

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

MDOT PROJECT MANAGER			JOB NUMBER (JN)	CONTROL SECTION (CS)
DESCRIPTION				
MDOT PROJECT MANAGER: Check all items to be included in RFP WHITE = REQUIRED GRAY SHADING = OPTIONAL			CONSULTANT: Provide only checked items below in proposal	
Check the appropriate Tier in the box below				
TIER I (\$25,000-\$99,999)	TIER II (\$100,000-\$250,000)	TIER III (>\$250,000)		
			Understanding of Service	
			<i>Innovations</i>	
			<i>Safety Program</i>	
N/A			Organizational Chart	
			Qualifications of Team	
			Past Performance	
Not required As part of Official RFP	Not required As part of Official RFP		Quality Assurance/Quality Control	
			Location: 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		Presentation	
N/A	N/A		Technical Proposal (if Presentation is required)	
3 pages (MDOT Forms not counted) (No Resumes)	7 pages (MDOT Forms not counted)	19 pages (MDOT Forms not counted)	Total maximum pages for RFP not including key personnel resumes	

The Michigan Department of Transportation (MDOT) is seeking professional services for the project contained in the attached scope of services.

If your firm is interested in providing services, please indicate your interest by submitting a Proposal, Proposal/Bid Sheet or Bid Sheet as indicated below. The documents must be submitted in accordance with the latest "Consultant/Vendor Selection Guidelines for Service Contracts" and "Guideline for Completing a Low Bid Sheet(s)", if a low bid is involved as part of the selection process. **Referenced Guidelines are available on MDOT's website under Doing Business > Vendor/Consultant Services > Vendor/Consultant Selections.**

RFP SPECIFIC INFORMATION

BUREAU OF HIGHWAYS

BUREAU OF TRANSPORTATION PLANNING **

OTHER

THE SERVICE WAS POSTED ON THE ANTICIPATED QUARTERLY REQUESTS FOR PROPOSALS

NO

YES

DATED _____

THROUGH _____

Prequalified Services – See page ___ of the attached Scope of Services for required Prequalification Classifications.

Non-Prequalified Services - If selected, the vendor must make sure that current financial information, including labor rates, overhead computations, and financial statements, if overhead is not audited, is on file with MDOT's Office of Commission Audits. This information must be on file for the prime vendor and all sub vendors so that the contract will not be delayed. **(Form 5100J Required with Proposal)**

Qualifications Based Selection – Use Consultant/Vendor Selection Guidelines

For all Qualifications Based Selections, the section team will review the information submitted and will select the firm considered most qualified to perform the services based on the proposals. The selected vendor will be contacted to confirm capacity. Upon confirmation, that firm will be asked to prepare a priced proposal. Negotiations will be conducted with the firm selected.

****For RFP's that originate in Bureau of Transportation Planning only**, a priced proposal must be submitted at the same time as, but separate from, the proposal. Submit directly to the Contract Administrator/Selection Specialist, Bureau of Transportation Planning **(see address list, page 2)**. The priced proposal must be submitted in a sealed envelope, clearly marked **"PRICE PROPOSAL."** The vendor's name and return address **MUST** be on the front of the envelope. The priced proposal will only be opened for the highest scoring proposal. Unopened priced proposals will be returned to the unselected vendor(s). Failure to comply with this procedure may result in your priced proposal being opened erroneously by the mail room.

For a cost plus fixed fee contract, the selected vendor must have a cost accounting system to support a cost plus fixed fee contract. This type of system has a job-order cost accounting system for the recording and accumulation of costs incurred under its contracts. Each project is assigned a job number so that costs may be segregated and accumulated in the vendor's job-order accounting system.

Qualifications Review / Low Bid - Use Consultant/Vendor Selection Guidelines. See Bid Sheet Instructions for additional information.

For Qualification Review/Low Bid selections, the selection team will review the proposals submitted and post the date of the bid opening on the MDOT website. The notification will be posted at least two business days prior to the bid opening. Only bids from vendors that meet proposal requirements will be opened. The vendor with the lowest bid will be selected. The selected vendor may be contacted to confirm capacity.

Best Value - Use Consultant/Vendor Selection Guidelines. See Bid Sheet Instructions below for additional information. The bid amount is a component of the total proposal score, not the determining factor of the selection.

Low Bid (no qualifications review required - no proposal required.) See Bid Sheet Instructions below for additional instructions.

BID SHEET INSTRUCTIONS

A bid sheet(s) must be submitted in accordance with the "Guideline for Completing a Low Bid Sheet(s)" (available on MDOT's website). The Bid Sheet(s) is located at the end of the Scope of Services. Submit bid sheet(s) separate from the proposal, to the address indicated below. The bid sheet(s) must be submitted in a sealed manila envelope, clearly marked **"SEALED BID."** The vendor's name and return address **MUST** be on the front of the envelope. Failure to comply with this procedure may result in your bid being opened erroneously by the mail room and the bid being rejected from consideration.

PROPOSAL SUBMITTAL INFORMATION

REQUIRED NUMBER OF COPIES FOR PROJECT MANAGER	PROPOSAL/BID DUE DATE	TIME DUE
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PROPOSAL AND BID SHEET MAILING ADDRESSES

Mail the multiple proposal bundle to the MDOT Project Manager or Other indicated below.

MDOT Project Manager

MDOT Other

Mail one additional stapled copy of the proposal to the Lansing Office indicated below.

Lansing Regular Mail	OR	Lansing Overnight Mail
Secretary, Contract Services Div - B470 Michigan Department of Transportation PO Box 30050 Lansing, MI 48909		Secretary, Contract Services Div - B470 Michigan Department of Transportation 425 W. Ottawa Lansing, MI 48933
Contract Administrator/Selection Specialist Bureau of Transportation Planning B470 Michigan Department of Transportation PO Box 30050 Lansing, MI 48909		Contract Administrator/Selection Specialist Bureau of Transportation Planning B470 Michigan Department of Transportation 425 W. Ottawa Lansing, MI 48933

GENERAL INFORMATION

Any questions relative to the scope of services must be submitted by e-mail to the MDOT Project Manager. Questions must be received by the Project Manager at least four (4) working days prior to the due date and time specified above. All questions and answers will be placed on the MDOT website as soon as possible after receipt of the questions, and at least three (3) days prior to the RFP due date deadline. The names of vendors 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

The following two American Recovery and Reinvestment Act of 2009 (ARRA) notifications, **ARRA MONTHLY EMPLOYMENT REPORTS** and **REQUIRED CONTRACT PROVISIONS TO IMPLEMENT AMERICAN RECOVERY AND REINVESTMENT ACT (ARRA) SECTIONS 902 AND 1515**, are attached to this Request For Proposal for your understanding. These two notifications are only applicable for those projects/contracts funded with ARRA funds and will be included in contract Exhibits.

MDOT FORMS REQUIRED AS PART OF PROPOSAL SUBMISSION

- 5100D** – Request for Proposal Cover Sheet
- 5100G** – Certification of Availability of Key Personnel
- 5100I** – Conflict of Interest Statement
- 5100J** - Consultant Data and Signature Sheet (Required only for Non-Prequalified Work)

(These forms are not included in the proposal maximum page count.)

Michigan Department of Transportation

**SCOPE OF SERVICE
FOR
INTELLIGENT TRANSPORTATION SYSTEMS**

CONTROL SECTION: 84915

JOB NUMBER: 109707C

PROJECT LOCATION:

Various locations, within the Southwest Region, along the I-94 corridor from the Michigan/Indiana state line East of M-40 in Van Buren County. (Southwest Region)

DESCRIPTION OF WORK:

This scope is to provide design for an ITS project, develop a final bid package based on 100% complete plans, provide a cost estimate for construction, serve as the MDOT representative and system manager, through construction phase, if an authorization is written to the consultant to do so.

