

S. ALTERNATE TECHNICAL CONCEPTS – CONSTRUCTION

1.0 Description. This specification allows the use of approved and pre-approved alternate technical concepts. 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 alternate grading, base, and pavement concepts.

2.0 Approved Alternate Paving Concepts. The contractor may consider one, all, or a combination of the following approved alternate pavement and base concepts listed below.

2.1 The contractor shall not be allowed to construct pavement with a combination of asphalt and concrete layers.

J5P0892 Route 65		
Aggr. Base	Asphalt Concrete Alternate	Portland Cement Concrete Alternate
4-in Type 5 Base	As shown in the plans	As shown in the plans
12-in Rock Base	<u>10.0-in HMA</u> Surface Course: 1.75-in SP125C (PG 70-22) Base Course 1: 3-in SP250C (PG 70-22) Base Course 2: 5.25-in SP250C (PG 64-22)	8.5-in Jointed PCCP

J5P0892B Route 65		
Aggr. Base	Asphalt Concrete Alternate	Portland Cement Concrete Alternate
4-in Type 5 Base	<u>12.0-in HMA</u> Surface Course: 1.75-in SP125C (PG 70-22) Base Course 1: 3-in SP250C (PG 70-22) Base Course 2: 7.25-in SP250C (PG 64-22)	8.5-in Jointed PCCP
12-in Rock Base	<u>9.0-in HMA</u> Surface Course: 1.75-in SP125C (PG 70-22) Base Course 1: 3-in SP250C (PG 70-22) Base Course 2: 4.25-in SP250C (PG 64-22)	8.5-in Jointed PCCP
18-in Rock Base	As shown in the plans	As shown in the plans

J5P0892B Route 65/7 Ramps		
Aggr. Base	Asphalt Concrete Alternate	Portland Cement Concrete Alternate
4-in Type 5 Base	<u>11.5-in HMA</u> Surface Course: 1.75-in SP125C (PG 70-22) Base Course 1: 3-in SP250C (PG 70-22) Base Course 2: 6.75-in SP250C (PG 64-22)	8.5-in Jointed PCCP
12-in Rock Base	<u>9.0-in HMA</u> Surface Course: 1.75-in SP125C (PG 70-22) Base Course 1: 3-in SP250C (PG 70-22) Base Course 2: 4.25-in SP250C (PG 64-22)	8.5-in Jointed PCCP
18-in Rock Base	As shown in the plans	As shown in the plans

J5P0892B Route 65/Dam Access Rd. Ramps & Aux. Lane		
Aggr. Base	Asphalt Concrete Alternate	Portland Cement Concrete Alternate
4-in Type 5 Base	<u>11.0-in HMA</u> Surface Course: 1.75-in SP125C (PG 70-22) Base Course 1: 3-in SP250C (PG 70-22) Base Course 2: 6.25-in SP250C (PG 64-22)	8.0-in Jointed PCCP
12-in Rock Base	<u>9.0-in HMA</u> Surface Course: 1.75-in SP125C (PG 70-22) Base Course 1: 3-in SP250C (PG 70-22) Base Course 2: 4.25-in SP250C (PG 64-22)	8.0-in Jointed PCCP
18-in Rock Base	As shown in the plans	As shown in the plans

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

2.1.2 The contractor shall build the roadway to the final profile as shown in the plans or as approved as an alternate grading concept, regardless of the approved paving concept elected.

2.1.3 Any excess material created by the use of this provision shall be disposed off the project by the contractor in accordance with standard specifications.

2.1.4 The Commission re-design costs for this approved ATC is \$0.00.

3.0 Additional Alternate Concepts.

3.0.1 In addition to the approved alternate paving concepts as outlined in Section 2.0, the bidder may submit additional alternate concepts for pre-approval. The contractor may submit any alternate technical concept for consideration meeting the general conditions and criteria listed below.

3.1 General Conditions.

3.1.1 Roadway design shall be in accordance with any state and all federal requirements, unless otherwise specified elsewhere in these contract documents. The bidder shall meet MoDOT, AASHTO and FHWA requirements unless alternate requirements are proposed and accepted by the Commission.

