

**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.
- The City of O'Fallon shall be notified 48 hours prior to construction for coordination and inspection.
- All construction and materials shall conform to the current construction standards of the City of O'Fallon. Where conflicts exist, the contractor shall notify the Engineer for resolution.
- All construction methods and practices shall conform with current OSHA standards.
- City approval of the construction site plans does not mean that single family can be constructed on the lots without meeting the building setbacks as required by the Zoning Code.
- Maintenance and upkeep of the common ground area shall be the responsibility of the developer and/or successors.
- All existing site improvements or features disturbed, damaged or destroyed shall be repaired or replaced to closely match pre-construction conditions by the contractor and shall remain the contractor's responsibility.
- All mechanical equipment to be screened from public view.
- All fill placed under proposed storm and sanitary sewer, proposed roads, and/or paved areas shall be compacted to 90% of maximum density as determined by the Modified AASHTO T-180 Compaction Test or 95% of maximum density as determined by the Standard Proctor Test AASHTO T-99. All fill placed in proposed roads shall be compacted from the bottom of the fill up. All test shall be verified by a soils engineer concurrent with grading and backfilling operations. Ensure 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 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.
- All trench backfills under paved areas or within a 1:1 shear plane from the back of curb 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 paving to be in accordance with St. Charles County standards and specifications except as modified by the City of O'Fallon ordinances.
- Driveway locations shall not interfere with the sidewalk handicap ramps.
- Sidewalks, curb ramps, ramp and accessible parking spaces shall be constructed in accordance with the current approved "American with Disabilities Act Accessibility Guidelines" (ADAAC) along with the required grades, construction materials, specifications and signage. If any conflict occurs between the above information and the plans, the ADAAC guidelines shall take precedence and the contractor prior to any construction shall notify the Project Engineer.
- All sign post and back and bracket arms shall be painted black using Carboline Rustbond Penetrating Sealer SG and Carboline 133 HB paint (or equivalent as approved by the City of O'Fallon).
- Gas, water and other underground utilities shall not conflict with depth or horizontal location of existing or proposed sanitary or storm sewers, including house laterals.
- Contractor shall keep road clear of mud and debris.
- Developer is notified that permits from U.S. Army Corps of Engineers and Mo.D.N.R. may be required for this development.
- The grading and elevations shown on the grading plans are for construction purposes only. Finished grades and slopes vary from those shown on the plans depending upon location, size, and type of house built on lot. However, care should be taken to insure that the finished grading conforms to the drainage area maps.
- Any permits, licenses, easements, or approvals required to work on public or private properties or roadways are the responsibility of the developer.
- The developer is responsible for adjusting all structure tops to match finished grade.
- The developer shall provide the City of O'Fallon with all soil testing reports.
- All proposed utilities shall be located underground.
- All sewer structures to be precast.
- These plans shall comply with Ordinance No. 4875 as it regards to the "pavement section". A four (4) inch rock base with underdrains located per city requirements shall be installed.

**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 and City of O'Fallon 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 and City of O'Fallon.
- The Contractor shall notify the Soils Engineer and City of O'Fallon 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 silted 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 and the City of O'Fallon shall approve the discing 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 and the City of O'Fallon. The roller shall be designed so as to avoid the creation of a tamped 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 and the City of O'Fallon at regular intervals.
- The Soils Engineer shall notify the Contractor and the City of O'Fallon 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 6 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 and the City of O'Fallon. 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 fill. 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.
- 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 other than building areas	88 %
Natural subgrade	88 %