The consultant will be responsible to scope the project, refine locations of equipment, develop plans to 100% completion, define known or anticipated environmental issues, provide necessary geotechnical information, define known or anticipated utility issues and define known or anticipated traffic concerns. This is a Traffic & Safety Programs funded project utilizing elements of the Michigan Department of Transportation (MDOT) Southwest Region ITS Architecture and implementation plan and consists of all work related to the design of four (4) Dynamic Message Signs (DMS) located at the following approximate locations:

1. I-94 east bound, north of the Michigan/Indiana state line
2. I-94 east bound west of the I-94/I-196 interchange
3. I-94 west bound east of the I-94/I-196 interchange
4. I-94 west bound east of the M-40 interchange

The system shall include, but is not limited to, Dynamic Message Signs (DMS), communications infrastructure of which shall interface with all of the existing ITS monitoring software and equipment and development of a project specific Conceptual Operations (Con-Ops) plan.

PRIMARY PREQUALIFICATION CLASSIFICATION(S):

Intelligent Transportation Systems

SECONDARY PREQUALIFICATION CLASSIFICATION(S):

Maintaining Traffic Plans & Provisions

Geotechnical Engineering Services

Road Design Surveys

Utility Coordination

ANTICIPATED START DATE: June 8, 2011

ANTICIPATED COMPLETION DATE: October 31, 2012

DBE REQUIREMENT: 7%

MDOT PROJECT MANAGER:

Kyle Rudlaff, Transportation Engineer 13 Licensed Specialist
Southwest Region/Coloma TSC
Coloma TSC, 3880 Red Arrow Highway, Benton Harbor, MI 49022
Phone Number: (269) 849-2347
Fax Number: (269) 849-1227
E-mail: rudlaffk@michigan.gov

The Consultant shall contact the Project Manager prior to beginning any work on the project.

The Consultant Project Manager shall be an engineer licensed in the State of Michigan with relevant experience in ITS systems engineering and design services. The Consultant Project Manager shall be an employee of the primary consulting firm responding to the RFP and not a sub-consultant.

REQUIRED MDOT GUIDELINES AND STANDARDS:

Work shall conform to current MDOT, FHWA, and AASHTO practices, guidelines, policies, and standards (i.e., Road Design Manual, Bridge Design Manual, Standard Plans, Drainage Manual, Roadside Design Guide, A Policy on Geometric Design of Highways and Streets, Michigan Manual of Uniform Traffic Control Devices, the Design Survey Manual, etc.).

GENERAL INFORMATION:

The consultant shall have substantial ITS conception, design background, and experience. The consultant should be prepared to demonstrate their background and experience, as this will be a major part of the selection for this RFP.

The Consultant shall furnish all services and labor necessary to conduct and complete the services described herein. The Consultant shall also furnish all materials, equipment, supplies, and incidentals necessary to perform the Services (other than those designated in writing to be furnished by the Department) and check and/or test the materials, equipment, supplies and incidentals as necessary in carrying out this work. The Services shall be performed to the satisfaction of the Department consistent with applicable professional standards.

The Consultant shall comply with all applicable Federal and State laws, rules, and regulations. The Consultant staff shall conduct themselves with professionalism in carrying out their duties.

The Consultant shall notify the Project Manager, in writing, prior to any personnel changes from those specified in the Consultant's original approved proposal. Any personnel substitutions are subject to review and approval of the Project Manager.

At the request of the Department, the Consultant, during the progress of the Services, shall furnish information or data relating to the Services described herein that may be required by the Department to enable it to carry out or to proceed with related phases of the Project not described herein, or which may be necessary to enable the Department to furnish information to the Consultant upon which to proceed with further Services.

CONSULTANT RESPONSIBILITIES:

Complete a design of this project including, but not limited to the following:

- Provide conceptual layouts for the corridor. This will include seeking stakeholder input on device locations and system functionality.
- Develop a Concept of Operations for the ITS devices in this project.
- Perform required design and functional technical specification writing to expand the ITS facilities in the project area. The proposed facilities shall include, but not be limited to, DMS, cabinets, and communications infrastructure.
- Prepare required plans 100% complete which would include: typical cross-sections, details, functional requirements and specifications required for construction. MDOT shall provide any existing details and specifications applicable to the proposed work in electronic format.
- Compute and verify all plan quantities for the bid package.
- Prepare staging plans and special provisions for maintaining traffic during construction.
- Provide solutions to any unique problems that may arise during the design of this project.
- Develop component and acceptance tests and work with MDOT to perform all tests.
- Coordinate the design with utility companies as directed by the Coloma TSC Utilities Engineer. Include results of interaction with utility companies into the final product.
- Prepare and incorporate all documents for E-Proposal Submittal.

MDOT PRECONSTRUCTION TASKS CONSULTANT CHECKLIST

MDOT PRECONSTRUCTION TASKS CONSULTANT CHECKLIST PRELIMINARY ENGINEERING - DESIGN

YES	P/PMS TASK NUMBER AND DESCRIPTION	DATE TO BE COMPLETED BY (mm/dd/yyyy)
	<u>DESIGN SCOPE VERIFICATION AND BASE PLAN PREPARATION</u>	
	3130 Verify Design Scope of Work and Cost	_/_/___
	3310 Prepare Aerial Topographic Mapping	_/_/___
	3320 Conduct Photogrammetric Control Survey	_/_/___
	3321 Set Aerial Photo Targets	_/_/___
X	3330 Conduct Design Survey	3/01/2012
	3340 Conduct Structure Survey	_/_/___
	3350 Conduct Hydraulics Survey	_/_/___
	3360 Prepare Base Plans	_/_/___
	<i>331M Utility Notification</i>	_/_/___
	3361 Review and Submit Preliminary ROW Plans	_/_/___
	<i>331M Preliminary ROW Plans Distributed</i>	_/_/___
X	3365 Pre-Conceptual ITS Design and Meeting	8/27/2011
	3370 Prepare Structure Study	_/_/___
	3375 Conduct Value Engineering Study	_/_/___
	3380 Review Base Plans	_/_/___
	<i>332M Base Plan Review (Pre-GI Inspection)</i>	_/_/___
X	3390 Develop the Maintaining Traffic Concepts	7/15/2011
	<u>PRELIMINARY PLANS PREPARATION</u>	
X	3510 Perform Roadway Geotechnical Investigation	2/_/2012
	3520 Conduct Hydraulic/Hydrologic and Scour Analysis	_/_/___
	3522 Conduct Drainage Study, Storm Sewer Design, and use Structural Best Management Practices	_/_/___
	3530 Conduct Structure Foundation Investigation	_/_/___
	3535 Conduct Structure Review for Architectural and Aesthetic Improvements	_/_/___
X	3540 Develop the Maintaining Traffic Plan	10/21/2011
	3551 Prepare/Review Preliminary Traffic Signal Design Plan	_/_/___
	3552 Develop Preliminary Pavement Marking Plan	_/_/___
	3553 Develop Preliminary Non-Freeway Signing Plan	_/_/___
	3554 Develop Preliminary Freeway Signing Plan	_/_/___
	3555 Prepare/Review Preliminary Traffic Signal Operations	_/_/___
	3570 Prepare Preliminary Structure Plans	_/_/___

MDOT PRECONSTRUCTION TASKS CONSULTANT CHECKLIST

PRELIMINARY ENGINEERING - DESIGN (cont'd)

