

## CHECKLIST TO DESIGNATE AREAS OF EVALUATION FOR REQUESTS FOR PROPOSAL (RFP)

Research Administration Use Only

	REQUISITION NUMBER 2112	DUE DATE 12/19/2016	TIME DUE Noon EST
MDOT PROJECT MANAGER <b>John Wilkerson</b>	JOB NUMBER (JN)		CONTROL SECTION (CS)
DESCRIPTION <b>3D Highway Design Model Cost Benefit Analysis</b>			
Check all items to be included in RFP		Provide only checked items below in proposal	
Check the appropriate Tier in the box below			
<input type="checkbox"/> <b>TIER I</b> (\$50,000-\$150,999)	<input checked="" type="checkbox"/> <b>TIER II</b> (\$150,000-\$1,000,000)	<input type="checkbox"/> <b>TIER III</b> (>\$1,000,000)	Best Value Scoring is listed in RFP.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Understanding of Service
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Past Performance
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Qualifications of Team
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Quality Assurance/Quality Control
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>Location:</b> The percentage of work performed in Michigan will be used for all selections unless the project is for on-site inspection or survey activities, then location should be scored using the distance from the consultant office to the on-site inspection or survey activity.
N/A	N/A	<input type="checkbox"/>	Presentation
N/A	N/A	<input type="checkbox"/>	Technical Proposal (if Presentation is required)

The prime consultant can be a private or public university or business. The prime consultant/vendor is responsible for the successful completion of the service and is expected to perform at least 40 percent of the services, by dollar value. The basis of payment is Actual Costs for Universities and Loaded Hourly Rate for Consultants as defined in standard MDOT contracts.

To submit a proposal, please follow the [MDOT Consultant Vendor Selection Guidelines for Research Administration- Revised September 2015](#).

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### RFP SPECIFIC INFORMATION

Problem Title: 3D Highway Design Model Cost Benefit Analysis

OR Number: 16-004

This is Best Value Selection which means the budget amount submitted with the proposal is a component of the proposal score, not the determining factor of the selection.

## PROPOSAL SUBMITTAL INFORMATION

### PROPOSAL AND BID SHEET EMAIL ADDRESS –

[mdot-rfp-response@michigan.gov](mailto:mdot-rfp-response@michigan.gov) with a CC to  
[mdot-research@michigan.gov](mailto:mdot-research@michigan.gov)

## GENERAL INFORMATION

Any questions relative to the Research Problem Statement must be submitted by e-mail to:

[mdot-research@michigan.gov](mailto:mdot-research@michigan.gov). Questions must be received by 4 business days prior to the RFP due date at 5:00 p.m. EST. All questions and answers will be placed on the MDOT RFP Web site as soon as possible after receipt of the questions and at least three (3) days prior to the due date listed above. The names of organizations submitting questions will not be disclosed.

MDOT is an equal opportunity employer and MDOT DBE firms are encouraged to apply. The participating DBE firm, as currently certified by MDOT's Office of Equal Opportunity, shall be listed in the Proposal.

### MDOT AND RESEARCH FORMS REQUIRED AS PART OF PROPOSAL SUBMISSION:

5100D- Request for Proposal Cover Sheet

Schedule of Research Activities Form- Appendix B

Deliverables Table- Appendix A

5100J- Consultant Data and Presignature sheet is required for signatory on this proposal

Research Proposal Budget Form Worksheet Appendix C (Universities)

5101S – Notice of Intent to Subcontract (if applicable)

OR

Budget Exhibits required in [Priced Proposal Guidelines](#) (Consultants)

**Proposals must be submitted for this project electronically. Proposal Submittal Requirements Can Be Found At the Following Link**  
[http://www.michigan.gov/documents/MDOT\\_Consultant-Vendor\\_Selection\\_Guidelines-0106\\_145222\\_7.pdf?20150707153457](http://www.michigan.gov/documents/MDOT_Consultant-Vendor_Selection_Guidelines-0106_145222_7.pdf?20150707153457)

**In PART IV – INSTRUCTION FOR SUBMITTING PROPOSALS**

**NOTIFICATION**

**E-VERIFY REQUIREMENTS**

E-Verify is an Internet based system that allows an employer, using information reported on an employee's Form I-9, Employment Eligibility Verification, to determine the eligibility of that employee to work in the United States. There is no charge to employers to use E-Verify. The E-Verify system is operated by the Department of Homeland Security (DHS) in partnership with the Social Security Administration. E-Verify is available in Spanish.