3.1.2 Concepts requiring new Design Exceptions must receive both MoDOT and FHWA approval. Any new design exceptions must be offset by the elimination or reduction of existing design exceptions elsewhere in the project. Any combination of existing and new design exceptions must produce a design that is judged equal to or better than the existing design as determined by the Commission and FHWA. The Commission in its sole discretion may reject any design exception proposal that it feels does not provide a suitable or safe design prior to FHWA review.

3.1.3 The concepts cannot delay the completion of the project as outlined in the Job Special Provision: Liquidated Damages Specified.

3.1.4 The concepts shall not extend beyond the limits of the Commission's right of way limits.

3.1.5 The contractor shall be responsible for any and all additional permits or approvals necessary to complete the concepts, which may include local, state or federal agencies.

3.1.6 Utilities shall not be disturbed except at the contractor expense.

3.1.7 The Commission shall be responsible for all roadway design revisions.

3.1.8 Any Alternate Concept submitted and approved shall not be considered as a Value Engineering Proposal.

3.2 Roadway Profile Grade Criteria

3.2.1 Requirements. Roadway profile grade for Route 65 shall have a maximum grade of 7%. Revised ditch and culvert designs shall reference the MoDOT Engineering Policy Guide hydraulic requirements. Revised geometric design requirements, including but not limited to curve length, stopping sight distance, k-value, and intersection design, shall reference the AASHTO Green Book and the AASHTO Roadside Design Guide.

3.2.2 The roadway profile grade shall not be modified at the following locations:

Description	Begin Station		End Station
Median Crossing at Station 941+50	934+00	to	949+00
Median Crossing at Route HH	973+50	to	988+00
Median Crossing at Station 1029+50	1021+00	to	1036+00
Median Crossing at Station 1076+00	1068+00	to	1080+00
Median Crossing at Route H	669+50	to	685+00
Median Crossing at Route AC	708+00	to	724+00
Median Crossing at Carpet Barn Road	748+00	to	763+50
Median Crossing at McDaniel Road	774+50	to	788+50
Median Crossing at Drennon Road	801+00	to	816+00
Median Crossing at Meyer Road	825+00	to	841+00
Median Crossing at Route BB	880+00	to	840+50
Median Crossing at Route T	907+50	to	925+00
SWPA Area	956+00	to	1040+00

3.3 Median Width Criteria.

3.3.1 Requirements. Median width may be varied to reduce or balance earthwork quantities. Each end of a modified median section shall require a minimum horizontal transition of 65:1 (ratio of length to width) for tangent sections and 90:1 for curve sections. Medians less than 50 feet wide will require a concrete barrier system consistent with current MoDOT accepted designs. Selection of this option shall require the re-design of pavement drainage, potentially including median ditch storage, inlet capacities, inlet spacing, inlet spreads, cross-slope corrections, and superelevation corrections. Any drainage revisions shall reference the MoDOT Engineering Policy Guide hydraulic requirements. Revised geometric design requirements, including but not limited to median transition length, curve length, stopping sight distance, k-value, intersection design, and maximum arithmetic difference in cross-slopes shall reference the AASHTO Green Book and the AASHTO Roadside Design Guide.

The median width shall not be modified north of Cedar Gate Road.

3.4 Other Alternate Concepts. All other alternate concepts submitted for pre-approval shall meet the General Conditions as outlined in Section 3.1

4.0 Submittal and Evaluation Process of the ATC

4.1 The conceptual submittal and evaluation process is intended for the contractor to present the concept prior to investing time and resources into detailed engineering of their concept. If the concept meets the minimum requirements and is pre-approved by

the Commission, the concept may be submitted in the bidder's proposal as outlined in Section 6.0.

4.2 The selection of one, all, or a combination of the pre-approved alternate technical concepts may require revisions to the roadway design features on this project.

4.3 The contractor shall request and submit the alternate technical concept (ATC) form with the following information:

(a) A description of both the existing contract requirements for performing the work and the proposed ATC.

(b) A detailed statement of the cost savings associated with the Implementation of the ATC. Including an itemized list of impacted bid items and estimated quantities supporting the cost savings for the ATC.

(c) A statement of the probable effect the ATC will have on the contract completion time.

