

GRADING NOTES

- A Geotechnical Engineer shall be employed by the owner and be on site during grading operations. All soils tests shall be verified by the Geotechnical Engineer concurrent with the grading and backfilling operations.
- The grading contractor shall perform a complete grading and compaction operation as shown on the plans, stated in these notes, or reasonably implied there from, all in accordance with the plans and notes as interpreted by the Geotechnical Engineer.
- The Contractor shall notify the Soils Engineer at least two days in advance of the start of the grading operation.
- All areas shall be allowed to drain. All low points shall be provided with temporary ditches.
- All filled places, including trench backfills, under buildings, proposed storm and sanitary sewer lines, proposed roads and/or paved areas, shall be compacted to 90% of maximum density as determined by the Modified AASHTO T-180 Compaction Test, (A.S.T.M.-D-1557), or 95% of maximum density as determined by the Standard Proctor Test AASHTO T-99. All filled places within public roadways shall be compacted from the bottom of the fill up to 90% maximum density as determined by the Modified AASHTO T-180 Compaction Test or 90% of maximum density as determined by the Standard Proctor Test AASHTO T-99, Method "C" (A.S.T.M.-D-698). 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 respective 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.
- 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 damming adjacent property and siting up existing downstream storm drainage systems. All erosion control systems shall be inspected and necessary corrections made within 24 hours of any rain storm resulting in 1/2 inch of rain or more.
- 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.
- All trash and debris on site, either existing or from construction, must be removed and properly disposed of off-site.
- 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.
- 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 non-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.
- Compaction equipment shall consist of tamping rollers, pneumatic-tired rollers, vibratory roller, or high speed impact type drum rollers acceptable to the Soils Engineer. The roller shall be designed so as to avoid the creation of a layered fill without proper blending of successive fill layers.
- The Soils Engineer shall observe and test the placement of the fill to verify that specifications are met. A series of fill density tests will be determined on each lift of fill. Interim reports showing fill quality will be made to the Owner at regular intervals.
- The Soils Engineer shall notify the Contractor of rejection of a lift of fill or portion thereof. The Contractor shall rework the rejected portion of fill and obtain notification from the Soils Engineer of its acceptance prior to the placement of additional fill.
- All areas to receive fill shall be scarified to a depth of not less than 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.
- 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 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.
- Developer must supply City construction inspectors with soil reports prior to or during site soil testing.
- 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%

GENERAL NOTES

- Underground utilities have been plotted from available information and therefore their locations shall be considered approximate only. The verification of the location of all underground utilities, either shown or not shown on these plans shall be the responsibility of the contractor, and shall be located prior to any grading or construction of the improvements.
- All manhole tops & flowlines built without elevations furnished by the Engineer will be the responsibility of the sewer contractor.
- Sanitary sewer pipe shall meet the following standards: A.S.T.M.-D-3034 SDR-35, wall thickness compression joint A.S.T.M.-D-3212. An appropriate rubber seal waterstop as approved by the City of O'Fallon sewer district shall be installed between P.V.C. pipe and masonry structures.
- All trench backfills under paved areas shall be granular backfill, and shall be Modified compacted to 90% of the maximum density as determined by the "AASHTO T-180 Compaction Test," (A.S.T.M.-D-1557). All other trench backfills may be earth material (free of large clods or stones). All trench backfills shall be water jetted.
- All sanitary house connections have been designed so that the minimum vertical distance from the low point of the basement to the flow line of a sanitary sewer at the corresponding house connection is not less than the diameter of the pipe plus the vertical distance of 2 1/2 feet.
- No area shall be cleared without the permission of the Project Engineer.

