

AN ORDINANCE BY THE CITY COUNCIL OF THE CITY OF WILDWOOD, MISSOURI AUTHORIZING THE MAYOR OF THE CITY OF WILDWOOD, MISSOURI TO EXECUTE A CONTRACT WITH THE ST. LOUIS COUNTY, MISSOURI DEPARTMENT OF TRANSPORTATION FOR THE MAINTENANCE OF A PEDESTRIAN CONNECTION (AN ASPHALT SIDEWALK) THAT WILL BE LOCATED WITHIN THE RIGHT-OF-WAY OF OLD STATE ROAD, A ST. LOUIS COUNTY ARTERIAL ROADWAY. (Ward – Seven)

WHEREAS, the City of Wildwood initiated a project to provide a pedestrian connection from Harbour Pointe Drive, in the Landings at Lake Chesterfield Subdivision, to Ridge Road, and then south on the same to the Rock Hollow Trail, since none exists at this time, despite significant residential development in the vicinity; and

WHEREAS, certain improvements constructed within St. Louis County, Missouri's right-of-way shall require maintenance by the City of Wildwood, Missouri; and

WHEREAS, St. Louis County, Missouri is requesting the City of Wildwood, Missouri to enter into a Contract to address the maintenance of this approximately 2,200 foot long pedestrian connection within its arterial roadway right-of-way, which is typical for projects by municipal governments in public lands not under their control or ownership.

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF WILDWOOD, MISSOURI:

SECTION ONE.

The Mayor of the City of Wildwood, Missouri is hereby authorized to execute a Contract with St. Louis County, Missouri (Department of Transportation and Pubic Works) for the maintenance of a pedestrian connection between the Landings at Lake Chesterfield Subdivision and the City's Rock Hollow Trail, located on Ridge Road.

SECTION TWO.

The terms of this Contract are hereby set forth and accepted in the attached document by the two (2) parties and incorporated herein as Exhibit A.

SECTION THREE.

This ordinance shall be in full force and effect on and after its passage and approval.

This Bill was passed and approved the _____ day of _____ 2017 by the Council of the City of Wildwood after having been read by the title, or in its entirety, two (2) times prior to passage.

PRESIDING OFFICER

ATTEST:

Deputy City Clerk

THE HONORABLE JAMES R. BOWLIN, MAYOR

ATTEST:

Deputy City Clerk

EXHIBIT A

CONTRACT BETWEEN
ST. LOUIS COUNTY AND
THE CITY OF WILDWOOD
(Pedestrian Connection)

This Contract is entered into between the City of Wildwood ("CITY") and St. Louis County ("COUNTY").

WITNESSETH:

WHEREAS, CITY has initiated a temporary asphalt sidewalk plan within the Cities of Wildwood and Ellisville, along Old State Road, a COUNTY arterial roadway, in conjunction with the Pedestrian Connection Project, hereinafter referred to as "PROJECT"; and

WHEREAS, CITY and COUNTY wish to enter into a contract reflecting their respective rights, obligations, and liabilities as they relate to the PROJECT, which will consist of installation, maintenance, repair, and replacement costs of the temporary asphalt sidewalk (including two detectable warning surfaces) and three 12" to 15" diameter HDPE culverts, including maintaining ADA compliance of said improvements, along Old State Road in conjunction with the Pedestrian Connection project and more fully described herein; and

WHEREAS, CITY is authorized to enter into this Contract by Ordinance No. _____ and COUNTY is authorized to enter into this Contract by Ordinance No. _____;

NOW THEREFORE, in consideration of the premises and the mutual promises, covenants and representations herein, CITY and COUNTY agree as follows:

- (1) SCOPE OF WORK — The PROJECT consists of temporary asphalt sidewalk (including two detectable warning surfaces) and three 12" to 15" diameter HDPE culverts, including maintaining ADA compliance of said improvements, in conjunction with the Pedestrian Connection project ("PROJECT Improvements"). CITY shall install, maintain, repair and replace PROJECT in accordance with Section 40.70-4 Item 8 and other applicable sections of the COUNTY Department of Transportation ("Department") Design Criteria for the Preparation of Improvement Plans, as revised on January 1, 2016 (Design Criteria) and other COUNTY Standard Specifications found in Department's Permit Requirements and Conditions Book dated December 1, 2015 and Department's Standard Drawings, as revised on September 1, 2015 (collectively "COUNTY Standards").
- (2) DESIGN/CONSTRUCTION — CITY represents that the PROJECT has been designed in accordance with all applicable governmental requirements and regulations. CITY shall construct or have constructed the PROJECT

Improvements in accordance with all applicable governmental requirements and regulations. CITY shall install or have installed the PROJECT Improvements and shall pay or cause to be paid all costs associated with such installation. CITY shall install or have installed the PROJECT Improvements in accordance with the COUNTY Standards and the COUNTY approved plans for the PROJECT.

(3) REVIEW/PERMITS — CITY shall submit or cause to be submitted plans to the COUNTY for review regarding PROJECT Improvements that are located within COUNTY'S right-of-way. CITY shall secure or cause to be secured all necessary approvals and permits from COUNTY for such PROJECT Improvements prior to installation. COUNTY's approval of such plans and issuance of such permits shall be reflective of this Contract and shall not be unreasonably withheld.

(4) MAINTENANCE — CITY shall be responsible for all aspects of the installation, maintenance, repair, and replacement costs of the PROJECT Improvements, including maintaining ADA compliance of said improvements. As between the CITY and COUNTY, the City shall be solely liable for the safety of the PROJECT.

CITY will pay all costs associated with installation, repair, maintenance, and replacement costs of the PROJECT Improvements, even if affected by COUNTY or other third parties, including but not limited to any roadway or sidewalk repair, maintenance and/or improvement, and any utility maintenance, repair and/or improvement.

CITY shall repair or correct or cause to be repaired /or corrected any damage to COUNTY right-of-way or property that may result from the PROJECT Improvements within one week after COUNTY provides CITY written notice. After this time, COUNTY may make these necessary repairs and/or corrections to the PROJECT Improvement areas using materials in accordance with COUNTY Standards. CITY will reimburse COUNTY for such necessary repairs and/or corrections within 30 days after demand is made by COUNTY.

CITY shall be responsible for dealing directly with all utility companies, all utility accounts shall be in the CITY's name and CITY shall be responsible for all related utility maintenance and operation costs.

(5) LIABILITY — With respect to all PROJECT Improvements, as between the CITY and COUNTY only, CITY assumes all liability for damage, accident or injury resulting from the installation, construction, maintenance, repair, presence or removal of the PROJECT Improvements. CITY shall defend, indemnify and hold harmless COUNTY, its agents, officers and employees, from any and all demands, claims, lawsuits and/or expenses, including attorneys' fees and court costs, arising from the installation, construction, maintenance, repair, presence or removal of the PROJECT Improvements.

(6) FEDERAL. STATE AND COUNTY LAWS — This Contract shall not be construed so as to conflict with or supersede or otherwise limit any applicable law,

rule, or regulation of the government of the United States, State of Missouri or COUNTY.

(7) CAPTIONS/SEVERABILITY — The captions included in this Contract are used for the purposes of convenience only and shall not be construed as limiting or otherwise affecting the Contract itself. In the event any portion of this Contract shall for any reason be declared invalid or unenforceable, such invalidity or unenforceability shall not affect the remaining provisions hereof.

(8) TERMINATION. If CITY desires to terminate this Contract, CITY must at its own cost and expense remove the PROJECT improvements and restore the entirety of the PROJECT to COUNTY Standards after 90 days written notice to COUNTY. CITY'S obligations will only be terminated once COUNTY has accepted the PROJECT as restored to COUNTY Standards for maintenance. If COUNTY desires to terminate this Contract, COUNTY agrees to remove the PROJECT improvements and restore the entirety of the PROJECT including its streetscape at COUNTY'S cost and expense after 90 days written notice to CITY. COUNTY will make such improvements available to CITY at CITY'S cost.

IN WITNESS WHEREOF, this Contract has been executed by the duly authorized representatives of each party and shall be operative and in effect as to each party as of the date written below.

ST. LOUIS COUNTY, MISSOURI

CITY OF WILDWOOD

By: _____
County Executive

By: _____
Mayor

Attest: _____
Administrative Director

Attest: _____

Approved:

Approved as to Legal Form:

Director, Department of
Transportation and Public Works

City Attorney

Approved as to Legal Form:

County Counselor



January 9, 2017

The Honorable City Council
City of Wildwood, Missouri
16860 Main Street
Wildwood, Missouri 63040

Re: Maintenance Contract between the City of Wildwood and St. Louis County – Old State Road Pedestrian Connection

Council Members:

The Department of Planning has been providing St. Louis County information it has requested for a proposed pedestrian connection the City is seeking to construct between the Landings at Lake Chesterfield Subdivision and the Rock Hollow Trail, which would be located within the right-of-way area of Old State Road. One (1) of the items that has been requested in this regard is a maintenance contract for the proposed pedestrian connection, with the principals being City of Wildwood and St. Louis County. This type of agreement is typical between governments and the City has participated in many of these with the Missouri Department of Transportation (MoDOT).

This pedestrian path has been designed to provide a critical connection between an existing large population area and the very popular Rock Hollow Trail. This connection is approximately 2,200 feet in length and will be constructed to provide accessibility for any user. One (1) other major feature of this proposed pedestrian connection is a designated crosswalk at the intersection of Old State Road and Ridge Road, which does not exist now and is certainly a needed safety feature for anyone wanting to walk in this general area of the City. This pedestrian connection was also part of the package of projects the City Council endorsed, when potential grant monies were being considered on the State's MOVES Cost Share Program. Governor Nixon ultimately eliminated the funding associated with this program, after the advertisement had occurred for it.

On tonight's agenda, a bill has been prepared to approve this maintenance contract for this pedestrian connection. The Department has estimated the cost to maintain this feature at approximately one hundred dollars (\$100.00) per year, which would include time for inspections and minor upkeep, such as any other pedestrian improvement in the City is provided over the course of a typical year. Eventually, this pedestrian connection will be incorporated or replaced, when improvements are made to this length of Old State Road, with a study currently underway that will provide a series of options for this roadway's change from its current condition. Given

these factors and benefits, the Department is respectfully requesting the City Council's favorable action on this maintenance contract with St. Louis County for the specified improvement.

If the City Council should have any questions or require additional information on this pedestrian improvement, please feel free to contact the Department of Planning and Parks at (636) 458-0440. The Department has provided the detailed engineering plans for this project, with the bill and this background letter. Thank you for your consideration of this information and action on the same.

Respectfully submitted,
CITY OF WILDWOOD



Joe Vujnich, Director
Department of Planning

Cc: The Honorable James R. Bowlin, Mayor
Ryan S. Thomas, P.E., City Administrator
John A. Young, City Attorney
Kathy Arnett, Assistant Director of Planning and Parks
Gary Crews, Superintendent of Parks and Recreation
Ken Keitel, terraspec

GENERAL NOTES:
UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE INFORMATION AND THEORITICAL LOCATIONS MUST BE CONSIDERED APPROXIMATE ONLY. THE VERIFICATION OF THE LOCATION OF 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 IMPROVEMENTS.

CONSTRUCTION AND MATERIALS USED SHALL CONFORM TO 2009 METROPOLITAN ST. LOUIS SEWER DISTRICT "STANDARD CONSTRUCTION SPECIFICATIONS FOR SEWER AND DRAINAGE FACILITIES", ELLISVILLE AND ST. LOUIS COUNTY STANDARDS.

ALL CONSTRUCTION SHALL BE PER MOST CURRENT DETAILS LOCATED IN THE ST. LOUIS COUNTY DESIGN CRITERIA MANUAL AND/OR THE SEDIMENT AND EROSION CONTROL MANUAL.

SIDEWALKS AND CURB RAMPS SHALL BE CONSTRUCTED TO ADA STANDARDS AND SPECIFICATIONS.

ALL STORM WATER SHALL BE DISCHARGED AT AN ADEQUATE NATURAL DISCHARGE POINT. SINKHOLES ARE NOT ADEQUATE NATURAL DISCHARGE POINTS.

EXISTING ABOVE & BELOW GROUND UTILITIES TO BE PROTECTED AND USED IN PLACE, UNLESS OTHERWISE SPECIFIED.

MANHOLES AND INLET TOPS BUILT WITHOUT ELEVATIONS FURNISHED BY THE ENGINEER WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.

EXISTING UTILITIES AND/OR STRUCTURES AFFECTED BY CONSTRUCTION, EITHER SHOWN OR NOT SHOWN ON THE PLANS, SHALL BE ADJUSTED TO GRADE.

STORM SEWERS SHALL BE R.C.P. (REINFORCED CONCRETE PIPE) A.S.T.M. C-76, CLASS III MINIMUM, UNLESS OTHERWISE SPECIFIED.

ALL P.V.C. SEWER PIPE SHALL BE A.S.T.M. D-3034, S.D.R.-35.

TRENCH SUPPORT TO BE TO APPLICABLE SPECIFICATIONS IN ORDER FOR SAFE PLACEMENT OF PIPES. IT IS THE SEWER CONTRACTOR'S RESPONSIBILITY TO INSURE SAFETY OF THE SEWER CONSTRUCTION ON THE PROJECT.

CONTRACTOR TO INSTALL STORM SEWERS, SANITARY SEWERS, WATER LINES, METERS, WATER BOXES, AND VALVES AS REQUIRED AND IN ACCORDANCE WITH THE LOCAL UTILITIES AND MUNICIPALITIES.

LOCATION AND ELEVATION OF EXISTING INLETS, MANHOLES AND PIPES TO BE VERIFIED BY CONTRACTOR PRIOR TO CONSTRUCTION.

ALL FILLS PLACED UNDER PROPOSED STORM SEWER LINES, SANITARY SEWER LINES, BUILDINGS AND PAVED AREAS, INCLUDING TRENCH BACKFILLS WITHIN AND OFF ROAD RIGHT-OF-WAY SHALL BE COMPACTED TO BOX OF MAXIMUM DENSITY AS DETERMINED BY THE "MODIFIED AASHTO T-180 COMPACTION TEST" (ASTM D-1557) FOR THE ENTIRE DEPTH OF THE FILL. COMPACTED GRANULAR BACKFILL IS REQUIRED IN ALL TRENCH EXCAVATION WITHIN THE STREET RIGHT-OF-WAY AND UNDER ALL PAVED AREAS. ALL TESTS SHALL BE PERFORMED UNDER THE DIRECTION OF AND VERIFIED BY A SOILS ENGINEER CONCURRENT WITH GRADING AND BACKFILLING OPERATIONS.

NEW CONTOURS ARE SHOWN TO FINISHED TOPSOIL AND FINISHED PAVEMENT GRADES. CONTRACTOR SHALL GRADE PAVEMENT AND DRAINAGE PAD AREAS TO SUBGRADE.

NEW GRADES SHALL BE WITHIN 0.1 FEET, MORE OR LESS, OF THOSE SHOWN ON THE GRADING PLAN.

ALL EXCAVATIONS, GRADING OR FILLING SHALL HAVE A FINISHED GRADE NOT TO EXCEED A 3:1 SLOPE (33%), UNLESS SUPPORTED BY A GEOTECHNICAL REPORT THAT HAS BEEN ACCEPTED AND APPROVED.

CONTRACTOR SHALL GRADE AND CONSTRUCT IMPROVEMENTS TO PROVIDE POSITIVE DRAINAGE TO STORM STRUCTURES, SWALES OR OFF SITE. PONDING OF STORM WATER WILL NOT BE PERMITTED DURING OR AFTER CONSTRUCTION.

THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY CONCERNING ANY DISCREPANCIES IN THE PLANS.

ALL TRASH AND DEBRIS ON SITE, EITHER EXISTING OR FROM CONSTRUCTION, MUST BE REMOVED AND PROPERLY DISPOSED OF OFF SITE.

DEBRIS AND FOUNDATION MATERIAL FROM ANY EXISTING ON SITE BUILDING OR STRUCTURE WHICH IS SCHEDULED TO BE RAZED FOR THIS DEVELOPMENT MUST BE PROPERLY BE DISPOSED OF OFF SITE.

A LEVEL AREA OF 60' X 60' (FRONT APPROACH) OR 48' X 60' (SIDE APPROACH) IS REQUIRED OUTSIDE OF THE ENTRANCE DOORS FOR WHEELCHAIR MANEUVERABILITY.

M.S.D. NOTES:
ALL STORM AND SANITARY SEWER STRUCTURES AND APPURTENANCES TO BE DEDICATED TO MSD, OR TO BE PRIVATE UNDER MSD INSPECTION, SHALL CONFORM TO THE METROPOLITAN ST. LOUIS SEWER DISTRICT, STANDARD CONSTRUCTION SPECIFICATIONS FOR SEWERS AND DRAINAGE FACILITIES, 2009. THAT WILL INCLUDE STANDARD CONSTRUCTION DETAILS SHOWN THEREIN, AND SHALL INCLUDE ALL SUBSEQUENT CHANGES MADE THEREIN.

SOME RECENT CHANGES CONCERN PIPE FIELD TESTING AND PERFORMANCE, AND INCLUDE THE FOLLOWING:

PART 4 - PIPE SEWER CONSTRUCTION

SECTION B, PIPE FIELD TESTS, PARAGRAPH 2, REACH INTEGRITY - DELETE THE FIRST SENTENCE AND THE FOLLOWING APPLIES:

ALL SANITARY AND COMBINED SEWERS SHALL SUSTAIN A MAXIMUM LEAKAGE LIMIT OF 100 GALLONS /INCH OF PIPE DIAMETER/ MILE OF LINE/DAY, AS REQUIRED BY THE MISSOURI DEPARTMENT OF NATURAL RESOURCES SPECIFICATIONS.

SECTION B, PIPE FIELD TESTS, PARAGRAPH 2, REACH INTEGRITY TESTING, SUBPARAGRAPH C, INFILTRATION/ EXFILTRATION TESTING - DELETE THE SIXTH SENTENCE, CONCERNING LEAKAGE LIMITS, AND THE FOLLOWING REPLACEMENT APPLIES:

THE MEASUREMENT OF LEAKAGE SHALL NOT EXCEED 100 GALLONS/INCH OF PIPE DIAMETER/MILE OF LINE/DAY, AS REQUIRED BY THE MISSOURI DEPARTMENT OF NATURAL RESOURCES SPECIFICATIONS.

SECTION B, PIPE FIELD TESTS, PARAGRAPH 4, MANHOLE TESTING, SUBPARAGRAPH A, VACUUM TESTING - AFTER THE FIRST SENTENCE, THE FOLLOWING ADDITION APPLIES:

THE VACUUM TEST MUST BE PERFORMED PRIOR TO BACKFILLING AROUND THE MANHOLE UNLESS THE CONTRACTOR PROVIDES DOCUMENTATION FROM THE PRECAST MANHOLE MANUFACTURE STATING THAT THE MANHOLE HAS BEEN VACUUM TESTED AFTER BACKFILLING HAS TAKEN PLACE. THE CONTRACTOR MUST SUBMIT THIS DOCUMENTATION PRIOR TO BACKFILLING AROUND ANY MANHOLE.

SECTION B, PIPE FIELD TESTS, PARAGRAPH 4, MANHOLE TESTING, SUBPARAGRAPH B, EXFILTRATION TESTING - DELETE THE SECOND SENTENCE, CONCERNING LEAKAGE LIMITS, AND THE FOLLOWING ADDITION APPLIES:

FOR EXFILTRATION TESTING, THE ALLOWABLE LEAKAGE LIMIT IS 100 GALLONS/INCH OF PIPE DIAMETER/MILE OF LINE/DAY WHEN THE AVERAGE HEAD ON THE TEST SECTION IS THREE FEET (3') OR LESS.

SOILS ENGINEER WILL VERIFY THAT ALL COMPRESSIBLE MATERIAL HAS BEEN REMOVED PRIOR TO FILL PLACEMENT AND THAT ALL FILL UNDER SANITARY AND STORM SEWER LINES CONSTRUCTED ABOVE ORIGINAL GRADE, HAS BEEN COMPACTED TO BOX OF "MODIFIED PROCTOR". FILL IS TO BE PLACED IN A MAXIMUM OF 9-INCH LIFTS. TEST SHALL BE TAKEN AT A MAXIMUM OF 50-FOOT INTERVALS ALONG THE ROUTE OF THE PIPE, AT A MAXIMUM OF 2-FOOT VERTICALLY, AND Laterally ON EACH SIDE OF THE PIPE, AT A DISTANCE EQUAL TO THE DEPTH OF FILL OVER THE PIPE. A COPY OF THESE RESULTS WILL BE SUBMITTED TO M.S.D. PRIOR TO CONSTRUCTION APPROVAL.

PRIOR TO OBTAINING A CONSTRUCTION PERMIT FROM METROPOLITAN ST. LOUIS SEWER DISTRICT, THE CONTRACTOR SHALL BE REQUIRED TO PROVIDE THE DISTRICT WITH A COPY OF AN EXECUTED CERTIFICATE OF INSURANCE INDICATING THAT THE PERMITTEE HAS OBTAINED AND WILL CONTINUE TO CARRY COMMERCIAL GENERAL LIABILITY AND COMPREHENSIVE AUTO LIABILITY INSURANCE. THE REQUIREMENTS AND LIMITS SHALL BE STATED IN THE "RULES AND REGULATIONS AND ENGINEERING DESIGN REQUIREMENTS FOR SANITARY AND STORMWATER DRAINAGE FACILITY", SECTION 10.090 (ADDENDUM).

EXISTING WATER AND SANITARY CONNECTIONS WILL NOT BE MODIFIED WITH THIS WORK.

SILTATION CONTROL NOTES:
IF CUT & FILL OPERATIONS OCCUR DURING A SEASON NOT PERMITTED FOR IMMEDIATE ESTABLISHMENT OF A PERMANENT PROTECTIVE COVER, A FAST-GERMINATING ANNUAL SUCH AS RYE GRASSES OR SUDAN GRASSES SHALL BE UTILIZED TO RETARD EROSION.

EROSION AND SILTATION CONTROL SHALL BE INSTALLED PRIOR TO ANY GRADING AND BE MAINTAINED THROUGHOUT THE PROJECT UNTIL ACCEPTANCE OF THE WORK BY THE OWNER AND/OR CONTROLLING REGULATORY AGENCY AND ADEQUATE VEGETATIVE GROWTH INSURES NO FURTHER EROSION OF THE SOIL.