The State of Michigan is requiring, under Public Act 200 of 2012, Section 381, that as a condition of each contract or subcontract for construction, maintenance, or engineering services that the pre-qualified contractor or subcontractor agree to use the E-Verify system to verify that all persons hired during the contract term by the contractor or subcontractor are legally present and authorized to work in the United States.

Information on registration for and use of the E-Verify program can be obtained via the Internet at the DHS Web site: <http://www.dhs.gov/E-Verify>.

The documentation supporting the usage of the E-Verify system must be maintained by each consultant and be made available to MDOT upon request.

It is the responsibility of the prime consultant to include the E-Verify requirement documented in this NOTIFICATION in all tiers of subcontracts.

9/13/12

# Michigan Department of Transportation

## SCOPE OF SERVICE FOR RESEARCH SERVICES

**TITLE:** 3D Highway Design Model Cost Benefit Analysis  
**OR#:** 16-004

**LOCATION:** Statewide

**WORK DESCRIPTION:** Research on 3D Highway Design Model Cost Benefit Analysis

**ANTICIPATED START DATE:** April 1, 2017

**ANTICIPATED COMPLETION DATE:** July 15, 2018

**BUDGET:** The budget for this project cannot exceed \$207,395.

### **MDOT RESEARCH PROJECT ADMINISTRATION MANAGER:**

John Wilkerson  
425 W. Ottawa  
Lansing, Michigan 48909  
E-MAIL: [mdot-research@michigan.gov](mailto:mdot-research@michigan.gov)

### **GENERAL INFORMATION:**

#### 1. PROBLEM TO ADDRESS

MDOT has been supplying electronic information to construction for several years as information only. We are now preparing to provide electronic information as part of the contract. We need a quantified understanding of the usage, benefits and savings (Return on Investment) that has resulted from RID (Reference Information Documents) with and/or without 3D models to inform future decision making with policies and uses of digital deliverables as well as justifying the past level of investment. This study should also serve as a reference as we proceed to making electronic deliverables part of the contract.

#### 2. RESEARCH OBJECTIVES

1. Determine a return on investment (ROI) of supplying 3D model and RID information by researching construction costs and schedules for cost and/or time savings on projects.

2. Investigate and document what and how 3D model and RID information is being used during construction based on current practices.
3. Investigate what RID information would be better utilized by the downstream user if it was part of the contract. This should include identifying associated items that could be eliminated from the plan sheets.
4. Provide an analysis of potential and actual risk reduction (i.e. construction change orders, safety issues/comments identified pre-bid, designer confidence) associated with providing RID or 3D Models.

### 3. URGENCY AND IMPLEMENTATION BENEFIT TO MDOT

The research will provide additional information to streamline and advance digital project delivery to construction. The results of this research will provide support for the potential removal of information from RID and the design plan sheets as they may not be needed or would become part of the contract. The Special Provision can be utilized as a starting point as we begin to deliver digital project data as part of the construction contract. The final report will provide support for one of our next steps of improving our digital project data as we move toward Civil Integrated Management.

The Department would gain an understanding of how much the Department has saved (cost, time and risk) by providing RID information to contractors. Data on what RID information is being used would help in decisions on which portions should become part of the contract. This information will help make the case to move forward in a change resistant climate

### 4. RISKS OR OBSTACLES TO RESEARCH

1. Limited Statistical data to determine an ROI of providing RID
2. Limited ability to connect risk reduction to change order cost, issues found pre-bid, or designer confidence.
3. Disparate segregated data

### 5. DESIRED QUALIFICATIONS IN AN INVESTIGATOR(S)

The investigator must have an understanding of automated design delivery related to the transportation industry. They should also have a good understanding of MDOT's project development and delivery process. Familiarity with Civil Integrated Management (CIM) and Building Information Modeling (BIM) concepts.