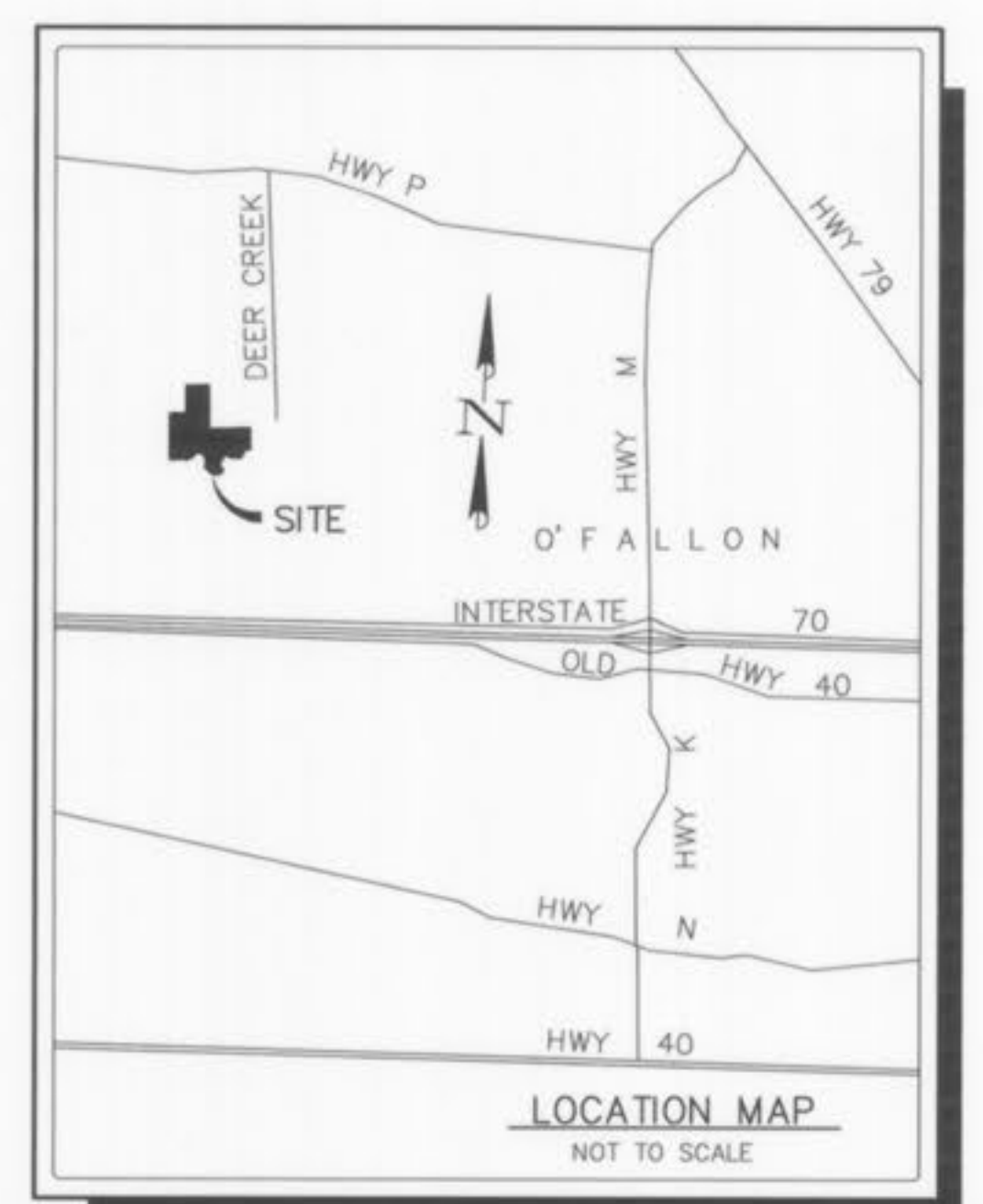
GENERAL NOTES

- All P.V.C. sanitary sewer is to be SDR-35 or equal with clean 1/2" to 1" granular stone bedding uniformly graded. This bedding shall extend from 4" below the pipe to the springline of the pipe. Immediate backfill over pipe shall consist of same size "clean" or minus stone from springline of pipe to 12" above the top of pipe.
- All soils test shall be verified by a Soils Engineer concurrent with the grading and backfilling operations.
- Easements shall be provided for sanitary sewers, and all utilities on the Record Plat. See Record Plat for location and size of easements.
- Maintenance and upkeep of the common ground area shall be the responsibility of the developer and/or successors.
- 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 water mains should be 2 inches in diameter, or larger. The pipe should have a Minimum Pressure Rating (PR) of 200 psi or SDR-21 for 2" thru 10" and C906 DR 13.5 Class 130 for 12" and larger pipe with blue stripe to identify as water pipe. All water mains of PVC material shall be certified by NSF and listed in NSF Standard 61. NSF stands for NSF International which is an agency that certifies materials, such as pipe, valves, etc. for use in potable water systems among other things. Standards 61 is the (ANSI/NSF Standard 61) is a listing of certified drinking water system components. The Missouri DNR requires that product which come in contact with drinking water be listed in NSF Standard 61. If the pipe is NSF certified, it will have a stamp on the pipe that says "NSF-pw".
- Disinfection and Bacteriological testing shall be per A.W.W.A. C 651-86.
- Pressure testing shall be performed immediately following disinfection, the piping shall be pumped to a pressure (at the lowest point in the project) of 150 PSI or higher, where the working pressure is higher than 150 PSI as determined by the District. In such cases, the test pressure shall be as specified by the District and two pressure tests shall be conducted. The first test shall be with the fire hydrant auxiliary valves open and be to 150 PSI. The second test shall be with the fire hydrant auxiliary valves closed and be to the higher pressure as directed by the District. All pumping equipment and pressure gauges shall be provided by the contractor. After achieving the test pressure, the piping shall be left closed for a period of two (2) hours. At the end of this time the pressure drop shall not exceed 2 PSI. In addition, if the pressure appears, in the judgment of the District's representative, to be continuing to drop, the test shall be continued for another two (2) hours and if any further drops occur, the test shall be considered a failure. If the pressure test fails, the contractor will be required to find and correct the source of the leakage. If this requires drainage of the pipelines, when the leakage is corrected, the piping must be re-disinfected and the pressure tested again until satisfactory results are achieved.