YES	P/PMS TASK NUMBER AND DESCRIPTION	DATE TO BE COMPLETED BY
X	3580 Develop Preliminary Plans	10/21/2011
	3581 Review and Submit Final ROW Plans	_/_/_
	<u>351M Final ROW Plans Distributed</u>	_/_/_
X	3585 Final ITS Concept Design and Meeting	11/16/2011
X	3590 Review Preliminary Plans (Hold Plan Review Meeting)	11/16/2011
X	<u>352M THE Plan Review (Grade Inspection)</u>	11/16/2011
X	3595 Conduct ITS Structure Foundation Investigation	12/15/2011
	<u>UTILITIES</u>	
	3610 Compile Utility Information	_/_/_
X	3615 Compile ITS Utility Information	8/25/2011
	3650 Coordinate RR Involvement for Grade Separations	_/_/_
	3655 Coordinate RR Involvement for At-Grade Crossings	_/_/_
X	3660 Resolve Utility Issues	03/15/2012
	<u>360M Utility Conflict Resolution Plan Distribution</u>	_/_/_
	<u>361M Utility Meeting</u>	_/_/_
	3670 Develop Municipal Utility Plans	_/_/_
	3672 Develop Special Drainage Structures Plans	_/_/_
	3675 Develop Electrical Plans	_/_/_
X	3680 Preliminary ITS Communication Analysis	1/12/2012
X	3690 Power Design (Power Drop in Field)	03/15/2012
	<u>MITIGATION/PERMITS</u>	
	3710 Develop Required Mitigation	_/_/_
	3720 Submit Environmental Permit Applications	_/_/_
	3730 Obtain Environmental Permit	_/_/_
	<u>FINAL PLAN PREPARATION</u>	
	3821 Prepare/Review Final Traffic Signal Design Plan	_/_/_
	3822 Complete Permanent Pavement Marking Plan	_/_/_
	3823 Complete Non-Freeway Signing Plan	_/_/_
	3824 Complete Freeway Signing Plan	_/_/_
	3825 Prepare/Review Final Traffic Signal Operations	_/_/_
X	3830 Complete the Maintaining Traffic Plan	4/01/2012
X	3840 Develop Final Plans and Specifications	4/01/2012
X	<u>380M Plan Completion</u>	4/01/2012
	3850 Develop Structure Final Plans and Specifications	_/_/_
X	3870 Hold Omissions/Errors Check (OEC) Meeting	4/01/2012
X	<u>387M Omissions/Errors Checks Meeting</u>	4/21/2012
X	<u>389M Plan Turn-In</u>	5/18/2012
	3880 CPM Quality Assurance Review	_/_/_
X	3890 Final ITS Communication Analysis	4/01/2012

MDOT PRECONSTRUCTION TASKS CONSULTANT CHECKLIST

PRELIMINARY ENGINEERING – RIGHT OF WAY

	P/PMS TASK NUMBER AND DESCRIPTION	DATE TO BE COMPLETED BY (mm/dd/yyyy)
YES	<u>EARLY RIGHT OF WAY WORK</u>	
	4120 Obtain Preliminary Title Commitments	_/_/____
	4130 Prepare Marked Final Right Of Way Plans	_/_/____
	<u>413M Approved Marked Final ROW</u>	_/_/____
	4140 Prepare Property Legal Instruments	_/_/____
	<u>ROW ACQUISITION</u>	
	4411 Preliminary Interviews	_/_/____
	<u>441M Post-Decision Meeting</u>	_/_/____
	4412 Real Estate Services Assignment Proposal and Fee Estimate (Form 633s) for Appraisal Work Authorization	_/_/____
	4413 Appraisal Reports	_/_/____
	4420 Appraisal Review Reports	_/_/____
	4430 Acquire Right Of Way Parcels	_/_/____
	4510 Conduct Right Of Way Survey & Staking	_/_/____
	<u>ROW RELOCATION</u>	
	4710 Relocation Assistance	_/_/____
	4720 Prepare Improvement Removal Plan	_/_/____
	<u>442M ROW Certification</u>	_/_/____

POST LETTING/AWARD TASKS (for reference only)

	P/PMS TASK NUMBER AND DESCRIPTION	DATE TO BE COMPLETED BY (mm/dd/yyyy)
YES	4810 Complete Acquisition Process	_/_/____
	4820 Manage Excess Real Estate	_/_/____
	4830 Provide Post-Certification Relocation Assistance	_/_/____
	4910 Conduct ROW Monumentation	_/_/____
X	5010 Construction Phase Engineering and Assistance	_/_/____
	5020 Prepare As-Built Drawings	_/_/____

OTHER P/PMS RELATED TASKS

- Meet with the MDOT Project Manager to review project, location of data sources and contact persons, and review relevant MDOT operations. The Consultant shall review and clarify project issues, data needs and availability, and the sequence of events and team meetings that are essential to complete the design by the project plan completion date. Attention shall be given to critical target dates that may require a large lead time, such as geotechnical requirements, Railroad coordination requirements, utility conflict resolution, local agency meetings, etc.
- Maintain a Design Project Record which includes a history of significant events (changes, comments, etc.) which influenced the development of the plans, dates of submittals and receipt of information.
- The consultant shall identify the locations of any existing water main and/or sanitary sewer on the project.
- If water main and/or sanitary sewers are present within the project limits, the Consultant shall evaluate vertical elevations and design the depth of any proposed fiber optic facilities so as not to be in conflict with the existing utility.
- Design the maintenance of traffic for all project work. The Consultant shall complete a Mobility Analysis and Transportation Management Plan for this project as described in the MDOT Work Zone Safety and Mobility Manual. It is expected that shoulder closures and single lane closures shall be used to provide a work area for construction activity. MOT plans are not required for this project. The Consultant shall place MDOT furnished Maintaining Traffic Typical in the proposal, complete a draft Special Provision for Maintaining Traffic, complete revisions as directed by MDOT, and describe all associated pay items as necessary for construction to install them. Traffic Restrictions for I-94 are the following:
 - I-94 east of M-40: Maintain two lanes of traffic in each direction from 3:00 p.m. to 7:00 p.m. on Monday through Wednesday, 2:00 p.m. to 7:00 p.m. on Thursday, and noon to 9:00 p.m. on Friday. Maintain a minimum of one lane in each direction during all other times.
 - West of I-196: Maintain a minimum of two lanes of traffic in each direction from 12:00 p.m. to 7:00 p.m. on Monday through Thursday, noon to 11:00 p.m. on Friday, 10:00 a.m. to 6:00 p.m. on Saturday, and noon to 11:00 p.m. on Sunday. Maintain a minimum of one lane of traffic in each direction during all other times.
- The survey task on this project, PPMS Task 3330, is included to install horizontal and vertical control at each sign location, provide topography for

encompassing the limits of work at each location, and identifying a suitable alignment for stationing at each location. See Attachment A for details.

- The Consultant may be required to provide Design Services during the construction phase of this project. This will include System Manager (SM) tasks such as to assist the MDOT Project Delivery Office with review tasks during the construction phase of the project to complete tasks including, review of shop drawing submittals, meeting correspondence, etc. If Construction Assistance is required, then a separate authorization for those services will be issued. The Consultant will not be compensated for performing work due to errors or omissions.
- The Consultant shall be required to prepare and submit a CPM network for review and use for preparing the progress schedule for the project.
- The Consultant representative shall record and submit type-written minutes for all project related meetings to the MDOT Project Manager within two days of the meeting. The Consultant shall also distribute the minutes to all meeting attendees. MDOT will provide and distribute official meeting minutes for the Plan Review Meeting.
- Attend any project-related meetings as directed by the MDOT Project Manager.
- The MDOT Project Manager shall be the official MDOT contact person for the Consultant and shall be made aware of all communications regarding this project. The Consultant must either address or send a copy of all correspondence to the MDOT Project Manager. This includes all Subcontractor correspondence and verbal contact records.
- The Consultant shall contact the MDOT Project Manager whenever discoveries or design alternatives have the potential to require changes in the scope, limits, quantities, costs, or right-of-way of the project.
- The Consultant shall determine all potential utility conflicts with the proposed facility placement. The Consultant shall also define solutions to the various utility conflicts and have them reviewed by MDOT before they are designed and placed on the construction plans.
- The Consultant is also responsible for determining the availability of electric *and communication* service to the proposed facilities at the locations described previously. Any potential problems with utility electric *and communication* service shall be brought to MDOT's attention as soon as they are known.
- The MDOT Project Manager shall be the official MDOT contact person for the Consultant and shall be made aware of all communications regarding this project. The Consultant must either address or send a copy of all

correspondence to the MDOT Project Manager. This includes all Subcontractor correspondence and verbal contact records.

- All plans, special provisions, estimates, and other project related items shall meet all MDOT requirements and detailing practices (i.e., format, materials, symbols, patterns, and layout) or as otherwise directed by the Project Manager.
- All plans, specifications, and other project related items are subject to review and approval by MDOT.

