

T. ALTERNATE TECHNICAL CONCEPTS – GRADING, BASE, AND PAVING

1.0 Description. This specification allows the use of Commission and contractor furnished alternate grading, base, and pavement sections. The Commission has provided a complete set of plans, quantities and cross sections to construct this project if the contractor does not elect to use the an alternate grading, base, and pavement concepts. The plans are based on the thicker pavement option laid on 4 inch aggregate base. Typical sections show Commission furnished pavement thicknesses that may be substituted when contractor elects to use 12 inch rock fill base or 18 inch rock fill base in lieu of 4 inch aggregate base.

2.0 Contractor Furnished Alternate Technical Concepts. This specification allows bidders the opportunity to include in their bid proposal, pricing for a pre-approved Alternate Technical Concept (ATC) that differs from the Commission-furnished bid proposal. ATC's allow for innovation and cost savings to obtain the best value for the project that meets or exceeds the general requirements, and which provides a product, which is equal to or better than the concept it replaces.

2.1 For this request-for-bid, the contractor may submit a bid for the Commission-furnished proposal, including the Commission-furnished design solution or a bid that includes pricing for the pre-approved ATC.

2.2 General Requirements. The Commission-furnished proposal documents contain all of the proposed work for the project to be bid. For this project, the contractor may propose an ATC to the pavement and base design. If an ATC is pre-approved by the Commission, the contractor has the option of submitting a bid for the pre-approved ATC proposal or the Commission furnished proposal.

2.2.1 The Commission will be responsible for completing all roadway design plans for approved ATCs.

2.2.2 The minimum requirements for the pavement and base design are listed below:

- Alternate pavement designs must be consistent with the AASHTO Mechanistic-Empirical Design guidelines. Any alternate pavement or base designs must provide an equivalent design and performance to the original design included in Commission furnished plans.
- For the concrete option, the transverse joint spacing may be decreased and dowel bar spacing and/or shape may be optimized if judged, by the Commission and FHWA, as providing an equivalent design and performance as what was included in the original design plans.
- All alternate full depth pavement designs shall have at least a 13 foot wide slab.
- The contractor will be responsible for any additional traffic control costs related to the proposed ATC

2.3 Submittal of Contractor Furnished Alternate Technical Concepts.

2.3.1 The contractor may submit an alternate technical concept for evaluation prior to the letting. If the technical concept meets the minimum requirements and is given a pass

recommendation the concept is considered pre-approved and will be considered for bid. All technical concepts are considered confidential and will not be shared with other bidders prior to the award of the project.

2.3.2 Alternate Technical Concepts will be accepted until 3:00 p.m. on March 11, 2011 to be considered for pre-approval. The Commission will review the ATC and respond back to the contractor as soon as possible, but not to exceed 2 days. Yet, the Commission reserves the right to take longer depending on resources and evaluation needs of the specific ATC. The contractor will be notified prior to completion of the 2 day time period if more time will be required.

2.3.3 Although there is not a limit to the number of ATC submittals, the Commission reserves the right to limit the number of ATC submittals if in its own determination it feels that a contractor is abusing the process by not limiting their submittals to reasonable concepts. The contractor will receive a written warning from the Commission before being limited on the number of ATC submittals.

2.3.4 Requirements for the ATC submittal shall include at a minimum:

- a) Detailed narrative of the ATC being proposed (detailed to at least enough information for the Commission to evaluate design)
- b) Estimate of cost savings.
- c) A description of any previous use or submission of similar technical concepts or value engineering proposals, including dates, job numbers, results, and/or outcome of the ATC/VE if previously submitted, as known by the contractor.

2.3.5 All requests for pre-approval of alternate technical concepts for this project shall be in writing and forwarded to the contact as listed below:

Linda Bokel, Project Contact
District 8, Project Development
3025 E. Kearney
P.O Box 868
Springfield, MO 65801
Telephone Number 417-895-7698
e-mail: Linda.Bokel@MoDOT.mo.gov

2.3.6 The contractor shall be responsible for supplying the Commission with the preliminary engineering required for the ATC proposal. The Commission will not reimburse any expenses related to the preparation of ATC proposals.

2.4 Evaluation of Contractor Furnished Alternate Technical Concepts

2.4.1 The minimum basis of acceptance for a ATC shall adhere to the project specific minimum requirements and submittal requirements. Any ATC failing to include the required submittal information or one that fails to meet the project minimum requirements will be rejected and returned to the contractor.

2.4.2 If an ATC is accepted, the Commission will provide written approval. If an ATC is disallowed, the contractor will be notified as to why.

