

GRADING NOTES

1. Subgrade utilities have been plotted from available information and therefore their location 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.
2. Sediment control plan should be implemented before grading begins. No graded area is to be left bare without being seeded and mulched. When deemed necessary, positive steps should be taken to prevent this soil from damaging adjacent properties and silted up any storm drainage.
3. Erosion and siltation control shall not be limited to what is shown on the plans. The contractor, with approval of the County Inspector, shall utilize best management practices to prevent sediment from entering adjacent properties, roadways, storm sewers and drainage ways.
4. Area shall be cleared without permission of the developer.
5. The Developer assumes full responsibility as to the performance of the grading operation and ensures that all properties and County and State roads will be adequately protected.
6. Separation and re-vegetation shall be performed according to Appendix A of the Model Sediment Erosion Control Regulations for Urban Development.
7. All natural vegetation is removed during grading, vegetation shall be reestablished in such a way as to prevent erosion. Permanent type grasses shall be established as soon as possible or during next seeding period after grading has been completed. Refer to Appendix A of St. Charles and Water Conservation District - Model Sediment and Erosion Control Regulations.
8. Site preparation includes the clearance of all stumps, trees, bushes, shrubs, and weeds; the grubbing 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 depths in the fill areas shall be thoroughly dished prior to the placement of any fill. The Soils Engineer shall approve the dishing operation.
9. Compaction equipment shall consist of tamping rollers, pneumatic-tired rollers, vibratory rollers or h speed impact type drum rollers acceptable to the Soils Engineer. The rollers shall be designed to avoid the creation of a layered fill without proper blending of successive fill layers.
10. The Soils Engineer shall observe and test the placement of the fill to verify that specifications are met. 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.
11. 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 acceptance prior to the placement of additional fill.
12. All Areas to receive fill shall be scarified to a depth of not less than 6 inches and then compacted to at least 85 percent of the maximum density as determined by the Modified AASHTO T-100 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 6 inches in thickness and compacted in accordance with the specifications set forth. 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.
13. The sequence of operation in the fill areas will be: fill, compact, verify acceptable soil density, and restore moisture contents during the filling operation. The acceptable moisture contents are those of which satisfactory dry densities can be obtained. The acceptable moisture contents during the fill operation in the remaining areas are from 2% below to 6% above the optimum.
14. 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 placement of succeeding lifts. Fill shall not be placed on frozen ground.
15. All low places whether on site or off site should be graded to avoid drainage. This may be accomplished with temporary ditches. Any off site drainage easements shall be acquired before off site grading is begun.
16. All excavations, grading or filling shall have a finished grade not to exceed a 3:1 slope (33%).
17. All filled places under proposed storm and sanitary sewer lines and/or paved areas including trench backfills within and off the road right-of-way shall be compacted to 90% of maximum density as determined by the Modified AASHTO T-100 Compaction Test (ASTM D-1557). All tests shall be verified by a Soils Engineer concurrent with grading and backfilling operations.
18. All filled places in proposed and existing St. Charles County roads (highways) shall be compacted from the bottom of the fill up to 90% maximum density as determined by the Modified AASHTO T-100 Compaction Test (ASTM D-1557). Paved areas in cuts shall meet the same compaction requirements. All tests shall be verified by a Soils Engineer concurrent with grading operations.
19. Soft soils in the bottom and banks of any existing or former pond areas or tributaries or any sediment basins or traps should be removed, spread out and permitted to dry sufficiently to be used as fill. None of this material should be placed in proposed public right-of-way locations or on any storm sewer location.
20. Any wells and/or springs which may exist on this property should be located and sealed in a manner acceptable with the City of Dardenne Prairie, St. Charles County Highway Department and St. Charles County Building Department.
21. Temporary siltation control measures (structure) shall be maintained until vegetative cover is established at a sufficient density to provide erosion control on the site.
22. If straw bales or all fences are destroyed by heavy rains, vandalism, etc., they are to be repaired and or replaced immediately.
23. When grading operations are completed or suspended for more than thirty (30) 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 locked at the rate of 100 pounds per 1000 square feet when seeded.
24. All existing site improvements disturbed, damaged or destroyed shall be repaired or replaced.
25. All trash and debris on-site, either existing or from construction, must be removed and properly disposed of off-site.
26. 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.
27. The total yardage of this project is based on a 15 % shrinkage factor.
28. 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 the Project Engineer at St. Charles Engineering and Surveying, Inc. prior to completion of the grading.
29. The vertical grading tolerance shall be plus or minus 0.2 feet for all rough grading.
30. All construction and materials shall conform to City of Dardenne Prairie Sanitary Sewer and Water Standards and Specifications.
31. Forty-eight (48) hours notice shall be given to the City of Dardenne Prairie before any grading is to begin in order to allow scheduling of required inspections.
32. Please notify the Chief Inspector of the St. Charles County Highway Department 24 hours prior to the commencement of grading and/or prior to the commencement of construction.
33. The Contractor shall prevent all storm/surface water, mud or construction debris from entering the existing sanitary sewer system.
34. The contractor shall maintain access to existing residential driveways and streets at all times.
35. Upon completion of storm sewers, siltation control shall be provided around all open sewer inlets and shall remain until the disturbed drainage areas have been properly stabilized.
36. When mechanized land clearing activities are completed or suspended for more than 30 days, either temporary vegetation must be established or temporary siltation control measures must be put in place with the review and approval of the City Engineer.
37. Developer must supply City construction inspectors with soil reports prior to or during site soil testing.

