

Memorandum

Department of Public Works



TO: Michael O. Geisel, P.E.
City Administrator

FROM: James A. Eckrich, P.E. *JAE*
Public Works Dir. / City Engineer

DATE: January 23, 2020

Please forward to PPW for review and recommendation as to the ultimate disposition of Hog Hollow.

RE: Hog Hollow Road

Michael O. Geisel 2020-1-28

Similar to the streets in most cities throughout the United States, the transportation network in the City of Chesterfield developed over a long period of time. Due to the manner in which the City of Chesterfield was developed, most streets in the City of Chesterfield were created as part of subdivision and meet the majority of today's standards. However, there are a number of streets that were created many years ago, sometimes connecting area farms, serving agricultural or other purposes, which do not meet today's standards. These streets include Wilson Avenue, West Drive, Old Clarkson Road, Old Chesterfield, River Valley Drive, Church Road, and Hog Hollow Road.

I have not researched the history of Hog Hollow Road, but it was created well before the incorporation of the City of Chesterfield, and does not meet many of today's street standards. Hog Hollow Road is a minor arterial roadway with a southern terminus at Olive Boulevard and a northern terminus at River Valley Drive in Maryland Heights. Through the City of Chesterfield, Hog Hollow Road fronts a creek and one residential parcel to the west, and a vacant parcel to the east (Briarcliffe). Once you cross the railroad tracks to the south and enter Maryland Heights, Hog Hollow Road leads directly to Missouri American Water Company's Central Plant. It is important to note that there are three large transmission water mains located under Hog Hollow Road, two of which are nearly 100 years old. These water mains provide the water for most of the western portion of St. Louis County.

Other than the Missouri American Water Company and the St. Louis City Water Company (both located just north of the railroad tracks in Maryland Heights) Hog Hollow Road is primarily used by motorists traveling to Maryland Heights from Olive Boulevard, and vice versa. Similar to River Valley Drive, the regional significance of Hog Hollow Road changed substantively after the construction of Missouri Route 141. In 2009, the Average Daily Traffic (ADT) on Hog Hollow Road was 4,200 vehicles per day. Today, the ADT on Hog Hollow Road is approximately 1,800 vehicles per day.



The center portion of the pavement on Hog Hollow Road is in fair condition, but the physical characteristics of the roadway do not meet City standards. The grade of the roadway, which varies from eight to sixteen percent, is well above the maximum allowed (twelve percent). Hog Hollow Road is only twenty feet wide, with no shoulders, and it contains a sharp curve south of Olive Boulevard. Further, Hog Hollow Road lacks a suitable platform where it intersects Olive Boulevard, the construction of which would cause the grades to increase even higher. The result is a dangerous intersection at Olive Boulevard, made worse because of multiple nearby commercial entrances and the fact that Hog Hollow Road does not align with Stablestone Drive (270 feet to the west, across Olive Boulevard).

The adjacent grade along Hog Hollow Road is very steep on both sides of the road. To the east the ground rises at a steep slope, where there are myriad trees. These trees are advantageous in that the roots stabilize the slope. However, they prevent turf establishment, leading to problems with dirt and mud along the roadway. More significantly, the large trees create a substantial hazard to area motorists when they fall, as the slope directs them toward the road. The ground to the west of Hog Hollow Road falls off quickly toward a creek. There are no storm sewers along the roadway, and the adjacent slope / inadequate working room does not allow for a sufficient drainage ditch on the upstream side. Stormwater is conveyed across the road via two

undersized culverts which frequently clog due mud (see above), their size and antiquated design. These factors make it extraordinarily difficult to maintain the roadway, and frequently cause erosion problems and pavement failure along the edge of the roadway. Due to this combination of factors and lack of available right of way, it is extraordinarily difficult and expensive to correct the problems and improve the roadway.

The problems with Hog Hollow Road are certainly not new, and the City of Chesterfield has made substantial efforts to maintain Hog Hollow Road throughout its history. Unfortunately, the conditions which contribute to Hog Hollow's problems have only made the road worse over time. Maintaining the road in its current configuration indefinitely is simply not a course of action that is sustainable for the City of Chesterfield.

In the mid-2000s the adjacent property owner initiated efforts to develop the property immediately east of Hog Hollow Road, known as Briarcliffe. In order to develop Briarcliffe, the property owner would need to remove a large amount of dirt from the site. This created a unique opportunity, and the City and Briarcliffe developer worked together to create plans to utilize the dirt from the site to reconstruct Hog Hollow Road. This reconstruction would not have eliminated all of the problems with Hog Hollow Road, but it would have improved the road to the greatest extent practicable given the physical characteristics of the surrounding area. This effort is referenced in Ordinance 2213 (Section K.1), which created a Planned Environment Unit for the Briarcliffe property in 2005.

Subsequent to the passage of Ordinance 2213, plans were created by Stock and Associates and a cost estimate was generated. The 2008 cost to reconstruct Hog Hollow Road was estimated at \$4,200,000, excluding utility relocations. However, that cost could be reduced to \$1,500,000, excluding utility relocations, using fill from the adjacent property to the east.

Unfortunately, the Briarcliffe development never came to fruition, and the reconstruction of Hog Hollow Road did not occur. The City has continued to maintain Hog Hollow in its current configuration, stabilizing the edge of the road the best we can and removing trees which fall on the road, from the east, as necessary. Hog Hollow Road frequently has to be closed during inclement weather.

In 2015 the City Staff presented a closure / vacation analysis of River Valley Drive and Hog Hollow Road to the Planning and Public Works Committee of City Council. At that time City Council elected to pursue the closure of River Valley Drive, but no action was taken regarding Hog Hollow Road. The primary reason I am presenting this matter to PPW again, at this time, is that the City has received a grading permit application from the Briarcliffe property. That property owner is proposing to regrade the property to accommodate a development and sell the dirt to an area contractor. The City's only basis for delaying approval of this grading permit is that its approval denies the City the opportunity to use the dirt to construct "improvements to Hog

Hollow Road concurrently with construction of the subdivision”, in accordance with Section K.1 of Ordinance 2213.

