

COMMERCIAL

GENERAL NOTES

- GN # 1 Driveway locations shall not interfere with the sidewalk handicap ramps, or curb inlet sumps
GN # 2 Sidewalks, curb ramps, ramps and accessible parking spaces shall be constructed in accordance with the current approved "American with Disabilities Act Accessibility Guidelines" (ADAAG) along with the required grades, construction materials, 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.

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 MoDOT 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 silt or mud in new or existing storm sewers and/or swales shall be removed after each rain and affected areas cleaned to the satisfaction of the City of O'Fallon and as required by MoDOT.

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:
1. Maximum dry density
2. Optimum moisture content
3. 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-1557) or from a minimum of 95% as determined by the "Standard Proctor Test AASHTO 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
6. 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.

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 foot centers.
a) Depth, Trench back fill 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 feet.
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 for 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 rejected. Compaction of the materials within the sunken/jettied area shall be compacted such that no further surface subsidence occurs.

Sanitary Sewer Notes

- SAN # 1 All sanitary sewer installation is to be in accordance with M.S.D. 2007 standards and specifications except as modified by the City of O'Fallon ordinances.
SAN # 2 Brick shall not be used in the construction of sanitary sewer structures. Pre cast concrete structures are to be used unless otherwise approved by the City of O'Fallon.
SAN # 3 Connections of all sanitary structures are to be made with A-Lock joint or equal.
SAN # 4 Sanitary laterals shall be a minimum of 4" residential, 6" commercial diameter pipe.
SAN # 5 All storm mains shall be a minimum of 8" diameter pipe.
SAN # 6 All sanitary sewer lines with a slope greater than 20% will require concrete cradle or concrete collar. Sanitary line with a slope greater than 50% will require a special approved design as shown on detail sheet.
SAN # 7 All manholes shall within the 100 year flood plain must have lock type watertight manhole covers.
SAN # 8 All sanitary sewer mains must have a minimum of 42" cover.
SAN # 9 When sanitary sewer crosses over storm line the sanitary main must be ductile iron pipe for 10 feet on each side of crossing.
SAN # 10 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 above sanitary lines. Show on profile sheet.
SAN # 11 The sanitary sewer shall run diagonally through the side yards to minimize any additional utility easements required.
SAN # 12 All sanitary sewer structures shall be waterproofed on the exterior in accordance to Missouri DNR specifications DCSR-8.120 (7)(E).
SAN # 13 All sanitary sewer pipe shall be SDR35 or equal.
SAN # 14 All sanitary sewer manholes and pipes will be tested to the following specifications. ASTM C1244, Standard testing method for Concrete Sewer Manhole by Negative Air Pressure (Vacuum), Latest revision ASTM F1417, Standard testing method for Installation Acceptance of Plastic Gravity Sewer Lines Using Low Pressure Air, Latest revision.

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 ordinances.
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 across the center of the opening(s) for curb inlets and area inlets.
STM # 4 HDPE pipe is to be N-12WT or equal and meet ASTM F1417 watertight 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 above sanitary lines. 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 of 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. Structures and lined 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, or discharge to sewer approved means.
STM # 12 The discharge point of all lined and sections shall be protected by rip rap or other approved means.
STM # 13 Rip rap shown at lined end sections will be evaluated in the field by the contractor, Contractor, and City inspectors after installation for effectiveness and field modified, if necessary to reduce erosion on and around the structure.
STM # 14 Add 1" minus rock back fill to all storm sewer structures lie within the 1:1 shear plane of the road.

Water Notes

- WN # 1 Fire hydrants shall be a maximum of 100 feet apart. Local fire district approval is required.
WN # 2 Coordinate with the water company for the location of water meters.
WN # 3 All water main must have a minimum of 42" of cover. (City water mains)
WN # 4 Provide water valves to isolate system.
WN # 5 All water mains shall be closed to SDR 21 or equal with locator/tracer wires
WN # 6 DISINFECTING:
Disinfecting shall be accomplished by placing sufficient hypo chlorite granule (HTH) in each section of pipe to achieve a chlorine residual in the pipeline, upon initial flushing, of 50 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 taken immediately and the chlorine residual must be 50 mg/L or greater. The solution shall be allowed to stand for 24 hours for a sample shall then be taken. The chlorine residual after 24 hours shall be 30 mg/L or greater. If the piping shows insufficient chlorine residual in either test, the piping shall be re-chlorinated by the injection of hypo chlorite solution until satisfactory results are achieved. Disinfecting shall be done by the contractor. Only the testing to determine the chlorine residual will be done by the City.
WN # 7 PRESSURE TESTING:
Immediately following disinfection, the piping shall be pumped to a pressure (at the lowest point in the project) of 150 psi or higher where the working pressure is higher than 150 PSI as determined by the City. In such cases, the pressure shall be as specified by the City and two pressure tests shall be conducted. The first test shall be with the fire hydrant auxiliary valve open and be to 150 PSI. The second test shall be with the hydrant auxiliary valve closed and be to the higher pressure as directed by the City. All pumping equipment and pressure gauges shall be provided by the contractor. After achieving the test pressure, the piping shall be left closed for a period of two (2) hours. At the end of this time the pressure drop shall not exceed 2 psi. In addition, if the pressure appears, in judgment of the City's representative, to be continuing to drop, the test shall be continued for another two (2) hours and if any further drops occur, the test shall be considered a failure. If the pressure test fails, the contractor will be required to find and correct the source of the leakage. If this requires draining of the pipeline, when the leakage is corrected, the pipeline must be re-disinfected and the pressure tested again until satisfactory results are achieved. Any MDNR required dechlorination will be performed by the contractor.