IMPROVEMENT PLANS PEACEFUL VALLEY

PART OF A TRACT OF LAND BEING PART OF U.S. SURVEY 1771,
PART OF U.S. SURVEY 3180, AND PART OF FRACTIONAL SECTIONS 5 AND 8,
TOWNSHIP 46 NORTH; RANGE 3 EAST
CITY OF DARDENNE PRAIRIE, MISSOURI



THIS PROPERTY IS SERVICED BY THE FOLLOWING UTILITY COMPANIES:
GAS - LACLEDE GAS (800) 887-4173
WATER - PUBLIC WATER DISTRICT NO. 2 ST. CHARLES COUNTY (636) 561-3737
ELECTRIC - AMEREN UE (800) 552-7583
TELEPHONE - CENTURY TEL (800) 824-2877
SANITARY - DUCKETT CREEK SANITARY DISTRICT (636) 441-1244
CABLE - CHARTER COMMUNICATIONS (636) 441-7511
FIRE DEPARTMENT - O'FALLON FIRE PROTECTION DISTRICT (636) 272-3493
SCHOOL - FORT ZUMWALT (636) 272-6620

GENERAL NOTES

1. All standard curb inlets are to have front-of-lot 2' (two and one-half feet) behind curb, within public right-of-way, unless otherwise noted.
2. No gravel shall be used in rip-rap. See plans for details.
3. 8" P.V.C. sanitary sewer pipe shall meet the following standards: A.S.T.M. D-3034 SDR35, with wall thickness compression joint A.S.T.M. D-3222. An appropriate rubber seal waterstop as approved by the sewer district shall be installed between P.V.C. pipe and manhole structures.
4. The Contractor shall prevent all storm/surface water, mud or construction debris from entering the existing sanitary sewer system.
5. The minimum vertical distance from the low point of the basement to the finished of the sanitary sewer of the corresponding house connection shall not be less than two and one half feet (2 1/2') plus the diameter of the sanitary sewer.
6. All sanitary laterals shown on plan are to be constructed of 4 inch P.V.C. pipe.
7. All P.V.C. sanitary sewer pipe is to be SDR35 or equal with "clean 1/2" to 1" granular stone bedding", uniformly graded. This bedding shall extend from 4" below the pipe to 6" above the top of pipe.
8. Brick shall not be used on sanitary manholes.
9. All sanitary sewer manholes shall be waterproofed on the exterior in accordance with Missouri D.N.R. Specification 100SR-6120 (I) (3).
10. All sanitary sewer construction shall conform to current Duckett Creek Sanitary Sewer District Standards and Specifications.
11. All pipes shall have positive drainage through manholes. No flat base structures are allowed.
12. All trench backfills under paved areas shall be granular backfill, and water jacked. All other trench backfills may be earth material (free of large clods or stones) and shall be water jacked.
13. All sewer taps shall without elevations furnished by the Engineer will be the responsibility of the sewer contractor.
14. Easements shall be provided for storm sewers, sanitary sewers, water mains, and all utilities on the record plat. See record plat for location, size, and width of easements.
15. Gas, water, and other underground utilities shall not conflict with the depth or horizontal location of existing and proposed sanitary and storm sewers including house laterals.
16. Duckett Creek Sewer District shall be notified of least 48 hours prior to construction of sanitary sewers for coordination and inspections.
17. All streets within this set of improvement plans shall be dedicated to public use. (After being built to St. Charles County standards and specifications as accepted by St. Charles County).
18. All streets and right-of-ways shown on these improvement plans will be dedicated to the City of Dardenne Prairie for public use forever.