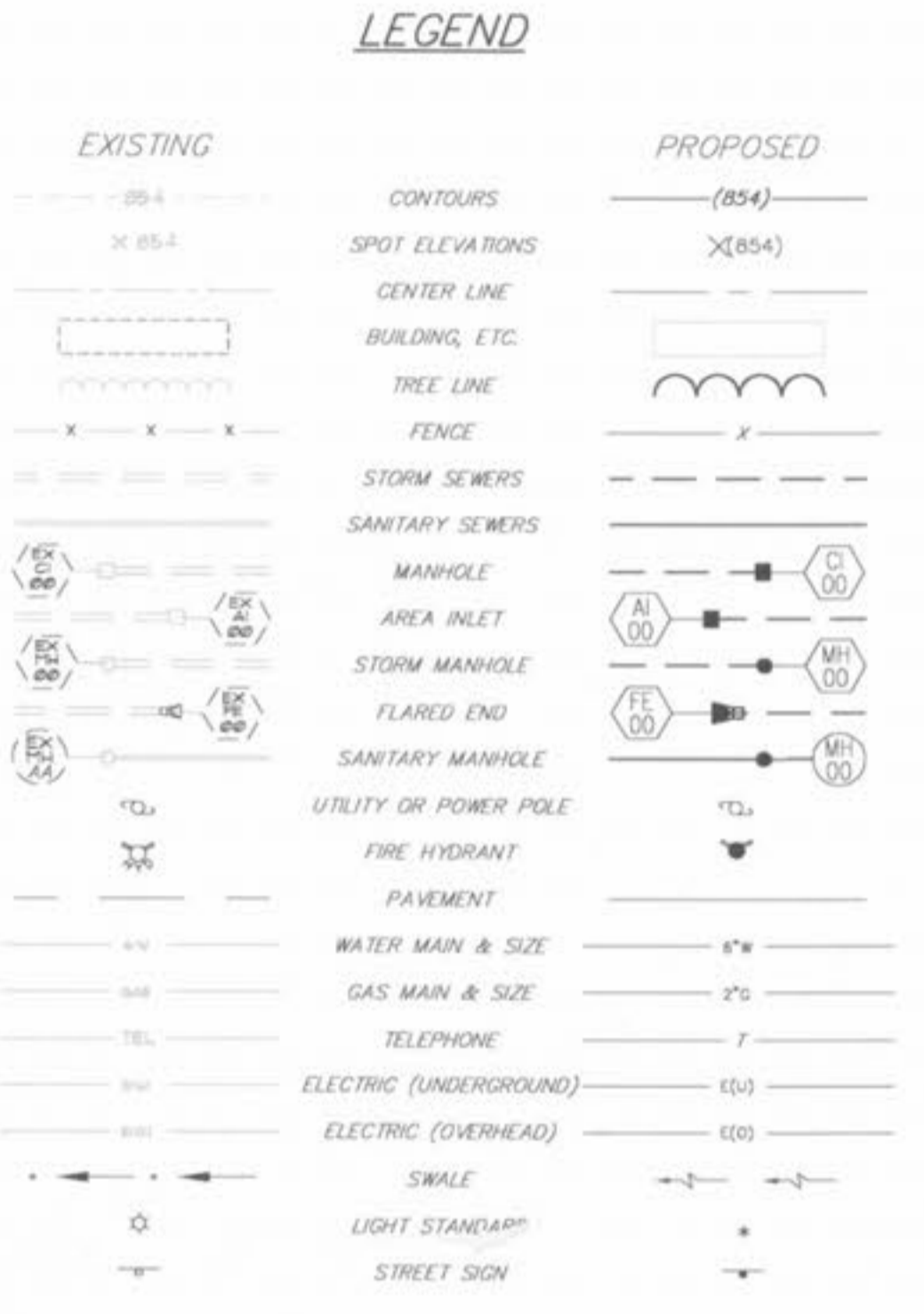
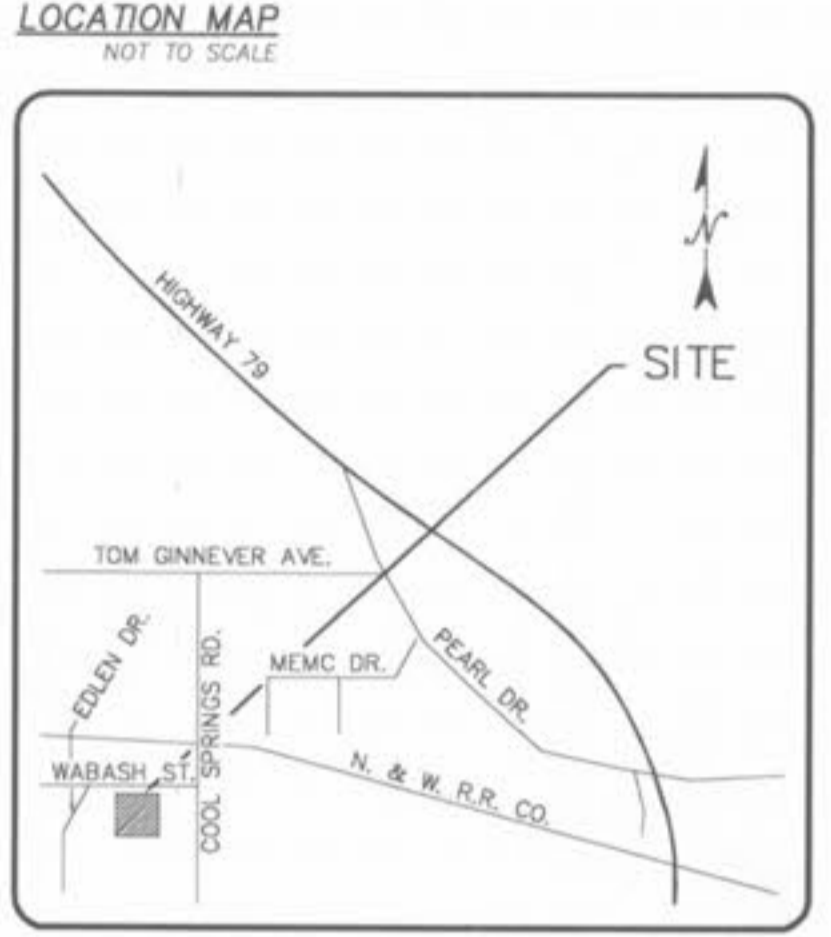
Measured as a percent of the maximum dry density as determined by modified Proctor Test (ASTM-D-1557).  
Moisture content must be within 2 percent below or 4 percent above optimum moisture content if fill is deeper than 10 feet.