(d) A description of any previous use or submission of the similar technical concept or value engineering proposal, including dates, job numbers, results, and/or outcome of the ATC/VE if previously submitted, as known by the contractor.

(e) Certification that the ATC proposal design meets all applicable federal and state design standards, and that no additional Design Exceptions are needed for approval of the ATC proposal design.

(f) A statement addressing any potential issues with utility conflicts, additional permits that may be required, keeping within existing right of way and/or long term impacts related to maintenance and operations.

(g) Four copies of the proposed alternate technical concept shall be submitted to the Commission for review. It is the contractor's responsibility to produce sufficient information within the ATC submittal to provide a clear and concise understanding of the proposed ATC in order to provide for adequate evaluation by the Commission. Electronic submittal of the alternate technical concept is preferred.

(h) The ATC submittal shall also identify their specific approach to the following:

- The roadway design shall include the proposer's method used to determine geometrics, profiles, super elevation-rates, sight distances, and design speeds, etc..
- For traffic related items the proposer shall define how they will interpret the 'guidance' recommendations in MUTCD.

4.4 The project contact for the conceptual submittal or design questions is:

Nicole Hood, P.E
MoDOT - District 5
1511 Missouri Boulevard, P.O. Box 718
Jefferson City, MO 65102

Telephone Number: (573) 526-6997
Fax Number: (573) 751-8267
Email: Nicole.Hood@modot.mo.gov

4.5 The contractor shall submit drawings and calculations to accurately represent his proposed concept for pre-approval. The pre-approval of the concept will require a maximum of 10 calendar days to process depending on the complexity of the proposal.

4.6 Approval of the Alternate Technical Concept to the contractor, will include MoDOT's maximum redesign cost and time.

4.7 Submittals received after 4:00 P.M. May 14, 2010 will not be accepted or processed.

4.8 The redesign cost for the Approved Alternate Paving Concept, as outlined in Section 2.0 is \$0.00.

5.0 Evaluation of Alternate Technical Concepts.

5.1 Alternate technical concepts (ATC) will be evaluated on a pass/fail basis. ATC's that meet the minimum requirements will pass and be considered for bid. ATC's that do not meet the minimum requirements will fail and not be considered for bid.

5.2 Alternate Technical Concepts will be evaluated using the following criteria. If any of the following criteria are not met, the ATC request fails.

(a) The ATC meets or exceeds the minimum requirements and engineering standards of the general conditions.

(b) The ATC does not adversely affect the overall completion date.

(c) The ATC does not adversely affect the long term maintenance of the project.

(d) The ATC re-design costs to the Commission, do not adversely affect the cost of the overall project. The Commission will determine the re-design cost.

(e) The ATC is consistent with the overall project goals, which include but are not limited to the following: Deliver the project on budget., Deliver the project on time., Minimize public impact by keeping regional and local traffic flowing efficiently and safely through the impacted area., Incorporate innovative design including faster/better construction techniques & inspection. Coordinate with all partners and the local community resulting in a project that is viewed as successful. Demonstrate quality construction, encourage green techniques and provide a long lasting facility that complies to ADA requirements.

(f) The ATC is equal to or better than the original design proposal. No decrease in engineering standard from the original design for any safety related item will be allowed, including but not limited to: narrower shoulders, narrower lane width, decreased sight distance, sharper horizontal curves, decreased design speed, decreased clear zone, reduction in clear distance to piers and/or abutments, vertical clearance, or reduced traffic control performance, etc. To be

considered for approval, all safety related elements of the ATC must meet or exceed the MoDOT design. New design exceptions will be considered if they meet the requirements of Section 3.1.2.

(g) Direct or secondary cost and/or delay related to utility conflicts.

(h) Each contractor will only be allowed to submit three (3) ATC's per job.

6.0 Bidding Requirements.

6.1 If the contractor elects to bid the project with either an approved or a pre-approved alternate technical concept, the contractor shall submit the following information with their bid documents:

(a) A description of the proposed ATC.

(b) A detailed statement of the savings. The statement should include assumed unit prices for each of the bid items considered for the savings. If the savings total changes from the original ATC submittal the Commission reserves the right to re-evaluate the ATC based on the criteria list in Section 5.0.

