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GENERAL NOTES

GENERAL UTILITY NOTES

- UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE INFORMATION AND THEREFORE THEIR LOCATIONS SHALL BE CONSIDERED APPROXIMATE ONLY. THE VERIFICATION OF THE LOCATION OF ALL UNDERGROUND UTILITIES, EITHER SHOWN OR NOT SHOWN ON THESE PLANS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THIS WORK SHALL BE COMPLETED PRIOR TO ANY GRADING OR CONSTRUCTION OF THE IMPROVEMENTS. IT WILL BE THE CONTRACTORS RESPONSIBILITY TO PROTECT ALL SUCH UNDERGROUND UTILITIES DURING ALL PHASES OF WORK.
- LOCATE EXISTING UNDERGROUND UTILITIES AND SEWERS IN THE AREAS OF WORK BEFORE STARTING OPERATIONS. WHEN UTILITIES OR SEWERS ARE TO REMAIN IN PLACE, PROVIDE ADEQUATE MEANS OF PROTECTION DURING OPERATIONS. SHOULD UNCHARTED, OR INCORRECTLY CHARTED, PIPING OR OTHER UTILITIES BE ENCOUNTERED DURING EXCAVATION, CONSULT THE CONSTRUCTION MANAGER AND UTILITY OWNER IMMEDIATELY FOR DIRECTIONS. COOPERATE WITH THE SERVICES AND FACILITIES IN OPERATION. REPAIR DAMAGED UTILITIES TO THE SATISFACTION OF THE UTILITY OWNER. REMOVALS OR RELOCATIONS BY UTILITY COMPANIES ARE TO BE INITIATED AND COORDINATED BY THE CONTRACTOR.
- WHERE SEWER, WATER LINES OR OTHER UTILITY LINES CROSS OVER OR UNDER EACH OTHER, PROVIDE CONCRETE ENCASEMENT OF THE TOP PIPE IF THE CLEARANCE IS LESS THAN 24 INCHES, AND CONCRETE ENCASEMENT OF BOTH PIPES IF THE CLEARANCE IS LESS THAN 12 INCHES. ENCASEMENT SHALL EXTEND TO A MINIMUM DISTANCE OF 10 FEET ON BOTH SIDES OF THE CROSSING. SUBMIT CONCRETE ENCASEMENT DETAILS FOR APPROVAL.
- ALL EXISTING UTILITY ACCESS COVERS SUCH AS MANHOLES, VALVE BOXES, VAULT COVERS, METER COVERS AND OTHER SURFACE APPURTENANCES SHALL BE ADJUSTED TO THE PROPER FINISH GRADE ELEVATION IN ACCORDANCE WITH THE REQUIREMENTS OF THE AFFECTED UTILITY COMPANY.
- DESIGN OF SHORING FOR UTILITY AND SEWER TRENCHES IS THE RESPONSIBILITY OF THE CONTRACTOR.
- MoDOT TYPE 5 GRANULAR BACKFILL SHALL BE PLACED UP TO TOP OF SUBGRADE WHERE ALL UTILITIES CROSS PAVEMENT.
- THE CONTRACTOR IS TO MAINTAIN A COMPLETE AND UP TO DATE SET OF AS BUILT DRAWINGS WHICH SHALL BECOME THE PROPERTY OF THE OWNER AT CONSTRUCTION COMPLETION.

