

GRADING NOTES

1. 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.
2. 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.
3. The Contractor shall notify the Soils Engineer at least two days in advance of the start of the grading operation.
4. All areas shall be allowed to drain. All low points shall be provided with temporary ditches.
5. 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 without being seeded and mulched. Care should be exercised to prevent soil from damaging adjacent property and silting up existing downstream storm drainage system.
6. 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.
7. All trash and debris on site, either existing or from construction, must be removed and properly disposed of off-site.
8. Soft soil in the bottom and banks of any existing or former pond sites or tributaries or on 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 locations.
9. 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 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 discing operation.
10. 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.
11. 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.
12. 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.
13. 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. 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.
14. 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.
15. 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.
16. 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.

BENCHMARK U.S.G.S.

ELEV. (U.S.G.S. DATUM) 459.35 out square on the northwest corner of the headwall of a 4' x 7' concrete box. Missouri State Highway P station 506+64 ± 20.5' left.

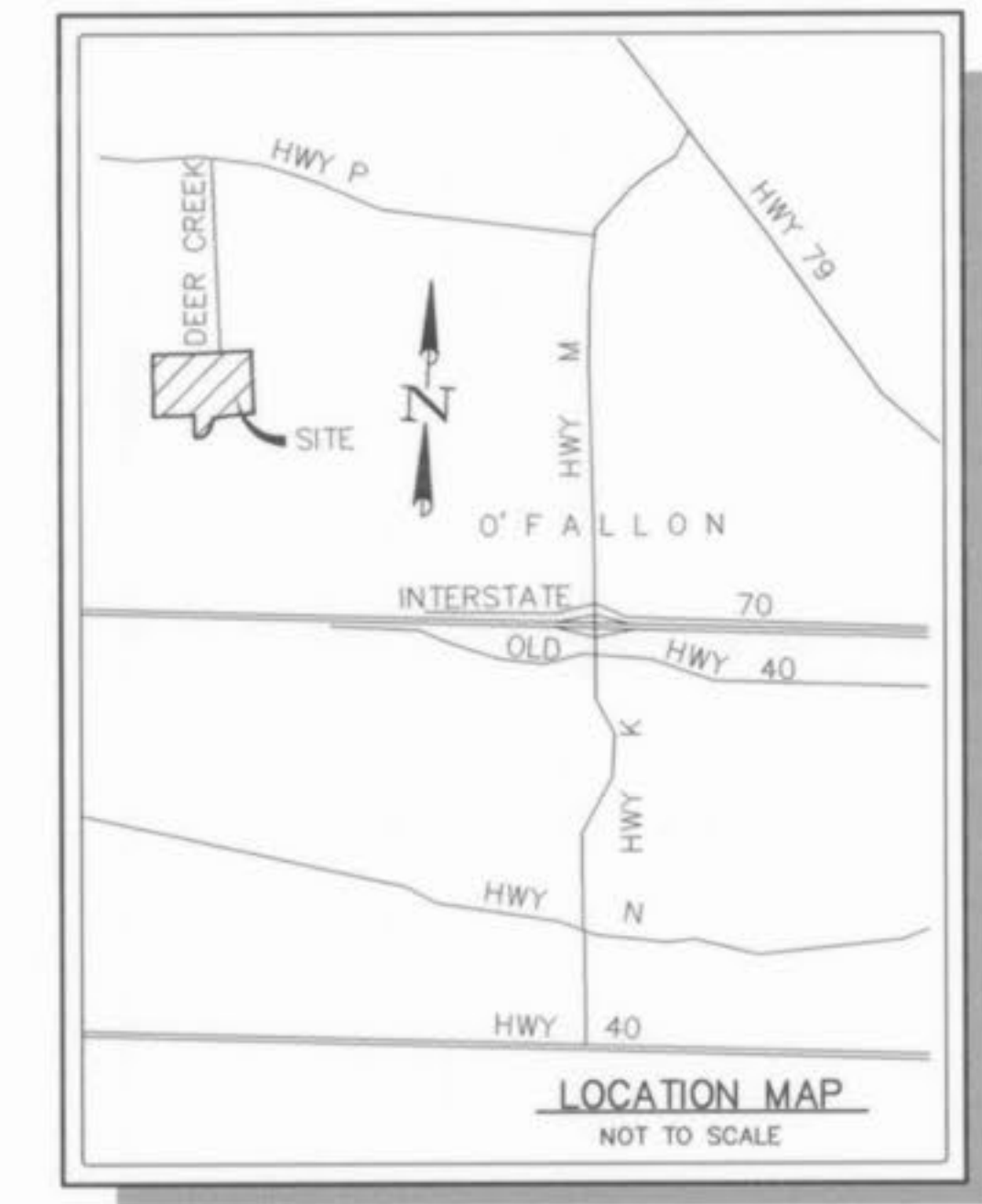
SITE
ELEV 478.49 old out square on southeast corner bridge over creek 13.5' south highway "P" and ± 1/4 mile east of intersection of highways "P" and "M".

