ("R-2") and Clayton Gardens ("R-4") Urban Design Zoning Districts**

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#### **Section 410.345 Front Lot Greenspace**

- A. The open, park-like appearance of the front setback is a significant character-defining element. It provides a soft, landscaped buffer between the homes and the street creating an inviting, unified appearance. Paving and other hard materials, in excess, can detract from this appearance and should be limited to the narrow driveways and walkways as traditionally found.

The open character of the front setback should be maintained as redevelopment occurs.

1. Lots zoned "R-2" shall have a minimum of sixty percent (60%) of the required front yard setback covered by greenspace.
2. Lots zoned "R-4" in Clayton Gardens shall have a minimum of fifty percent (50%) of the required front yard setback covered by greenspace.
3. Driveways shall narrow to a maximum of ten (10) feet in width at the street edge or per the City of Clayton standards.
4. Turnarounds or circular drives shall not be permitted within a front setback.

#### **Section 410.350 Total Lot Greenspace**

- A. The presence of open lawn and landscaped areas throughout Clayton Gardens and Clayshire is a strong character-defining feature of the neighborhoods. New development should utilize similar lot coverage as traditionally found along a block to maintain the open character of the street and ensure compatibility with adjacent homes.
  1. A minimum of sixty percent (60%) of the total lot shall be covered by greenspace. Incentives for additional lot coverage may be earned in Section 410.375, Garage Width and Location.

2. Lots zoned "R-4" in Clayton Gardens shall have a minimum of fifty percent (50%) of the total lot covered by greenspace. No additional bonuses may be earned.

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**Section 410.375 Garage Width and Location (Lots Zoned "R-2")**

- A. General. The garage has not typically been a dominant feature in Clayton Gardens and Clayshire. Locating the garage to the rear or side of the home, as is typical in these neighborhoods, allows the architectural details of the home and front yard to define the character of the street. Below-grade front garages have been introduced in several areas of Clayton Gardens. In many cases, the garage and associated driveway replace the yard and dominate the street, completely changing its character. To protect the established character of these neighborhoods, garage placement and scale need to be carefully considered to minimize visual impacts upon the street and surrounding development.
- B. East Of Forsyth.
  1. At-grade, side-loading garages or detached garages or rear-loading garages are preferred in all cases and shall be utilized where fifty-one percent (51%) or more of the homes on the block have them. The following incentives shall apply:
    - a. A side-loading, rear-loading or detached garage, all at-grade condition, shall warrant up to a five percent (5%) reduction in the required total lot greenspace.



East of Forsyth, detached rear garages are typical and are the preferred configuration for new homes.

2. Front-loading and/or below-grade garages are strongly discouraged in all cases and shall be prohibited unless they are featured on fifty-one percent (51%) or more of the homes on the block.
3. Front-loading garages, at or below-grade, shall not exceed twenty-four (24) feet in width or fifty percent (50%) of the total length of the home's front facade, whichever is less.



No

Front-loading, below-grade garages are not compatible with the existing character of the neighborhoods and are strongly discouraged in all cases.

4. Third (3rd) garage doors on front facade shall be prohibited. Third (3rd) or fourth (4th) garage stalls shall be provided in the form of a separate detached garage located at the rear of the lot or as a side entry condition.

C. West Of Forsyth (Not Including Clayton Gardens "R-4").

1. At-grade, side-loading garages or detached garage or rear-loading garages are preferred in all cases and shall be utilized where fifty-one percent (51%) or more of the homes on the block have them.



West of Forsyth, at grade, side-loaded garages, like the one on this infill home, are preferred.



Rear-entry garages preserve the character of the street and are also encouraged for infill development.

- a. An at-grade, side-loading, rear-loading or detached garage condition shall warrant up to a five percent (5%) reduction in the required total lot greenspace.
2. Below-grade and/or front-loading garages are strongly discouraged in all cases and shall be prohibited unless they are featured on fifty-one percent (51%) or more of the homes on the block.



Front-loading garages are permitted where they are featured on 51% or more of the homes on the block.