TEMPORARY SILTATION CONTROL MEASURES (STRUCTURAL) SHALL BE MAINTAINED UNTIL VEGETATIVE COVER IS ESTABLISHED AT A SUFFICIENT DENSITY TO PROVIDE EROSION CONTROL ON THE SITE.

WHERE NATURAL VEGETATION IS REMOVED DURING GRADING, VEGETATION SHALL BE REESTABLISHED IN SUCH A DENSITY AS TO PREVENT EROSION.

WHEN CLEARING AND/OR GRADING OPERATIONS ARE COMPLETED OR SUSPENDED FOR MORE THAN 30 DAYS, ALL NECESSARY PRECAUTIONS SHALL BE TAKEN TO RETAIN SOIL MATERIALS ON SITE. PROTECTIVE MEASURES MAY BE REQUIRED BY THE DIRECTOR OF PUBLIC WORKS / CITY ENGINEER SUCH AS PERMANENT SEEDING, PERIODIC WETTING, MULCHING, OR OTHER SUITABLE MEANS.

STORM WATER PIPES, OUTLETS AND CHANNELS SHALL BE PROTECTED BY SILT BARRIERS AND KEPT FREE OF WASTE AND SILT AT ALL TIMES PRIOR TO FINAL SURFACE STABILIZATION AND/OR PAVING.

SILTATION FENCES SHALL BE INSPECTED PERIODICALLY FOR DAMAGE AND FOR THE AMOUNT OF SEDIMENT WHICH HAS ACCUMULATED. REMOVAL OF SEDIMENT WILL BE REQUIRED WHEN IT REACHES 1/2 THE HEIGHT OF THE SILTATION FENCE.

NO EXCAVATION SHALL BE MADE SO CLOSE TO THE PROPERTY LINE AS TO ENDANGER ANY ADJOINING PROPERTY OF ANY PUBLIC OR PRIVATE STREET WITHOUT SUPPORTING AND PROTECTING SUCH PUBLIC OR PRIVATE STREET OR PROPERTY FROM SETTLING, CRACKING OR OTHER DAMAGE.

PROVIDE ADEQUATE OFF-STREET PARKING FOR CONSTRUCTION EMPLOYEES. PARKING ON NON-SURFACED AREAS SHALL BE PROHIBITED IN ORDER TO ELIMINATE THE CONDITION WHEREBY MUD FROM CONSTRUCTION AND EMPLOYEE VEHICLES IS TRACKED ONTO THE PAVEMENT CAUSING HAZARDOUS ROADWAY AND DRIVING CONDITIONS. THE STREETS SURROUNDING THIS DEVELOPMENT AND ANY STREET USED FOR CONSTRUCTION ACCESS THERE TO SHALL BE CLEANED THROUGHOUT THE DAY.

SOFT SOILS IN THE BOTTOM OF BANKS OF ANY EXISTING OR FORMER POND SITES OR TRIBUTARIES OR ANY SEDIMENT BASINS OR TRAPS SHOULD BE REMOVED, SPREAD OUT AND PERMITTED TO DRY SUFFICIENTLY TO BE USED AS FILL. NONE OF THIS MATERIAL SHOULD BE PLACED IN PROPOSED PUBLIC RIGHT-OF-WAY LOCATIONS OR IN ANY STORM SEWER LOCATION.

ADDITIONAL GENERAL NOTES:
ALL CONSTRUCTION SHALL BE PER MOST CURRENT DETAILS LOCATED IN ELLISVILLE AND ST. LOUIS COUNTY'S DESIGN CRITERIA BOOK AND THE SEDIMENT AND EROSION CONTROL MANUAL.

THE DEVELOPER IS ADVISED THAT UTILITY COMPANIES WILL REQUIRE COMPENSATION FOR RELOCATION TO THEIR FACILITIES WITHIN THE PUBLIC ROAD RIGHT-OF-WAY. UTILITY RELOCATION COST SHALL BE CONSIDERED THE DEVELOPER'S RESPONSIBILITY. THE DEVELOPER SHOULD ALSO BE AWARE OF EXTENSIVE DELAYS IN UTILITY COMPANY RELOCATION AND ADJUSTMENTS. SUCH DELAYS WILL NOT CONSTITUTE A CAUSE TO ALLOW OCCUPANCY PRIOR TO COMPLETION PRIOR TO COMPLETION OF ROAD IMPROVEMENTS. ST. LOUIS COUNTY SHALL BEAR NO RESPONSIBILITY FOR UTILITY RELOCATION OR ADJUSTMENT COSTS OR ASSOCIATED DELAYS.

ALL DISTURBED EARTH AREAS IN THE ROW TO BE SOODED ALL OTHER AREAS TO BE SEEDS.

INTERIM STORM WATER DRAINAGE CONTROL IN THE FORM OF SILTATION CONTROL MEASURES ARE REQUIRED.

THE DEVELOPER IS REQUIRED TO PROVIDE ADEQUATE STORM WATER SYSTEMS IN ACCORDANCE WITH ELLISVILLE, ST. LOUIS COUNTY AND M.S.D. STANDARDS.

ADDITIONAL SILTATION CONTROL SHALL BE INSTALLED AS REQUIRED BY ELLISVILLE AND ST. LOUIS COUNTY.

ALL OFFSITE PROPERTY OWNERS SHALL BE GIVEN NOTICE 48 HOURS IN ADVANCE OF ANY WORK.

ANY DISTURBED OFFSITE PROPERTY (E. BUSHES, FENCES, MAILBOXES, ETC.) SHALL BE REPLACED, IN KIND, AT THE DEVELOPER'S EXPENSE.

TRUCKS SHALL NOT EXCEED POSTED WEIGHT LIMITS OF ANY BRIDGES DURING HAUL OPERATIONS.

ALL SEDIMENT SHALL BE WASHED FROM ALL VEHICLES AT WASHDOWN STATION PRIOR TO LEAVING SITE. NO TRACKING OF SEDIMENT ONTO ANY ROADS SHALL BE ALLOWED.

ESTIMATE OF EARTHWORK:

CUT	FILL
ST. LOUIS COUNTY 208.80 C.Y.	45.30 C.Y.
ELLISVILLE 120.70 C.Y.	15.90 C.Y.
268.3 C.Y. TO BE HAULED OFF	
10 C.Y. PER TRUCK = 27 TRUCKS	
15 TRUCKS A DAY = 2 DAYS	

TRUCKS SHALL NOT EXCEED POSTED WEIGHT LIMITS FOR ST. LOUIS COUNTY BRIDGES DURING HAUL OPERATIONS.

ANY SOFT SOIL REMOVAL WILL ALTER THESE NUMBERS

ANY MATERIAL REMOVAL FROM SITE INCLUDING TOP SOILS WILL ALTER THESE NUMBERS. NO SHRINKAGE OR SWELLING FACTOR USED. SEE ADDITIONAL GEOTECH REPORT.

THE ESTIMATED EARTHWORK QUANTITIES ARE CALCULATED FOR PERMIT AND INSPECTION. THESE QUANTITIES ARE NOT INTENDED TO BE USED FOR BID.

THE ENGINEER HAS CALCULATED THE ABOVE QUANTITIES OF EARTHWORK TO BE REGARDED AS AN ESTIMATE OF THE BULK QUANTITIES AS PROPOSED ON THE SITE ENGINEERING PLANS PREPARED BY DOERING ENGINEERING INC.

THE QUANTITIES ESTIMATED ARE BASED UPON THE HORIZONTAL AND VERTICAL LOCATION OF THE IMPROVEMENTS AS PROPOSED ON THE SITE ENGINEERING PLANS PREPARED BY DOERING ENGINEERING INC.

EARTHWORK THAT MAY BE NECESSARY FOR COMPLETION OF THE PROJECT INCLUDE, BUT ARE NOT LIMITED TO, MISCELLANEOUS UNDERGROUND CONDUITS INCLUDING SEWER LINES AND WATER MAINS, PROCESS OR TRANSFER PIPING, ELECTRICAL OR TELEPHONE CONDUITS, BASES FOR LIGHT STANDARDS, BUILDINGS FOOTINGS AND FOUNDATIONS, ETC.

THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THE ACTUAL SIZE OF THE FIELD EXCAVATIONS MADE FOR THE INSTALLATION OF UNDERGROUND STRUCTURES, AND SUCH THE ACTUAL QUANTITIES OF EARTHWORK FROM SUCH ITEMS MAY VARY FROM THE ESTIMATE SHOWN ABOVE.

EARTHWORK CONTRACTOR TO PROVIDE HAUL ROUTE AND SITE INFORMATION TO ST. LOUIS COUNTY HIGHWAYS AND TRAFFIC PRIOR TO COMMENCEMENT OF EARTHWORK OPERATION.

TRUCKS SHALL NOT EXCEED POSTED WEIGHT LIMITS FOR ST. LOUIS COUNTY BRIDGES DURING HAUL OPERATIONS.

ALL WORK WITHIN ST. LOUIS COUNTY RIGHT-OF-WAY SHALL BE CONSTRUCTED TO COUNTY STANDARDS.

ROAD IMPROVEMENTS SHALL BE COMPLETED PRIOR TO ISSUANCE OF ANY OCCUPANCY PERMIT.

A PERMIT SHALL BE OBTAINED FROM THE ST. LOUIS COUNTY DEPARTMENT OF PUBLIC WORKS FOR CONSTRUCTION OF RETAINING WALLS.

APPLICANT SHALL USE EXTREME CAUTION IN AREAS WHERE TRAFFIC SIGNALS FACILITIES ARE EXISTING. IT IS THE RESPONSIBILITY OF THE CONTRACTOR/DEVELOPER TO CONTACT THE ST. LOUIS COUNTY DEPARTMENT OF HIGHWAYS AND TRAFFIC AT (314) 615-0215 A MINIMUM OF 48 HOURS IN ADVANCE OF CONSTRUCTION WORK FOR LOCATING AND SPOTTING EXISTING TRAFFIC CONDUIT. IN THE EVENT THE CONTRACTOR DAMAGES ANY TRAFFIC SIGNAL FACILITIES, REPAIRS SHALL BE MADE AT THE CONTRACTORS EXPENSE BY AN ELECTRICAL CONTRACTOR AS DIRECTED BY ST. LOUIS COUNTY.

ALL HYDRANTS, POWER POLES OR OTHER OBSTRUCTIONS WITHIN SAINT LOUIS COUNTY ROAD RIGHT-OF-WAY SHALL HAVE A MINIMUM TWO FOOT SETBACK FROM FACE OF CURB OR EDGE OF SHOULDER OF THE ULTIMATE PAVEMENT SECTION AS DIRECTED BY ST. LOUIS COUNTY DEPARTMENT OF HIGHWAYS AND TRAFFIC.

ANY ENTITY THAT PERFORMS WORK ON ST. LOUIS COUNTY MAINTAINED PROPERTY SHALL PROVIDE THE COUNTY WITH A CERTIFICATE OF INSURANCE ENDORSING GENERAL LIABILITY COVERAGE (BODILY INJURY AND PROPERTY DAMAGE) IN THE AMOUNTS SPECIFIED AS THE LIMITS OF LIABILITY SET BY THE STATE FOR PUBLIC ENTITIES. SUCH CERTIFICATES SHALL INCLUDE ST. LOUIS COUNTY AS AN ADDITIONAL INSURED AND SHALL BE PROVIDED PRIOR TO THE ISSUANCE OF ANY PERMIT. CERTIFICATE SHALL PROVIDE FOR A 30 DAY POLICY CANCELLATION NOTICE TO ST. LOUIS COUNTY. UPON REQUEST, THE COUNTY WILL PROVIDE THE SPECIFIC AMOUNTS FOR BOTH PER PERSON AND PER OCCURRENCE LIMITS.

ALL SIDEWALKS AND ASSOCIATED ACCESSIBILITY IMPROVEMENTS WITHIN ST. LOUIS COUNTY R.O.W. SHALL BE CONSTRUCTED TO ST. LOUIS COUNTY ADA STANDARDS.

WITHIN ST. LOUIS COUNTY R.O.W. PROVIDE SIDEWALK TERMINATION'S IN COMPLIANCE WITH ST. LOUIS COUNTY ADA STANDARDS.

NO SLOPE SHALL EXCEED 3:1 MAXIMUM, UNLESS SUPPORTED BY A GEOTECHNICAL REPORT APPROVED BY ST. LOUIS COUNTY TRANSPORTATION DEPT.

UTILITY WORK IN ST. LOUIS COUNTY R-O-W REQUIRES SEPARATE SPLITTING PERMITS. CONTACT MR. JAMES HAYES @ 314-615-8515.

THE CONTRACTOR SHALL MAINTAIN EXISTING TRAFFIC CONTROL SIGNS (STREET NAME, STOP, NO PARKING, ONE-WAY, TURN, ETC.) UNTIL SUCH TIME AS THEY NEED TO BE REMOVED/RELOCATED FOR CONSTRUCTION OPERATIONS. TEMPORARY SIGNING SHALL BE IN ACCORDANCE WITH THE CURRENT VERSION OF MUTCD CHAPTER 6F (TEMPORARY TRAFFIC CONTROL ZONE DEVICES). EXISTING SIGNS SHALL NOT LAY ON THE GROUND FOR ANY PERIOD OF TIME. PORTABLE SUPPORTS SHALL NOT BE LOCATED ON SIDEWALKS OR AREAS DESIGNATED FOR PEDESTRIAN TRAFFIC. SIGNS SHALL BE CRASH WORTHY AND PROPERLY MAINTAINED FOR CLEANLINESS, VISIBILITY, AND PROPER POSITIONING, AND SHALL BE COORDINATED WITH THE ST. LOUIS COUNTY SIGN SHOP AT (314) 615-0242.

THE CONTRACTOR SHALL NOTIFY THE ST. LOUIS COUNTY DIVISION OF OPERATIONS STRIPING PERSONNEL AT (314) 615-0233, 24 HOURS IN ADVANCE OF ANY STRIPING RELATED WORK. ALL GRADING AND EXISTING STRIPING AND INSTALLATION OF TEMPORARY STRIPING AS REQUIRED BY ST. LOUIS COUNTY SHALL BE PERFORMED BY THE CONTRACTOR. ALL PERMANENT STRIPING WILL BE INSTALLED BY THE ST. LOUIS COUNTY DEPARTMENT OF TRANSPORTATION.

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PERTINENT INFORMATION:

- SEWER DISTRICT: M.S.D.
- ELECTRIC: AMERENUE
- GAS: LACLEDE GAS
- PHONE: ATT
- WATER: MISSOURI-AMERICAN WATER COMPANY
- SCHOOL DISTRICT: ROCKWOOD R-11
- FIRE DISTRICT: METRO WEST FIRE PROTECTION DISTRICT
- WATER SHED: MERAMEC RIVERA

FLOOD MAP

FEMA MAP # 28188C0278 K, EFFECTIVE DATE FEBRUARY 4, 2015
SUBJECT PROPERTY NOT WITHIN ANY FLOOD ZONES

BENCHMARK

BENCHMARK: ELEVATIONS WERE DETERMINED USING THE WOODOT VRS NETWORK OF CONTINUOUSLY OPERATING REFERENCE STATIONS FOR 1983 EAST ZONE.

SITE BENCHMARK O.I. PIPE AT THE SOUTHWEST CORNER OF LOT 1 OF VINTAGE GROVE RECORDED IN PLAT BOOK 382 PG. 305, ELEV. - 720.88

THIS PROJECT IS TIED INTO ST. LOUIS COUNTY BENCHMARK #17185. TO CONVERT THIS TO THE COUNTY SYSTEM ADD 0.06' TO SITE ELEVATIONS TO MATCH NAVD83 AS REPORTED.

NAVOD83 (SLC2011a) ELEV = 739.84 FTUS (OR) 225.505 METER
MODIFIED ELEV = 740.01 FTUS
CUT "1" ON THE SOUTHWEST CORNER OF THE 9'x8' CONCRETE PAD BASE FOR ATT CABLE BOX SITUATED IN A CLUSTER OF UTILITY BOXES WEST OF A GRAVEL DRIVEWAY FOR COMMERCIAL PROPERTY ADDRESSED AS #341 OLD STATE ROAD, AND NORTH OF THE INTERSECTION OF OLD STATE ROAD WITH RIDGE ROAD FROM THE SOUTH, ROUGHLY 45 FEET NORTHWEST OF THE CENTERLINE OF THE OLD STATE ROAD, 6 FEET EAST OF THE NORTHERLY PROJECTION OF THE CENTERLINE OF RIDGE ROAD, AND 17 FEET NORTHEAST OF UTILITY POLE #301019, WHICH HAS AN OVERHEAD STREET LIGHT ATTACHED AND IS SUPPORTED BY A SEPARATE CUY POLE.

SP MO EAST N-304316E E=2412634 METER - ESTIMATED
ROUGH NAD83 (LAT=38.5755152(N/4) LONG=90.6002692(W/-)

MARK A. DOERING
CIVIL ENGINEER E-23059

PRIOR TO ISSUANCE OF A MAJOR LAND DISTURBANCE PERMIT, A LAND DISTURBANCE ESCROW SHALL BE APPROVED BY ST. LOUIS COUNTY DEPARTMENT OF PLANNING.

THE SWPPP SHALL HAVE SUFFICIENT INFORMATION TO BE OF PRACTICAL USE TO CONTRACTORS AND SITE CONSTRUCTION WORKERS TO GUIDE THE INSTALLATION AND MAINTENANCE OF BMP'S. TEMPORARY STABILIZATION IS TO TAKE PLACE WHERE SOIL DISTURBING ACTIVITIES TAKE PLACE ON ANY PORTION OF THE SITE AND ARE NOT PLANNED TO RESUME FOR A PERIOD EXCEEDING 14 CALENDAR DAYS. TEMPORARY STABILIZATION MUST BE INITIATED IMMEDIATELY UPON KNOWING THE DURATION IS MORE THAN 14 DAYS. TEMPORARY STABILIZATION MUST BE COMPLETED WITHIN 7 CALENDAR DAYS. SLOPES FOR TEMPORARY STABILIZATION MUST BE DEFINED IN THE SWPPP. A SITE MAP OR MAPS, DEFINING THE SLOPED AREAS FOR ALL PHASES OF THE PROJECT, MUST BE INCLUDED IN THE SWPPP. THE TYPES OF BMP'S USED MUST BE SUITED TO THE AREA DISTURBED, TAKING INTO ACCOUNT THE NUMBER OF ACRES EXPOSED AND THE STEEPNESS OF THE SLOPES. IF THE SLOPE OF THE AREA IS GREATER THAN 3:1 (3 FEET HORIZONTAL TO 1 FOOT VERTICAL) OR IF THE SLOPE IS GREATER THAN 3% AND GREATER THAN 150 FEET IN LENGTH, THEN THE PERMITTEE MUST ESTABLISH TEMPORARY STABILIZATION WITHIN 7 DAYS OF CEASING OPERATION ON THAT PART OF THE SITE. FINAL STABILIZATION OF DISTURBED AREAS MUST BE INITIATED IMMEDIATELY AND COMPLETED WITHIN 7 CALENDAR DAYS WHENEVER ANY CLEARING, GRADING, EXCAVATING OR OTHER EARTH DISTURBING ACTIVITIES HAVE PERMANENTLY CEASED ON ANY PORTION OF THE SITE. ALLOWANCES TO THE 7 DAY COMPLETION PERIOD FOR TEMPORARY AND FINAL STABILIZATION MAY BE MADE DUE TO WEATHER OR EQUIPMENT MALFUNCTIONS. THE USE OF ALLOWANCES SHALL BE DOCUMENTED IN THE SWPPP. A SITE MAP SHOWING THE OUTLINES OF THE TOTAL PROJECT AREA, THE AREAS TO BE DISTURBED, AREAS THAT WILL NOT BE DISTURBED, EXISTING LAND USES, LOCATIONS OF OFF-SITE MATERIALS, WASTE, BORROW, AND EQUIPMENT STORAGE AREAS, LOCATIONS AND NAMES OF SURFACE WATER BODIES THE SITE DRAINS TO, AREAS OF FINAL STABILIZATION, LOCATIONS OF FLOOD PLAINS, LOCATIONS OF TEMPORARY AND PERMANENT BEST MANAGEMENT PRACTICES (BMP), LOCATIONS OF OUTFALLS, LOCATION(S) OF PORTA-POTTIES, GAS TANKS, DUMPSTERS, ETC. WITH UPDATES AND LOCATION CHANGES AND SUCH OTHER INFORMATION AS MAY BE REQUIRED BY THE COUNTY DEPARTMENT(H) HAVING ENFORCEMENT AUTHORITY AND RESPONSIBILITIES DESCRIBED IN SECTION 103.0 OF THE CODE. THE PERMITTEE SHALL ENSURE THE BMP'S ARE PROPERLY INSTALLED AT THE LOCATIONS AND RELATIVE TIMES SPECIFIED IN THE SWPPP. PERIPHERAL OR BORDER BMP'S TO CONTROL RUNOFF FROM DISTURBED AREAS SHALL BE INSTALLED OR MARKED FOR PRESERVATION BEFORE GENERAL SITE CLEARING IS STARTED. NOTE THAT THIS REQUIREMENT DOES NOT APPLY TO EARTH DISTURBANCES RELATED TO INITIAL SITE CLEARING AND ENTRY ESTABLISHMENT, EXIT AND ACCESS OF THE SITE, WHICH MAY REQUIRE THAT STORMWATER CONTROLS BE INSTALLED IMMEDIATELY AFTER THE EARTH DISTURBANCE STORM WATER DISCHARGES FROM DISTURBED AREAS WHICH LEAVE THE SITE, SHALL PASS THROUGH AN APPROPRIATE IMPEDIMENT TO SEDIMENT MOVEMENT, SUCH AS A SEDIMENTATION BASIN, SEDIMENT TRAPS, SILT FENCES, ETC., PRIOR TO LEAVING THE AND DISTURBANCE SITE. A DRAINAGE COURSE SHALL BE CLEARLY MARKED ON A SITE MAP AND DESCRIBED IN THE SWPPP.

THE CONTRACTOR SHALL PROVIDE, INSTALL, MAINTAIN, AND REMOVE A PUBLIC NOTIFICATION SIGN, PER PAGES 42-43 OF THE ST. LOUIS COUNTY SEDIMENT AND EROSION CONTROL MANUAL.

