

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 and two family dwelling units can be constructed on the lots with 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 filled 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 tests 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 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 backs 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 permit(s) 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.
- All joint for sidewalks shall be at least 24" spacing.
- 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 #29183C0237 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 #29183C0237 E.
- No slopes shall exceed 4 % within City Right-of-Way and 3:1 on all other slopes.

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. Copies of the soil testing shall be provided to the City of O'Fallon.
- 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 silt 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 off-site. Topsoil and grass in the fill areas shall be thoroughly disc'd 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 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 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 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 content.
- 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 %

Pavement subgrade shall be compacted to City Standards or optimum moisture, which ever is greater.

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)

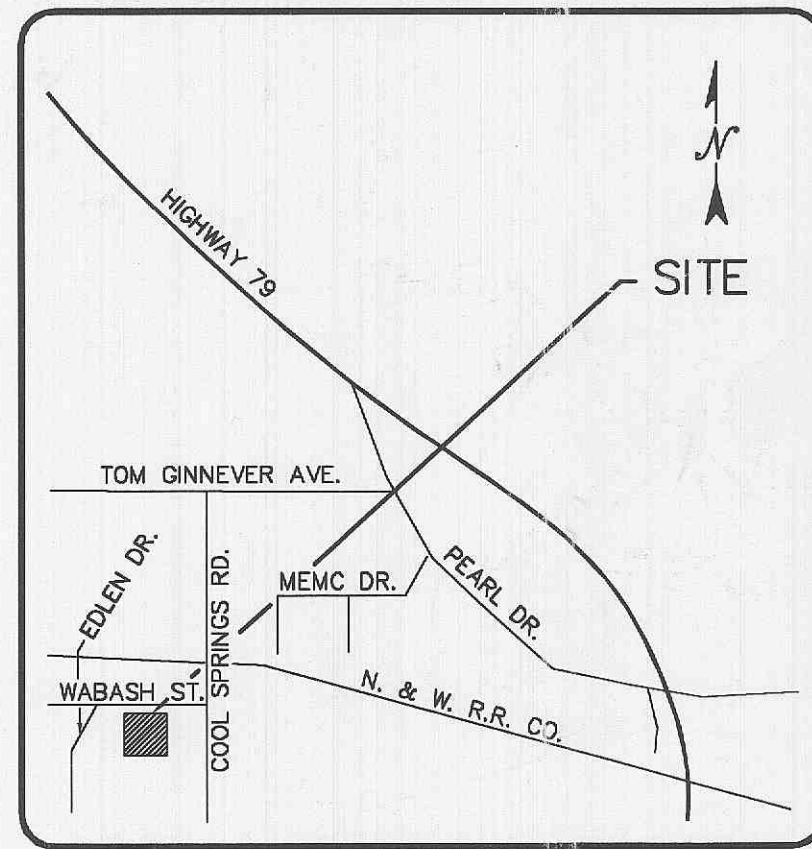
SILTATION NOTES:

- 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 (structural) 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 tacked 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.

