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Saint Louis
COUNTY

TRANSPORTATION

PUBLIC WORKS

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January 11, 2016

ADDENDUM NO. 1

Notice to All Persons and Firms Proposing
to Submit a Bid or Furnish Materials for
Shackelford Road Improvements
St. Louis County Project No. AR-1398
Federal Project No. STP-4901(634)

The construction contract for this project has been revised as follows:

No. 1

Replace Special Provisions to the General Specifications Part A, provisions A thru J with the attached special provisions A thru J.

No. 2

Delete Special Provision No. 100.10.7 "CLAIMS FOR DAMAGE TO PRIVATE PROPERTY". All Processes, procedures and responsibilities for claims for damage to private property shall be as defined in the St. Louis County Standard Specifications for Road and Bridge Construction manual.

No. 3

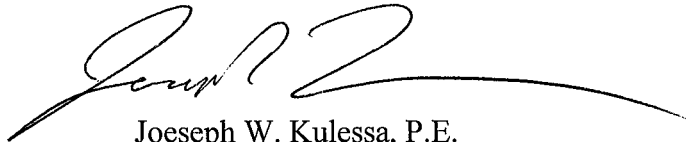
Replace Special Provision No. 200.20.3 "REMOVAL OF BUILDINGS" with the attached provision 200.30.3 "REMOVAL OF BUILDINGS".

No. 4

Replace Special Provision No. 200.30.5 "EXCAVATION OF UNSUITABLE MATERIAL AND BACKFILL OF RESULTING EXCAVATION" with the attached provision 200.30.5 "EXCAVATION OF UNSUITABLE MATERIAL AND BACKFILL OF RESULTING EXCAVATION".

Addendum No. 1
Shackelford Road Improvements (AR-1398)
January 11, 2016
Page 2

ATTENTION BIDDERS: THE ADDENDUM ACKNOWLEDGEMENT IN THE BID DOCUMENTS MUST BE COMPLETED AND SUBMITTED WITH ALL BID PROPOSALS.

A handwritten signature in black ink, appearing to read 'Joe Kulesa', with a long horizontal flourish extending to the right.

Joseph W. Kulesa, P.E.
Supervisor, Project Managers

JWK/jlh


Attachments: Revised Job Special Provisions A thru J, Job Special Provision 200.20.3, Job Special Provision 200.30.5, and Addendum Acknowledgement (Please sign and return.)

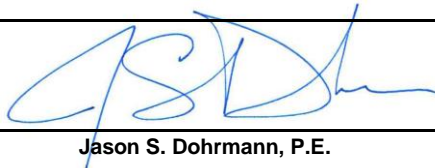
JOB SPECIAL PROVISIONS – TABLE OF CONTENTS

(Job Special Provisions shall prevail over Specification and/or General Provisions whenever in conflict therewith)

A. PERVIOUS ASPHALT	2
B. DETENTION POND OUTFALL STRUCTURE.....	11
C. SIDEWALK BRIDGE AND FLUME	11
D. OBSERVATION WELL	12
E. TEMPORARY CONCRETE SIDEWALK, 4-INCH THICK.....	12
F. MSD TYPE 5 ROCK BLANKET.....	13
G. BIORETENTION PLANTING AND RESTORATION.....	13
H. BIORETENTION SOILS AND RELATED MATERIALS	17
I. MODULAR BMP SYSTEMS	19
J. SAWCUT	21

ENGINEER OF RECORD CERTIFICATION

	<p>The professional whose signature and personal seal appears hereon assumes responsibility only for the JOB SPECIAL PROVISIONS attached herewith and disclaims (pursuit to Section 327.411 RSMO) any responsibility for all other calculations, drawings, specifications, estimates, reports, surveys or other documents or instruments or revisions thereof not sealed by the undersigned professional relating to, or intended to, be used for any part or parts of the project to which this report refers.</p> <p>ENGINEERING CORPORATION CERTIFICATION Howard R. Green Company (HR Green, Inc.) is a licensed Missouri Professional Engineering Corporation. Certificate of Authority No. 2002006608.</p> <p>Missouri Professional Engineer License No. 2004017159 My renewal date is December 31, 2014</p>
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 Jason S. Dohrmann, P.E.

January 8, 2016

Date: _____

A. PERVIOUS ASPHALT

1.0 Description. This work shall consist of the construction of pervious asphalt pavement in the locations shown on the plans, and in accordance with the details specified on sheet 92 of 184 of the plans.

1.1 The porous asphalt pavement specified herein is modified after the National Asphalt Pavement Association (NAPA) specification outlined in Design, Construction, and Maintenance Guide for Porous Asphalt Pavements, Information Series 131 (2008) and Design, Construction, and Maintenance of Open-Graded Friction Courses, Information Series 115 (2002).

1.1.1 The primary requirements for the specifications of the mix are performance grade (PG) asphalt binder, binder content, binder draindown, aggregate gradation, air void content, retained tensile strength (TSR).

1.2 Submittals. The following submittals shall be required in accordance with the pervious asphalt pavement:

1.2.1 The contractor shall obtain the Porous Asphalt manufacturer's certification that the Porous Asphalt has been approved by MSD. This certification shall be provided to the MSD Division Inspector. The certification shall include the manufacturer's name, and state that the Porous Asphalt has been approved by MSD and that the paving materials meet all requirements as evaluated under the manufacturer's quality control program.

1.2.2 Prior to use on projects requiring MSD approval, the manufacture shall submit five (5) copies of a completed pervious paving application as well as documentation describing the quality control program. The completed application and other documentation shall be submitted to:

MSD BMP Committee
Metropolitan St. Louis Sewer District
2350 Market Street
St. Louis, Missouri 63103-2555

1.2.3 At completion of the project, prior to final dedication, the Contractor shall submit an as-built certification, signed and sealed by a Missouri Professional Engineer, shall be provided certifying:

1.2.3.1 The Porous Asphalt system was built as designed.

1.2.3.2 The Porous Asphalt system was installed by a qualified contractor.

1.2.3.3 The Porous Asphalt system installation was witnessed by the certifying engineer or a representative under his direct supervision.

1.2.4 Submittal Requirements. Samples of each material are to be submitted to the Engineer in sufficient volume to perform the standardized tests for each material.

Material or Pavement Course	Properties to be reported on Certificate**
choker course, reservoir course	gradation, max. wash loss, min. durability index, max. abrasion loss, air voids (reservoir course)
filter course	gradation, permeability/ sat. hydraulic conductivity
filter blanket	gradation

Material or Pavement Course	Properties to be reported on Certificate**
geotextile filter fabric	manufacturer's certification, Grab strength, Mullen Burst Strength, Permittivity, Flow Rate, and UV resistance after 500 hours
binder	manufacturer's certification in accordance with Section 1015
coarse aggregate gradation	wear, fracture faces (fractured and elongated)
fine aggregate	Gradation
optional anti-strip	manufacturer's certification

2.0 Materials. The pervious asphalt pavement shall conform to the materials specified in the Metropolitan St. Louis Sewer District's requirements for pervious pavements, available on their website at <http://www.stlmsd.com/what-we-do/stormwater-management/bmp-toolbox/stormwater-quality/permeable-pavement>.

2.1 Porous Asphalt Materials shall be manufactured, transported, placed and compacted in accordance with applicable sections of Saint Louis County Road and Bridge Standard Specification Sections 404 and 405 unless specified otherwise by this Special Provision. The maximum recommend nominal maximum aggregate size (NMAS) for parking lot surfaces is 9.5 mm and for roadway wearing surfaces is 12.5 mm.

