

**GRADING NOTES**

- A Geotechnical Engineer shall be employed by the owner and be on site during grading operations. All soils tests shall be verified by the Geotechnical Engineer concurrent with the grading and backfilling operations.
- The grading contractor shall perform a complete grading and compaction operation as shown on the plans, stated in these notes, or reasonably implied there from, all in accordance with the plans and notes as interpreted by the Geotechnical Engineer.
- The Contractor shall notify the Soils Engineer at least two days in advance of the start of the grading operation.
- All areas shall be allowed to drain. All low points shall be provided with temporary ditches.
- A sediment control plan that includes monitored and maintained sediment control basins and/or straw bales should be implemented as soon as possible. No graded area is to be allowed to remain bare over the winter without being seeded and mulched. Care should be exercised to prevent soil from damaging adjacent property and silting up existing downstream storm drainage system.
- Soft soil in the bottom and banks of any existing or former pond sites or tributaries 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.
- 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 disking operation.
- Compaction equipment shall consist of tamping rollers, pneumatic-tired rollers, vibratory roller, or high speed impact type drum rollers acceptable to the Soils Engineer. The roller shall be designed so as to avoid the creation of a layered fill without proper blending of successive fill layers.
- 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 rejection 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 5 inches and then compacted in accordance with the specifications given below. 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 sequence of operation in the fill areas will be fill, compact, verify acceptable soil density, and repetition of the sequence. The acceptable moisture contents during the filling operation are those at which satisfactory dry densities can be obtained. The acceptable moisture contents during the filling operation in the remaining areas are from 2 to 8 percent above the optimum moisture control.
- All grades shall be within 0.2 feet of those shown on grading plan.
- No slope shall be steeper than 3:1 or as called for in the soils report for the project. All slopes shall be sodded or seeded and mulched.
- 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.
- Fill and backfill should be compacted to the criteria specified in the following table:

CATEGORY	MINIMUM PERCENT COMPACTION
Fill in building areas below footings	90%
Fill under slabs, walks, and pavement	90%
Fill other than building areas	88%
Natural subgrade	88%
Pavement subgrade	90%
Pavement base course	90%

Measured as a percent of the maximum dry density as determined by modified Proctor Test (ASTM-D-1557).

Moisture content must be within 2 percent below or 4 percent above optimum moisture content if fill is deeper than 10 feet.

NOTE: Trash and debris shall be hauled off site.

**GRADING QUANTITY**  
303,800 cu.yds.  
(INCLUDES 15% SHRINKAGE)

The above yardage is an approximation only, NOT FOR BIDDING PURPOSES. Contractors shall verify quantities prior to construction.

It is the intention of the Engineer for the earthwork to balance on-site. The Engineer shall be notified if any difficulties arise in achieving the balance.

**GENERAL 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 or construction of the improvements.
- All manhole tops built without elevations furnished by the Engineer will be the responsibility of the sewer contractor.
- 8" P.V.C. sanitary sewer pipe shall meet the following standards. A.S.T.M.-D-3034 SDR-35, with wall thickness compression joint A.S.T.M.-D-3212. An appropriate rubber seal waterstop as approved by the sewer district shall be installed between P.V.C. pipe and masonry structures.
- All filled places, including trench backfills, under buildings, proposed storm and sanitary sewer lines and/or paved, areas, shall be compacted to 90% maximum density as determined by the "Modified AASHTO T-180 Compaction Test," (A.S.T.M.-D-1557). All filled places within public roadways shall be compacted to 95% of maximum density as determined by the "Standard Proctor Test AASHTO T-99, Method C" (A.S.T.M.D.-698).
- All trench backfills under paved areas shall be granular backfill, and shall be compacted to 90% of the maximum density as determined by the "Modified AASHTO T-180 Compaction Test," (A.S.T.M.-D-1557). All other trench backfills may be earth material (free of large clods or stones). All trench backfills shall be water jetted.
- All sanitary house connections have been designed so that the minimum vertical distance from the low point of the basement to the flow line of a sanitary sewer at the corresponding house connection is not less than the diameter of the pipe plus the vertical distance of 2 1/2 feet.
- No area shall be cleared without the permission of the Project Engineer.
- All P.V.C. sanitary sewer is to be SDR-35 or equal with clean 1/2" to 1" granular stone bedding uniformly graded. This bedding shall extend from 4" below the pipe to the springline of the pipe. Immediate backfill over pipe shall consist of same size "clean" or minus stone from springline of pipe to 6" above the top of pipe.
- All soils test shall be verified by a Soils Engineer concurrent with the grading and backfilling operations.
- Easements shall be provided for sanitary sewers, and all utilities on the Record Plat. See Record Plat for location and size of easements.
- Maintenance and upkeep of the common ground area shall be the responsibility of the developer and/or successors.
- A 25' building line shall be established along all Public Right-Of-Way.
- All water lines shall be laid at least 10 feet horizontally, from any sanitary sewer, storm sewer, or manhole. 3' vertical clearance from outside of pipe to outside of pipe shall be maintained wherever water lines must cross sanitary sewers, laterals, or storm drains. The water line shall be laid at such an elevation that the bottom of the water line is above the top of the drain or sewer. A full length of water pipe shall be centered over the sewer line to be crossed so that the joints will be equally distant from the sewer and as remote therefrom as possible. This vertical separation shall be maintained for that portion of the water line located within 10 feet horizontally, of any sewer or drain it crosses.
- All PVC water pipe 6" and larger in size shall be Class C-900 per St. Charles County Public Water District No. 2 Specifications. All other mains shall have a minimum pressure rating of PR-200 or SDR-21. NOTE: Ultra-Blue PVC (MO) Pressure Pipe with a minimum pressure rating of 200 p.s.i. shall also be considered acceptable.
- Water lines, valves, sleeves, meters, and fittings shall meet all specifications and installation requirements of St. Charles County Public Water District No. 2.
- All water hydrants and valves shall be ductile iron and installed in accordance with plans and details. All ductile iron pipe for water mains shall conform to A.W.W.A. Specifications C-106 and/or C-108. The ductile iron fittings shall conform to A.W.W.A. Specification CC-110. All rubber gasket joints for water ductile iron pressure pipe and fittings shall conform to A.W.W.A. Specification C-111.
- All sanitary manholes shall be waterproofed on the exterior in accordance with Missouri Department of Natural Resources specifications 10 CSR-B-120 (7)E.
- Brick will not be used in the construction of sanitary sewer manholes.
- All pipes shall have positive drainage through manholes. No flat base structures are allowed.
- The City of O'Fallon and Duckett Creek Sanitary District shall be notified 48 hours prior to construction for coordination and inspection.
- Gas, water and other underground utilities shall not conflict with the depth or horizontal location of existing or proposed sanitary or storm sewers, including house laterals.