- No slope shall exceed 3 (horizontal) to 1 (vertical).

**SILTATION NOTES:**

- Siltation controls will be installed prior to any grading or construction operations and shall be inspected and maintained as necessary to insure their proper function until sufficient vegetation has been established to prevent erosion.
- The installation and maintenance of all siltation control shall be the responsibility of the developer.
- Temporary siltation control measures (structure) shall be maintained until vegetative cover is established at a sufficient density to provide erosion control on the site.
- 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.
- Where natural vegetation is removed during grading, vegetation shall be reestablished in such a density as to prevent erosion. Permanent type grasses shall be established as soon as possible during the next seeding period after grading has been completed.
- 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.
- When grading operation are completed or suspended for more than 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.
- All finished grades (area not to be disturbed by future improvement) in excess of 20% slopes (5:1) shall be mulched and backed at the rate of 100 pounds per 1,000 square feet when seeded.
- Additional siltation controls may be required as directed by the local governing authority.
- 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, silted 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 or swales 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.

A SET OF IMPROVEMENT PLANS FOR  
**WABASH WOODS**  
A TRACT OF LAND BEING PART OF  
THE NORTH HALF OF NORTHEAST QUARTER OF  
SECTION 28, TOWNSHIP 47 NORTH, RANGE 3 EAST,  
CITY OF O'FALLON, ST. CHARLES COUNTY, MISSOURI



**DEVELOPMENT NOTES:**

- Present Zoning: I-1 LIGHT INDUSTRIAL, R-1 PLANNED UNIT DEVELOPMENT
- Total Acreage of Tract: 64.8 Acres ±  
Acreage of R-1 PUD: 40.4 Acres ±  
Density: 4.16 lots/acre  
Typical lot size: 5,500 s.f.  
Average lot size: 7,300 s.f.  
Minimum lot size: 5,500 s.f.
- Number of lots proposed: 168 lots
- This property is served by the following utilities:  
City of O'Fallon Water & Sewer  
Ameren UE  
CenturyTel Telephone
- This property is located within the following service areas:  
Fl. Zumwalt School Dist.  
St. Charles County Ambulance Dist.  
O'Fallon Fire Prot. Dist.
- A portion of this property is labeled "Zone X" areas outside the limits of the 500-year floodplain as determined by the Flood Insurance Rate Map (F.I.R.M.) of the St. Charles County, Missouri. Map #29183G0237 E.
- A portion of this property is labeled "Zone X" areas of 500-year flood, areas of 100-year flood with average depths of less than 1 foot as determined by the Flood Insurance Rate Map (F.I.R.M.) of the St. Charles County, Missouri. Map #29183G0237 E.
- Building Setbacks:  
Front 25 feet  
Side 5 feet  
Rear 25 feet
- Tree Preservation Calculations:  
Area of Existing Trees: 14.8 Acres  
Area of Saved Trees: 3.8 Acres  
Percentage Saved: 26 %
- One Street Tree per lot is also required. (Two required on corner lots) Total=181 Trees of size and type required by the City Ordinance.
- No lot shall be allowed direct access to Wabash Ave.
- Prior to issuance of BUILDING PERMITS for more than thirty percent (30 %) of the total units, BUILDING PERMITS for all of the recreational amenities shall be pulled. Prior to the issuance of BUILDING PERMITS for forty percent (40 %) of the total units, all recreational amenities shall be open for use.
- Lots 50 & 69 shall have street access to proposed street "A" only. "NO PARKING" signs shall be posted along entrance to subdivision.
- No proposed slopes shall exceed 3:1.
- Detention shall be provided for the 100 year storm event. The proposed industrial use area shall be detained in the shown proposed basins.
- Easements shall be provided for sanitary sewers, and all utilities on the Record Plat. See Record Plat for location and size of easements.
- All sign locations and sizes must be approved separately through the Planning Division.
- A separate Site Plan will be required for review and approval by the Planning and Zoning Commission for the proposed recreational amenities. The Site Plan shall also include the pedestrian trail and bridge with details for each.
- Separate Final Plan(s) will be required for review and approval by the Planning and Zoning Commission for each of the future light industrial sites.
- This site shall be constructed in one phase with multiple record plats to be determined.
- All proposed fencing requires a separate permit through the City of O'Fallon's Planning Division.