- WN # 8 All tops 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.

NOTE: ALL EXISTING STORM SEWER INLETS SHALL INDICATE THAT NO WASTE IS TO BE DUMPED INTO THE EXISTING STORM SEWER SYSTEM.

Water Notes

- #10 BACTERIOLOGICAL TESTING:
After satisfactory disinfection and pressure testing, a sample shall be taken by the contractor in the presence of a City representative and submitted to a laboratory approved by the Missouri Department of Natural Resources and the City for bacteriological analysis. After 24 hours a second sample shall be taken in a like manner and submitted for analysis. The two samples taken on consecutive days, a minimum of 24 hours apart, must be found to be "safe" by the testing laboratory, and copies of the test results must be supplied to the City. If the samples are not found to be "safe" further flushing and/or disinfection as directed by the City shall be conducted by the contractor until "safe" samples on two consecutive test days are achieved. Following successful bacteriological testing and a determination by the City that the mains are "safe", 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 intersection does not have a curb, then the curb on the new entrance shall begin 10' from the edge of the existing road.
RN # 3 Provide 6" of concrete 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 (where 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 sub-outs over 100 feet in length will require a temporary turnaround.
RN # 8 All sub grade in cut or fill areas shall 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:
1. Concrete.
a. 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 specifications at twenty-eight (28) days, the second (2nd) cylinder must be held and tested at day fifty-six (56).
b. Percent air and temperature. First (1st) test 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.
2. Sub grade and base.
a. Proof roll as described in Section 405.210(B).
b. One (1) compaction test per two hundred fifty (250) square feet of machine paving (three (3) tests per intersection, five (5) tests within cul-de-sacs and one (1) test per repair slab.
c. Gradation test for sub base material.
3. Asphalt.
a. One (1) set of compaction tests per two hundred fifty (250) square feet of machine. One (1) set includes three (3) tests across the paved lane at the same station.
b. One (1) bulk density test per paving 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 density throughout.
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 (200) feet.
RN # 12 No 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 specifications at twenty-eight (28) days, the second (2nd) cylinder must be held and tested at 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 base must be proof-rolled with a fully loaded (ten (10) ton load) tandem truck or equivalent tire vehicle. If one (1) pass down each driving lane no faster than three (3) miles per hour, 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 Modified Proctor Density Method AASHTO T-99 and within +/-2/4 percentage points of the optimum moisture content.
RN # 15 The entire width and length of the line, grade and cross section shown on the plans or as established by the engineer. If any settling or washing occurs 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 (+.04) feet.
RN # 16 Utility Work Prior to Base Construction. No base course work may proceed on any crust until all utility excavation, storm and sanitary sewers, water, gas, electric, etc.) have been properly back filled with granular material, crushed stone or gravel mechanically compacted in ten (10) inch lifts. Utilities installed after sub grade preparation shall be bored. Compaction requirements shall follow St. Charles County standards (2006).
RN # 17 Equipment Calibration. The developer's contractors and subcontractors must have their equipment calibrated by the following minimum standards:
a. Scale meter--weekly.
b. Treadle compression--annually by independent calibration service.
c. Batch scales--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.E.D. or MoDOT standards. S1-1 from the M.U.T.E.D. manual will be used at all crosswalk locations accompanied with either 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 plain development application from the City is required for any work within the flood plain limits.
Walls: Terraced and Vertical
RW #1 A permit is required for 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. Retaining walls for a channeled drainage area shall be constructed to the drainage area.
RW #2 Retaining walls will not be allowed in public right-of-way areas unless approved by the City Engineer.
RW #3 Any retaining wall more than thirty (30) inches high shall be constructed within two (2) feet of the wall will require a guard on the retaining wall.
RW #4 Retaining walls that are used for drainage of any lot or drainage area shall not be constructed without the approval and permitting from the City Engineer or the Missouri Department of Natural Resources. Retaining walls shall be constructed in accordance with Section 405.275 of the City code for additional design requirements.

Provide a marking on the storm sewer inlets. The City will allow the following marking and adhesive procedures only as shown in the table below or an approved equal. "Peel and stick" adhesive pads will not be allowed.

Table with 5 columns: Manufacturer, Size, Adhesive, Style, Message (Part #) and Website. Rows include ACP International and DAS Manufacturing, Inc.

PROJECT TITLE



PREMIER CIVIL ENGINEERING

Wentzville 1195 Wentzville Parkway Suite 103 Wentzville, MO 63390

Phone (636) 266-4566 Fax (636) 396-4022

Premier Civil Engineering Missouri State Certificate of Authority #LC0981126



STEVE MARON, P.E. ENGINEER REG. NO. 100007195

Developer / Owner Information

RJH ENTERPRISES LLC 661 KILLARY DOWNS WELDON SPRING, MO 63304 CONTACT: RANDY HUBLER CELL: 314-220-7041 HUBLER AUTO PLAZA

City of O'Fallon Standard Notes

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