If the grading permit is issued, the City’s ability to utilize the dirt is eliminated, and the previous cost estimate to reconstruct Hog Hollow Road increases by \$2.7 million, to a total cost of \$4.2 million. Please keep in mind that these are 2008 numbers, and the cost to reconstruct the roadway today would be much higher than \$4.2 million. Additionally, this estimate does not include the cost to relocate utilities, which was estimated at \$620,000 in 2008 with water company participation.

It is my belief that the cost to reconstruct Hog Hollow today, without the use of the dirt from Briarcliffe, would be closer to seven million dollars. This increase is primarily due to four factors: 1) inflation of construction; 2) acquisition of right of way not contemplated within the original estimate; 3) design and permitting costs not accounted for within the original estimate; 4) increased utility costs; and 5) the original estimate contemplated the developer constructing the road improvements. Again, if the City would pursue the reconstruction of Hog Hollow Road, the result would be a greatly improved Hog Hollow – but one that still does not meet all of today’s standards. It is simply impractical with the mainline grade, the slope of the ground from east and west, and the environmental considerations associated with the adjacent creek, to reconstruct the road in such a manner that it would meet all of today’s standards.

It is difficult to justify the expenditure in excess of \$7 million to reconstruct a roadway which serves one resident, two utility companies, and drivers attempting to bypass Missouri Route 141. Accordingly, I believe it is time for the City to determine its long-term plans for Hog Hollow Road. If the City desires to reconstruct Hog Hollow Road, we must begin to make some kind of effort toward that goal. Please be advised that there are no grant monies available to reconstruct Hog Hollow. Hog Hollow Road is classified as a Local Road by East West Gateway, and the City’s previous efforts to get the road classified (and eligible for federal grant funding) were denied. That means that unless some kind of arrangement can be made with the adjacent property owner, the City would need to allocate seven million dollars plus to reconstruct this road. I cannot make such a recommendation at this time.

An alternative option to reconstructing Hog Hollow Road is to once again consider the vacation of Hog Hollow Road. While I am generally opposed to any action by the City that reduces connectivity, it can be argued that the need for Hog Hollow Road as a public road was eliminated by the creation of Missouri Route 141. It can also be argued that Hog Hollow Road is an access road with the primary purpose of serving the two area water companies. Accepting either argument would provide the City a justification to vacate the Hog Hollow right of way and no longer maintain it as a public road.

I want to be clear that pursuing the vacation of Hog Hollow Road creates significant challenges, and would certainly be opposed by a number of parties. This includes, but is not limited to: Missouri American Water Company, St. Louis City Water

Company, the Monarch Fire Protection District, the resident whose house is accessed from Hog Hollow Road, and some area motorists. **All of these parties would need to be contacted and consulted as part of any decision to vacate Hog Hollow Road. These efforts have not yet been initiated solely because Staff wanted to consult with City Council on this matter first. If Council agrees that vacation should be pursued, City Staff will further study this matter and contact the area stakeholders. The affected parties have not and will not be excluded from this process. However, some party needs to be contacted / consulted first, and it is my belief that it is most appropriate that that party is the City of Chesterfield City Council.**

If PPW supports my recommendation and determines that it is appropriate to further study the vacation of Hog Hollow Road, we will need to determine how to address the residential parcel accessed via Hog Hollow Road. This will be challenging but there are some potential creative solutions. We will also need to determine the ultimate disposition of the right of way and whether it would continue to exist as a private road utilized by the water companies. Again, this is challenging, and there would need to be substantial consultation and negotiation with all affected parties, including the water companies.

These matters would be studied thoroughly and addressed prior the submittal of any formal vacation request to City Council. Additionally, as described above, all affected parties would be contacted and asked to provide their input regarding the vacation of Hog Hollow Road.

Action Recommended

This matter should be forwarded to the Planning and Public Works Committee for consideration. In conjunction with this memorandum, I will provide a presentation at the PPW meeting, with photos, detailing the problems with Hog Hollow Road. Should PPW concur with Staff's recommendation, it should authorize Public Works Staff to further study the vacation of Hog Hollow Road, including contacting and negotiating with all affected parties. If this course of action is authorized, the City Staff will issue the grading permit requested by Briarcliffe.

Should PPW determine that Hog Hollow shall remain a City maintained roadway, it should authorize Public Works Staff to pursue an updated design and cost estimate, as well as options to fund the reconstruction, including negotiation with Briarcliffe.

AN ORDINANCE AMENDING THE ZONING ORDINANCE OF THE CITY OF CHESTERFIELD BY CREATING A PLANNED ENVIRONMENT UNIT PROCEDURE WITHIN AN "R-3" RESIDENCE DISTRICT FOR TWO (2) TRACTS OF LAND TOTALING 29.4 ACRES LOCATED ON OLIVE BOULEVARD, IN THE PROPERTY FORMERLY KNOWN AS CHESTERFIELD MANOR NURSING HOME. (16R340151, 16R340207) (P.Z. 3-2005 BRIARCLIFFE VILLAS/G.H.H. INVESTMENTS, LLC)

WHEREAS, the petitioner, G, requested a Planned Environment Unit Procedure in an "R-3" Residence District for two (2) tracts of land totaling 29.4 acres located on Olive Boulevard, and;

WHEREAS, the Planning Commission held a public hearings on March 14, 2005 and June 27, 2005 to consider the matter, and;

WHEREAS, P.Z. 3-2005 Briarcliffe Villas/G.H.H. Investments, LLC was considered by the Planning Commission of the City of Chesterfield and recommended for approval by a vote of 6-2.