A SET OF ROAD IMPROVEMENT PLANS FOR

WABASH AVENUE

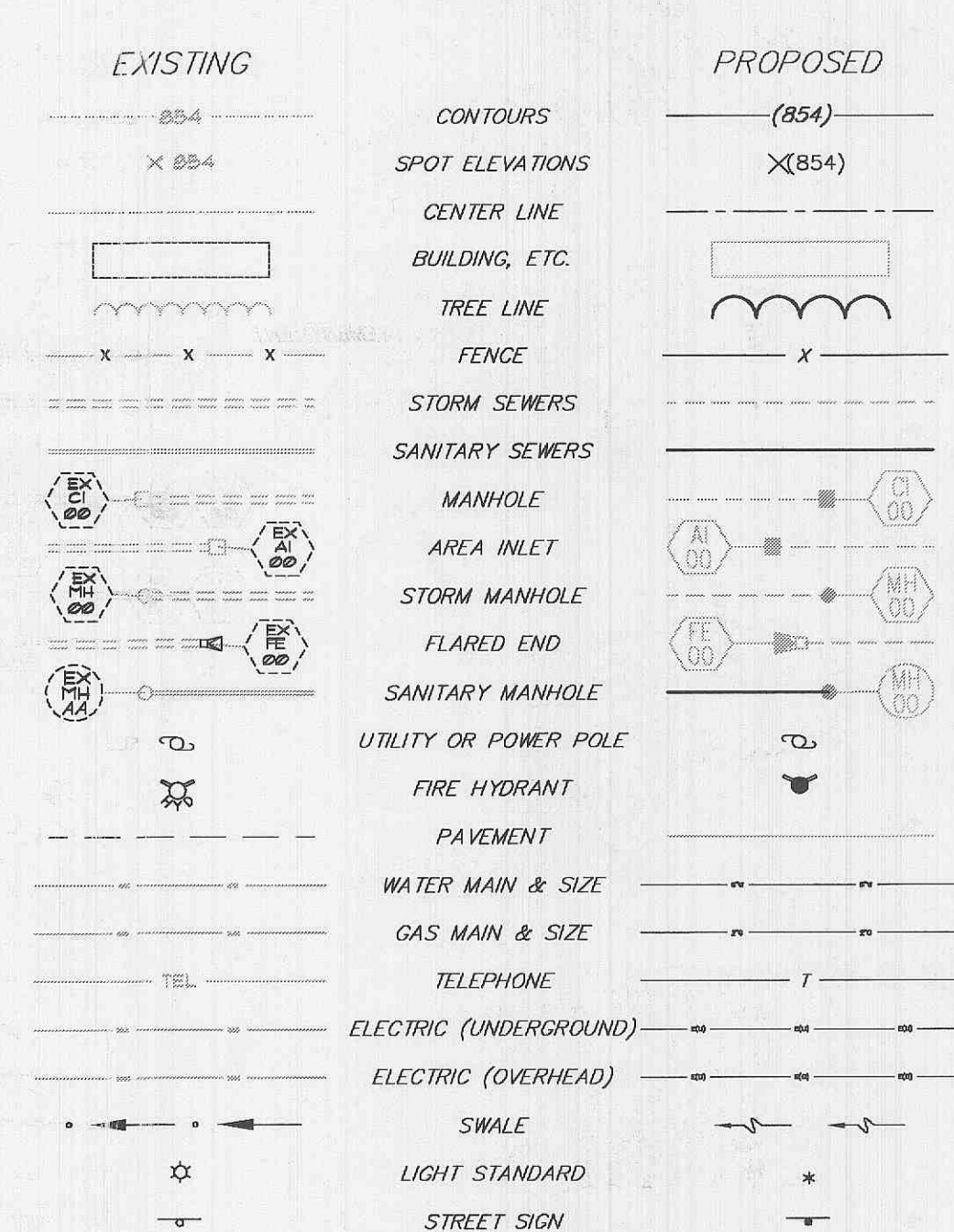
LOCATION MAP
NOT TO SCALE



ABBREVIATIONS

AI AREA INLET	NRCC NON-REINFORCED PORTLAND CEMENT CONCRETE
APPR. APPROACH	NTS NOT TO SCALE
ASPH. ASPHALT	OF OUTFALL
ATC ADJUST TO GRADE	PB PULL BOX
ATGBO ADJUST TO GRADE BY OTHERS	PC POINT OF CURVATURE
B.C. BACK OF CURB	PCC PORTLAND CEMENT CONCRETE
BEG. BEGINNING	P.D.E. PERMANENT DRAINAGE EASEMENT
BLO. BUILD	P.E. PRIVATE ENTRANCE
BM BENCHMARK	P.W.E. PERMANENT WALL EASEMENT
C. or C CENTERLINE	PI POINT OF INTERSECTION
CE. COMMERCIAL ENTRANCE	PP POWER POLE
CHIS. CHISELED	PROP. PROPOSED
CIL. CURB INLET	PS PRIVATE SIGN
CLF. CONSTRUCTION LIMIT	P.S.E. PERMANENT SANITARY EASEMENT
OLF. 100 LINEAR FEET	PT POINT OF TANGENT
CMP. CORRUGATED METAL PIPE	PT PERMANENT TRAFFIC SIGNAL EASEMENT
CONC. CONCRETE	P.T.S.E. POINT OF VERTICAL CURVATURE
CONSTR. CONSTRUCTION/CONSTRUCT	P.V. POINT OF VERTICAL INTERSECTION
COR. CORNER	P.V.M.T. PAVEMENT
CSB. CABLE SPLICE BOX	P.V. POINT OF VERTICAL TANGENT
CT. COURT	R. RADIUS
DCI. DOUBLE CURB INLET	R/W. RIGHT-OF-WAY
DR. DRIVE	RCP. REINFORCED CONCRETE PIPE
EL. ELEVATION	RD. ROAD
EP. EDGE OF PAVEMENT	RET. RETAINING
ELEV. ELEVATION	RT. RIGHT
EX. EXISTING	RS. SANITARY SEWER
EXST. EXISTING	SIDWALK
FACE OF CURB	SGI. SPECIAL GRATE INLET
FLARED END SECTION	SHLDR. SHOULDER
FLOWLINE	SS. STREET SIGN
GD. GAS DRIP	S.S.D. STOPPING SIGHT DISTANCE
GDP. GUARD POST	STA. STATION
GRATE INLET	SURF. SURFACE
GAS METER	TBA. TO BE ABANDONED
GRA. GRADED TROUGH	TBA. TO BE ADJUSTED
GV. GAS VALVE	TBM. TO BE REMOVED BY OTHERS
GWA. GUY WIRE ANCHOR	TBR&R. TO BE REMOVED AND REPLACED
GWS/OVS. GAS/OIL WARNING SIGN	TBR&R&O. TO BE REMOVED AND REPLACED BY OTHERS
HOR. HORIZONTAL	T.C.E. TEMPORARY CONSTRUCTION EASEMENT
INV. INVERT	TEMP. TEMPORARY
IP. IRON PIN	TSB. TELEPHONE SPLICE BOX
JC. JUNCTION CHAMBER	TL. TRAFFIC LIGHT
RATE OF VERTICAL CURVE	TRYP. TYPICAL
LANE	UP. USE IN PLACE
LIGHT STANDARD	VC. VERTICAL CURVE
LT. METER	VCP. WITRIFIED CLAY PIPE
MB. MAIL BOX	WM. WATER METER
MH. MANHOLE	WV. WATER VALVE
MISC. MISCELLANEOUS	
MM. MILLIMETER	
M.O. MIDDLE ORDINATE	
M.S.E. MECHANICALLY STABILIZED EARTH NUMBER	