2.2 Porous Asphalt binder grade used shall be PG64-22, PG70-22, or PG76-22 in accordance with Section 1015. The asphalt content should be the highest possible without exceeding draindown requirements.

2.3 Mix gradation shall be stated in the mix design with production tolerances included.

2.4 Mix target compaction and production temperatures shall be stated on the mix design.

2.5 The Mix void content (AASHTO T 269) shall be reported on the mix design.

2.6 The Mix ASTM 4867 moisture susceptibility TSR ($\geq 80\%$) shall be reported on the mix design.

2.7 The Contractor shall test the material for draindown ($\leq 0.3\%$) and report the results with the mix design. Conduct draindown test (AASHTO T305) on loose mix at a temperature 25°F higher than anticipated production temperature.

2.8 Porous Media bed, filter course, choker gravel and stone base aggregate materials shall be pre-approved for use by the Metropolitan St. Louis Sewer District.

2.9 Geotextile shall be non-woven geotextile design for separation and filtration in accordance with AASHTO M288 Class 3, minimum permittivity (ASTM D4491) $\geq 1.7 \text{ sec}^{-1}$, Flow rate (ASTM D4491) $\geq 120 \text{ gpm/ft}^2$, and UV resistance at 500 hours (ASTM D 4355) $\geq 70\%$ strength retained.

3.0 Execution.

3.1 Porous Media Beds

3.1.1 Protection of native materials from over compaction is important. Proper compaction of select subbase materials is essential. Improper compaction of subbase materials will result in either low pavement durability from insufficient compaction, or poor infiltration due to over-compaction of subbase. Care must be taken to assure proper compaction as detailed below.

3.2 Grade Control

3.2.1 Establish and maintain required lines and elevations. The Engineer shall be notified for review and approval of final stake lines for the work before construction work is to begin. Finished surfaces shall be true to grade and even, free of roller marks and free of puddle-forming low spots. All areas must drain freely. Excavation elevations should be within +/- 0.1 ft.

3.2.2 If, in the opinion of the Engineer, based upon reports of the testing service and inspection, the quality of the work is below the standards which have been specified, additional work and testing will be required until satisfactory results are obtained.

3.2.3 The Engineer shall be notified at least 24 hours prior to all porous media bed and porous pavement work.

3.3 Subgrade Preparation

3.3.1 Native subgrade refers to materials beyond the limit of the excavation. The existing native subgrade material under all bed areas shall NOT be compacted or subject to excessive construction equipment traffic prior to geotextile and stone bed placement. Compaction is acceptable if an impermeable liner is used at the base of the porous asphalt system and infiltration is not desired.

3.3.2 Where erosion of the native material subgrade has caused accumulation of fine materials and/or surface ponding, this material shall be removed with light equipment and the underlying soils scarified to a minimum depth of 6 inches with a York rake or equivalent and light tractor.

3.3.3 Bring subgrade to line, grade, and elevations indicated. Fill and lightly regrade any areas damaged by erosion, ponding, or traffic compaction before the placing of the stone subbase.

3.3.4 All bed bottoms are as level as feasible to promote uniform infiltration. For pavements subbases constructed on grade, soil or fabric barriers should be constructed along equal elevation for every 6-12" of grade change to act as internal check dams. This will prevent erosion within the subbase on slope.

3.4 Porous Media Bed Installation

3.4.1 Subbase refers to materials below pavement surface and above native subgrade. Upon completion of subgrade work, the Engineer shall be notified and shall inspect at his/her discretion before proceeding with the porous media bed installation.

3.4.2 Sideslope geotextile and porous media bed aggregate shall be placed immediately after approval of subgrade preparation. Any accumulation of debris or sediment which has taken place after approval of subgrade shall be removed prior to installation of geotextile at no extra cost to the Owner.

3.4.3 Place sideslope geotextile in accordance with manufacturer's standards and recommendations. Adjacent strips of geotextile shall overlap a minimum of sixteen inches. Secure geotextile at least four feet outside of the bed excavation and take any steps necessary to prevent any runoff or sediment from entering the storage bed.

3.4.4 Install filter course aggregate in 8-inch maximum lifts to 95% standard proctor compaction (ASTM D698 / AASHTO T99). Install aggregate to grades indicated on the drawings. Testing frequency shall be no less than 1 per lift or for every 500 tons placed.

3.4.5 Install choker, gravel, and stone base course aggregate to 95% compaction standard proctor (ASTM D698 / AASHTO T99). Choker should be placed evenly over surface of filter course bed, sufficient to allow placement of pavement, and notify Engineer for approval. Choker base course thickness shall be sufficient to allow for even placement of the porous asphalt but no less than 4-inches in depth. Testing frequency shall be no less than 1 per lift or for every 500 tons placed.

3.4.6 The density of subbase courses shall be determined by AASHTO T 191 (Sand-Cone Method), AASHTO T 204 (Drive Cylinder Method), or AASHTO T 238 (Nuclear Methods), or other approved methods at the discretion of the supervising engineer. Testing frequency shall be no less than 1 per lift or for every 500 tons placed.

3.4.7 The infiltration rate of the compacted subbase shall be determined by ASTM D3385 or approved alternate as determine by the Engineer. The Contractor's approved testing lab shall perform the infiltration rate testing at 2 locations as determined by the Engineer. The infiltration rate shall be no less 5-30 ft/day or no less than 50% of the hydraulic conductivity (ASTM D2434) at 95% standard proctor compaction (refer to section 2.1.A.5).

3.4.8 Compaction of subbase course material shall be done with a method and adequate water to meet the requirements. Rolling and shaping shall continue until the required density is attained. Water shall be uniformly applied over the subbase course materials during compaction in the amount necessary for proper consolidation. No additional payment will be made for supplying, hauling, and application of water. No additional payment will be made for rolling and shaping of subbase.

3.4.9 Rolling and shaping patterns shall begin on the lower side and progress to the higher side of the subbase course while lapping the roller passes parallel to the centerline. Rolling and shaping shall continue until each layer conforms to the required grade and cross-section and the surface is smooth and uniform.

3.4.10 Following placement of subbase aggregate, the sideslope geotextile shall be folded back long all bed edges to protect from sediment washout along bed edges. At least a four-foot edge strip shall be used to protect beds from adjacent bare soil. This edge strip shall remain in place until all bare soils contiguous to beds are stabilized and vegetated. In addition, take any other necessary steps to prevent sediment from washing into beds during site development. When the site is fully stabilized, temporary sediment control devices shall be removed.

3.4.11 Porous Asphalt Pavement Installation

3.4.11.1 Mixing Plant

3.4.11.1.1 The mixing plant, hauling and placing equipment, and construction methods shall be in conformance with NAPA IS 131 (2008) and applicable sections of the Section 405 of the Standard Specifications. The mix temperature in the truck at the time of loading shall not exceed 350° F or 25° F more than the specified production temperature of the mix design, whichever is less. The use of surge bins shall not be permitted.