- 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 CC-110. All rubber gasket joints for water ductile iron pressure pipe and fittings shall conform to A.W.W.A. Specification C-111.
- All sanitary manholes shall be waterproofed on the exterior in accordance with Missouri Department of Natural Resources specifications 10 CSR-120 (7E).
- Brick will not be used in the construction of sanitary sewer manholes.
- All pipes shall have positive drainage through manholes. No flat base structures are allowed.
- The City of O'Fallon 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.
- All existing site improvements disturbed, damaged or destroyed shall be repaired or replaced to closely match pre-construction conditions.
- The contractor shall prevent all storm, surface water, mud and construction debris from entering the existing sanitary sewer system.
- All construction and materials shall conform to the current construction standards of the City of O'Fallon.
- All sanitary and storm sewer trench backfills shall be water jetted. Granular backfill will be used under pavement areas.
- All existing areas disturbed during construction of the off-site 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 storm inlets must be installed with a 5/8" trash bar across the opening.
- 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, City of O'Fallon specifications or manufacturers specifications, which ever are more stringent, shall be followed.
- The use of High Density Polyethylene Corrugated pipe, ADS N-12 WT or equal 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 A.A.S.H.T.O. 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.
- Blow-off hydrants and water meters shall not be located in any pavement or hard surfaced area including, but not limited to, driveways, sidewalks, and streets. Since the location of all such areas is not shown on this plan all costs to relocate any blow-off hydrants and water meters from any pavement or hard surfaced areas shall be borne by the Developer or the Builders.
- All creek crossings shall be grouted rip-rap as directed by District inspectors. (All grout shall be high slump ready-mix concrete).
- Existing sanitary sewer service shall not be interrupted.
- Pre-manufactured adapters shall be used at all PVC to DIP connections. Rubber boot/Mission-type couplings will not be allowed.
- All utilities shall be located underground.
- Storm and sanitary sewer pipe piece at less than 1% slope shall have field verification of pipe slope before backfilling.
- Any permits, licenses, easements, or approvals required to work on public or private properties or roadways are the responsibility of the developer.
- No slopes shall exceed 3:1 (1V).

A SET OF AS-BUILT PLANS FOR
THE ENCLAVE AT DEER CREEK
A TRACT OF LAND BEING PART OF THE NORTHWEST QUARTER OF SECTION 19, TOWNSHIP 47 NORTH, RANGE 3 EAST OF THE FIFTH PRINCIPAL MERIDIAN, ST. CHARLES COUNTY, MISSOURI

