

STATE OF MICHIGAN
 DEPARTMENT OF TECHNOLOGY, MANAGEMENT AND BUDGET
 PROCUREMENT
 P.O. BOX 30026, LANSING, MI 48909
 OR
 525 W. ALLEGAN, LANSING, MI 48933

May 19, 2014

CHANGE NOTICE NO. 4
 to
CONTRACT NO. 071B9200263
 between
THE STATE OF MICHIGAN
 and

NAME & ADDRESS OF CONTRACTOR:	PRIMARY CONTACT	EMAIL
Ledstar, Inc. 131 Westcreek Drive Woodbridge, Ontario, L4L 9N6	Milan Patel	milan@ledstar.com
	TELEPHONE	CONTRACTOR #, MAIL CODE
	(905) 265-7800 ext. 206	

STATE CONTACTS	AGENCY	NAME	PHONE	EMAIL
CONTRACT COMPLIANCE INSPECTOR	MDOT	Michele Mueller	(248) 431-1443	mmuellerm2@michigan.gov
BUYER	DTMB	Sue Cieciva	(517) 284-7007	ciecivas@michigan.gov

CONTRACT SUMMARY:			
DESCRIPTION: Dynamic Message Signs – Michigan Department of Transportation			
INITIAL EFFECTIVE DATE	INITIAL EXPIRATION DATE	INITIAL AVAILABLE OPTIONS	EXPIRATION DATE BEFORE CHANGE(S) NOTED BELOW
July 21, 2009	July 20, 2012	2, one year	July 20, 2014
PAYMENT TERMS	F.O.B	SHIPPED	SHIPPED FROM
Net 45 Days ARO	Delivered	90-120 Days ARO	Canada
ALTERNATE PAYMENT OPTIONS:			AVAILABLE TO MiDEAL PARTICIPANTS
<input type="checkbox"/> P-card	<input type="checkbox"/> Direct Voucher (DV)	<input type="checkbox"/> Other	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
MINIMUM DELIVERY REQUIREMENTS:			
1 Unit			

DESCRIPTION OF CHANGE NOTICE:				
EXTEND CONTRACT EXPIRATION DATE	EXERCISE CONTRACT OPTION YEAR(S)	EXTENSION BEYOND CONTRACT OPTION YEARS	LENGTH OF OPTION/EXTENSION	EXPIRATION DATE AFTER CHANGE
<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Six Months	January 20, 2015
VALUE/COST OF CHANGE NOTICE:		ESTIMATED REVISED AGGREGATE CONTRACT VALUE:		
\$360,000.00		\$4,612,808.00		

Effective June 10, 2014, this Contract is EXTENDED six months, therefore the Contract expiration date is hereby CHANGED to January 20, 2015. In addition, this Contract is hereby INCREASED by \$360,000.00

All other terms, conditions, specifications, and pricing remain unchanged.

Per agency request dated May 2, 2014, DTMB, Procurement request dated May 13, 2014, vendor agreement by email dated May 13, 2014.

STATE OF MICHIGAN
 DEPARTMENT OF TECHNOLOGY, MANAGEMENT AND BUDGET
 PROCUREMENT
 P.O. BOX 30026, LANSING, MI 48909
 OR
 530 W. ALLEGAN, LANSING, MI 48933

CHANGE NOTICE NO. 3
 to
CONTRACT NO. 071B9200263
 between
THE STATE OF MICHIGAN
 and

NAME & ADDRESS OF CONTRACTOR:	PRIMARY CONTACT	EMAIL
Ledstar, Inc. 131 Westcreek Drive Woodbridge, Ontario, L4L 9N6	Milan Patel	milan@ledstar.com
	TELEPHONE	CONTRACTOR #, MAIL CODE
	(905) 265-7800 ext. 206	

STATE CONTACTS	AGENCY	NAME	PHONE	EMAIL
CONTRACT COMPLIANCE INSPECTOR	MDOT	Michele Mueller	248-431-1443	muellerm2@michigan.gov
BUYER	DTMB	Jim Wilson	517-241-1916	Wilsonj4@michigan.gov

CONTRACT SUMMARY:			
DESCRIPTION: Dynamic Message Signs - MDOT			
INITIAL EFFECTIVE DATE	INITIAL EXPIRATION DATE	INITIAL AVAILABLE OPTIONS	EXPIRATION DATE BEFORE CHANGE(S) NOTED BELOW
July 21, 2009	July 20, 2012	2, one year	July 20, 2013
PAYMENT TERMS	F.O.B	SHIPPED	SHIPPED FROM
Net 45 ARO	Delivered	90-120 Days ARO	Canada
ALTERNATE PAYMENT OPTIONS:			AVAILABLE TO MiDEAL PARTICIPANTS
<input type="checkbox"/> P-card <input type="checkbox"/> Direct Voucher (DV) <input type="checkbox"/> Other			<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
MINIMUM DELIVERY REQUIREMENTS:			
1 Unit			

DESCRIPTION OF CHANGE NOTICE:				
EXTEND CONTRACT EXPIRATION DATE	EXERCISE CONTRACT OPTION YEAR(S)	EXTENSION BEYOND CONTRACT OPTION YEARS	LENGTH OF OPTION/EXTENSION	EXPIRATION DATE AFTER CHANGE
<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1 year	July 20, 2014
VALUE/COST OF CHANGE NOTICE:		ESTIMATED REVISED AGGREGATE CONTRACT VALUE:		
\$0.00		\$4,252,808.00		
Effective June 12, 2013, the contract exercises an option year. New contract end date is July 20, 2014				

STATE OF MICHIGAN
 DEPARTMENT OF TECHNOLOGY, MANAGEMENT AND BUDGET
 PROCUREMENT
 P.O. BOX 30026, LANSING, MI 48909
 OR
 530 W. ALLEGAN, LANSING, MI 48933

June 28, 2012

CHANGE NOTICE NO. 2
 to
CONTRACT NO. 071B9200263
 between
THE STATE OF MICHIGAN
 and

NAME & ADDRESS OF CONTRACTOR:	PRIMARY CONTACT	EMAIL
Ledstar, Inc. 131 Westcreek Drive Woodbridge Ontario, L4L 9N6	Milan Patel	milan@ledstar.com
	TELEPHONE	CONTRACTOR #, MAIL CODE
	(905) 265-7800 Ext. 206	

STATE CONTACTS	AGENCY	NAME	PHONE	EMAIL
CONTRACT COMPLIANCE INSPECTOR:	MDOT	Michele Mueller	(248) 431-1443	muellerm2@michigan.gov
BUYER:	DTMB	Don Mandernach	(517) 241-7233	mandernachd@michigan.gov

CONTRACT SUMMARY:			
DESCRIPTION: Dynamic Message Signs - MDOT			
INITIAL EFFECTIVE DATE	INITIAL EXPIRATION DATE	AVAILABLE OPTIONS	CURRENT EXPIRATION DATE
7/21/2009	7/20/2012	2, 1 Yr. Options	7/20/2012
PAYMENT TERMS	F.O.B	SHIPPED	SHIPPED FROM
Net 45 ARO	Delivered	90 - 120 Days ARO	Canada
ALTERNATE PAYMENT OPTIONS:			AVAILABLE TO MiDEAL PARTICIPANTS
<input type="checkbox"/> P-card <input type="checkbox"/> Direct Voucher (DV) <input type="checkbox"/> Other			<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
MINIMUM DELIVERY REQUIREMENTS:			
1 Unit			

DESCRIPTION OF CHANGE NOTICE:		
OPTION EXERCISED: <input type="checkbox"/> NO <input checked="" type="checkbox"/> YES	IF YES, EFFECTIVE DATE OF CHANGE: 7/21/2012	NEW EXPIRATION DATE: 7/20/2013
Effective immediately, the first of the two available option years will be utilized.		
All other terms, condition, specifications, and pricing remain the same.		
Per agency (ITRAC request C20120618-093821 dated 6/27/2012) and Vendor (dated 6/28/2012) agreement, and DTMB Procurement approval.		
VALUE/COST OF CHANGE NOTICE:	\$0.00	
ESTIMATED REVISED AGGREGATE CONTRACT VALUE:	\$4,252,808.00	

STATE OF MICHIGAN
 DEPARTMENT OF MANAGEMENT AND BUDGET
 PROCUREMENT
 P.O. BOX 30026, LANSING, MI 48909
 OR
 530 W. ALLEGAN, LANSING, MI 48933

November 8, 2011

CHANGE NOTICE NO. 1
OF
CONTRACT NO. 071B9200263
between
THE STATE OF MICHIGAN
and

NAME & ADDRESS OF CONTRACTOR Ledstar, Inc. 131 Westcreek Drive Woodbridge Ontario, L4L 9N6 Email: Milan@ledstar.com	TELEPHONE Milan Patel (905) 265-7800 Ext. 206
	CONTRACTOR NUMBER/MAIL CODE
	BUYER/CA (517) 373-7374 Klatra Pickett
Contract Compliance Inspector: Michelle R. Mueller: muellerm2@michigan.gov (248-483-5133) Dynamic Message Signs – MDOT	
CONTRACT PERIOD: 3 yrs. + 2 one-year options From: July 21, 2009 To: July 20, 2012	
TERMS <p style="text-align: center;">Net 45 ARO</p>	SHIPMENT <p style="text-align: center;">90 to 120 Days ARO</p>
F.O.B. <p style="text-align: center;">Delivered</p>	SHIPPED FROM <p style="text-align: center;">Canada</p>
MINIMUM DELIVERY REQUIREMENTS <p style="text-align: center;">1 Unit</p>	
MISCELLANEOUS INFORMATION:	

NATURE OF CHANGE(S):

For maintenance access, currently the large dynamic message signs are not set up for rear door entry. On October 21, 2011, the Michigan Department of Transportation (MDOT) received additional federal funding for eight (8) custom rear door access (parts and labor) and design, engineering and drawings. This contract will be **INCREASED** by \$14,658.00. This is allowed under current contract language.

All other terms, conditions, specifications, and pricing remain unchanged.

AUTHORITY/REASON(S):

Per Purchase Request (PRF) from MDOT, dated 10/12/2011.

INCREASE: \$14,658.00

TOTAL REVISED ESTIMATED CONTRACT VALUE: \$4,252,808.00

STATE OF MICHIGAN
 DEPARTMENT OF MANAGEMENT AND BUDGET
 PURCHASING OPERATIONS
 P.O. BOX 30026, LANSING, MI 48909
 OR
 530 W. ALLEGAN, LANSING, MI 48933

CONTRACT NO. 071B9200263
between
THE STATE OF MICHIGAN
and

NAME & ADDRESS OF CONTRACTOR Ledstar, Inc. 131 Westcreek Drive Woodbridge Ontario, L4L 9N6 Email: Milan@ledstar.com	TELEPHONE Milan Patel (905) 265-7800 Ext. 206 CONTRACTOR NUMBER/MAIL CODE BUYER/CA (517) 241-2619 Seleana Samuel
Contract Compliance Inspector: Michelle R. Mueller: muellerm2@michigan.gov (248-483-5133) Dynamic Message Signs – MDOT	
CONTRACT PERIOD: 3 yrs. + 2 one-year options From: July 21, 2009 To: July 20, 2012	
TERMS <p style="text-align: center;">Net 45 ARO</p>	SHIPMENT <p style="text-align: center;">90 to 120 Days ARO</p>
F.O.B. <p style="text-align: center;">Delivered</p>	SHIPPED FROM <p style="text-align: center;">Canada</p>
MINIMUM DELIVERY REQUIREMENTS <p style="text-align: center;">1 Unit</p>	
MISCELLANEOUS INFORMATION: <p>The terms and conditions of this Contract are those of ITB #07119200147, this Contract Agreement and the vendor's quote dated April 4, 2009. In the event of any conflicts between the specifications, and terms and conditions, indicated by the State and those indicated by the vendor, those of the State take precedence.</p> <p>Estimated Contract Value: \$4,238,150.00</p>	

THIS IS NOT AN ORDER: This Contract Agreement is awarded on the basis of our inquiry bearing the ITB No. 07119200147. Orders for delivery will be issued directly by the Department of Transportation through the issuance of a Purchase Order Form.