GENERAL NOTES

1. 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.
2. All manhole tops built without elevations furnished by the Engineer will be the responsibility of the sewer contractor.
3. 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.
4. 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).
5. 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.
6. 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.
7. No area shall be cleared without the permission of the Project Engineer.
8. 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 some size "clean" or minus stone from springline of pipe to 12" above the top of pipe.
9. All soils test shall be verified by a Soils Engineer concurrent with the grading and backfilling operations.
10. Easements shall be provided for sanitary sewers, and all utilities on the Record Plot. See Record Plat for location and size of easements.
11. Maintenance and upkeep of the common ground area shall be the responsibility of the developer and/or successors.
12. A 25' building line shall be established along all Public Right-Of-Way.
13. 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.
18. All PVC water pipe shall conform to ASTM D2241, SDR 21 Standard Specification for P.V.C. Pressure Pipe, 200 P.S.I. working pressure for water, with approved joint.
19. Water lines, valves, sleeves, meters, and fittings shall meet all specifications and installation requirements of City of O'Fallon.
20. 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.
21. All sanitary manholes shall be waterproofed on the exterior in accordance with Missouri Department of Natural Resources specifications 10 CSR-8.120 (7)E.
22. Brick will not be used in the construction of sanitary sewer manholes.
23. All pipes shall have positive drainage through manholes. No flat base structures are allowed.
24. The City of O'Fallon and shall be notified 48 hours prior to construction for coordination and inspection.
25. 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.
26. All existing site improvements disturbed, damaged or destroyed shall be repaired or replaced to closely match preconstruction conditions.
27. The contractor shall prevent all storm, surface water, mud and construction debris from entering the existing sanitary sewer system.
28. All construction and materials shall conform to the current construction standards of the City of O'Fallon.
29. All sanitary and storm sewer trench backfills shall be water jetted. Granular backfill will be used under pavement areas.
30. All existing areas disturbed during construction of the offsite sanitary sewer line shall be seeded and mulched to prevent erosion.
31. All sanitary sewer laterals shall be a minimum of 4" in diameter per City of O'Fallon.

