GN # 3 Truncated domes for curb ramps located in public right of way shall meet ADA requirements and shall be constructed using red pre cast truncated domes per pavement details.

GN # 4 Any proposed pavilions or playground oreas will need a separate permit from the Building Division.

GN # 5 The Contractor is responsible to call Missouri One Call and The City of D'Fallon for the location of utilities. Contact the City of O'Fallon (636) 379—3814 for the location of City maintained cable for street lights and traffic signals, all other utilities call Missouri One Call 1-800-DIG-RITE. 1-800-344-7483

GN # 6 All proposed utilities and/or utility relocations shall be located underground.

GN # 7 All proposed fencing requires a separate permit through the Building Division.

GN # 8 All construction operations and work zone traffic control within the right of way will follow MoDOT or M.U.T.C.D. standards whichever is more stringent.

GN # 9 All free standing signs shall be located a minimum of ten (10) feet away from any right of way line and/or property line and a minimum of three (3) feet from the back of curbing or sidewalk. All signs shall abide by the regulations for visibility at corners, including corners from driveways and the street it intersects per Section 400.260 of the O'Fallon Zoning Code.

GN #10 All subdivision identification or directional sign(s) must hove the locations and sizes approved and permitted separately through the Planning and Development

GN #11 Materials such os trees, arganic debris, rubble, foundations, and other deleterious material shall be removed from the site and disposed of in compliance with all applicable laws and regulations. If the material listed previously are reused, a letter from a soil Engineer must clarify amount, location, depth. ect. and be approved with the construction plans. 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.

GN #12 Twenty-four (24) hours prior to storting any of the work covered by the above plans and after opproval thereof, the developer shall make arrangements with the Construction Inspection Office to provide for inspection of the work, sufficient in the opinion of the City Engineer, to assure compliance with the plans and specifications os approved.

GN #13 The City Engineer or their duly authorized representative sholl make all necessary inspections of City infrastructure, escrow items or infrastructure located on the approved plans.

GN #14 All installations and construction shall conform to the approved engineering drawings. However, if the developer chooses to moke minor modifications in design and/or specifications during construction, he/she shall make such changes at his/her own risk, without ony assurance that the City Engineer will approve the completed installation or construction. It shall be the responsibility of the developer to notify the City Engineer of any changes from the approved drawings. The developer may be required to correct the installed improvements so as ta conform to the engineering drawings. The developer may request a letter from the Construction Inspection Division regarding any field changes approved by the City inspectors.

GN #15 City approval of the construction site plans does not mean that any building can be constructed on the lots without meeting the building setbacks as required by the Zoning Code.

Erosion Control Notes

EN # 1 The Permittee shall assume complete responsibility for controlling all siltation and erosion of the project area. The Permittee 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 the clearing operations and be maintained throughout the project until acceptance of the work by City of O'Fallon and as needed by MoDOT. The Permittee's responsibilities include all design and implementation as required to prevent erosion and the depositing of silt. The City of O'Fallon and as required by McDOT may at their option direct the Permittee 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 silts or mud in new or existing storm sewers and/or swales shall be removed after each rain and offected areas cleaned ta the satisfaction of the City of O'Fallon and as required by MoDOT."

EN # 2 All erosion control systems are to be inspected and corrected weekly, especially within 48 hours of any rain storm resulting in one—half inch of rain or more. Any silt or debris leaving the site and offecting public right of way or starm water drainage facilities sholl be cleaned up within 24 hours after the end of the storm.

EN # 3 Erosion control devices (silt fence, sediment basin, etc.) shall be in occordance with St. Charles County Soil and Water Conservation District Erosion and Sediment Control guidelines.

EN # 4 This development is required to provide long term post construction BMP's such as; low impact design, source control and treatment controls that protects water quality and controls run off to maximum extent practical in compliance with Phase II Illicit Storm Water Discharge Guidelines. (Ord. 5082, section 405.0245)

EN #5 Graded areas shall be seeded and mulched (strawed) within 14 days of stopping land disturbance activities. Unless it can be shown to the City Engineer that weather conditions are not favorable, vegetotive growth is to be established within 6 weeks of stopping grading work on the project. The vegetative growth established shall be sufficient to prevent erosion and the standard shall be as required by EPA and DNR. (70% coverage per square foot) Ord. 5242, Section 405.070

Grading Notes

GRN #1 Developer must supply City construction inspectors with soil reports prior to and during site grading. The soil report will be required to contain

the following information on soil test curves (Proctor reports) for projects within the City: Moximum dry density

Optimum moisture content

Maximum and minimum allowable moisture content

4. Curve must be plotted to show density from a minimum of 90% Compaction and above as determined by the "Modified AASHTO T-180" Compaction Test" (A.S.T.M.-D-1157) or from a minimum of 95% as determined by the "Standard Proctor Test ASSHTO T-99, Method C" (A.S.T.M.-D-698). Proctor type must be designated on document.