SHEET INDEX

- COVER SHEET
- SITE PLAN
- SITE PLAN
- SANITARY SEWER PROFILES
- STORM SEWER PROFILES



DEVELOPMENT NOTES

- Area of tract: 41.48 Acres
- Existing Zoning: "R-1" Single Family Residential (CITY OF O'FALLON)
- Proposed Use: Single Family Residential
- Minimum Lot Size - "R-1": 10,000 Square Feet
- Area in Lots: 12.38 Acres
- Area in Right-of-Way: 2.04 Acres
- Area in Common Ground: 29.10 Acres
- Area Reserved for Future Development: 0.28 Acres
- Yard Requirements - "R-1"
 - A. Front Yard: 25 Feet
 - B. Side Yard: 6 Feet
 - C. Rear Yard: 25 Feet
- Height Requirement: "R-1": 2 1/2 stories or 35 feet.
- Maximum Lot Coverage: 30%
- Enclosed decks must maintain a 25 foot setback from rear property line.
- Current Owner/Developer: Vantage Homes, Inc./Vantage Development Co. P.O. Box 1270 St. Peters MO, 63376
- The site is served by the following:
 - A. Sanitary Sewers: City of O'Fallon
 - B. Water: City of O'Fallon
 - C. Electric: Ameren/Electric Company
 - D. Telephone: CenturyTel, Inc.
 - E. Gas: Localed Gas Company
 - F. School: Fort Zumwalt School District
 - G. Fire: O'Fallon Fire Protection District
- Flood plain exists on this site per F.I.R.M. #29183C0230F. Date: March 17, 2003.
- Topographic information is an U.S.G.S. Datum.
- Boundary information provided per boundary survey by Box Engineering.
- All local streets will be constructed to City of O'Fallon standards. Streets will consist of 26 foot wide concrete pavement with integral rolled curb centered in a 50 foot right-of-way. Minimum radius shall be 150 feet.
- All cut-de-sacs and bubbles will have a minimum pavement radii of 42 feet with a minimum right-of-way radii of 54 feet. Street intersections shall have a minimum rounding radius of 25 feet with pavement radii of 37 feet.
- Minimum street grades shall be 1%.
- A 4 foot wide concrete sidewalk shall be constructed on one side of streets as indicated.
- All homes shall have a minimum of 2 off-street parking places with 2-car garages
- All utilities must be located underground
- 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.
- Additional lighting may be required by the City of O'Fallon
- The following lots are susceptible to street creep: 3-4, 6-8, 10, 12-21.
- Calculations in accordance to the "Tree Preservation Ordinance":
 - Existing Trees = 7,84 Acres
 - 20% = 1.57 Acres needed to be saved
 - Saved Trees = 2.14 Acres (27%)
 - Trees Removed = 5.70 Acres (73%)
 - 2.14 Acres of Saved Trees is greater than 1.57 Acres of Trees required to be saved, so therefore no additional trees are required to be planted.
 - Street trees requirements = 1 Tree/Lot, 2 Trees per corner lot = 27 trees
 - Total Street Trees to be planted = 27 Trees
 - Total trees to be planted with this development = 0 + 27 = 27 Trees
 - Maximum slope on yard slopes will be 3:1.
 - Common ground areas will be maintained by the homeowner's association.
 - All construction traffic for this development will enter the site from the east via Water View Lane.
 - The developer is aware that sanitary sewer service will not be available to this site until a new Lift Station is completed.
 - A Geological Engineer will be needed to monitor and approve the rock wall construction.
 - The roadway connection to Bridal Path Lane will require approval from St. Charles County.
 - The roadway connection to Bridal Path Lane shall only be opened after fifty percent (50%) of the Building Permits for this development have been issued by the City of O'Fallon.
 - Stormwater detention is not required for this development and therefore has been waived provided that additional excavated floodplain volume is removed and equivalent to the volume of detention normally required.



BENCHMARK:

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

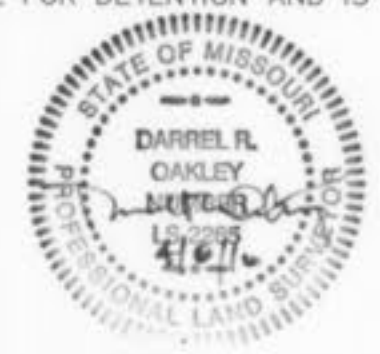
SITE BENCHMARK
SITE
ELEV 478.49 old cut square on southeast corner bridge over creek 13.5' south highway "P" and 1/4 mile east of intersection of highways "M" and "N".

BASIN/LAKE MEASUREMENTS

THE EXISTING CROSS-SECTIONS OF LAKE DETENTION AREA WITH RESPECT TO EXISTING OR PROPOSED ELEVATIONS HAVE BEEN MEASURED. THE RESULTS OF THOSE MEASUREMENTS ARE SHOWN ON THIS SET OF FINAL MEASUREMENT PLANS.

THE WETLAND AREAS SHOWN ON THESE FINAL MEASUREMENT PLANS WERE FOR BORROW MATERIAL ONLY. THE FINAL GEOMETRY WAS DETERMINED BASED ON THE AMOUNT OF FILL NEEDED TO COMPLETE THE ADJOINING DEVELOPMENT AND TO PROVIDE ADEQUATE VOLUME FOR DETENTION AND IS NOT BASED ON THE ORIGINAL DESIGN PLANS.