Production Sampling and Testing Requirements

Test	Minimum Frequency	Test Method
Mix Temperature in truck at Plant	1 st load and every 5 th load	MoDOT TM 30
Gradation	1 per 500 tons	AASHTO T 30
Specific Gravity		AASHTO T 331
Binder Content		AASHTO T 308
Air Void Content		AASHTO T 269
Binder Draindown		AASHTO T 305

3.5 Hauling Equipment

3.5.1 Mineral filler, fine aggregate, slag dust, etc. shall not be used to dust truck beds. The open graded mix shall be covered during transportation with a suitable canvas material (of such size sufficient to protect the mix from the weather and also minimize mix cooling and the prevention of lumps) in accordance with Section 404.14. When necessary, to ensure the delivery of material at the specified temperature, truck bodies shall be insulated, and covers shall be securely fastened. Long hauls, particularly those in excess of 25 miles, may result in separation of the binder from the mix (draindown) and its rejection. Draindown testing in accordance with AASHTO T 305 that exceeds 0.3 percent is excessive and will require a change in the Contractor's mix manufacturing or hauling operations.

3.5.2 Each truck will be visually inspected by the Engineer for pooling (draindown) at the time of placement.

3.6 Placing Equipment

3.6.1 The paver shall be a track paver in accordance with Section **404.15.2 Non-Highway Class Pavers**. The paver shall be a self-propelled unit with an activated screed or strike-off assembly capable of being heated if necessary, and capable of spreading and finishing the mixture without segregation for the widths and thicknesses required. In general, track pavers have proved superior for Porous Asphalt placement. The screed shall be adjustable to provide the desired cross-sectional shape. The finished surface shall be of uniform texture and evenness and shall not show any indication of tearing, shoving, or pulling of the mixture. The machine shall, at all times, be in good mechanical condition and shall be operated by competent personnel.

3.6.2 Pavers shall be equipped with the necessary attachments, designed to operate electronically, for controlling the grade of the finished surface.

3.6.3 The adjustments and attachments of the paver will be checked and approved by the Engineer before placement of asphalt material.

3.6.4 Slope Plate. Pavers shall be equipped with a sloped plate to produce a tapered edge at longitudinal joints. The sloped plate shall be attached to the paver screed extension.

3.6.5 The sloped plate shall produce a tapered edge having a face slope of 1:3 (vertical: horizontal). The plate shall be so constructed as to accommodate compacted mat thickness from 1 1/4 to 4 inches. The bottom of the sloped plate shall be mounted 3/8 to 1/2 inch above the existing pavement. The plate shall be interchangeable on either side of the screed.

3.6.6 Joint Heater. Pavers shall also be equipped with a joint heater capable of heating the longitudinal edge of the previously placed mat to a surface temperature of 200° F, or higher if necessary, to achieve bonding of the newly placed mat with the previously placed mat. This shall be done without undue breaking or fracturing of aggregate at the interface. The surface temperature shall be measured immediately behind the joint heater. The joint heater shall be equipped with automated controls that shut off the burners when the pavement machine stops and reignite them with the forward movement of the paver. The joint heater shall heat the entire area of the previously placed wedge to the required temperature. Heating shall immediately precede placement of the asphalt material.

3.7 Rollers

3.7.1 Rollers shall be in good mechanical condition, operated by competent personnel, capable of reversing without backlash, and operated at speeds slow enough to avoid displacement of the asphalt mixture. The weight of the rollers shall be sufficient to compact the mixture to the required density without crushing of the aggregate. Rollers shall be equipped with tanks and sprinkling bars for wetting the rolls and free from hydraulic, oil or fuel leaks.

3.7.2 Rollers shall be two-axle tandem rollers with a gross weight of not less than 8 tons and not more than 12 tons and shall be capable of providing a minimum compactive effort of 250 pounds per inch of width of the drive roll. All rollers shall be at least 42 inches in diameter.

3.7.3 A rubber tired roller will not be required on the open graded asphalt friction course surface.

3.8 Conditioning of Existing Surface

3.8.1 Contact surfaces such as curbing, gutters, and manholes shall be painted with a thin, uniform coat of Type SS-1H emulsified asphalt immediately before the asphalt mixture is placed against them in accordance with Section 407.

3.9 Temperature Requirements

3.9.1 Placement. The temperature of the asphalt mixture, at the time of discharge from the haul vehicle at the paver, shall be between 275 to 325° F and no less than 10° F above the compaction temperature for the approved mix design, whichever is greater.

3.9.2 Temperatures of the asphalt mixture shall be recorded, at a minimum, for the first load and then for every third load.

3.10 Spreading and Finishing Weather Limitations. Porous asphalt shall not be placed between November 15 and March 15, or when the ambient air temperature at the pavement site in the shade away from artificial heat is below 60° F or when the actual ground temperature is below 50° F. Only the Director may adjust the air temperature requirement or extend the dates of the pavement season. The Contractor shall not pave on days when rain is forecast for the day, unless a change in the weather results in favorable conditions as determined by the Engineer.

3.10.1 Lift Thickness. The Porous Asphalt shall be placed either in a single application at 4 inches thick or in two lifts. If more than one lift is used, great care must be taken to insure that the porous asphalt layer join completely. This means: keeping the time between layer placements minimal; keeping the first layer clear from dust and moisture, and minimizing traffic on the first layer.

3.10.2 Protection of Exposed Surfaces. The Contractor shall protect all exposed surfaces that are not to be treated from damage during all phases of the pavement operation.

3.10.3 Spreading and Finishing. The asphalt mixture shall be spread and finished with the specified equipment. The mixture shall be struck off in a uniform layer to the full width required and of such depth that each course, when compacted, has the required thickness and conforms to the grade and elevation specified. Pavers shall be used to distribute the mixture over the entire width or over such partial width as practical. On areas where irregularities or unavoidable obstacles make the use of mechanical spreading and finishing equipment impractical, the mixture shall be spread and raked by hand tools.

3.10.4 Daylight Production Required. No material shall be produced so late in the day as to prohibit the completion of spreading and compaction of the mixture during daylight hours, unless night paving has been approved for the project.

3.10.5 Opening to Traffic. No traffic will be permitted on material placed until the material has been thoroughly compacted and has been permitted to cool to below 100° F. The use of water to cool the pavement is not permitted. The Engineer reserves the right to require that all work adjacent to the pavement, such as guardrail, cleanup, and turf establishment, is completed prior to placing the wearing course when this work could cause damage to the pavement. On projects where traffic is to be maintained, the Contractor shall schedule daily pavement operations so that at the end of each working day all travel lanes of the roadway on which work is being performed are paved to the same limits. Suitable aprons to transition approaches, where required, shall be placed at side road intersections and driveways as directed by the Engineer.

3.11 Compaction

3.11.1 Void Content. Immediately after the asphalt mixture has been spread, struck off, and surface irregularities adjusted, it shall be thoroughly and uniformly compacted by rolling. The compaction objective is 16% - 19% in place void content (Corelock using ASTM D 6857) and shall be determined by the Contractor a minimum of 1 time per 500 tons or fraction thereof. Placement quantities of 50 tons or less per day will be visually accepted by the Engineer. Failure to achieve a minimum of 16% in-place voids or when in-place voids exceed 19%, the Engineer will require the immediate plant shut-down. The Contractor will verify the necessary changes in mix design, mix production or mix placement with the Engineer before plant production resumes.

3.11.2 Breakdown. Breakdown rolling shall occur when the mix temperature is between 275 to 325° F.

3.11.3 Intermediate. Intermediate rolling shall occur when the mix temperature is between 200 to 275° F

3.11.4 Finish Rolling. Finish rolling shall occur when the mix temperature is between 150 to 200° F.

3.11.5 Compaction. Rolling shall be continued until all roller marks are eliminated and before the mix temperature reaches 175°F. The cessation temperature occurs at approximately 175°F, at which point the mix becomes resistant to compaction. If compaction has not been done at temperatures greater than the cessation temperature, the pavement will not achieve adequate durability. The surface shall be rolled when the mixture is in the proper condition and when the rolling does not cause undue displacement, cracking, or shoving.