NOW THEREFORE BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF CHESTERFIELD, ST. LOUIS COUNTY, MISSOURI, AS FOLLOWS:

Section 1. The City of Chesterfield Zoning Ordinance and the Official Zoning District Maps, which are a part thereof, are hereby amended by establishing a Planned Environment Unit (PEU) Procedure (PEU) in an "R-3" Residence District for a 29.4 acre tract of land located on Olive Boulevard, on the property formerly known as Chesterfield Manor Nursing Home, described as follows:

PROPERTY DESCRIPTION

Part of Lot 11 of D.J. Talbots Estate Subdivision, in U.S. Surveys 2030 and 206, Township 46 North, Range 4 East, in St. Louis County, Missouri, and described as follows:

Beginning at a point in the center line of Hog Hollow Road, 40 feet wide, at its intersection with the South line of U.S. Survey 2030; thence along the center line of said road, North 45 degrees 03 minutes 31 seconds West 86.69 feet, North 74 degrees 44 minutes 26 seconds West 142.55 feet; thence North 47 degrees 14 minutes 26 seconds West 211.20 feet and North 28 degrees 14 minutes 26 seconds West 353.81 feet to a point; thence leaving said road line and running North 59 degrees 31 minutes 48 seconds East 1,249.07 feet to a point; thence South 25 degrees 49 minutes 00 seconds East 1,460.05 feet to a point in the North line of

Olive Street road, 60 feet wide; thence along the North line of Olive Street road South 61 degrees 58 minutes 49 seconds West 294.51 feet to a point; thence North 28 degrees 33 minutes 00 seconds West 175.96 feet to a point in the South line of U.S. Survey 2030; thence along said Survey line, North 82 degrees 32 minutes 26 seconds West 854.19 feet to the **POINT OF BEGINNING** and containing 1,282,091 square feet or 29.433 acres more or less, according to calculations by Stock & Associates Consulting Engineers, Inc. on August 11, 2004.

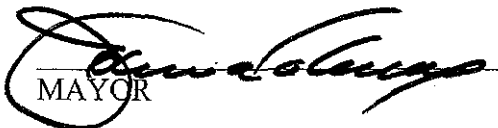
Section 2. The preliminary approval, pursuant to the City of Chesterfield Zoning Ordinance is granted, subject to all of the ordinances, rules and regulations and the specific conditions as recommended by the Planning Commission in its recommendations to the City Council, which are set out in Attachment A, which is attached hereto and made a part hereof.

Section 3. The City Council, pursuant to the petition filed by G.H.H. Investments, L.L.C. in P.Z. 3-2005 requesting the amendment embodied in this ordinance, and pursuant to the recommendations of the City of Chesterfield Planning Commission that said petition be granted and after public hearings, held by the Planning Commission on the 15th day of March 2005 and the 27th day of June, 2005, does hereby adopt this ordinance pursuant to the power granted to the City of Chesterfield under Chapter 89 of the Revised Statutes of the State of Missouri authorizing the City Council to exercise legislative power pertaining to planning and zoning.

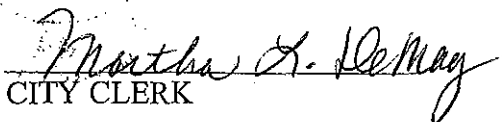
Section 4. This ordinance and the requirements thereof are exempt from the warnings and summons for violations as set out in Section 1003.410 of the zoning Ordinance of the City of Chesterfield.

Section 5. This ordinance shall be in full force and effect from and after its passage and approval.

Passed and approved this 7th day of NOVEMBER, 2005.


MAYOR

ATTEST:


CITY CLERK

ATTACHMENT A

In keeping with the following Comprehensive Plan policies, these conditions have been developed:

1.2 Adherence to the Plan	7.2 Multi-Modal Transportation Design	8.3.1 New Development Review for Stormwater Control
1.4 Quality New Development	7.2.1 Maintain Proper Level of Service	8.4.3 Aesthetic Impact
1.6 Lighting Plan and Program	7.2.3 Maintain Proper Traffic Flow	10.1 Open Space Preservation and Creation
2.1 Quality Residential Development	7.2.4 Encourage Sidewalks	10.1.2 Encourage Clustering within Planned Environment Units
2.1.5 Provide Buffer for Existing Residential Development	7.2.9 Access Management	8.2.2 Underground Electric Service
2.1.8 Transitional Use between Single-Family Detached and Higher Density Development	8.2.2 Underground Electric Service	8.3 Stormwater Management
2.1.9 Encourage Planned Residential Development	8.3 Stormwater Management	8.3.1 New Development Review for Stormwater Control

I. SPECIFIC CRITERIA

A. Information to be shown on the Site Development Concept Plan shall be limited to those conditions specified in Section A, General Criteria-Concept Plan. Site Development Plans and Site Development Section Plans shall adhere to specific design criteria.

B. Definitions

1. Site Development Concept Plan is a conceptual plan for development in a planned district being done in phases. A concept plan provides an overall picture of a development that is being divided into sections to be developed in phases.
2. A Site Development Section Plan is a plan for development for sections of the overall concept plan.
3. Site Development Plan is a plan for development in planned districts that is being done in one phase.

C. PERMITTED USES

1. The uses allowed this Planned Environment Unit shall be:
 - a. Single family-attached units
2. The above uses in the Planned Environment Unit shall be restricted as follows:
 - a. There shall be no more than eighty-two (82) units
 - b. The permissive land area per unit shall be a minimum of 7,500 square feet

D. FLOOR AREA, HEIGHT, BUILDING AND PARKING STRUCTURE REQUIREMENTS

1. HEIGHT

- a. No building elevation of any dwelling structure or building accessory to a dwelling structure shall exceed three (3) stories or forty-five (45) feet in height, whichever is less.

2. BUILDING REQUIREMENTS

- a. Openspace: A minimum of seventy-one percent (70%) openspace is required for this development. Openspace includes all areas excluding the building or areas for vehicular circulation.

E. STRUCTURE AND PARKING SETBACKS

1. STRUCTURE SETBACKS

No building or structure, other than a freestanding project identification sign, boundary and retaining walls, light standards, flag poles or fences will be located within the following setbacks:

Minimum yard requirements:

- a. Twenty (20) feet from feet from the right-of-way line of any roadway.
- b. Six (6) feet of any side property line.
- c. Fifteen (15) feet from the rear property line.