19. Baricades will be constructed per the standard specifications as shown in the "Manual of Uniform Traffic Control Devices". End of roadway markers shall be installed 4 feet above the pavement on two post "V" shaped sign posts. Each marker shall consist of an 18" diamond post and reflectors.
20. The most stringent of the above requirements shall apply.
21. Final testing for sanitary sewer mains 8" and larger - a manhole must be pulled through and an air test may be required.
22. As-built locations of laterals must be provided to Duckett Creek Sanitary District by the Contractor.
23. Sanitary Manholes
42" manholes/Waterproofed for 8" sewers only
48" manholes/Waterproofed for sewers over 8"
24. Concrete pipe joints shall be MD Type "X" approved compression-type joints and shall conform to the requirements of the Specifications for Joints for Circular Concrete Sewer and Culvert Pipe, using Fireable, Waterlight, Rubber-type Gaskets ASTM C443. Band-type gaskets depending entirely on cement for adhesion and resistance to displacement during jacking shall not be used.
25. All storm sewer pipes shall be reinforced concrete pipe, Class II minimum. Any concrete pipe, conduit, or culvert beneath a street right-of-way or with reasonable probability of being so located shall be a minimum of Class II, but also shall account for all vertical loads. In no case shall the design provide for less than 15-20 loading per AASHTO. For other locations the maximum design live load shall be H-20 loading.
26. Existing sanitary sewer service shall not be interrupted.
27. Pre-manufactured adapters shall be used at all PVC to DP connections. Rubber boot / Weldon-type couplings shall not be allowed.
28. "Type K" Lock-Type Cover and Locking Device (Lock-Lug) shall be used where lock-type covers are required.
29. The Chief Inspector of the St. Charles County Highway Department shall be contacted 24 hours prior to the commencement of grading and/or prior to the commencement of construction.
30. Landscaping Requirements:
- One tree per 50 feet of street frontage shall be required to be installed within the setback stubbing and street frontage. The required trees may be clustered or arranged within the setback, they need not be placed evenly at 50 foot intervals.
- One tree shall also be required to be planted for every two multifamily dwelling units.
31. Street Lights
- One size thousand five hundred (1,500) lumen 100 watt high pressure sodium light or equal, or Linear Electric approved light standards (17 foot fiberglass pole, black or gray in color), at each street intersection, but no further apart than three hundred (300) feet within or abutting the subdivision, at the entrance to the development, and at the end of each cul-de-sac. After installation, the lighting facilities will be maintained and operated at the expense of the home owner's association.
32. Driveway locations shall not interfere with the sidewalk handicap ramps.
33. Hydrant distances: 600' / 300' - Residential/Commercial pending.
34. Public Water Supply District No. 2 of St. Charles County shall be notified of least 48 hours prior to construction of water mains for coordination and inspections.
35. All open mains should be properly capped or plugged when the main is unattended for more than 4 hours.
36. All bare coatings, except service lines, shall have 3 coating spacers per pipe length.
37. All service lines under the streets are to have a 2" PVC casing installed, at a minimum of 30" depth.