All terms and conditions of the invitation to bid are made a part hereof.

FOR THE CONTRACTOR:

Ledstar, Inc.

Firm Name

Authorized Agent Signature

Authorized Agent (Print or Type)

Date

FOR THE STATE:

Signature

Anthony DesChenes, Director

Name/Title

**Commodities Division, Purchasing
Operations**

Division

Date

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Attachment A, Specifications for Dynamic Message Sign, Large

Attachment B, Specifications for Dynamic Message Sign, Small

Attachment C, Price Proposal

Attachment D, Criteria for Dynamic Message Sign, Large

Attachment E, Criteria for Dynamic Message Sign, Small



DEFINITIONS

“Days” means calendar days unless otherwise specified.

“24x7x365” means 24 hours a day, seven days a week, and 365 days a year (including the 366th day in a leap year).

“Additional Service” means any Services/Deliverables within the scope of the Contract, but not specifically provided under any Statement of Work, that once added will result in the need to provide the Contractor with additional consideration.

“Audit Period” has the meaning given in **Section 2.093**.

“Business Day,” whether capitalized or not, shall mean any day other than a Saturday, Sunday or State-recognized legal holiday (as identified in the Collective Bargaining Agreement for State employees) from 8:00am EST through 5:00pm EST unless otherwise stated.

“Blanket Purchase Order” is an alternate term for Contract and is used in the States computer system.

“Business Critical” means any function identified in any Statement of Work as Business Critical.

“Chronic Failure” is defined in any applicable Service Level Agreements.

“Deleted – Not Applicable” means that section is not applicable or included in this RFP. This is used as a placeholder to maintain consistent numbering.

“Deliverable” means physical goods and/or commodities as required or identified by a Statement of Work

“DMB” means the Michigan Department of Management and Budget

“Environmentally preferable products” means a product or service that has a lesser or reduced effect on human health and the environment when compared with competing products or services that serve the same purpose. Such products or services may include, but are not limited to, those which contain recycled content, minimize waste, conserve energy or water, and reduce the amount of toxics either disposed of or consumed.

“Excusable Failure” has the meaning given in **Section 2.214**.

“Hazardous material” means any material defined as hazardous under the latest version of federal Emergency Planning and Community Right-to-Know Act of 1986 (including revisions adopted during the term of the Contract).

“Incident” means any interruption in Services.

“ITB” is a generic term used to describe an Invitation to Bid. The ITB serves as the document for transmitting the RFP to potential bidders

“Key Personnel” means any Personnel designated in **Section 1.031** as Key Personnel.

“New Work” means any Services/Deliverables outside the scope of the Contract and not specifically provided under any Statement of Work, that once added will result in the need to provide the Contractor with additional consideration.



“Ozone-depleting substance” means any substance the Environmental Protection Agency designates in 40 CFR part 82 as: (1) Class I, including, but not limited to, chlorofluorocarbons, halons, carbon tetrachloride, and methyl chloroform; or (2) Class II, including, but not limited to, hydrochlorofluorocarbons.

“Post-Consumer Waste” means any product generated by a business or consumer which has served its intended end use, and which has been separated or diverted from solid waste for the purpose of recycling into a usable commodity or product, and which does not include post-industrial waste.

“Post-Industrial Waste” means industrial by-products which would otherwise go to disposal and wastes generated after completion of a manufacturing process, but does not include internally generated scrap commonly returned to industrial or manufacturing processes.

“Recycling” means the series of activities by which materials that are no longer useful to the generator are collected, sorted, processed, and converted into raw materials and used in the production of new products. This definition excludes the use of these materials as a fuel substitute or for energy production.

“Reuse” means using a product or component of municipal solid waste in its original form more than once.

“RFP” means a Request for Proposal designed to solicit proposals for services.

“Services” means any function performed for the benefit of the State.

“Source reduction” means any practice that reduces the amount of any hazardous substance, pollutant, or contaminant entering any waste stream or otherwise released into the environment prior to recycling, energy recovery, treatment, or disposal.

“State Location” means any physical location where the State performs work. State Location may include state-owned, leased, or rented space.

“Subcontractor” means a company Contractor delegates performance of a portion of the Services to, but does not include independent contractors engaged by Contractor solely in a staff augmentation role.

“Unauthorized Removal” means the Contractor’s removal of Key Personnel without the prior written consent of the State.

“Waste prevention” means source reduction and reuse, but not recycling.

“Waste reduction” or “pollution prevention” means the practice of minimizing the generation of waste at the source and, when wastes cannot be prevented, utilizing environmentally sound on-site or off-site reuse and recycling. The term includes equipment or technology modifications, process or procedure modifications, product reformulation or redesign, and raw material substitutions. Waste treatment, control, management, and disposal are not considered pollution prevention, per the definitions under Part 143, Waste Minimization, of the Natural Resources and Environmental Protection Act (NREPA), 1994 PA 451, as amended.

“Work in Progress” means a Deliverable that has been partially prepared, but has not been presented to the State for Approval.

“Work Product” refers to any data compilations, reports, and other media, materials, or other objects or works of authorship created or produced by the Contractor as a result of an in furtherance of performing the services required by this Contract.



Article 1 – Statement of Work (SOW)

1.010 Project Identification

1.011 Project Request

This Contract is for small and large dynamic message signs to be used by the Michigan Department of Transportation (MDOT).

1.012 Background

Michigan Department Of Transportation (MDOT) – Michigan Intelligent Transportation System (MITS) installs Dynamic Message Signs on structural foundations and supports throughout the State of Michigan on state corridors. The Dynamic Message Signs provide traffic information to the motoring public by utilizing real time traffic conditions on various corridors throughout the State so the motorists are aware of potential congestion to allow them to make more informed decisions on their route to and from desired destination.

1.020 Scope of Work and Deliverables

1.021 In Scope

Contractor shall supply the Dynamic Message Signs in compliance with attachments A, B, and C.

1.022 Work and Deliverable

Contractor must provide Deliverables/Services and staff, and otherwise do all things necessary for or incidental to the performance of work, as set forth in Sections 1.020 and 1.030 of this Contract.

1.030 Roles and Responsibilities

1.031 Contractor Staff, Roles, and Responsibilities

The Contractor shall have the capacity to receive orders electronically, by phone, facsimile, and by written order. Contractor shall have internal controls, approved by Purchasing Operations, to insure that authorized individuals with the State place orders. The Contractor shall verify orders that have quantities that appear to be abnormal or excessive.

Contractor contact information is as follows:

Rakesh Patel, Service Manager
 905-265-7800 extension 203
 416-268-2276 mobile phone

Jose Fereira, Service
 905-265-7800 extension 229
 416-505-0275 mobile phone

Greg Bartlett, Sales
 905-265-7800 extension 218
 416-574-1051 mobile phone
gbartlett@ledstar.com



In addition orders may be sent to: 905-265-7805 (fax); milan@ledstar.com or 131 Westcreek Drive, Woodbridge, Ontario, L4L 9N6.

The Contractor’s Customer Service Department is available to the State of MI 24 hours per day, 7 days a week, 365 days per year. During normal business hours, service may be reached at 1-800-853-7310, for after-hours, 27/7 service may be reached at 416-505-0275.

The Contractor’s customer service must respond to State agency inquiries promptly. If the customer service contract information changes during the life of the Contract the State must be notified and given new contact information.

Any supplies and services to be furnished under this Contract shall be ordered by issuance of a purchase order, unless otherwise defined within this Contract, orders will be issued by the Michigan Department of Transportation.

All purchase orders are subject to the terms and conditions of this Contract. In the event of a conflict between a purchase order and this Contract, the Contract shall control.

If mailed, a purchase order is considered “issued” when the State deposits the order in the mail. Orders may be issued orally, by facsimile, or by electronic commerce methods

1.040 Project Plan

1.041 Project Plan Management

The contractor will carry out this project under the direction and control of MDOT - MITS.

Although there will be continuous liaison with the contractor team, the client agency’s project director will meet as needed, with the contractor’s project manager for the purpose of reviewing progress and providing necessary guidance to the contractor in solving problems that arise.

The Contractor’s project manager for this Contract is Milan Patel. His contact information is: phone 905-265-7800 extension 206, mobile phone 416-616-5788, email Milan@ledstar.com. Ledstar Inc.’s facilities are only a few hours away and can either meet the client at MDOT or host progress meetings.

1.042 Reports

The Contractor will be able to provide various reports of purchasing activities to Purchasing Operations, DMB on a quarterly basis. Reports shall include, at a minimum, an itemized listing of purchasing activities by each agency, with the agency name, and the total value of purchases for each agency, and a grand total of all purchases

1.050 Acceptance

1.051 Criteria

The following criteria will be used by the State to determine Acceptance of the Services or Deliverables provided under this SOW:

Contractor shall refer to Attachment C and D for the requirements for acceptance. The Contractor shall supply a testing procedures document to MDOT- MITS to demonstrate how the requirements will be met.



1.052 Final Acceptance

Onsite testing with Contractor and MDOT- MITS, for successful completion of testing procedures document applicable to the requirements set forth in Attachments C, and D.

1.060 Proposal Pricing

1.061 Proposal Pricing

Pricing for this Contract is Outlined in Attachment C.

1.062 Price Term

Prices quoted are the maximum for a period of 365 days from the date the Contract becomes effective.

Prices are subject to change at the end of each 365-day period. Such changes shall be based on changes in actual costs incurred. Documentation of such changes must be provided with the request for price change in order to substantiate any requested change. Purchasing Operations reserves the right to consider various pertinent information sources to evaluate price increase requests (such as the CPI and PPI, US City Average, as published by the US Department of Labor, Bureau of Labor Statistics). Purchasing Operations also reserves the right to consider other information related to special economic and/or industry circumstances, when evaluating a price change request. Changes may be either increases or decreases, and may be requested by either party. Approved changes shall be firm for the remainder of the contract period unless further revised at the end of the next 365-day period. Requests for price changes shall be RECEIVED IN WRITING AT LEAST TEN DAYS PRIOR TO THEIR EFFECTIVE DATE, and are subject to written acceptance before becoming effective. In the event new prices are not acceptable, the CONTRACT may be cancelled. **The Contractor remains responsible for performing according to the contract terms at the contract price for all orders received before price revisions are approved or before the contract is cancelled.**

1.063 Tax Excluded from Price

(a) Sales Tax: For purchases made directly by the State, the State is exempt from State and Local Sales Tax. Prices must not include the taxes. Exemption Certificates for State Sales Tax will be furnished upon request.

(b) Federal Excise Tax: The State may be exempt from Federal Excise Tax, or the taxes may be reimbursable, if articles purchased under any resulting Contract are used for the State’s exclusive use. Certificates showing exclusive use for the purposes of substantiating a tax-free, or tax-reimbursable sale will be sent upon request. If a sale is tax exempt or tax reimbursable under the Internal Revenue Code, prices must not include the Federal Excise Tax.

1.064 Holdback – Deleted Not Applicable

1.070 Commodity Requirements and Terms

Product Quality



1.0701 Specifications

Definite Specifications - All commodities and/or services to be furnished hereunder shall conform to the specifications as noted in attachments A and B of this Contract.

1.0702 Alternate Bids – Deleted Not Applicable

1.0703 Research and Development

Contractor shall continue to invest in new product development and research to stay current with ongoing demands.

1.0704 Quality Assurance Program

Ledstar’s Quality Assurance Program has been developed in-house in accordance with these principles and standards as a framework: ISO 9001:2000 (E) Quality Management Systems – Requirements, ISO 9004:2000 (E) Quality Management Systems – Guidelines for Performance Improvement, and Six Sigma.

Customer satisfaction is realized through our commitment to a perpetual cycle of communication, organization, planning, execution, testing, and review.