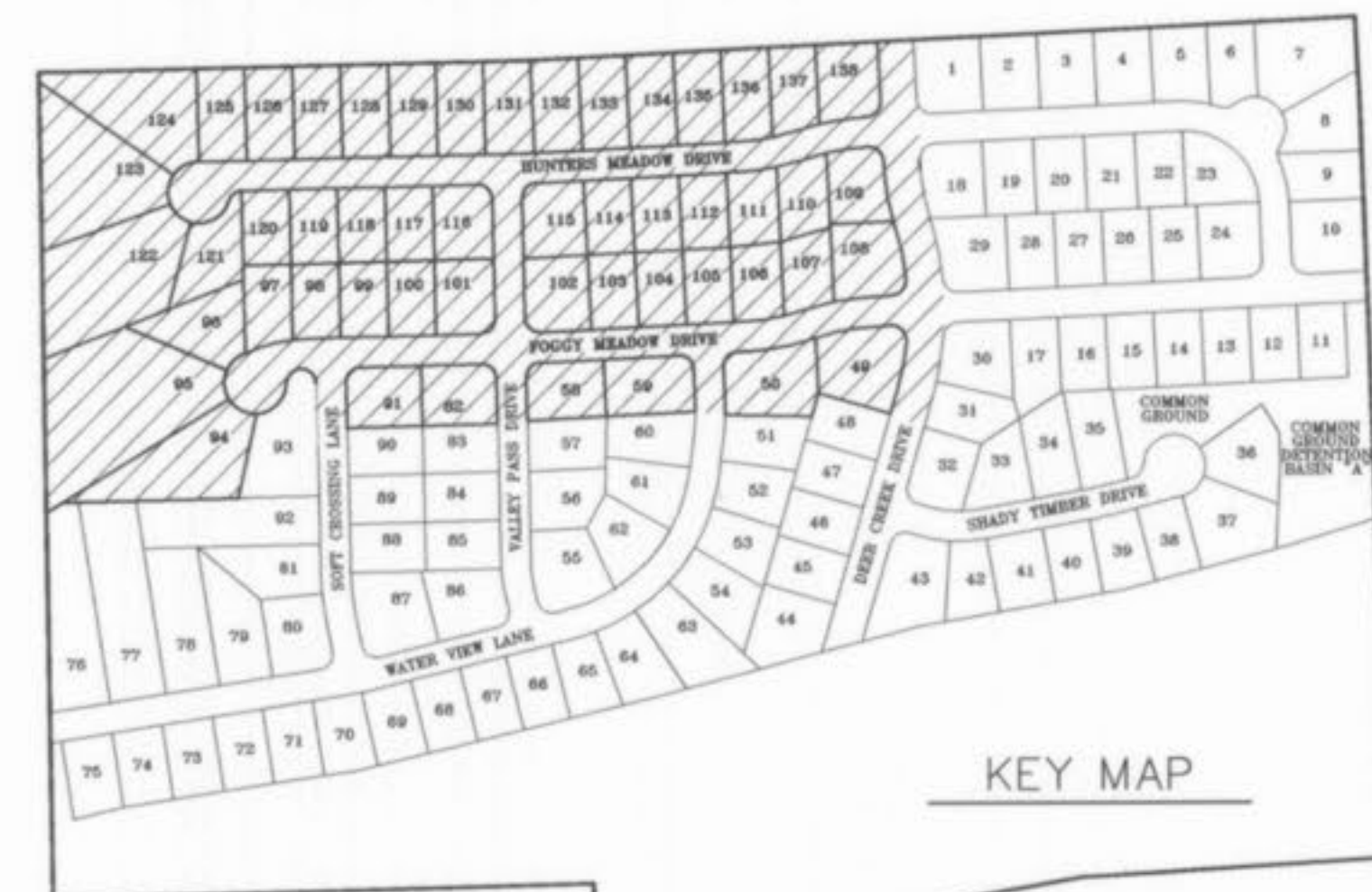
A SET OF OFFSITE WATER AS-BUILT PLANS FOR
THE MANORS AT DEER CREEK
PHASE 1

A TRACT OF LAND BEING
PART OF FRACTIONAL SECTION 19,
TOWNSHIP 47 NORTH, RANGE 3 EAST
OF THE FIFTH PRINCIPAL MERIDIAN,
ST. CHARLES COUNTY, MISSOURI



