

**GRADING NOTES:**

- Underground utilities have been plotted from available information and therefore their locations shall be considered approximate only. The verification of the location of all underground utilities, either shown or not shown on these plans, shall be the responsibility of the contractor, and shall be located prior to any grading and/or construction of improvements.
  - The contractor shall assume complete responsibility for controlling all siltation and erosion of the project area. The contractor shall use whatever means necessary to control erosion and siltation including, but not limited to, staked straw bales and/or siltation fabric fences (possible methods of control are detailed in the plan). Control shall commence with grading and be maintained throughout the project until acceptance of the work by the Owner and/or the City of O'Fallon and/or MoDOT. The Contractor's responsibilities include all design and implementation as required to prevent erosion and the depositing of silt. The Owner and/or the City of O'Fallon and/or MoDOT may at their option direct the Contractor in his methods as deemed fit to protect property and improvements. Any depositing of silt or mud on new or existing pavement shall be removed immediately. Any depositing of silt or mud in new or existing storm sewers shall be removed after each rain and affected areas cleaned to the satisfaction of the Owner and/or the City of O'Fallon and/or MoDOT. Erosion control shall not be limited to what is shown on the plans.
  - No area shall be cleared without permission of the developer.
  - Owner/Developer assumes full responsibility as to the performance of the grading operation and assurance that all properties and City/County and State roads will be adequately protected.
  - Soil preparation and re-vegetation shall be performed according to Appendix A of the Model Sediment and Erosion Control Regulations for Urban Development.
  - Where natural vegetation is removed during grading, vegetation shall be re-established in such a density as to prevent erosion. Permanent type grasses shall be established as soon as possible or during the next seeding period after grading has been completed. Refer to Appendix A of St. Charles Soil and Water Conservation District - Model Sediment and Erosion Control Regulations.
  - Site preparation includes the clearance of all stumps, trees, bushes, shrubs, and weeds; the grubbing and removal of roots and other surface obstructions from the site; and the demolition and removal of any man-made structures. The unsuitable material shall be properly disposed of off-site. Topsoil and grass in the fill areas shall be thoroughly disced prior to the placement of any fill. The Soils Engineer shall approve the discing operation.
  - Compaction equipment shall consist of tamping rollers, pneumatic-tired rollers, vibratory rollers or high speed impact type drum rollers acceptable to the Soils Engineer. The rollers shall be designed so as to avoid the creation of a layered fill without proper blending of successive fill layers.
  - The developer must supply the City construction inspectors with soil reports prior to and during soil testing. The soil report will be required to contain the following information on soil test curves (Proctor Reports) for projects within the City.
    - Maximum dry density
    - Optimum moisture content
    - Maximum and minimum allowable moisture content
    - Curve must be plotted to show density from a minimum of 95% Compaction and above as determined by the "Modified AASHTO T-180 Compaction Test" (A.S.T.M.-D-1157) or from a minimum of 100% as determined by the "Standard Proctor Test AASHTO T-99, Method C" (A.S.T.M.-D698). Proctor type must be designated on document.
    - Curve must have at least 5 density points with moisture content and sample locations listed.
    - Specific Gravity
    - Natural Moisture Content
    - Liquid Limit
    - Plastic Limit
- Be advised that if this information is not provided to the City's Construction Inspector the City will not allow grading or construction activities to proceed on any project site.
- The Soils Engineer shall observe and test the placement of the fill to verify that specifications are met. A series of fill density tests will be determined on each lift of fill. Interim reports showing fill quality will be made to the Owner at regular intervals.
  - The Soils Engineer shall notify the Contractor of rejections of a lift of fill or portion thereof. The Contractor shall rework the rejected portion of fill and obtain notification from the Soils Engineer of its acceptance prior to the placement of additional fill.
  - All Areas to receive fill shall be scarified to a depth of not less than 6 inches and then compacted to at least 90 percent of the maximum density as determined by the Modified AASHTO T-180 Compaction Test (ASTM-D1557). Natural slopes steeper than 1 vertical to 5 horizontal to receive fill shall have horizontal benches cut into the slopes before the placement of any fill. The width and height to be determined by the Soils Engineer. The fill shall be loosely placed in horizontal layers not exceeding 8 inches in thickness and compacted in accordance with the specifications given below. The Soils Engineer shall be responsible for determining the acceptability of soils placed. Any unacceptable soils placed shall be removed at the Contractor's expense.