Ledstar’s QA program is supported by several policies and procedures, and is audited on an annual basis. Our overall policy is enumerated in Ledstar document QMSP-LE-240 (See Appendix.) Other documents supporting our program include: Control of Documents, Control of Records, Product Realization Process, Control of Non-Conforming Products, Preventative Action, Corrective Action, Internal Quality Audits, Service and Response, Vendor Evaluation and Approval, Purchasing Process, Vendor Management, and Project Management.

A copy of Ledstar’s Quality Management System Procedures may be made available upon request.

In addition to Ledstar’s general Quality Assurance Program, Ledstar provides project-specific QA and testing documentation, reports and plans. These cover manufacturing and process testing and burn-in, factory acceptance, third-party certifications (such as welding, painting, NEMA, and UL), post-delivery testing, and training. Please refer to Appendix for samples of this documentation.

1.0705 Warranty for Products or Services

For a period of five years from date of final acceptance, Ledstar shall replace any/all defective parts at no cost to the owner. If anything in the sign breaks, we’ll repair it, get it back on line, and MDOT will not see any cost at all. The only things we do not cover are consumables, such as air filters, and acts of accident, terror, vandalism, misuse or environmental catastrophe.

Warranty claims are made by contacting Ledstar. Contact numbers and specific personnel names will be provided to the State. The State shall be provided with 24 hour, 7 day per week access to technical support. Within 48 hours of notification, Ledstar shall provide on-site presence to fix the problem. At time of notification of a warranty issue, Ledstar opens an RMA/warranty file and documents the problem, time of notification, sign ID, and location. Ledstar will then arrange to make the repair by Ledstar technical staff and through our service partner (an approved Michigan contractor for ITS work and Maintenance of Traffic services). Ledstar has made arrangements to this effect with several such contractors in advance in order to ensure best possible response time. Ledstar shall coordinate all site warranty activities with the State for proper scheduling, security, and any other factors that may influence timing of warranty work or access to the work site. A record of site work performed and a report is then generated in accordance with our Service and Response QMSP. A copy of the report is sent to the client.



In addition, each warranty visit is logged (with record & result of activity) at the DMS site, signed by the technician and stored in the weatherproof documentation packet inside the DMS controller cabinet.

During initial installation, Ledstar personnel will be available for the installation, testing, and final commissioning of every sign we provide. Our technician will have all testing equipment, tools, software and spare parts needed to ensure successful installation and operation of the sign. Should a problem arise that requires factory support, the technician shall have in-house technical and engineering support via telephone and should other spare parts be required, Ledstar can either hand-deliver the part to site (our office is less than four hours from either Detroit or Port Huron) or delivered via next-day courier. It is important to note that Ledstar recognizes that a number of variables can influence site time, and we do NOT limit the site time included in our price. We do not set an hourglass in motion when Ledstar arrives on site, after which additional payment is required. Instead, we work with the client and their installation contractors to make sure that we are on site when we are needed, and we stay until the client is satisfied.

1.0706 Training

Training is an important part of the Ledstar-client relationship. Our equipment is designed for ease of maintenance and operation, and we believe that thorough training of the client will ensure they get the most out of the DMS. Consequently, Ledstar offers three training courses, all of which are included – on a repeat as necessary basis – in this proposal.

The first course covers the operation of the DMS system and is designed for both administration operators and technical personnel. It consists of theoretical and hands-on training and includes every aspect of system operation, from configuration to communications, as well as messages, scenarios, libraries, monitoring, diagnostics and reporting. This is a two day course and shall be given at location(s) provided by the client. Ledstar provides all course materials.

The second course is primarily designed for technicians, and includes all aspects of DMS storage, installation, hookup, operation, maintenance, troubleshooting, diagnostics and repair. This course has in-class and hands-on components. This course also includes instruction on product safety and covers handling & storage, installation, and working in and around the equipment. This is a two day course and shall be given at location(s) provided by the client. Ledstar provides all course materials.

The third training course is considered a refresher course for those who have had previous in-depth training but require updating of their skills. This is a one or two day course and shall be given at location(s) provided by the client. Ledstar provides all course materials.

All training is at the Contractor’s expense.

1.0707 Special Programs (Deleted Not Applicable)

1.0708 Security

This Contract may require frequent deliveries to State of Michigan facilities. The State will decide whether to issue State ID badges to the Contractor’s delivery personnel or accept the ID badge issued to delivery personnel by the Contractor.

The State may decide to also perform a security background check. If so, Contractor will be required to provide to the State a list of all delivery people that will service State of Michigan facilities, including name, date of birth, social security number and/or driver license number.

The Contractor and its subcontractors shall comply with the security access requirements of individual State facilities; see section 2.051, Background Checks and Security.



Delivery Capabilities

1.0709 Time Frames

Ledstar’s delivery schedule shall be between 90 and 120 days of approval to proceed on any order received under the Contract. Orders for components may be shipped via next-day courier or hand-delivered. Ledstar keeps an in-house stock of spare components and can generally ship these items next-day.

1.0710 Minimum Order

The minimum order is one sign.

1.0711 Packaging

Ledstar uses shipping methods designed for protection of the product and easy handling and off-loading at the destination. For minimal environmental impact, no refuse or waste is left at the jobsite.

The state reserves the right of final approval on packaging offered by the Contractor.

Packaging and containers, etc., shall be in accordance with supplier's commercial practice and shall meet the requirements of Department of Transportation (D.O.T.) and rail and motor carrier freight classifications in effect at time of shipment, which will permit application of the lowest freight rate.

1.0712 Palletizing – Deleted Not Applicable

1.0713 Delivery Term

Job sites will be on MDOT trunk lines (freeways) statewide. MDOT will provide the Contractor with a general delivery location several months in advance, and the exact delivery location 45 calendar days prior to delivery.

Prices are "F.O.B. Delivered" with transportation charges prepaid on all orders of one sign or more to the State.

Other F.O.B. terms will not be accepted.

LedStar shall pay all shipping costs. No transportation charges, levies, or fees of any kind shall be billed to the client

1.0714 Contract Performance (Deleted Not Applicable)

1.0715 Place of Performance

The Contractor will service this Contract from the below address:

Place of Performance Full address	Owner/Operator of facility to be used	Percent (%) of Contract value to be Performed at listed Location
9440 Grinnell St.	Motor City Electric Co.	Est. 8%
131 Westcreek Drive	LedStar Inc.	92%



1.0716 Environmental Requirements (Deleted Not Applicable)

1.0717 Subcontractors

Any subcontracted work to be performed under this Contract shall be performed by:

Description of Work to be sub-contracted	Percent (%) of total contract value to be sub-contracted	Sub-contractor's name and principal place of business (City and State)
Warranty work, support & logistics	Est. 8%	Motor City Electric Co. Detroit, MI

If subcontractor information changes during the life of the Contract, the Contractor is to notify DMB Purchasing Operations prior to the change.

1.0718 Reports and Meetings – Deleted Not Applicable

1.0719 Samples/Models – Deleted Not Applicable

1.080 Additional Requirements

1.081 Additional Terms and Conditions specific to this Contract



Article 2, Terms and Conditions

2.000 Contract Structure and Term

2.001 Contract Term

This Contract is for a period of 3 years beginning July 21, 2009 through July 20, 2012. All outstanding Purchase Orders must also expire upon the termination (cancellation for any of the reasons listed in **Section 2.150**) of the Contract, unless otherwise extended under the Contract. Absent an early termination for any reason, Purchase Orders issued but not expired, by the end of the Contract's stated term, will remain in effect for the balance of the fiscal year for which they were issued.

2.002 Options to Renew

This Contract may be renewed in writing by mutual agreement of the parties not less than 30 days before its expiration. The Contract may be renewed for up to 2 additional 1 year periods.

2.003 Legal Effect

Contractor shall show acceptance of this Contract by signing two copies of the Contract and returning them to the Contract Administrator. The Contractor shall not proceed with the performance of the work to be done under the Contract, including the purchase of necessary materials, until both parties have signed the Contract to show acceptance of its terms, and the Contractor receives a contract release/purchase order that authorizes and defines specific performance requirements.

Except as otherwise agreed in writing by the parties, the State assumes no liability for costs incurred by Contractor or payment under this Contract, until Contractor is notified in writing that this Contract (or Change Order) has been approved by the State Administrative Board (if required), approved and signed by all the parties, and a Purchase Order against the Contract has been issued.

2.004 Attachments & Exhibits

All Attachments and Exhibits affixed to any and all Statement(s) of Work, or appended to or referencing this Contract, are incorporated in their entirety and form part of this Contract.

2.005 Ordering

The State will issue a written Purchase Order, Blanket Purchase Order, Direct Voucher or Procurement Card Order, which must be approved by the Contract Administrator or the Contract Administrator's designee, to order any Services/Deliverables under this Contract. All orders are subject to the terms and conditions of this Contract. No additional terms and conditions contained on either a Purchase Order or Blanket Purchase Order apply unless they are also specifically contained in that Purchase Order's or Blanket Purchase Order's accompanying Statement of Work. Exact quantities to be purchased are unknown, however, the Contractor will be required to furnish all such materials and services as may be ordered during the CONTRACT period. Quantities specified, if any, are estimates based on prior purchases, and the State is not obligated to purchase in these or any other quantities.

2.006 Order of Precedence

(a) The Contract, including any Statements of Work and Exhibits, to the extent not contrary to the Contract, each of which is incorporated for all purposes, constitutes the entire agreement between the parties with respect to the subject matter and supersedes all prior agreements, whether written or oral, with respect to the subject matter and as additional terms and conditions on the purchase order must apply as limited by **Section 2.005**.

(b) In the event of any inconsistency between the terms of the Contract and a Statement of Work, the terms of the Statement of Work will take precedence (as to that Statement of Work only); provided, however, that a Statement of Work may not modify or amend the terms of the Contract, which may be modified or amended only by a formal Contract amendment.



2.007 Headings

Captions and headings used in the Contract are for information and organization purposes. Captions and headings, including inaccurate references, do not, in any way, define or limit the requirements or terms and conditions of the Contract.

2.008 Form, Function & Utility

If the Contract is for use of more than one State agency and if the Deliverable/Service does not meet the form, function, and utility required by that State agency, that agency may, subject to State purchasing policies, procure the Deliverable/Service from another source.

2.009 Reformation and Severability

Each provision of the Contract is severable from all other provisions of the Contract and, if one or more of the provisions of the Contract is declared invalid, the remaining provisions of the Contract remain in full force and effect.

2.010 Consents and Approvals

Except as expressly provided otherwise in the Contract, if either party requires the consent or approval of the other party for the taking of any action under the Contract, the consent or approval must be in writing and must not be unreasonably withheld or delayed.

2.011 No Waiver of Default

If a party fails to insist upon strict adherence to any term of the Contract then the party has not waived the right to later insist upon strict adherence to that term, or any other term, of the Contract.

2.012 Survival

Any provisions of the Contract that impose continuing obligations on the parties, including without limitation the parties' respective warranty, indemnity and confidentiality obligations, survive the expiration or termination of the Contract for any reason. Specific references to survival in the Contract are solely for identification purposes and not meant to limit or prevent the survival of any other section.