DEVELOPMENT NOTES

1. Area of tract: 75.39 Acres
2. Existing Zoning: Unzoned
3. Proposed Zoning: "R-1" Single Family Residential
4. Proposed Use: Single Family Residential Subdivision
5. Number of Lots Proposed: 138 Single Family
6. Area in Single Family Lots: 42.06 Acres
7. Area in Single Family Street Right-of-Way: 9.96 Acres
8. Area in Single Family Common Ground: 23.37 Acres
9. Average Lot Area: 13,276 Square Feet
10. Minimum Lot Size: 10,000 Square Feet
11. Yard Requirements:
 - A. Front Yard: 25 Feet
 - B. Side Yard: 6 Feet
 - C. Rear Yard: 25 Feet
12. Height Requirement: 2 1/2 stories or 35 feet
13. Enclosed decks must maintain a 25 foot setback from rear property line.
14. The site is served by the following:
 - A. Sanitary Sewers: City of O'Fallon
 - B. Water: City of O'Fallon
 - C. Electric: AmerenUE
 - D. Telephone: Verizon Midwest
 - E. Gas: St. Charles Gas Company
 - F. School: Fort Zumwalt
 - G. Fire: O'Fallon Fire Protection District
15. Flood Plain exists on property per F.I.R.M. #29183G0230E. Dated: Revised August 2, 1996
16. Topographic information is per U.S.G.S. topography
17. Boundary information provided per boundary survey by Bax Engineering Company, dated August 1, 1996.
18. One tree shall be planted within the street right-of-way per O'Fallon requirements.
19. All local streets will be constructed to City of O'Fallon standards. Streets will consist of 28 foot wide concrete pavement with integral rolled curb centered in a 50 foot right-of-way and street A will be 36 foot wide. 36 foot wide concrete pavement with integrated rolled curb centered in a 60 foot right-of-way (Collector). Minimum radius shall be 150 feet.
20. All cul-de-sacs and bunnies will have a minimum pavement radii of 40 feet with a minimum right-of-way radii of 52 feet. Street intersections shall have a minimum rounding radius of 25 feet with pavement radii of 37 feet.
21. Minimum street grades will be 1% and maximum street grades will be 8%
22. A 4 foot wide concrete sidewalk shall be constructed on one side of the street where indicated. A five foot wide concrete sidewalk will be required on both sides of the collector street.
23. All homes shall have a minimum of 2 off-street parking places with 2-car garages
24. All utilities must be located underground
25. The developer realizes that they will comply with current Tree Preservation Ordinance Number 1689 and provide landscaping as set forth in Article 23 of the City of O'Fallon Zoning Ordinances.
26. Additional lighting may be required by the City of O'Fallon
27. The following lots are susceptible to street movement: 6-9, 11, 12, 18, 29-31, 32, 36, 37, 42, 43, 50-54, 63-65, 68, 69, 79, 86, 93-99, 107-111, 121-125, 130-132, 137, 138. Calculations in accordance to the Tree Preservation Ordinance:
 - Existing trees: 17.5 Ac.
 - Saved trees: 3.50 Ac.
 - Removed trees: 4.10 Ac. (23%)
 - Street trees: 13.40 Ac.
 - 1 Tree/Lot, except for corner lots which shall have two trees per lot, planted in the right-of-way. Street trees shall be maintained by the homeowner's association and be planted per the O'Fallon Street Tree Planting Guide.
29. Storm water detention will be provided onsite.
30. Maximum slope will be 3:1.
31. As requested by the St. Charles County Highway Department per letter dated 7-26-01: "Developer will be required to provide a minimum of 3 1/2" asphalt overlay between Highway P and the stub of the south property line of Den Creek Estates. St. Charles County Highway Department will require that at least 2" of the 3 1/2" overlay would be laid prior to construction traffic using the road. The final 1 1/2" would be laid once most of the improvements are completed to provide a smooth final driving surface.
32. Common ground areas and stormwater detention areas will be maintained by the home owner's association.
33. A no rise certificate will be provided during the preparation of improvement plans.
34. The covenants and restrictions will be provided at the time the record plat becomes available.



LEGEND

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|---------|-------------------------------|---------|----------------------------------------|
| C.I. | CURB INLET | ○ | STREET LIGHT |
| D.C.I. | DOUBLE CURB INLET | — 562 — | EXISTING CONTOUR |
| A.I. | AREA INLET | — 562 — | PROPOSED CONTOUR |
| M.A. | MANHOLE | — 562 — | STREET SIGN |
| F.E. | FLARED END SECTION | — 562 — | NO PASSING SIGN |
| E.P. | END PIPE | — 562 — | WATER VALVE |
| C.P. | CONCRETE PIPE | — 562 — | BLOW OFF ASSEMBLY |
| R.C.P. | REINFORCED CONCRETE PIPE | — 562 — | |
| C.M.P. | CORRUGATED METAL PIPE | — 562 — | |
| C.I.P. | CAST IRON PIPE | — 562 — | |
| P.V.C. | POLY VINYL CHLORIDE (PLASTIC) | — 562 — | |
| C.O. | CLEAN OUT | — 562 — | |
| — 562 — | FIRE HYDRANT | — 562 — | FLOWLINE ELEVATION OF HOUSE CONNECTION |
| — 562 — | STORM SEWER | — 562 — | FLOWLINE ELEVATION OF SEWER MAIN |
| — 562 — | SANITARY SEWER | — 562 — | |

SHEET INDEX

1 COVER SHEET
2 - 3 WATER PLAN

APPROVED

OFFSITE WATER MEASUREMENTS
THE EXISTING SEWER LENGTHS, SIZES, FLOWLINES, DEPTHS OF STRUCTURES AND SEWERS AND LOCATIONS WITH RESPECT TO EXISTING OR PROPOSED EASEMENTS HAVE BEEN MEASURED. THE RESULTS OF THOSE MEASUREMENTS ARE SHOWN ON THIS SET OF FINAL MEASUREMENT PLANS.

ALL PUBLIC SEWERS ARE LOCATED WITHIN DESIGNATED EXISTING OR PROPOSED EASEMENTS EXCEPT AS FOLLOWS:

SIGNED: _____ DATE: _____
P.E./S. _____

ASBUILTS NOTE:
ALL DISTANCE AND SLOPE CALCULATIONS ARE FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE.