3.11.6 Breakdown Vibratory Compaction. Rollers or oscillating vibratory rollers, ranging from 8-12 tons, shall be used for compaction. The number, weight, and type of rollers furnished shall be sufficient to obtain the required compaction while the mixture is in a workable condition. Generally, one breakdown roller will be needed for each paver used in the spreading operation.

3.11.7 To prevent adhesion of the mixture to the rolls, rolls shall be kept moist with water or water mixed with very small quantities of detergent or other approved material. Excess liquid will not be permitted.

3.11.8 Irregular Areas. Along forms, curbs, headers, walls, and other places not accessible to the rollers, the mixture shall be thoroughly compacted with hot or lightly oiled hand tampers, smoothing irons or with mechanical tampers. On depressed areas, either a trench roller or cleated compression strips may be used under the roller to transmit compression to the depressed area.

3.11.9 Other combinations of rollers and/or methods of compacting may be used if approved in writing by the Engineer, provided the compaction requirements are met.

3.11.10 Joint Compaction. Unless otherwise specified, the longitudinal joints shall be rolled first. Next, the Contractor shall begin rolling at the low side of the pavement and shall proceed towards the center or high side with lapped rollings parallel to the centerline. The speed of the roller shall be slow and uniform to avoid displacement of the mixture, and the roller should be kept in as continuous operation as practical. Rolling shall continue until all roller marks and ridges have been eliminated.

3.11.11 Roller Restrictions. Rollers will not be stopped or parked on the freshly placed mat.

3.11.12 Acceptance Testing. It shall be the responsibility of the Contractor to conduct whatever process control the Contractor deems necessary. Acceptance testing will be conducted by the Engineer using cores provided by the Contractor.

3.11.13 Mixture Deficiencies. Any mixture that becomes loose and broken, mixed with dirt, or is in any way defective shall be removed and replaced with fresh hot mixture. The mixture shall be compacted to conform to the surrounding area. Any area showing an excess or deficiency of binder shall be removed and replaced. These replacements shall be at the Contractor's expense.

3.11.14 Cessation of Vibratory Compaction Equipment. If the Engineer determines that unsatisfactory compaction or surface distortion is being obtained or damage to highway components and/or adjacent property is occurring using vibratory compaction equipment, the Contractor shall immediately cease using this equipment and proceed with the work in accordance with Sec 3.11.5.

3.11.15 Curing and Protection of Permeable Pavement. The Contractor assumes full responsibility for the cost of repairing all damages that may occur to roadway or parking lot components and adjacent property if vibratory compaction equipment is used. After final rolling, no

vehicular traffic of any kind shall be permitted on the surface until cooling and hardening has taken place, and in no case within the first 48 hours. For small batch jobs, curing can be considered to have occurred after the surface temperature is less than 100° F. Curing time is preferably one week, or until the entire surface temperature cools below 100° F. Provide barriers as necessary at no extra cost to the Owner to prevent vehicular use; remove at the discretion of the Engineer.

3.12 Joints

3.12.1 Between New and Old Pavements. Joints between old and new pavements or between successive day's work shall be made to ensure a thorough and continuous bond between the old and new mixtures. Whenever the spreading process is interrupted long enough for the mixture to attain its initial stability, the paver shall be removed from the mat and a joint constructed.

3.12.2 Butt Joints. Butt joints shall be formed by cutting the pavement in a vertical plane at right angles to the centerline, at locations approved by the Engineer. The Engineer will determine locations by using a straightedge at least 16 feet long. The butt joint shall be thoroughly coated with Type SS-1H emulsified asphalt just prior to depositing the pavement mixture when pavement resumes.

3.12.3 Tapered Joints. Tapered joints shall be formed by tapering the last 18 to 24 inches of the course being laid to match the lower surface. Care shall be taken in raking out and discarding the coarser aggregate at the low end of the taper, and in rolling the taper. The taper area shall be thoroughly coated with Type SS-1H emulsified asphalt just prior to resuming pavement. As the paver places new mixture on the taper area, an evenly graduated deposit of mixture shall complement the previously made taper. Shovels may be used to add additional mixture if necessary. The joint shall be smoothed with a rake, coarse material discarded, and properly rolled.

3.12.4 Longitudinal Joints. Longitudinal joints that have become cold shall be coated with Type SS-1H emulsified asphalt before the adjacent mat is placed. If directed by the Engineer, joints shall be cut back to a clean vertical edge prior to applying the emulsion.

3.13 Surface Tolerances

3.13.1 Straightedge Testing. The surface will be tested by the Engineer using a straightedge at least 10 feet in length. Any variations exceeding 3/8 inch between any two contact points shall be satisfactorily eliminated.

3.13.2 Work shall be done expertly throughout, without staining or injury to other work. Transition to adjacent impervious asphalt pavement shall be merged neatly with flush, clean line. Finished pavement shall be even, without pockets, and graded to elevations shown on drawing.

3.13.3 Equipment or Material Storage Restrictions. Porous pavement beds shall not be used for equipment or materials storage during construction, and under no circumstances shall vehicles be allowed to deposit soil on paved porous surfaces.

3.14 Permeability Testing

3.14.1 The full permeability of the pavement surface shall be tested by application of potable water at the rate of at least 5 gpm over the surface, using a hose or other distribution devise. Water used for the test shall be clean, free of suspended solids and deleterious liquids and will be provided at no extra cost to the Owner. All applied water shall infiltrate directly without large puddle formation or surface runoff, and shall be observed by the Engineer.

3.15 Repair of Damaged Pavement

3.15.1 Any existing pavement on or adjacent to the site that has been damaged as a result of construction work shall be repaired to the satisfaction of the Engineer without additional cost to the Owner.

3.16 Plant Shutdown and Rejection of Mix. Should the porous asphalt mix not meet the tolerances specified in this special provision upon repeat testing, the Engineer may reject further loads of mix. Mix that is loaded into trucks during the time that the plant is changing operations to comply with a failed test shall not be accepted, and should be recycled at the plant.

4.0 Method of Measurement. Measurement for furnishing and installing the pervious asphalt pavement will be made to the nearest square yard of pavement, complete and in place.

5.0 Basis of Payment.

5.1 The accepted quantities of pervious pavement, complete and in place, will be paid for at the contract unit price per square yard. Payment for other items related to the pervious pavement will be paid for at the unit price for each included in the contract.

5.2 The pay item for this work is listed as 405-50.01

B. DETENTION POND OUTFALL STRUCTURE

1.0 Description. This work consists of furnishing and constructing the control structures for the wetland and detention pond, as specified on sheet 86 of 184 of the plans.

2.0 Materials. All work and materials shall be in accordance with the latest edition of the Metropolitan St. Louis Sewer District Standard Construction Specifications for Sewers and Drainage Facilities. A cut sheet or shop drawing shall be submitted to MSD prior to installation of the trash rack.

3.0 Basis of Payment. Detention Pond Outfall Structures will be paid for at the contract lump sum price per each. Such payment shall include all construction and materials necessary for the complete installation of the outlet structures. No direct payment will be made for incidental items necessary to complete the work, including but not limited to labor, tools, equipment, excavation, storage, hauling, disposing, or any other items associated with this item.