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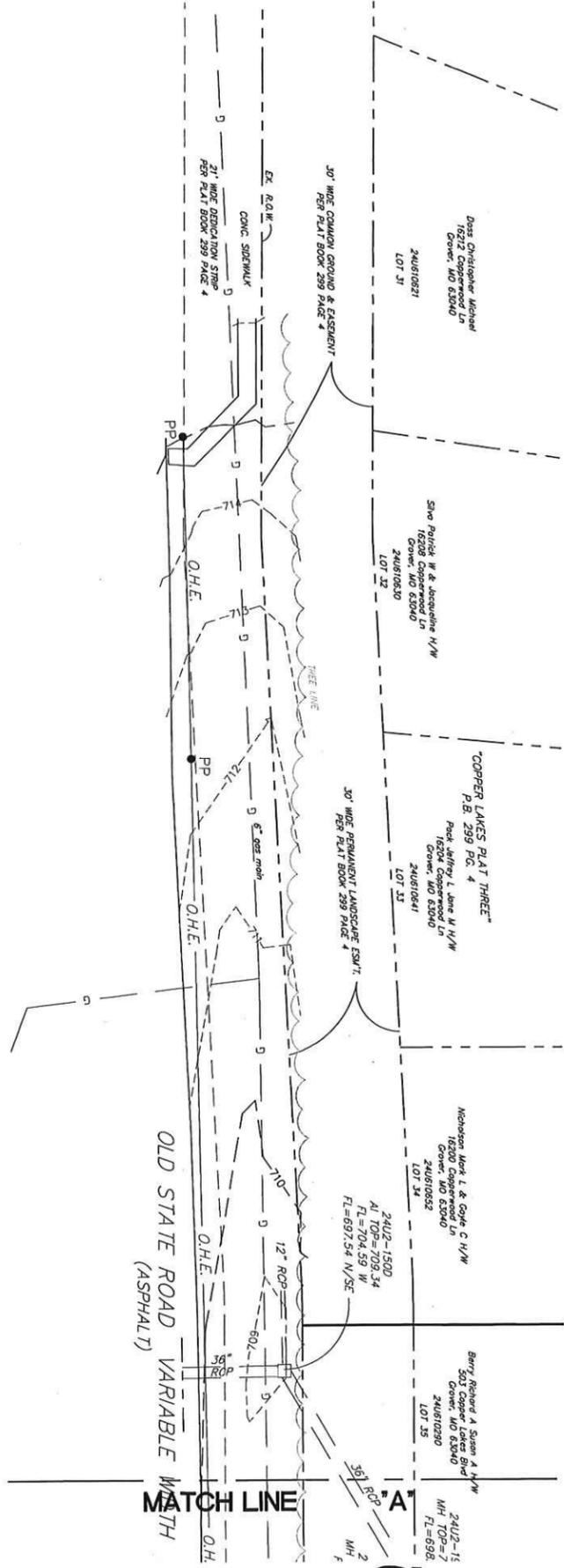
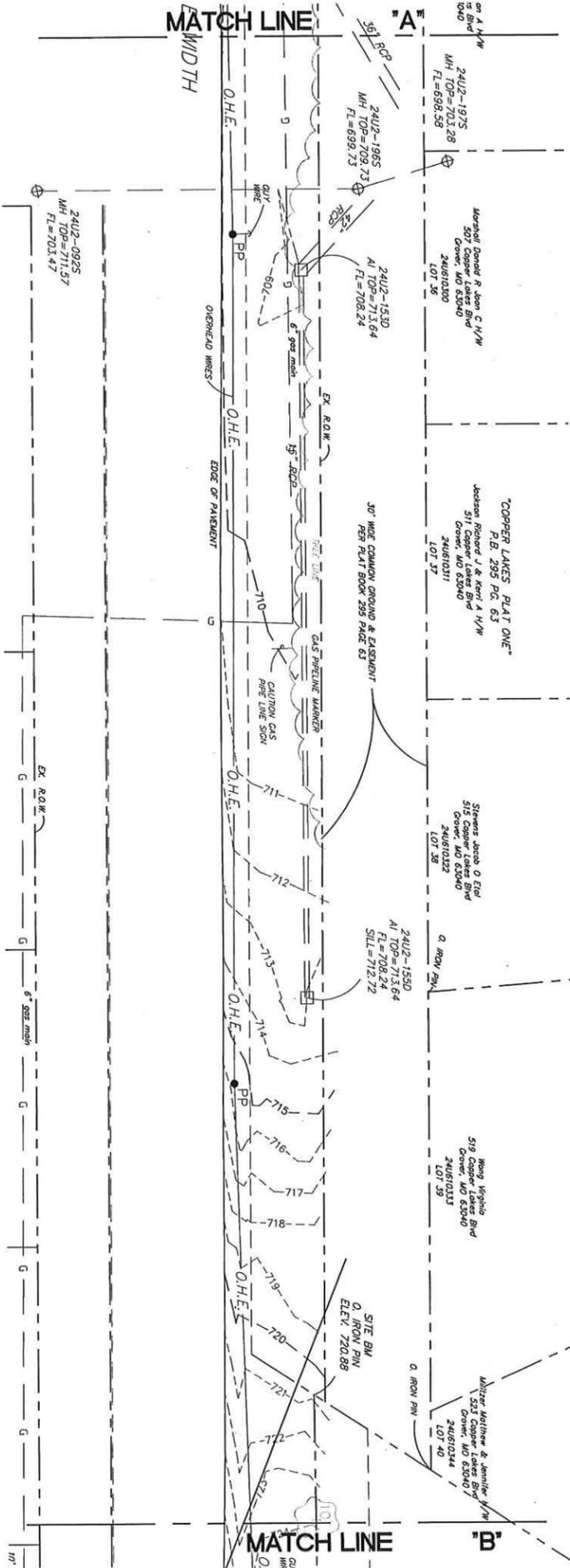
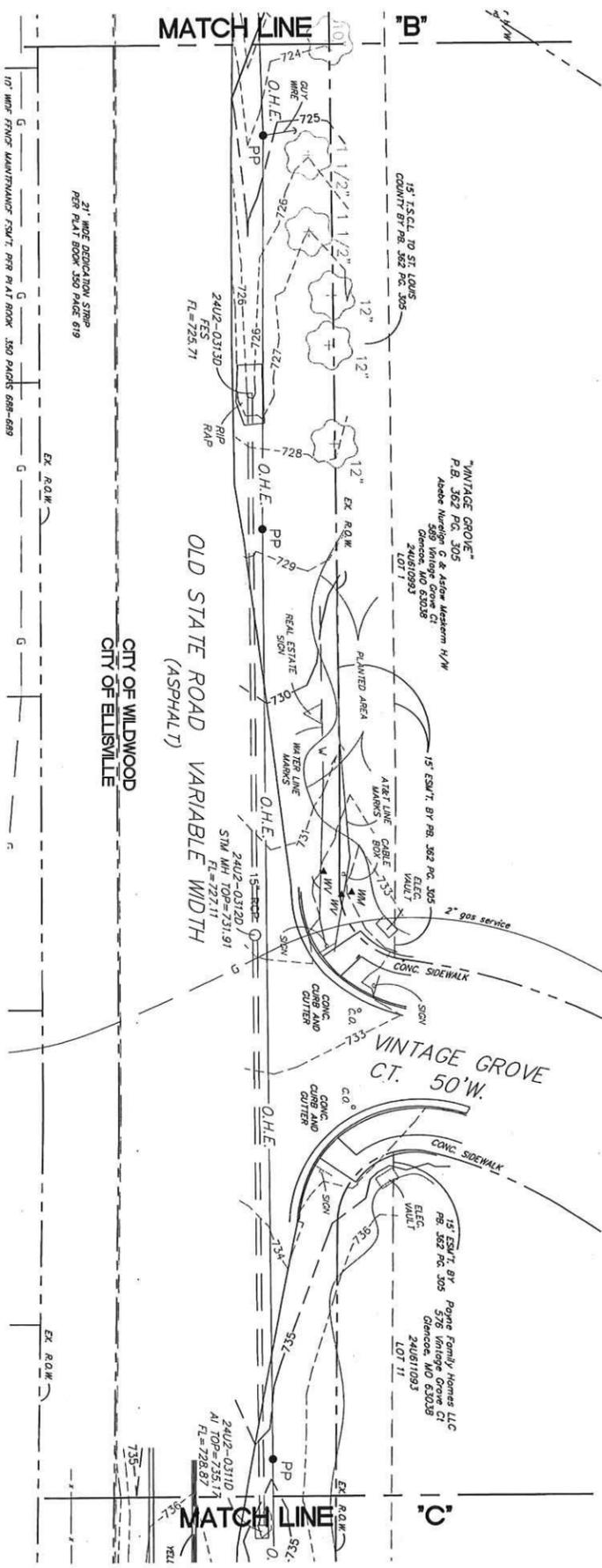
WATER QUALITY DATA

SITE LOCATION: CITY OF WILDWOOD & CITY OF ELLISVILLE
INTERSECTION OF OLD STATE ROAD & RIDGE ROAD

STORMWATER MANAGEMENT NOTE:
LAND AREA DISTURBED= 0.70 ACRES
ANY FUTURE LAND DISTURBANCE AND/OR INCREASE IN IMPERVIOUS AREA ON THIS SITE MAY REQUIRE ADDITIONAL STORM WATER MANAGEMENT PER MSD REGULATIONS IN PLACE AT THAT TIME. (INCLUDING TOTAL LAND DISTURBANCE AND /OR IMPERVIOUSNESS ADDED ON THIS PLAN, P-30949-00)

EXISTING IMPERVIOUS AREAS:
PAVEMENT 0.03 SF OR 0.00 AC

EXISTING IMPERVIOUS: 0.003 AC X 3.54 = 0.01 CFS
EXISTING PERVIOUS: 0.667 AC X 1.70 = 1.13 CFS
TOTAL: 1.14 CFS



- DEMOLITION NOTES:**
1. UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE INFORMATION AND THEREFORE, THEIR LOCATIONS MUST 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 IMPROVEMENTS.
 2. THE CONTRACTOR IS RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF ALL SITUATION CONTROL SHOWN AND OTHER EROSION CONTROL DEVICES THAT MAY BE REQUIRED.
 3. ALL EXISTING BELOW GROUND UTILITIES TO BE PROTECTED AND USED IN PLACE UNLESS OTHERWISE NOTED.
 4. CONTRACTOR TO LEGALLY DISPOSE OF ITEMS EXCEPT THOSE INDICATED TO BE REINSTALLED, SALVAGED, OR TO REMAIN ON THE OWNER'S PROPERTY.
 5. PROTECT IMPROVEMENTS INDICATED TO REMAIN AGAINST DAMAGE AND SOLING DURING DEMOLITION.
 6. AREAS DENOTED AS SAW CUT ON PLAN ARE TO BE SAW CUT FULL DEPTH AND REMOVED. MATCH ALL DISTURB PAVEMENT AREAS IN KIND, THICKNESS, AND TYPE PER PROPOSED IMPROVEMENT PLAN.
 7. PROJECT NEEDS TO PROVIDE FOR CONTINUOUS PEDESTRIAN ACCESS DURING CONSTRUCTION FOR SIDEWALK REMOVAL/ REPLACEMENT VERIFY THERE IS ADEQUATE PEDESTRIAN ACCESS AROUND SITE OR PROVIDE TEMPORARY PEDESTRIAN ACCESS. EXISTING SIDEWALK MAY NOT BE REMOVED WITHOUT CONFIRMING ADEQUATE PEDESTRIAN FACILITIES WILL EXIST DURING CONSTRUCTION.
 8. REMOVE AND REPLACE SIDEWALK OR CURB AND GUTTER TO NEXT JOINT.



SLC HT #3266 -- MSD P-30949-00 -- BASE MAP-24U2

Old State Road & Ridge Rd Walkway

WILDWOOD, MISSOURI

OWNER
City of Wildwood
 16860 Main Street
 Wildwood, MO 63040
 Ph: 636-458-0440
 Fax: 636-458-6969
 www.cityofwildwood.com

Existing Conditions

JOB NUMBER
15019

DATE DRAWN BY
07/26/16 DWD

REVISION
 09/10/16 rev. per SLC/MSD
 10/03/16 rev. per SLC/MSD

SHEET NUMBER
C2

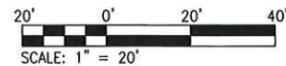
LAND PLANNING
 RECREATION PLANNING AND DESIGN
 LANDSCAPE ARCHITECTURE
 5630 GRIFFIN ROAD
 ST. LOUIS, MO 63128
 (314)984-8211 FAX(314)846-1718



Engineered By:
DOERING
ENGINEERING inc.
 CIVIL ENGINEERING • PLANNING • SURVEYING

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Natural Resource	Questions	Actions
Wetland	Are wetlands on site?	No
Streams and Floodplains	Are major waterways on the site?	No
	Is the site located within the 100- or 500-year floodplain?	No
	Is the municipal or county stream buffer (setback) shown?	N/A
	Is the site in a flooding or erosion prone area?	No
Karst	Are sinkholes, springs, or seeps located on the site?	No
	What is the depth to bedrock?	N/A
Existing Topography	What is the existing topography?	N/A
	Are there areas with slopes steeper than 20 percent?	No
	What are the site's soils types?	N/A
Ponds	What is the existing stormwater drainage area and flow path?	N/A
	Are there existing ponds on or adjacent to the property?	No
Vegetated Cover	Is the site forested?	No
	Are grassy/prairie areas on the site?	No
Existing Property Use	What is the site's current use?	Road
Surrounding Property Use	What is the surrounding property use?	Road



SLC HT #3266 -- MSD P-30949-00 -- BASE MAP-24U2



MARK A. DOERING
 CIVIL ENGINEER E-23059
 MO. EXPIRATION DATE:
 DECEMBER 31 2016
 IL. EXPIRATION DATE:
 APRIL 30 2017
 MO. CORPORATE
 LICENSE NO. 001347
 IL. CORPORATE
 LICENSE NO. 184.003035

Existing Conditions

JOB NUMBER
 15019

DATE DRAWN BY
 07/26/16 DWD

REVISION
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 10/03/16 rev. per SLC/MSD

SHEET NUMBER
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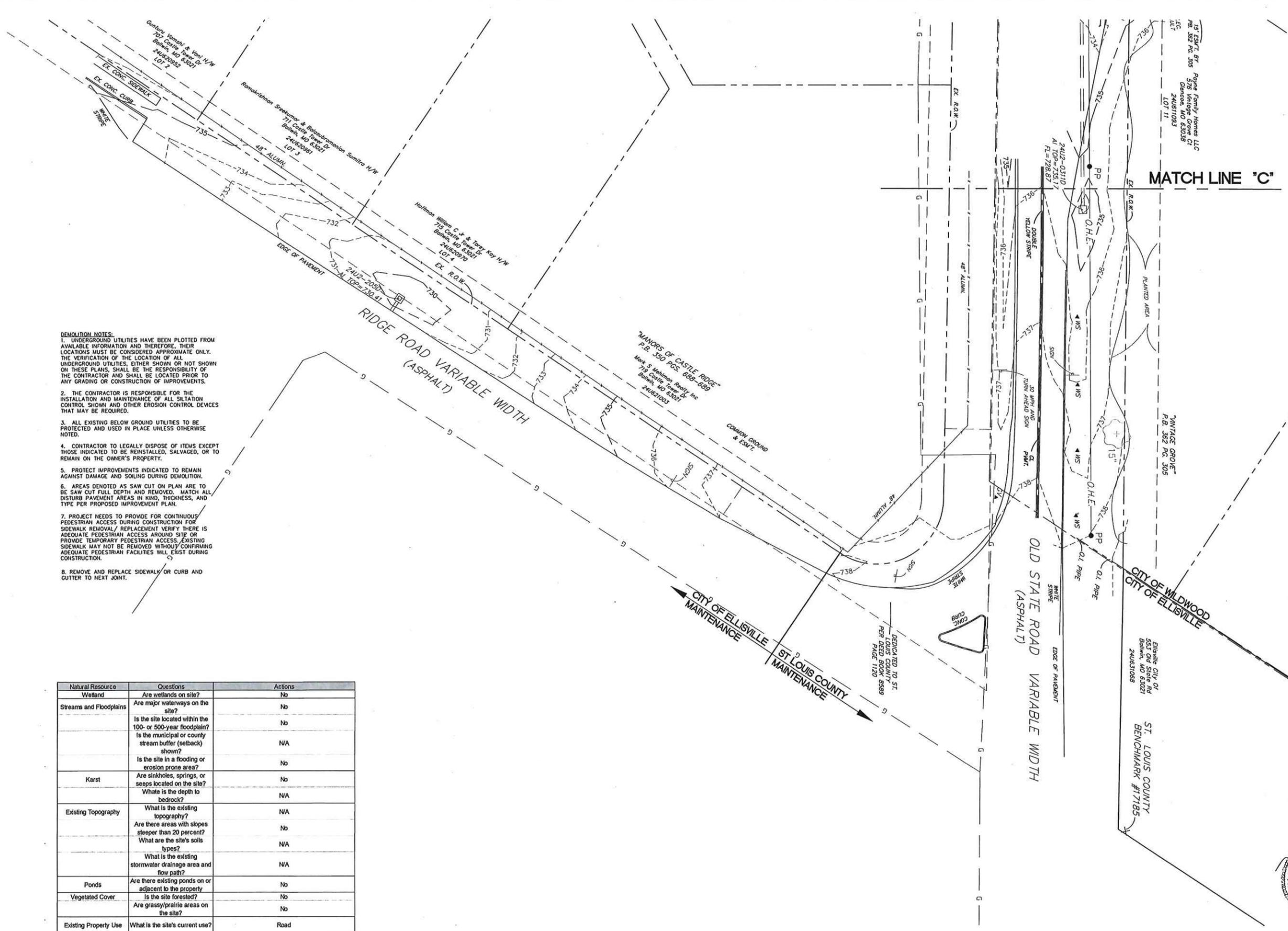
LAND PLANNING
 RECREATION PLANNING AND DESIGN
 LANDSCAPE ARCHITECTURE
terraspec
 5050 GRIFFIN ROAD
 ST. LOUIS, MO 63128
 (314)984-8211 FAX(314)843-1718

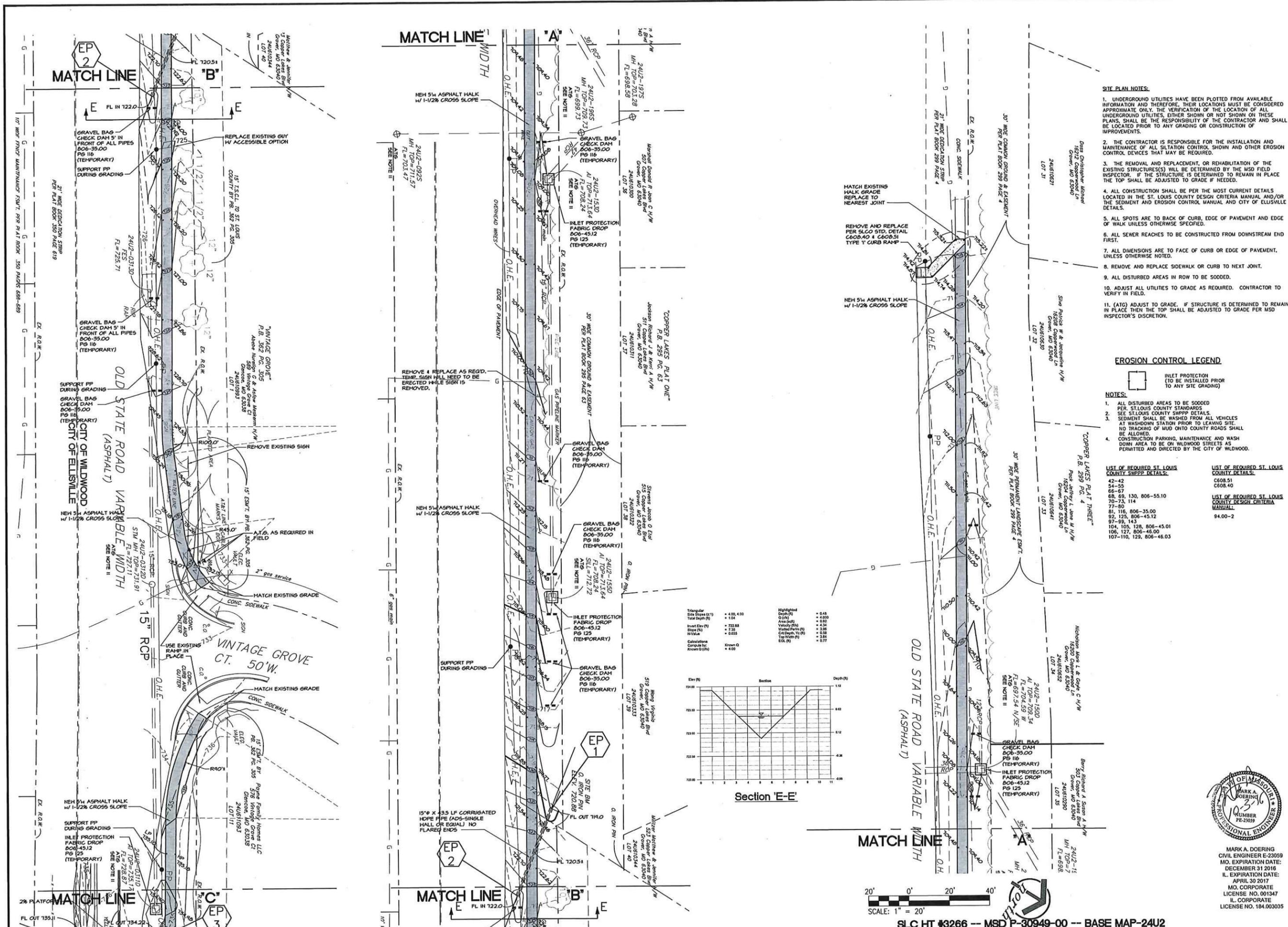
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DOERING
ENGINEERING
 CIVIL ENGINEERING • PLANNING • SURVEYING
 Missouri Office
 5050 Griffin Rd.
 St. Louis, Missouri 63128
 Telephone: (314) 843-1718
 Fax: (314) 843-1718

Old State Road &
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 WILDWOOD, MISSOURI

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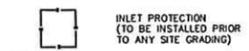
SHEET TITLE





- SITE PLAN NOTES:**
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 - THE CONTRACTOR IS RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF ALL SILTATION CONTROL SHOWN AND OTHER EROSION CONTROL DEVICES THAT MAY BE REQUIRED.
 - THE REMOVAL AND REPLACEMENT, OR REHABILITATION OF THE EXISTING STRUCTURE(S) WILL BE DETERMINED BY THE MSD FIELD INSPECTOR. IF THE STRUCTURE IS DETERMINED TO REMAIN IN PLACE THE TOP SHALL BE ADJUSTED TO GRADE IF NEEDED.
 - ALL CONSTRUCTION SHALL BE PER THE MOST CURRENT DETAILS LOCATED IN THE ST. LOUIS COUNTY DESIGN CRITERIA MANUAL AND/OR THE SEDIMENT AND EROSION CONTROL MANUAL AND CITY OF ELLISVILLE DETAILS.
 - ALL SPOTS ARE TO BACK OF CURB, EDGE OF PAVEMENT AND EDGE OF WALK UNLESS OTHERWISE SPECIFIED.
 - ALL SEWER REACHES TO BE CONSTRUCTED FROM DOWNSTREAM END FIRST.
 - ALL DIMENSIONS ARE TO FACE OF CURB OR EDGE OF PAVEMENT, UNLESS OTHERWISE NOTED.
 - REMOVE AND REPLACE SIDEWALK OR CURB TO NEXT JOINT.
 - ALL DISTURBED AREAS IN ROW TO BE SOODED.
 - ADJUST ALL UTILITIES TO GRADE AS REQUIRED. CONTRACTOR TO VERIFY IN FIELD.
 - (ATC) ADJUST TO GRADE. IF STRUCTURE IS DETERMINED TO REMAIN IN PLACE THEN THE TOP SHALL BE ADJUSTED TO GRADE PER MSD INSPECTOR'S DISCRETION.