MONTHLY PROGRESS REPORT:

The Consultant shall monthly project progress reports to the MDOT Project Manager. The reports shall include work accomplished during the previous month; anticipated work items for the upcoming months; real or anticipated problems on the project; update of previously approved detailed project schedule, including explanations for any delays or changes; items needed from MDOT; copy of Verbal Contact Records for the period.

MDOT RESPONSIBILITIES (GENERAL):

- A. Schedule and/or conduct the following:
 1. Project related meetings
 2. The Plan Review
 3. Utility Meetings
 4. Stakeholder engagement meetings
 5. Final item cost estimates, as necessary
- B. Make decisions or provide input for the following items:
 1. Resolve political issues
 2. Resolve issues related to funding
 3. Review of Final packaging of the Proposal after the Consultant's review of the final package.
 4. Determine which letting date will be used for the project
 5. Coordinate with local contractor's association (MITA)
- C. Furnish existing plans
- D. Provide environmental clearance.
- E. Coordinate any necessary utility relocation.
- F. Safety Reviews for any required design exceptions.
- G. Review and approve all external communications.
- H. Review and approve all budget, schedule, and design aspects.

DELIVERABLES:

The Consultant shall provide 11" x 17" plans in electronic format, in English units.

MDOT shall print and distribute paper plans as necessary for review meetings.

A Microstation fence file of each plan sheet shall be provided at the Plan Review, at Final Plans, and as otherwise requested. All project reports and the final deliverables shall be provided in 100% electronic format. Paper reports are acceptable and expected for some items such as the Geotechnical Report, but an equivalent electronic document must be provided with it.

All plan sheets required for this project shall be completed by the Consultant. These include, but are not limited to:

- Title Sheet
- Note Sheet
- Typical Cross-Sections
- Plan Sheets
- Project specific Special Details

TRAFFIC CONTROL AND MDOT PERMITS

The Consultant shall be responsible for all traffic control required to perform the tasks as outlined in this Project Scope of Design Services. See Attachment B for details.

The Consultant shall be responsible for obtaining up to date access permits and pertinent information for tasks in MDOT Right of Way (ROW). This information can be obtained through Pam Sebenick, Utilities/Permits Section, Real Estate Division at (517) 373-7680.

UTILITIES

The Consultant shall be responsible for obtaining from MDOT and showing on the plans the location and names of all existing utilities within the limits of the project. In the course of resolving utility conflicts, the Consultant shall make modifications to the plans or design details and provide assistance as directed by the MDOT Utility Permits Engineer and/or Project Manager. The Consultant shall attend any utility meetings called to ensure that the concerns are addressed on the plans involving utilities. The Consultant shall assist in the review of utility permit requests to ensure compatibility with the project. The consultant shall provide for the staking of various proposed facilities so as to locate potential utility conflicts and aid in the completion of utility relocation plans for and private utility companies.

SCHEDULE:

Achievement of the project milestones will require a concentrated effort by both the consultant and MDOT. Timely communications, receipt of information, and development and approval of deliverables will be critical to the success of the assigned deliverables.

The schedule will be determined on a task by task basis as set forth in each task.

The start date for the consultant services will be immediately upon notice to proceed (NTP). The duration of the services will be at the discretion of MDOT project manager.

The Consultant shall provide at the kick off meeting a detailed schedule of target dates for each step of the design.

PROJECT MANAGEMENT:

This project will require close interaction and good communication between the consultant and MDOT.

If there are any major deviations from the original scope of this assignment, these changes must be documented and jointly approved by the consultant and MDOT.

The selected consultant shall provide all necessary project management services, including monthly and quarterly progress reports, developing and maintaining a project schedule, and providing invoices in a timely manner.

Consultants should provide a description of their management team for this project and list all key personnel responsible for the deliveries of this RFP.

STATUS REPORTS/ MEETINGS:

There will be periodic, regular meetings between MDOT representatives and the selected consultant to review work product, and to communicate progress, issues, ideas, and expectations.

The selected consultant shall provide copies of all project reports, correspondence, meeting announcements, and meeting minutes which shall be delivered by email to the MDOT Manager. The consultant shall provide the minutes of all meetings attended. These shall be distributed by email to the MDOT Project Manager.

PROJECT DOCUMENTATION:

All documentation and reports shall be delivered in the current version of Microsoft Word or Adobe Acrobat (whichever applies) being used by MDOT. All documentation delivered shall be clear, concise, complete, and in compliance with standards required by the MDOT Project Manager. All CADD files shall be delivered in the current version of MicroStation being used by MDOT.

CONSULTANT PAYMENT – Actual Cost Plus Fixed Fee:

Compensation for this project shall be on an **actual cost plus fixed fee** basis. This basis of payment typically includes an estimate of labor hours by classification or employee, hourly labor rates, applied overhead, other direct costs, subconsultant costs, and applied fixed fee.

All billings for services must be directed to the Department and follow the current guidelines. The latest copy of the "Professional Engineering Service Reimbursement Guidelines for Bureau of Highways" is available on MDOT's website. 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. Typically, billings must be submitted within 60 days after the completion of services for the current billing. The final billing must be received within 60 days of the completion of services. Refer to your contract for your specific contract terms.

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 Region Engineer/Bureau Director and 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 Region Engineer/Bureau Director and the MDOT Project Manager.

The fixed fee for profit allowed for this project is 11.0% of the cost of direct labor and overhead.

ATTACHMENT A

SURVEY SCOPE OF WORK

As of 02/02/11

SURVEY PREQUALIFICATIONS: Road Design Surveys.

MAPPING LIMITS: A PORTFOLIO as outlined in this section IS REQUIRED.

NOTES: The Consultant shall discuss the scope of this survey with the MDOT Project Manager/Region Surveyor before submitting a PRICE proposal.

Kyle Rudlaff, MDOT engineering project manager at the Coloma TSC at 269-849-2347 rudlaffk@michigan.gov

Erik J. Schnepf, PS, Region Surveyor, survey project manager at the Southwest Region office at 269-337-3922 or schnepf@michigan.gov

NOTES: The Selected Consultant shall discuss the scope of this survey with an MDOT Region Surveyor or an MDOT Lansing Design Surveyor before submitting a priced proposal.

The Selected Consultant surveyor must contact the Region or TSC Traffic and Safety Engineer for work restrictions in the project area prior to submitting a priced proposal.

A **detailed Survey Work Plan must** be included in the project proposal. A **spreadsheet estimate** of hours by specific survey task such as traversing, leveling, mapping, etc. **must** be included in the **priced proposal**.

It is the responsibility of the Professional Surveyor to safeguard all corners of the United States Public Land Survey System, published Geodetic Control and any other Property Controlling corners that may be in danger of being destroyed by the proposed construction project.

GENERAL REQUIREMENTS:

1. Surveys must comply with **all Michigan law** relative to land surveying.
2. Surveys must be done under the **direct supervision** of a Professional Surveyor licensed to practice in the State of Michigan.
3. Work in any of the following categories of survey: Road Design, Structure, Hydraulic, Right-of-Way, and/or Ground Control (Photogrammetric) must be completed by a survey firm which is pre-qualified by MDOT for that category.
4. Surveys must meet all requirements of the Michigan Department of Transportation (MDOT) Design Surveys *Standards of Practice* dated March

2008, the MDOT Design Survey Manual on-line, and the MDOT RTK guidelines. Please contact the Design Survey office to clarify any specific questions regarding these standards.