PREPARED FOR:
VANTAGE HOMES
P.O. BOX 1270
ST. PETERS, MO 63376
(314) 280-4550

DISCLAIMER OF RESPONSIBILITY
I hereby certify that the documents enclosed in this envelope are true and correct copies of the original documents. I am not responsible for any errors or omissions in the original documents or for any part or parts of the architectural or engineering project or survey.

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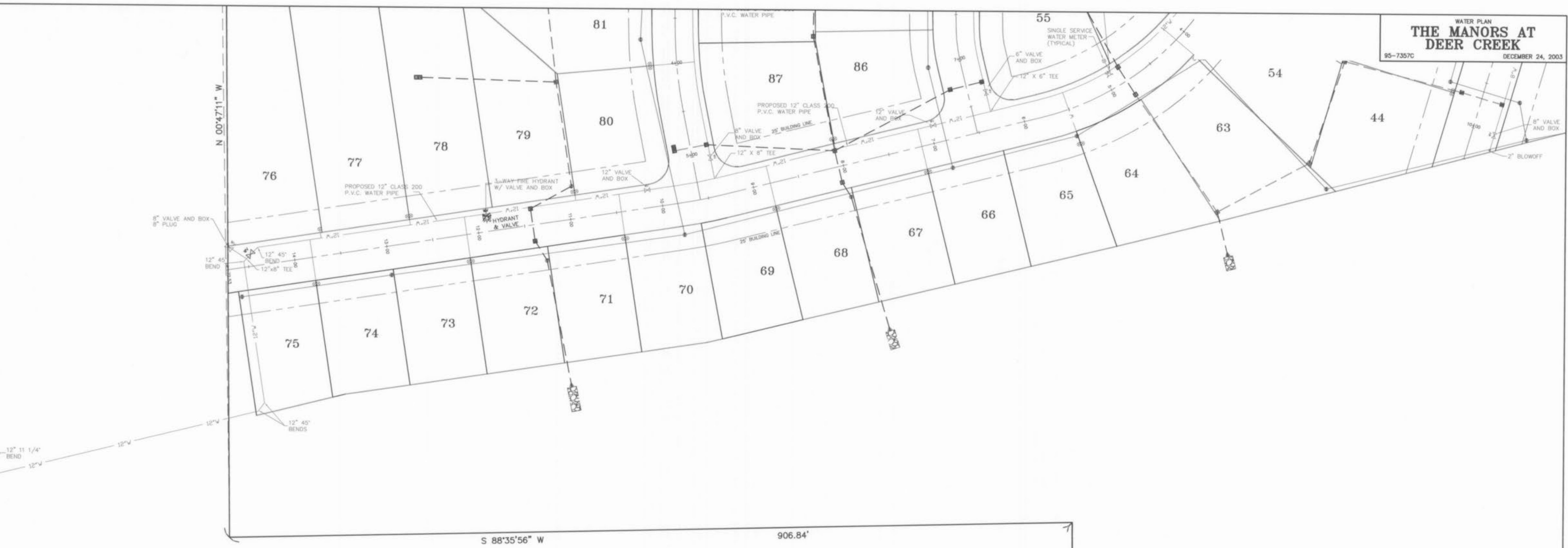
REVISIONS