BAX ENGINEERING, INC.
DARREL R. OAKLEY
MISSOURI PROFESSIONAL LAND SURVEYOR #2215



LEGEND

- CL CURB INLET
- DL DOUBLE CURB INLET
- AL AREA INLET
- ML MANHOLE
- FL FLOOR END SECTION
- FE END PIPE
- CP CONCRETE PIPE
- RCP REINFORCED CONCRETE PIPE
- CCP CORRUGATED METAL PIPE
- CBP CAST IRON PIPE
- PVC POLY VINYL CHLORIDE (PLASTIC)
- CG CLEAN OUT
- FL FLOWLINE ELEVATION OF HOUSE CONNECTION
- FL FLOWLINE ELEVATION OF SEWER MAIN
- FW FIRE HYDRANT
- SW STORM SEWER
- SS SANITARY SEWER
- SL STREET LIGHT
- EX EXISTING CONTOUR
- PR PROPOSED CONTOUR
- SS STREET SIGN
- NP NO PARKING SIGN
- HW WATER VALVE
- BO BLOW OFF ASSEMBLY

VEGETATIVE ESTABLISHMENT
For Urban Development Sites

- Seeding Rates: APPENDIX A
- Permanent:
- Tall Fescue - 80 lbs./ac.
 - Smooth Brome - 100 lbs./ac.
 - Combined Fescue & Brome @ 40 lbs./ac. and Brome @ 50 lbs./ac.
- Temporary:
- Wheat or Rye - 90/120 lbs./ac. (2.0/2.5 lbs. per 1000 square feet)
 - Oats - 80 lbs./ac. (2 lbs. per 1000 square feet)
- Seeding Periods:
- Fescue or Brome - February 1 to June 1
 - August 1 to November 1
 - Wheat or Rye - January 1 to June 1, July 15 to November 15
 - Oats - February 1 to June 1, August 1 to October 1
 - Mulch Rates: 70-115 lbs. per 1,000 sq. feet (3,000-5,000 lbs. per acre)
 - Fertilizer Rates:
 - Nitrogen 30 lbs./ac.
 - Phosphate 60 lbs./ac.
 - Potassium 30 lbs./ac.
 - Lime 600 lbs./ac. ENM*
- * ENM = effective neutralizing material as per State evaluation of quarried rock.

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

DISCLAIMER OF RESPONSIBILITY
I hereby certify that the documents intended to be submittal by my seal are limited to this sheet, and I hereby disclaim any responsibility for all other drawings, specifications, estimates, reports or other documents or instruments relating to or intended to be used for any part or parts of the architectural or engineering project or survey.