At least one college series of statistics courses and working experience in statistical analyses

### **CONSULTANT RESPONSIBILITIES:**

1. Scope Verification
2. Collection and review of ROI Data. This could use one or more of the following methods: interviews with project staff or contractors; comparison of current and historical data related to the introduction and evolution of RID; expanding on the data

currently included in a file (Models\_Bid\_performance.pdf) that is available upon request from John Wilkerson at wilkersonj1@michigan.gov; review of project costs by funding type as they relate to the RID Requirements; review of targeted pay items related to projects as it relates to the type of RID data provided; identifying trends; comparing percentage of design (PE) effort; or other.

3. ROI Analysis
4. Industry investigation of current use of RID
5. Investigation of digital data that could become part of the contract to improve the quality and reduce the cost of construction.
6. Collection and review of risk reduction data. This could use one or more of the following methods: comparing cost or time overruns for projects with RID or 3D models to projects without, percentage of construction oversight (CE&I) effort, interview of project staff or contractors, or other.
7. Reporting and knowledge transfer

Failure of any of the above will be found in noncompliance with the contract.

**DELIVERABLES:**

1. Meeting Notes
2. Historical RID ROI analysis information - Identify parameters that could be tracked to more accurately refine ROI analysis in the future.
3. Preliminary Report of initial findings - Due 6 months from notice to proceed
4. Documentation of any surveys or interviews performed
5. Final Report - Providing a summary and recommendations as necessary for each objective
6. Special Provision to identify digital project data as part of the contract

**MDOT RESPONSIBILITIES:**

Provide access to MDOT Enterprise Databases with project related information (Web Trns-port, PPMS/Planisware, Field Manager, ProjectWise, other systems as necessary)

Provide copies of materials for the Research Team to familiarize themselves with MDOT's needs. Assist in reviewing detailed task outlines, timelines for completion, and milestones for checking progress.

Maintain communications providing guidance, reviews, and approvals as necessary.

Monitor progress of tasks and budget throughout the contract.

MDOT does not currently have the cost associated with developing the RID as it is difficult to isolate those costs from the total project design costs.

MDOT has been requiring RID since 2012 and have received just over 300 projects that include RID of which just over 100 included 3D model information. Since January, 2015 MDOT has been formally reviewing over 150 of these projects of which approximately 40% included 3D model information. Since March, 2015 3D models were required to be submitted as part of the RID. See the following resources for more information on the RID Requirements:

[http://www.michigan.gov/documents/mdot/MDOT\\_DA\\_2012-05\\_402526\\_7.pdf](http://www.michigan.gov/documents/mdot/MDOT_DA_2012-05_402526_7.pdf)

[http://www.michigan.gov/documents/mdot/MDOT\\_DA\\_2015-03\\_484348\\_7.pdf](http://www.michigan.gov/documents/mdot/MDOT_DA_2015-03_484348_7.pdf)

[http://mdotwiki.state.mi.us/design/index.php/Design\\_Submittal\\_Requirements](http://mdotwiki.state.mi.us/design/index.php/Design_Submittal_Requirements)

[http://mdotwiki.state.mi.us/design/index.php/Chapter\\_2\\_-\\_Data\\_Requirements](http://mdotwiki.state.mi.us/design/index.php/Chapter_2_-_Data_Requirements)

[http://mdotwiki.state.mi.us/design/index.php/Chapter\\_3\\_-\\_Standard\\_Naming\\_Conventions](http://mdotwiki.state.mi.us/design/index.php/Chapter_3_-_Standard_Naming_Conventions)

[http://mdotwiki.state.mi.us/design/index.php/Chapter\\_5\\_-\\_RID\\_Process](http://mdotwiki.state.mi.us/design/index.php/Chapter_5_-_RID_Process)

## **COORDINATION PROCEDURES**

Work will be completed in compliance with the Research Implementation Manual

## **CONSULTANT PAYMENT**

All billings for services must be directed to the Department and follow the current Research Implementation Manual. This document contains instructions and forms that must be followed and used for billing. Payment may be delayed or decreased if the instructions are not followed.