F. PARKING AND LOADING REQUIREMENTS

1. Parking and loading spaces for this development will be as required in the City of Chesterfield Code.

2. Construction Parking

- a. No construction related parking shall be permitted within Olive Boulevard right-of-way.
- b. Provide adequate off-street stabilized parking area(s) for construction employees and a washdown station for construction vehicles entering and leaving the site in order to eliminate the condition whereby mud from construction and employee vehicles is tracked onto the pavement causing hazardous roadway and driving conditions.
- c. The streets surrounding this development and any street used for construction access thereto shall be cleaned throughout the day. The developer shall keep the road clear of mud and debris at all times.
- d. If existing City maintained streets are to be used as construction access to this site, prior to approval of a grading permit or improvement plans, or any construction related traffic or delivery of any construction equipment to the site, the following items must be addressed:
 - i. The travel route must be approved by the Department of Public Works. No deviation from the approved route will be permitted.
 - ii. An evaluation, including film record, of the current condition of the pavement on the approved travel route must be submitted.
 - iii. An appropriate bond must be submitted, as approved by the City of Chesterfield, to ensure that any damage to existing pavement is repaired. Repair of damage to existing streets will not be included in the subdivision escrow; a separate bond must be established.
 - iv. All plan sheets shall indicate that vehicle loads of construction traffic using this route are not to exceed 22,400 pounds axle load per 60,000 gross vehicle weight and that no tri-axle trucks are to be used. Weight tickets may be used to determine conformance with this requirement.
 - v. Additional protective measures, as deemed necessary by the Department of Public Works, may also be required.

G. LANDSCAPE AND TREE REQUIREMENTS

1. The developer shall submit a landscape plan, tree stand delineation; and tree preservation plan in accordance with the City of Chesterfield Code.
2. If the estimated cost of new landscaping indicated on the Site Development Plan as required by the Planning Commission exceeds one thousand (\$1,000) dollars, as determined by a plant nursery, the petitioner shall furnish a two (2) year bond or escrow sufficient in amount to guarantee the installation of said landscaping.
2. Prior to release of the Landscape Installation Bond/Escrow, a two (2) year Landscape Maintenance Bond/Escrow will be required.
3. A minimum of thirty-four (34%) percent of the existing tree cover shall be maintained.
4. Buffering:
 - i. A minimum of a twenty (20) foot wide buffer strip shall be provided between this development and Eagle Ridge Subdivision. Ten (10) feet of which may be satisfied by landscaping on the abutting property if provided.
 - ii. A minimum of a thirty (30) foot wide buffer strip shall be provided between this development and the commercial development to the southwest.
 - iii. A minimum of a thirty (30) foot wide buffer strip shall be provided along Hog Hollow Road and Olive Boulevard

H. SIGN REQUIREMENTS

1. Ornamental Entrance Monument construction, if proposed, shall be reviewed by the Missouri Department of Transportation and City of Chesterfield Department of Public Works for sight distance considerations prior to installation or construction.
 - b. All permanent freestanding signs shall have landscaping, which may include, but not be limited to, shrubs, annuals, and other materials, adjacent to the sign base or structural supports. This sign and landscaping shall be as approved by the Planning Commission on the Site Development Plan.
 - c. Signs shall be permitted in accordance with the regulations of the City of Chesterfield Code.

I. LIGHT REQUIREMENTS

1. Provide a lighting plan and cut sheet in accordance with the City of Chesterfield Code.

2. The location and height of the light standards will be as approved by the Planning Commission.
3. Except for required street lighting, no source of illumination will be situated so that light is cast on any public right-of-way or adjoining property.

J. ARCHITECTURAL

1. The developer shall submit architectural elevations, including but not limited to, colored renderings and building materials. Architectural information is to be reviewed by the Architectural Review Board and the Planning Commission.
2. Building facades should be articulated by using color, arrangement or change in materials to emphasize the façade elements. The planes of the exterior walls may be varied in height, depth or direction. Extremely long facades shall be designed with sufficient building articulation and landscaping to avoid a monotonous or overpowering appearance from the street.

K. ACCESS/ACCESS MANAGEMENT

1. There shall be no access to Hog Hollow from this development. Accordingly, there are no road improvements to Hog Hollow associated with this petition. However, the Department of Public Works is desirous of exploring the opportunity of constructing improvements to Hog Hollow concurrently with the construction of the subdivision, to take advantage of the opportunity to effect grade changes and minimize construction costs. Given the deteriorated and substandard condition of Hog Hollow Road, the feasibility of rehabilitating Hog Hollow in conjunction or simultaneously with the development of the subject tract should be seriously investigated. The Department of Public Works continues to be concerned about the existing condition of Hog Hollow Road as well as its physical location as compared to the dedicated rights of way. Since the City's inception, Hog Hollow Road has been a continual maintenance and safety concern. The Department of Public Works routinely closes off this section of roadway during icy, inclement weather. It is exceedingly steep, has excessively sharp curvature, has no standard platform for its intersection with Olive Boulevard, is of insufficient width, lacks drainage and has little or no shoulder area. Additionally, this section of roadway exists alongside a significant ravine, with steep side slopes that are continuously eroded. There are at least three water mains and a gas main that occupy the Hog Hollow Road corridor. The gas main is routinely exposed due to the ongoing erosion and sloughing of the steep slopes. The Department of Public Works has been required each year to spend considerable effort to restore or re-build shoulders, slopes, retaining structures and headwalls. All of which is particularly perilous for our maintenance crews due to the aforementioned road conditions.

2. Ingress and egress must conform to MoDOT's Access Management Guidelines and must be reviewed and approved by MoDOT. Any changes to the entrance geometrics and drainage design shall be in accordance with Missouri Department of Transportation (MoDOT) standards and shall be reviewed and approved by MoDOT.
3. Access to Olive Boulevard (State Highway 340) shall be limited to one street approach. The street approach shall be located as directed by the Department of Public Works and the Missouri Department of Transportation. No access will be allowed to Hog Hollow Road.
4. The nearest edge of any driveway intersecting the entrance street shall be located a minimum of 80 feet from the edge of pavement of Olive Boulevard, as directed by the Department of Public Works.
5. No direct access to Olive Boulevard (State Highway 340) or to Hog Hollow Road will be permitted from any lot within the subdivision.
6. Streets and drives related to this development shall be designed and located in conformance with the Chesterfield Driveway Access Location and Design Standards, as originally adopted by Ordinance No. 2103 and as may be amended from time to time.