  - The surface of the fill shall be finished so that it will not impound water. If at the end of a days work it would appear that there may be rain prior to the next working day, the surface shall be finished smooth. If the surface has been finished smooth for any reason, it shall be scarified before proceeding with the placement of succeeding lifts. Fill shall not be placed on frozen ground, nor shall filling operations continue when the temperature is such as to permit the layer under placement to freeze.
  - All cut and fill slopes should be a maximum of 3:3% slope (3:1) after grading. 2:1 slopes will be permitted with the approval of the City Engineer. A Professional Engineer with demonstrated geotechnical experience shall sign and seal recommendations for stability of 2:1 slopes.
  - All fill placed under proposed storm and sanitary sewer, proposed roads, and/or paved areas shall be compacted to 95% of maximum density as determined by the Modified AASHTO T-180 Compaction Test or 100% of maximum density as determined by Standard Proctor Test AASHTO T-99. All fill placed in proposed roads shall be compacted from the bottom of the fill up. All tests shall be verified by a soils engineer concurrent with grading and backfilling operations. Note that the moisture content of the soil in fill areas is to correspond to the compactive effort as defined by the Standard or Modified Proctor test. Optimum moisture content shall be determined using the same test that was used for the compaction. Soil compaction curves shall be submitted to the City of O'Fallon prior to the placement of fill. Proof rolling may be required to verify soil stability at the discretion of the City of O'Fallon.
  - Soft soil in the bottom and banks of any existing or former pond site should be removed, spread out and permitted to dry sufficiently to be used as fill. None of this material should be placed in proposed right-of-way locations or on storm sewer locations.
  - Temporary siltation control measures (structural) shall be maintained until vegetative cover is established at a sufficient density to provide erosion control on the site.
  - If straw bales or silt fences are destroyed by heavy rains, vandalism, etc., they are to be replaced immediately by contractor.
  - When grading operations are completed or suspended for more than fourteen (14) days, permanent grass must be established at sufficient density to provide erosion control on the site. Between permanent grass seeding periods, temporary cover shall be provided according to the Designated Official's recommendation. Refer to Appendix A of St. Charles Soil and Water Conservation District - Model Sediment and Erosion Control Regulations. All finished grades (areas not to be disturbed by improvement) in excess of 20% slopes (5:1) shall be mulched and tacked at the rate of 100 pounds per 1000 square feet when seeded.
  - All erosion control systems shall be inspected and necessary corrections made within 24 hours of any rainstorm resulting in one-half inch of rain or more.
  - Debris and foundation material from any existing on-site building or structure which is scheduled to be razed for this development must be disposed of off-site.
  - The total yardage of this project is based on a 15% ± shrinkage factor.
  - The shrinkage factor is subject to change, due to soil conditions (types and moisture content), weather conditions, and the percentage of compaction actually achieved at the time of the year grading is performed. As a result, adjustments in final grade may be required. If adjustments need to be made, the contractor shall contact St. Charles Engineering and Surveying, Inc. prior to completion of the grading.
  - The vertical grading tolerance shall be plus or minus 0.2 feet for all rough grading.
  - The Contractor shall prevent all storm/surface water, mud or construction debris from entering the sanitary sewer system.
  - All low places shall be graded to provide drainage with temporary ditches.
  - Any cost to the City due to public notification or letters required by FEMA, to be sent by or published by the City shall be reimbursed by the developer.
  - The existing sanitary manholes shall be adjusted to proposed grade with concrete grade rings not to exceed 16" in height. For taller extension manhole barrel units shall be used.
  - Grading shall not be started or continued on soils having more than 2-inches of frost. When such conditions exist, the surface must be thoroughly broken and mixed with non-frozen material to the satisfaction of the engineer. No frozen soils may be added to any fill material. Frost must be removed and stockpiled for later use if needed.
  - Construction hours on this project will be during the following times.
 