3. Front-loading garages shall not exceed twenty-four (24) feet in width or fifty percent (50%) of the total length of the home's front facade, whichever is less.
4. Third (3rd) garage doors on front facade shall be prohibited. Third (3rd) or fourth (4th) garage stalls shall be provided in the form of a separate, detached garage located at the rear of the lot or as a side entry condition.

D. Clayshire.

1. At-grade, side-loading garages or detached garages or rear-loading garages are preferred in all cases and shall be utilized where fifty-one percent (51%) or more of the homes on the block have them.



This Clayshire home illustrates a preferred detached, rear garage configuration. The following incentives shall apply:

- a. An at-grade, side-loading, rear-loading, or detached garage condition shall warrant up to a five percent (5%) reduction in the required greenspace.
- b. At-grade and/or below-grade, front-loading garages shall be prohibited unless they are featured on fifty-one percent or more of the homes on the block.

2. Front-loading garages shall not exceed twenty-four (24) feet in width or fifty percent (50%) of the total length of the home's front facade, whichever is less.
3. Third (3rd) garage doors on front facade shall be prohibited. Third (3rd) or fourth (4th) garage stalls shall be provided in the form of a separate, detached garage located at the rear of the lot or as a side entry condition.

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[NOTE: Other Sections of Article VII are not altered, amended or affected in any way by this amendment and remain in full force and effect. For that reason, those materials are not set forth here in full.]

## **Article VIII Clayshire Subdivision ("R-4") Urban Design District**

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### **Section 410.415 Front Lot Greenspace**

- A. The high visibility of the front setback from the street creates a significant impact on a neighborhood's character. In the Clayshire ("R-4"), the setback provides a soft, landscaped buffer between the building and the street, creating an inviting, unified appearance. Paving and other hard materials, in excess, can detract from this appearance and should be limited to driveway approaches and narrow walkways as traditionally found in the neighborhood.



The open character of the front yard should be maintained.

1. A minimum of sixty percent (60%) of the required front yard setback shall be covered by greenspace.
2. Turnarounds or circular drives shall be prohibited within the front setback.
3. Shared access points to garages located within the same building, on the same lot shall be utilized to the maximum extent feasible.

### **Section 410.420 Total Lot Greenspace**

- A. The presence of open areas between and among the multi-family homes in Clayshire ("R-4") is a strong character-defining feature of the neighborhood. New development

should utilize similar lot coverage as traditionally found along a block to maintain the open character of the street and ensure compatibility with adjacent homes.

- B. A minimum of sixty percent (60%) of the total lot shall be covered by greenspace. Additional lot coverage may be earned through the incentives provided in Section 410.445, Garage Width and Location.

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#### **Section 410.445 Garage Width and Location**

- A. Due in part to the relatively low density of existing multi-family housing, little off-street parking is currently provided in Clayshire ("R-4"). Where it is provided, garage entrances are located to the side or rear of the structure, creating little visual impact from the street. In other Clayton neighborhoods, redevelopment has brought with it the introduction of below-grade front garages. In many cases, the below-grade garage and associated driveway replace the yard and dominate the street, completely changing the character of the neighborhood. Garage placement and scale need to be carefully considered on each redevelopment project to minimize their visibility and impact upon the street and surrounding development.
1. At-grade, side-loading garages or detached garages or rear-loading garages are preferred in all cases and shall be utilized where fifty-one percent (51%) or more of the homes on the block have them.



Garage entrances shall be located to the rear or side of the structure.

- a. An at-grade, side-loading, rear-loading or detached garage condition shall warrant up to a five percent (5%) reduction in required total lot greenspace.
2. Below-grade, front-loading garages shall not be permitted.
3. Front-loading, at-grade garages shall not exceed twenty-four (24) feet in width or fifty percent (50%) of the total length of the home's front facade, whichever is less.

4. Third (3rd) garage doors on front facade shall be prohibited. Third (3rd) or fourth (4th) garage stalls shall be provided in the form of a separate, detached garage located at the rear of the lot or as a side entry condition.
5. For larger, multi-unit structures, shared driveway access to a parking garage serving a single building is strongly encouraged and shall warrant up to a five percent (5%) reduction in required total lot greenspace.