L. PUBLIC/PRIVATE ROAD IMPROVEMENTS, INCLUDING PEDESTRIAN CIRCULATION

1. Provide sidewalks along both sides of internal streets as directed by the City of Chesterfield.
2. Provide up to the standard fifty (50) foot right-of-way for Hog Hollow Road based on the centerline of the existing roadway. Should Hog Hollow Road be reconstructed and relocated in conjunction with this development, right-of-way shall be dedicated as necessary and as directed by the Department of Public Works based upon the planned relocation.
3. All roadway and related improvements in each plat or phase of the development shall be constructed prior to 60% occupancy of that plat or phase. All roadway and related improvements in the overall development shall be completed prior to 80% occupancy of the overall development.
4. Provide any additional right-of-way and construct any improvements to State Highway 340 (Olive Boulevard) as required by the Missouri Department of Transportation.
5. Provide a five (5) foot wide sidewalk, conforming to ADA standards, along the Olive Boulevard frontage of the site. The grades for the sidewalk shall accommodate the extension of the sidewalk eastward to Eagle Manor Lane.

The sidewalk may be located within State right-of-way, if permitted by the Missouri Department of Transportation, or within a 6 foot wide sidewalk, maintenance and utility easement. Required sidewalks internal to the site shall connect to the sidewalk along Olive Boulevard.

M. TRAFFIC STUDY

Provide a traffic study as directed by the City of Chesterfield and/or the Missouri Department of Transportation. The scope of the study shall include internal and external circulation and may be limited to site specific impacts, such as the need for additional lanes, entrance configuration, geometrics, sight distance, traffic signal modifications or other improvements required, as long as the density of the proposed development falls within the parameters of the City's traffic model. Should the density be other than the density assumed in the model, regional issues shall be addressed as directed by the City of Chesterfield.

P. POWER OF REVIEW

City Council shall have automatic power of review of site plans for the subject development. The City Council will then take appropriate action relative to the proposal.

Q. STORMWATER AND SANITARY SEWER

1. The site shall provide for the positive drainage of storm water and it shall be discharged at an adequate natural discharge point or an adequate piped system. The adequacy and condition of the existing downstream systems shall be verified and upgraded if necessary.
2. Emergency overflow drainage ways to accommodate runoff from the 100-year storm event shall be provided for all storm sewers, as directed by the Department of Public Works.
3. The petitioner shall provide adequate detention and/or hydraulic calculations for review and approval of all storm water that will encroach on MoDOT right-of-way.
4. All drainage detention storage facilities must be placed outside of the standard governmental agency planning and zoning setbacks or fifteen (15) feet from the new or existing right of way line, whichever is greater.
5. Detention may be required for the entire site such that the release rates will not exceed the allowable release rates for the post developed peak flow of the 2-year and 100-year, 24-hour storm event. Stormwater must be discharged at an adequate discharge point. Wetland mitigation will not be allowed within the detention basin area.

4. Formal plan submittal and approval will be required by the District prior to the issuance of permits.
5. Detention/retention is to be provided in each watershed as required by the City of Chesterfield. Detention of storm water runoff is required by providing permanent detention/retention facilities, such as dry reservoirs, ponds, underground vaults or other alternatives acceptable to the Department of Public Works. The maximum fluctuation from the permanent pool elevation to the maximum ponding elevation of a basin shall be three (3) feet, as directed. Wetland mitigation shall not be permitted within a detention/retention basin. The detention/retention facilities shall be operational prior to paving of any driveways or parking areas in non-residential developments or issuance of building permits exceeding sixty (60%) of the approved dwelling units in each plat, watershed or phase of residential developments. The location and types of detention/retention facilities shall be identified on the Site Development Plan.
6. The lowest opening of all structures shall be set at least two (2) feet higher than the 100-year high water elevation in detention/retention facilities. All structures shall be set at least thirty (30) feet horizontally from the limits of the 100-year high water.
7. Grading and stormwater systems shall be designed so as to collect all surface water from all disturbed areas along the northwestern portion of the development, parallel and adjacent to the top of the slope draining to the northwest, and convey that surface water to an adequate discharge point where extraordinary measures will be employed to dissipate energy, attenuate flows and protect slopes from degradation. No stormwater shall be allowed to flow from an area which has been graded, to the undisturbed slope.
8. Grading and stormwater systems shall be designed so as to collect surface water from the rear of the lots on the northern side of the development and the western side of the development (those units tributary to bluffs along the Missouri River valley and the steep slopes above Hog Hollow Road) and convey that surface water to an adequate discharge point where extraordinary measures will be employed to dissipate energy, attenuate flows and protect the slopes from degradation. No stormwater from the aforementioned lots shall be allowed to flow to the undisturbed or reconstructed slopes, as directed by the Department of Public Works.

R. ROADWAY IMPROVEMENTS AND CURB CUTS.

1. Obtain approval from the City of Chesterfield Department of Public Works and the Missouri Department of Transportation for the locations of proposed curb cuts, areas of new dedication, and roadway improvements.

S. GEOTECHNICAL REPORT.

Provide a geotechnical report, prepared by a registered professional engineer licensed to practice in the State of Missouri, as directed by the Department of Public Works. The report shall verify the suitability of grading and proposed improvements with soil and geologic conditions and address the existence of any potential sinkhole, ponds, dams, septic fields, etc., and recommendations for treatment. A statement of compliance, signed and sealed by the geotechnical engineer preparing the report, shall be included on the Site Development Plan.

T. GRADING AND IMPROVEMENT PLANS.

1. A grading permit or improvement plan approval is required prior to issuance of a building permit, as directed.
2. A grading permit or improvement plan approval is required prior to any clearing or grading. The Site Development Plan and Tree Preservation Plan/Tree Removal Permit must be approved prior to issuance of a grading permit or approval of improvement plans. No grading that results in a change in watersheds will be permitted.
3. Prior to grading permit or improvement plan approval, provide comments/approvals from the appropriate Fire District, the Missouri Department of Transportation, the Howard Bend Levee District and the Metropolitan St. Louis Sewer District.
4. Prior to approval of a grading permit or improvement plans, copies of recorded easements, including book and page of record, for all off-site work and off-site areas inundated by headwater from on-site improvements must be submitted.
5. Prior to approval of a grading permit or improvement plans, a Storm Water Pollution Prevention Plan (SWPPP) must be submitted and approved. The SWPPP shall address installation and maintenance of required erosion control practices specific to site conditions. The purpose of the SWPPP is to ensure the design, implementation, management and maintenance of Best Management Practices (BMPs) to control erosion and reduce the amount of sediment and other pollutants in storm water discharges associated with land disturbance activities, and ensure compliance with the terms and conditions stated in the Sediment and Erosion Control Manual.