NO.	DATE	DESCRIPTION

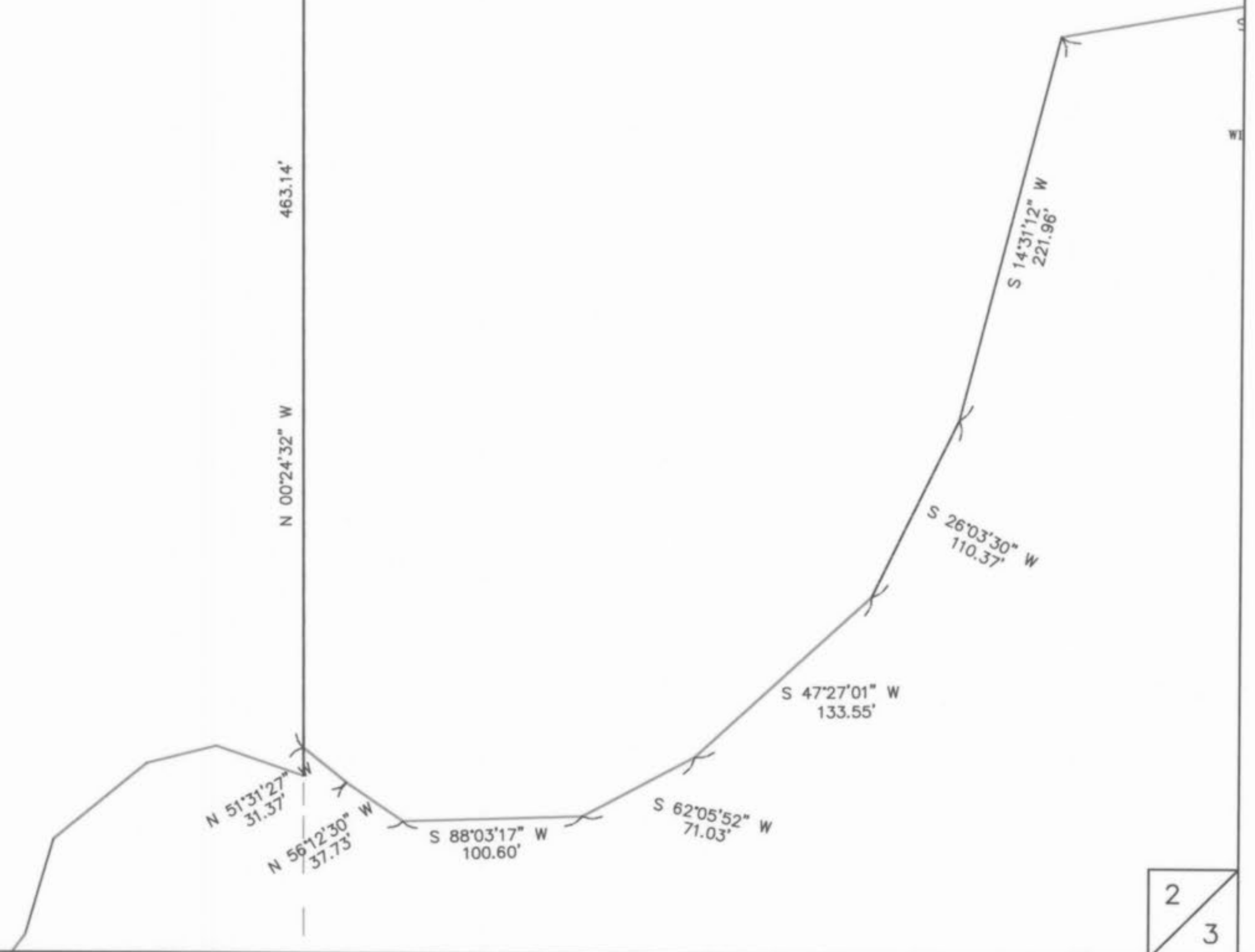
BAX
ENGINEERING PLANNING SURVEYING
1052 South Cloverleaf Drive
St. Peters, MO. 63376-6445
636-928-5552
FAX 928-1718

12-24-03
DATE
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FILE NAME
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DRAWN
DESIGNED CHECKED

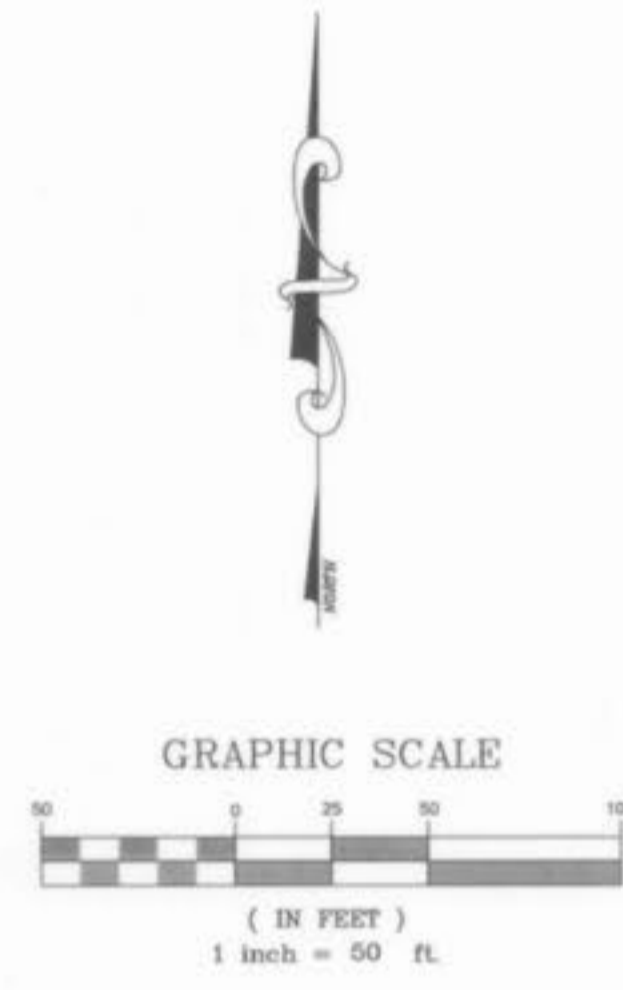
Approved 1-14-04 ABK Manors at Deer Creek Offsite Water As-Built