LEGEND



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 1/2 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-8.120 (7E).
- Brick will not be used in the construction of sanitary sewer manholes.
- All pipes shall have positive drainage through manholes. No flat basins or 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 shall be pump out and abandonment shall be done according to specification set out by Metropolitan St. Louis Sewer District (2000) and inspected by governing authority.

STORM SEWER NOTES:

- All structures shall be precast.
- All manhole tops built without elevations furnished by the Engineer will be the responsibility of the sewer contractor.
- 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 basins or 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, watertight, 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 conditions or equal, per ASHTO M294 as followed.
- The use of High Density Polyethylene Computed pipe, ADS N-12 will be permitted as an acceptable alternative to reinforced concrete pipe, ADS N-12 HC shall be used for all ADS pipe greater than 36". Pipe shall meet A.S.T.M.-D-2321 and AASHTO M-294-291.
- 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.

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 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 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.

8/15/05
Contractors Field Copy
APPROVED
A.B.K.

SHEET INDEX

1	COVER SHEET
2	TYPICAL SECTIONS / DETAILS
3-4	PLAN AND PROFILE
5-6	DRAINAGE PLAN / STORM PROFILES / DETAILS
7	CROSS SECTIONS
8	INTERSECTION WARPINGS / STRIPING PLAN
9	TRAFFIC STRIPING & SIGNAGE PLAN
10-12	CONSTRUCTION DETAILS

Call BEFORE you DIG
TOLL FREE
1-800-344-7483
MISSOURI ONE-CALL SYSTEM, INC.

THE UNDERGROUND UTILITIES SHOWN HEREON 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: BM5 - Elev. 514.20 (T.R. Hughes Road Project) Chiseled "+" in top of 7" dia. conc. water vault in front of VSM Abrievies.



ISSUE	DATE	REMARKS
1	5/11/05	REVISED PER CITY COMMENTS
2	7/29/05	REVISED PER CITY COMMENTS
3	8/10/05	REVISED PER CITY COMMENTS
4		

The responsibility for professional engineering liability on this project is hereby limited to the set of plans authorized by the seal signature and date hereunder attached. Responsibility is not assumed for any errors or omissions on drawings or specifications, including revisions after this date unless specifically indicated.

RECEIVED
AUG 12 2005
CITY OF O'FALLON, MO

PREPARED BY:
LIBERTY ENGINEERING, L.L.C.
P.O. Box 2 - Columbia, MO 65208 - Phone: (636) 246-9555
RESIDENTIAL - COMMERCIAL - MUNICIPAL

PREPARED FOR:
KAPLAN DEVELOPMENT, L.L.C.
P.O. BOX 340
ST. PETERS, MO 65057
(636) 346-6871

PROJECT:
WABASH AVENUE ROAD IMPROVEMENTS
COVER SHEET

PROJECT NO: **04021-01**
DESIGNED BY:
DRAWN BY:
CHECKED BY:
SHEET NO: **1** OF **12**