R. MISCELLANEOUS

1. All utilities will be installed underground. The development of this parcel will coordinate the installation of all utilities in conjunction with the construction of any roadway on site.
 - a. Sleeves for future telecommunication services are required to be installed adjacent and/or parallel to any proposed roadway, or other

location as directed by the City of Chesterfield, in order to facilitate the installation of utilities and telecommunication infrastructure for current and future users.

3. If any development in, or alteration of, the floodplain is proposed, the developer shall submit a Floodplain Study and Floodplain Development Permit/Application as directed by the Department of Public Works. The Floodplain Study must be approved prior to approval of the Site Development Plan, as directed. The Floodplain Development Permit must be approved prior to the approval of a grading permit or improvement plans. If any change in the location of the Special Flood Hazard Area is proposed, the Developer shall be required to obtain a Letter of Map Revision (LOMR) from the Federal Emergency Management Agency (FEMA). The LOMR must be issued by FEMA prior to the final release of any escrow held for improvements in the development.
4. If any lot is proposed to be located in an existing, or proposed, Special Flood Hazard Area the lot shall be clearly labeled as being located in the floodplain on the Site Development Plan and improvement plans. The lowest Reference Level (floor), as defined by FEMA, shall be constructed a minimum of two (2) feet above the base flood elevation. The Reference Level (floor) of structures in areas removed from or within 100 feet of the Special Flood Hazard Area shall be constructed a minimum of two (2) feet above the highest base flood elevation in the vicinity of the lot unless other actions are taken that assure the structures are reasonably safe from flooding as defined by FEMA and approved by the Department of Public Works. The minimum elevation for the Reference Level for each lot shall be indicated on the Site Development Plan and improvement plans, and an Elevation Certificate, on the form developed by FEMA for that purpose, shall be submitted immediately after construction of each structure. Occupancy permits shall not be issued for structures for which an Elevation Certificate has not been submitted.
5. All new roads within and adjacent to this site shall be constructed at least one (1) foot above the base flood elevation of the Special Flood Hazard Area or protected from flood waters by an appropriate levee. Improvements to existing roadways shall be required as necessary to provide at least one access route to each lot that is at least one (1) foot above the base flood elevation.
6. A wider turnaround, to accommodate buses and larger vehicles, may be required for any cul-de-sac as directed by the City of Chesterfield.
7. Erosion and salutation control devices shall be installed prior to any clearing or grading and be maintained throughout the project until adequate vegetative growth insures no future erosion of the soil and work is accepted by the owner and controlling regulatory agency.

8. Provide adequate off-street stabilized parking area(s) for construction employees and a washdown station for construction vehicles entering and leaving the site in order to eliminate the condition whereby mud from construction and employee vehicles is tracked onto the pavement causing hazardous roadway and driving conditions.
9. The streets surrounding this development and any street used for construction access thereto shall be cleaned throughout the day. The developer shall keep the road clear of mud and debris at all times.
10. When clearing and/or grading operations are completed or will be suspended for more than 14 days, all necessary precautions shall be taken to retain soil materials on site. Protective measures may include a combination of seeding, periodic wetting, mulching, or other suitable means.
11. If cut and fill operations occur during a season not favorable for immediate establishment of permanent ground cover, unless alternate storm water detention and erosion control devices have been designed and established, a fast germinating annual, such as rye or Sudan grasses, shall be utilized to retard erosion.
12. Soft soils in the bottom and banks of any existing or former pond sites or tributaries or any sediment basins or traps should be removed, spread out and permitted to dry sufficiently to be used as fill. This material shall not be placed in proposed public right-of-way locations or in any storm sewer location.
13. All fills placed under proposed storm and sanitary sewer lines and/or paved areas, including trench backfill within and off the road right-of-way, shall be compacted to 90% of maximum density as determined by the "Modified AASHTO T-180 Compaction Test" (ASTM D-1557) for the entire depth of the fill. Compacted granular backfill is required in all trench excavation within the street right-of-way and under all paved areas. All tests shall be performed concurrent with grading and backfilling operations under the direction of a geotechnical engineer who shall verify the test results.
14. The developer shall cause, at his expense and prior to the recording of any plat, the reestablishment, restoration or appropriate witnessing of all Corners of the United States Public Land Survey located within, or which define or lie upon, the out boundaries of the subject tract in accordance with the Missouri Minimum Standards relating to the preservation and maintenance of the United States Public Land Survey Corners.

II. TIME PERIOD FOR SUBMITTAL OF SITE DEVELOPMENT PLANS

1. TIME PERIOD FOR PLAN SUBMITTAL

The developer shall submit a Site Development Plan within eighteen (18) months of City Council approval of the Preliminary Development Plan. This requirement shall be accomplished prior to issuance of building permits.

- a. Failure to comply with these submittal requirements will result in the expiration of the preliminary development plan and will require a new public hearing.
- b. Where due cause is shown by the developer, this time interval for plan submittal may be extended through appeal to and approval by the Planning Commission.

III. COMMENCEMENT OF CONSTRUCTION

- A. Substantial construction shall commence within two (2) years of approval of the site development concept plan or site development plan, unless otherwise authorized by ordinance. Substantial construction means final grading for roadways necessary for first approved plat or phase of construction and commencement of installation of sanitary storm sewers.
- B. Where due cause is shown by the developer, the Commission may extend the period to commence construction for not more than one additional year.