Payment to the Consultant for services rendered shall not exceed the maximum amount unless an increase is approved in accordance with the contract with the Consultant.

Direct expenses, if applicable, will not be paid in excess of that allowed by the Department for its own employees in accordance with the State of Michigan's Standardized Travel Regulations. Supporting documentation must be submitted with the billing for all eligible expenses on the project in accordance with the Reimbursement Guidelines. The only hours that will be considered allowable charges for this contract are those that are directly attributable to the activities of this project.

The use of overtime hours is not acceptable unless prior written approval is granted by the MDOT project manager. Reimbursement for overtime hours that are allowed will be limited to time spent on this project in excess of forty hours per person per week. Any variations to this rule should be included in the priced proposal submitted by the Consultant and must have prior written approval by the MDOT project manager.

The basis of payment is Actual Costs for Universities and Loaded Hourly Rate for Consultants as defined in standard MDOT contracts.

## **PROPOSAL INFORMATION AND SCORING**

Formal proposals are required and shall include the information as outlined in these Guidelines. This section is the information required in the proposal that will be used to score the qualifications of each consultant's proposal. The section numbering correlates to the score sheet. Therefore, the consultant should format their proposals consistent with the outline provided.

### **1. UNDERSTANDING OF SERVICE: 40 POINTS**

Describe understanding of the service intended to be proposed. This information is to be based on the scope of services.

**Problem Statement and Background Summary-** demonstrates good understanding of problem, looks objectively at problem, specifies problem limits and restricts scope appropriately, and cites relevant literature.

**Research Plan-** cites specific objectives clearly, technical approach responds to all written and implied requirements, difficult areas are identified and details to overcome are given, represents novel idea or technical approach, plan is feasible, and effort is consistent with scope of problem.

**Products and Implementation-** proposal clearly defines products to be delivered at completion, includes practical, realistic implementation plan.

**MDOT Involvement-** MDOT involvement is not excessive and is clearly defined and quantified.

### **2. QUALIFICATIONS OF TEAM: 30 POINTS –**

Describe the structure of the project team including the roles of all key personnel and subcontractors. For each subcontractor describe role in service and include what percent of the task that the subcontractor is expected to provide. Provide résumés for each of the key staff of the prime and subcontractor.

**Facilities-** proposer has adequate access to equipment and/or laboratory required in study.

**Staffing-** personnel availability is clearly defined, shows a depth of qualified personnel, proposer has ability to manage a project of this size an sufficient resources to complete study, qualifications are directly related to the requirements of the project, plans for specific key personnel assignment included, and there is a reasonable balance between subcontractor and prime contractor.

**Statistical Qualification-** The required knowledge level for a research team in statistical analyses, if defined, will be in the RFP under the heading DESIRED QUALIFICATIONS IN AN INVESTIGATOR(S).

Proposals not documenting statistical training and experience levels required in the RFP may be classified as non-responsive.

### **3. RELEVANT PAST PERFORMANCE: 30 POINTS**

The project manager will contact references and review relevant performance evaluations from the past 5 years.

**Record of past accomplishment-** proposer satisfactorily completed past projects, was cooperative and flexible, and ended past projects according to the original budget and time schedule.

**4. QUALITY ASSURANCE/QUALITY CONTROL (QAQC) PLAN: 5 POINTS**

The proposer provided an outline of a QA/QC process. The QA/QC Manager is experienced with MDOT standards and practices.

**5. LOCATION: 5 POINTS**

The percentage of work hours performed in Michigan will be used for all selections unless the project is for on-site inspection or survey activity. The combination of location and percentage of work performed in Michigan should not exceed 5 points.

Percentage of Work To Be Done in Michigan Score	
95% to 100%	5
80% to 94%	4
50% to 79%	3
25% to 49%	2
10% to 24%	1
Less than 10%	0

**6. PRICE: 40 POINTS**

Cost score is based on the lowest cost proposed divided by the current proposer cost multiplied by 40. Lowest bid shall receive 40 points.