5. Curve must have at least 5 density points with moisture content and sample locations listed on document

Specific gravity 7. Natural moisture content

8. Liquid limit

9. 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.

GRN #2 All fill placed in areas other than proposed storm sewers, sanitary sewers, proposed roads, and paved areas shall be compacted from the bottam of the fill up in 8" lifts and compacted to 90% moximum density as determined by Modified AASHTO T-180 compaction test or 95% of maximum density as determined by the Standard Practor Test AASHTO T-99. Ensure the moisture content of the soil in fill areas corresponds 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 compaction. Soil compaction curves shall be submitted to the City of O'Fallon prior to the placement of fill.

GRN # 3 The surface of the fill shall be finished so 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 loyer under placement to freeze.

GRN # 4 All sediment and detention bosins are to be constructed during the initial phase of the grading operation or in accordance with the approved SWPPP.

GRN # 5 When grading operations are complete or suspended for more than 14 days, permanent grass must be established at sufficient density to provide erosion control on site. Between permanent grass seeding periods, temporary cover shall be provided according to St. Charles Soil and Water Conservation District - Model Sediment and Erosion Control Regulations. All finished grades (areas not to be disturbed by improvements) in excess of 20% slopes (5:1) shall be mulched and tacked at a rate of 100 pounds per 1000 square feet when seeded.

GRN # 6 No slopes shall exceed 3 (horizontal): 1 (vertical) unless otherwise approved by the soils report and specifically located on the plans and approved by the City Engineer.

GRN # 7 All low places whether on site or off shall be graded to provide drainage with temporary ditches.

GRN # 8 All existing wells on site shall be capped per DNR standards.

Grading Notes Continued

GRN #10 All trench back fills under paved areas shall be granular back fill, and compacted mechanically. All other trench back fills may be earth material (free of large clods, or stones) and compacted using either mechanical or water jetting, Granular material and earth material 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

a) Depth, Trench back fills less than 8 feet deep shall be probed to a depth extending half the depth of the trench back fill, but not less than 3 feet. Trench back fill greater than 8 feet in depth shall be probed to half the depth of the trench back fill but not greater than 8

b) Equipment, The jetting probe shall be a metal pipe with an interior diameter of 1.5 to 2 inches.

c) Method, Jetting shall be performed from the lowest surface topographic point and proceed toward the highest point, and from the bottom of the trench back fill toward 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.

d) Surface Bridging, The contractor shall identify the locations of the surface bridging (the tendency far the upper surface to crust and arch over the trench rather than collapse and consolidate during the jetting process). The contractor shall break down the bridged areas using an appropriate method such as wheels or bucket of a backhoe. When surface crust is collapsed, the void shall be back filled with the same material used as trench back fill and rejetted. Compaction of the materials within the sunken/jetted area shall be compacted such that no further surface subsidence occurs.

GRN #11 Site grading

a. Within City right—of—woy. Material is to be placed in eight (8) inch to twelve (12) inch loose lifts and compacted per the approved compaction requirements. One (1) compaction test will be performed every two hundred fifty (250) feet along the centerline for each lift.

b. Outside of City right—of—way. Material is to be placed in eight (8) inch to twelve (12) inch loose lifts and compacted per the approved compaction requirements. One (1) compaction test will be performed at two (2) foot vertical intervals and approximately every one thousand (1,000) cubic yards.

> SITE IS SERVED BY DUCKETT CREEK SANITARY DISTRICT SEE NOTES ON SHEET 23.

Sanitary Sewer Notes

AN # 1 All sanitary sewer installation is to be in accordance with M.S.D. 20D7 standards and specifications except as modified by the City

hall not be used in the construction of sanitary sewer structures. Pre cast concrete structures are to be used

SAN # 3 Connections at all so tary structures are to be made with A-Lock joint or equal

SAN # 4 All sanitary laterals shall be sinimum of 4" residential, 6" commercial diameter pipe.

SAN # 5 All sanitory mains shall be a minimum 18" diameter pipe.

SAN # 6 All sanitary sewer line with a slope greater the 20% will require concrete crack concrete collar. Sanitary line with a slope greater than 50% will require a special approved design as shown on

SAN # 7 All manholes built within the 100 year flood plain must have e watertight manhole covers.