## **Article IX Topton-Brighton (“R-4”) Urban Design District**

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### **Section 410.485 Front Lot Greenspace**

- A. The high visibility of the front setback from the street creates a significant impact on a neighborhood's character. The setback and the soft, landscaped buffer it provides between the building and the street is particularly important in Topton-Brighton, where new development is significantly more intense than that traditionally found. Larger buildings have a much stronger presence at the sidewalk edge, creating the perception of a reduced setback with less open space. Paving and other hard materials, in excess, can also detract from this appearance and should be limited to driveway approaches and walkways as traditionally found in the neighborhood. New development should be sensitive to the established neighborhood character and open space provided by front yards and front yard landscaping.
1. A minimum of sixty percent (60%) of the front yard setback shall be covered by greenspace.
  2. Turnarounds or circular drives shall be prohibited within the front setback.
  3. Shared drives for garage access are encouraged to minimize the width of driveways.



Shared drives for garage access are encouraged, to minimize the width of driveways.

4. Individual driveway approaches shall taper or "neck down" to ten (10) feet at the street edge to the maximum extent feasible.

### **Section 410.490 Total Lot Greenspace**

- A. The presence of open areas between and among the multi-family homes in Topton-Brighton is a strong character-defining feature of the neighborhood. New development should utilize similar lot coverage as traditionally found along a block to maintain the open character of the street and ensure compatibility with adjacent homes.
- B. A minimum of fifty-five percent (55%) of the total lot shall be covered by greenspace. Additional lot coverage may be earned through the incentives provided in Section 410.515, Garage Width and Location.

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### **Section 410.515 Garage Width and Location**

- A. The garage has not traditionally been a dominant feature in Topton-Brighton, as parking or garages were typically located to the rear of the structure. This configuration allowed the architectural details of the homes and front yard to define the character of the street. Below-grade front garages have been introduced in Topton-Brighton as the size of homes has increased and lot configurations become more complex. The appearance of these garages and their associated driveways have virtually replaced the yard in some cases and dominate the street, completely changing its character. This garage condition should be strongly discouraged and future garage placement and scale should be carefully considered to minimize additional visual impacts upon the street and surrounding neighborhood.
  - 1. At-grade, side or rear accessed garages are the preferred condition and are strongly encouraged. The following incentives shall apply:
    - a. An at-grade, side-loading or rear-loading garage condition shall warrant up to a five percent (5%) reduction in the minimum total lot greenspace requirement.
  - 2. Front-loading below-grade garages are strongly discouraged.



Front-loading below-grade garages are strongly discouraged.

- 3. The following restrictions shall apply to below-grade, front-loading garages:
  - a. The applicant shall demonstrate that all potential alternative garage locations have been ruled out.

- b. Front-loading garages shall not exceed twenty-four (24) feet in width or fifty percent (50%) of the total length of the home's front facade, whichever is less.
  - c. Front-loading garages along the street edge shall utilize landscaping and strategic tree plantings to break up paved areas.
4. For larger, multi-unit structures, shared driveway access to a parking garage serving a single building is strongly encouraged.

## **Article X Westwood Corridor (“R-6”) Urban Design District**

### **Section 410.560 Total Lot Greenspace**

- A. The Westwood Corridor is home to a variety of lot sizes and configurations. Many of the lots offer limited opportunities for flexibility in coverage due to their smaller size and proximity to adjacent homes. However, a small number of lots along the southwest side of Westwood are significantly deeper and wider, creating the potential for additional coverage towards the rear of the lot without creating negative visual impacts.
- B. A minimum of fifty percent (50%) of the total lot shall be covered by greenspace. Structures providing a front courtyard or increased front yard setback, as specified in Section 410.585 Rear Yard Setbacks, shall be provided up to a ten percent (10%) reduction in the required greenspace, provided that required front and side yard setbacks are met.