3.1 The pay item for this work is listed as 604-13.30

C. SIDEWALK BRIDGE AND FLUME

1.0 Description. This work shall consist of the construction of various sidewalk bridges and flumes throughout the project limits, as specified on sheet 87 of 184 of the plans.

2.0 Measurement and Payment. The pay item for Sidewalk Bridge and Flume will be paid per square yard, and will include the work shown on in the details of the plans; more specifically all of the items shaded in the gray shading tone. This work shall include the curb cut casting, concrete, rebar reinforcement, grading, earthwork, backfill, bedding, and all other items incidental to the work shown.

2.1 The pay item for this work is listed as 604-19.92

D. OBSERVATION WELL

1.0 Description. This work consists of furnishing and constructing observation wells for inspection of pervious pavement storage beds and the bioretention cell as indicated on sheet 92 of 184 of the plans. Shop drawings or material cut sheets shall be submitted for review prior to receiving materials.

2.0 Basis of Payment. Observation wells will be paid for at the contract unit price for "Observation Well". This unit price shall include all construction and materials necessary for the installation of each well, complete and in place. No direct payment will be made for incidental items necessary to complete the work, including but not limited to, forming, tools, labor, or hardware.

2.1 The pay item for this work is listed as 604-13.40

E. TEMPORARY CONCRETE SIDEWALK, 4-INCH THICK

1.0 Description. This work consists of furnishing and providing temporary sidewalk connections during the construction phase of permanent sidewalk along Shackelford and the various sideroads.

1.1 The work, materials, and method of measurement for item shall conform to the requirements of Section 608 of the St. Louis County Standard Specifications for Highway Construction.

2.0 Basis of Payment.

2.1 The accepted quantities of Temporary Concrete Sidewalk will be paid for at the contract unit bid price per square foot.

2.2 Removal of the Temporary Concrete Sidewalk will not be measured or paid for. Said removal shall be considered incidental to the bid price for the Temporary Concrete Sidewalk.

2.3 The pay item for this work is listed as 608-60.14

F. MSD TYPE 5 ROCK BLANKET

1.0 Description. This work consists of furnishing and placing MSD Type 5 Rock Blanket in the locations shown on the plans, conforming to the requirements of Part 2, Section K of MSD's Standard Construction Specifications for Sewers and Drainage Facilities, 2009 Edition.

1.1 In addition to the placement of the rock blanket, the contractor shall grout the rocks to hold them in place on the slopes shown on the plans. To do so, Contractor shall place a layer of low slump concrete on slope where the blanket is shown on the plans and embed the larger stones in the concrete to lock the rocks in place on the slope. Dumping the rocks into place will not be acceptable, as there is no way to ensure all rocks are embedded in the concrete. Other grouting methods (which can be shown to provide the same results as required herein) may be presented to the Engineer for approval but the County makes no guarantees that any method other than that described herein will be approved. A smooth surface of concrete covering the large stones is NOT the desired result.

2.0 Basis of Payment.

2.1 Payment for Furnishing and Placing MSD Type 5 Rock Blanket, complete and in place, will be paid for at the contract unit bid price per square yards. No distinction or separate payment will be made for furnishing or placing. The bid item shall incorporate both actions.

2.2 No additional payment will be made for the labor or materials (including concrete) required to lock the blanket in place on the slope. These items and actions shall be considered incidental to the bid item.

2.3 The pay item for this work is listed as 611-30.90

G. BIORETENTION PLANTING AND RESTORATION

1.0 Description. This work consists of the following requirements necessary for the construction and site restoration of the wetland bounded generally by Shackelford Road, Teakwood Manor Drive, and Randell Court, as well as the bioretention area east of Lindsay lane and the various Modular BMP systems on the project.

1.1 The requirements herein supplement any such requirements found in Division 808 of the St. Louis County Standard Specifications for Highway Construction, and supercede any said requirements in the event where this JSP is more restrictive.

2.0 Plant Criteria

2.1 The planting of the grasses, sedges, trees, and shrubs specified on the construction plans in the area of the detention pond shall conform to the requirements of Section 808 of the St. Louis County Standard Specifications. In areas where conflict occurs between this specification (pertaining to Section 808 only) and the notes shown on the plan sheets, the direction given on the plan sheets shall govern.

2.2 Balled and Burlapped Trees (B&B). The trees shall be of species and trunk diameter identified in the Planting Plans in the Project Construction Plans. The trees shall be grown in

climatic conditions similar to those of the project site. The trees shall be true to their name as specified. Balled and burlapped plants shall be dug with a sufficient quantity of earth taken equally on all sides and bottoms of the plants to include the necessary roots to support growth. B&B stock shall be single stem, reasonably straight and of specimen quality. Stock shall be free of insects, disease, defects or injuries. Tree diameter shall be measured six inches above the ground line. For tree diameters of 1 – 1.5 inches, the minimum ball diameter shall be 18 inches. For tree diameters of 2 – 2.5 inches, the minimum ball diameter shall be 24 inches. The balls shall be prepared in a workmanlike manner and firmly bound.

2.3 Bare Root Trees and Shrubs. The plants shall be of species identified in the Planting Plans on the Project Construction Plans and grown in climatic conditions similar to those of the project site. Plant material shall be 1 to 2 years old and of sufficient length to provide intended design function, minimum length 18 inches long, or as specified in the Project Construction Plans. Plant material shall be live, viable woody vegetation. Plants shall have well-developed branches and vigorous healthy root systems. Plants shall have root mass approximately equal to the top. Plants shall be free of insects, disease, defects or injuries.

2.4 Container plants. The plants shall be of species identified in Planting Plans on the Project Construction Plans and grown in climatic conditions similar to those of the project site. Plant material shall be live, viable woody vegetation. Plants shall be well-rooted and established in the containers in which they are supplied. The root system shall be large enough to hold the soil when the plant is removed from the container but shall not be root bound. Minimum container size shall be one (1) gallon unless specified otherwise on the Planting Plans on the Project Construction Plans.

2.5 Plant plugs and rhizomes. Plant materials shall consist of live, viable plants of the type and size specified in the Planting Plans on the Project Construction Plans. Plant plugs shall have well developed root systems and shall hold the soil mass when removed from the container. However, plant plugs shall not be root bound. Rhizomes shall be well developed and free from rot or scars.

3.0 Handling of Live Plant Materials:

3.1 Shipping requirements. Bare root trees, shrubs, and herbaceous plants shall be harvested just before shipment to the site or harvested no earlier than two months before planting time and stored in refrigerated storage at 34°F to 38°F and greater than 90% humidity. The plant material shall be shipped to arrive on site no later than 24 hours after harvest or removal from cold storage. Plants shall be shipped in enclosed or covered trucks to prevent excessive drying. All plants regardless of type shall be packed in such a way as to maintain adequate moisture and prevent damage to roots, bark, stems or limbs. Bare root plants shall be bundled by species. Each bare root bundle shall carry a label clearly and accurately identifying the plant species. Each individual container plant and balled and burlap tree shall carry a label clearly and accurately identifying the plant species. Each plant plug container and rhizome package shall be clearly and accurately labeled.

3.2 Storage and On-Site Handling. A plant storage area shall be delineated by hay bales, timbers, temporary shed or other structure, such as a refrigerated trailer or room, to protect the plants from mechanical damage, freezing and desiccation. The plant storage area shall be arranged so that plant materials can be removed from storage without crushing or otherwise damaging the remaining stock.