A SET OF IMPROVEMENT PLANS FOR  
**THE KNOLLS**  
A TRACT OF LAND BEING PART OF  
U.S. SURVEY 1641, TOWNSHIP 46 NORTH,  
RANGE 3 EAST OF THE FIFTH PRINCIPAL MERIDIAN,  
ST. CHARLES COUNTY, MISSOURI



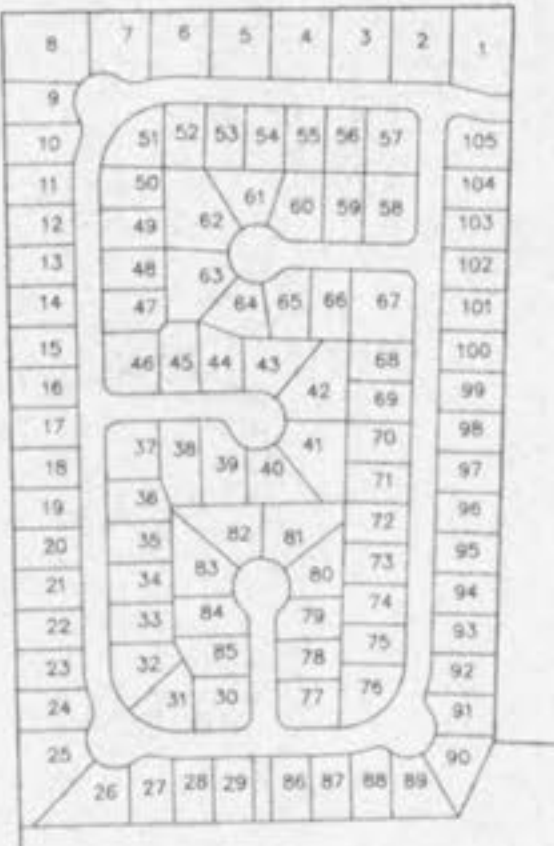
**DEVELOPMENT NOTES**

- Area of Tract: 60.60 Acres±
- Existing Zoning: R-1 PUD Single Family Residential (City of O'Fallon)
- Proposed Use: Single Family Homes
- Number of Lots Proposed: 105 Lots
- The proposed height and lot setbacks are as follows:  
Minimum Front Yard: 25 feet  
Minimum Side Yard: 5 feet  
Minimum Rear Yard: 25 feet  
Maximum Height of Building: 2 1/2 stories or 35 feet
- Site is served by:  
Duckett Creek Sanitary District  
Union Electric Company  
St. Charles Gas Company  
St. Charles County Water District No. 2  
GTE Telephone Company  
Port Zumwalt School District  
Francis Howell School District  
O'Fallon Fire Protection District
- Flood Plain information is per F.I.R.M. #29183 C 0240 E, August 2, 1996
- Topographic information is per Walker and Associates Aerial Topography on U.S.G.S. Datum.
- Boundary information is per actual boundary survey performed by Bax Engineering Co.
- All streets will be constructed to City of O'Fallon standards. Streets will consist of 26 foot wide concrete pavement with integral rolled curb centered in a 50 foot right-of-way. A minimum centerline radius shall be 150 feet.
- All cul-de-sacs and bubbles will have pavement radii of 42 feet with right-of-way radii of 54 feet. Street intersections shall have a minimum rounding radius of 25 feet with pavement radii of 37 feet.
- Minimum street grades shall be 1%.
- All homes shall have a minimum of 2 off-street parking places with 2-car garages.
- All utilities must be located underground.
- All Lot Lines must have a minimum lot width of 75 ft. at the front building line.
- A 4' foot wide concrete sidewalk shall be constructed on one side of streets as indicated on plan.
- The developer realizes that they will comply with the current Tree Preservation Ordinance Number 1689 and provide landscaping as set forth in Article 23 of the City of O'Fallon Zoning Ordinance.
- The following lots are susceptible to street movement: Lots 1,2,6,7,8,9,10,11,16,17,23,24,25,26,27,28,31,32,33,39,40,41,42,43,50,60,61,62,63,64,65,76,79,80,81,82,83,84,87,88,89,90,91,92,102,105
- A 60' (feet) wide stormwater drainage easement shall be provided along the existing creek, measured from the centerline, 30' (feet) on each side. This shall be shown on the record plat, per City of O'Fallon ordinances.