(c) A statement of the probable effect the ATC will have on the contract completion time.

(d) The Commission's re-design costs.

6.2 The above listed information shall be submitted in accordance with Sec 102.10. If the contractor is bidding electronically, the ATC submittal can be submitted separately prior to the bid opening.

6.4 If the low bidder includes one or more ATC's, and the bid plus the redesign cost exceeds the bid of another bidder, plus redesign cost they may have had for their approved ATC, the low bidder will be responsible for the difference between the two adjusted bids. The Commission will execute a change order for the difference in the bid adjusted for redesign cost. The Contractor will only be responsible for the maximum redesign cost supplied by the Commission when the ATC was approved and will be reimbursed if the redesign is less than the Commission estimated amount, by a Commission executed change order for the difference.

6.4.1 The redesign cost for all bids submitted with pre-approved ATC's will be published on the Apparent Bids Report that is located on MoDOT's website immediately after the bid opening.

6.4.2 In lieu of executing a change order for the difference between the two adjusted bids, the contractor may choose to opt out of an ATC prior to starting the redesign and complete the project utilizing the original design at the awarded cost. If the contractor elects this option, the contractor shall inform the project contact of their intentions within 5 calendar days of the award of the project.

7.0 Award Determination.

7.1 The awarded bid amount will be the base bid minus the ATC savings. The ATC savings are based on the unit bid price included in the ATC pay items provided in the itemized bid.

7.2 The overall project cost for any ATC pay items or any pay items impacted by the ATC shall not exceed the awarded bid amount for those impacted items.

8.0 After Contract Award.

8.1 The contractor shall notify the Commission in writing within 5 calendar days their intent begin ATC revisions or build as per the original design.

8.2 Plan quantities will be adjusted by the Commission as per the revisions based on the ATC and incorporated in the contract as a change order. If the change order for the ATC raises the awarded bid amount, the contractor can either accept a no-cost change order for the difference or abandon the ATC.

8.3 If the successful bidder's pre-approved ATC is abandoned by the contractor or fails to be constructed for any reason, the contractor is obligated to complete the project utilizing the original design at the awarded cost, and shall be responsible for any final redesign cost.

8.4 Any additional savings from the ATC beyond the savings submitted with the bid shall be split 50/50 between the contractor and the Commission.

9.0 Method of Measurement. Final measurement of the items affected by the ATC will be made; however, not for the purpose of payment in excess of the awarded amount.

10.0 Basis of Payment.

10.1 Payment shall be at the unit price for the items of work included in the contract. Payment for any new items of work not in the original bid documents shall come from the detailed ATC statement.

10.2 A separate pay item for Misc Approved ATC for each project is included in the itemized proposal for bidding approved paving alternate concepts. If the contractor elects to bid the paving as designed in the contract, the bidder shall leave the contract unit price column blank for the Misc Approved ATC pay item that is not being used. If the contractor elects to bid the project with an approved paving alternate, the bidder shall enter the unit price for all standard items, then bid the lump sum savings for the approved paving alternate concept as a positive number, with the unit reflected as one negative lump sum resulting in an adjusted final price reflecting the savings

10.3 Separate pay items for two (2) Misc Pre-approved ATC's in each project are included in the itemized proposal for bidding a pre-approved ATC. If no ATC's are approved, the bidder shall leave the contract unit price column blank for the ATC pay items that are not being used. If the contractor elects to bid the project with pre-approved ATC's, the contractor shall enter the unit price for all standard items, then bid the lump sum savings from the pre-approved ATC as a positive number, with the unit

reflected as one negative lump sum resulting in an adjusted final price reflecting the savings.

10.3.1 The lump sum savings bid includes all savings from the pre-approved ATC including the quantity adjustments (underruns) to the standard items. After the project is awarded and the Commission has fully designed the ATC, the Commission shall submit to the awarded bidder a full set of the redesigned plans with summary of quantities. A change order will then be processed to adjust the bid items quantities associated with the ATC. The ATC savings bid item will then be deleted from the contract. The revised project cost shall not exceed the award bid amount as outlined in Section 7.2

10.4 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.