AS-BUILTS ADDED DECEMBER, 2003

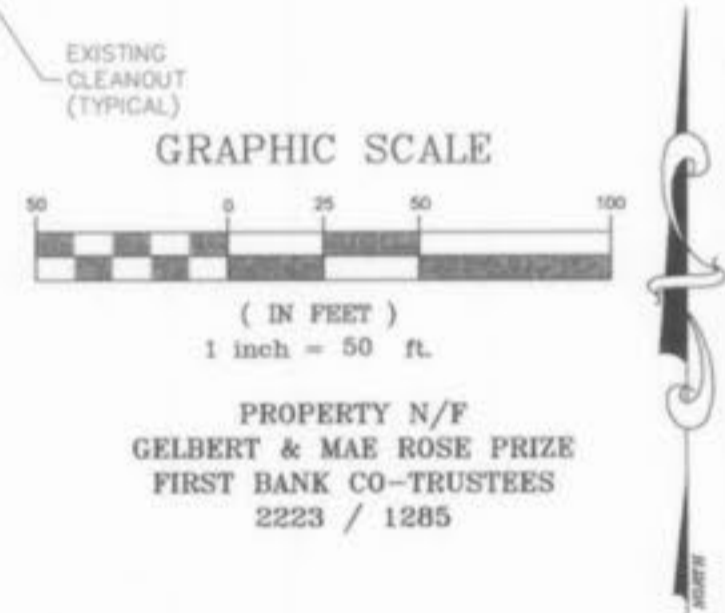
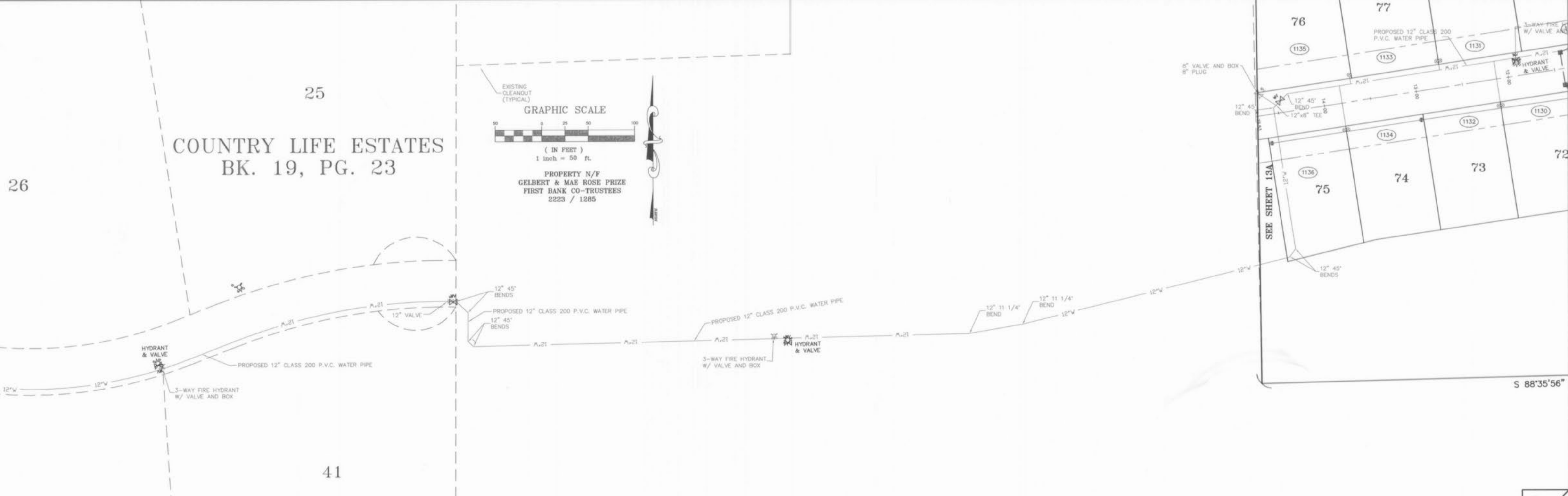
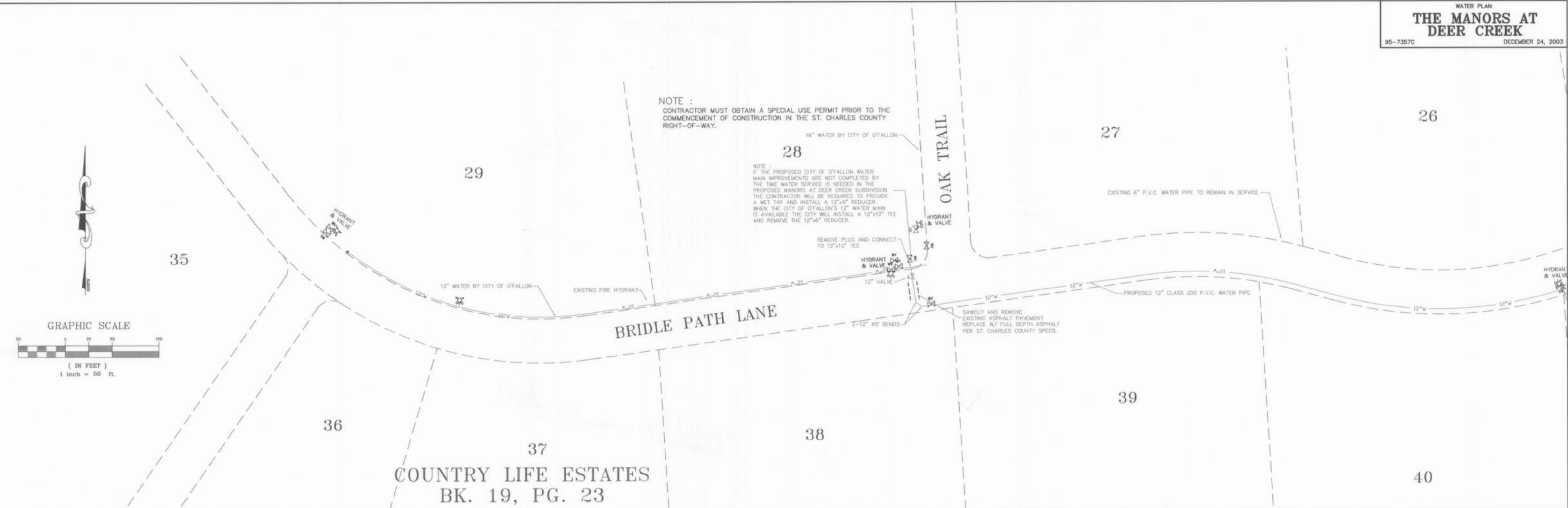


UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE INFORMATION AND THEREFORE THEIR LOCATIONS SHALL BE CONSIDERED APPROXIMATE ONLY. THE VERIFICATION OF THE LOCATION OF ALL UNDERGROUND UTILITIES, EITHER SHOWN OR NOT SHOWN ON THESE PLANS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, AND SHALL BE LOCATED PRIOR TO ANY GRADING OR CONSTRUCTION OF THE IMPROVEMENTS.



NOTE :
 CONTRACTOR MUST OBTAIN A SPECIAL USE PERMIT PRIOR TO THE COMMENCEMENT OF CONSTRUCTION IN THE ST. CHARLES COUNTY RIGHT-OF-WAY.

NOTE :
 IF THE PROPOSED CITY OF O'FALLON WATER MAIN IMPROVEMENTS ARE NOT COMPLETED BY THE TIME WATER SERVICE IS NEEDED IN THE PROPOSED MANORS AT DEER CREEK SUBDIVISION THE CONTRACTOR WILL BE REQUIRED TO PROVIDE A WET TAP AND INSTALL A 12"x45" REDUCER. WHEN THE CITY OF O'FALLON'S 12" WATER MAIN IS AVAILABLE THE CITY WILL INSTALL A 12"x12" TEE AND REMOVE THE 12"x45" REDUCER.



AS-BUILTS ADDED DECEMBER, 2003

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3

Manors at Deer Creek
 off the water As Built

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