## **Chapter 430. Storm Water Control Requirements**

### **Article I Grading, Erosion and Sediment Control**

#### **Section 430.010 Introduction — Purpose**

- A. This Chapter is being enacted to comply with requirements of the Metropolitan Sewer District (MSD) related to protection of property during construction. During construction, soil is highly vulnerable to erosion by wind and water. Eroded soil endangers water resources by reducing water quality and causing siltation. In addition, clearing and grading during construction causes the loss of vegetation necessary to prevent erosion and sustain the flow of water. Finally, construction activities strip the land and generate waste which causes a cleaning nuisance on streets, sidewalks and/or adjacent properties.
- B. This Chapter is designed to provide an adequate safeguard to assure that construction activities do not cause damage to the environment and to protect properties adjacent to the site and throughout the City of Clayton.
- C. This Chapter is designed to outline procedures and requirements for stormwater management during construction activities and post construction maintenance to ensure deployment of best practices related to sustainability and environmental protection.

#### **Section 430.020 Definitions**

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[NOTE: Those definitions not set out here are not altered, amended or affected in any way by this amendment and remain in full force and effect. For that reason, those materials are not set forth here in full.]

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MICRO-DETENTION. A single or series of small storm water detention areas that absorb or detain some or all of the storm water runoff in a development site. It works by temporarily storing storm water near where it falls as precipitation. Micro-detention can include common landscaping features such as small garden areas, tree grates, perimeter hedges, and bioretention areas such as rain gardens. It may also include non-vegetated areas such as sub-surface storage areas with regulated outflow. Micro-detention is one of several best management practices that can be used to treat and/or infiltrate storm water or collect it for reuse at a development site.

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## **Article II Post Construction Storm Water Control**

### **Section 430.060 Findings of Fact**

- A. Land development projects and associated increases in impervious cover alter the hydrology of local watersheds and increase storm water runoff rates and volumes, flooding, stream channel erosion, and sediment transport and deposition. This storm water runoff contributes to increased quantities of water-borne pollutants, and storm water runoff, soil erosion and non-point source pollution can be controlled and minimized through the regulation of storm water runoff from development sites.
- B. The Metropolitan St. Louis Sewer District (MSD) has established a set of water quality and quantity policies applicable to all development in the MSD service area, including the City of Clayton, to provide reasonable guidance for the regulation of storm water runoff for the purpose of protecting local water resources from degradation. It has been determined that the regulation of storm water runoff discharges from land development projects and other construction activities in order to control and minimize increases in storm water runoff rates and volumes, soil erosion, stream channel erosion and non-point source pollution associated with storm water runoff is in the public interest and will prevent threats to public health and safety.

### **Section 430.070 Purpose**

- A. The purpose of this Article is to protect and safeguard the general health, safety and welfare of the public residing in watersheds within the City of Clayton which is included in the MSD service area. In general, the City of Clayton seeks to meet that purpose through the following objectives:
  - 1. Minimize increases in storm water runoff from any development in order to reduce flooding, siltation and erosion;
  - 2. Minimize increases in non-point source pollution caused by storm water runoff from development which would otherwise degrade local water quality; and
  - 3. Reduce storm water runoff rates and volumes, soil erosion and non-point source pollution, wherever possible, through storm water management controls and to ensure that these management controls are properly maintained and pose no threat to public safety or adjacent properties.

### **Section 430.080 Applicability**

This Article shall be applicable to all site plan applications where an MSD permit is required and/or a City permit is required for the scope of work.