WATER LINE CONSTRUCTION NOTES

- ALL MATERIALS AND METHODS OF CONSTRUCTION FOR WATER MAINS, SERVICE LINES, AND APPURTENANCES SHALL BE DONE IN ACCORDANCE WITH THE MISSOURI AMERICAN WATER COMPANY STANDARD SPECIFICATIONS FOR WATER LINE CONSTRUCTION. PIPE SHALL BE DUCTILE IRON, PRESSURE CLASS 350 PSI.
- CONTRACTOR SHALL PROVIDE FOR DISINFECTION OF WATER MAINS IN ACCORDANCE WITH THE MISSOURI AMERICAN WATER COMPANY AND AWWA C601 STANDARDS. CONTRACTOR TO PROVIDE THE OWNER WITH ACCEPTABLE TEST RESULTS PRIOR TO ACCEPTANCE OF WORK.
- ALL WATER LINES SHALL BE LAID AT LEAST 10 FEET HORIZONTALLY, FROM ANY SANITARY SEWER, STORM SEWER, OR MANHOLE. WHENEVER WATER LINES MUST CROSS SANITARY SEWERS, LATERALS OR STORM DRAINS, THE WATER LINES SHALL BE LAID TO HAVE A MINIMUM VERTICAL CLEARANCE OF 18 INCHES AND COMPLY WITH MISSOURI DEPARTMENT OF NATURAL RESOURCES CLEARANCE REQUIREMENTS AND PER LOCAL CODE REQUIREMENTS.
- DEMOLITION OF WATERLINES AND RELATED APPURTENANCES SHALL BE IN ACCORDANCE WITH THE REQUIREMENT OF THE MISSOURI AMERICAN WATER COMPANY. THE CONTRACTOR SHALL OBTAIN ALL PERMITS NECESSARY FOR THE DEMOLITION OF WATERLINES AND APPURTENANCES.
- ALL FITTINGS FOR BURIED PIPING 4-INCH AND LARGER, SHALL BE DUCTILE IRON MECHANICAL JOINT (D.I.M.J.), EPOXY COATED, UNLESS NOTED OTHERWISE. THESE FITTINGS SHALL INCORPORATE RESTRAINING RINGS, MEGA-LUGS OR OTHER APPROVED EQUIVALENT MECHANICAL DEVICES.
- ALL PROPOSED DUCTILE IRON PIPE, FITTINGS AND RESTRAINTS WITHIN FIFTY (50) FEET OF AN EXISTING GAS MAIN SHALL BE POLYETHYLENE ENCASED.
- ALL FASTENERS SHALL BE MANUFACTURED OF NON-CORROSIVE MATERIALS.
- WHERE MINIMUM SEPARATION BETWEEN UTILITIES IS REQUIRED, THE DISTANCE SHALL BE MEASURED FROM OUTSIDE OF PIPE TO OUTSIDE OF PIPE.
- CONTRACTOR SHALL MAKE EXPLORATORY EXCAVATIONS AT ALL INTERSECTIONS OF PROPOSED WORK AND EXISTING UTILITIES. THE EXPLORATORY EXCAVATIONS SHALL BE MADE FORTY-EIGHT (48) HOURS IN ADVANCE OF THE PROPOSED WORK. IF THERE IS A CONFLICT THE CONTRACTOR SHALL NOTIFY THE OWNER OR THEIR REPRESENTATIVE IMMEDIATELY. INFORMATION ON THE OBSTRUCTION SHALL BE FURNISHED BY THE CONTRACTOR AND SHALL INCLUDE: LOCATION, ELEVATION, UTILITY TYPE, MATERIAL AND SIZE.
- LOCATIONS AND DIMENSIONS OF EXISTING RIGHTS-OF-WAY AND EASEMENTS ARE BASED ON THE BEST AVAILABLE INFORMATION. THE CONTRACTOR SHALL VERIFY ALL THE LIMITS OF RIGHTS-OF-WAY AND EASEMENTS IN ORDER TO AVOID ENCROACHMENTS.
- THE CONTRACTOR SHALL REPLACE BUT NOT BE LIMITED TO PAVING, STABILIZED EARTH, DRIVEWAYS OR ANY ITEMS DISTURBED OR DAMAGED BY THE CONSTRUCTION OR ITS RELATED ACTIVITIES. THE CONTRACTOR SHALL REPLACE WITH EQUAL MATERIAL OR AS DIRECTED BY THE CONSTRUCTION MANAGER.
- THE DISPOSAL OF ANY EXCESS EARTHWORK MATERIAL SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- IT IS THE CONTRACTORS RESPONSIBILITY TO COORDINATE HIS WORK WITH THE WORK SCHEDULE OF ADJACENT CONTRACTORS.
- PIPE MEASUREMENTS SHALL BE CENTER TO CENTER OF FITTINGS OR VALVES.
- VALVES FOR POTABLE WATER MAINS SHALL BE DUCTILE IRON (D.I.) EPOXY COATED GATE VALVES.