October 1 - May 30	7:00 am to 7:00 pm	Monday - Sunday
June 1 - September 30	6:00 am to 8:00 pm	Monday - Friday
	7:00 am to 8:00 pm	Saturday and Sunday
  - The most stringent of the above requirements shall apply.

**O'FALLON NOTES:**

- Rip rap shown at flared ends will be evaluated in the field after installation for effectiveness and field modified if necessary to reduce erosion on and off site.
- All paving to be in accordance with St. Charles County standards and specifications except as modified by the City of O'Fallon ordinances.
- Provide a marking on all storm sewer inlets. The City will allow the following markers and adhesive procedures only as shown in the table below or an approved equal by Almetek Industries. "Peel and stick" adhesive pads will not be allowed.
 

MANUFACTURER	SIZE	ADHESIVE	STYLE	MESSAGE (PART#)	WEBSITE
ACP INTERNATIONAL	3 7/8"	epoxy	crystal cap	no dumping drains to waterways (sd-w-cs)	www.acpinternational.com
DAS MANUFACTURING, Inc.	4"	epoxy	Standard style	no dumping drains to stream (#sds)	www.dasmanufacturing.com
- All pipe joints shall be gasketed O-ring type.
- Connections at all sanitary and storm structures to be made with A-lock joint or equal.
- All inlets shall have a 5/8" dia. trash bar.
- 0.20' drop is required in all storm sewer and sanitary sewer structures.
- All sanitary laterals shall be a minimum of 6" PVC.
- Brick shall not be used in the construction of sanitary or storm sewer structures. Precast concrete structures are to be used unless otherwise approved by the City.
- All sanitary laterals and sanitary mains crossing under pavement must have the proper rock backfill and required compaction.
- HDPE pipe is to be N-12WT or equal and to meet ASTM F1417 water tight field test.
- Lighting values will be reviewed on site prior to final occupancy inspection. Corrections will need to be made if not in compliance with City Standards.
- All proposed fencing requires a separate permit through the Planning Division.
- All sign locations and sizes must be approved separately through the Planning Division.
- All sign post and backs and bracket arms shall be painted black using Corboline Rustbond Penetrating Sealer 5G and Corboline 133 HB paint (or equivalent as approved by the City and MoDOT). Signs designating Street Names shall be on the opposite side of the street from traffic control signs.
- All utilities will be located underground.
- Trees, organic debris, rubble, foundations and other deleterious material shall be removed from the site and disposed in compliance with all applicable laws and regulations. Landfill tickets for such disposal shall be maintained on file by the developer. Burning on site shall be allowed only by permit from the local fire district. If a burn pit is proposed the location and mitigation shall be shown on the grading plan and documented by the soils engineer.
- All public utilities shall be installed within easements, either existing or to be established on a future record plat.
- All sidewalks, curb ramps, ramp and accessible parking shall be constructed in accordance with current approved "American With Disabilities Act Accessibility Guidelines" (ADAAG) along with the required grades, construction material, specifications and signage. If any conflict occurs between the above information and the plans, the ADAAG guidelines shall take precedence and the contractor prior to any construction shall notify the project engineer. (note that at least one 8' wide handicap access aisle is provided and curb ramps do not project into handicap access aisles.)
- Truncated Domes for curb ramps shall meet ADA requirements and shall be constructed using red pre cast truncated domes such as those manufactured by Armor Tile or approved equal.
- All curbs shall be six (6") inch vertical concrete curbs.
- Grades at entrances shall not exceed 2% for walks, 4% from street and 10% overall. Typically 2% from back of curb through the right of way is desired.
- All water mains shall adhere to the City of O'Fallon Specifications.