2.020 Contract Administration

2.021 Issuing Office

This Contract is issued by the Department of Management and Budget, Purchasing Operations and MDOT- MITS (collectively, including all other relevant State of Michigan departments and agencies, the "State"). Purchasing Operations is the sole point of contact in the State with regard to all procurement and contractual matters relating to the Contract. Purchasing Operations **is the only State office authorized to change, modify, amend, alter or clarify the prices, specifications, terms and conditions of this Contract.** The Contractor Administrator within Purchasing Operations for this Contract is:

Seleana Samuel, Buyer Manager
 Purchasing Operations
 Department of Management and Budget
 Mason Bldg, 2nd Floor
 PO Box 30026
 Lansing, MI 48909
 Samuels1@michigan.gov
 517-241-2619

2.022 Contract Compliance Inspector (CCI)

After DMB-Purchasing Operations receives the properly executed Contract, it is anticipated that the Director of Purchasing Operations, in consultation with MDOT MITS, will direct the person named



below, or any other person so designated, to monitor and coordinate the activities for the Contract on a day-to-day basis during its term. However, monitoring of this Contract implies **no authority to change, modify, clarify, amend, or otherwise alter the prices, terms, conditions and specifications of the Contract as that authority is retained by DMB Purchasing Operations.** The Contract Compliance Inspector for this Contract is:

Michele R. Mueller, Transportation Engineer
 MDOT MITS
 18101 W Nine Mile Road
 Southfield, MI 48075
Muellerm2@michigan.gov
 248-483-5133
 248-569-3103

2.023 Project Manager

The following individual will oversee the project:

Michele R. Mueller, Transportation Engineer
 MDOT MITS
 18101 W Nine Mile Road
 Southfield, MI 48075
Muellerm2@michigan.gov
 248-483-5133
 248-569-3103

2.024 Change Requests

The State reserves the right to request from time to time any changes to the requirements and specifications of the Contract and the work to be performed by the Contractor under the Contract. During the course of ordinary business, it may become necessary for the State to discontinue certain business practices or create Additional Services/Deliverables. At a minimum, to the extent applicable, the State would like the Contractor to provide a detailed outline of all work to be done, including tasks necessary to accomplish the services/deliverables, timeframes, listing of key personnel assigned, estimated hours for each individual per task, and a complete and detailed cost justification.

If the Contractor does not so notify the State, the Contractor has no right to claim thereafter that it is entitled to additional compensation for performing that service or providing that deliverable.

Change Requests:

- (a) By giving Contractor written notice within a reasonable time, the State must be entitled to accept a Contractor proposal for Change, to reject it, or to reach another agreement with Contractor. Should the parties agree on carrying out a Change, a written Contract Change Notice must be prepared and issued under this Contract, describing the Change and its effects on the Services and any affected components of this Contract (a “Contract Change Notice”).
- (b) No proposed Change must be performed until the proposed Change has been specified in a duly executed Contract Change Notice issued by the Department of Management and Budget, Purchasing Operations.
- (c) If the State requests or directs the Contractor to perform any activities that Contractor believes constitute a Change, the Contractor must notify the State that it believes the requested activities are a Change before beginning to work on the requested activities. If the Contractor fails to notify the State before beginning to work on the requested activities, then the Contractor waives any right to assert any claim for additional compensation or time for performing the requested activities. If the Contractor commences performing work outside the scope of this Contract and then ceases performing that work, the Contractor must, at the request of the State, retract any out-of-scope work that would adversely affect the Contract.



2.025 Notices

Any notice given to a party under the Contract must be deemed effective, if addressed to the party as addressed below, upon: (i) delivery, if hand delivered; (ii) receipt of a confirmed transmission by facsimile if a copy of the notice is sent by another means specified in this Section; (iii) the third Business Day after being sent by U.S. mail, postage pre-paid, return receipt requested; or (iv) the next Business Day after being sent by a nationally recognized overnight express courier with a reliable tracking system.

State:
 State of Michigan
 Purchasing Operations
 Attention: Seleana Samuel
 PO Box 30026
 530 West Allegan
 Lansing, Michigan 48909

Contractor:
 Name LedStar, Inc.
 131 Westcreek Drive
 Woodbridge Ontario L4L9N6

Either party may change its address where notices are to be sent by giving notice according to this Section.

2.026 Binding Commitments

Representatives of Contractor must have the authority to make binding commitments on Contractor’s behalf within the bounds set forth in the table. Contractor may change the representatives from time to time upon written notice.

2.027 Relationship of the Parties

The relationship between the State and Contractor is that of client and independent contractor. No agent, employee, or servant of Contractor or any of its Subcontractors must be or must be deemed to be an employee, agent or servant of the State for any reason. Contractor will be solely and entirely responsible for its acts and the acts of its agents, employees, servants and Subcontractors during the performance of the Contract.

2.028 Covenant of Good Faith

Each party must act reasonably and in good faith. Unless stated otherwise in the Contract, the parties will not unreasonably delay, condition or withhold the giving of any consent, decision or approval that is either requested or reasonably required of them in order for the other party to perform its responsibilities under the Contract.

2.029 Assignments

(a) Neither party may assign the Contract, or assign or delegate any of its duties or obligations under the Contract, to any other party (whether by operation of law or otherwise), without the prior written consent of the other party; provided, however, that the State may assign the Contract to any other State agency, department, division or department without the prior consent of Contractor and Contractor may assign the Contract to an affiliate so long as the affiliate is adequately capitalized and can provide adequate assurances that the affiliate can perform the Contract. The State may withhold consent from proposed assignments, subcontracts, or novations when the transfer of responsibility would operate to decrease the State’s likelihood of receiving performance on the Contract or the State’s ability to recover damages.

(b) Contractor may not, without the prior written approval of the State, assign its right to receive payments due under the Contract. If the State permits an assignment, the Contractor is not relieved of its



responsibility to perform any of its contractual duties, and the requirement under the Contract that all payments must be made to one entity continues.

(c) If the Contractor intends to assign the contract or any of the Contractor's rights or duties under the Contract, the Contractor must notify the State in writing at least 90 days before the assignment. The Contractor also must provide the State with adequate information about the assignee within a reasonable amount of time before the assignment for the State to determine whether to approve the assignment.

2.030 General Provisions

2.031 Media Releases

News releases (including promotional literature and commercial advertisements) pertaining to the RFP and Contract or project to which it relates shall not be made without prior written State approval, and then only in accordance with the explicit written instructions from the State. No results of the activities associated with the RFP and Contract are to be released without prior written approval of the State and then only to persons designated.

2.032 Contract Distribution

Purchasing Operations retains the sole right of Contract distribution to all State agencies and local units of government unless other arrangements are authorized by Purchasing Operations.

2.033 Permits

Contractor must obtain and pay any associated costs for all required governmental permits, licenses and approvals for the delivery, installation and performance of the Services. The State must pay for all costs and expenses incurred in obtaining and maintaining any necessary easements or right of way.

2.034 Website Incorporation

The State is not bound by any content on the Contractor's website, even if the Contractor's documentation specifically referenced that content and attempts to incorporate it into any other communication, unless the State has actual knowledge of the content and has expressly agreed to be bound by it in a writing that has been manually signed by an authorized representative of the State.

2.035 Future Bidding Preclusion

Contractor acknowledges that, to the extent this Contract involves the creation, research, investigation or generation of a future RFP, it may be precluded from bidding on the subsequent RFP. The State reserves the right to disqualify any bidder if the State determines that the bidder has used its position (whether as an incumbent Contractor, or as a Contractor hired to assist with the RFP development, or as a Vendor offering free assistance) to gain a competitive advantage on the RFP.

2.036 Freedom of Information

All information in any proposal submitted to the State by Contractor and this Contract is subject to the provisions of the Michigan Freedom of Information Act, 1976 Public Act No. 442, as amended, MCL 15.231, et seq (the "FOIA").

2.037 Disaster Recovery

Contractor and the State recognize that the State provides essential services in times of natural or man-made disasters. Therefore, except as so mandated by Federal disaster response requirements, Contractor personnel dedicated to providing Services/Deliverables under this Contract will provide the State with priority service for repair and work around in the event of a natural or man-made disaster.

2.040 Financial Provisions

2.041 Fixed Prices for Services/Deliverables

Each Statement of Work or Purchase Order issued under this Contract shall specify (or indicate by reference to the appropriate Contract Exhibit) the firm, fixed prices for all Services/Deliverables, and the



associated payment milestones and payment amounts. The State may make progress payments to the Contractor when requested as work progresses, but not more frequently than monthly, in amounts approved by the Contract Administrator, after negotiation. Contractor must show verification of measurable progress at the time of requesting progress payments.

2.042 Adjustments for Reductions in Scope of Services/Deliverables

If the scope of the Services/Deliverables under any Statement of Work issued under this Contract is subsequently reduced by the State, the parties shall negotiate an equitable reduction in Contractor’s charges under such Statement of Work commensurate with the reduction in scope.

2.043 Services/Deliverables Covered

For all Services/Deliverables to be provided by Contractor (and its Subcontractors, if any) under this Contract, the State shall not be obligated to pay any amounts in addition to the charges specified in this Contract.

2.044 Invoicing and Payment – In General

(a) Each Statement of Work issued under this Contract shall list (or indicate by reference to the appropriate Contract Exhibit) the prices for all Services/Deliverables, equipment and commodities to be provided, and the associated payment milestones and payment amounts.

(b) Each Contractor invoice will show details as to charges by Service/Deliverable component and location at a level of detail reasonably necessary to satisfy the State’s accounting and charge-back requirements. Invoices for Services performed on a time and materials basis will show, for each individual, the number of hours of Services performed during the billing period, the billable skill/labor category for such person and the applicable hourly billing rate. Prompt payment by the State is contingent on the Contractor’s invoices showing the amount owed by the State minus any holdback amount to be retained by the State in accordance with **Section 1.064**.

(c) Correct invoices will be due and payable by the State, in accordance with the State’s standard payment procedure as specified in 1984 Public Act No. 279, MCL 17.51 et seq., within 45 days after receipt, provided the State determines that the invoice was properly rendered.

(d) All invoices should reflect actual work done. Specific details of invoices and payments will be agreed upon between the Contract Administrator and the Contractor after the proposed Contract Agreement has been signed and accepted by both the Contractor and the Director of Purchasing Operations, Department of Management & Budget. This activity will occur only upon the specific written direction from Purchasing Operations.

2.045 Pro-ration

To the extent there are any Services that are to be paid for on a monthly basis, the cost of such Services shall be pro-rated for any partial month.

2.046 Antitrust Assignment

The Contractor assigns to the State any claim for overcharges resulting from antitrust violations to the extent that those violations concern materials or services supplied by third parties to the Contractor, toward fulfillment of this Contract.

2.047 Final Payment

The making of final payment by the State to Contractor does not constitute a waiver by either party of any rights or other claims as to the other party’s continuing obligations under the Contract, nor will it constitute a waiver of any claims by one party against the other arising from unsettled claims or failure by a party to comply with this Contract, including claims for Services and Deliverables not reasonably known until after acceptance to be defective or substandard. Contractor’s acceptance of final payment by the State under this Contract shall constitute a waiver of all claims by Contractor against the State for payment under this Contract, other than those claims previously filed in writing on a timely basis and still unsettled.



2.048 Electronic Payment Requirement

Electronic transfer of funds is required for payments on State Contracts. Contractors are required to register with the State electronically at <http://www.cpexpress.state.mi.us>. As stated in Public Act 431 of 1984, all contracts that the State enters into for the purchase of goods and services shall provide that payment will be made by electronic fund transfer (EFT).

2.050 Taxes

2.051 Employment Taxes

Contractors are expected to collect and pay all applicable federal, state, and local employment taxes, including the taxes.

2.052 Sales and Use Taxes

Contractors are required to be registered and to remit sales and use taxes on taxable sales of tangible personal property or services delivered into the State. Contractors that lack sufficient presence in Michigan to be required to register and pay tax must do so as a volunteer. This requirement extends to: (1) all members of any controlled group as defined in § 1563(a) of the Internal Revenue Code and applicable regulations of which the company is a member, and (2) all organizations under common control as defined in § 414(c) of the Internal Revenue Code and applicable regulations of which the company is a member that make sales at retail for delivery into the State are registered with the State for the collection and remittance of sales and use taxes. In applying treasury regulations defining “two or more trades or businesses under common control” the term “organization” means sole proprietorship, a partnership (as defined in § 701(a)(2) of the Internal Revenue Code), a trust, an estate, a corporation, or a limited liability company.