SAN # 8 All sanitary sewer mains must have a minimum of 42"

SAN # 9 When sanitary mains cross over storm line the san

SAN #10 Encase with concrete both sanitary and start sewer at crossing when storm sewer is in 18 inches above sanitary sewer. Add concrete cradle se HDPE storm sewer when it is more than 18 inches to only RCP storm sewer and sanitary line. Show on profile sheet.

aragonally through the side yards to minimize any additional utility eas SAN #11 The sanitary sewers should

SAN #12 All sanitary sewer strettares shall be waterproofed on the exterior in accordance to Missouri DNR specifications 190SR-8.120 (7)(E).

SAN #13 All sanitary or pipe shall be SDR35 or equal. SAN #14 All sociary sewer manholes and pipes will be tested to the following specifications. ASTM C1244, Standard testing method

Manhole by Negative Air Pressure (Vacuum), Latest revision ASTM F1417, Standard testing methad for Installation Acceptance of F Sewer Lines Using Low Pressure Air, Latest revision.

SAN #15 Add 1" minus rock back fill to oll sanitary sewer and all other utilities that lie within the 1:1 shear plane of the rood.

Storm Sewer Notes

STM # 1 All Storm Sewer installation is to be in accordance with M.S.D. 2007 standards and specifications except as modified by the City of O'Fallon

STM # 2 Brick shall not be used in the construction of storm sewer structures. Pre cast concrete structures are to be used unless otherwise approved by the City of O'Fallon.

STM # 3 A 5/8" trash bar shall be installed horizontally in the center of the opening(s) in all curb inlets and area inlets.

STM # 4 HDPE pipe is to be N-12WT or equal and to meet ASTM F1417 water tight field test.

STM # 5 Encase with concrete both sanitary and storm sewer at crossing when storm sewer is within 18 inches above sanitary sewer. Add concrete cradle to only RCP storm sewer and encase HDPE storm sewer when it is more than 18 inches obove sanitary line. Show on profile sheet.

STM # 6 The storm sewers should run diagonally through the side yards to minimize any additional utility easements required.

STM # 7 All concrete pipes will be installed with O-ring rubber type gaskets.

STM # 8 Connections at all storm structures are to be made with A-lock joint or equal.

STM # 9 Pre cast concrete inlet covers are not to be used.

STM #10 The swale in the detention basins shall have a minimum 1% longitudinal slope and be lined with a permanent erosion control blanket that will allow infiltration of storm water.

STM #11 All storm sewer shall be reinforced concrete pipe or H.D.P.E. pipe. All structures and flared end sections must be concrete. Manufacturing specifications must be followed and details provided for the installation of H.D.P.E. pipe, H.D.P.E. pipe will not be allowed for detention basin outflows, final pipe run to detention basins, creek discharge or other approved means.

STM #12 The discharge point of all flared end sections shall be protected by rip rap or other approved means.

STM #13 Rip rap shown at flared end sections will be evaluated in the field by the Engineer, Contractor, and City Inspectors after installation for effectiveness and field modified, if necessary to reduce erosion on and off site.

STM #14 Add 1" minus rock back fill to all storm sewer that lie within the 1:1 shear plane of the road.

SITE IS SERVED BY PWSD No. 2 OF ST. CHARLES COUNTY SEE NOTES ON SHEET 18.

WN # 1 Fire hydrants shall be a maximum of 600' apart. Local fire district approval is required.

# 2 Coordinate with the water company on the location of water meters. water main must have a minimum of 42" of cover. (City water mains)

WN # 4 Prov. water valves to isolate the system.

WN # 5 All water in shall be class 200 SDR 21 or equal with locator/tracer wires

WN # 6 DISINFECTING:

Disinfecting shall be a amplished by placing sufficient hypo chlorite granule (HTH) in each section of the to achieve a chlorine residual in the pipeline, upon initial filling, or 10 mg/L (PPM). HT. tablets will not be allowed. Following completion of the pipeline, it shall be slowly filled with water and a sample will be take immediately and the chlorine residual must be 50 mg/L or greater. The solution shall be allowed to stand for 24 hours and a sample shall then be to ... The chlorine residual after 24 hours shall be 30 mg/L or greater. If the piping shows insufficient chlorine residuals in either test, the piping shall be sechlorinated by the interior of hypo chlorite solution until satisfactory results are achieved. All disinfecting shall be done by the contractor ally the te ng to determine the chlorine residuol will be done by the City.