INSTALLATION OF WATER MAINS

"ALWAYS KEEP THE WATER MAIN ON EASEMENT"

NOTE: ALL FITTINGS, VALVES AND FIRE HYDRANTS SHALL BE PUSH-ON JOINT.

1. No 4-way fittings are to be allowed.
- Water main shall be located as shown on plans, as not to interfere with other utility locations.
- All water mains shall be 8 inches in diameter, up to the last fire hydrant. 6" pipe can be used after the fire hydrant if there are no other fire hydrants on the main, and no future extension foreseen. The pipe shall have a Minimum Pressure Rating (MP) of 200 or C-900.
- Fire hydrant must be Mueller Steam Controller and painted yellow in color and all valves must be Mueller push-on joint resistant wedge gate valve.
- All fire hydrants and the valve and tee for the fire hydrant shall be restrained push-on type joint as required by MANS specifications.
- The contractor shall place all fire hydrants between 15 (1 1/2) feet and three feet (3') from the street curb (measured from the edge of the fire hydrant).
- These water bends (45, 22 1/2, 11 1/4) are to be made with push-on joint fittings using mega legs or any appropriate joint restraint that meet MANS specifications.
- Water fittings, tees, W/flows, etc. will have mega legs, concrete blocking, or any other appropriate joint restraint that meets MANS specifications. Concrete not to be on nuts or bolts. One 1" rock should be used to backfill above the weep holes at the fire hydrant.
- Rocky soils shall require bedding 6" under and 6" over water pipe.
- Concrete encasement required to DNR Specification, when crossing sanitary sewers and when water main is within 18" vertical, 10' horizontal of any sanitary sewer.
- Must use appropriate sized couplings when crossing streets and use coupling pipe only when required by Municipality, WOOD, or MANS.
- Must outfit coated solid core, 12 gauge tracer wire, taped to the top of the pipe. All wire must run up the outside of the valve box and come up inside the valve box under the water lid.
- Use 3M waterproof splice kits for all splicing of tracer wire.
- Any project with over 1,500' of pipe should use the 2,300' roll of tracer wire to eliminate splicing.
- A chlorine test is required. It must initially test at 25 PPM, or greater, and 24 hours later 10 PPM must be present. It must be tested by a Public Water Supply District No. 2 Inspector, and have 24 hours notice prior to that inspection. The main will be tested for Cl2 every 1,000' of pipe.
- If chlorine test fails then main must be re-chlorinated.
- The contractor will meter water and pay for it.
- Callium samples should be collected every 1,000'.
- Final Pressure Test: The water main must be pumped up to 125 PSI and maintain this pressure for one hour with zero drop in pressure.
- Gas, water, and other underground utilities shall not conflict with the depth or horizontal location of existing and proposed sanitary and storm sewers including house laterals.
- All waterline construction shall conform to current Missouri American Water Standards and Specifications.
- The contractor shall place the "stoppers" outlet of the fire hydrant toward the street.
- Backfill shall have no debris or stones larger than 4" in diameter.
- All creek crossings will require ductile iron pipe, if less than 3' of cover, concrete encasement with rip rap required.

33. All proposed positions and playground areas will need a separate permit from the City Engineer.
34. City approval of the construction site plans does not indicate that single family and two family dwelling units can be constructed on the lots without meeting the building setbacks as required by the Zoning Code.
35. The developer must apply the City of Dardenne Prairie construction inspectors with soil reports prior to or during site soil testing.
36. Lots 5, 10, 11, 24, and 25, shall have additional expansion joints in the driveways to account for street creep.
37. Proposed development includes 18.24 Ac. Total 50 lots.
38. Setback information:
minimum front yard: 25'
minimum side yard: 7'
minimum rear yard: 20'
39. All vegetation shall be done in accordance with the City of Dardenne Prairie Ordinance.
40. Lots 12-21 and 29-39 will be a walkout lots.
41. FEMA panel 239 of 325, FEMA LHM has been issued on 09/03/03 Case Number 03-07-11454.