EROSION CONTROL LEGEND



- NOTES:**
- ALL DISTURBED AREAS TO BE SOODED PER ST. LOUIS COUNTY STANDARDS.
 - SEE ST. LOUIS COUNTY SWPPP DETAILS.
 - SEDIMENT SHALL BE WASHED FROM ALL VEHICLES AT WASHDOWN STATION PRIOR TO LEAVING SITE. NO TRACKING OF MUD ONTO COUNTY ROADS SHALL BE ALLOWED.
 - CONSTRUCTION PARKING, MAINTENANCE AND WASH DOWN AREA TO BE ON WILLOWWOOD STREETS AS PERMITTED AND DIRECTED BY THE CITY OF WILLOWWOOD.

LIST OF REQUIRED ST. LOUIS COUNTY SWPPP DETAILS:

42-42
44-55
66-67
68, 69, 130, 806-55.10
70-73, 114
77-80
81, 116, 806-35.00
92, 125, 806-45.12
97-99, 143
104, 110, 128, 806-45.01
106, 127, 806-46.00
107-110, 129, 806-46.03

LIST OF REQUIRED ST. LOUIS COUNTY DETAILS:

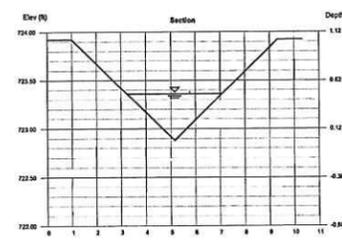
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6508.40

LIST OF REQUIRED ST. LOUIS COUNTY DESIGN CRITERIA MANUAL:

94.00-2

Materials Table:

Triangular	4.00, 4.00	Highlighted	0.43
Side Slope (ft)	1:1	Depth (ft)	4.00
Total Depth (ft)	1:1	Area (sq ft)	0.82
Inlet Depth (ft)	752.88	Velocity (ft/s)	4.74
Slope (ft)	7.35	Velocity (ft/s)	3.98
W Value	0.655	Calc Days to (ft)	0.82
Calculations	Known Q	Top Width (ft)	3.84
Computed by:	4.00	Eq. (ft)	0.77



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Missouri Office
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Engineered By:
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Old State Road & Ridge Rd Walkway
 WILLOWWOOD, MISSOURI

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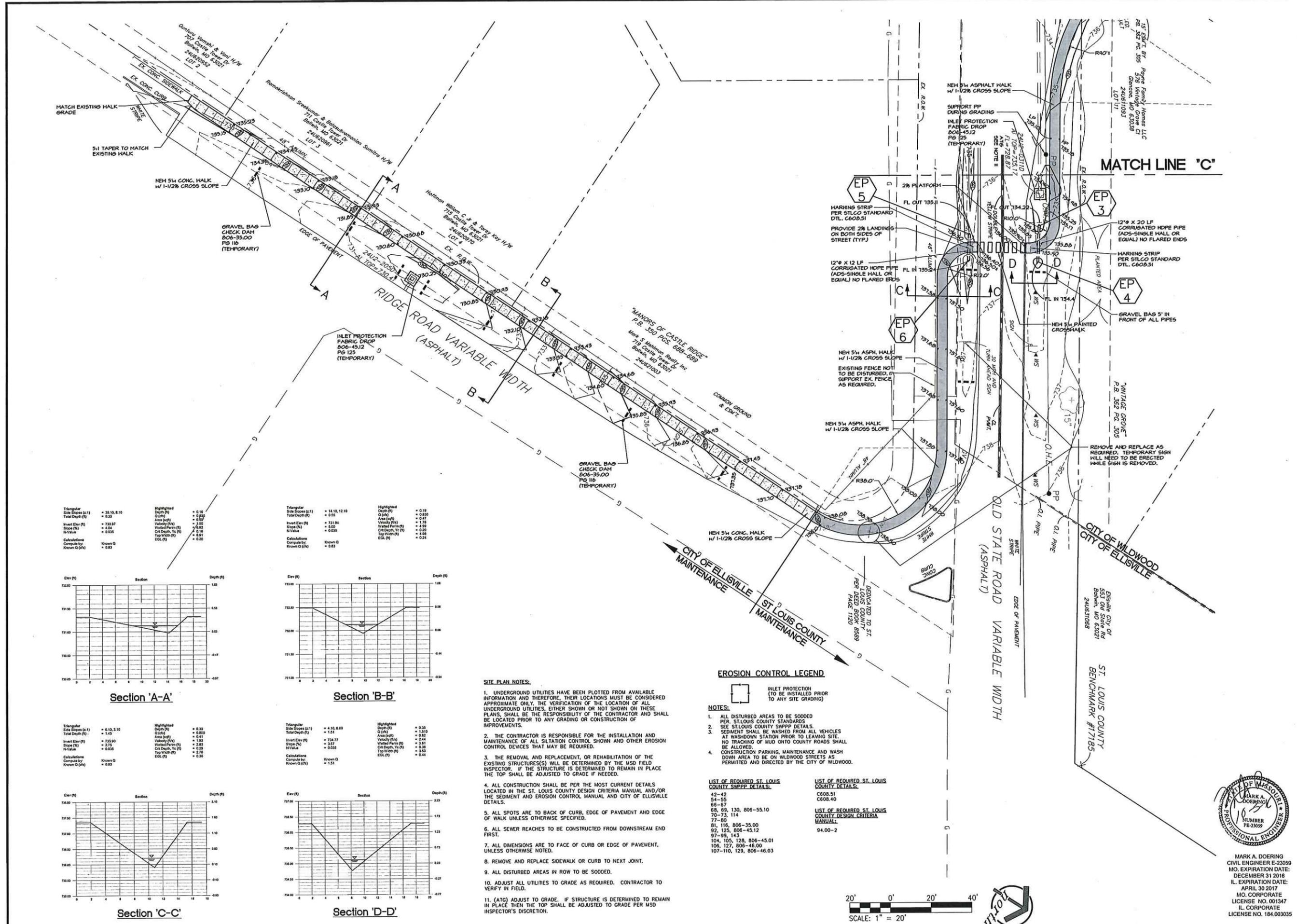
SHEET TITLE
Site/Grading & SWPP Plans

JOB NUMBER
15019

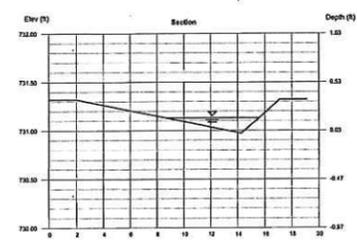
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 10/03/16 rev. per SLCT/MSD

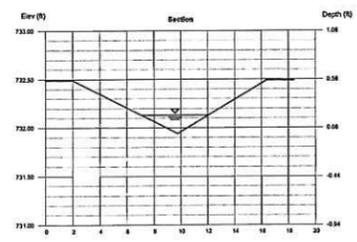
SHEET NUMBER
C4



Triangular Side Slope (z:1) = 35.10, 8.10 Total Depth (ft) = 0.35 Invert Elev (ft) = 730.97 Slope (%) = 4.04 N-Value = 0.035 Calculations Computed by: Known Q (ft/s) = 0.83	Highland Depth (ft) Q (cfs) Area (sq ft) Velocity (ft/s) Wetted Perim (ft) C/D Depth, Yc (ft) Top Width (ft) EGL (ft) = 0.16 = 0.820 = 6.02 = 7.80 = 4.62 = 0.18 = 6.81 = 0.20	Triangular Side Slope (z:1) = 14.10, 12.10 Total Depth (ft) = 0.55 Invert Elev (ft) = 731.84 Slope (%) = 5.00 N-Value = 0.035 Calculations Computed by: Known Q (ft/s) = 0.83	Highland Depth (ft) Q (cfs) Area (sq ft) Velocity (ft/s) Wetted Perim (ft) C/D Depth, Yc (ft) Top Width (ft) EGL (ft) = 0.19 = 0.930 = 0.47 = 1.78 = 4.98 = 0.20 = 4.88 = 0.24
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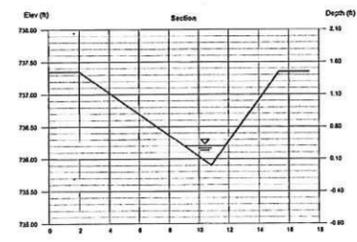


Section 'A-A'

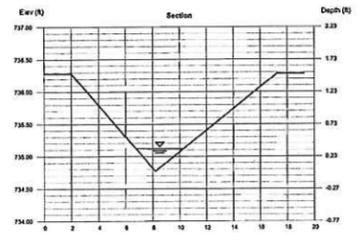


Section 'B-B'

Triangular Side Slope (z:1) = 6.10, 3.10 Total Depth (ft) = 1.43 Invert Elev (ft) = 735.90 Slope (%) = 3.71 N-Value = 0.035 Calculations Computed by: Known Q (ft/s) = 0.80	Highland Depth (ft) Q (cfs) Area (sq ft) Velocity (ft/s) Wetted Perim (ft) C/D Depth, Yc (ft) Top Width (ft) EGL (ft) = 0.30 = 0.800 = 0.41 = 1.93 = 2.83 = 0.29 = 2.75 = 0.34	Triangular Side Slope (z:1) = 4.10, 6.00 Total Depth (ft) = 1.51 Invert Elev (ft) = 734.77 Slope (%) = 3.87 N-Value = 0.035 Calculations Computed by: Known Q (ft/s) = 1.51	Highland Depth (ft) Q (cfs) Area (sq ft) Velocity (ft/s) Wetted Perim (ft) C/D Depth, Yc (ft) Top Width (ft) EGL (ft) = 0.35 = 1.018 = 0.62 = 2.44 = 3.61 = 0.38 = 3.28 = 0.44
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Section 'C-C'



Section 'D-D'

SITE PLAN NOTES:

- UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE INFORMATION AND THEREFORE, THEIR LOCATIONS MUST 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 IMPROVEMENTS.
- THE CONTRACTOR IS RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF ALL SILTATION CONTROL SHOWN AND OTHER EROSION CONTROL DEVICES THAT MAY BE REQUIRED.
- THE REMOVAL AND REPLACEMENT, OR REHABILITATION OF THE EXISTING STRUCTURE(S) WILL BE DETERMINED BY THE MSD FIELD INSPECTOR. IF THE STRUCTURE IS DETERMINED TO REMAIN IN PLACE THE TOP SHALL BE ADJUSTED TO GRADE IF NEEDED.
- ALL CONSTRUCTION SHALL BE PER THE MOST CURRENT DETAILS LOCATED IN THE ST. LOUIS COUNTY DESIGN CRITERIA MANUAL AND/OR THE SEDIMENT AND EROSION CONTROL MANUAL AND CITY OF ELLISVILLE DETAILS.
- ALL SPOTS ARE TO BACK OF CURB, EDGE OF PAVEMENT AND EDGE OF WALK UNLESS OTHERWISE SPECIFIED.
- ALL SEWER REACHES TO BE CONSTRUCTED FROM DOWNSTREAM END FIRST.
- ALL DIMENSIONS ARE TO FACE OF CURB OR EDGE OF PAVEMENT, UNLESS OTHERWISE NOTED.
- REMOVE AND REPLACE SIDEWALK OR CURB TO NEXT JOINT.
- ALL DISTURBED AREAS IN ROW TO BE SOODED.
- ADJUST ALL UTILITIES TO GRADE AS REQUIRED. CONTRACTOR TO VERIFY IN FIELD.
- (ATG) ADJUST TO GRADE. IF STRUCTURE IS DETERMINED TO REMAIN IN PLACE THEN THE TOP SHALL BE ADJUSTED TO GRADE PER MSD INSPECTOR'S DISCRETION.

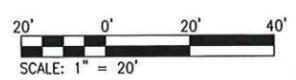
EROSION CONTROL LEGEND



NOTES:

- ALL DISTURBED AREAS TO BE SOODED PER ST. LOUIS COUNTY STANDARDS.
- SEE ST. LOUIS COUNTY SWPPP DETAILS.
- SEDIMENT SHALL BE WASHED FROM ALL VEHICLES AT WASHDOWN STATION PRIOR TO LEAVING SITE. NO TRACKING OF MUD ONTO COUNTY ROADS SHALL BE ALLOWED.
- CONSTRUCTION PARKING, MAINTENANCE AND WASH DOWN AREA TO BE ON WILDWOOD STREETS AS PERMITTED AND DIRECTED BY THE CITY OF WILDWOOD.

LIST OF REQUIRED ST. LOUIS COUNTY SWPPP DETAILS: 42-42 54-55 66-67 68, 69, 130, 806-55.10 70-73, 114 77-80 81, 116, 806-35.00 92, 125, 806-45.12 97-99, 143 104, 105, 128, 806-45.01 106, 127, 806-46.00 107-110, 129, 806-46.03	LIST OF REQUIRED ST. LOUIS COUNTY DETAILS: C608.51 C608.40	LIST OF REQUIRED ST. LOUIS COUNTY DESIGN CRITERIA MANUAL: 94.00-2
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MARK A. DOERING
CIVIL ENGINEER E-23059
NO. EXPIRATION DATE:
DECEMBER 31 2016
IL. EXPIRATION DATE:
APRIL 30 2017
MO. CORPORATE
LICENSE NO. 001947
IL. CORPORATE
LICENSE NO. 184.003035

PHYSICAL DESCRIPTION - Establishment of vegetation by spreading grass seed designed to protect exposed soil from erosion by eliminating direct impact of precipitation and slowing overland flow rates. Once established, the vegetative cover will also filter pollutants from the runoff. Use only perennial vegetation for final stabilization.

WHERE BMP IS TO BE INSTALLED - To exposed soil after a phase of rough or finish grading has been completed, or areas where no activity will occur for 30 days.

CONDITIONS FOR EFFECTIVE USE OF BMPs

Type of Flow: Sheet flow
 Contributing Slope Length: 30-foot maximum for 3:1 slopes
 50-foot maximum for slope between 3:1 and 10:1
 100-foot maximum for slopes under 10%
 Minimum Rates: See attached chart
 Acceptable Dates: See attached chart

WHEN BMP IS TO BE INSTALLED - Immediately after rough or finished grading is completed.

INSTALLATION / CONSTRUCTION PROCEDURES

- Install upstream BMPs to protect area to be seeded.
- Rough grade area and remove all debris larger than 1-inch in diameter and concentrated areas of smaller debris.
- Install stabilization grids, if needed.
- Mix soil amendments (lime, fertilizer, etc.) into top 3 to 6 inches of soil as needed.
- Plant seed 1/4 to 1/2 inch deep.
- Rake lightly to firm surface.
- Cover seeded area with mulch unless seeding completed during optimum spring and summer dates.
- Install additional stabilization (netting, bonded fiber matting, etc.) as required.
- Water immediately - enough to soak 4 inches into soil without causing runoff.
- If contract / permit allows seeding to be used for final stabilization, only perennial vegetation seeds shall be used.
- For additional information see Sections 805 and 806.50 of St. Louis County's Standard Specification for Road and Bridge Construction.

O&M PROCEDURES:

- Inspect every week and after every storm.
- Protect area from vehicular and foot traffic.
- Re-seed areas that have not sprouted within 21 days of planting.
- Repair damaged or eroded areas and reseed and stabilize as needed.
- Do not mow until 4 inches of growth occur.
- During the first 4 months, mow no more than 1/3 the grass height.
- Re-fertilize during 2nd growing season.

SITE CONDITIONS FOR REMOVAL - Does not require removal, but temporary seeding can be removed immediately prior to work returning to an area.

POLLUTION PREVENTION PROCEDURES

DESCRIPTION - Pollution prevention includes best management practices that need to be set up at the beginning of the project. Pollution prevention practices consist of site management considerations that do not fit into the other categories of erosion or sediment controls, such as materials inventory, good housekeeping, spill prevention and clean up, solid waste management and concrete washout. Building materials and other construction site wastes must be properly managed and disposed of to reduce the risk of pollution from materials such as surplus or surplus building materials or hazardous wastes. Practices such as trash disposal, recycling, proper material handling, and spill prevention and cleanup measures can reduce the potential for storm water runoff to mobilize construction site wastes and contaminate surface or ground water.

APPROPRIATE APPLICATION OF BMPs - The proper management and disposal of wastes should be practiced at every construction site to reduce contaminated storm water runoff. Use waste management practices to properly locate refuse piles, to cover materials that might be displaced by rainfall or storm water runoff, and to prevent spills and leaks from hazardous materials that were improperly stored.

Solid Wastes

- Designate a waste collection area on the site that does not receive a substantial amount of runoff from adjacent areas and does not drain directly to a water body.
- Dumpsters or other collection containers should be provided and maintained and ensure that containers have lids so they can be covered before periods of rain, and keep containers in a covered area whenever possible.
- Schedule waste collection to prevent the containers from overflowing.
- Clean up spills immediately. For hazardous materials, follow cleanup instructions on the package.
- During the demolition phase of construction, provide extra containers and schedule more frequent pickups.
- Collect, remove, and dispose of all construction site wastes at authorized disposal areas in accordance with state and local laws and regulations. Contact a local environmental agency to identify these disposal sites.
- Solid waste may not be buried or burned on the site.
- Good housekeeping on a construction site is very important. Keep the site clean.

Pesticides and Fertilizers

- Follow all federal, state, and local regulations that apply to the use, handling, or disposal of pesticides and fertilizers.
- Do not handle the materials any more than necessary.
- Store pesticides and fertilizers in a dry, covered area.

SILT FENCE

PHYSICAL DESCRIPTION - Sil fences are used as temporary perimeter controls, appropriate to the BMP, at sites where construction activities will disturb the soil. They can also be used on the interior of the site. A sil fence consists of a length of filter fabric stretched between anchoring posts spaced at regular intervals along the site at low and down slope areas. The filter fabric should be entrenched in the ground. When installed correctly and inspected frequently, sil fence can be an effective barrier to soil leaving the site in storm water runoff.

WHERE BMP IS TO BE INSTALLED - Sil fences apply to construction sites with relatively small drainage areas. They are appropriate in areas where runoff will occur as low-level flow, not exceeding 0.5 c.f.s. The drainage area for sil fences should not exceed 0.25 acre per 100-foot fence length (100 square feet per foot of fence). The slope length above the fence should not exceed 100 feet (NAHD, 1995). The fence should be designed to withstand the runoff from a 10-year peak storm event.

CONDITIONS FOR EFFECTIVE USE OF BMPs - Spacing of parallel lengths of all fence along slopes is relative to slope steepness as follows:

Type of Flow: Sheet flow only
 Contributing Slope Length: 30-foot maximum for 3:1 slopes
 50-foot maximum for slopes between 3:1 and 10:1
 100-foot maximum for slopes under 10%

For additional information see Section 806.70 of St. Louis County's Standard Specification for Road and Bridge Construction.

WHEN BMP IS TO BE INSTALLED - Prior to disturbance of natural vegetation and at intervals during construction of fill slopes. Install on the perimeter of the site (where storm water enters the site) prior to disturbance of natural vegetation, around material stockpiles and interior to the site along slopes, at the base of slopes and at intervals during construction of slopes.

INSTALLATION / CONSTRUCTION PROCEDURES

- Drive post for fence line.
- Dig trench to required dimensions in front of posts for fabric burial.
- Attach wire mesh to posts.
- Attach fabric to posts, allowing required length below ground level to run fabric along bottom of trench.
- Backfill and compact soil in trench to protect and anchor fabric.

If a standard-strength fabric is used, it can be reinforced with wire mesh behind the filter fabric. This increases the effective life of the fence. The maximum life expectancy for synthetic fabric sil fences is about 6 months, depending on the amount of rainfall and runoff.

The stakes used to anchor the filter fabric should be wood or metal. Wooden stakes should have minimum dimensions of 2 by 2 inches if a hardwood like oak is used. Stakes from soft woods like No. 2 Southern Pine, should have minimum dimensions of 4 by 4 inches. When using steel (standard U, T, L or C shape sections) posts in place of wooden stakes, they should weigh no less than 1.0 lb/linear foot. If metal posts are used, attachment points are needed for fastening the filter fabric with wire ties. Posts should be at least 5 feet long and driven or placed at a slight upstream angle into the ground to a

SEEDING REQUIREMENTS

Perennial Seeding	Dates for Seeding											
	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Turfgrass	O	O	O	O	O	O	O	O	O	O	O	O
Grass	O	O	O	O	O	O	O	O	O	O	O	O
Grass (with straw)	A	A	O	O	O	P	P	O	O	P	P	A

Temporarily Seeding

Perennial Seeding	Dates for Seeding											
	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Turfgrass	A	A	O	O	O	O	O	O	O	O	O	A
Grass	A	A	O	O	O	O	O	O	O	O	O	A

O = Optimum seeding dates
 A = Acceptable seeding dates
 P = Permitted seeding dates with seeding 2 months later - likely, area 50% of seed and 70% of water forest with average 70% seed and average 70% water forest

Minimum Fertilizer and Seeding Rates

Seeding Method	Pounds per acre	Pounds per 100 sq. ft.
Turfgrass	200	1.8
Grass	200	1.8
Grass (with straw)	200	1.8

Notes: 1 = Turfgrass @ 100 pounds per acre and straw @ 100 pounds per acre
 2 = Turfgrass @ 100 pounds per acre and straw @ 100 pounds per acre and straw @ 100 pounds per acre
 3 = Seeding rate for slopes is equal to 20% of the rate for 100% slope.