- Detention to be provided in Phase 1 of this development.
- Lots adjacent to the existing creeks shall have a minimum low sill elevation set at least one foot above the proposed 100 year floodplain as shown on plans. A L.O.M.R. shall be applied for these lots.

**REFERENCE BENCHMARK**

RW 40, CROSS CUT ON TOP NORTH END OF A CORRUGATED METAL PIPE AT THE NORTHEAST CORNER OF MCCLUER ROAD, BATES ROAD, AND HENNING ROAD. ELEVATION = 526.94'

**KEY MAP**  
NOT TO SCALE



**TREE PRESERVATION CALCULATIONS:**

TOTAL AREA OF EXISTING TREE MASSES: 4.18 AC.  
4.18 AC. X .30% = 0.84 AC.  
TOTAL AREA OF PROPOSED CLEARING: 0.00 AC.  
TOTAL AREA OF REMAINING TREES: 4.18 AC.  
4.18 AC. > 0.84 AC. = (NO ADDITIONAL TREES NEEDED)

**LANDSCAPE REQUIREMENTS:**

LENGTH OF CENTERLINE OF STREETS = 4,654 LF.  
4,654 LF. X 2 = 9,308 LF.  
9,308 LF. / 50 LF. = 187 TREES  
TOTAL PROPOSED = 187 TREES  
NOTE: PROPOSED REPLACEMENTS TREES WILL BE HARDWOOD VARIETIES WITH 2" MINIMUM DIAMETER AND A HEIGHT OF 8'. TREES TO BE PLANTED ON THE INDIVIDUAL LOTS WILL BE PLANTED AFTER HOME CONSTRUCTION AND YARD FINISH GRADING BY THE HOMEOWNER AS REQUIRED IN THE COMMENTS AND RESTRICTIONS FOR THE KNOLLS

**LEGEND**

- CL CURB INLET
- D.C.I. DOUBLE CURB INLET
- A.I. AREA INLET
- M.H. MANHOLE
- F.E. FLARED END SECTION
- E.P. END PIPE
- C.P. CONCRETE PIPE
- R.C.P. REINFORCED CONCRETE PIPE
- C.M.P. CORRUGATED METAL PIPE
- C.I.P. CAST IRON PIPE
- P.V.C. POLY VINYL CHLORIDE (PLASTIC)
- C.O. CLEAN OUT
- F.H. FIRE HYDRANT
- S.S. STORM SEWER
- S.S. SANITARY SEWER
- STREET LIGHT
- EXISTING CONTOUR
- PROPOSED CONTOUR
- STREET SIGN
- NO PARKING SIGN
- WATER VALVE
- BLOW OFF ASSEMBLY
- FLOODE ELEVATION OF HOUSE CONNECTION
- FLOODE ELEVATION OF SEWER MAIN

**SHEET INDEX**

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**APPROVED**  
3/30/98  
Jean Celler

PREPARED

DISCLAIMER OF RES. I hereby certify that I am a duly licensed Professional Engineer in the State of Missouri. I am not responsible for any errors or omissions in this drawing, plan, or specification, or for any part or parts of any project or projects engineering project or projects.

STATE OF MISSOURI  
PROFESSIONAL ENGINEER  
RICHARD L. FRANCO  
NUMBER E-25651

**REVISIONS**

NO.	DATE	DESCRIPTION
3-9-98	City of O'F	
3-18-98	Duckett Cree	
3-26-98	City of O'F	

**BAX**  
ENGINEERING  
PLANNING  
SURVEYING

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FAX 928-1718

2-09-98  
DATE  
97-9197  
PROJECT NUMBER  
1 OF 32  
SHEET OF  
9197C0V.DWG  
FILE NAME  
MRK M.G.  
DRAWN CHECKED