2.060 Contract Management

2.061 Contractor Personnel Qualifications

All persons assigned by Contractor to the performance of Services under this Contract must be employees of Contractor or its majority-owned (directly or indirectly, at any tier) subsidiaries (or a State-approved Subcontractor) and must be fully qualified to perform the work assigned to them. Contractor must include a similar provision in any subcontract entered into with a Subcontractor. For the purposes of this Contract, independent contractors engaged by Contractor solely in a staff augmentation role must be treated by the State as if they were employees of Contractor for this Contract only; however, the State understands that the relationship between Contractor and Subcontractor is an independent contractor relationship.

2.062 Contractor Key Personnel

- (a) The Contractor must provide the Contract Compliance Inspector with the names of the Key Personnel.
- (b) Key Personnel must be dedicated as defined in the Statement of Work to the Project for its duration in the applicable Statement of Work with respect to other individuals designated as Key Personnel for that Statement of Work.
- (c) The State will have the right to recommend and approve in writing the initial assignment, as well as any proposed reassignment or replacement, of any Key Personnel. Before assigning an individual to any Key Personnel position, Contractor will notify the State of the proposed assignment, will introduce the individual to the appropriate State representatives, and will provide the State with a resume and any other information about the individual reasonably requested by the State. The State reserves the right to interview the individual before granting written approval. In the event the State finds a proposed individual unacceptable, the State will provide a written explanation including reasonable detail outlining the reasons for the rejection.
- (d) Contractor must not remove any Key Personnel from their assigned roles on the Contract without the prior written consent of the State. The Contractor’s removal of Key Personnel without the prior



written consent of the State is an unauthorized removal (“Unauthorized Removal”). Unauthorized Removals does not include replacing Key Personnel for reasons beyond the reasonable control of Contractor, including illness, disability, leave of absence, personal emergency circumstances, resignation or for cause termination of the Key Personnel’s employment. Unauthorized Removals does not include replacing Key Personnel because of promotions or other job movements allowed by Contractor personnel policies or Collective Bargaining Agreement(s) as long as the State receives prior written notice before shadowing occurs and Contractor provides 30 days of shadowing unless parties agree to a different time period. The Contractor with the State must review any Key Personnel replacements, and appropriate transition planning will be established. Any Unauthorized Removal may be considered by the State to be a material breach of the Contract, in respect of which the State may elect to exercise its termination and cancellation rights.

(e) The Contractor must notify the Contract Compliance Inspector and the Contract Administrator at least 10 business days before redeploying non-Key Personnel, who are dedicated to primarily to the Project, to other projects. If the State does not object to the redeployment by its scheduled date, the Contractor may then redeploy the non-Key Personnel.

2.063 Re-assignment of Personnel at the State’s Request

The State reserves the right to require the removal from the Project of Contractor personnel found, in the judgment of the State, to be unacceptable. The State’s request must be written with reasonable detail outlining the reasons for the removal request. Additionally, the State’s request must be based on legitimate, good-faith reasons. Replacement personnel for the removed person must be fully qualified for the position. If the State exercises this right, and the Contractor cannot immediately replace the removed personnel, the State agrees to an equitable adjustment in schedule or other terms that may be affected by the State’s required removal. If any incident with removed personnel results in delay not reasonably anticipatable under the circumstances and which is attributable to the State, the applicable SLAs for the affected Service will not be counted for a time as agreed to by the parties.

2.064 Contractor Personnel Location

All staff assigned by Contractor to work on the Contract will perform their duties either primarily at Contractor’s offices and facilities or at State facilities. Without limiting the generality of the foregoing, Key Personnel will, at a minimum, spend at least the amount of time on-site at State facilities as indicated in the applicable Statement of Work. Subject to availability, selected Contractor personnel may be assigned office space to be shared with State personnel.

2.065 Contractor Identification

Contractor employees must be clearly identifiable while on State property by wearing a State-issued badge, as required. Contractor employees are required to clearly identify themselves and the company they work for whenever making contact with State personnel by telephone or other means.

2.066 Cooperation with Third Parties

Contractor agrees to cause its personnel and the personnel of any Subcontractors to cooperate with the State and its agents and other contractors including the State’s Quality Assurance personnel. As reasonably requested by the State in writing, the Contractor will provide to the State’s agents and other contractors reasonable access to Contractor’s Project personnel, systems and facilities to the extent the access relates to activities specifically associated with this Contract and will not interfere or jeopardize the safety or operation of the systems or facilities. The State acknowledges that Contractor’s time schedule for the Contract is very specific and agrees not to unnecessarily or unreasonably interfere with, delay or otherwise impeded Contractor’s performance under this Contract with the requests for access.

2.067 Contract Management Responsibilities

The Contractor will be required to assume responsibility for all contractual activities, whether or not that Contractor performs them. Further, the State will consider the Contractor to be the sole point of contact with regard to contractual matters, including payment of any and all charges resulting from the anticipated Contract. If any part of the work is to be subcontracted, the Contract must include a list of subcontractors, including firm name and address, contact person and a complete description of work to be subcontracted.



The State reserves the right to approve subcontractors and to require the Contractor to replace subcontractors found to be unacceptable. The Contractor is totally responsible for adherence by the subcontractor to all provisions of the Contract. Any change in subcontractors must be approved by the State, in writing, prior to such change.

2.068 Contractor Return of State Equipment/Resources

The Contractor must return to the State any State-furnished equipment, facilities and other resources when no longer required for the Contract in the same condition as when provided by the State, reasonable wear and tear excepted.

2.070 Subcontracting by Contractor

2.071 Contractor full Responsibility

Contractor shall have full responsibility for the successful performance and completion of all of the Services and Deliverables. The State will consider Contractor to be the sole point of contact with regard to all contractual matters under this Contract, including payment of any and all charges for Services and Deliverables.

2.072 State Consent to delegation

Contractor shall not delegate any duties under this Contract to a Subcontractor unless the Department of Management and Budget, Purchasing Operations has given written consent to such delegation. The State shall have the right of prior written approval of all Subcontractors and to require Contractor to replace any Subcontractors found, in the reasonable judgment of the State, to be unacceptable. The State’s request shall be written with reasonable detail outlining the reasons for the removal request. Additionally, the State’s request shall be based on legitimate, good-faith reasons. Replacement Subcontractor(s) for the removed Subcontractor shall be fully qualified for the position. If the State exercises this right, and the Contractor cannot immediately replace the removed Subcontractor, the State will agree to an equitable adjustment in schedule or other terms that may be affected by the State’s required removal. If any such incident with a removed Subcontractor results in delay not reasonable anticipatable under the circumstances and which is attributable to the State, the applicable SLA for the affected Work will not be counted in time agreed upon by the parties.

2.073 Subcontractor bound to Contract

In any subcontracts entered into by Contractor for the performance of the Services, Contractor shall require the Subcontractor, to the extent of the Services to be performed by the Subcontractor, to be bound to Contractor by the terms of this Contract and to assume toward Contractor all of the obligations and responsibilities that Contractor, by this Contract, assumes toward the State. The State reserves the right to receive copies of and review all subcontracts, although Contractor may delete or mask any proprietary information, including pricing, contained in such contracts before providing them to the State. The management of any Subcontractor will be the responsibility of Contractor, and Contractor shall remain responsible for the performance of its Subcontractors to the same extent as if Contractor had not subcontracted such performance. Contractor shall make all payments to Subcontractors or suppliers of Contractor. Except as otherwise agreed in writing by the State and Contractor, the State will not be obligated to direct payments for the Services other than to Contractor. The State’s written approval of any Subcontractor engaged by Contractor to perform any obligation under this Contract shall not relieve Contractor of any obligations or performance required under this Contract. Attached as **Exhibit A** is a list of the Subcontractors, if any, approved by the State as of the execution of this Contract, together with a copy of the applicable subcontract.

2.074 Flow Down

Except where specifically approved in writing by the State on a case-by-case basis, Contractor shall flow down the obligations in **Sections 2.031, 2.060, 2.100, 2.110, 2.120, 2.130, 2.200** in all of its agreements with any Subcontractors.



2.075 Competitive Selection

The Contractor shall select subcontractors (including suppliers) on a competitive basis to the maximum practical extent consistent with the objectives and requirements of the Contract.

2.080 State Responsibilities

2.081 Equipment

The State will provide only the equipment and resources identified in the Statements of Work and other Contract Exhibits.

2.082 Facilities

The State must designate space as long as it is available and as provided in the Statement of Work, to house the Contractor’s personnel whom the parties agree will perform the Services/Deliverables at State facilities (collectively, the “State Facilities”). The Contractor must have reasonable access to, and unless agreed otherwise by the parties in writing must observe and comply with all rules and regulations relating to each of the State Facilities (including hours of operation) used by the Contractor in the course of providing the Services. Contractor agrees that it will not, without the prior written consent of the State, use any State Facilities or access any State information systems provided for the Contractor’s use, or to which the Contractor otherwise gains access in the course of performing the Services, for any purpose other than providing the Services to the State.

2.090 Security

2.091 Background Checks

On a case-by-case basis, the State may investigate the Contractor's personnel before they may have access to State facilities and systems. The scope of the background check is at the discretion of the State and the results will be used to determine Contractor personnel eligibility for working within State facilities and systems. The investigations will include Michigan State Police Background checks (ICHAT) and may include the National Crime Information Center (NCIC) Finger Prints. Proposed Contractor personnel may be required to complete and submit an RI-8 Fingerprint Card for the NCIC Finger Print Check. Any request for background checks will be initiated by the State and will be reasonably related to the type of work requested.

All Contractor personnel will also be expected to comply with the State’s security and acceptable use policies for State IT equipment and resources. See <http://www.michigan.gov/dit>. Furthermore, Contractor personnel will be expected to agree to the State’s security and acceptable use policies before the Contractor personnel will be accepted as a resource to perform work for the State. It is expected the Contractor will present these documents to the prospective employee before the Contractor presents the individual to the State as a proposed resource. Contractor staff will be expected to comply with all Physical Security procedures in place within the facilities where they are working.

2.092 Security Breach Notification

If the Contractor breaches this Section, the Contractor must (i) promptly cure any deficiencies and (ii) comply with any applicable federal and state laws and regulations pertaining to unauthorized disclosures. Contractor and the State will cooperate to mitigate, to the extent practicable, the effects of any breach, intrusion, or unauthorized use or disclosure. Contractor must report to the State in writing any use or disclosure of Confidential Information, whether suspected or actual, other than as provided for by the Contract within 10 days of becoming aware of the use or disclosure or the shorter time period as is reasonable under the circumstances.

2.093 PCI Data Security Requirements – Delete Not Applicable



2.100 Confidentiality

2.101 Confidentiality

Contractor and the State each acknowledge that the other possesses and will continue to possess confidential information that has been developed or received by it. As used in this Section, “Confidential Information” of Contractor must mean all non-public proprietary information of Contractor (other than Confidential Information of the State as defined below) which is marked confidential, restricted, proprietary or with a similar designation. “Confidential Information” of the State must mean any information which is retained in confidence by the State (or otherwise required to be held in confidence by the State under applicable federal, state and local laws and regulations) or which, in the case of tangible materials provided to Contractor by the State under its performance under this Contract, is marked as confidential, proprietary or with a similar designation by the State. “Confidential Information” excludes any information (including this Contract) that is publicly available under the Michigan FOIA.

2.102 Protection and Destruction of Confidential Information

The State and Contractor will each use at least the same degree of care to prevent disclosing to third parties the Confidential Information of the other as it employs to avoid unauthorized disclosure, publication or dissemination of its own confidential information of like character, but in no event less than reasonable care. Neither Contractor nor the State will (i) make any use of the Confidential Information of the other except as contemplated by this Contract, (ii) acquire any right in or assert any lien against the Confidential Information of the other, or (iii) if requested to do so, refuse for any reason to promptly return the other party's Confidential Information to the other party. Each party will limit disclosure of the other party's Confidential Information to employees and Subcontractors who must have access to fulfill the purposes of this Contract. Disclosure to, and use by, a Subcontractor is permissible where (A) use of a Subcontractor is authorized under this Contract, (B) the disclosure is necessary or otherwise naturally occurs in connection with work that is within the Subcontractor's scope of responsibility, and (C) Contractor obligates the Subcontractor in a written Contract to maintain the State's Confidential Information in confidence. At the State's request, any employee of Contractor and of any Subcontractor having access or continued access to the State's Confidential Information may be required to execute an acknowledgment that the employee has been advised of Contractor's and the Subcontractor's obligations under this Section and of the employee's obligation to Contractor or Subcontractor, as the case may be, to protect the Confidential Information from unauthorized use or disclosure.