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- ALL PIPE AND POLYETHYLENE SERVICE TUBING SHALL BEAR THE NATIONAL SANITATION FOUNDATION (NSF) SEAL OF APPROVAL FOR POTABLE WATER SERVICE.
- FITTINGS FOR BOTH PVC AND DUCTILE IRON PIPE SHALL BE DUCTILE IRON COMPACT FITTINGS CONFORMING TO THE REQUIREMENTS OF ANSI/AWWA C153/A21.53.
- DUCTILE IRON PIPE AND FITTINGS SHALL HAVE A CEMENT MORTAR INTERIOR LINING CONFORMING TO THE REQUIREMENTS OF ANSI/AWWA C104/A21.4.
- ALL WATER MAINS SHALL BE HYDROSTATICALLY TESTED AND DISINFECTED IN ACCORDANCE WITH AWWA STANDARDS, LATEST REVISIONS. HYDROSTATIC TESTING FOR PVC MAINS SHALL BE 150 PSI FOR MINIMUM OF 2 HOURS AND MEET AWWA STANDARD C605, WITH DUCTILE IRON MAINS TESTED AT 150 PSI FOR 2 HOURS AND PER AWWA C600. ALL NEW MAINS SHALL BE DISINFECTED PER AWWA STANDARD C651. BACTERIOLOGICAL TESTS FOR 2 CONSECUTIVE DAYS SHALL BE APPROVED PRIOR TO PLACING SYSTEM INTO SERVICE.
- PVC POTABLE WATER MAINS SHALL BE SOLID BLUE IN COLOR.
- ALL POTABLE WATER MAINS SHALL BE INSTALLED WITH THE MINIMUM VERTICAL/HORIZONTAL SEPARATION FROM ALL EXISTING AND/OR PROPOSED SANITARY AND STORM PIPING AS REQUIRED BY MDNR RULES. CONFLICTS BETWEEN STORM AND SANITARY SEWER SYSTEMS, FORCE MAINS AND PROPOSED POTABLE WATER MAINS SHALL BE RESOLVED BY ADJUSTING THE PROPOSED POTABLE WATER MAIN.
- ALL WATER MAINS SHALL HAVE AN "EARLY WARNING" PROTECTION TAPE INSTALLED CONTINUOUSLY ALONG THE ENTIRE LENGTH. THE PROTECTION TAPE SHALL BE INSTALLED DURING THE BACK FILLING 6 TO 12 INCHES BELOW FINISH GRADE DIRECTLY OVER THE PIPE AND BE CONTINUOUSLY MARKED WITH "CAUTION - WATER MAIN BURIED BELOW". THE TAPE SHALL HAVE A EMBEDDED METALLIC DETECTABLE STRIP AND BE BLUE IN COLOR. PROTECTION TAPE SHALL BE TERRA-TAPE OR APPROVED EQUAL.
- THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS ON ALL EQUIPMENT AND MATERIALS FOR APPROVAL BY THE OWNER PRIOR TO PROCUREMENT.
- ALL NEW WATER MAINS SHALL BE INSTALLED WITH A MINIMUM OF 42" OF COVER, UNLESS NOTED OTHERWISE.
- THE CONTRACTOR SHALL VIDEO THE ENTIRE WORK AREA PRIOR TO COMMENCEMENT OF CONSTRUCTION. ONE COPY OF THE PRE-CONSTRUCTION VIDEO SHALL BE SUBMITTED TO THE OWNER.
- ALL FLANGED COUPLING ADAPTERS SHALL HAVE A MINIMUM OF 4-3/4"Ø STAINLESS STEEL RESTRAINING RODS EQUALLY SPACED.
- ALL CONNECTIONS TO WATER MAINS SHALL BE MADE BY THE CONTRACTOR ONLY AFTER THE CONNECTION PROCEDURE AND HIS WORK SCHEDULE REGARDING THIS ACTIVITY ARE REVIEWED AND APPROVED BY THE MISSOURI AMERICAN WATER COMPANY.
- VALVE BOX AND COVER SHALL BE CONSTRUCTED OF CAST IRON. THE VALVE BOX LID SHALL BE STAMPED WITH "WATER".
- FIRE HYDRANTS SHALL BE AS SPECIFIED BY THE MISSOURI AMERICAN WATER COMPANY AND THE LOCAL FIRE DEPARTMENT.
- MoDOT TYPE 5 GRANULAR BACKFILL SHALL BE PLACED UP TO TOP OF SUBGRADE WHERE WATER LINES CROSS PAVED AREAS.