5. Consultants must obtain all necessary permits required to perform this survey on any public and/or private property, including an up-to-date permit from the MDOT Utilities Coordination and Permits Section.
6. Prior to performing the survey, the Consultant must contact all landowners upon whose lands they will enter. The contact may be personal, phone or letter, but must be documented. This notice must include the reasons for the survey on private land, the approximate time the survey is to take place, the extent of the survey including potential brush cutting (which must be minimized), and an MDOT contact person (the MDOT Project Manager or designate).
7. The Consultant must contact any and all Railroads prior to commencing field survey on railroad property. The cost for any permit, flaggers and/or training that is required by the Railroad will be considered as a direct cost, but only if included in the Consultant's priced proposal.
8. The Consultant must adhere to all applicable OSHA and MIOSHA safety standards, including the appropriate traffic signs for the activities and conditions for this job.
9. Consultants are responsible for a comprehensive and conscientious research of all records, including MDOT records, essential for the completion of this project.
10. Measurements, stationing, recorded data, and computations must be in **International Feet**, unless specified otherwise by the MDOT Project Manager.
11. Coordinate values shall be based upon the Michigan State Plane coordinate system NAD83 (CORS). All elevations must be based upon the North American Vertical Datum of 1988 (NAVD88). The datums must be clearly stated in the Survey Work Plan. A preliminary submittal of the adjusted Horizontal and Vertical control for the project may be submitted to the MDOT Survey Consultant Coordinator or Region Surveyor for review and acceptance as soon as it is available.
12. The survey notes must be submitted to the Design Survey Unit in 10" by 12" divided portfolios with flap covers. As many portfolios should be used as are needed to contain all of the required documents and Compact Discs (CD's) or DVD's. **Duplicate CD's must be included in the portfolio, with one set labeled "Region Surveyor"**.

or survey; an explanation of how the alignment was determined; and all supporting documentation.

- c. The **Control** section must contain the data collected and copies of all research documents used to establish the **horizontal and vertical** reference systems for the project, and must include a thorough written explanation describing how the systems were established. This section should also contain control traverse and GPS raw data (electronic only), least squares analysis for both traverse and benchmarks, and a list of control point coordinates and witnesses. A complete benchmark list with datum, description, station and offset, and elevation shall also be included. This information must be submitted in hardcopy as well as ASCII and MicroStation electronic file format on Compact Discs (CD's). Also, a sketch of the control traverse, showing any ties (government corners, property, alignment, etc.) shall be included in this section. It is recommended that the project's survey control be submitted for review as soon as it is available.
- d. The **Property** section contains all information that is utilized regarding the real property affected by the project, and all necessary property ties. This may include copies of all recorded Land Corner Recordation Certificates for the government corners used or reestablished, recorded plats, recorded certified surveys, tax maps, tax descriptions, and adjacent/riparian owners.
- e. The **Mapping** section contains all survey notes, research documents, and collected data used to produce the maps necessary for this project. All topographic plots, as well as utilities and drainage information, are to be placed in this section. Raw data in electronic form only, but not on the .PDF file.
- f. The **Miscellaneous** section contains any information not included in the previous sections. The project Surveyor's Report should specify any items included in this section.

15. **All data**, whether electronic or paper, **must be recorded on non-rewritable Compact Discs (CD's) or DVD's**. All paper files, including MicroStation files, must be scanned and/or converted to Adobe Acrobat .PDF format. It is not necessary to include raw survey data files in the Adobe file. CD's must be organized in the same manner as the portfolio, such as by Administrative section, Control section, etc. A Table of Contents in Adobe Acrobat format is required that has all .PDF pages of the CD bookmarked/linked so each place in the .PDF archive can be accessed with a single click of the computer mouse. Specified format files such as ASCII text, CAiCE and MicroStation must have separate access in native format outside of the .PDF file. CD's must be labeled with the control section, job number, data type and file names.
16. It is not necessary to label each individual paper page in the portfolio.
17. Each category of survey must be packaged separately (i.e., Structure surveys separate from Road surveys and Hydraulic surveys). CD's must be labeled with the Control Section, Job Number, data type and file names.
18. The Consultant representative shall record and submit typewritten minutes for all project related meetings to the MDOT Project Manager within two weeks of the meeting. The Consultant shall also distribute the minutes to all meeting attendees.
19. The MDOT Project Manager is the official contact for the Consultant. The Consultant must send a copy of all project correspondence to the MDOT Project Manager. The MDOT Project Manager shall be made aware of all communications regarding this project. Any survey related questions regarding this project should be directed to a Survey Consultant Project Manager or MDOT Region Surveyor.

At the completion of this survey for this project, legible copies of all field survey notes, all electronic data, and all research records obtained for this project will be considered the property of MDOT and **must be sent to** the MDOT, Design Support Area, Supervising Land Surveyor, P.O. Box 30050, Lansing, MI 48909. Please use MDOT's Form 222(5/01) entitled "SURVEY NOTES: RECEIPT AND TRANSMITTAL" for all transmittals. A copy of this transmittal form must also be sent to the MDOT Project Manager for Design.

Acceptance of this survey by the MDOT Supervising Land Surveyor and/or the MDOT Project Manager does not relieve the Consultant of any liability for the content of the survey.

WORK RESTRICTIONS

The Selected Consultant, and the Selected Consultant only, is advised to discuss Traffic Control scenarios with the MDOT Traffic and Safety Engineer at the closest MDOT TSC prior to submitting a priced proposal.

No work shall be performed or lane closures allowed during the Memorial Day, July 4th, or Labor Day holiday periods, as defined by the MDOT Project Manager or

representative specifically designated by the Project Manager (the Traffic & Safety Engineer at the MDOT TSC).

Work on weekends, if approved, shall be as directed by the MDOT Project Manager or Designate.

The Consultant must call the MDOT Region or TSC Traffic and Safety Engineer before beginning work to inform him or her of surveying activity in the area. The MDOT Region or TSC must be notified at least two weeks prior to lane closures so advance notice can be posted on the Web site.

Traffic shall be maintained by the Consultant throughout the project in accordance with Sections 812, 922, 103.05 and 103.06 of the *Standard Specifications for Construction*, 2003 edition, www.mdot.state.mi.us/specbook/, and Supplemental Specification 03SS001(2) Errata to the 2003 Standard Specifications and all other supplemental specifications currently in effect against the Standard Specifications for Construction. All traffic control devices shall conform to the current edition, as revised, of the *Michigan Manual of Uniform Traffic Control Devices* (MMUTCD). All warning signs for maintenance of traffic used on this project shall be fabricated with prismatic retro-reflective sheeting, and shall be set up five feet above ground.

The Consultant shall use MDOT standard “maintaining traffic” typicals for any and all closures.

Typical MDOT traffic control diagrams are available on line at www.mdot.state.mi.us/tands/plans.cfm

COORDINATION WITH OTHER CONTRACTS IN THE VICINITY

The Consultant shall coordinate operations with contractors performing work on other projects within or adjacent to the Construction Influence Area (CIA).

MDOT maintenance crews and/or Contract Maintenance Agencies may perform maintenance work within or adjacent to the CIA. The Maintenance Division of MDOT and/or Contract Maintenance Agency will coordinate their operations with the MDOT Project Manager or Designate to minimize the interference to the Consultant.

The Consultant must contact the Development Engineer at the nearest MDOT TSC for information regarding project coordination.

The Consultant’s attention is called to the requirements of cooperation with others as covered in Article 104.07 of the 2003 Standard Specifications for Construction. Other contracts or maintenance operations may occur during the life of the project.

No claim for extra compensation or adjustment in contract unit prices will be allowed on account of delay or failure of others to complete work unit scheduled.

FIELD SURVEY

The purpose of the field survey is to obtain all information and data required by the project design engineer, to leave control in the field for future construction staking, and to provide a sufficient history of the area to enable the MDOT Design Survey Unit to perform dependable surveys in the future. The Consultant surveyor must discuss the scope of this survey with the project design engineer before initiating any work on this project. Notes of this meeting and a detailed Survey Work Plan with an estimate of hours broken down by specific survey task must be submitted to the MDOT Project Manager and Survey Consultant Project Manager within two weeks of this meeting.

CONTROL

A three dimensional control system must be established throughout the project area. This control shall be based on the Michigan State Plane Coordinate System NAD1983 (CORS) horizontal datum and NAVD 1988 vertical datum. All subsequent control must be based on the established control. Any traverse/control points or bench marks established must adhere to the Michigan Department of Transportation (MDOT) Design Surveys *Standards of Practice* dated March 2008 and be listed in the Control pocket of the portfolio. Contact the MDOT Survey Consultant Coordinator or Region Surveyor for existing control in the area.