IV. GENERAL CRITERIA – SITE DEVELOPMENT PLAN SUBMITTAL REQUIREMENTS

- A. Site Development Plan shall include, but is not limited to, the following:
 1. Outboundary plat and legal description of the property.
 2. Density Calculations.
 3. Zoning District lines and floodplain boundaries.
 4. Location map, north arrow, and plan scale.
 5. Conceptual location and size, including height, of all proposed buildings, parking and loading areas, and lots.
 6. Parking calculations.
 7. Specific structure and parking setbacks along all roadways and property lines.
 8. Provide the greenspace percentage for each lot on the plan.
 9. Provide open space percentage.

10. Address trees and landscaping in accordance with the City of Chesterfield Code.
11. Provide a lighting plan in accordance with the City of Chesterfield Code.
12. Provide Floor Area Ratio (F.A.R.)
13. Comply with all preliminary plat requirements of the City of Chesterfield Subdivision Ordinance.
14. Scale shall be no greater than one (1) inch equals one hundred (100) feet.
15. Size and approximate location of existing and proposed internal and adjacent roadway, drives, major utility easements, necessary right-of-way dedications, road improvements and curb cuts on and adjacent to property in question.
16. Show location of curb cuts, necessary right-of-way dedication, road improvements, and driveways on opposite side of street.
17. Show existing and proposed contours at intervals of not more than two (2) foot, and extending one hundred fifty (150) feet beyond the limits of the site.
18. Show existing and proposed roadway, drives, and walkways on and adjacent to the property in question, including location of curb cuts, necessary right-of-way dedications and road improvements, and locations of the existing roads and driveways on the opposite side of the development.
19. Show preliminary stormwater and sanitary sewer facilities.
20. Show the location of significant natural features, such as wooded areas and rock formations that are to remain or be removed.
21. Signed and sealed in conformance with the State of Missouri Department of Economic Development, Division of Professional Registration, Missouri Board for Architects, Professional Engineers and Land Surveyors requirements.
22. Provide comments/approvals from the appropriate Fire District, the Metropolitan St. Louis Sewer District, Howard Bend Levee District, and the Missouri Department of Transportation.
23. Show location and size, including height above sea level, of all buildings, parking and loading areas, light standards, fencing, free-standing signs, trash enclosures, and all other above-ground structures and landscaping.
24. Show existing and proposed roadway, drives, and walkways on and adjacent to the property in question, including location of curb cuts, necessary right-of-way dedications and road improvements, and locations of the existing roads and driveways on the opposite side of the development.

25. Prior to plan approval; depict existing and proposed improvements, easements, right-of-ways, and off-site easements and right-of-way required for proposed improvements within one hundred fifty (150) feet of the site as directed by the City of Chesterfield. Improvements include, but are not limited to, roadways and driveways adjacent to and across the street from the site, and significant natural features, such as wooded areas and rock formations, that are to remain or be removed.
26. Show the location of the proposed storm sewers, detention basins, sanitary sewers and connection(s) to existing systems.
27. Show existing improvements and the locations of significant natural features, such as wooded areas and rock formations that are to remain or be removed.
28. The Site Development Plan and Tree Preservation Plan must be approved prior to clearing or grading.

V. RECORDING

Within sixty (60) days of approval of any development plan by the City of Chesterfield, the approved Plan will be recorded with the St. Louis County Recorder of Deeds. Failure to do so will result in the expiration of approval of said plan and require re-approval of a plan by the Planning Commission.

VI. VERIFICATION PRIOR TO IMPROVEMENT PLAN APPROVAL

Prior to improvement plan approval, the developer will provide the following:

1. Comments/approvals from the Missouri Department of Transportation, the Metropolitan St. Louis Sewer District, the Howard Bend Levee District and the appropriate Fire District and any other applicable agency as required by the Department of Planning.
2. Copies of recorded easements for off-site work, including book and page information, will be provided.

VII. VERIFICATION PRIOR TO FOUNDATION OR BUILDING PERMITS

A. Subsequent to approval of the Site Development Plan and prior to the issuance of any foundation or building permit, the following requirements will be met:

1. Notification of Department of Planning

Prior to the issuance of foundation or building permits, all approvals from the above mentioned agencies and the City of Chesterfield Department of Public Works, as applicable, must be received by the City of Chesterfield Department of Planning.

2. Notification of St. Louis County Department of Public Works

Prior to issuance of foundation or building permits, all approvals from the City of Chesterfield, the Missouri Department of Transportation and the Metropolitan St. Louis Sewer District must be received by the St. Louis County Department of Public Works.

3. Certification of Plans

Provide verification that construction plans are designed to conform to the requirements and conditions of the Geotechnical Report. The Geotechnical Engineer will be required to sign and seal all plans with a certification that the proposed construction will be completed in accordance with the grading and soil requirements and conditions contained in the report.

VIII. OCCUPANCY PERMIT/FINAL OCCUPANCY

1. All lots shall be seeded and mulched or sodded before an occupancy permit shall be issued, except that a temporary occupancy permit may be issued in cases of undue hardship because of unfavorable ground conditions. Seed and mulch shall be applied at rates that meet or exceed the minimum requirements stated in the Sediment and Erosion Control Manual.
2. Prior to final occupancy of any building and/or release of subdivision escrows, the developer shall provide certification by a registered land surveyor that all monumentation depicted on the record plat has been installed and United States Public Land Survey Corners have not been disturbed during construction activities or that they have been reestablished and the appropriate documents filed with the Missouri Department of Natural Resources Land Survey Program.

IX. FINAL RELEASE OF ESCROW

Prior to the release of final escrow, the developer will provide certification by a Registered Land Surveyor that all monumentation depicted on the Record Plat has been installed and that the U.S. Public Land Survey Corners have not been disturbed during the construction activities or that they have been corrected and the appropriate documents filed with the Missouri Department of Natural Resources Land Survey Program.

All conditions of the Escrow as stated in the Escrow Agreement shall be met and approved by the Department of Public Works per the established Escrow Agreement.