3.3 Plants shall be protected from desiccation and severe freezing. The plants shall be kept moist at all times. The plant materials shall be protected from direct sunlight and from drying by wind.

3.4 All rooted plant materials stored on site shall be "heeled in" in wet mulch completely covering the roots to a depth of two inches. When heeling in bare root stock, the bindings around the bundles shall be cut and the root mass spread out. The label identifying each bundle shall be maintained with the plants so that the identity of each stem is apparent. Plant plugs and rhizomes shall be heeled in such a way that they are protected from crushing and readily retrievable.

3.5 Mulch in the plant storage area shall be watered thoroughly at least once each day. Mulch temperature shall be monitored and recorded daily. Mulch temperature shall be maintained between 34°F and 40°F. Ice may be added to the mulch to maintain proper temperature. Hair roots must not be exposed to the elements for more than 60 seconds. If the hair roots dry the plant will die; it shall not be accepted and shall be replaced.

3.6 Planting stock shall be protected from damage. At no time shall motorized equipment be operated directly on the plant stock.

4.0 Live Plant Installation and Maintenance:

4.1 Definitions:

4.1.1 Fertilizer. Fertilizer shall consist of a balanced controlled release fertilizer (16-6-8) in individual application packets. The fertilizer shall include minor nutrients, humic acid and naphthalene acetic acid.

4.1.2 Mycorrhizal inoculum packets. Mycorrhizal inoculum packets shall consist of pelletized viable mycorrhizae including both endo- and ecto-mycorrhizae.

4.1.3 Root gel. Root gel shall consist of a water-soluble gel containing starch-based hydrophilic polymers, humic acid, kelp. A fresh batch of root gel shall be prepared each day.

4.1.4 Root gel with mycorrhizal inoculum. Root gel shall consist of a water-soluble gel containing starch-based hydrophilic polymers, humic acid, kelp extract and mycorrhizal. A fresh batch of root gel shall be prepared each day.

4.1.5 Rooting hormone containing synthetic auxin plant hormone (IBA) or comparable ingredient and specifically formulated to promote root formation in hardwood cuttings.

4.1.6 Loam. Loam shall consist of a uniform mixture (equal parts) of sand, silt and clay and shall be reasonably free of lumps, roots, gravel and other deleterious materials.

4.2 Construction Requirements:

4.2.1 General Installation Conditions. Plants shall not be installed when ambient temperatures may drop below 32°F. All plants shall not be installed when ambient temperatures are forecasted to rise above 90°F at any point during a forty-eight (48) hour period following installation. Plants shall not be installed when wind velocity exceeds 30 mph.

4.2.2 Ball and burlap trees. Ball and burlap trees shall be installed in the pattern and density presented in the Planting Plan on the Project Construction Plans. BALL AND BURLAP TREES SHALL ONLY BE INSTALLED BETWEEN SEPTEMBER 1 THROUGH NOVEMBER 30 AND FEBRUARY 1 THROUGH MAY 31. When installation through erosion control blanket is specified, ball and burlap trees shall be planted through cleanly cut slits in the erosion control blanket. One (1) fertilizer packet per foot of height and one (1) mycorrhizal inoculum packet shall be placed in the planting hole before plant placement. Plants shall be placed in the plumb position. Excavated material shall be mixed with loam to form a friable backfill material. Backfill material shall be placed around the soil mass and tamped firmly into place. The diameter of the planting hole shall be at least 30% greater than the diameter of the container and at least 1 inch deeper. Side slopes shall be approximately 1:1 and the bottom of the planting hole shall be horizontal. Burlap shall not be removed from the plants until immediately before installation. When removing burlap from the plant, the soil mass shall not be disturbed. All cords, wires and burlap shall be removed from the trunk of the plant during or at the end of the backfilling operation. Additional excavated material shall be used to construct a 2-inch high water-retention rim on the downhill lip of the planting hole. After installation the plant shall be watered sufficiently to saturate the root mass. Additional backfill material shall be added to fill voids. The slit in the erosion control blanket shall be closed around the stem of the plant and stapled securely. Within 10 days after planting, balled and burlap trees shall be wrapped with a biodegradable tree wrap. The tree wrap shall cover the trunk from the ground to the lowest major branch with a ¼ inch to ½ inch overlap.

4.2.3 Container Vegetation. Container plants shall be installed in the pattern and density presented in the Planting Plan on the Project Construction Plans. CONTAINER VEGETATION SHALL ONLY BE INSTALLED BETWEEN SEPTEMBER 1 THROUGH NOVEMBER 30 AND FEBRUARY 1 THROUGH MAY 31. When installing through erosion control blanket, container plants shall be planted through cleanly cut slits in the erosion control blanket. Portions of the erosion control blanket shall not be removed. The diameter of the planting hole shall be at least 30% greater than the diameter of the container and at least 1 inch deeper. Side slopes shall be approximately 1:1 and the bottom of the planting hole shall be horizontal. Plants shall not be removed from their containers until immediately before installation. When removing plant from container, the soil mass shall not be disturbed. Two fertilizer packets and a mycorrhizal inoculum packet shall be placed in the planting hole before plant placement. Plants shall be placed in the plumb position. Excavated material shall be mixed with topsoil to form a friable backfill material. Backfill material shall be placed around the soil mass and tamped firmly into place. Additional excavated material shall be used to construct a 2-inch high water-retention rim on the downhill lip of the planting hole. After installation the plant shall be watered sufficiently to saturate the root mass. Additional backfill material shall be added to fill voids. The slit in the erosion control blanket shall be closed around the stem of the plant and stapled securely. Additional blanket may be necessary to cover exposed soil.

4.2.4 Plugs and Rhizomes. Plant plugs shall be installed in the pattern and density presented in the Planting Plan on the Project Construction Plans. PLUG AND RHIZOMES SHALL ONLY BE INSTALLED BETWEEN FEBRUARY 15 THROUGH MAY 31. When removing plant from container, the soil mass shall not be disturbed. Any circling roots shall be cleanly cut. The plant plugs shall be dipped in root gel prior to installation. The plant plug shall be placed in loosened loam flush with the top of the soil mass. After placement, the soil shall be firmly tamped around the plant plug to eliminate air pockets. Rhizomes shall be dipped in root gel prior to installation. The rhizomes shall be placed in loosened loam. The top of the rhizome shall be exposed and shall not be completely covered with soil. After placement, the soil shall be firmly tamped around the rhizome to eliminate air pockets.

4.3 Post Installation Plant Maintenance:

4.3.1 Contractor shall thoroughly water installed plants within 24 hours of installation. Installed plants shall be watered sufficient to saturate root system at least once each week during construction unless otherwise instructed by the City's Onsite Representative.

4.3.2 Plants that are installed during the spring planting period shall be watered once a week during the following summer months of May, June, July and August. Plants that are installed during the fall planting period shall be watered once a week during the following spring months of March, April and May only if there is less than 1" of rain during each week, and once a week during the following summer months of June, July and August regardless of rainfall. Weeks shall be measured 12:00 a.m. Monday to 12:00 a.m. Monday.

4.3.3 For spring planting conditions, the Contractor shall correct erosion and drainage problems during the following summer months of May, June, July and August. For any seeded area showing bare ground patches larger than 36"x36", Contractor shall hand seed using the seed mix specified in the Contract Documents and cover with erosion control blanket or other specified erosion control material. Contractor shall remove required silt fencing after the final project walk thru and restore the fence area by hand seeding, using the seed mix specified in the Contract Documents.