### **Section 430.090 Storm Water Design**

- A. The City of Clayton hereby adopts by reference the MSD Rules and Regulations and Engineering Design Requirements for Sanitary and Storm Water Drainage Facilities as originally adopted February 2006, or latest version, as the applicable standard for the proper implementation of the requirements of this Article. In addition, the City of Clayton's City-Wide Storm Water Study, dated August 2006, includes details of several BMPs for addressing specific needs in the City of Clayton such as rain gardens, bioswales, pervious concrete, pervious paver systems and storm water planters.
- B. The MSD regulations include a list of acceptable storm water treatment practices, including the specific design criteria for each storm water practice. The manual may be updated and expanded from time to time, at the discretion of MSD, based on improvements in engineering, science, monitoring and local maintenance experience. Storm water treatment practices that are designed and constructed in accordance with these design and sizing criteria will be presumed to meet the minimum water quality performance standards.
- C. Developers shall include storm water control measures on the site plan submitted for the Department of Planning and Development review of proposed construction in addition to submittal to MSD for appropriate permits.
- D. To address specific conditions and patterns of development and storm water, the City of Clayton has developed additional guidelines and standards for stormwater design. The following shall be used in addition to the MSD regulations and in the event of a conflict with a MSD regulation as cited above, the most restrictive or demanding of the requirements shall prevail. References to testing and performance requirements shall be calculated or determined per MSD methodology.
  - 1. The following items are requirements for storm water management design on all property within the city.
    - a. The differential runoff calculation shall be completed using a 100 year – 60 minute storm event and on-site mitigation or detention shall be required for any increase in runoff volume. The calculation shall utilize methods and definitions per the adopted MSD Rules and Regulations.
    - b. Drainage area maps shall delineate pre construction and post construction drainage areas and overland flow paths of a property considering onsite and offsite contributing flow areas.
      - (1) Changes in flow patterns post construction shall not result in an increase in storm water runoff onto an adjoining lot.
      - (2) Storm water discharges should be directed away from adjacent private property and toward an adjacent storm water collection system.
      - (3) Increasing the contributing drainage area to a public right-of-way shall only be acceptable when mitigation of potential nuisances on the public sidewalk or street is proven and when overall volume of storm water generated on the site is not increased.
    - c. Retention cells (bioretention or detention) are acceptable tools to manage water for sites larger than one acre or subdivisions containing multiple lots.
    - d. Micro-detention is an acceptable approach to manage water for sites less than one acre.

2. The following items are requirements for storm water management design on all residentially zoned property within the city.
  - a. Infiltration and discharge practices shall not be placed in locations that cause water problems to down-slope properties or nuisances along public right-of-way.
  - b. Downspouts, pop-up emitters, or similar discharge and daylight points shall be a minimum of ten (10) feet from property lines and ten (10) feet from any impervious surface sloping down to adjacent buildable property.
    - (1) Discharge on a severe slope shall include erosion protection measures along the overland flow path.
    - (2) An overland flow path that leads to adjacent buildable property shall be covered with a pervious surface and maintain storm water discharge as sheet flow.
  - c. To limit potential impacts to buildable property downstream or down-slope from a BMP outflow, swales or channels may be constructed along the perimeter of a site to capture or redirect overland flow away from structure foundations or basements and toward nearby storm water collection systems.
  - d. A water table test shall be required when there is a known or suspected groundwater issue around a project, when excavation of twelve (12) feet or more in depth is proposed, or when deemed necessary by the Director of Planning and Development.
  - e. In cases of a high water table, underground infiltration (such as a drywell) is not an appropriate option for mitigation and alternatives for surface detention such as rainwater harvesting barrels or micro-detention basins are required.
  - f. Below grade garages shall not be permitted on lots where excavation for the basement goes below the water table level.
  - g. Below grade garages shall not be permitted on sites measuring less than one acre unless approved by MSD in compliance with regulation 3.030.09 of the MSD Rules and Regulations and Engineering Design Requirements for Sanitary and Storm Water Drainage Facilities which states: "Basement garages will only be allowed as directed by the District. Driveways to basement garages shall be designed whenever possible to allow for positive drainage away from the garage and to an acceptable location such as the street gutter. When sump driveways are necessary and allowed by the District, gravity drains shall be provided to intercept stormwater and discharge to an acceptable surface location or storm or combined sewer. Pumped discharge will not be allowed. Finished floor elevations of sump (basement) garages shall be a minimum of one (1) foot below the lowest basement finished floor elevation and sanitary sewer floor drain elevation. The District reserves the right to deny construction of sump (basement) garages."
  - h. Sump pump design guidelines:
    - (1) Sump Pumps for addressing stormwater runoff at trapped locations should be avoided. This is to avoid algae issues in the summer and icing issues in the winter from continuous operations where these discharges would affect adjoining parcels or streets and sidewalks in the public right-of-way.