Temporarily Seeding

Seeding Method	Pounds per acre	Pounds per 100 sq. ft.
Turfgrass	200	1.8
Grass	200	1.8

Fertilizer

Fertilizer	Permanent Seeding (pounds/acre)	Temporary Seeding (pounds/acre)
Nitrogen	15	30
Phosphorus	15	30
Potassium	15	30
Iron (Fe)	0.5	0.5

NOTE: Effective nutrient value per lb. of fertilizer.

- Construct berms or dikes to contain stored pesticides and fertilizers in case of spillage.
- Follow the recommended application rates and methods.
- Have equipment and absorbent materials available in storage and application areas to immediately contain and clean up any spills that occur.

Decontaminants - Phosphorous and nitrogen containing decontaminants are used in wash water for cleaning vehicles. Excesses of these nutrients can be a major source of water pollution. Use decontaminants only as recommended, and limit their use on the site. Do not dump wash water containing decontaminants into the storm drain system; divert it to a sanitary sewer or contain it so that it can be treated at a wastewater treatment plant.

1) HANDLING AND DISPOSAL OF HAZARDOUS MATERIALS

DO

- Prevent spills
- Use products up
- Follow label directions for disposal
- Remove lids from empty bottles and cans when disposing in trash
- Recycle wastes whenever possible

DONT

- Don't pour waste into sewers or waterways or on the ground
- Don't pour waste down the sink, floor drain or siphon
- Don't bury chemicals or containers, or dispose of them with construction debris
- Don't burn chemicals or containers
- Don't mix chemicals together
- Don't remove the original product label from the container

2) Containers shall be provided for collection of all waste material including construction debris, trash, petroleum products and any hazardous material to be used onsite. All waste material shall be disposed of at facilities approved for that material.

3) No waste materials shall be buried on-site.

4) Mixing, pumping, transferring or otherwise handling construction chemicals such as fertilizer, lime, asphalt, concrete drying compounds, and all other potentially hazardous materials shall be performed in an area away from any water course, ditch or storm drain.

5) Equipment fueling and maintenance, oil changing, etc., shall be performed only in an area designated for that purpose. The designated area is equipped for recycling and catching spills.

minimum depth of 18 inches. Depth shall be increased to a minimum of 22 inches if fence is placed on a slope of 3:1 or greater. When the post embedment depth is impossible to obtain, the posts shall be adequately secured to prevent movement of the fence due to sediment loading.

Each sil fence in a continuous fashion from a single roll of fabric to eliminate gaps in the fence. If a continuous roll of fabric is not available, overlap the fabric from both directions only at stakes or posts. Overlap at least 18 inches.

The geosynthetic filter fabric and wire mesh (when applicable) shall be no less than 30 inches above ground and are stapled or wired to the upslope side of the post. Staples should be a 17-gauge wire and 1/2 inch long. Excavate a trench to bury the bottom of the fabric fence in a "Z" configuration at least 6 inches below the ground surface. The trench shall be backfilled with native soil and the soil compacted over the geotextile. This helps to prevent gaps from forming near the ground surface. Gaps would make the filter useless as a sediment barrier.

The height of the fence posts should be 38 inches (22-inch embedment) to 42 inches (18-inch embedment) above the original ground surface. If standard-strength fabric is used with 14-gauge steel wire with a mesh spacing of 6 inches by 6 inches (or a prefabricated polymeric mesh of equivalent strength), space the posts no more than 4 feet apart. If extra-strength fabric is used without wire mesh reinforcement, space the posts no more than 4 feet apart with wire mesh as 6 feet apart with non-wire mesh geosynthetic.

Alternate Construction: Install fence by sliding it into ground with specialized equipment. Install posts at required spacing indicated on detail.

LIMITATIONS - Do not install sil fences along areas where rocks or other hard surfaces will prevent you from uniformly anchoring the fence posts and stretching the filter fabric. Installing fences in such an area greatly reduces their effectiveness and can create runoff channels leading offsite. Sil fences are not suitable for areas where large amounts of concentrated runoff are likely. Fence shall not be used when slope is 1:1 or greater and water flow rates exceed 2 cubic feet per minute. Open, windy areas present a maintenance challenge, too, because high winds can make the filter fabric determine areas. Do not install sil fences across streams, ditches, or waterways (Genent et al., 1996).

When the pores of the fence fabric become clogged with sediment, posts of water are likely to form on the uphill side of the fence. Setting and design of the sil fence should account for this. Take care to avoid unnecessary diverting stormwater from these posts, causing further erosion damage.

MAINTENANCE CONSIDERATIONS - Inspect sil fences regularly and frequently, as well as after each rainfall event, to make sure that they are intact and that there are no gaps where the fence meets the ground or along the length of the fence. If you find gaps or tears, repair or replace the fabric immediately. Remove accumulated sediment from the fence base when the sediment reaches one-third to one-half the fence height. Remove sediment more frequently if accumulated sediment is creating noticeable strain on the fabric and the fence might fail from a sudden storm event. When you remove the sil fence, remove the accumulated sediment, dress the area disturbed to give it a pleasing appearance and vegetate all bare areas as well.

O&M PROCEDURES

- Inspect every week and after every storm.
- Remove sediment buildup deeper than 1/2 the fence height or 12", whichever is less.
- Replace torn or clogged fabric; repair loose fabric.

TYPICAL DETAILS - Minimum seeding rates and acceptable dates for work attached.

INSTALLATION / CONSTRUCTION PROCEDURES

- Excavate diversion area except for area of upstream connection.
- Compact as required to place diversion properly.
- Install pipe bedding or channel lining as required.

SEEDING REQUIREMENTS

Perennial Seeding	Dates for Seeding											
	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Turfgrass	O	O	O	O	O	O	O	O	O	O	O	O
Grass	O	O	O	O	O	O	O	O	O	O	O	O
Grass (with straw)	A	A	O	O	O	P	P	O	O	P	P	A

Temporarily Seeding

Perennial Seeding	Dates for Seeding											
	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Turfgrass	A	A	O	O	O	O	O	O	O	O	O	A
Grass	A	A	O	O	O	O	O	O	O	O	O	A

O = Optimum seeding dates
 A = Acceptable seeding dates
 P = Permitted seeding dates with seeding 2 months later - likely, area 50% of seed and 70% of water forest with average 70% seed and average 70% water forest

6) Concrete wash water shall not be allowed to flow directly to storm sewers, streams, ditches, lakes, etc., without being treated. A sump or pit shall be constructed to contain concrete wash water. See additional requirements in the "Concrete Waste Management" section of this manual.

7) If substances such as oil, diesel fuel, hydraulic fluid, antifreeze, etc. are spilled, leaked, or released onto a soil, the soil shall immediately be dug up and disposed of at a licensed sanitary landfill (not a construction / demolition debris landfill). Spills on pavement shall be immediately washed with sand, kitty litter or product designed for that purpose and disposed of at a licensed sanitary landfill. Hazardous or industrial wastes such as most solvents, gasoline, oil-based paints, and cement curing compounds require special handling. These materials will be removed from the site and recycled or disposed of in accordance with MDRR requirements.

8) State law requires the party responsible for a petroleum product spill in excess of 50 gallons to report the spill to Missouri Department of Natural Resources (MDNR) at (537) 634-2436, as soon as practical after discovery. Federal law requires the responsible party to report any release of oil if it reaches or threatens a stream, lake, creek, stream, river, groundwater, wetland, or area, the a road ditch, that drains into one of the above.

9) The contractor / permittee should ensure adequate training is provided to the site superintendent and all field personnel, etc. on the proper protocol for reporting and cleaning up spills.

10) Manufacturer's recommended method for spill cleanup should be clearly posted and the site personnel should be made aware of the procedures and the location of the information and clean up supplies.

11) Material and equipment necessary for spill cleanup should be kept in the material storage area on site.

12) Minimize the material inventory stored on-site (e.g., only a few days' supply).

13) Do not store hazardous chemicals, drums, or bagged / banded materials directly on the ground. Place these items on a pallet and under cover in a locked container.

14) Storage areas shall be kept clean and well organized.

CONSTRUCTION ENTRANCE

PHYSICAL DESCRIPTION - A stabilized pathway providing vehicular access to a remote construction area designed to reduce rutting, loading of road in wet weather, and creation of dust in dry weather. The "roadway" can be constructed of aggregate over fabric, asphalt concrete or Portland cement concrete based on the longevity of the project, required performance, and site conditions. Roadways should follow the natural terrain to the extent possible.

WHERE BMP IS TO BE INSTALLED - On long travel paths on unpaved areas, adjacent to bodies of water, and in areas where poor soil is encountered.

CONDITIONS FOR EFFECTIVE USE OF BMPs

Drainage: Road ditches or pipes, if needed, sized for 15 year, 20 minute storm; HGL 6" below surface of entrance

WHEN BMP IS TO BE INSTALLED - First order of work, along with washdown area, prior to vehicles or equipment accessing work areas.

INSTALLATION / CONSTRUCTION PROCEDURES

- Grade and compact area of construction entrance.
- Install culvert under entrance if needed to maintain positive drainage.
- Place geosynthetic material next to compacted soil, lay geotext on top of this, and cover with aggregate, forming diversion across entrance if needed to direct runoff away from roadway.
- See Washdown Station BMP for additional steps.

O&M PROCEDURES:

- Immediately remove any mud or debris tracked onto paved surfaces.
- Remove sediment and clods of dirt from construction entrance continuously.
- Replace rock if necessary to maintain clean surface.
- Repair settled areas.

SITE CONDITIONS FOR REMOVAL - Remove when vehicles and equipment will no longer access unpaved areas.

TYPICAL DETAIL - 806-46-01

PHYSICAL DESCRIPTION - A 1/2 inch to 1-inch thick mat of vigorous turf, free of disease, insects and weeds. Soil prevents ruts from disrupting the soil structure and causing erosion. Soil slows water runoff and acts as a filter when sediment laden runoff crosses over the sodded area.

WHERE BMP IS TO BE INSTALLED - Typically installed in areas requiring immediate erosion protection, such as swales or diversion points and as filter strips, around inlets, and adjacent to curbs. Also installed in areas requiring immediate aesthetic appearance or function such as entrances to new subdivision and off site construction areas.

CONDITIONS FOR EFFECTIVE USE OF BMPs - Type of Flow: Sheet flow and low concentrated flows with velocities less than 5 ft/s.

WHEN BMP IS TO BE INSTALLED - Immediately after finish grading, installation of area inlets, and installation of underground services and foundations of new homes.

INSTALLATION / CONSTRUCTION PROCEDURES

- Finish grade area and remove all debris larger than 1/2 inch in diameter and concentrated areas of smaller debris.
- Soil preparation of area to be sodded shall be determined by tests to determine lime and fertilizer requirements. Soil amendments shall be mixed into top 3 to 6 inches of soil by disk or other means.
- Level and roll soil lightly to provide an even grade and firm the surface. Soil should not be excessively wet or dry.
- Lay first row of sod perpendicular to the slope or direction of flow. But subsequent rows tight against previous rows with slight staggering in brick-like pattern. Fill minor gaps with good soil and roll entire surface to ensure contact.
- Stake, staple and / or net corners and centers of sod strips as required.
- Water immediately after installation enough to soak 4 inches into soil without causing runoff.
- For additional information see Section 805 of St. Louis County's Standard Specification for Road and Bridge Construction.
- Type of sod shall be as specified in the contract or on the approved plans.

O&M PROCEDURES:

- Water sod daily for 3 weeks - enough to soak 4 inches into soil without causing runoff.
- Reposition areas of sod that has moved along the slope.
- Remove sediment accumulations - remove soil if necessary.
- Repair any eroded areas, replace sod, and stabilize as needed.
- Do not mow until 3-inches of new growth occur. During the first 4 months, mow no more than 1/2 the grass height.

PHYSICAL DESCRIPTION - A small dam built within a drainage swale or temporary diversion channel designed to pond water and cause sediment to settle out. Dams can be constructed of rock, sand bags, fiber rolls / wattles, triangular dikes, or gravel bags. Sil fences shall not be used to construct check dams.

WHERE BMP IS TO BE INSTALLED - At intervals along drainage swales or channels. The top of the downstream check dam should be level with the base of the upstream check dam.

CONDITIONS FOR EFFECTIVE USE OF BMPs

Type of Flow: Moderate concentrated flow
 Contributing Area: Maximum of 2 acres
 Channel Slope: Maximum of 2%

WHEN BMP IS TO BE INSTALLED - Prior to disturbance of natural vegetation in contributing drainage area, immediately after construction of drainage way.

For additional information see Section 806.30 of St. Louis County's Standard Specification for Road and Bridge Construction.

INSTALLATION / CONSTRUCTION PROCEDURES

- Grade drainage way and compact area of check dam.
- Place rock, sand bags, fiber rolls / wattles or gravel bags to required configuration perpendicular to flow.

O&M PROCEDURES

- Inspect every week and after every storm.
- Remove trash and leaf accumulation.
- Remove sediment buildup once it reaches 1/2 depth of check dam or 12" depth, whichever is less.
- Restore dam structure to original configuration to protect banks.
- Replace rock on upstream face of dam if ponding does not drain in reasonable timeframe.

SITE CONDITIONS FOR REMOVAL - Remove after contributing drainage areas have been adequately stabilized and vegetation is adequately established in drainage way. Re-grade and vegetate area of check dam.

TYPICAL DETAIL - 806-35-00

PHYSICAL DESCRIPTION - A stabilized pathway providing vehicular access to a remote construction area designed to reduce rutting, loading of road in wet weather, and creation of dust in dry weather. The "roadway" can be constructed of aggregate over fabric, asphalt concrete or Portland cement concrete based on the longevity of the project, required performance, and site conditions. Roadways should follow the natural terrain to the extent possible.

WHERE BMP IS TO BE INSTALLED - On long travel paths on unpaved areas, adjacent to bodies of water, and in areas where poor soil is encountered.

CONDITIONS FOR EFFECTIVE USE OF BMPs

Drainage: Road ditches or pipes, if needed, sized for 15 year, 20 minute storm; HGL 6" below surface of entrance

WHEN BMP IS TO BE INSTALLED - First order of work, along with washdown area, prior to vehicles or equipment accessing work areas.

INSTALLATION / CONSTRUCTION PROCEDURES

- Grade and compact area of construction entrance.
- Install culvert under entrance if needed to maintain positive drainage.
- Place geosynthetic material next to compacted soil, lay geotext on top of this, and cover with aggregate, forming diversion across entrance if needed to direct runoff away from roadway.
- See Washdown Station BMP for additional steps.

O&M PROCEDURES:

- Immediately remove any mud or debris tracked onto paved surfaces.
- Remove sediment and clods of dirt from construction entrance continuously.
- Replace rock if necessary to maintain clean surface.
- Repair settled areas.

SITE CONDITIONS FOR REMOVAL - Remove when vehicles and equipment will no longer access unpaved areas.

TYPICAL DETAIL - 806-46-01

PHYSICAL DESCRIPTION - A stabilized pathway providing vehicular access to a remote construction area designed to reduce rutting, loading of road in wet weather, and creation of dust in dry weather. The "roadway" can be constructed of aggregate over fabric, asphalt concrete or Portland cement concrete based on the longevity of the project, required performance, and site conditions. Roadways should follow the natural terrain to the extent possible.

WHERE BMP IS TO BE INSTALLED - On long travel paths on unpaved areas, adjacent to bodies of water, and in areas where poor soil is encountered.

CONDITIONS FOR EFFECTIVE USE OF BMPs

Drainage: Road ditches or pipes, if needed, sized for 15 year, 20 minute storm; HGL 6" below surface of entrance

WHEN BMP IS TO BE INSTALLED - First order of work, along with washdown area, prior to vehicles or equipment accessing work areas.

INSTALLATION / CONSTRUCTION PROCEDURES

- Grade and compact area of construction entrance.
- Install culvert under entrance if needed to maintain positive drainage.
- Place geosynthetic material next to compacted soil, lay geotext on top of this, and cover with aggregate, forming diversion across entrance if needed to direct runoff away from roadway.
- See Washdown Station BMP for additional steps.

O&M PROCEDURES:

- Immediately remove any mud or debris tracked onto paved surfaces.
- Remove sediment and clods of dirt from construction entrance continuously.
- Replace rock if necessary to maintain clean surface.
- Repair settled areas.

SITE CONDITIONS FOR REMOVAL - Remove when vehicles and equipment will no longer access unpaved areas.

TYPICAL DETAIL - 806-46-01

PHYSICAL DESCRIPTION - A stabilized pathway providing vehicular access to a remote construction area designed to reduce rutting, loading of road in wet weather, and creation of dust in dry weather. The "roadway" can be constructed of aggregate over fabric, asphalt concrete or Portland cement concrete based on the longevity of the project, required performance, and site conditions. Roadways should follow the natural terrain to the extent possible.

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CONDITIONS FOR EFFECTIVE USE OF BMPs

Drainage: Road ditches or pipes, if needed, sized for 15 year, 20 minute storm; HGL 6" below surface of entrance

WHEN BMP IS TO BE INSTALLED - First order of work, along with washdown area, prior to vehicles or equipment accessing work areas.

INSTALLATION / CONSTRUCTION PROCEDURES

- Grade and compact area of construction entrance.
- Install culvert under entrance if needed to maintain positive drainage.
- Place and compact roadway materials.
- Vegetate road ditches.

O&M PROCEDURES

- Remove sediment and clods of dirt from road daily.
- Remove sediment from road ditches.
- Repair settled areas.
- Replace rock if necessary to maintain clean surface.
- Remove sediment from road ditches once it is within 6" of top of road surface.

SITE CONDITIONS FOR REMOVAL - Remove when vehicles and equipment will no longer access remote areas, re-grade area and vegetate.

TYPICAL DETAIL - 806-46-02

PHYSICAL DESCRIPTION - A stabilized pathway providing vehicular access to a remote construction area designed to reduce rutting, loading of road in wet weather, and creation of dust in dry weather. The "roadway" can be constructed of aggregate over fabric, asphalt concrete or Portland cement concrete based on the longevity of the project, required performance, and site conditions. Roadways should follow the natural terrain to the extent possible.

WHERE BMP IS TO BE INSTALLED - On long travel paths on unpaved areas, adjacent to bodies of water, and in areas where poor soil is encountered.

CONDITIONS FOR EFFECTIVE USE OF BMPs

Drainage: Road ditches or pipes, if needed, sized for 15 year, 20 minute storm; HGL 6" below surface of entrance

WHEN BMP IS TO BE INSTALLED - First order of work, along with washdown area, prior to vehicles or equipment accessing work areas.

INSTALLATION / CONSTRUCTION PROCEDURES

- Grade and compact area of construction entrance.
- Install culvert under entrance if needed to maintain positive drainage.
- Place and compact roadway materials.
- Vegetate road ditches.

O&M PROCEDURES

- Remove sediment and clods of dirt from road daily.
- Remove sediment from road ditches.
- Repair settled areas.
- Replace rock if necessary to maintain clean surface.
- Remove sediment from road ditches once it is within 6" of top of road surface.

SITE CONDITIONS FOR REMOVAL - Remove when vehicles and equipment will no longer access remote areas, re-grade area and vegetate.

TYPICAL DETAIL - 806-46-02

PHYSICAL DESCRIPTION - A stabilized pathway providing vehicular access to a remote construction area designed to reduce rutting, loading of road in wet weather, and creation of dust in dry weather. The "roadway" can be constructed of aggregate over fabric, asphalt concrete or Portland cement concrete based on the longevity of the project, required performance, and site conditions. Roadways should follow the natural terrain to the extent possible.

WHERE BMP IS TO BE INSTALLED - On long travel paths on unpaved areas, adjacent to bodies of water, and in areas where poor soil is encountered.

CONDITIONS FOR EFFECTIVE USE OF BMPs

Drainage: Road ditches or pipes, if needed, sized for 15 year, 20 minute storm; HGL 6" below surface of entrance

WHEN BMP IS TO BE INSTALLED - First order of work, along with washdown area, prior to vehicles or equipment accessing work areas.

INSTALLATION / CONSTRUCTION PROCEDURES

- Grade and compact area of construction entrance.
- Install culvert under entrance if needed to maintain positive drainage.
- Place and compact roadway materials.
- Vegetate road ditches.

O&M PROCEDURES

- Remove sediment and clods of dirt from road daily.
- Remove sediment from road ditches.
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- Replace rock if necessary to maintain clean surface.
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- Grade and compact area of construction entrance.
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- Remove sediment and clods of dirt from road daily.
- Remove sediment from road ditches.
- Repair settled areas.
- Replace rock if necessary to maintain clean surface.
- Remove sediment from road ditches once it is within 6" of top of road surface.

SITE CONDITIONS FOR REMOVAL - Remove when vehicles and equipment will no longer access remote areas, re-grade area and vegetate.

TYPICAL DETAIL - 806-46-02

LAND PLANNING
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 LANDSCAPE ARCHITECTURE

5000 GRIFFIN ROAD
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tensaptec

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WASHDOWN STATION

FUNCTIONAL DESCRIPTION - An area located at construction entrances designed to wash sediment from the tires and undercarriage of exiting vehicles and prevent sediment from being tracked onto existing roadways.

WHERE BMP IS TO BE INSTALLED - Areas or immediately adjacent to exit paths from unpaved construction sites.

CONDITIONS FOR EFFECTIVE USE OF BMPs

Drainage: Downstream BMPs sized to treat dirty runoff from washdown station.

WHEN BMP IS TO BE INSTALLED - First order of work, along with construction entrance, prior to vehicles or equipment accessing unpaved areas.