SEWER CONSTRUCTION NOTES

- ELEVATION OF EXISTING SEWERS ARE FROM AVAILABLE PLANS, RECORD DRAWINGS AND/OR SURVEYS. ACTUAL ELEVATIONS MAY VARY FROM THOSE SHOWN. THE CONTRACTOR SHALL VERIFY LOCATIONS AND ELEVATIONS OF EXISTING SEWERS PRIOR TO COMMENCING CONSTRUCTION.
- EXISTING INLETS, MANHOLES AND SEWERS TO BE ABANDONED (T.B.A.) SHALL BE ABANDONED IN ACCORDANCE WITH THE METROPOLITAN ST. LOUIS SEWER DISTRICTS "STANDARD CONSTRUCTION SPECIFICATIONS", 2009 EDITION. THE CONTRACTOR SHALL CAREFULLY COORDINATE SEWERS ABANDONMENT TO INSURE THAT ACTIVE SEWERS ARE NOT DAMAGED OR FILLED.
- TOPS OF ALL MANHOLES AND INLETS TO REMAIN IN PLACE SHALL BE ADJUSTED TO PROPER FINISH GRADE ELEVATION, IN ACCORDANCE WITH REQUIREMENTS OF MSD.
- FOR SEWER PIPE (STORM, SANITARY AND COMBINED) WITH A DESIGN GRADE LESS THAN ONE PERCENT (1%), VERIFICATION OF THE PIPE GRADE WILL BE REQUIRED FOR EACH INSTALLED REACH OF SEWER, PRIOR TO ANY SURFACE RESTORATION OR INSTALLATION OF ANY SURFACE IMPROVEMENTS. THE CONTRACTOR'S FIELD SUPERVISOR WILL BE REQUIRED TO PROVIDE DAILY DOCUMENTATION VERIFYING THAT THE AS-BUILT PIPE GRADE MEETS THE DESIGN GRADE THROUGH THE SUBMITTAL OF SIGNED CUT SHEETS TO THE MSD INSPECTOR UPON REQUEST.
- FIELD SURVEYED VERIFICATION MUST BE MADE UNDER THE DIRECTION OF A LICENSED LAND SURVEYOR OR REGISTERED ENGINEER. THE CONTRACTOR WILL BE REQUIRED TO REMOVE AND REPLACE ANY SEWER REACH HAVING AN AS-BUILT GRADE WHICH IS FLATTER THAN THE DESIGN GRADE BY MORE THAN 0.1%. SEWERS WITH GRADES GREATER THAN THE DESIGN SLOPE MAY BE LEFT IN PLACE, PROVIDED NO OTHER SEWER GRADE IS REDUCED BY THIS VARIANCE IN THE AS-BUILT GRADE.
- MSD ALSO RESERVES THE RIGHT TO REQUIRE THE CONTRACTOR TO REMOVE AND REPLACE ANY SEWER AT ANY TIME PRIOR TO CONSTRUCTION APPROVAL FOR WHICH THE AS-BUILT GRADE DOES NOT COMPLY WITH THE GRADE TOLERANCE STATED ABOVE.
- THE SEWER CONTRACTOR SHALL BE RESPONSIBLE FOR ANY COSTS ASSOCIATED WITH THE FIELD VERIFICATION OF THE SEWER GRADE, OR REMOVAL AND REPLACEMENT OF THE SEWER PIPE OR ASSOCIATED APPURTENANCES.
- MAINTENANCE OF THE SEWERS DESIGNATED AS "PUBLIC" SHALL BE THE RESPONSIBILITY OF THE METROPOLITAN ST. LOUIS SEWER DISTRICT UPON DEDICATION OF THE SEWERS TO THE DISTRICT. SELECTED GRANULAR BACKFILL SHALL BE PLACED UP TO TOP OF SUBGRADE WHEN SEWER LINES CROSS PAVED AREAS.
- MoDOT TYPE 5 GRANULAR BACKFILL SHALL BE PLACED UP TO TOP OF SUBGRADE WHERE SEWER LINES CROSS PAVED AREAS.
- AS BUILT DOCUMENTATION IS TO BE RECORDED AS IMPROVEMENTS ARE COMPLETED. DRAWINGS ARE TO BE UPDATED AND SUBMITTED TO MSD BY THE CONTRACTOR ACCORDING TO THE DISTRICTS GUIDELINES.