OPUS positioning may be used as a check, and for determining Primary Control as defined in the MDOT Standards of Practice for Design Survey March 2008. For any and all OPUS solutions, a RINEX format file with a minimum of two hours of GPS data must be included, as well as the OPUS solution (extended version) from NGS. All OPUS solutions must be verified within 0.20 foot, either by a separate OPUS solution from an independent occupation, or by a least squares adjustment based on NGS/CORS positions.

If GPS-derived elevations are used, the Surveyor's Report and the Witness List and Witness Sheet for the project must clearly state that the vertical datum is "NAVD 1988 GPS-derived from Geoid XX." Geoid03 is the recommended Geoid at this time April 2009.

A mapping control point that is a rebar in the ground should not be considered a benchmark. The elevation of a rebar that is a control point should be verified or re-established prior to use as a benchmark.

A Witness list sheet for this project must be provided that has a formula for grid to ground conversion, with a statement that a mapping control point that is a rebar in the ground should not be considered a benchmark, and its elevation should be verified or re-established prior to use.

All Witness lists, for horizontal control, benchmarks, government corners, and alignment points, must use all capital letters exclusively.

The Consultant must provide a **MicroStation file** that contains the benchmark list and horizontal control point list, government corner list, and alignment point list. The type of alignment must be described. This file must also provide a formula for a grid to ground conversion. This file must be named **JNxxxxwit.dgn** and formatted as an MDOT plan sheet. An example MicroStation file will be provided on the MDOT Design Survey ftp site. **Upper case letters must be used exclusively**, as they are easier to read on half size plan sheet.

For this project primary control monuments have been set along I-94 from the Indiana/Michigan State line to Hennesy Road. This was completed under the previous MDOT job number 483350. The selected consultant would use this horizontal and vertical control for the I-94 EB near the state line portion of the project. This control shall be given to the selected consultant. Additional horizontal control and benchmarks will need to be established in the mapping area. Additional intermediate control and vertical control will meet current MDOT standards. The new horizontal and vertical control should be set near the location of each sign foundation. Each sign location will have a minimum of 3 new horizontal control points and 1 new benchmark.

For this project primary control/intermediate monuments have been set along I-94 by the proposed US-31 connection to I-94 by I-196. This was completed under the previous MDOT job number 49719C . There is also control by the Britian Avenue over I-94, which is on the same coordinate system. This was for project 104002. The selected consultant would use this horizontal and vertical control for the I-94 Eastbound and Westbound 2 miles west of I-196. Additional horizontal control and benchmarks will need to be established in the mapping area. This control shall be given to the selected consultant. Additional intermediate control and vertical control will meet current MDOT standards. The new horizontal and vertical control should be set near the location of each sign foundation. Each sign location will have a minimum of 3 new horizontal control points and 1 new benchmark.

For this project primary control/intermediate monuments have been set along I-94 by M-40. This was completed under the previous MDOT job number 53350. The selected consultant would use this horizontal and vertical control for the I-94 Westbound 2 miles east of M-40. Additional horizontal control and benchmarks will need to be established in the mapping area. This control shall be given to the selected consultant. Additional intermediate control and vertical control will meet current MDOT standards. The new horizontal and vertical control should be set near the location of each sign foundation. This area was reconstructed, so some of the horizontal and vertical control may not longer be present. Each sign location will have a minimum of 3 new horizontal control points and 1 new benchmark.

PROPERTY/GOVERNMENT CORNERS

Any PLSS corners within the project mapping limits must be recovered or established and tied to the project coordinate system. Any PLSS corners necessary for legal

alignment determination and/or property ties for Right of Way issues must be recovered or established and tied to the project coordinate system.

All PLSS corners must be recorded in accordance with PA 74 of 1970, as amended, and all applicable administrative rules. A copy of each **recorded** Land Corner Recordation Certificate must be submitted to the MDOT Design Survey Office as part of the final report. All PLSS corners located in hard surface roads must be protected by a monument box, regardless of impending construction. The Consultant shall provide to the Survey Consultant Project Manager a list of any affected Government or Property Controlling Corners in the detailed work plan for discussion or approval.

The Consultant surveyor must contact the County Remonumentation Representative prior to beginning work on the project to inform him of proposed corner perpetuation activities, and to obtain information pertinent to PLSS corners and/or property controlling corners affected by project construction.

All **monument boxes** through the project area must be accounted for by the Consultant surveyor, shown on the project mapping, and have a recorded LCRC submitted in the survey portfolio.

No ROW will be determined for this project.

ALIGNMENT

Since most existing alignment points locate and define the boundary between the public Right of Way and private ownership, legal alignment points are considered Property Controlling Corners and must be recovered and recorded in accordance with PA 74 of 1970, as amended, and all applicable administrative rules. A copy of each recorded Land Corner Recordation Certificate must be submitted in the Property Section of the final portfolio.

The Consultant must clearly define in the Work Plan what type of alignment(s) is proposed, Legal, Survey or As Constructed, how the stationing will be established, and whether or not the alignment(s) will be staked in the field.

An **alignment sheet** must be prepared and submitted that shows the alignment(s) with stationing and coordinates, and the source of stationing, curve data, and the alignment definition. All alignments must be **annotated** as in the following examples: As Constructed alignment for CS 45011 as surveyed in 2009, or Legal Alignment of 1952 for CS 38016 as surveyed in 2009. Showing government corners with distances along government lines to the alignment are also appropriate for this CADD drawing. MDOT MicroStation format is required. Some tangents may be graphically shortened to “shrink” the drawing to fit paper size.

The Consultant must provide an **alignment control point list with witnesses** for all alignment points found or set. This list must include datum, point designations, descriptions, coordinates, combined Scale Factor, and witnesses. This list may be

appended to the witness list for horizontal and vertical control points. Witness lists must use only uppercase letters.

All **monument boxes** through the project area must be accounted for by the Consultant surveyor, shown on the project mapping, and have a recorded LCRC submitted with the survey portfolio.

For the project location by the state line along I-94 a best fit alignment will be determined along I-94. This line should be along East bound I-94. The location of the line will be along the edge of metal as determined using aerial photography. This can be discussed with the selected consultant. The source of stationing should be clearly identified in the surveyor's report.

For the project location 2 miles west of I-196 a Survey alignment of I-94 has been previously determined under project 104002. This alignment is in the median. It will be given to the selected consultant to be included in the survey deliverable package .dgn files. This alignment begins at station 1156+87 and ends at station 1755+60.

For the project location I-94 Westbound 2 miles east of M-40 has been reconstructed after the aerial photography has been completed. For this project a best fit median alignment was previously determined. Also a best fit alignment of West bound I-94 was also determined previously determined best fit alignments. These will be included in the survey deliverables dgn files. The stationing will need to be verified with the stenciled stationing in Westbound I-94.

MAPPING

The Consultant must submit a **CAiCE software file, named MDOTjob#.zip**, utilizing CAiCE's built-in archive feature, of all survey mapping points and data files for the mapping area. If a Digital Terrain Model is needed for the project, it must be created in CAiCE and named EXRD. **The CAiCE software used must be Version 10.6 or newer.**

The Consultant is responsible for using the latest MDOT CAiCE Feature Codes, files and Plans Production tugboat (macro), available on the MDOT Design Survey File Transfer Protocol (FTP) site at **ftp://ftp.michtrans.net/**. The consultant Username is "survcons." The consultant Password is "\$urvcon\$." The tugboat can also be used to convert CAiCE files into Geopak and MicroStation formats.

The Consultant must provide an electronic **MicroStation Intergraph Version 8 format file** of the mapping area. This file must be named MDOTjob#pl.dgn, for example **109707Cpl.dgn**, and must be submitted **in a sub-directory outside of the CAiCE archive file** named "MicroStation." The MicroStation file will be a 2-D file of the planimetric features including contours. This file must be sized appropriately, utilize the seed file **seedrd_c.dgn** with working units of 1000, 1, and be compiled in standard MDOT format. The Consultant is responsible for using the latest MDOT Resource files, color table, and cell files, available on the MDOT File Library site under CAD_V8. Go to <http://mdotwas1.mdot.state.mi.us/public/bbs/>

For a comprehensive list of MicroStation level designations, contents and line attributes, refer to the “MDOT V8 Level Feature Code List_08.pdf” table located on the MDOT Design Survey File Transfer Protocol web site. This table replaces the former Attachments AA, C & D. Also in the ftp site, the Consultant should refer to the V8GROUP&ALPHA LIST_08.pdf file for Data Collection Codes.