5.0 Method of Measurement. Measurement will be made in accordance with the provisions of Section 808.6

6.0 Basis of Payment. Payment will be made in accordance with Section 808.7.

H. BIORETENTION SOILS AND RELATED MATERIALS

1.0 Description. This specification pertains to the bioretention soils and filtering media associated with the wetland bounded generally by Shackelford Road, Teakwood Manor Drive, and Randell Court, as well as the bioretention area east of Lindsay lane and the various Modular BMP systems on the project.

1.1 The filtering media, including mulch, gravel, sand, and soil media layers, shall be in strict accordance with the Landscape Guide for Stormwater Best Management Practice Design, published jointly by the Metropolitan St. Louis Sewer District, the Missouri Department of Conservation, the Missouri Botanical Garden, Shaw Nature Preserve, the Missouri Department of Agriculture, and Grow Native!. The document is available online for download at:
<http://www.stlmsd.com/what-we-do/stormwater-management/bmp-toolbox/stormwater-quality/bioretention/bioretention-design>

1.2 Bioretention Media. The planting soil should be a sandy loam or loamy sand (should contain a minimum of 35 to 60 percent sand, by volume). The clay content for these soils should be less than 10 percent by volume. A saturated hydraulic conductivity of at least 1.0 feet per day (0.5 inches per hour) is required. (Without post-construction verification, a conservative default value of 0.5 feet per day is acceptable. The design rate may be increased to 2 feet/day if field observation, post-construction infiltration testing, or other equivalent testing [as determined by the Metropolitan St. Louis Sewer District] is provided to confirm the design rate is achieved.) The soil should be free of stones, stumps, roots, or other woody material over 1 inch in diameter. For best results, brush or seeds from noxious weeds, such as Johnson grass, mugwort, nutsedge and Canadian thistle

should not be present in the soils. Placement of the planting soil should be in lifts of 12 to 18 inches, loosely compacted (rubber wheeled heavy equipment and mechanical tamping devices are not recommended for compaction). The specific characteristics are presented in the following table.

Parameter	Value
pH range	5.2 to 8.00
Organic matter	1.5 to 5.0%
Magnesium	35 lbs. per acre, minimum
Phosphorus (P2O5)	75 lbs. per acre, minimum
Potassium (K2O)	85 lbs. per acre, minimum
Soluble salts	≤ 500 ppm

1.3 Mulch Layer. The mulch layer should be standard landscape style, single or double shredded hardwood mulch. The mulch layer should be free of other materials, such as weed seeds, soil, roots, etc. The mulch should be applied to a maximum depth of two (2) inches. Grass clippings CAN NOT be used as a mulch. Alternatively, pea gravel or other similar natural gravel may be used.

1.4 Gravel and Sand. The Engineer shall be provided samples of the material at least 14 days in advance of use. A “natural” (i.e. river-run) source of sand and gravel should be used. Materials must be washed to prevent fines from clogging the sand and gravel layers.

1.5 Seed Mixtures.

1.5.1 There are several seed mixtures required in the area of the wetland. Refer to the Plans (Sheet 84 of 184) for seed types and application rates. Refer to Section 800 of the St. Louis County Standard Specifications for fertilizer types and application rates.

1.5.2 Seed to be used shall be approved by the State of Missouri for viability and freedom from excessive amounts of weed seeds. Shipment containers shall be clearly marked with seed species and/or seed mix. Submit to the Engineer seed mix label at least 14 days prior to seeding. Request for seed substitutions shall only be made by written request to the County and requires approval from the County.

1.5.3 Seed materials shall be delivered to the site no sooner than two weeks before start of placement. Seed shall be stored in cool, dry, covered conditions. Seed shall not be stored in unprotected areas subject to drought or precipitation events.

1.5.4 A seed cover crop is required to prevent erosion and reduce weed growth during the first growing season. Either Seed Oats (*Avena Sativa*) or Winter Wheat (*Triticum Aestivum*) can be used at a rate of 60 lbs per acre. If Winter Wheat is used, cut before seed heads mature to avoid reseeding. Clippings from mowing shall be removed from the wetland.

2.0 Basis of Payment.

2.1 Payment for the bioretention materials and related soils will be made by the contract unit price for the following items (next page):

Item No.	Description	Unit	ASTM Designation
310-30.05	Clean Crushed Stone (2-1/2")	C.Y.	ASTM D-448 No. 8
605-40.01	Natural Sand	C.Y.	ASTM C-33 F.A.
605-50.01	Gravel (3/8")	C.Y.	ASTM C-33 No. 8
605-50.03	Gravel (3/4")	C.Y.	ASTM C-33 No. 6 or 67
802-60.90	Shredded Hardwood Bark Mulch	C.Y.	N/A
805-10.41	Low Marsh Zone Seed Mixture	Acre	N/A – See MSD Specs.
805-10.50	Tall MSD Dry Seed Mixture	Acre	N/A – See MSD Specs.
805-10.51	Tall MSD Wet Seed Mixture	Acre	N/A – See MSD Specs.
806-16.00	Bioretention Media	C.Y.	N/A – See MSD Specs.
807-30.01	MSD Type 4 Geotextile	S.Y.	N/A – See MSD Specs.

I. **MODULAR BMP SYSTEMS**

1.0 Description. This work shall consist of the manufacture or construction and installation of a modular BMP system for concrete rain gardens meeting the requirements of this specification, as indicated on sheet 90 of 184 of the plans.

1.1 Submittals. Contractor shall submit detailed installation methods of modular precast concrete rain garden units. Indicate locations, plans, elevations, dimensions, and shapes required for installation. In addition, for each type of finish indicated on exposed surfaces of modular precast concrete rain garden units, in sets of 3, illustrating full range of finish, color, and texture variations expected; approximately 12 by 12 by 2 inches.

2.0 Materials.

2.1 Contractor shall provide the following material certificates, signed by manufacturers:

Cementitious materials

Aggregates

Reinforcing materials

Admixtures

Threaded inserts

Test Reports: Provide certified test report showing unit strength and percentage of air entrainment of precast concrete panels.

2.2 Delivery and Storage: Deliver modular precast concrete rain garden units in such quantities and at such times to limit unloading units temporarily on the ground. Support units during shipment on non-staining shock-absorbing material. Store units with adequate dunnage and bracing and protect units to prevent contact with soil and to prevent cracking, distortion, warping or other physical damage. Place stored units so identification marks are clearly visible, and units can be inspected. Handle and transport units in a position consistent with their shape and design in order to avoid excessive stresses which would cause cracking or damage. Lift and support units only at threaded inserts cast into each precast concrete panel.

2.3 System Components:

2.3.1 System consists of five (5) basic modular concrete shapes with lifting connections to be used for placement of modules in configuration indicated on the drawings.

2.3.2 Modules shall be placed on a compacted granular leveling base, overlap and be secured in place with 1/2 inch diameter steel pins and internal or external structural supports as detailed on project documents.

2.3.3 Granular Base Leveling Course: The Engineer shall be provided samples of the material for gradation and Proctor testing at least 14 days in advance of use. Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 95 percent passing a 3/4 inch sieve and not more than 10 percent passing a No. 200 sieve. Granular base shall be compacted using a mechanical plate compactor to 95% of the Standard Proctor maximum soil density. Compaction testing shall be made at no less than 4 per day of placement.