X. GENERAL DEVELOPMENT CONDITIONS

- A. General development conditions relating to the operation, construction, improvement and regulatory requirements to be adhered to by the developer are as follows:

1. All required subdivision improvements in each plat of a subdivision shall be completed prior to issuance of more than eighty-five percent (85%) of the building permits for all lots in the plat.
2. If cut or fill slopes in excess of the standard maximum of 3:1 horizontal run to vertical rise are desired, approval for the steeper slopes must be obtained from the Director of Public Works. Approval of steeper slopes is limited to individual and isolated slopes, rock dikes, undisturbed and stable natural slopes and slopes blending with the natural terrain. Design of the steep slopes must be performed by a registered professional engineer and include recommendations regarding construction methods and long-term maintenance of the slope. Any steep slope proposed on a Site Development Plan shall be labeled and referenced with the following note: *Approval of this plan does not constitute approval of slopes in excess of 3:1. Steep slopes are subject to the review and approval of the Director of Public Works. Review of the proposed steep slope will be concurrent with the review of the grading permit or improvement plans for the project.*
3. If any development in, or alteration of, the floodplain is proposed, the developer shall submit a Floodplain Study and Floodplain Development Permit/Application as directed by the Department of Public Works. The Floodplain Study must be approved prior to approval of the Site Development Plan, as directed. The Floodplain Development Permit must be approved prior to the approval of a grading permit or improvement plans. If any change in the location of the Special Flood Hazard Area is proposed, the Developer shall be required to obtain a Letter of Map Revision (LOMR) from the Federal Emergency Management Agency (FEMA). The LOMR must be issued by FEMA prior to the final release of any escrow held for improvements in the development.
4. If any lot is proposed to be located in an existing, or proposed, Special Flood Hazard Area the lot shall be clearly labeled as being located in the floodplain on the Site Development Plan and improvement plans. The lowest Reference Level (floor), as defined by FEMA, shall be constructed a minimum of two (2) feet above the base flood elevation. The Reference Level (floor) of structures in areas removed from or within one hundred (100) feet of the Special Flood Hazard Area shall be constructed a minimum of two (2) feet above the highest base flood elevation in the vicinity of the lot unless other actions are taken that assure the structures are reasonably safe from flooding as defined by FEMA and approved by the Department of Public Works. The minimum elevation for the Reference Level for each lot shall be indicated on the Site Development Plan and improvement plans, and an Elevation Certificate, on the form developed by FEMA for that purpose, shall be submitted immediately after construction of each structure. Occupancy permits shall not be issued for structures for which an Elevation Certificate has not been submitted.

5. All new roads within and adjacent to this site shall be constructed at least one (1) foot above the base flood elevation of the Special Flood Hazard Area or protected from flood waters by an appropriate levee. Improvements to existing roadways shall be required as necessary to provide at least one access route to each lot that is at least one (1) foot above the base flood elevation.
6. Erosion and siltation control devices shall be installed prior to any clearing or grading and be maintained throughout the project until adequate vegetative growth insures no future erosion of the soil and work is accepted by the owner and controlling regulatory agency.
7. Access/utility easements shall be required throughout the development. A continuous fifteen (15) foot wide rear yard easement shall be provided. At a minimum, a ten (10) foot wide utility/access easement shall be provided at every other lot line or break between structures, as directed.
8. Should the design of the subdivision include retaining walls that serve multiple properties, those walls shall be located within common ground or special easements, including easements needed for access to the walls.
9. This development may require an NPDES permit from the Missouri Department of Natural Resources. NPDES permits are applicable to construction activities that disturb one (1) or more acres.
10. Internal streets shall be constructed in accordance with Section 1005.180 of the Subdivision Ordinance of the City of Chesterfield.
11. If street grades in excess of six percent (6%) are desired, steep grade approval must be obtained. In no case shall slopes in excess of twelve percent (12%) be considered. Any request for steep street grades must include justification prepared, signed and sealed by a registered professional engineer and include plans, profiles, boring logs, cross-sections, etc in accordance with the Street Grade Design Policy. The justification should clearly indicate site conditions and alternatives considered. If steep grades are approved for this site, a disclosure statement shall be provided to all potential buyers and a note indicating that priority snow removal will not be given to this site shall be included on the Site Development Plan and Record Plat.
12. Any request to install a gate at the entrance to this development must be approved by the City of Chesterfield and the Missouri Department of Transportation. No gate installation will be permitted on public right of way. A minimum stacking distance of 60 feet from any intersection and a turnaround for rejected vehicles designed to accommodate a single unit truck shall be provided in advance of the gate, as directed by the Department of Public Works and the Missouri Department of Transportation.

13. All streets within this development shall be private and remain private forever. Maintenance of private streets, including, but not limited to, snow removal, shall be the responsibility of the developer/subdivision. In conformance with Section 1005.265 of the Subdivision Ordinance, a disclosure statement shall be provided to all potential buyers. In conformance with Section 1005.180 of the Subdivision Ordinance, the method for providing continuous maintenance of streets and appurtenant storm sewers shall be included in the trust indentures and the record plat.

Signage indicating that the streets are private and owners are responsible for maintenance shall be posted in conformance with Section 1005.180 of the Subdivision Ordinance. Said signage shall be posted within 30 days of the placement of the adjacent street pavement and maintained/replaced by the developer until such time as the subdivision trustees are residents of the subdivision, at which time the trustees shall be responsible.

- i. The nearest edge of any drive or intersecting street shall be located at least 40 feet from the line of the gate, as directed.
14. Placement of fire hydrants and required fire flow shall be per the direction of the appropriate Fire Protection District.

XVII. ENFORCEMENT

1. The City of Chesterfield, Missouri will enforce the conditions of this ordinance in accordance with the Site Development Plan approved by the City of Chesterfield and the terms of this Attachment A.
2. Failure to comply with any or all the conditions of this ordinance will be adequate cause for revocation of permits by issuing Departments and Commissions.
3. Non-compliance with the specific requirements and conditions set forth in this Ordinance and its attached conditions or other Ordinances of the City of Chesterfield shall constitute an ordinance violation, subject, but not limited to, the penalty provisions as set forth in the City of Chesterfield Code.
4. Waiver of Notice of Violation per the City of Chesterfield Code.
5. This document shall be read as a whole and any inconsistency to be integrated to carry out the overall intent of this Attachment A.