The Consultant must submit **files created from CAiCE that are formatted for design in Geopak** software. This can be accomplished by using the MDOT Plans Production CAiCE Tugboat (macro), which is available on the MDOT Design Survey File Transfer Protocol (FTP) site. The Consultant must submit a 3D MicroStation Triangle file and the same Triangle file in Geopak DAT format. **This DAT file is generated through the new (August 2008) MDOT tugboat.** The Consultant must also submit a Survey Chain (TIN Boundary) around the edited Triangle file with the name and Feature “CLIP.” A Job#.XML file must be included for each separate alignment. Each alignment must be computed separately, and uniquely named to include the JN and a description, such as 79585_AsC_Wbd.XML. These files must be submitted electronically **in a subdirectory outside of the CAiCE archive file** named “Geopak.”

For each sign location a separate DTM and PL will be generated. Exact mapping limits will be determined with the selected consultant. The consultant will be expected to locate any visible utilities near and within the mapping area. The consultant will be expected to locate all topographic and plan a metric features within the mapping limits.

POST SURVEY CLEAN-UP

Once the survey is complete, all stakes must be removed from the MDOT median and ROW to aid the maintenance crews and adjacent property owners. All benchmarks and control points and their witnesses must remain in place.

FINAL REPORT: DELIVERABLES

The final report for this project shall include:

1. In the first pocket of the portfolio, labeled **ADMINISTRATIVE**, the following will appear:
 - a. MDOT’s Form 222(5/01) entitled “SURVEY NOTES: RECEIPT AND TRANSMITTAL”
 - b. The project’s Professional Surveyor’s Report on company letterhead consisting of:
 - i) A comprehensive synopsis of the work performed on this project, signed **and sealed** by the project’s Professional Surveyor.
 - ii) The source and methods used to establish the project horizontal and vertical control and alignment(s) for this project.
 - iii) A detailed explanation of anything discovered during the survey of this project that may create a problem for the designer or another surveyor.
 - c. CD or DVD with all documents scanned or converted into PDF files. Each page must be inserted in a master PDF file and bookmarked for easy retrieval. An example can be provided upon request.
 - d. MDOT QA/QC Portfolio Checklist (revised March 2009).

2. In the second pocket of the portfolio, labeled **ALIGNMENT**, the following will appear:
 - a. An annotated MicroStation drawing of the alignment(s), showing:
 - i) A statement defining the alignment(s) as **legal, as constructed, or survey**
 - ii) Stationing, source of stationing, and station equation to existing stationing
 - iii) Horizontal coordinates of P.I.'s, at a minimum
 - iv) Curve data
 - v) Alignment points found or set
 - vi) Control points
 - vii) Reference lines and angles of crossing (if appropriate)
 - viii) Government corners and ties to government lines
 - b. Witness list for the alignment points found or set, which shows coordinates, stationing and four witnesses for each alignment point. Witness lists must use only uppercase letters.
 - c. LCRC's for alignment points found.
3. In the third pocket of the portfolio, labeled **CONTROL**, the following will appear:
 - a. Documentation of horizontal and vertical datum sources.
 - b. OPUS documentation.
 - c. Least squares adjustments for the horizontal and vertical control.
 - d. It is not necessary to submit electronic raw survey data in hardcopy form, or in the .PDF file.
 - e. Text files, hardcopy and on CD, which contain the witness lists for the horizontal alignment ties, horizontal control points, benchmarks and government corners. All witness lists must note the datum(s), a combined scale factor for state plane grid-to-ground conversion, and an example thereof. Witness lists must use only uppercase letters.
 - f. A MicroStation V8 file showing the data in d. above, using only upper case letters.
4. In the fourth pocket of the portfolio, labeled **PROPERTY**, the following will appear:
 - a. Tax maps and descriptions with owner names, addresses and phone numbers, if Right of Way is to be acquired, or if riparian ownerships are required.
 - b. Maps, plats, and recorded surveys.
 - c. Documents such as plats, Act 132 Certificates and/or tax maps marked with point numbers as property ties, if Right of Way is to be acquired.
 - d. Legible **recorded** copies of all Land Corner Recordation Certificates (LCRC) filed for the government corners (PLSS corners and Property Controlling Corners) used for computations and/or in danger of obliteration by impending construction.
5. In the fifth pocket of the portfolio, labeled **MAPPING**, the following will appear:
 - a. Mapping file in MicroStation V8 format, and also converted to .PDF format. Hardcopy signed and sealed. All point and line descriptions must use only upper case letters.
 - b. An archived CAiCE software file.
 - c. Geopak files produced from CAiCE.

- d. All field survey notes and electronic mapping data used for the project. It is not necessary to submit electronic raw survey data in hardcopy form, or in the .PDF file.
 - e. All supporting and supplemental information or data, such as drainage and utilities, electronically only if possible.
6. In the sixth pocket of the portfolio, labeled **MISCELLANEOUS**, the following will appear:
- a. Any photographs taken for clarity of an area
 - b. Any newspaper clippings related to the project
 - c. Any information not covered in this scope that will be of benefit to the designer or another surveyor

General Notes

- a. It is the responsibility of the Consultant to insure that all electronic files submitted to MDOT conform to the required format and that all documents are legible.
- b. The Consultant must organize and label the various sections of the portfolio as required by the Standards of Practice for MDOT Design Surveys dated March 2008.
- c. All research documents are required to be scanned and placed on the CD.
- d. It is desirable to limit paper and to include as much electronic data as possible on Compact Disc or DVD, including scanned items, to facilitate future electronic storage and transmission of survey data. **Duplicate CD's must be included in the portfolio, with one set labeled "Region Surveyor".**

ATTACHMENT B
MOT Requirements

MINIMUM MERGING TAPER LENGTH "L" (FEET)

OFFSET FEET	POSTED SPEED LIMIT, MPH (PRIOR TO WORK AREA)									
	25	30	35	40	45	50	55	60	65	70
1	10	15	20	27	45	50	55	60	65	70
2	21	30	41	53	90	100	110	120	130	140
3	31	45	61	80	135	150	165	180	195	210
4	42	60	82	107	180	200	220	240	260	280
5	52	75	102	133	225	250	275	300	325	350
6	63	90	123	160	270	300	330	360	390	420
7	73	105	143	187	315	350	385	420	455	490
8	83	120	163	213	360	400	440	480	520	560
9	94	135	184	240	405	450	495	540	585	630
10	104	150	204	267	450	500	550	600	650	700
11	115	165	225	293	495	550	605	660	715	770
12	125	180	245	320	540	600	660	720	780	840
13	135	195	266	347	585	650	715	780	845	910
14	146	210	286	374	630	700	770	840	910	980
15	157	225	307	400	675	750	825	900	975	1050

TAPER LENGTH "L" IN FEET

THE FORMULAS FOR THE MINIMUM LENGTH OF A MERGING TAPER IN DERIVING THE "L" VALUES SHOWN IN THE ABOVE TABLES ARE AS FOLLOWS:

"L" = $\frac{W \times S^2}{60}$ WHERE POSTED SPEED PRIOR TO THE WORK AREA IS 40 MPH OR LESS

"L" = S x W WHERE POSTED SPEED PRIOR TO THE WORK AREA IS 45 MPH OR GREATER

- L = MINIMUM LENGTH OF MERGING TAPER
- S = POSTED SPEED LIMIT IN MPH PRIOR TO WORK AREA
- W = WIDTH OF OFFSET

TYPES OF TAPERS

UPSTREAM TAPERS

- MERGING TAPER
- SHIFTING TAPER
- SHOULDER TAPER
- TWO-WAY TRAFFIC TAPER

DOWNSTREAM TAPERS
(USE IS OPTIONAL)

TAPER LENGTH

- L - MINIMUM
- 1/2 L - MINIMUM
- 1/3 L - MINIMUM
- 100' - MAXIMUM
- 100' - MINIMUM (PER LANE)