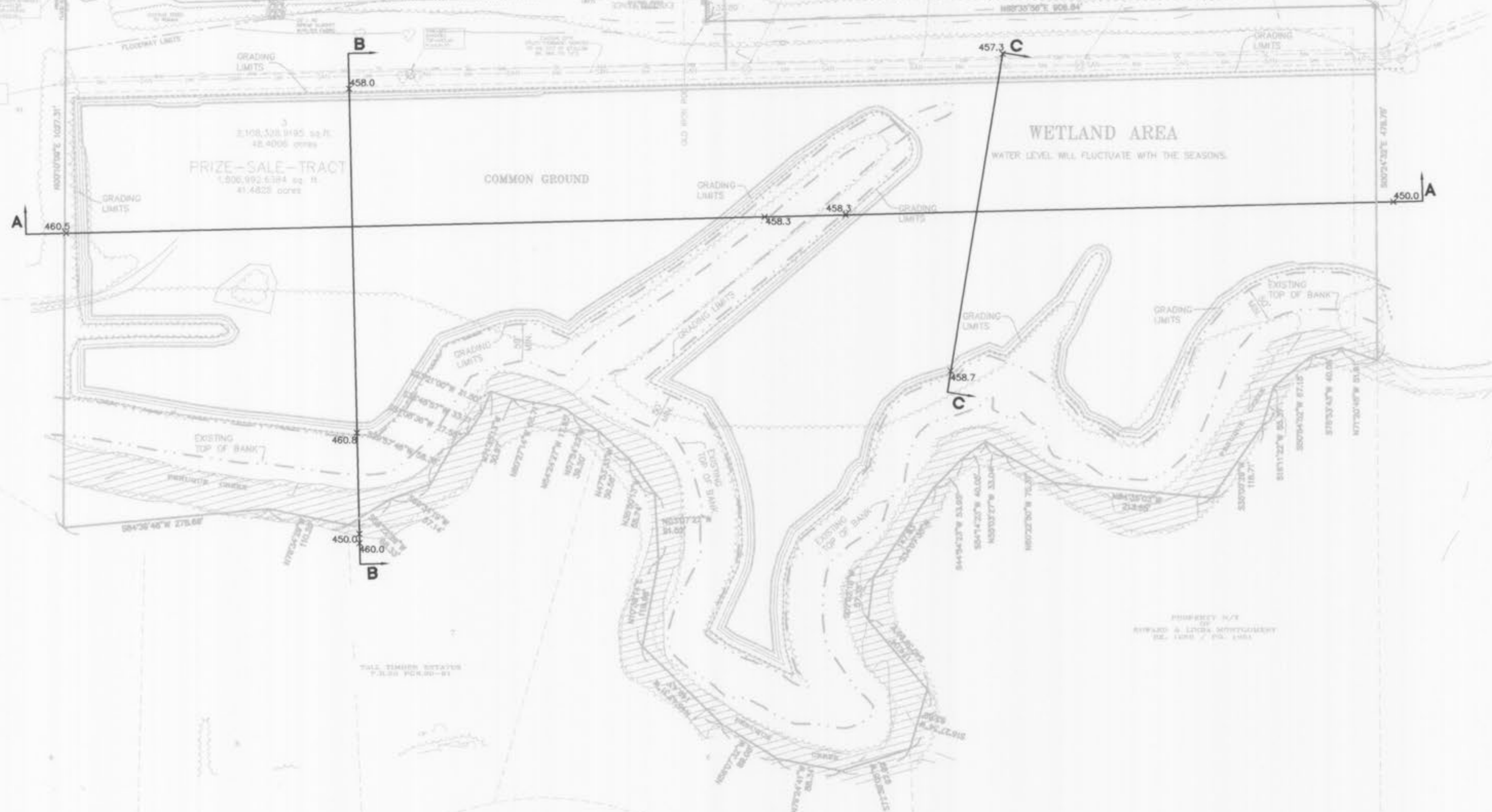
REVISIONS

NO.	DATE	DESCRIPTION

ENGINEERING PLANNING SURVEYING
221 Point West Blvd.
St. Charles, MO. 63301
636-928-5552
Fax 928-1718