WN # 7 PRESSURE TESTING:

Immediately following disinffection, the piping shall be pured to a preside (at the lowest point in the project) of 150 psi or higher where the by the City. In such coase the pressure shall be as specified by the City and two pressure working pressure is higher than 150 PSI as determine tests shall be conducted. The first test shall with the fire hydrant auxiliory valve on and be to 150 PSI. The second test shall be with the fire hydrant auxiliary volve closed and box the higher pressure as directed by the City. As sumping equipment and pressure gauges shall be provided by the contractor. After anieving the test pressure, the piping shall be left closed for a riod of two (2) hours. At the end of this time the pressure drop should exceed 2 psi. In addition, if the pressure appears, in judgment of the businesses representative, to be continuing to drop, the test shall be asidered a failure. If the pressure test as, the contractor will be required to find and correct the source of the leakage. If this requires draining of the pipeline, akage is carrected, the pipeline must be re-disinfected and the pressure tested again until satisfactory result are bieved. Any required dechlorination will be performed by the contractor.

ops for valves, meters, and manholes are to be constructed to within 1 inch (0.08') of finish grade. Grading around structure tops on slopes need to be accounted for.

WILL TESTING:

<u>lisinfec</u>tion and pressure testing, a sample shall be taken by the contractor in the pre<u>sence</u> the Missouri Department of Natural Resources and the Att or pacteriological analysis. After 24 hours, we samples taken on consecutive days ,a minimum of 24 hours a second sample shall be taken in a like manne. the test results must be supplied to the City. If the samples are apart, must be found to be "safe" by the testing laborate not found to be "safe" further flushing or disinfection as directed by the City snow. ducted by the contractor until "safe" samples ways are achieved. Following successful bacteriological testing and a determination. the mains may be placed into service.

## Roadway Notes

RN # 1 All paving (public and private) to be in accordance with 2006 St. Charles County Standards and Specifications except as modified by the City of O'Fallon ordinances.

RN # 2 If the intersecting road does not have a curb, then the curb on the new entrance shall begin 10' fram the edge of the existing road.

RN # 3 Provide 6" of cancrete over 4" of MoDot type 1 or type 5 aggregate rock or asphalt equivalent for minor residential streets per City Code 405.370.

RN # 4 Multi—use trail (when required) Shall have a minimum of 3" Type "C" Asphalt over 4" aggregate base per City requirements.

RN # 5 Type C (BP-1) Compaction requirements shall be 98% minimum density according to St. Charles Co. Standard Specifications.

RN # 6 Provide pavement striping at any point where the multi-use trail crosses existing or proposed pavement

RN # 7 All street stub-outs over 250' in length will require a temporary turnoround.

RN # 8 All sub grade in cut or fill will need to conform to the City of O'Fallon Compaction requirements RN # 9 Material Testing And Frequency. Materials for construction shall be tested and inspected per the appropriate ASTM code or at the City Engineer's discretion. The developer's engineer shall perform the following quality control guidelines:

a. Cylinders/compressive strength. One (1) set of four (4) cylinders within the first fifty (50) cubic yords and one (1) set per one hundred (100) cubic yards thereafter. Dne (1) cylinder must be tested at seven (7) days, one (1) at fourteen (14) days and two (2) at twenty—eight (28) days. If the first (1st) cylinder does not meet specifications of twenty—eight (28) days, then the second (2nd) cylinder must be held and tested

b. Percent air and temperature. First (1st) truck batch each day and two (2) thereafter until a consistency is encountered. Once a consistency is encountered, then tests will be performed in conjunction with the concrete cylinders.

c. Slump. First (1st) truck batch each day and two (2) thereafter until a consistency is encountered. Once a consistency is encountered, then tests will be performed in conjunction with the concrete cylinders.

d. If concrete is batched from more than one (1) plant, then the aforementioned guidelines will be applicable to each plant. Sub grode ond base.

a. Proof roll as described in Section 405.210(B).

b. One (1) compaction test per two hundred fifty (250) feet of mainline poving, three (3) tests per intersection, five (5) tests within cul-de-sacs and one (1) test per repoir slab.

c. Gradation test for sub base material.

Asphalt. a. One (1) set of compaction tests per two hundred fifty (250) feet of mainline. One (1) set includes three (3) tests across the paved lane at the

b. One (1) bulk density test per poving operation.

RN #10 Approval Of Sub grade And Base (Sub base). The City Engineer or representative shall approve the sub grade before any base is placed thereon and shall approve the base before concrete or surface course is placed. The sub grade and base shall be so constructed that it will be uniform in

RN #11 In all fill areas in the roadways, soil tests shall be submitted and approved by the City Engineer for each foot of fill and at least one (1) test and an average of one (1) test within every two hundred fifty (250) feet.