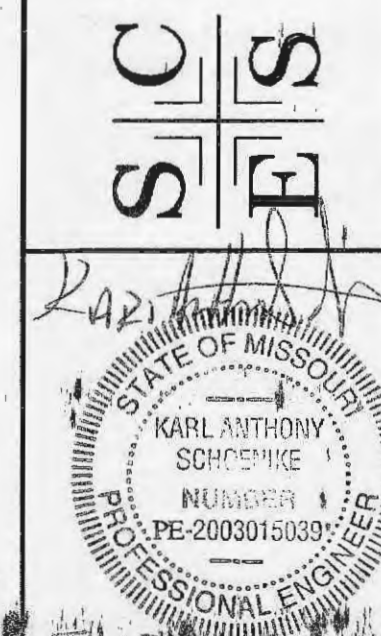
**CONSTRUCTION NOTES:**

- All construction and materials shall conform to City of O'Fallon Sanitary Sewer, Water, Storm, Pavement and St. Charles County Standards and Specifications.
- Forty-eight (48) hours notice shall be given to the following: City of O'Fallon Sewer Division before construction of sanitary sewers, City of O'Fallon Water Division before construction of water mains, City of O'Fallon Construction Inspection Group before grading, storm sewer, and pavement construction begins in order to allow scheduling of required inspections.
- All standard curb inlets are to have front-of-inlet 2'-6" (two and one half feet) behind curb, within public right-of-way, unless otherwise noted.
- All storm sewers shall be Reinforced A.S.T.M. C-76, Class III minimum, unless otherwise shown on the plans.
- All storm sewer pipe in the right-of-way shall be reinforced concrete pipe (A.S.T.M. C-76, Class III minimum).
- The use of High Density Polyethylene Corrugated Pipe (HDPE) with smooth interior wall will be permitted as an acceptable alternative to RCP outside of the Public ROW. Pipe shall meet A.S.T.M. D-2321 A.A.S.H.T.O. M-294-921. Concrete Flared End Sections, Manholes and Inlet Structures shall be required. Material will be continuous between structures, splicing is not permitted. HDPE pipe will not be permitted under paved areas or soon to be paved areas. HDPE pipe should provide for a water tight joint such as "Sure-Lok" WT by Hancor, Inc.
- All corrugated steel pipe shall conform to the requirements of AASHTO M-36 and shall be fully coated with bituminous material conforming to the requirements of AASHTO M-190. Corrugated steel pipe shall be helical pipe with reformed ends. Pipes shall be joined using either hugger bands with rubber o-ring gaskets or universal corrugated bands with sponge neoprene gaskets.
- Concrete Pipe Joints shall be M.S.D. Type "A" Approved Compression Joints and shall conform to the requirements of the Specification for Joints and Circular Concrete Sewer and Culvert Pipe, using flexible, watertight, rubber-type gaskets A.S.T.M. C-443. Band-Type Gaskets depending entirely on cement for adhesion and resistance to displacement during jointing shall not be used.
- Existing sanitary sewer service shall not be interrupted.
- The Contractor shall prevent all storm/surface water, mud or construction debris from entering the existing sanitary sewer system.
- The contractor shall maintain access to existing residential driveways and streets at all times.
- All pipes shall have 0.20 feet drop through manholes. No flat base structures are allowed.
- All trench backfills under paved areas shall be granular backfill, and water jetted. All other trench backfills may be earth material (free of large clods or stones) and shall be water jetted. JETTING. Granular material and earth materials associated with new construction outside of pavements may be jetted, taking care to avoid damage to newly laid sewers. The jetting shall be performed with a probe route on not greater than 7.5-foot centers with the jetting probe centered over and parallel with the direction of the pipe. Trench widths greater than 10-feet will require multiple probes every 7.5-foot centers.
  - DEPTH. Trench backfills less than 8-feet deep shall be probed to a depth extending half the depth of the trench backfill, but not less than 3-feet. Trench backfill greater than 8-feet in depth shall be probed to half the depth of the trench backfill but not greater than 8-feet.
  - EQUIPMENT. The jetting probe shall be a metal pipe with an exterior diameter of 1.5 to 2-inches.
  - METHOD. Jetting shall be performed from the low surface topographic point and proceed towards the high point, and from the bottom of the trench backfill towards the surface. The flooding of each jetting probe shall be started slowly allowing slow saturation of the soil. Water is not allowed to flow away from the trench without first saturating the trench.
  - SURFACE BRIDGING. The contractor shall identify the locations of the surface bridging (the tendency for the upper crust to rch over the trench rather than collapse and consolidate during the jetting process). The contractor shall breakdown the bridged areas using an appropriate method such as wheels or bucket of a backhoe. When surface crust is collapsed, the void shall be backfilled with the same material used as trench backfill and re-jetted. Compaction of the materials within the sunken/jetted area shall be compacted such that no further surface subsidence occurs.
- No sewer tops shall be built without elevations furnished by the Engineer.
- Easements shall be provided for storm sewers, sanitary sewers, and all utilities on the record plat. See record plat for location, size, and width of easements.
- All signs and sign posts shall conform to the City of O'Fallon standards.
- Debris, soil, and other material shall be removed daily from public streets and sidewalks.
- It shall be the responsibility of the contractor/developer to provide traffic control per M.U.T.C.D.
- Developer shall assume full responsibility for the maintenance of the temporary sediment basins until vegetation is established.
- Utilities crossing existing streets of collector size and greater shall be in a conduit or casing pipe.
- The most stringent of the above requirements shall apply.

REVISED PER CITY COMMENTS

BOX CULVERT PLANS FOR:  
**BRAMBLETT ROAD**

ST. CHARLES ENGINEERING & SURVEYING, INC.  
801 S. FIFTH STREET, SUITE 202  
ST. CHARLES, MO 63301  
TEL: (636) 947-0607 FAX: (636) 947-2448



ORDER NO.  
04-1419-01  
DATE  
11/05/07  
BC-2