1-20-2010
DATE
02-11841-1
PROJECT NUMBER
1 OF 3
SHEET
11841ASB-LAKE
FILE NAME
GH/VW
DRAWN
DRO
DESIGNED CHECKED

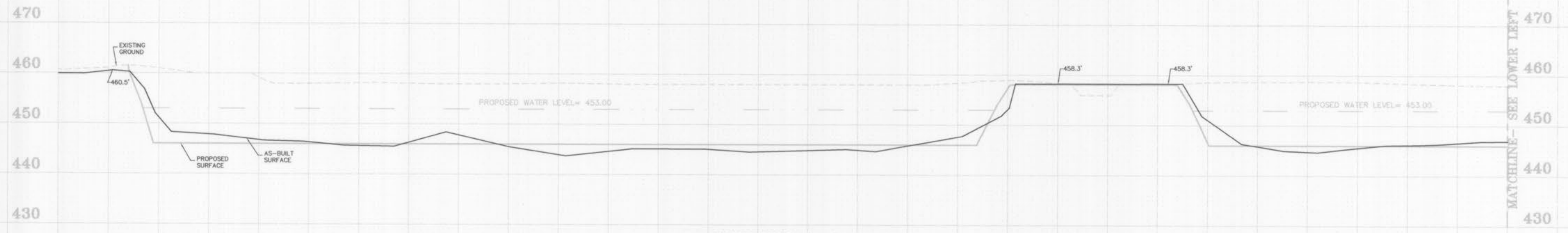
AS-BUILTS ADDED JANUARY 2010



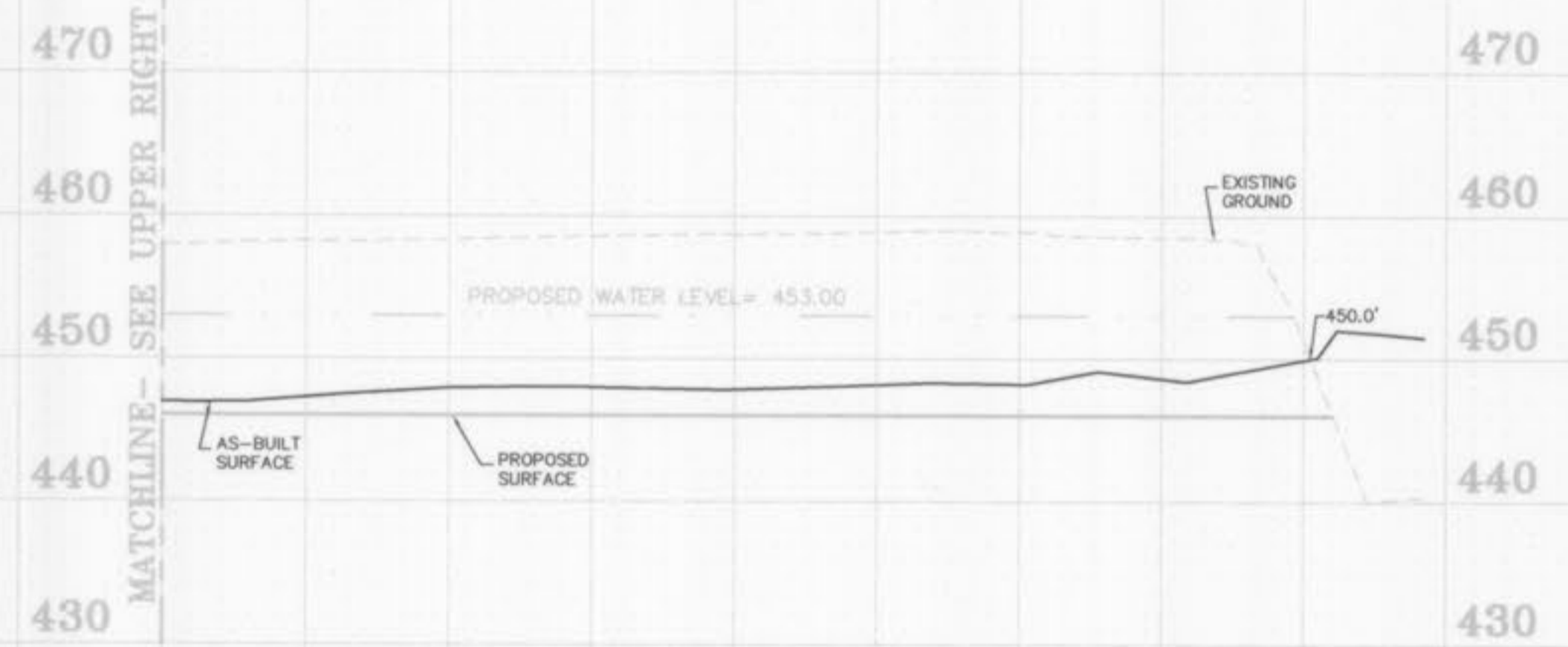
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 --- VEGETATIVE BUFFER LIMITS



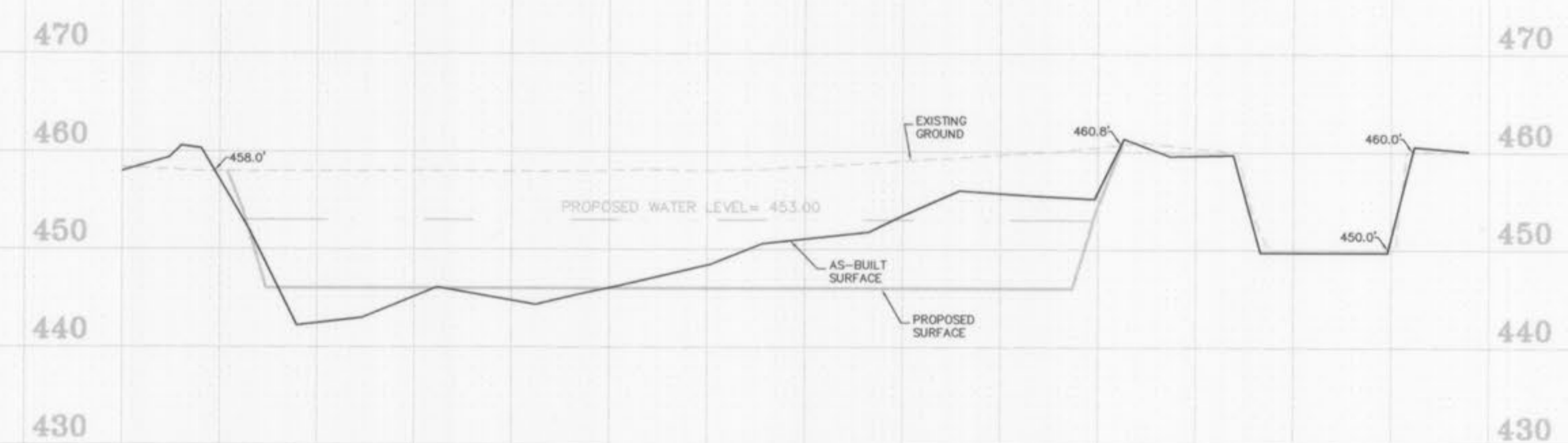
UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE INFORMATION AND THEREFORE THEIR LOCATIONS SHALL BE CONSIDERED APPROXIMATE ONLY. THE VERIFICATION OF THE LOCATION OF ALL UNDERGROUND UTILITIES, EITHER SHOWN OR NOT SHOWN ON THESE PLANS, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, AND SHALL BE LOCATED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