INSTALLATION/CONSTRUCTION PROCEDURES

- Grade and compact area for drainage under washdown pad.
- Install steel-plated plate on frame or other support to allow a 2" drain space.
- Grade and vegetate downstream BMPs (V-ditch shown on detail).
- Install water supply and hose.
- Post sign in advance of station indicating that all exiting vehicles and equipment must use station prior to exiting site.

DAM PROCEDURES:

- Remove sediment daily.
- Repair soiled areas.
- Replace rock if necessary to maintain clean surface.

SITE CONDITIONS FOR REMOVAL - Remove when vehicles and equipment will no longer access unpaved areas.

TYPICAL DETAIL - 806-46.00

VEHICLE MAINTENANCE AND WASHING AREAS

DESCRIPTION - Ideally, vehicle maintenance and washing occurs in garages and wash facilities, not on active construction sites. However, if these activities must occur onsite, operators should follow appropriate BMPs to prevent untreated runoff-encrusted wastewater or hazardous wastes from being discharged to surface or ground waters. Vehicle maintenance and washing BMPs prevent construction site spills of wash water, fuel, or coolant from contaminating surface or ground water. They apply to all construction sites.

APPROPRIATE APPLICATION OF BMP - Inspect construction vehicles daily, and repair any leaks immediately. Dispose of oil, fuel, antifreeze, and other automotive-related chemicals according to manufacturer instructions. These wastes require special handling and disposal. Used oil, antifreeze, and some solvents can be recycled at designated facilities, but other chemicals must be disposed of at a hazardous waste disposal site. Local government agencies can help identify such facilities.

Designate special paved areas for vehicle repair. To direct wash water to sanitary sewer systems or other treatment facilities, ensure that vehicle washing areas are impervious and are bermed. Use blowers or vacuums instead of water to remove dry materials from vehicles if possible. Because water alone can remove most dirt adequately, use high-pressure water spray without detergents at vehicle washing areas. If you must use detergents, avoid phosphate or organo-phosphate based cleaners to reduce nutrient enrichment and biological oxygen demand in stormwater. Use only biodegradable products that are free of halogenated solvents. Clearly mark all washing areas, and inform workers that all washing must occur in this area.

O&M PROCEDURES - Vehicle maintenance operations produce substantial amounts of hazardous and other wastes that require regular disposal. Clean up spills and dispose of cleanup materials immediately. Inspect equipment and storage containers regularly to identify leaks or signs of deterioration. Maintenance of vehicle wash areas is minimal, usually involving repairs to berms and drainage to the sanitary sewer system.

TYPICAL DETAILS - Not applicable.

CONCRETE WASTE MANAGEMENT

DESCRIPTION - The purpose of this specification is to set forth procedures and practices designed to eliminate the discharge of concrete waste materials to storm drainage systems, drainage areas, streets or watercourses, which shall be required of the contractor.

APPROPRIATE APPLICATION OF BMP - Concrete waste management procedures and practices will be implemented on construction projects as follows:

- Where concrete is used as a construction material or where concrete dust and debris result from demolition activities.
- Where slabs containing Portland cement concrete (PCC), asphaltic concrete (AC) or bituminous concrete (BC) are generated, such as from saw cutting, coring, grinding, grooving and hydro-concrete demolition.
- Where concrete trucks and other concrete-coated equipment are washed on-site, when approved by the Resident Engineer or Construction Inspector.
- Where mortar-mixing station exist.

AWARENESS / ENFORCEMENT

- Contractor's and / or permit holder's superintendent or representative shall oversee and enforce concrete waste management procedures.
- Discuss the concrete management techniques described in this BMP (such as handling of concrete waste and washout) with the ready-mix concrete supplier before any deliveries are made.
- The site superintendent shall make drivers aware of the presence of the concrete waste management facilities. The site superintendent should post signage indicating the location and designated use of the concrete waste management areas, and provide careful oversight to inspect for evidence of improper dumping of concrete waste and wash water.

IMPLEMENTATION

- Contractors, private individuals, public agencies, etc. using concrete material, shall incorporate requirements for concrete waste management into material supplier and subcontractor agreements. Include requirements in contracts with concrete delivery companies that drivers must use designated concrete washout facilities.
- Store dry and wet materials under cover, away from drainage areas.
- Avoid mixing excess amounts of fresh concrete.
- Do not allow excess concrete to be dumped on site, except in designated areas.
- Cover the structures before predicted rainstorms to prevent overflows.
- Monitor on site concrete waste storage and disposal procedures at least weekly or as directed by the Resident Engineer or Construction Inspector.

- In St. Louis County, the contractor is required by Missouri State Law (10 CSR 10-0.170) and County Ordinance (612.340) to control fugitive dust blown from the construction site. Signage, dust control, including saw-cut material etc., on the construction site shall be maintained for safety purposes and to prevent nuisances. The contractor / permittee shall apply reasonable measures to control dust and particulate matter (of any size or source) due to roadway / construction traffic, grading, clearing and grubbing, building demolition, saw-cutting etc. from migrating off the site of origin. Operations involve from grinding, saw-cutting etc. should be picked up (dusted-up) by means of a vacuum device or swept up. Compressed or blown air may be used to clean negligible residual dust that the vacuum or sweeping did not clean up, as long as the above dust control procedures (and law and ordinance) are met. Saw cutting residue, slurry or dry, should not be allowed to enter storm drains or watercourses. Saw cutting residue should not be allowed to flow across the pavement and should not be left on the surface of the pavement when traffic is present, when precipitation is anticipated before cleanup or overnight. In approved locations, saw-cut slurry may flow into the dirt (where it can soak into the ground) adjacent to the saw-cutting operation and be buried, on site, if minimum below finished grade. Other dust control and clean-up procedures may be acceptable as approved by the Engineer or St. Louis County. See additional Concrete Waste Management requirements in this Manual.

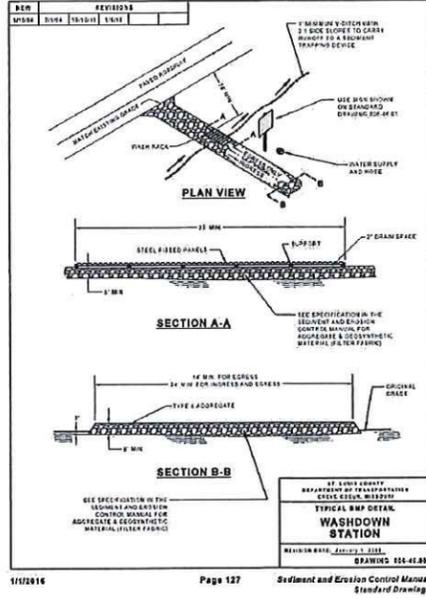
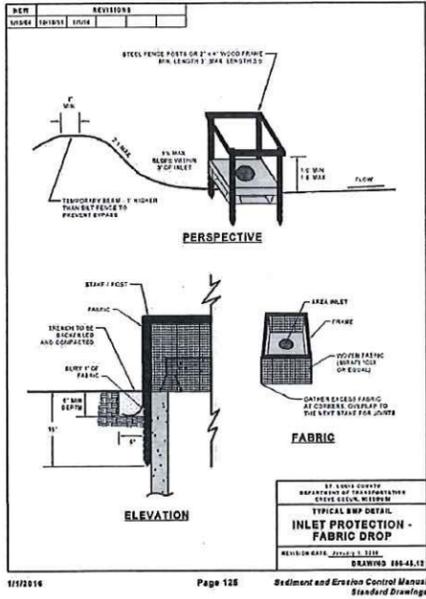
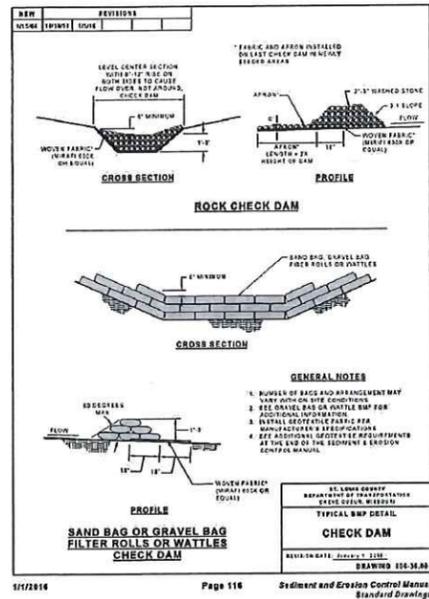
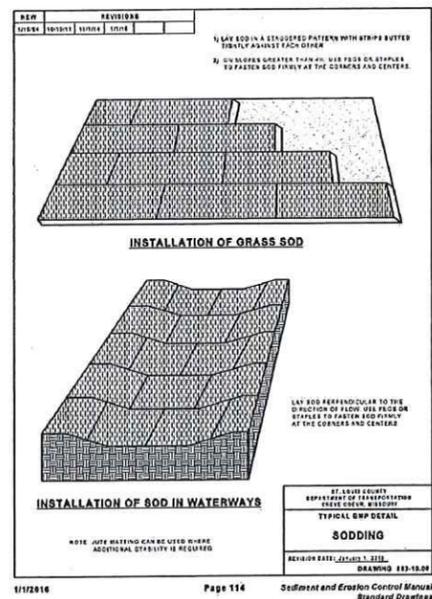
WASHOUT AREA PROTOCOL

- Contain concrete washout on site or take it offsite for disposal in designated areas only.
- Do not wash out concrete trucks into storm drains, open ditches, streets, or streams.
- For onsite washout:

- Locate washout area on site at least 50 feet from storm drains, open ditches, or water bodies. Do not allow runoff from this area by constructing a temporary pit or bermed area large enough to contain liquid and solid waste. Locate it in a dirt area where the liquid portion of the washout can soak into the ground. They are preferably built below-grade to prevent brooding and reduce the likelihood of runoff. Discourage use of the washout once it reaches 75% capacity. Washouts should be sized to handle solids and wash water to prevent overflow. It is estimated that 7 gallons of wash water are used to wash one truck chute and 50 gallons are used to wash out the hopper of a concrete pump. Implement a maintenance schedule for washout areas.

- Temporary washout facilities should have pit or bermed areas of sufficient volume to completely contain all liquid and waste concrete materials generated during washout procedures.
- Wash out wastes into the pit where the concrete can set, be broken up, and used on site, or buried on site or disposed of properly.

- Do not mix sweepings from exposed aggregate concrete into the street or storm drain. Collected and return sweepings to aggregate base stockpile or dispose of in the trash.
- Do not place concrete wash water in a pit that is connected to the storm drain system or that drains to nearby waterways.



- Locate concrete washout facilities in an area that allows convenient access for concrete trucks, preferably near the area where the concrete is being poured. Appropriate gravel or rock should cover paths to concrete washout facilities if the facilities are located on undeveloped property. These areas should be far enough away from other construction traffic to reduce the likelihood of accidental damage and spills. The number of facilities you install should depend on the expected demand for storage capacity. On large sites with extensive concrete work, place washouts in multiple locations for ease of use. If the dirt concrete washout is located on the site it shall have a 2-foot cover minimum. The 2-foot cover shall match with surrounding finished grade.

Concrete washed out in areas other than those designated for such activity, shall be cleaned up by the contractor.

Install signage adjacent to each washout facility to inform concrete equipment operators to utilize the proper facilities.

Perform washout of concrete mixers, delivery trucks and other delivery systems in designated areas only.

Wash out concrete from concrete pump bins into concrete pump trucks and discharge into designated washout area.

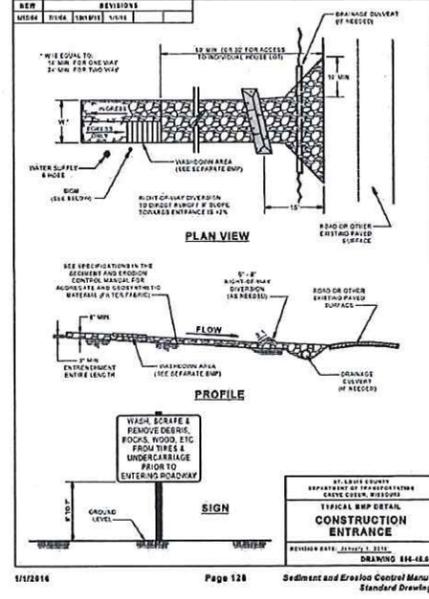
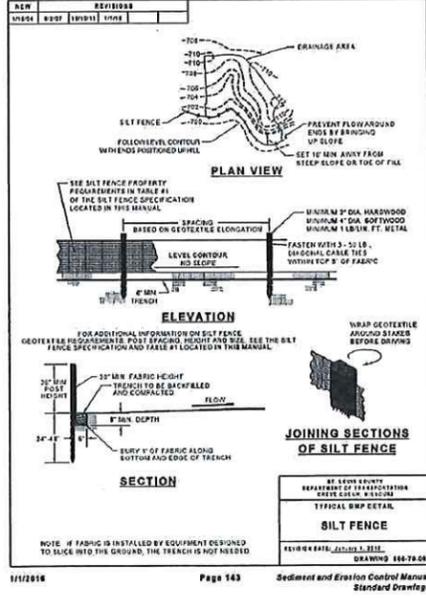
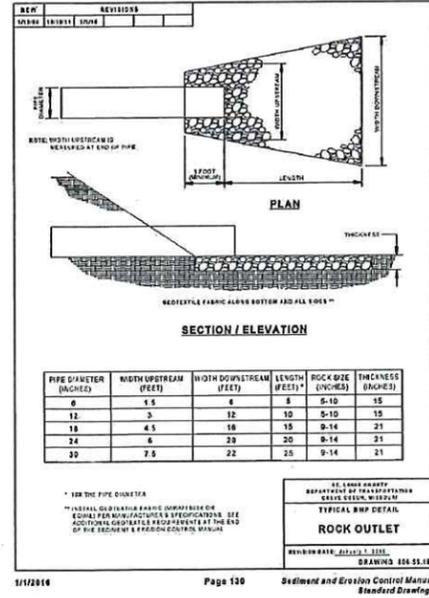
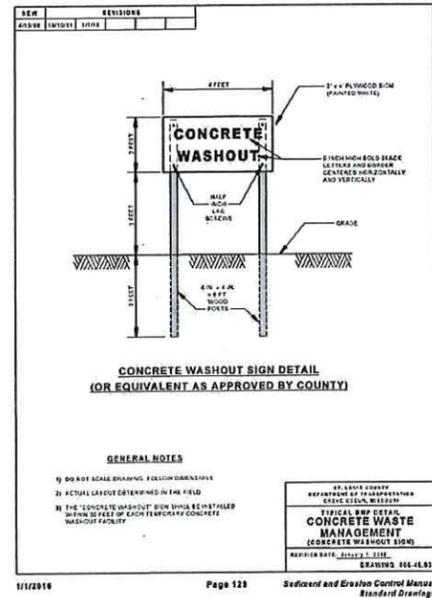
Equipment that cannot be easily moved, such as concrete pavers, shall only be washed in designated areas that do not drain to waterways or storm drain systems.

Backfill and repair holes, depressions or other ground disturbance caused by the removal of the temporary concrete washout facilities.

Wash out concrete on site into a future designated final concrete pour location. This location cannot be within 50 feet of a storm or sanitary sewer, or water course, or where it can drain off site. The washout cannot jeopardize the integrity of the final concrete pour. Concrete to be removed from the site shall be disposed of in conformance with the provisions in Standard Specification Manual, Section 207, as directed by the Engineer. No additional payment will be made for complying with the above specification.

A self-contained and watertight container may be used to control, capture, and contain concrete wastewater and washout material. The container must be portable and temporary, damage resistant, protect against spills and leaks, and sized to handle solids and wash water to prevent overflow. The container should be emptied and cleaned when 75% of its capacity is reached. After all liquids evaporate or are pumped or vacuumed, and the remaining slurry solidified, the Contractor may bury the solids on site. On County roadway projects, the solids may be buried on site if approved by the Engineer. In other cases, solids shall be buried a minimum of 2 feet below finished grade. Disposal of container contents that are removed from the site shall be made at an approved landfill. In order to prevent overflows caused by natural occurrences and to provide security for safety purposes and against acts of vandalism, the container shall be covered at the end of each workday and remain covered until the beginning of the next workday. The cover shall remain on site with the container at all times. Container shall be free of liquids during any on-site relocation process or transport to another site. On County roadway projects, location(s) for the container shall be approved by the Engineer.

TYPICAL DETAIL - 806-46.03



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Old State Road & Ridge Rd Walkway
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Wildwood, MO 63040
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SHEET TITLE
SWPP Details

JOB NUMBER
15019

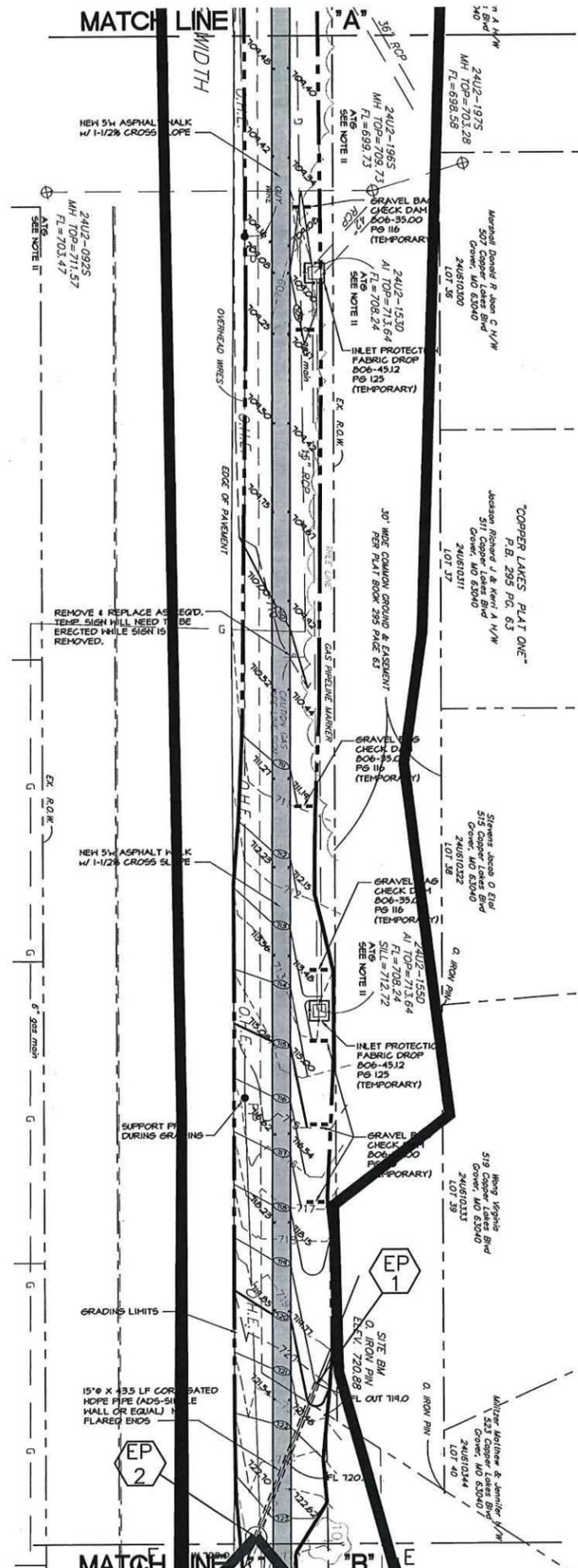
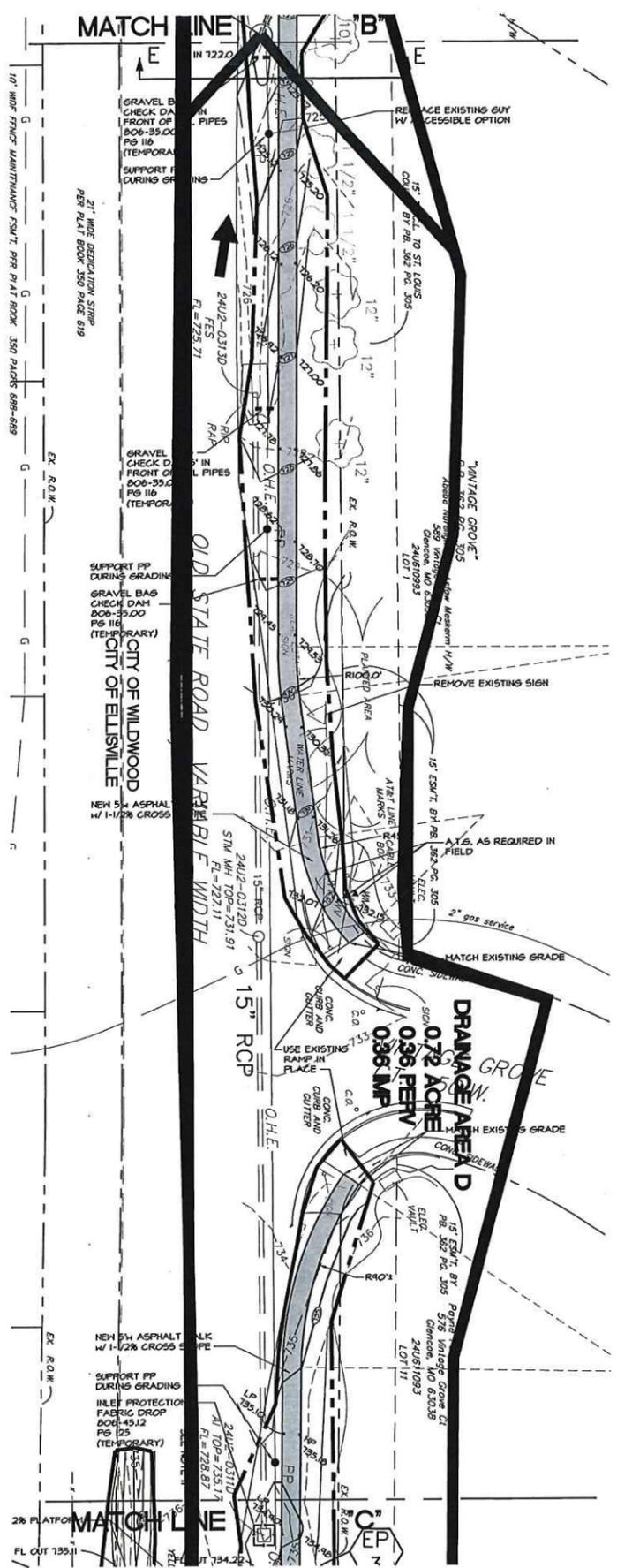
DATE DRAWN BY
07/26/16 DWD