Promptly upon termination or cancellation of the Contract for any reason, Contractor must certify to the State that Contractor has destroyed all State Confidential Information.

2.103 Exclusions

Notwithstanding the foregoing, the provisions of **Section 2.080** will not apply to any particular information which the State or Contractor can demonstrate (i) was, at the time of disclosure to it, in the public domain; (ii) after disclosure to it, is published or otherwise becomes part of the public domain through no fault of the receiving party; (iii) was in the possession of the receiving party at the time of disclosure to it without an obligation of confidentiality; (iv) was received after disclosure to it from a third party who had a lawful right to disclose the information to it without any obligation to restrict its further disclosure; or (v) was independently developed by the receiving party without reference to Confidential Information of the furnishing party. Further, the provisions of **Section 2.080** will not apply to any particular Confidential Information to the extent the receiving party is required by law to disclose the Confidential Information, provided that the receiving party (i) promptly provides the furnishing party with notice of the legal request, and (ii) assists the furnishing party in resisting or limiting the scope of the disclosure as reasonably requested by the furnishing party.



2.104 No Implied Rights

Nothing contained in this Section must be construed as obligating a party to disclose any particular Confidential Information to the other party, or as granting to or conferring on a party, expressly or impliedly, any right or license to the Confidential Information of the other party.

2.105 Respective Obligations

The parties' respective obligations under this Section must survive the termination or expiration of this Contract for any reason.

2.110 Records and Inspections

2.111 Inspection of Work Performed

The State's authorized representatives must at all reasonable times and with 10 days prior written request, have the right to enter Contractor's premises, or any other places, where the Services are being performed, and must have access, upon reasonable request, to interim drafts of Deliverables or work-in-progress. Upon 10 Days prior written notice and at all reasonable times, the State's representatives must be allowed to inspect, monitor, or otherwise evaluate the work being performed and to the extent that the access will not reasonably interfere or jeopardize the safety or operation of the systems or facilities. Contractor must provide all reasonable facilities and assistance for the State's representatives.

2.112 Examination of Records

For seven years after the Contractor provides any work under this Contract (the "Audit Period"), the State may examine and copy any of Contractor's books, records, documents and papers pertinent to establishing Contractor's compliance with the Contract and with applicable laws and rules. The State must notify the Contractor 20 days before examining the Contractor's books and records. The State does not have the right to review any information deemed confidential by the Contractor to the extent access would require the confidential information to become publicly available. This provision also applies to the books, records, accounts, documents and papers, in print or electronic form, of any parent, affiliated or subsidiary organization of Contractor, or any Subcontractor of Contractor performing services in connection with the Contract.

2.113 Retention of Records

Contractor must maintain at least until the end of the Audit Period all pertinent financial and accounting records (including time sheets and payroll records, and information pertaining to the Contract and to the Services, equipment, and commodities provided under the Contract) pertaining to the Contract according to generally accepted accounting principles and other procedures specified in this Section. Financial and accounting records must be made available, upon request, to the State at any time during the Audit Period. If an audit, litigation, or other action involving Contractor's records is initiated before the end of the Audit Period, the records must be retained until all issues arising out of the audit, litigation, or other action are resolved or until the end of the Audit Period, whichever is later.

2.114 Audit Resolution

If necessary, the Contractor and the State will meet to review each audit report promptly after issuance. The Contractor will respond to each audit report in writing within 30 days from receipt of the report, unless a shorter response time is specified in the report. The Contractor and the State must develop, agree upon and monitor an action plan to promptly address and resolve any deficiencies, concerns, and/or recommendations in the audit report.

2.115 Errors

(a) If the audit demonstrates any errors in the documents provided to the State, then the amount in error must be reflected as a credit or debit on the next invoice and in subsequent invoices until the amount is paid or refunded in full. However, a credit or debit may not be carried for more than four invoices. If a balance remains after four invoices, then the remaining amount will be due as a payment or refund within



45 days of the last quarterly invoice that the balance appeared on or termination of the contract, whichever is earlier.

(b) In addition to other available remedies, the difference between the payment received and the correct payment amount is greater than 10%, then the Contractor must pay all of the reasonable costs of the audit.

2.120 Warranties

2.121 Warranties and Representations

Contractor shall provide a five year (5) warranty.

See Section 1.0705 for additional warranty details

The Contractor represents and warrants:

(a) It is capable in all respects of fulfilling and must fulfill all of its obligations under this Contract. The performance of all obligations under this Contract must be provided in a timely, professional, and workman-like manner and must meet the performance and operational standards required under this Contract.

(b) The Contract Appendices, Attachments and Exhibits identify the equipment and software and services necessary for the Deliverable(s) to perform and Services to operate in compliance with the Contract’s requirements and other standards of performance.

(c) It is the lawful owner or licensee of any Deliverable licensed or sold to the State by Contractor or developed by Contractor under this Contract, and Contractor has all of the rights necessary to convey to the State the ownership rights or licensed use, as applicable, of any and all Deliverables. None of the Deliverables provided by Contractor to the State under this Contract, nor their use by the State, will infringe the patent, copyright, trade secret, or other proprietary rights of any third party.

(d) If, under this Contract, Contractor procures any equipment, software or other Deliverable for the State (including equipment, software and other Deliverables manufactured, re-marketed or otherwise sold by Contractor under Contractor’s name), then in addition to Contractor’s other responsibilities with respect to the items in this Contract, Contractor must assign or otherwise transfer to the State or its designees, or afford the State the benefits of, any manufacturer's warranty for the Deliverable.

(e) The contract signatory has the power and authority, including any necessary corporate authorizations, necessary to enter into this Contract, on behalf of Contractor.

(f) It is qualified and registered to transact business in all locations where required.

(g) Neither the Contractor nor any Affiliates, nor any employee of either, has, must have, or must acquire, any contractual, financial, business, or other interest, direct or indirect, that would conflict in any manner or degree with Contractor’s performance of its duties and responsibilities to the State under this Contract or otherwise create an appearance of impropriety with respect to the award or performance of this Agreement. Contractor must notify the State about the nature of the conflict or appearance of impropriety within two days of learning about it.

(h) Neither Contractor nor any Affiliates, nor any employee of either has accepted or must accept anything of value based on an understanding that the actions of the Contractor or Affiliates or employee on behalf of the State would be influenced. Contractor must not attempt to influence any State employee by the direct or indirect offer of anything of value.



- (i) Neither Contractor nor any Affiliates, nor any employee of either has paid or agreed to pay any person, other than bona fide employees and consultants working solely for Contractor or the Affiliate, any fee, commission, percentage, brokerage fee, gift, or any other consideration, contingent upon or resulting from the award or making of this Contract.
- (j) The prices proposed by Contractor were arrived at independently, without consultation, communication, or agreement with any other bidder for the purpose of restricting competition; the prices quoted were not knowingly disclosed by Contractor to any other bidder; and no attempt was made by Contractor to induce any other person to submit or not submit a proposal for the purpose of restricting competition.
- (k) All financial statements, reports, and other information furnished by Contractor to the State as part of its response to the RFP or otherwise in connection with the award of this Contract fairly and accurately represent the business, properties, financial condition, and results of operations of Contractor as of the respective dates, or for the respective periods, covered by the financial statements, reports, other information. Since the respective dates or periods covered by the financial statements, reports, or other information, there have been no material adverse change in the business, properties, financial condition, or results of operations of Contractor.
- (l) All written information furnished to the State by or for the Contractor in connection with this Contract, including its bid, is true, accurate, and complete, and contains no untrue statement of material fact or omits any material fact necessary to make the information not misleading.
- (m) It is not in material default or breach of any other contract or agreement that it may have with the State or any of its departments, commissions, boards, or agencies. Contractor further represents and warrants that it has not been a party to any contract with the State or any of its departments that was terminated by the State or the department within the previous five years for the reason that Contractor failed to perform or otherwise breached an obligation of the contract.
- (n) If any of the certifications, representations, or disclosures made in the Contractor's original bid response change after contract award, the Contractor is required to report those changes immediately to the Department of Management and Budget, Purchasing Operations.

2.122 Warranty of Merchantability

Goods provided by Contractor under this agreement shall be merchantable. All goods provided under this Contract shall be of good quality within the description given by the State, shall be fit for their ordinary purpose, shall be adequately contained and packaged within the description given by the State, shall conform to the agreed upon specifications, and shall conform to the affirmations of fact made by the Contractor or on the container or label.

2.123 Warranty of Fitness for a Particular Purpose

When the Contractor has reason to know or knows any particular purpose for which the goods are required, and the State is relying on the Contractor's skill or judgment to select or furnish suitable goods, there is a warranty that the goods are fit for such purpose.

2.124 Warranty of Title

Contractor shall, in providing goods to the State, convey good title in those goods, whose transfer is right and lawful. All goods provided by Contractor shall be delivered free from any security interest, lien, or encumbrance of which the State, at the time of contracting, has no knowledge. Goods provided by Contractor, under this Contract, shall be delivered free of any rightful claim of any third person by of infringement or the like.

2.125 Equipment Warranty- (Reserved)



2.126 Equipment to be New

If applicable, all equipment provided under this Contract by Contractor shall be new where Contractor has knowledge regarding whether the equipment is new or assembled from new or serviceable used parts that are like new in performance or has the option of selecting one or the other. Equipment that is assembled from new or serviceable used parts that are like new in performance is acceptable where Contractor does not have knowledge or the ability to select one or other, unless specifically agreed otherwise in writing by the State.

2.127 Prohibited Products

The State will not accept salvage, distressed, outdated or discontinued merchandise. Shipping of such merchandise to any State agency, as a result of an order placed against the Contract, shall be considered default by the Contractor of the terms and conditions of the Contract and may result in cancellation of the Contract by the State. The brand and product number offered for all items shall remain consistent for the term of the Contract, unless Purchasing Operations has approved a change order pursuant to **Section 2.024**.

2.128 Consequences For Breach

In addition to any remedies available in law, if the Contractor breaches any of the warranties contained in this section, the breach may be considered as a default in the performance of a material obligation of this Contract.

2.130 Insurance

2.131 Liability Insurance

The Contractor must provide proof of the minimum levels of insurance coverage as indicated below. The insurance must protect the State from claims which may arise out of or result from the Contractor’s performance of services under the terms of this Contract, whether the services are performed by the Contractor, or by any subcontractor, or by anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable.

The Contractor waives all rights against the State of Michigan, its departments, divisions, agencies, offices, commissions, officers, employees and agents for recovery of damages to the extent these damages are covered by the insurance policies the Contractor is required to maintain under this Contract.

All insurance coverages provided relative to this Contract/Purchase Order are PRIMARY and NON-CONTRIBUTING to any comparable liability insurance (including self-insurances) carried by the State.

The insurance must be written for not less than any minimum coverage specified in this Contract or required by law, whichever is greater.

The insurers selected by Contractor must have an A.M. Best rating of A or better, or as otherwise approved in writing by the State, or if the ratings are no longer available, with a comparable rating from a recognized insurance rating agency. All policies of insurance required in this Contract must be issued by companies that have been approved to do business in the State.

See www.michigan.gov/dleg.

Where specific limits are shown, they are the minimum acceptable limits. If Contractor’s policy contains higher limits, the State must be entitled to coverage to the extent of the higher limits.