3.0 General Conditions.

3.1 The contractor may consider a pre-approved ATC or one, all, or a combination of the approved Commission furnished alternate base and pavement concepts listed on the typical sections. The contractor shall not be allowed to construct pavement with a combination of asphalt and concrete layers.

3.2 The life cycle cost analysis factor shall apply to the asphalt alternates regardless of the base technical concept elected.

3.3 The contractor shall build the roadway to the final profile as shown in the plans, regardless of the technical concept elected.

3.4 If rock base is used, Sec 303 shall be deleted and replaced as follows:

4.1 Description. This work shall consist of furnishing and placing select rock excavation material in the top 12 to 18 inches of the subgrade for use as a base to provide pavement support and drainage as shown on the plans or as directed by the engineer. This work also includes daylighting the 12 inch and/or 18 inch rock base and finishing the inslopes.

4.2 Material. The material source for rock base shall be in accordance with approval from the engineer. Geologic conditions may vary from available subsurface information. Approval from the engineer of a source for the inherent stone will not constitute approval of the final rock base product. Additional mechanical processing beyond excavation, such as, but not limited to, scalping, size reduction, washing, etc., of the material may be necessary to meet this specification.

4.2.1 Material for rock base shall be durable stone or broken concrete or asphalt containing a combined total of no more than 10 percent of earth, sand, shale and non-durable rock. Material from geologic-filled sink deposits or stone indicating evidence of solution activity shall not be used.

4.2.2 The material shall be as large as can be conveniently handled within the limits of this specification. No particle dimension shall exceed 12 inches for 18-inch rock base or 9 inches for 12-inch rock base. There shall be some material with particle dimensions exceeding 9 inches for 18-inch rock base or 6 inches for 12-inch rock base. The material shall be uniformly graded from coarse to fine.

4.2.3 Broken, sound concrete pavement and composite pavements may be used provided the ratio of the longest dimension measurement to thickness does not exceed 2:1 and provided there is no excessive exterior steel mesh that would affect compaction.

4.2.4 Acceptance of quality and size of material will be made by visual inspection at the job site.

4.3 Construction Requirements.

4.3.1 Except as noted herein, all applicable provisions in Sec 203 for the handling and placement of roadway excavation material shall apply.

4.3.2 The material shall not be dumped in place, but shall be distributed by blading or dozing in a manner to ensure proper placement in final position in the subgrade.

4.3.3 Rock base may be placed in one lift. Rock base material may be placed thicker, in maximum 18-inch (450 mm) lifts, provided a uniform drainage plane under the rock base is provided. No additional payment will be made for the thicker rock base material. Class C excavation in rock cuts shall be performed to allow placement of the specified lift thickness.

4.3.4 Material shall be compacted in accordance with Sec 203.5.5.

4.3.5 The final surface shall be of a uniform texture and grade suitable for paving. The top 2 inches of the rock base shall consist of either 2-inch maximum rock fragments or spalls or of milled asphalt or crushed concrete. The 2-inch maximum size granular type material shall have a plasticity index not to exceed 10 and a gradation such that at least 50 percent of the material will be retained on the No. 4. Recycled concrete or asphalt or Type 5 aggregate shall have a gradation meeting that as specified Sec 1007. There shall be no exposed rock exceeding the 2-inch size in the final surface that would interfere with final preparation of the base for paving.

4.3.6 A roughly compensating maximum deviation of $\pm 1/2$ inch (13 mm) from the required elevation will be permitted on the surface of the finished rock base.

5.0 Method of Measurement. Final measurement of the completed rock base will not be made, except for authorized changes during construction. Where appreciable errors are found in the contract quantity, the revision or correction will be computed and added to or deducted from the contract quantity for Type 5 base to the nearest square yard.

6.0 Basis of Payment.

6.1 Payment for the Commission furnished and pre-approved alternate technical concepts will be considered completely covered by the bid items in the contract documents for pavement and Type 5 aggregate for base, per square yard. There will be no additional compensation for any item associated with the use of an alternate technical concept. If the contractor elects to use alternate technical concepts, plan quantity will be paid for the various pay items for pavement and Type 5 Aggregate for base.

6.2 The Commission does not warrant that there are sufficient quantities of Class C material within the project limits to construct the 12-inch and/or 18-inch rock base alternate technical concepts. If the contractor elects to provide additional material to construct the 12 and/or 18 in rock base for any of these concepts, the additional material will be considered included in plan quantity for items set up in the contract. No additional pay will be provided for any material needed to accomplish any of these concepts.