- (2) Sump Pump discharges shall be directed to a surface infiltration BMP or micro-detention such as a rain garden.
  - (3) When a sump pump discharge is connected to a BMP that has been designed to mitigate an increase in differential runoff, the capacity of such BMP shall be increased by fifty percent (50%).
  - (4) City inspection will check during installation on the sump pump pit for high groundwater prior to final permit approval for the planned discharge location. Additional groundwater monitoring may be required prior to final permit approval as deemed necessary by the Director of Planning and Development Services.
- i. Drywell and below-grade infiltration BMP design guidelines:
- (1) Drywells are not the preferred method for stormwater mitigation due to the common soil typology and site characteristics of the city, therefore, additional analysis and requirements have been placed on the design of such BMPs to increase functionality when used.
  - (2) Soil typology testing is required for all drywells and infiltration BMPs to ensure appropriate siting and the results shall be provided as part of the initial submission for review.
    - (a) Soils should have a clay content of less than twenty percent (20%).
    - (b) Drywells may be prohibited within areas of karst topography.
    - (c) Drywells may not be placed within fill soils.
  - (3) A geotechnical/infiltration test is required for all drywells and infiltration BMPs to ensure performance and the results shall be provided as part of the initial submission for review.
    - (a) The target infiltration rate shall be one (1) inch per hour or greater. The minimum infiltration rate shall be 0.52 inches per hour.
    - (b) Where the infiltration rate is less than one (1) inch per hour, the required drywell footprint shall be increased by a minimum of fifty percent (50%) to provide additional infiltration area.
    - (c) Where the infiltration rate is less than 0.52 inches per hour, a drywell or below grade infiltration BMP shall not be used.
    - (d) The infiltration test is required to be signed and sealed unless waived by the Director of Planning and Development Services for small scope projects.
  - (4) Drywells should be designed for ninetieth (90<sup>th</sup>) percentile rainfall capture. The drywell shall fully de-water the 90<sup>th</sup> percentile rainfall within twenty-four (24) hours but in no case longer than forty-eight (48) hours.
  - (5) Drywells and infiltration BMPs shall be a minimum of ten (10) feet from any property line and a minimum of twenty-five (25) feet from a building foundation or basement.
    - (a) If the base of the building foundation or basement is at a higher elevation than the bottom of the infiltration bed, the setback may be reduced to ten (10) feet.

- (6) The bottom of the drywell or infiltration bed shall be separated by at least four (4) feet vertically from the water table or a bedrock layer.
- (7) The drainage area directed to a single drywell shall not exceed one thousand (1000) square feet.
  - (a) A drywell receiving runoff from a drainage area measuring eight hundred (800) square feet or more shall not also be connected to a sump pump.
- (8) Pre-treatment in the form of a sediment trap or catch basin shall be provided for any drywell or infiltration BMP collecting a non-roof area.
- (9) Multiple drywell locations or infiltration BMPs and/or overflow discharge locations, separated by a minimum of fifteen (15) feet, are recommended to avoid saturation and are required when the overland flow path leads to downstream buildable property (without first traversing right-of-way).
- (10) Prior to installation, a test pit inspection shall be performed. The test pit shall be excavated by the applicant/contractor and extend a minimum of four (4) feet below grade and inspected by city staff to check for standing water, hardpan, bedrock, or other formations restricting infiltration.

### **Article III Permit Procedures and Requirements**

#### **Section 430.100. Permit Required**

- A. No applicant, land owner or land operator shall receive a building, demolition, grading or right-of-way permit governed by these regulations without first securing the necessary approvals of MSD prior to commencing the proposed activity. Verification of this approval will be a set of plans approved by MSD including a valid MSD project number.
- B. For a project scope that is disturbing less than one acre and/or does not require a building, plumbing, demolition, or site plan review permit and includes the installation, modification, replacement or repair of a BMP or other stormwater management element regulated under this Chapter, an administrative/architectural review permit shall be required to facilitate review and inspection of the project for compliance.