**SHEET INDEX**

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26	OUTFALL STRUCTURE DETAILS
27	DETENTION BASIN CROSS SECTIONS
28	TRAFFIC CONTROL PLAN
29	GRADING / SILTATION DETAILS
30	PAVEMENT DETAILS
31	WATER DETAILS
CD1&CD2	CONSTRUCTION DETAILS

**SANITARY SEWER NOTES:**

- All manhole tops built without elevations furnished by the Engineer will be the responsibility of the sewer contractor.
- Eight (8) inch 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 water stop as approved by the sewer district shall be installed between P.V.C. pipe and masonry structures.
- All filled places, including trench back fills, 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 back fills under paved areas shall be granular back fill, 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 back fills may be earth material (free of large clods or stones). All trench back fills 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 2/2 feet.
- 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 back fill over pipe shall consist of same size "clean" or minus stone from spring line of pipe to 12" above the top of pipe.
- All sanitary manholes shall be waterproofed on the exterior in accordance with Missouri Department of Natural Resources specifications 10CSR-6.120 (7). Provide 31 ml waterproofing on all structures.
- 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. Structures shall have a 0.2" min. difference in invert elevation unless otherwise approved.
- The City of O'Fallon 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.
- The contractor shall prevent all storm, surface water, mud and construction debris from entering the existing sanitary sewer system.
- All sanitary and storm sewer trench back fills shall be water jetted. Granular back fill will be used under pavement areas.
- All existing areas disturbed during construction of the sanitary sewer line shall be seeded and mulched to prevent erosion.
- All sanitary sewer laterals shall be a minimum of 4" in diameter per City of O'Fallon.
- All construction methods and practices shall conform with current OSHA standards.
- Sod or erosion control blankets may be used in disturbed areas as directed by engineer.
- Abandonment of existing septic tanks according to specification set out by St. Charles County.
- All structures to be precast.
- Only wyes or T-ways as approved by the City of O'Fallon will be allowed for sewer connection.