2.3.4 Drainage Aggregate: The Engineer shall be provided samples of the material for gradation and Proctor testing at least 14 days in advance of use. Narrowly graded mixture of washed crushed stone, or crushed or uncrushed gravel; ASTM D 448; coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2-inch sieve and 0 to 5 percent passing a No. 8 sieve.

3.0 Execution.

3.1 General: Install manufactured modular concrete BMP units according to manufacturer's written instructions (if proprietary) unless otherwise indicated.

3.1.1 Securely anchor with hardware recommended by manufacturer

3.1.2 Install external / internal lateral supports to maintain alignment and to accommodate lateral movement.

3.1.3 Do not exceed 1/8-inch unit-to-unit offset from flush (lippage) or 1/4 inch in 10 feet from level, or indicated slope.

3.2 Drainage Aggregate: Place and compact filter material over subsurface drain and granular leveling course to within 12 inches of final subgrade, in compacted layers 6 inches thick. Overlay drainage backfill with one layer of subsurface drainage geotextile, overlapping sides and ends at least 6 inches

3.3 Compaction Of Soil Backfills And Fills Outside Of Rain Garden

3.3.1 Place backfill and fill soil materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.

3.3.2 Place backfill and fill soil materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure. Backfill exterior and interior of rain garden in alternating lifts to prevent displacing rain garden precast panels. Remove temporary bracing only after backfill is complete.

3.3.3 The Engineer shall be provided samples of the material for Proctor testing at least 14 days in advance of use. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D 698 and ASTM D 1557:

3.3.3.1 Under structures, steps, and pavements, scarify and re-compact top 12 inches of existing subgrade and each layer of backfill or fill soil material at 95 percent of the maximum standard Proctor density. Minimum of one test per location per day of placement.

3.3.3.2 Under walkways, scarify and re-compact top 6 inches below subgrade and compact each layer of backfill or fill soil material at 92 percent of the maximum standard Proctor density. Minimum of one test per location per day of placement.

3.3.3.3 Under turf or unpaved areas, scarify and re-compact top 6 inches below subgrade and compact each layer of backfill or fill soil material at 85 percent of the maximum standard Proctor density. Minimum of one test per location per day of placement.

3.3.4 Refer to JSP-G for the plantings within the Modular BMP systems.

4.0 Method of Measurement. No measurement will be made.

5.0 Basis of Payment.

5.1 Modular BMP systems will be paid for at the contract lump sum price per each size specified on the plans. Such payment shall include all construction and materials necessary for the complete installation of the modular panels. No direct payment will be made for incidental items necessary to complete the Work, including but not limited to, excavation, subbase preparation, bedding, backfill outside the walls, tools, or labor. The contract unit price and payment will be full compensation for providing a technical advisor as needed. Payment for the plantings, bedding inside the Modular BMP system, or other incidental within the walls of the system will be paid for accordingly by bid item.

5.2 The pay item for this work is listed as 860-00.10, 860-00.15, and 860-00.25.

J. SAWCUT

3.0 Description. This work consists of sawcutting various types of pavements and pedestrian facilities at any depth.

3.1 The work, materials, and method of measurement for item shall conform to the requirements of Section 202 of the St. Louis County Standard Specifications for Highway Construction.

4.0 Basis of Payment.

4.1 The Sawcut work shall be considered incident to the project and will not be measured for payment.

**END OF
JOB SPECIAL PROVISIONS**

200.20.3 REMOVAL OF BUILDINGS

- A. All potential bidders will be allowed to view the one (1) building scheduled for demolition. St. Louis County will hold "Pre Bid Meetings on January 20, 2016. The meetings will be held at 1845 Teakwood Manor Drive at 1:00 PM.
- B. All necessary permits shall be obtained by the Contractor, at his expense, from governmental agencies having jurisdiction, prior to commencement of any work.
- C. All utility firms shall be given notice by the Contractor to disconnect their respective facilities. Water service shall be disconnected by the Contractor at the street main prior to the commencement of demolition to the improvement or removal of any salvage material from the improvement. Written confirmation from the appropriate water company as to the satisfactory disconnection must be provided to the Department prior to any other demolition work.
- D. All sanitary sewer openings shall be satisfactorily sealed by the Contractor to meet the requirement of the sewer district servicing the area prior to the commencement of demolition to the improvement or removal of any salvage material from the improvement. Written confirmation from the appropriate sewer company as to satisfactory work completed must be provided to the Department prior to any other demolition work.
- E. Foundation walls shall be completely removed.
- F. The foundation walls and basement slab are to be completely removed.
- G. The contractor shall be required to test the structure for asbestos prior to demolition. It is anticipated that low levels of asbestos will be present. The asbestos survey results, including laboratory results, shall be supplied to St. Louis County as soon as they are received. Contractor is responsible for permits for asbestos abatement. Asbestos abatement costs to include any clearance activities (e.g. air monitoring, etc.) that may be required by St. Louis County Health Department.
- H. Payment for removal of the one (1) building, including asbestos testing and asbestos removal, will be completely covered by the contract unit price for Item No. 202-22.10 "Removal of Buildings".

200.30.5 EXCAVATION OF UNSUITABLE MATERIAL AND BACKFILL OF RESULTING EXCAVATION

- A. It is the intent of this specification that the required backfill be provided to furnish a stable foundation for the roadway. The Engineer may order additional excavation beyond the pay limits established for roadway excavation in order to remove material found unsuitable for roadway construction. Backfill material shall be of an approved 2-inch maximum size granular-type material (with a plasticity index not exceeding 10 and a gradation such that at least 50 percent of the material will be retained on the No. 4 sieve) and placed to a depth approved by the Engineer that shall not exceed 3 feet. The Engineer will determine the gradation of the material.
- B. The Engineer will make measurement for the volume of unsuitable material excavated beyond or outside the limits shown on the plans or established by the specifications for roadway excavation. No direct payment will be made for spreading, shaping, and compacting this backfill material. When the base becomes unsuitable, soft or wet, due to inclement weather, the Contractor's operational sequence, neglect of the Contractor, or due to the Contractor's failure to control water in the trench or channel, no payment will be made to remove the unsuitable material, provide backfill material, and to backfill the area in an acceptable manner.
- C. Payment for authorized excavation of unsuitable material, furnishing and placement of the backfill material and disposal of the unsuitable material will be made at a unit price of \$45 per cubic yard of additional excavation.

January 11, 2016

ADDENDUM ACKNOWLEDGEMENT

ADDENDUM NO. 1

FROM: St. Louis County Department of Transportation

RE: Shackelford Road Improvements
St. Louis County Project No. AR-1398
Federal Project No. STP-4901(634)

**PACKAGE INCLUDES THIS ACKNOWLEDGEMENT AND
ADDENDUM NOTICE AND REVISED SPECIAL PROVISIONS
A, B, C, D, E, F, G, H, I, J, 200.20.3, AND 200.30.5.**
(26 pages total)

IF YOU DID NOT RECEIVE ALL PAGES, CALL (314) 615-8584.

UPON RECEIPT OF THIS PACKAGE, **PLEASE SIGN AND DATE**
(IN THE INDICATED LOCATIONS BELOW), AND **FAX THIS**
ACKNOWLEDGEMENT TO THE DEPARTMENT OF
TRANSPORTATION AT (314) 615-8194 (Attn: Joe Kulesa,
DESIGN DIVISION) TO VERIFY RECEIPT

COMPANY _____

RECEIVED BY _____

DATE _____