GENERAL 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 DETAILS SHOWN THEREIN, AND SHALL INCLUDE ALL SUBSEQUENT CHANGES MADE THERETO.
- 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 TESTING - DELETE THE FIRST SENTENCE AND THE FOLLOWING REPLACEMENT 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 MANUFACTURER STATING THAT THE MANHOLE MAY BE VACUUM TESTED AFTER BACKFILLING AS 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.

GENERAL UTILITY NOTES

- THE FOLLOWING UTILITY COMPANIES HAVE FACILITIES WITHIN THE CONSTRUCTION AREA. THE CONTRACTOR SHALL COORDINATE WITH THE APPROPRIATE AGENCY PRIOR TO THE COMMENCEMENT OF ANY WORK WHICH WILL AFFECT ANY EXISTING UTILITY.

Ameren Missouri Ellisville District 280 Old State Road Ellisville, MO 63021 Attn: Mr. Dave Muntean (314-992-8903)	Laclede Gas Company 720 Olive Street St. Louis, MO 63101 Attn: Lisa Stuart (314-342-0694)	Southwestern Bell Telephone 14780 Manchester Road Ballwin, Missouri 63011 Attn: Sherry Schmdie (636-256-1468)
Metropolitan Sewer District 2350 Market St. St. Louis, Missouri 63103-2555 (314-768-6200)	Missouri One-Call 1-800-334-7483	Missouri American Water Company 1050 Research Blvd. St. Louis, Missouri 63132 Attn: Roger Timmermeier (314-996-2464)

CONTRACTOR TO PROVIDE SIGNED AND SEALED SHOP DRAWINGS TO BE APPROVED BY THE PROJECT ENGINEER & MSD CONTACT MSD AT 314-335-2072.

CONSTRUCTION SITE RUNOFF SHALL NOT FLOW INTO THE WATER QUALITY BMP(S). ALL STORMWATER FLOW TO THE WATER QUALITY BMP(S) SHALL BE DIVERTED, PLUGGED OR DISCONNECTED UNTIL THE CONSTRUCTION SITE IS STABLE AND THE MSD DEDICATION INSPECTOR PROVIDES APPROVAL TO PLACE THE BMP(S) ONLINE.

LOCATOR NO. - 23K521443
FEMA MAP NUMBER - 29189C0329K DATE: FEBRUARY 4, 2015

UTILITIES
WATER - MISSOURI AMERICAN WATER COMPANY
SANITARY SEWER - METROPOLITAN SEWER DISTRICT
STORM SEWER - METROPOLITAN SEWER DISTRICT
ELECTRIC - AMEREN UE
TELEPHONE - SOUTHWESTERN BELL TELEPHONE
GAS - LACLEDE GAS COMPANY

WEBSTER UNIVERSITY CONTACT FOR MAINTAINING THE BMP'S IS:
CRAIG MILLER
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Environmental Graphics & Signage
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9721 Lezinger Road
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Spellman Brady & Company
Interior Designer
8251 Maryland Avenue, Suite 300
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314-862-0070

SWT Design
Landscape Architect
7722 Big Bend Blvd
St. Louis, MO 63119
314-644-5700

Webb Engineering Services, Inc.
Planning & Fire Protection
1400 S. 3rd Street, Suite 201
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2	ADDENDUM 1-12	16 JUN 2016
1	ADDENDUM 1-10	5 MAY 2016
-	ISSUED FOR CONSTRUCTION (BP1)	15 JAN 2016

No.	Description	Date
KEY PLAN		
Drawing Title:		

GENERAL
NOTES

Project No.: 04561.00 Checked by:

C101