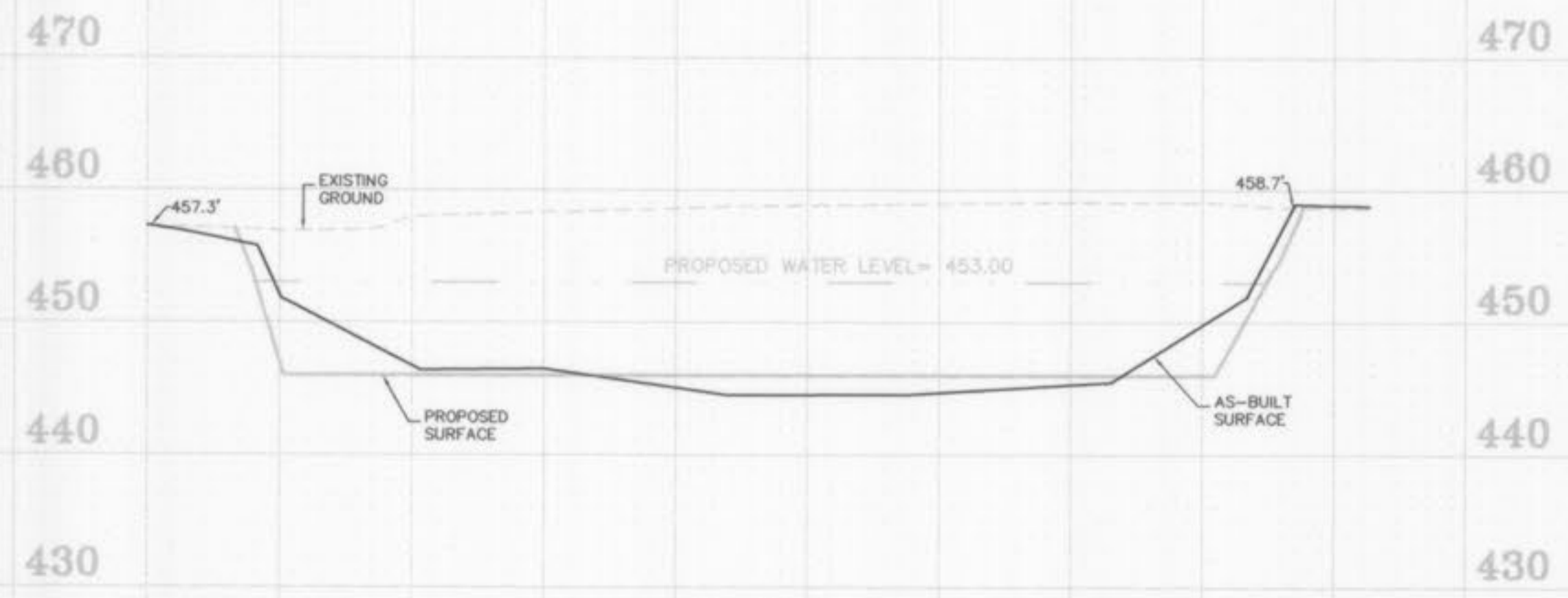
SECTION A-A



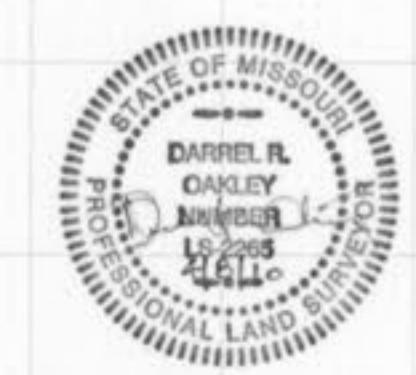
SECTION A-A



SECTION B-B



SECTION C-C



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. SCALE: VERTICAL = 1"=10' HORIZONTAL = 1"=50'