**STORM SEWER NOTES:**

- All manhole tops built without elevations furnished by the Engineer will be the responsibility of the sewer contractor. All area inlets are to be open four (4) sides unless otherwise noted.
- All filled places, including trench back fills, 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 back fills under paved areas shall be granular back fill, and shall be compacted to 90% as determined by the "Modified AASHTO T-180 Compaction Test." (A.S.T.M.-D-1557). All other trench back fills may be earth material (free of large clods or stones). All trench back fills shall be water jetted.
- Brick will not be used in the construction of storm sewer manholes.
- All pipes shall have positive drainage through manholes. No flat base structures are allowed. Structures shall have a 0.2" minimum difference in invert elevation unless otherwise approved.
- All construction and materials shall conform to the current construction standards of the City of O'Fallon.
- All sanitary and storm sewer trench back fills shall be water jetted. Granular back fill will be used under pavement areas.
- Concrete pipe for storm sewers shall be Class III, A.S.T.M. C-76 with a minimum diameter of 12" except in the R.O.W. it shall be 15".
- The ADS N-12 pipe shall have a smooth interior wall.
- Concrete pipe joints shall be MSD type "A" approved compression-type joints and shall conform to the requirements of the specifications for joints for circular concrete sewer and culvert pipe, using flexible, water-tight, 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.
- When HDPE pipe is used, pipe must meet ADS pro-link ultra joint specifications or equal, per ASHTO M294 be followed.
- The use of High Density Polyethylene Corrugated pipe, ADS N-12 or equal will be permitted as an acceptable alternative to reinforced concrete pipe.
- All flared end sections and inlet structures will be concrete.
- All storm sewer pipe installed in the Public Right-of-Way shall be reinforced concrete Class III pipe.
- All concrete pipe or ADS N-12 pipe shall be installed with "O-Ring" Rubber type gaskets per M.S.D. standard construction, specifications or manufacturer.
- All construction methods and practices shall conform with current OSHA standards.
- Provide a 5/8" trash bar in all inlet openings.
- HDPE pipe is to be N-12WT or equal and to meet ASTM F1417 water light field test.
- All structures to be precast.

**WATER MAIN NOTES:**

- The City of O'Fallon shall be notified 48 hours prior to construction for coordination and inspection.
- All water lines shall be laid at least 10 feet horizontally, from any sanitary sewer, storm sewer, or manhole. 18" 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 contacted over the sewer line to be crossed so that the joints will be equally distant from the sewer and as remote from them 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 shall conform to A.S.T.M.-D-2241, SDR 21 Standard Specification for P.V.C. Pressure Pipe, 200 P.S.I. working pressure for water, with approved joint.
- Water lines, valves, sleeves, meters, and fittings shall meet all specifications and installation requirements of the City of O'Fallon.
- 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 C-110. All rubber gasket joints for water ductile iron pressure pipe and fittings shall conform to A.W.W.A. Specification C-111.
- All bends on water main are to be made with fittings.
- Any water main in the 1 to 1 shear plane or under the pavement will require compacted rock backfill.

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MISSOURI ONE-CALL SYSTEM, INC.

THE UNDERGROUND UTILITIES SHOWN WERE PLOTTED FROM AVAILABLE INFORMATION AND DO NOT NECESSARILY REFLECT THE ACTUAL EXISTENCE, NONEXISTENCE, SIZE, TYPE, NUMBER OR LOCATION OF THESE OR OTHER UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE ACTUAL LOCATION OF ALL UNDERGROUND UTILITIES, SHOWN OR NOT SHOWN, AND SAID UTILITIES SHALL BE LOCATED IN THE FIELD PRIOR TO ANY GRADING, EXCAVATION OR CONSTRUCTION OF IMPROVEMENTS. THESE PROVISIONS SHALL IN NO WAY ABSOLVE ANY PARTY FROM COMPLYING WITH THE UNDERGROUND FACILITY SAFETY AND DAMAGE PREVENTION ACT, CHAPTER 319, RSMo

- Topographical information taken from survey by Box Engineering for the City of O'Fallon.
- T.R. Hughes Blvd. roadway plans taken from plans by Parsons Brinkerhoff dated 9-15-00.
- Vertical control: BMS - Elev. 514.20 (T.R. Hughes Road Project) Chisled "x" in top of 7' dia. conc. water vault in front of VSM Abutments.



ISSUE	DATE	REVISIONS
1	1/25/05	Submitted to city for review.
2	6/15/05	Revised per city's review.
3	7/29/05	Revised per city's review.
4	8/16/05	Revised per city's review.

The responsibility for professional engineering liability on this project is hereby limited to the use of plans authorized by the engineer. It is not intended that any other engineering plans involved in this project and specifically excludes revisions after this date unless reauthorized.

PREPARED BY:  
**LIBERTY ENGINEERING, L.L.C.**  
P.O. Box 2 - Commerce, MO 63338 Phone: (636) 244-5333  
RESIDENTIAL - COMMERCIAL - MUNICIPAL

PREPARED FOR:  
**KAPLAN DEVELOPMENT, LLC**  
P.O. BOX 340 - MO 63378  
(636) 946-8974

PROJECT: **WABASH WOODS PHASE ONE**  
DESIGNED BY:  
DRAWN BY:  
CHECKED BY:  
SHEET NO: **1** OF **31**  
COVER SHEET

8/21/05  
File Copy  
APPROVED as Noted  
AOK