The Contractor is required to pay for and provide the type and amount of insurance checked below:

- 1. Commercial General Liability with the following minimum coverage:



\$2,000,000 General Aggregate Limit other than Products/Completed Operations
 \$2,000,000 Products/Completed Operations Aggregate Limit
 \$1,000,000 Personal & Advertising Injury Limit
 \$1,000,000 Each Occurrence Limit

The Contractor must list the State of Michigan, its departments, divisions, agencies, offices, commissions, officers, employees and agents as ADDITIONAL INSUREDS on the Commercial General Liability certificate. The Contractor also agrees to provide evidence that insurance policies contain a waiver of subrogation by the insurance company.

2. If a motor vehicle is used to provide services or products under this Contract, the Contractor must have vehicle liability insurance on any auto including owned, hired and non-owned vehicles used in Contractor's business for bodily injury and property damage as required by law.

The Contractor must list the State of Michigan, its departments, divisions, agencies, offices, commissions, officers, employees and agents as ADDITIONAL INSUREDS on the vehicle liability certificate. The Contractor also agrees to provide evidence that insurance policies contain a waiver of subrogation by the insurance company.

3. Workers' compensation coverage must be provided according to applicable laws governing the employees and employers work activities in the state of the Contractor's domicile. If the applicable coverage is provided by a self-insurer, proof must be provided of approved self-insured authority by the jurisdiction of domicile. For employees working outside of the state of qualification, Contractor must provide appropriate certificates of insurance proving mandated coverage levels for the jurisdictions where the employees' activities occur.

Any certificates of insurance received must also provide a list of states where the coverage is applicable.

The Contractor also agrees to provide evidence that insurance policies contain a waiver of subrogation by the insurance company. This provision must not be applicable where prohibited or limited by the laws of the jurisdiction in which the work is to be performed.

4. Employers liability insurance with the following minimum limits:

\$100,000 each accident
 \$100,000 each employee by disease
 \$500,000 aggregate disease

5. Employee Fidelity, including Computer Crimes, insurance naming the State as a loss payee, providing coverage for direct loss to the State and any legal liability of the State arising out of or related to fraudulent or dishonest acts committed by the employees of Contractor or its Subcontractors, acting alone or in collusion with others, in a minimum amount of one million dollars (\$1,000,000.00) with a maximum deductible of fifty thousand dollars (\$50,000.00).

6. Umbrella or Excess Liability Insurance in a minimum amount of ten million dollars (\$10,000,000.00), which must apply, at a minimum, to the insurance required in Subsection 1 (Commercial General Liability) above.

7. Professional Liability (Errors and Omissions) Insurance with the following minimum coverage: three million dollars (\$3,000,000.00) each occurrence and three million dollars (\$3,000,000.00) annual aggregate.

8. Fire and Personal Property Insurance covering against any loss or damage to the office space used by Contractor for any reason under this Contract, and the equipment, software and other



contents of the office space, including without limitation, those contents used by Contractor to provide the Services to the State, up to its replacement value, where the office space and its contents are under the care, custody and control of Contractor. The policy must cover all risks of direct physical loss or damage, including without limitation, flood and earthquake coverage and coverage for computer hardware and software. The State must be endorsed on the policy as a loss payee as its interests appear.

2.132 Subcontractor Insurance Coverage

Except where the State has approved in writing a Contractor subcontract with other insurance provisions, Contractor must require all of its Subcontractors under this Contract to purchase and maintain the insurance coverage as described in this Section for the Contractor in connection with the performance of work by those Subcontractors. Alternatively, Contractor may include any Subcontractors under Contractor’s insurance on the coverage required in this Section. Subcontractor(s) must fully comply with the insurance coverage required in this Section. Failure of Subcontractor(s) to comply with insurance requirements does not limit Contractor’s liability or responsibility.

2.133 Certificates of Insurance and Other Requirements

Contractor must furnish to DMB-Purchasing Operations, certificate(s) of insurance verifying insurance coverage or providing satisfactory evidence of self-insurance as required in this Section (the “Certificates”). The Certificate must be on the standard “accord” form or equivalent. **THE CONTRACT OR PURCHASE ORDER NO. MUST BE SHOWN ON THE CERTIFICATE OF INSURANCE TO ASSURE CORRECT FILING.** All Certificate(s) are to be prepared and submitted by the Insurance Provider. All Certificate(s) must contain a provision indicating that coverages afforded under the policies WILL NOT BE CANCELLED, MATERIALLY CHANGED, OR NOT RENEWED without 30 days prior written notice, except for 10 days for non-payment of premium, having been given to the Director of Purchasing Operations, Department of Management and Budget. The notice must include the Contract or Purchase Order number affected. Before the Contract is signed, and not less than 20 days before the insurance expiration date every year thereafter, the Contractor must provide evidence that the State and its agents, officers and employees are listed as additional insureds under each commercial general liability and commercial automobile liability policy. In the event the State approves the representation of the State by the insurer’s attorney, the attorney may be required to be designated as a Special Assistant Attorney General by the Attorney General of the State of Michigan.

The Contractor must maintain all required insurance coverage throughout the term of the Contract and any extensions and, in the case of claims-made Commercial General Liability policies, must secure tail coverage for at least three years following the expiration or termination for any reason of this Contract. The minimum limits of coverage specified above are not intended, and must not be construed, to limit any liability or indemnity of Contractor under this Contract to any indemnified party or other persons. Contractor is responsible for all deductibles with regard to the insurance. If the Contractor fails to pay any premium for required insurance as specified in this Contract, or if any insurer cancels or significantly reduces any required insurance as specified in this Contract without the State’s written consent, then the State may, after the State has given the Contractor at least 30 days written notice, pay the premium or procure similar insurance coverage from another company or companies. The State may deduct any part of the cost from any payment due the Contractor, or the Contractor must pay that cost upon demand by the State.

2.140 Indemnification

2.141 General Indemnification

To the extent permitted by law, the Contractor must indemnify, defend and hold harmless the State from liability, including all claims and losses, and all related costs and expenses (including reasonable attorneys’ fees and costs of investigation, litigation, settlement, judgments, interest and penalties), accruing or resulting to any person, firm or corporation that may be injured or damaged by the Contractor in the performance of this Contract and that are attributable to the negligence or tortious acts of the Contractor or any of its subcontractors, or by anyone else for whose acts any of them may be liable.



2.142 Code Indemnification

To the extent permitted by law, the Contractor shall indemnify, defend and hold harmless the State from any claim, loss, or expense arising from Contractor’s breach of the No Surreptitious Code Warranty.

2.143 Employee Indemnification

In any claims against the State of Michigan, its departments, divisions, agencies, sections, commissions, officers, employees and agents, by any employee of the Contractor or any of its subcontractors, the indemnification obligation under the Contract must not be limited in any way by the amount or type of damages, compensation or benefits payable by or for the Contractor or any of its subcontractors under worker’s disability compensation acts, disability benefit acts or other employee benefit acts. This indemnification clause is intended to be comprehensive. Any overlap in provisions, or the fact that greater specificity is provided as to some categories of risk, is not intended to limit the scope of indemnification under any other provisions.

2.144 Patent/Copyright Infringement Indemnification

To the extent permitted by law, the Contractor must indemnify, defend and hold harmless the State from and against all losses, liabilities, damages (including taxes), and all related costs and expenses (including reasonable attorneys’ fees and costs of investigation, litigation, settlement, judgments, interest and penalties) incurred in connection with any action or proceeding threatened or brought against the State to the extent that the action or proceeding is based on a claim that any piece of equipment, software, commodity or service supplied by the Contractor or its subcontractors, or the operation of the equipment, software, commodity or service, or the use or reproduction of any documentation provided with the equipment, software, commodity or service infringes any United States patent, copyright, trademark or trade secret of any person or entity, which is enforceable under the laws of the United States.

In addition, should the equipment, software, commodity, or service, or its operation, become or in the State’s or Contractor’s opinion be likely to become the subject of a claim of infringement, the Contractor must at the Contractor’s sole expense (i) procure for the State the right to continue using the equipment, software, commodity or service or, if the option is not reasonably available to the Contractor, (ii) replace or modify to the State’s satisfaction the same with equipment, software, commodity or service of equivalent function and performance so that it becomes non-infringing, or, if the option is not reasonably available to Contractor, (iii) accept its return by the State with appropriate credits to the State against the Contractor’s charges and reimburse the State for any losses or costs incurred as a consequence of the State ceasing its use and returning it.

Notwithstanding the foregoing, the Contractor has no obligation to indemnify or defend the State for, or to pay any costs, damages or attorneys’ fees related to, any claim based upon (i) equipment developed based on written specifications of the State; (ii) use of the equipment in a configuration other than implemented or approved in writing by the Contractor, including, but not limited to, any modification of the equipment by the State; or (iii) the combination, operation, or use of the equipment with equipment or software not supplied by the Contractor under this Contract.

2.145 Continuation of Indemnification Obligations

The Contractor’s duty to indemnify under this Section continues in full force and effect, notwithstanding the expiration or early cancellation of the Contract, with respect to any claims based on facts or conditions that occurred before expiration or cancellation.

2.146 Indemnification Procedures

The procedures set forth below must apply to all indemnity obligations under this Contract.

- (a) After the State receives notice of the action or proceeding involving a claim for which it will seek indemnification, the State must promptly notify Contractor of the claim in writing and take or assist Contractor in taking, as the case may be, any reasonable action to avoid the imposition of a default judgment against Contractor. No failure to notify the Contractor relieves the Contractor of its



indemnification obligations except to the extent that the Contractor can prove damages attributable to the failure. Within 10 days following receipt of written notice from the State relating to any claim, the Contractor must notify the State in writing whether Contractor agrees to assume control of the defense and settlement of that claim (a “Notice of Election”). After notifying Contractor of a claim and before the State receiving Contractor’s Notice of Election, the State is entitled to defend against the claim, at the Contractor’s expense, and the Contractor will be responsible for any reasonable costs incurred by the State in defending against the claim during that period.

(b) If Contractor delivers a Notice of Election relating to any claim: (i) the State is entitled to participate in the defense of the claim and to employ counsel at its own expense to assist in the handling of the claim and to monitor and advise the State about the status and progress of the defense; (ii) the Contractor must, at the request of the State, demonstrate to the reasonable satisfaction of the State, the Contractor’s financial ability to carry out its defense and indemnity obligations under this Contract; (iii) the Contractor must periodically advise the State about the status and progress of the defense and must obtain the prior written approval of the State before entering into any settlement of the claim or ceasing to defend against the claim and (iv) to the extent that any principles of Michigan governmental or public law may be involved or challenged, the State has the right, at its own expense, to control the defense of that portion of the claim involving the principles of Michigan governmental or public law. But the State may retain control of the defense and settlement of a claim by notifying the Contractor in writing within 10 days after the State’s receipt of Contractor’s information requested by the State under clause (ii) of this paragraph if the State determines that the Contractor has failed to demonstrate to the reasonable satisfaction of the State the Contractor’s financial ability to carry out its defense and indemnity obligations under this Section. Any litigation activity on behalf of the State, or any of its subdivisions under this Section, must be coordinated with the Department of Attorney General. In the event the insurer’s attorney represents the State under this Section, the insurer’s attorney may be required to be designated as a Special Assistant Attorney General by the Attorney General of the State of Michigan.

(c) If Contractor does not deliver a Notice of Election relating to any claim of which it is notified by the State as provided above, the State may defend the claim in the manner as it may deem appropriate, at the cost and expense of Contractor. If it is determined that the claim was one against which Contractor was required to indemnify the State, upon request of the State, Contractor must promptly reimburse the State for all the reasonable costs and expenses.

2.150 Termination/Cancellation

2.151 Notice and Right to Cure

If the Contractor breaches the contract, and the State in its sole discretion determines that the breach is curable, then the State will provide the Contractor with written notice of the breach and a time period (not less than 30 days) to cure the Breach. The notice of breach and opportunity to cure is inapplicable for successive or repeated breaches or if the State determines in its sole discretion that the breach poses a serious and imminent threat to the health or safety of any person or the imminent loss, damage, or destruction of any real or tangible personal property.