#### **Section 430.110 Storm Water Management Plan Components To The Site Plan**

- A. Example (Use items below that are applicable to the site proposed)

- Applicant information
- Name, legal address and telephone number
- Common address and legal description of site
- Vicinity map

Existing and proposed mapping and plans (recommended scale of 1" = 50') which illustrate at a minimum:

- Site plan sealed by a registered professional engineer in the State of Missouri
- Existing and proposed topography (minimum of two (2) foot contours recommended)
- Perennial and intermittent streams
- Mapping of predominant soils from soil surveys
- Boundaries of existing predominant vegetation and proposed limits of clearing
- Location and boundaries of resource protection areas such as wetlands, lakes, ponds and other setbacks
- Location of existing and proposed roads, buildings and other structures
- Existing and proposed utilities (e.g., water, sewer, gas, electric) and easements

- \_\_\_\_\_ Location of existing and proposed conveyance systems such as grass channels, swales and storm drains
  - \_\_\_\_\_ Flow paths
  - \_\_\_\_\_ Location of floodplain/floodway limits and relationship of site to upstream and downstream properties and drainages (if applicable)
  - \_\_\_\_\_ Location and dimensions of proposed channel modifications, such as bridge or culvert crossings (if applicable)
  - \_\_\_\_\_ Location, size and limits of disturbance of proposed structural storm water management practices
- Hydrologic and hydraulic analysis including:
- \_\_\_\_\_ Existing condition analysis for runoff rates, volumes and velocities presented showing methodologies used and supporting calculations
  - \_\_\_\_\_ Proposed condition analysis for runoff rates, volumes and velocities showing the methodologies used and supporting calculations
  - \_\_\_\_\_ Analysis of potential downstream impact/effects of project, where necessary
  - \_\_\_\_\_ Selection and rationale for structural or non-structural storm water facilities and best management practices
  - \_\_\_\_\_ Sizing calculations for structural or non-structural storm water facilities and best management practices including contributing drainage area, storage and outlet configuration
  - \_\_\_\_\_ Landscaping plans for structural or non-structural storm water facilities and best management practices and any site reforestation or revegetation
  - \_\_\_\_\_ Erosion and sediment control plan.

## **Article IV Inspections of Storm Water Facilities**

### **Section 430.120 Inspection of Storm Water Facilities**

Inspection of facilities may be made on a reasonable basis including, but not limited to: routine inspections; random inspections; inspections based upon complaints or other notice of possible violations or inspection of drainage features. Inspections may include, but are not limited to: reviewing maintenance records; sampling discharges, surface water, ground water and material or water in drainage control facilities; and evaluating the condition of drainage control facilities and other storm water treatment practices.

### **Section 430.130 Inspection and Abatement**

When any new drainage control facility is installed on private property, or when any new connection is made between private property and a public drainage control system, sanitary sewer or combined sewer, the property owner shall grant to the City of Clayton's Public Works and/or Planning Department and/or MSD the right to enter the property at reasonable times and in a reasonable manner for the purpose of inspection of the new facility or connection as a condition of the permit allowing such new facility or connection. The property owner shall sign a consent or the owner's consent shall be evident on the permit. When there is a reasonable basis to believe that a violation of this Chapter is occurring or has occurred, the City will obtain the owner's consent or an administrative warrant to perform inspections or when necessary for abatement of a public nuisance or correction of a violation of this Chapter.

### **Section 430.140 Failure To Maintain Practices**

If the property owner fails or refuses to meet the requirements of the maintenance covenant, the City of Clayton, after reasonable notice, may issue violation notices. In the event that the storm water management facility becomes a danger to public safety or public health, MSD and/or City of Clayton Public Works or Planning Department (dependent on jurisdiction described in Article III or Article IV) shall notify the party responsible for maintenance of the

storm water management facility in writing. Upon receipt of that notice, the responsible person shall have a reasonable time given the nature and extent of the failure to effect maintenance and repair of the facility in a manner acceptable to the City or legal action may be pursued.

**Section 430.150 Storm Water Management Maintenance and Preservation Requirements**

- A. A Deed Restriction shall be recorded identifying the location, design, maintenance requirements, and any reporting requirements for any BMP used on a site unless an easement or maintenance agreement is in place through MSD.
- B. Unless more specific or frequent inspections are required under an agreement specified above, property owners shall report the results of a maintenance inspection every two years. Inspection reports shall follow the form and requirements on file with the Department of Planning and Development Services.