INDEX

- 1 TITLE SHEET
- 2 FLAT PLAN
- 3 GRADING PLAN
- 4 STREET PROFILES
- 5 SANITARY PROFILES 1
- 6 SANITARY PROFILES 2
- 7, 7A STORM PROFILES
- 8 OUTFALL STRUCTURE/ GENERAL DETAILS
- 9 GENERAL DETAILS 2
- 10 WARPING DETAILS
- 11 DRAINAGE AREA MAP
- 12 PAVEMENT DETAILS
- 13 SANITARY DETAILS
- 14-16 STORM DETAILS
- 17 WATER DETAILS
- 18 SIDEWALK DETAILS

LEGEND

	SANITARY STRUCTURE	CO	CLEAN OUT	
	STORM STRUCTURE	T.B.R.	TO BE REMOVED	
	TEST HOLE	T.B.R. & R.	TO BE REMOVED & RELOCATED	
	POWER POLE	T.B.P.	TO BE PROTECTED	
	LIGHT STANDARD	T.B.A.	TO BE ABANDONED	
	CURB INLET	B.C.	BASE OF CURB	
	DOUBLE CURB INLET	T.C.	TOP OF CURB	
	GRATE INLET (EXISTING)	T.W.	TOP OF WALL	
	AREA INLET (EXISTING)	TYP.	TYPICAL	
	DOUBLE AREA INLET	U.N.O.	UNLESS NOTED OTHERWISE	
	FLARED END SECTION	U.I.P.	USE IN PLACE	
	END OF PIPE	---	EXISTING CONTOUR	
	ENERGY DISSIPATOR	---	PROPOSED CONTOUR	
	MANHOLE	---	TREE LINE	
	REINFORCED CONCRETE PIPE	---	SAN SEWER (EXISTING)	
	CORRUGATED METAL PIPE	---	SAN SEWER (PROPOSED)	
	CAST IRON PIPE	---	STORM DRAIN (EXISTING)	
	POLYVINYL CHLORIDE PIPE	---	STORM DRAIN (PROPOSED)	
	VITRIFIED CLAY PIPE	---	PHONE BOX	
	GUY WIRE	---	IRON PIPE	
	SIGN	---	WATER LINE	
	POST	---	HYDRANT	
	WATER METER	---	CONCRETE PAVEMENT	
	WATER VALVE	---	PLACED RIP-RAP W/UNDERLAIN FABRIC	
	WATER SHUT OFF	---	GENERAL SURFACE DRAINAGE	
	GAS VALVE	---	N.T.S.	NOT TO SCALE
	OVERHEAD ELECTRIC LINE	---	ROW	RIGHT-OF-WAY
	CLEARING LIMITS	---	T.B.C.	TOP BACK CURB
	EDGE OF ASPHALT	---	D.I.P.	DUCTILE IRON PIPE
	EDGE OF CONCRETE	---	---	DIVERSION SWALE
	DIVERSION SWALE	---	---	STOP SIGN
	STREET SIGN	---	---	YIELD SIGN

10/10/03
File Copy
APPROVED
[Signature]

IMPROVEMENT PLANS
PEACEFUL VALLEY
TITLE SHEET

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801 S. FIFTH STREET, SUITE 202
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DEVELOPER

TRAVIS SHANE HOMES
P.O. BOX 340
O'FALLON, MO 63366
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ENGINEERS AUTHENTICATION

The responsibility for the professional engineering liability on this project is hereby limited to the set of plans authenticated by the seal, signature and date hereunder attached. Responsibility is disclaimed for all other engineering plans involved in the project and specifically excludes revisions after this date unless reauthenticated.

[Signature]

ORDER NO.	02-0890
DATE	07/25/03
1	