RN #12 Na traffic will be allowed on new concrete pavement until it has cured for seven (7) days and it reaches three thousand five hundred (3,500) psi within 28 days. Concrete pavements shall not be approved unless it reaches a strength of four thousand (4,000) psi.Cylinders/compressive strength. One (1) set of four (4) cylinders within the first fifty (50) cubic yards and one (1) set per one hundred (100) cubic yards thereafter. One (1) cylinder must be tested at seven (7) days, one (1) at fourteen (14) days and two (2) at twenty-eight (28) days. If the first (1st) cylinder does not meet specification at twenty-eight (28) days, then the second (2nd) cylinder must be held and tested of day fifty-six (56).

RN #13 Prior to placement of aggregate base material on sub grade and prior to placement of pavement on base material, the sub grade and bose must be proof-rolled with a fully loaded (ten (10) ton load) tandem truck or equivolent tire vehicle with one (1) pass down each driving lane no faster than three (3) miles per hour. If soft spots are detected, or pumping, rutting or heaving occurs greater than one (1) inch at the sub grade, the roadbed shall be considered unsatisfactory and the soil in these areas shall be remediated to the depth indicated by the contractor's testing

firm and approved by a representative of the City Engineer. RN #14 Sub grade and base beneath pavements shall be compacted to St. Charles County Highway Department specifications. The moisture range shall be determined by the Standard or Modified Proctor Density Method AASHTO T-99 and within -2/+4 percentage points of the optimum moisture

RN #15 The entire width and length will conform to line, grade and cross section shown on the plans or as established by the engineer. If any settling or washing occurs, or where hauling results in ruts or other objectionable irregularities, the contractor shall improve the sub grade or base to the satisfaction of the City before the pavement is placed. Additional rolling or methods to verify compaction shall be at the discretion of the City Engineer. Tolerance allowed on all lines, grades and cross sections shall be plus or minus four-hundredths (+0.04) feet.

RN #16 Utility Work Prior To Bose Construction. No bose course work may proceed on any street until all utility excavotions (storm and sanitory sewers, water, gas, electric, etc.) have been properly back filled with granular material, crushed stone or gravel mechanically tamped in ten (10) inch lifts. Utilities installed after sub grade preparation shall be bored. Compaction requirements shall follow St. Chorles County standards (2006).

RN #17 Equipment calibration. The developer's contractors and subcontractors must have their equipment calibrated by the following minimum standards. o. Air meter—weekly.

 b. Cylinder compression—annually by independent calibration service. c. Batch scoles—monthly.

d. Nuclear testing devices—every six (6) months.

e. Proctor equipment—every six (6) months. f. Slump cone—monthly.

RN #18 All permanent traffic control will be per M.U.T.C.D. or MoDot standards. S1-1 from the M.U.T.C.D. manual will be used at all crosswalk locations accompanied with ether w16-9p or w16-7p signs

RN #19 All traffic signals, street signs, sign post, backs and bracket arms shall be painted black using Carboline Rust Bond Penetrating Sealer SG and Carboline 133 HB paint (or equivalent as approved by City of O'Fallon and MoDOT).

## Flood plain Information

FP #1 A flood plan development application from the City is required for any work within the flood plain limits.

FP #2 This property lies within Zone X (areas determined to be outside of 500—year floodplain) per the Flood Insurance Rate Map, Community Panel No. 29183C0240 E, effective date August 2, 1996.

## Retaining Walls: Terraced and Vertical

RW #1 A permit is required for all retaining walls that are 48 inches or taller in height, measured from the top of the footing to the top of the wall or for walls that support a surcharge load or that alters the channelized drainage of any lot or drainage area.

City of O'Fallon Standard Subdivision Notes and Details — June 2010

RW #2 Retaining wolls will not be allowed in public right-of-way without written approval from the City Engineer. RW #3 Any retaining wall more than thirty (30) inches tall which supports a walking surface that is within two (2) feet of the wall will require a guard

RW #4 Retaining walls that alter the channeled drainage of any lot or drainage area shall not be constructed without prior approval and permitting from the City of O'Fallon Engineering Department regardless of the height of the wall.

RW #5 See section 405.275 of the City code for additional design requirements.

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2 SILVER

N Z SET OF PLANS AUTHENTICATED BY THE SEAL, SIGNATURE AND DATE MEREUNDER ATTACHED. RESPONSIBILITY IS DISCLAIMED FOR ALL OTHER ENGINEERING PLANS INVOLVED IN THIS PROJECT AND SPECIFICALLY EXCLUD

PICKETT, RAY & SILVER, INC. MO LICENSE #000325

**PICKETT** 

DOUGLAS S. TIEMANN PROFESSIONAL ENGINEER LICENSE E-23345

P+Z No. 28-13

City No.

Page No.

2 of 27