 TRAFFIC AND SAFETY MAINTAINING TRAFFIC TYPICAL	TABLES FOR "L", "D" AND "B" VALUES		
	DRAWN BY: CON:AE:djf CHECKED BY: BMM	JUNE 2006 PLAN DATE:	M0020a
FILE: K:/DGN/TSR/STDS/ENGLISH/MNTTRF/M0020a.dgn		REV.	08/21/2006

DISTANCE BETWEEN TRAFFIC CONTROL DEVICES "D"
AND LENGTH OF LONGITUDINAL BUFFER SPACE ON
"WHERE WORKERS PRESENT" SEQUENCES

"D" DISTANCES	POSTED SPEED LIMIT, MPH (PRIOR TO WORK AREA)									
	25	30	35	40	45	50	55	60	65	70
D (FEET)	250	300	350	400	450	500	550	600	650	700

GUIDELINES FOR LENGTH OF
LONGITUDINAL BUFFER SPACE "B"

SPEED* MPH	LENGTH FEET
20	33
25	50
30	83
35	132
40	181
45	230
50	279
55	329
60	411
65	476
70	542

* POSTED SPEED, OFF PEAK 85TH PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED

1 BASED UPON AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) BRAKING DISTANCE PORTION OF STOPPING SIGHT DISTANCE FOR WET AND LEVEL PAVEMENTS (A POLICY ON GEOMETRIC DESIGN OF HIGHWAY AND STREETS), AASHTO. THIS AASHTO DOCUMENT ALSO RECOMMENDS ADJUSTMENTS FOR THE EFFECT OF GRADE ON STOPPING AND VARIATION FOR TRUCKS.

 TRAFFIC AND SAFETY MAINTAINING TRAFFIC TYPICAL	TABLES FOR "L", "D" AND "B" VALUES		
	DRAWN BY: CON:AE:djf CHECKED BY: BMM	JUNE 2006 PLAN DATE:	M0020a
FILE: K:/DGN/TSR/STDS/ENGLISH/MNTTRF/M0020a.dgn REV. 08/21/2006			

END ROAD WORK

PLACE THIS SIGN ALONG WITH THE ADVANCE WORK ZONE SIGNING AS DEPICTED ON THE APPROPRIATE TYPICAL M0030a-M0080a.

END ROAD WORK

PLACE THIS SIGN ALONG WITH THE ADVANCE WORK ZONE SIGNING AS DEPICTED ON THE APPROPRIATE TYPICAL M0030a-M0080a.

SPEED LIMIT
X X
R2-1

PLACE THROUGHOUT WORK AREA AS INDICATED AND AFTER ALL ENTRANCE RAMP AND ALL MAJOR CROSSROADS IF PERMANENT SIGNS ARE NOT IN PLACE.

SPEED LIMIT
X X
R2-1

PLACE THROUGHOUT WORK AREA AS INDICATED AND AFTER ALL ENTRANCE RAMP AND ALL MAJOR CROSSROADS IF PERMANENT SIGNS ARE NOT IN PLACE.

KEY

- • • CHANNELIZING DEVICES
- ⊘ LIGHTED ARROW PANEL (CAUTION MODE)
- ➔ TRAFFIC FLOW
- REFLECTS EXISTING SPEED LIMIT
- * USE THE "NEXT -- MILES" SIGN WHEN SHOULDER CLOSURE EXCEEDS 1 MILE IN LENGTH

SIGN = 148 ft± - TYPE B PLUS ADDITIONAL R2-1's THROUGHOUT WORK AREA

SPEED LIMIT
X X
R2-1

WORK ZONE BEGINS
R5-18c

SPEED LIMIT
X X
R2-1

WORK ZONE BEGINS
R5-18c

RIGHT SHOULDER CLOSED
W21-5a

RIGHT SHOULDER CLOSED AHEAD
W21-5b

NEXT -- MILES *
W20-1a

ROAD WORK AHEAD
W20-1

ROAD WORK AHEAD
W20-1

SHOULDER

SHOULDER

MDOT
Michigan Department of Transportation
TRAFFIC AND SAFETY
MAINTAINING TRAFFIC
TYPICAL

TYPICAL TEMPORARY TRAFFIC CONTROL
FOR A SHOULDER CLOSURE ON A
DIVIDED ROADWAY OR FREEWAY
NO SPEED REDUCTION

DRAWN BY: CON:AE:djf
CHECKED BY: BMM

JUNE 2006
PLAN DATE:

M0880a

SHEET
1 OF 2

NOT TO SCALE

FILE: PW RD/TS/Typicals/Signs/MT NON FWY/M0880a.dgn REV. 08/21/2007

NOTES

1. D = DISTANCE BETWEEN TRAFFIC CONTROL DEVICES
 $1/3 L$ = MINIMUM LENGTH OF TAPER
 B = LENGTH OF LONGITUDINAL BUFFER
 SEE **M0020a** FOR "D," "L," AND "B" VALUES
2. ALL NON-APPLICABLE SIGNING WITHIN THE CIA SHALL BE MODIFIED TO FIT CONDITIONS, COVERED OR REMOVED.
3. DISTANCES BETWEEN SIGNS, THE VALUES FOR WHICH ARE SHOWN IN TABLE D, ARE APPROXIMATE AND MAY NEED ADJUSTING AS DIRECTED BY THE ENGINEER.
- 3A. THE "WORK ZONE BEGINS" (R5-18c) SIGN SHALL BE USED ONLY IN THE INITIAL SIGNING SEQUENCE IN THE WORK ZONE. SUBSEQUENT SEQUENCES IN THE SAME WORK ZONE SHALL OMIT THIS SIGN AND THE QUANTITIES SHALL BE ADJUSTED APPROPRIATELY.
- 4E. THE MAXIMUM RECOMMENDED DISTANCE(S) BETWEEN CHANNELIZING DEVICES SHOULD BE EQUAL IN FEET TO THE POSTED SPEED IN MILES PER HOUR ON TAPER(S) AND TWICE THE POSTED SPEED IN THE PARALLEL AREA(S).
5. FOR OVERNIGHT CLOSURES, CHANNELIZING DEVICES SHALL BE LIGHTED PLASTIC DRUMS.
6. WHEN CALLED FOR IN THE FHWA ACCEPTANCE LETTER FOR THE SIGN SYSTEM SELECTED, THE TYPE A WARNING FLASHER, SHOWN ON THE WARNING SIGNS, SHALL BE POSITIONED ON THE SIDE OF THE SIGN NEAREST THE ROADWAY.
7. ALL TEMPORARY SIGNS, TYPE III BARRICADES, THEIR SUPPORT SYSTEMS AND LIGHTING REQUIREMENTS SHALL MEET NCHRP 350 CRASHWORTHLY REQUIREMENTS STIPULATED IN THE 2005 EDITION OF THE MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, THE CURRENT EDITION OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION, THE STANDARD PLANS AND APPLICABLE SPECIAL PROVISIONS. ONLY DESIGNS AND MATERIALS APPROVED BY MDOT WILL BE ALLOWED.
8. WHEN BUFFER AREAS ARE ESTABLISHED, THERE SHALL BE NO EQUIPMENT OR MATERIALS STORED OR WORK CONDUCTED IN THE BUFFER AREA.
- 29A. THE TYPE OF REFLECTIVE SHEETING USED FOR THE W20-1a PLAQUE SHALL BE THE SAME AS THE TYPE USED FOR THE PARENT SIGN.

SIGN SIZES

DIAMOND WARNING - 48" x 48"
 W20-1a PLAQUE - 48" x 36"
 R2-1 REGULATORY - 48" x 60"
 R5-18c REGULATORY - 48" x 48"

NOT TO SCALE

 TRAFFIC AND SAFETY MAINTAINING TRAFFIC TYPICAL	TYPICAL TEMPORARY TRAFFIC CONTROL FOR A SHOULDER CLOSURE ON A DIVIDED ROADWAY OR FREEWAY NO SPEED REDUCTION		SHEET 2 OF 2
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