**TOTAL POINTS: 150**

**Research Proposal Budget Form Worksheet**

Project Title \_\_\_\_\_  
 Research Organization \_\_\_\_\_  
 Date \_\_\_\_\_

									FY1	FY2	FY3	FY4	TOTAL	
<b>SALARIES &amp; WAGES -- MUST COMPLY WITH OMB CIRCULAR A-21</b>														
Specify number of hours to be worked and hourly rate for each individual below: Examples of role of individual are Principal Investigator, Technician, Grad Student, etc. Annual wage increases must not exceed 2%														
(role of individual)														
Name of individual														
Enter FY	FY1 rate	FY1 hrs	FY2 rate	FY2 hrs	FY3 rate	FY3 hrs	FY4 rate	FY4 hrs						
rate & hrs									\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
(role of individual)														
Name of individual														
Enter FY	FY1 rate	FY1 hrs	FY2 rate	FY2 hrs	FY3 rate	FY3 hrs	FY4 rate	FY4 hrs						
rate & hrs									\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
(role of individual)														
Name of individual														
Enter FY	FY1 rate	FY1 hrs	FY2 rate	FY2 hrs	FY3 rate	FY3 hrs	FY4 rate	FY4 hrs						
rate & hrs									\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
(role of individual)														
Name of individual														
Enter FY	FY1 rate	FY1 hrs	FY2 rate	FY2 hrs	FY3 rate	FY3 hrs	FY4 rate	FY4 hrs						
rate & hrs									\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
(role of individual)														
Name of individual														
Enter FY	FY1 rate	FY1 hrs	FY2 rate	FY2 hrs	FY3 rate	FY3 hrs	FY4 rate	FY4 hrs						
rate & hrs									\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
(role of individual)														
Name of individual														
Enter FY	FY1 rate	FY1 hrs	FY2 rate	FY2 hrs	FY3 rate	FY3 hrs	FY4 rate	FY4 hrs						
rate & hrs									\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
(role of individual)														
Name of individual														
Enter FY	FY1 rate	FY1 hrs	FY2 rate	FY2 hrs	FY3 rate	FY3 hrs	FY4 rate	FY4 hrs						
rate & hrs									\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<b>Sub-Total Salary &amp; Wages</b>									\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	

**FRINGE BENEFITS -- MUST COMPLY WITH OMB CIRCULAR A-21**

Indicate Employee, appropriate negotiated rate for each and description of who the rate applies to.  
 ( e.g. - Sam Smith, 25%, Summer Faculty. The rate is negotiated between the university and it's cognizant agency

<b>Name</b>									
(Rate Description)									
(% rate)	FY1	FY2	FY3	FY4	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<b>Name</b>									
(Rate Description)									
(% rate)	FY1	FY2	FY3	FY4	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<b>Name</b>									
(Rate Description)									
(% rate)	FY1	FY2	FY3	FY4	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<b>Name</b>									
(Rate Description)									
(% rate)	FY1	FY2	FY3	FY4	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<b>Name</b>									
(Rate Description)									
(% rate)	FY1	FY2	FY3	FY4	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<b>Name</b>									
(Rate Description)									
(% rate)	FY1	FY2	FY3	FY4	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<b>Name</b>									
(Rate Description)									
(% rate)	FY1	FY2	FY3	FY4	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<b>Sub-Total Fringe Benefits</b>					\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

**SUBCONTRACTOR -- MUST COMPLY WITH OMB CIRCULAR A-21**

A copy of the subcontractor's budget must be attached. An MDOT approved subcontract is required for subcontractor costs in excess of \$25,000 prior to payment of invoices that contain subcontractor work. List all subcontractors on a separate line.

<b>Subcontractor Name &amp; Amt.</b>									\$0.00
<b>Subcontractor Name &amp; Amt.</b>									\$0.00
<b>Sub-Total Subcontractor</b>					\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

**TRAVEL -- MUST COMPLY WITH OMB CIRCULAR A-21**

Must be in accordance with IDS contract requirements.

<b>In-State Travel (Destinations within Michigan)</b> Provide a separate table itemizing costs.									\$0.00
<b>Out-of-State Travel (Prior approval required)</b> Provide a separate table itemizing costs.									\$0.00
<b>Sub-Total Travel</b>					\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