REVISION
09/10/16 rev. per SLCT/MSD
10/03/16 rev. per SLCT/MSD

SHEET NUMBER
C8



MARK A. DOERING
CIVIL ENGINEER E-23059
MO. EXPIRATION DATE:
DECEMBER 31 2016
IL. EXPIRATION DATE:
APRIL 30 2017
MO. CORPORATE
LICENSE NO. 001347
IL. CORPORATE
LICENSE NO. 184.003035

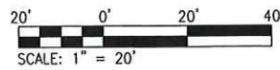
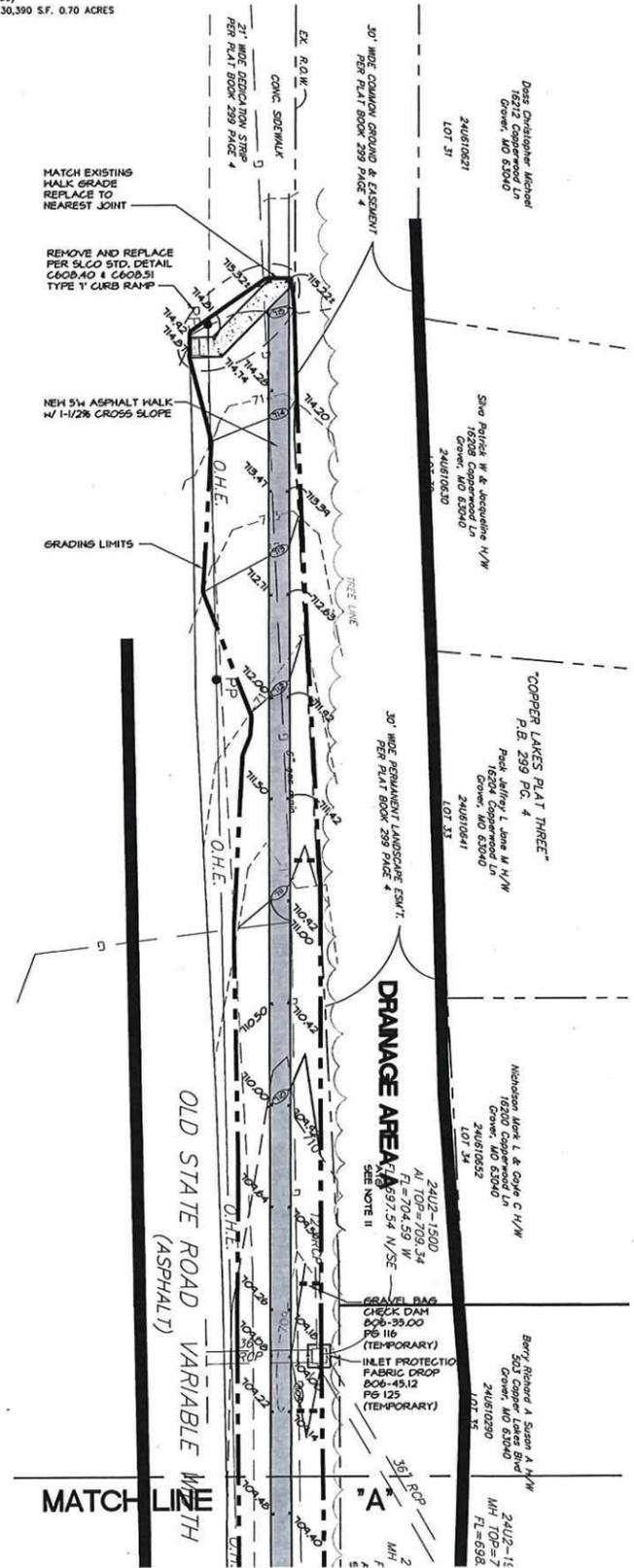


NOTE:
1. FOR DRAINAGE AREA ONLY THIS SHEET NOT TO BE USED FOR CONSTRUCTION.

ALL SEWER REACHES TO BE CONSTRUCTED FROM DOWNSTREAM END FIRST.

ANY FUTURE LAND DISTURBANCE AND/OR INCREASE IN IMPERVIOUS AREA ON THIS SITE MAY REQUIRE ADDITIONAL STORM WATER MANAGEMENT PER US REGULATIONS IN PLACE AT THAT TIME (INCLUDING TOTAL LAND DISTURBANCE AND/OR IMPERVIOUSNESS ADDED ON THIS PLAN, P-XXXXX-00)
TOTAL DISTURBED AREA 30,390 S.F. 0.70 ACRES

LEGEND



SLC HT #3266 -- MSD P-30949-00 -- BASE MAP-24U2



MARK A. DOERING
CIVIL ENGINEER E-23059
NO. EXPIRATION DATE:
DECEMBER 31 2016
I.L. EXPIRATION DATE:
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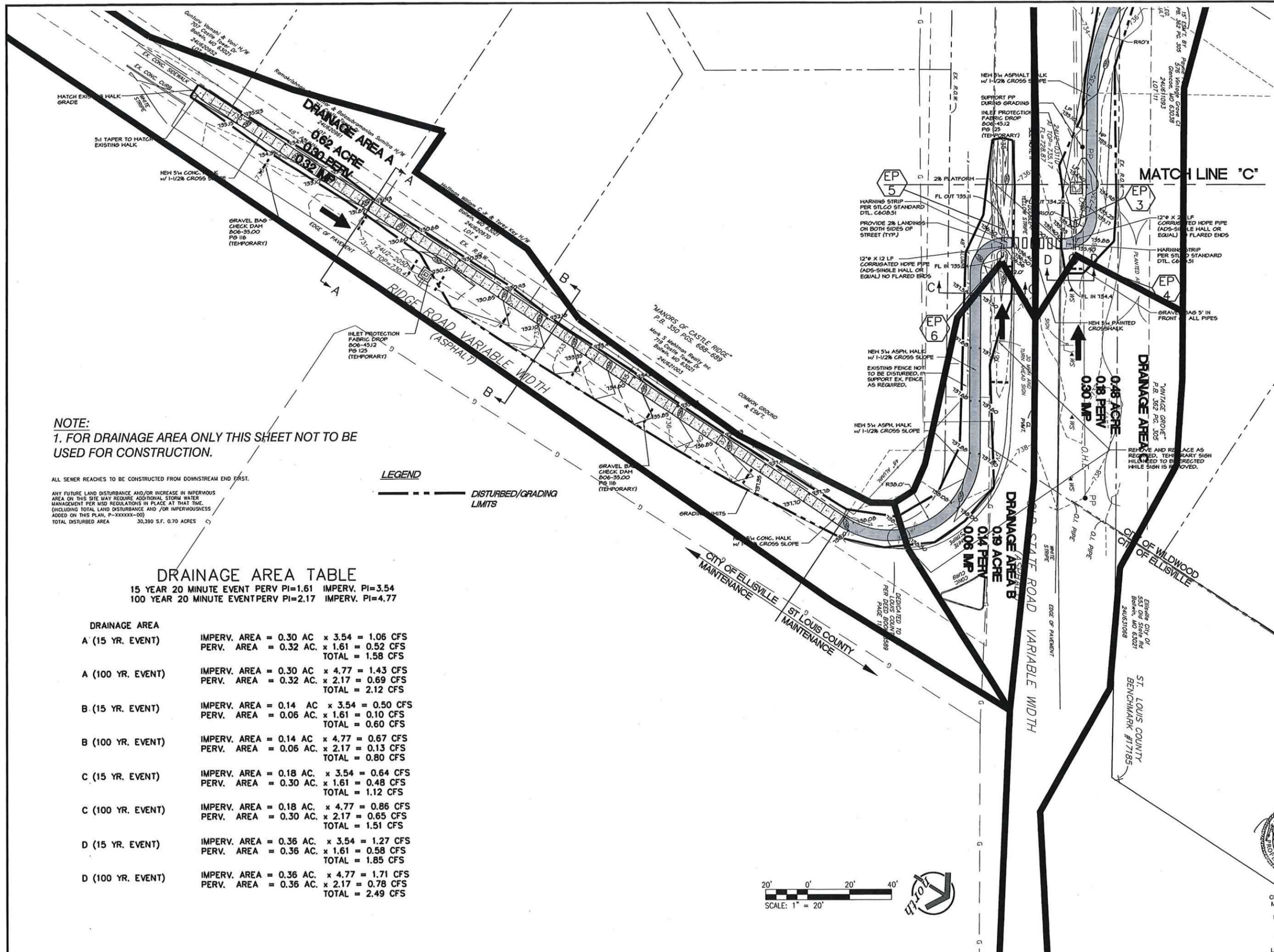
SHEET TITLE
Drainage Area Map

JOB NUMBER
15019

DATE DRAWN BY
07/26/16 DWD

REVISION
09/10/16 rev. per SLC/MSD
10/03/16 rev. per SLC/MSD

SHEET NUMBER
C9



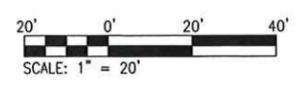
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LEGEND
 - - - - - DISTURBED/GRADING LIMITS

DRAINAGE AREA TABLE
 15 YEAR 20 MINUTE EVENT PERV PI=1.61 IMPERV. PI=3.54
 100 YEAR 20 MINUTE EVENT PERV PI=2.17 IMPERV. PI=4.77

DRAINAGE AREA	IMPERV. AREA	PERV. AREA	IMP. CFS	PERV. CFS	TOTAL CFS
A (15 YR. EVENT)	0.30 AC	0.32 AC	1.06 CFS	0.52 CFS	1.58 CFS
A (100 YR. EVENT)	0.30 AC	0.32 AC	1.43 CFS	0.69 CFS	2.12 CFS
B (15 YR. EVENT)	0.14 AC	0.06 AC	0.50 CFS	0.10 CFS	0.60 CFS
B (100 YR. EVENT)	0.14 AC	0.06 AC	0.67 CFS	0.13 CFS	0.80 CFS
C (15 YR. EVENT)	0.18 AC	0.30 AC	0.64 CFS	0.48 CFS	1.12 CFS
C (100 YR. EVENT)	0.18 AC	0.30 AC	0.86 CFS	0.65 CFS	1.51 CFS
D (15 YR. EVENT)	0.36 AC	0.36 AC	1.27 CFS	0.58 CFS	1.85 CFS
D (100 YR. EVENT)	0.36 AC	0.36 AC	1.71 CFS	0.78 CFS	2.49 CFS



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SHEET TITLE
Drainage Area Map

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15019

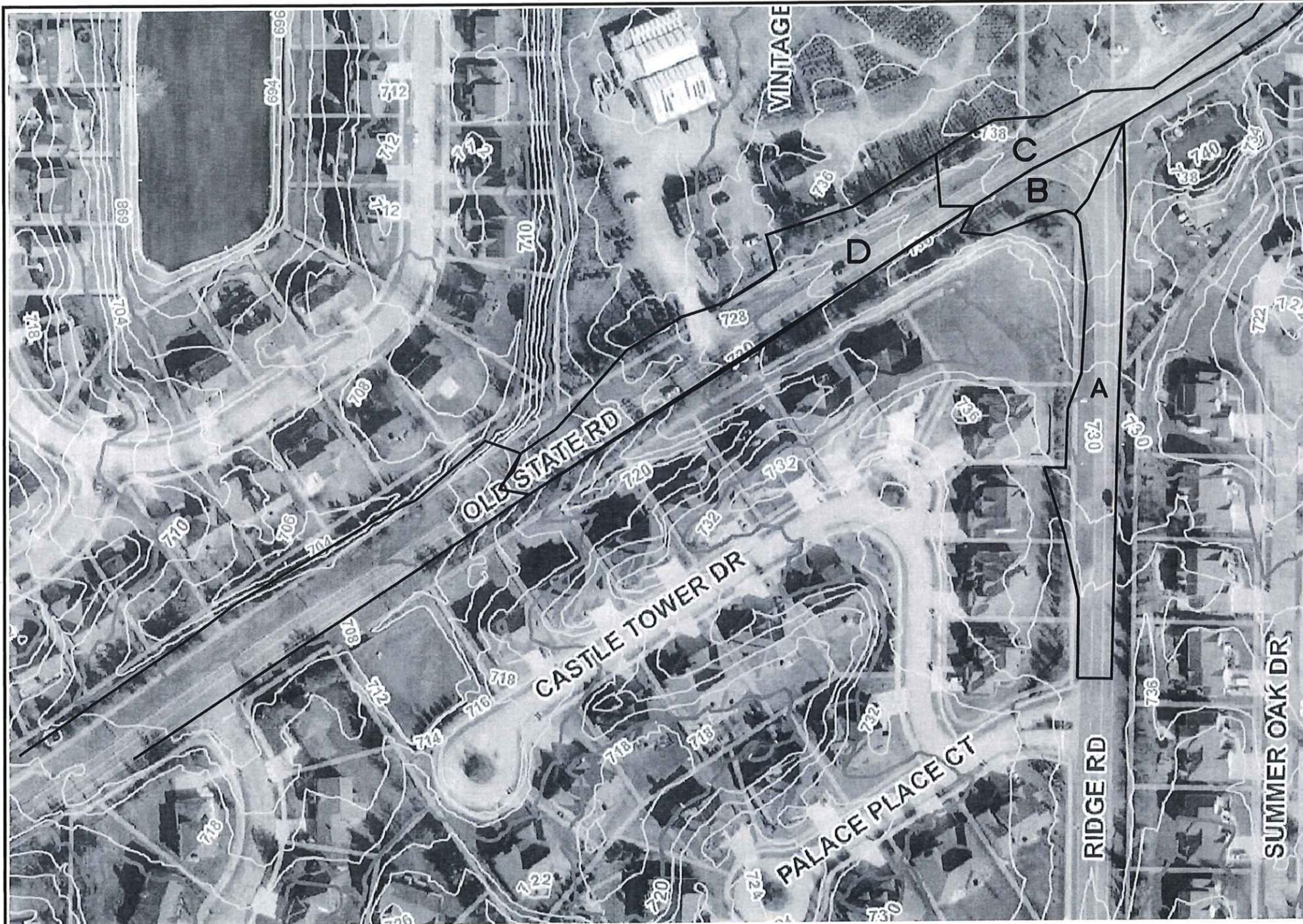
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REVISION
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SHEET NUMBER
C10



MARK A. DOERING
 CIVIL ENGINEER E-23059
 MO. EXPIRATION DATE:
 DECEMBER 31 2016
 IL. EXPIRATION DATE:
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B (15 YR. EVENT)	0.06 AC	0.14 AC	0.10 CFS	0.50 CFS	0.60 CFS
B (100 YR. EVENT)	0.06 AC	0.14 AC	0.13 CFS	0.67 CFS	0.80 CFS
C (15 YR. EVENT)	0.30 AC	0.18 AC	0.48 CFS	0.64 CFS	1.12 CFS
C (100 YR. EVENT)	0.30 AC	0.18 AC	0.65 CFS	0.86 CFS	1.51 CFS
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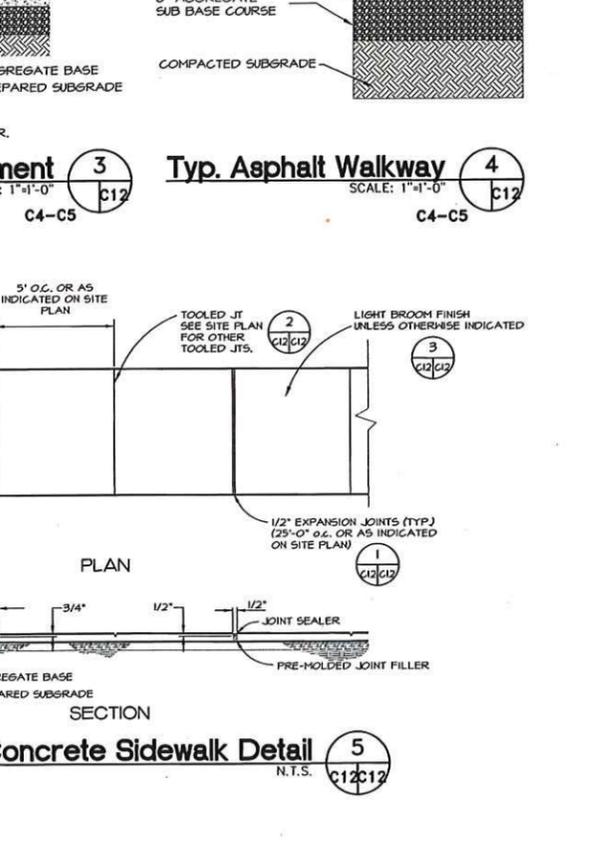
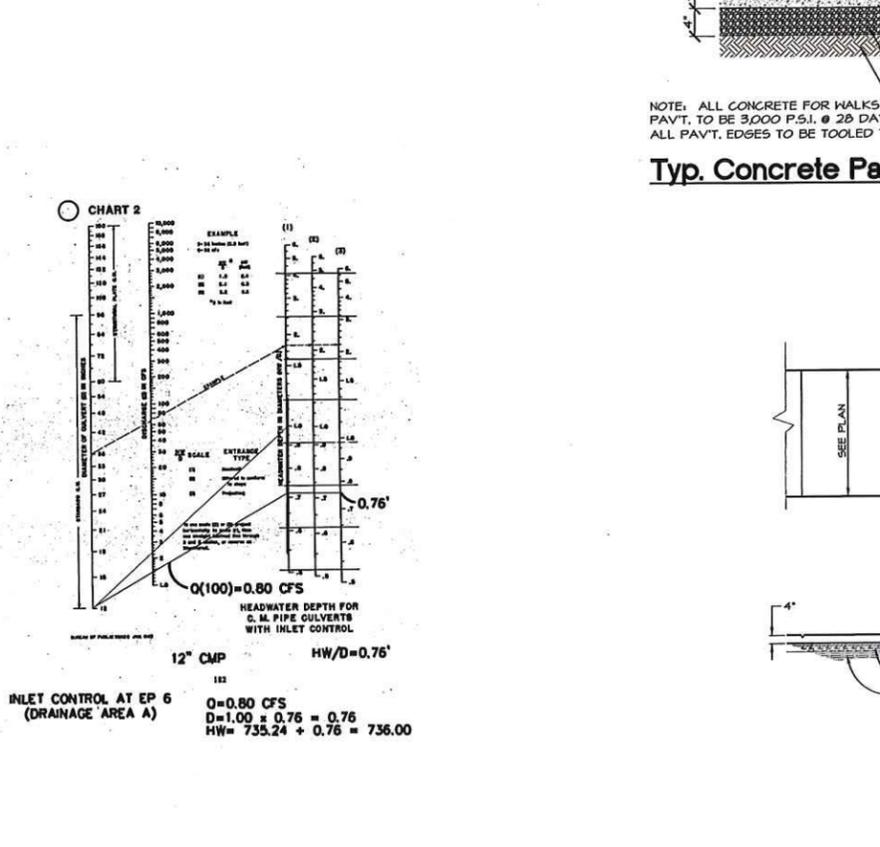
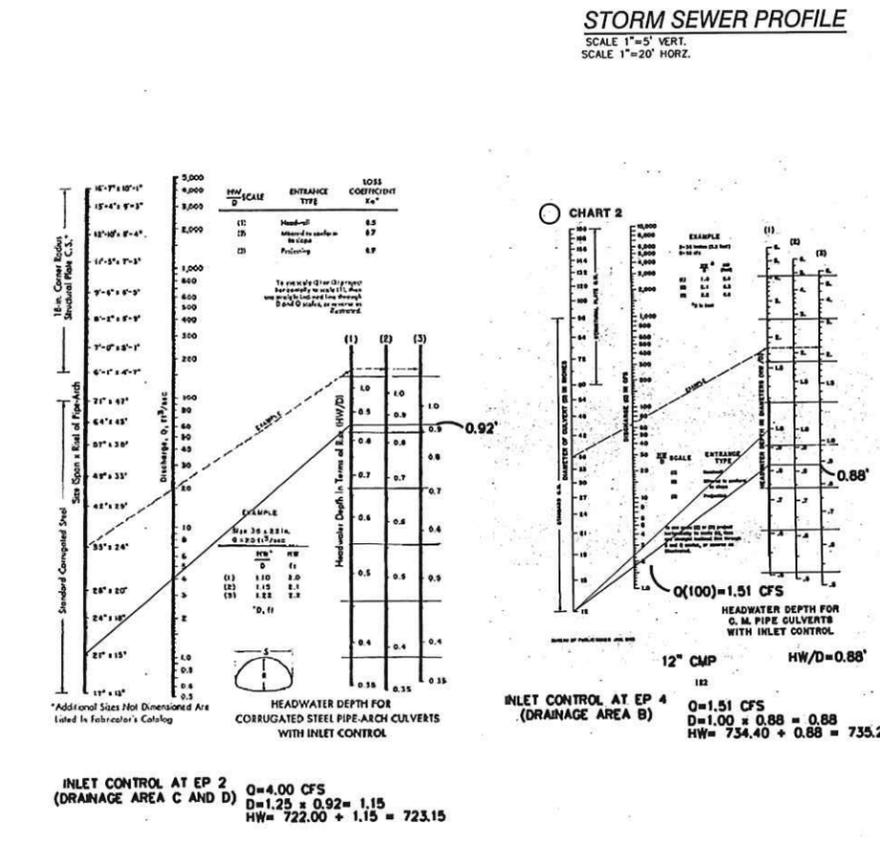
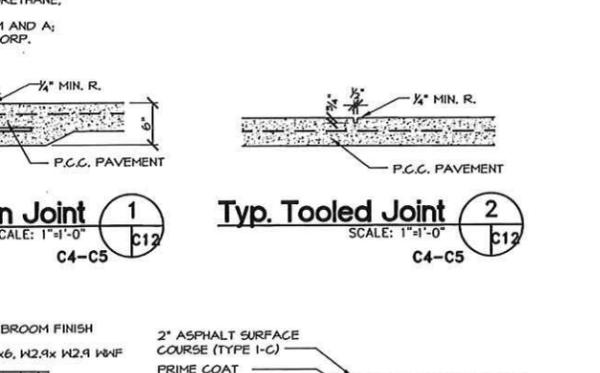
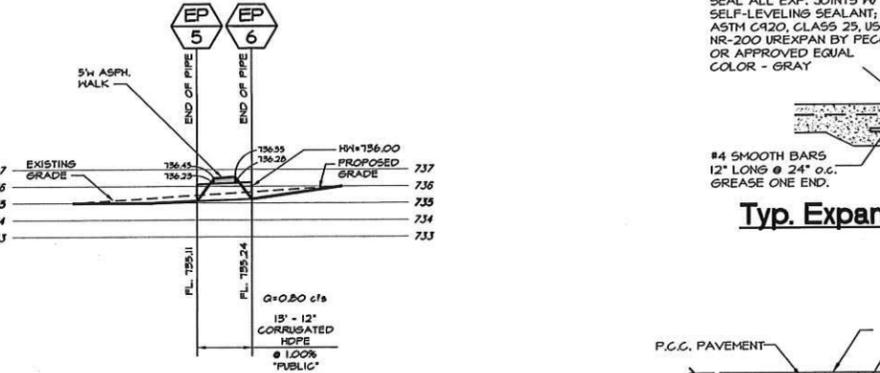
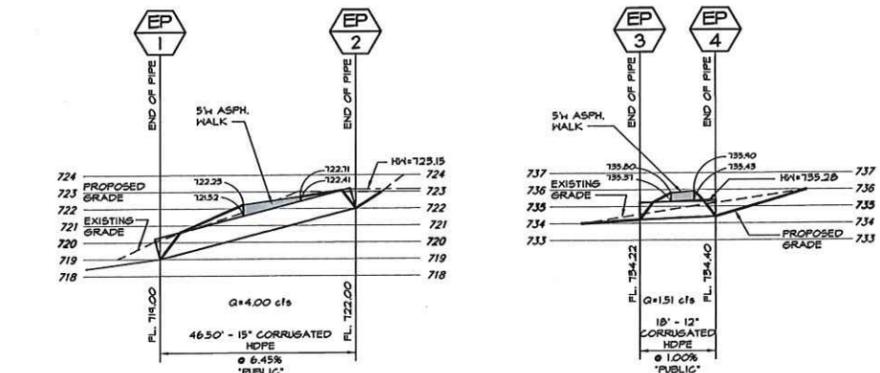
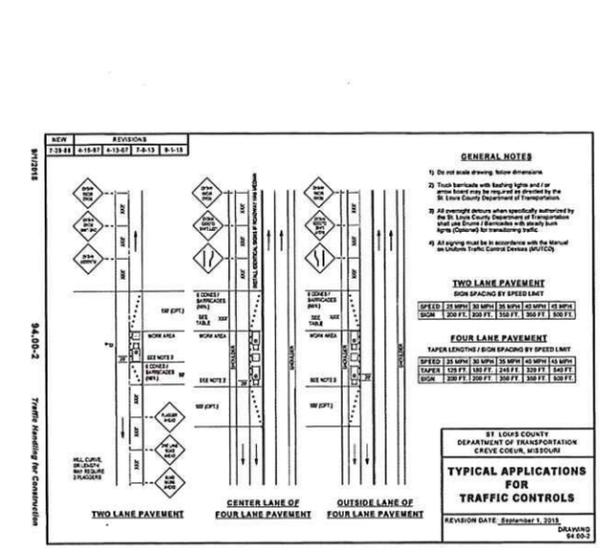
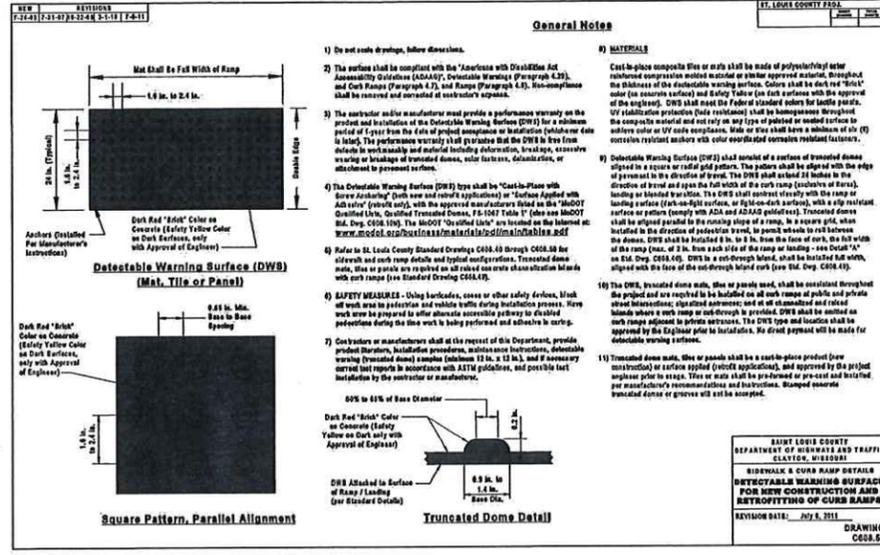
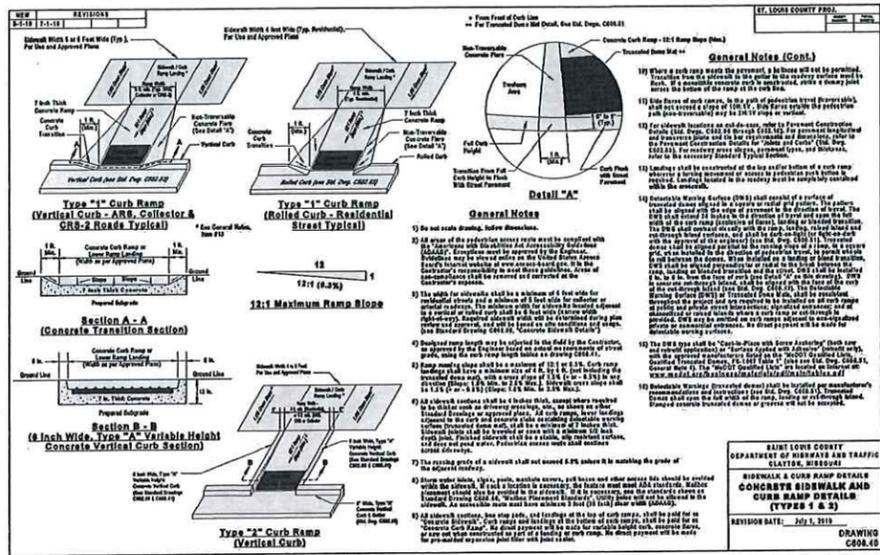
Old State Road &
 Ridge Rd Walkway
 WILDWOOD, MISSOURI

OWNER
 City of Wildwood
 16860 Main Street
 Wildwood, MO 63040
 Ph: 636-458-0440
 Fax: 636-458-6969
 www.cityofwildwood.com



SHEET TITLE
 Overall
 DAM
 JOB NUMBER
 15019
 DATE DRAWN BY
 07/26/16 DWD
 REVISION
 09/10/16 rev. per SLC1/MSD
 10/03/16 rev. per SLC1/MSD
 SHEET NUMBER
 C11

MARK A. DOERING
 CIVIL ENGINEER E-23059
 MO. EXPIRATION DATE:
 DECEMBER 31 2016
 I.L. EXPIRATION DATE:
 APRIL 30 2017
 MO. CORPORATE
 LICENSE NO. 001347
 I.L. CORPORATE
 LICENSE NO. 184.003035



LAND PLANNING
RECREATION PLANNING AND DESIGN
LANDSCAPE ARCHITECTURE

5030 GRIFFIN ROAD
ST. LOUIS, MO 63126
(314) 984-6211 FAX (314) 984-1718

Engineered By:
DOERING
ENGINEERING
INC.

CIVIL ENGINEERING • PLANNING • SURVEYING

Missouri Office:
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SHEET TITLE:
Profiles/
Hydraulics/
Details

JOB NUMBER:
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05/10/16 rev. per SLC/MSD
10/03/16 rev. per SLC/MSD

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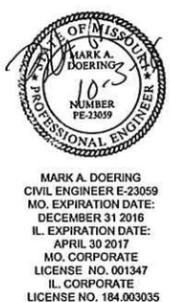
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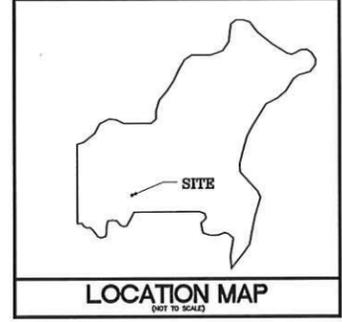
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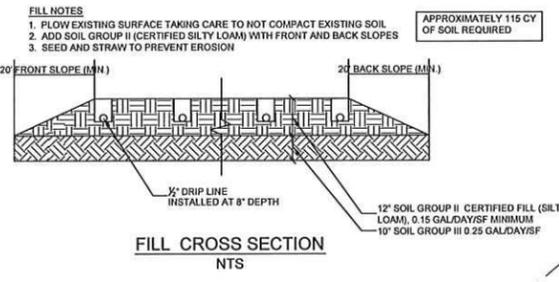
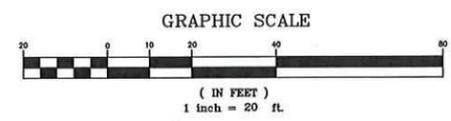
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15019





FOOD ZONE X
F.I.R.M. 29185C0290K AUGUST 2, 1995
LOC# 26U510048



FILL NOTES
1. FLOW EXISTING SURFACE TAKING CARE TO NOT COMPACT EXISTING SOIL
2. ADD SOIL GROUP II (CERTIFIED SILTY LOAM) WITH FRONT AND BACK SLOPES
3. SEED AND STRAW TO PREVENT EROSION

APPROXIMATELY 115 CY OF SOIL REQUIRED

GENERAL NOTES

- CONSTRUCTION OF THE ONSITE SEWAGE DISPOSAL SYSTEM SHALL COMPLY WITH THE MISSOURI DEPARTMENT OF HEALTH AND SENIOR SERVICES AS AMENDED BY ST. LOUIS COUNTY AND THE SOILS REPORT BY ONSITE SOILS DATED 12/14/2016.
- SIZE, LOCATION, AND TYPE OF DISPOSAL SYSTEM SHALL NOT BE MODIFIED WITHOUT AUTHORIZATION FROM THE ENGINEER AND ST. LOUIS COUNTY.
- CONTOURS AND ELEVATIONS BASED ON TBM 100
- PLANS FOR THE ONSITE DISPOSAL SYSTEM WERE PREPARED TO MEET MINIMUM STANDARDS PER STATE AND COUNTY REQUIREMENTS. GANEY ENGINEERING LLC DOES NOT REPRESENT NOR WARRANT PROPER OPERATION OR FUNCTION OF INSTALLED SYSTEM FOR ANY PERIOD OF TIME.
- ALL STORM WATER RUNOFF FROM THE DWELLING AND SURFACE RUNOFF SHALL BE DIVERTED AROUND AND NOT BE ALLOWED TO ENTER THE SYSTEM.

ONSITE WASTEWATER TREATMENT OPERATION AND MAINTENANCE

PROPER OPERATION AND MAINTENANCE IS REQUIRED FOR THE ONSITE WASTEWATER TREATMENT SYSTEM TO FUNCTION PROPERLY. KING SEPTIC SERVICE ENGINEERING RECOMMENDS A MAINTENANCE AGREEMENT WITH A QUALIFIED PROVIDER. OWNER IS EXPECTED TO FOLLOW GUIDELINE LOCATED WITHIN THE AERATION TANK SERVICE MANUAL.

SOIL EVALUATION

ON-SITE SOILS, COPY ATTACHED
MATTHEW W. ROTH, SOIL SCIENTIST
DECEMBER 14, 2016

ONSITE WASTEWATER TREATMENT DESIGN

APPLICATION RATE OF 0.15 GAL/SF/DAY FOR ALTERNATIVE ABSORPTION IN SILTY LOAM FILL
EXISTING 3 BEDROOM HOME = 120 GAL/DAY/BEDROOM X 3 = 360 GAL/DAY
(360 GAL/DAY) / (0.15 GAL/SF/DAY) = 2400 SF OF DRIP FIELD REQUIRED
3000 SF OF DRIP FIELD PROPOSED
PROPOSED CLASS #1 NSF 40 - 500 GAL/DAY JET AERATION TANK (OR APPROVED EQUAL)

Ganey Engineering LLC Drip Flow Calculations

Job Description:	1408 Bald Eagle
Contact:	Cathy Ferguson
Prepared by:	Paul Ganev
Date:	10-Dec-16

Please fill in the shaded areas and drop down menus
This spreadsheet serves as a guide, and is not a complete hydraulic design.

Worksheet 1- Field Flow

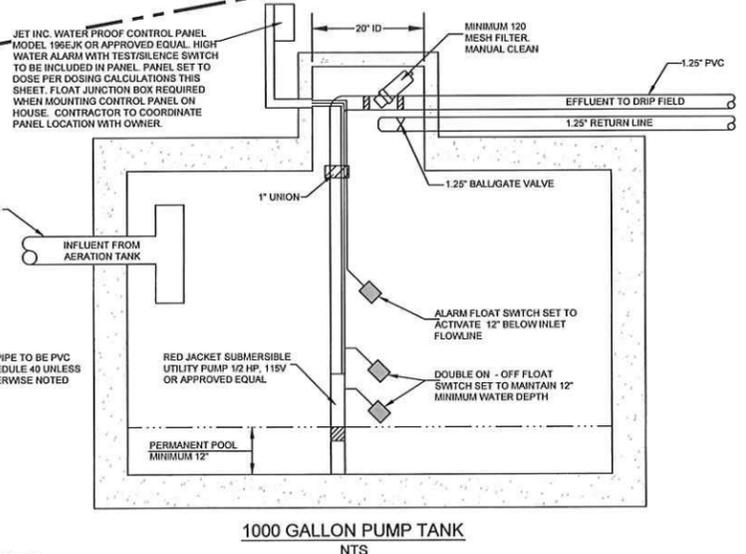
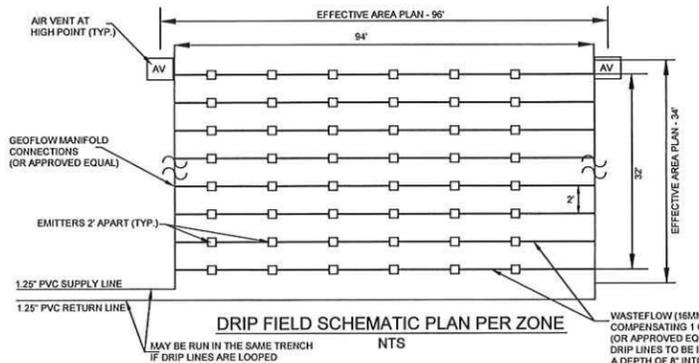
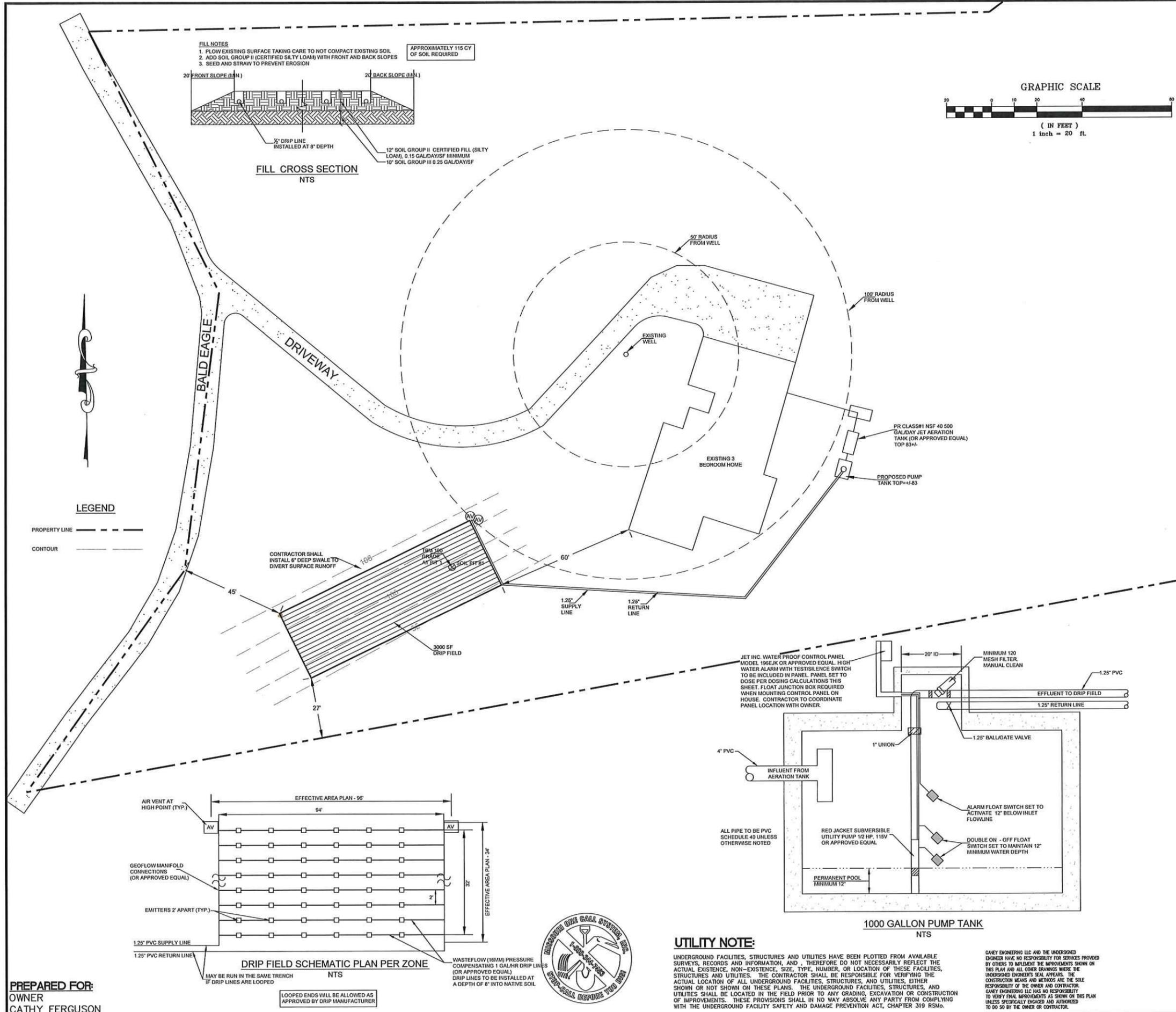
Total Field	
Total Quantity of effluent to be disposed per day	360 gallons / day
Hydraulic loading rate	0.15 gallons / sq. ft. / day
Minimum Disposal Field Area	2,400 square ft.
Total Disposal Field Area	3,000 square ft.

Flow per zone	
Number of Zones	1 (zone(s))
Disposal area per zone	3,000 square ft.
Classify the spacing between WASTEFLOW lines	2 ft.
Classify the number of zones between WASTEFLOW lines	2 ft.
Total length of pipe zone (including manifolds)	1,500 ft. per zone
Total number of emitters per zone	300 emitters per zone
Select Wasteflow drip line (10mm)	Wasteflow PC-1 1/2" drip line
Pressure at the beginning of the drip field	20 psi
Friction loss at the beginning of the drip field	46.2 ft.
What is the flow rate per emitter in gph?	1.02 gph
Flow rate per zone	12.75 gpm

Required, choose flush velocity	0.5 ft/sec
How many lines of WASTEFLOW per zone?	16 lines
Fill in the actual length of longest drip line lateral	24 ft.
Equivalent length including flush requirement	132.2847017
Flush flow required at the end of each drip line	0.37 gpm
Total flow per zone-worst case scenario	18.67 gpm

Select Filters and zone valves	
Select Filter Type	Vertical Screen Filter
Recommended Filter (diameter)	AP08-10 1" Screen Filter-50gpm
Select Zone Valve Type	Electric Solenoid
Recommended Zone Valve (diameter)	0 0

Dosing	
Number of doses per day	12 (doses)
Time ON: Pump run time per dose zone	2.21 min x sec
Time OFF: Pump off time between doses	1.57 min x sec
Per Zone - Pump run time per day zone	0.27 min x day
All Zones - Number of doses per day - all zones	12 doses / day
Allow time for field to percolate	0.00 min x min x sec
Flush flush time	0.00 min x min x sec
Drain time	0.01 min x min x sec
Field flush time	0.01 min x min x sec
Field flush counter	3 cycles
Time required to complete all functions per day	1.56 min x min
Dose volume per zone	30 gallons per dose



UTILITY NOTE:

UNDERGROUND FACILITIES, STRUCTURES AND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE SURVEYS, RECORDS AND INFORMATION, AND THEREFORE DO NOT NECESSARILY REFLECT THE ACTUAL EXISTENCE, NON-EXISTENCE, SIZE, TYPE, NUMBER, OR LOCATION OF THESE FACILITIES, STRUCTURES AND UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE ACTUAL LOCATION OF ALL UNDERGROUND FACILITIES, STRUCTURES, AND UTILITIES, EITHER SHOWN OR NOT SHOWN ON THESE PLANS. THE UNDERGROUND FACILITIES, STRUCTURES, AND 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.

GANEY ENGINEERING LLC AND THE UNDERGROUND OWNER HAVE NO RESPONSIBILITY FOR SERVICES PROVIDED BY OTHERS TO IMPLEMENT THE IMPROVEMENTS SHOWN ON THIS PLAN AND ALL OTHER DRAWINGS WHERE THE UNDERGROUND ENGINEER'S SEAL APPEARS. THE CONSTRUCTION MEANS AND METHODS ARE THE SOLE RESPONSIBILITY OF THE OWNER AND CONTRACTOR. GANEY ENGINEERING LLC HAS NO RESPONSIBILITY TO VERIFY FINAL IMPROVEMENTS AS SHOWN ON THIS PLAN UNLESS SPECIFICALLY ORDERED AND AUTHORIZED TO DO SO BY THE OWNER OR CONTRACTOR.



PREPARED FOR:
OWNER
CATHY FERGUSON

LOOPED ENDS WILL BE ALLOWED AS APPROVED BY DRIP MANUFACTURER

PAUL R. GANEV
MO# PE-2010019544

P.O. BOX 308
ARNOLD, MO 63010
PH. (314) 973-0377
e-mail: ganeyengineering@yahoo.com

GANEY ENGINEERING LLC

**1408 BALD EAGLE ROAD
WILDWOOD, MO 63038**

JOB# 216-693

SITE PLAN