2.152 Termination for Cause

(a) The State may terminate this contract, for cause, by notifying the Contractor in writing, if the Contractor (i) breaches any of its material duties or obligations under this Contract (including a Chronic Failure to meet any particular SLA), or (ii) fails to cure a breach within the time period specified in the written notice of breach provided by the State

(b) If this Contract is terminated for cause, the Contractor must pay all costs incurred by the State in terminating this Contract, including but not limited to, State administrative costs, reasonable attorneys’ fees and court costs, and any reasonable additional costs the State may incur to procure the Services/Deliverables required by this Contract from other sources. Re-procurement costs are not consequential, indirect or incidental damages, and cannot be excluded by any other terms otherwise



included in this Contract, provided the costs are not in excess of 50% more than the prices for the Service/Deliverables provided under this Contract.

(c) If the State chooses to partially terminate this Contract for cause, charges payable under this Contract will be equitably adjusted to reflect those Services/Deliverables that are terminated and the State must pay for all Services/Deliverables for which Final Acceptance has been granted provided up to the termination date. Services and related provisions of this Contract that are terminated for cause must cease on the effective date of the termination.

(d) If the State terminates this Contract for cause under this Section, and it is determined, for any reason, that Contractor was not in breach of contract under the provisions of this section, that termination for cause must be deemed to have been a termination for convenience, effective as of the same date, and the rights and obligations of the parties must be limited to that otherwise provided in this Contract for a termination for convenience.

2.153 Termination for Convenience

The State may terminate this Contract for its convenience, in whole or part, if the State determines that a termination is in the State’s best interest. Reasons for the termination must be left to the sole discretion of the State and may include, but not necessarily be limited to (a) the State no longer needs the Services or products specified in the Contract, (b) relocation of office, program changes, changes in laws, rules, or regulations make implementation of the Services no longer practical or feasible, (c) unacceptable prices for Additional Services or New Work requested by the State, or (d) falsification or misrepresentation, by inclusion or non-inclusion, of information material to a response to any RFP issued by the State. The State may terminate this Contract for its convenience, in whole or in part, by giving Contractor written notice at least 30 days before the date of termination. If the State chooses to terminate this Contract in part, the charges payable under this Contract must be equitably adjusted to reflect those Services/Deliverables that are terminated. Services and related provisions of this Contract that are terminated for cause must cease on the effective date of the termination.

2.154 Termination for Non-Appropriation

(a) Contractor acknowledges that, if this Contract extends for several fiscal years, continuation of this Contract is subject to appropriation or availability of funds for this Contract. If funds to enable the State to effect continued payment under this Contract are not appropriated or otherwise made available, the State must terminate this Contract and all affected Statements of Work, in whole or in part, at the end of the last period for which funds have been appropriated or otherwise made available by giving written notice of termination to Contractor. The State must give Contractor at least 30 days advance written notice of termination for non-appropriation or unavailability (or the time as is available if the State receives notice of the final decision less than 30 days before the funding cutoff).

(b) If funding for the Contract is reduced by law, or funds to pay Contractor for the agreed-to level of the Services or production of Deliverables to be provided by Contractor are not appropriated or otherwise unavailable, the State may, upon 30 days written notice to Contractor, reduce the level of the Services or the change the production of Deliverables in the manner and for the periods of time as the State may elect. The charges payable under this Contract will be equitably adjusted to reflect any equipment, services or commodities not provided by reason of the reduction.

(c) If the State terminates this Contract, eliminates certain Deliverables, or reduces the level of Services to be provided by Contractor under this Section, the State must pay Contractor for all Work-in-Process performed through the effective date of the termination or reduction in level, as the case may be and as determined by the State, to the extent funds are available. This Section will not preclude Contractor from reducing or stopping Services/Deliverables or raising against the State in a court of competent jurisdiction, any claim for a shortfall in payment for Services performed or Deliverables finally accepted before the effective date of termination.



2.155 Termination for Criminal Conviction

The State may terminate this Contract immediately and without further liability or penalty in the event Contractor, an officer of Contractor, or an owner of a 25% or greater share of Contractor is convicted of a criminal offense related to a State, public or private Contract or subcontract.

2.156 Termination for Approvals Rescinded

The State may terminate this Contract if any final administrative or judicial decision or adjudication disapproves a previously approved request for purchase of personal services under Constitution 1963, Article 11, § 5, and Civil Service Rule 7-1. In that case, the State will pay the Contractor for only the work completed to that point under the Contract. Termination may be in whole or in part and may be immediate as of the date of the written notice to Contractor or may be effective as of the date stated in the written notice.

2.157 Rights and Obligations upon Termination

(a) If the State terminates this Contract for any reason, the Contractor must (a) stop all work as specified in the notice of termination, (b) take any action that may be necessary, or that the State may direct, for preservation and protection of Deliverables or other property derived or resulting from this Contract that may be in Contractor’s possession, (c) return all materials and property provided directly or indirectly to Contractor by any entity, agent or employee of the State, (d) transfer title in, and deliver to, the State, unless otherwise directed, all Deliverables intended to be transferred to the State at the termination of the Contract and which are resulting from the Contract (which must be provided to the State on an “As-Is” basis except to the extent the amounts paid by the State in respect of the items included compensation to Contractor for the provision of warranty services in respect of the materials), and (e) take any action to mitigate and limit any potential damages, or requests for Contractor adjustment or termination settlement costs, to the maximum practical extent, including terminating or limiting as otherwise applicable those subcontracts and outstanding orders for material and supplies resulting from the terminated Contract.

(b) If the State terminates this Contract before its expiration for its own convenience, the State must pay Contractor for all charges due for Services provided before the date of termination and, if applicable, as a separate item of payment under this Contract, for Work In Process, on a percentage of completion basis at the level of completion determined by the State. All completed or partially completed Deliverables prepared by Contractor under this Contract, at the option of the State, becomes the State’s property, and Contractor is entitled to receive equitable fair compensation for the Deliverables. Regardless of the basis for the termination, the State is not obligated to pay, or otherwise compensate, Contractor for any lost expected future profits, costs or expenses incurred with respect to Services not actually performed for the State.

(c) Upon a good faith termination, the State may assume, at its option, any subcontracts and agreements for services and deliverables provided under this Contract, and may further pursue completion of the Services/Deliverables under this Contract by replacement contract or otherwise as the State may in its sole judgment deem expedient.

2.158 Reservation of Rights

Any termination of this Contract or any Statement of Work issued under it by a party must be with full reservation of, and without prejudice to, any rights or remedies otherwise available to the party with respect to any claims arising before or as a result of the termination.

2.160 Termination by Contractor

2.161 Termination by Contractor

If the State breaches the Contract, and the Contractor in its sole discretion determines that the breach is curable, then the Contractor will provide the State with written notice of the breach and a time period (not less than 30 days) to cure the breach. The Notice of Breach and opportunity to cure is inapplicable for successive and repeated breaches.



The Contractor may terminate this Contract if the State (i) materially breaches its obligation to pay the Contractor undisputed amounts due and owing under this Contract, (ii) breaches its other obligations under this Contract to an extent that makes it impossible or commercially impractical for the Contractor to perform the Services, or (iii) does not cure the breach within the time period specified in a written notice of breach. But the Contractor must discharge its obligations under **Section 2.160** before it terminates the Contract.

2.170 Transition Responsibilities

2.171 Contractor Transition Responsibilities

If the State terminates this contract, for convenience or cause, or if the Contract is otherwise dissolved, voided, rescinded, nullified, expires or rendered unenforceable, the Contractor agrees to comply with direction provided by the State to assist in the orderly transition of equipment, services, software, leases, etc. to the State or a third party designated by the State. If this Contract expires or terminates, the Contractor agrees to make all reasonable efforts to effect an orderly transition of services within a reasonable period of time that in no event will exceed thirty (30) days. These efforts must include, but are not limited to, those listed in **Sections 2.141, 2.142, 2.143, 2.144, and 2.145.**

2.172 Contractor Personnel Transition

The Contractor must work with the State, or a specified third party, to develop a transition plan setting forth the specific tasks and schedule to be accomplished by the parties, to effect an orderly transition. The Contractor must allow as many personnel as practicable to remain on the job to help the State, or a specified third party, maintain the continuity and consistency of the services required by this Contract. In addition, during or following the transition period, in the event the State requires the Services of the Contractor’s subcontractors or vendors, as necessary to meet its needs, Contractor agrees to reasonably, and with good-faith, work with the State to use the Services of Contractor’s subcontractors or vendors. Contractor will notify all of Contractor’s subcontractors of procedures to be followed during transition.

2.173 Contractor Information Transition

The Contractor agrees to provide reasonable detailed specifications for all Services/Deliverables needed by the State, or specified third party, to properly provide the Services/Deliverables required under this Contract. The Contractor will provide the State with asset management data generated from the inception of this Contract through the date on which this Contractor is terminated in a comma-delineated format unless otherwise requested by the State. The Contractor will deliver to the State any remaining owed reports and documentation still in Contractor’s possession subject to appropriate payment by the State.

2.174 Contractor Software Transition

The Contractor must reasonably assist the State in the acquisition of any Contractor software required to perform the Services/use the Deliverables under this Contract. This must include any documentation being used by the Contractor to perform the Services under this Contract. If the State transfers any software licenses to the Contractor, those licenses must, upon expiration of the Contract, transfer back to the State at their current revision level. Upon notification by the State, Contractor may be required to freeze all non-critical changes to Deliverables/Services.

2.175 Transition Payments

If the transition results from a termination for any reason, reimbursement must be governed by the termination provisions of this Contract. If the transition results from expiration, the Contractor will be reimbursed for all reasonable transition costs (i.e. costs incurred within the agreed period after contract expiration that result from transition operations) at the rates agreed upon by the State. The Contractor will prepare an accurate accounting from which the State and Contractor may reconcile all outstanding accounts.



2.176 State Transition Responsibilities

In the event that this Contract is terminated, dissolved, voided, rescinded, nullified, or otherwise rendered unenforceable, the State agrees to perform the following obligations, and any others upon which the State and the Contractor agree:

- (a) Reconciling all accounts between the State and the Contractor;
- (b) Completing any pending post-project reviews.

2.180 Stop Work

2.181 Stop Work Orders

The State may, at any time, by written stop work order to Contractor, require that Contractor stop all, or any part, of the work called for by the Contract for a period of up to 90 calendar days after the stop work order is delivered to Contractor, and for any further period to which the parties may agree. The stop work order must be identified as a stop work order and must indicate that it is issued under this **Section 2.150**. Upon receipt of the stop work order, Contractor must immediately comply with its terms and take all reasonable steps to minimize incurring costs allocable to the work covered by the stop work order during the period of work stoppage. Within the period of the stop work order, the State must either: (a) cancel the stop work order; or (b) terminate the work covered by the stop work order as provided in **Section 2.130**.

2.182 Cancellation or Expiration of Stop Work Order

The Contractor must resume work if the State cancels a Stop Work Order or if it expires. The parties will agree upon an equitable adjustment in the delivery schedule, the Contract price, or both, and the Contract must be modified, in writing, accordingly, if: (a) the stop work order results in an increase in the time required for, or in Contractor’s costs properly allocable to, the performance of any part of the Contract; and (b) Contractor asserts its right to an equitable adjustment within 30 calendar days after the end of the period of work stoppage; provided that, if the State decides the facts justify the action, the State may receive and act upon a Contractor proposal submitted at any time before final payment under the Contract. Any adjustment will conform to the requirements of **Section 2.024**.

2.183 Allowance of Contractor Costs

If the stop work order is not canceled and the work covered by the stop work order is terminated for reasons other than material breach, the termination must be deemed to be a termination for convenience under **Section 2.130**, and the State will pay reasonable costs resulting from the stop work order in arriving at the termination settlement. For the avoidance of doubt, the State is not be liable to Contractor for loss of profits because of a stop work order issued under this **Section 2.150**.



2.190 Dispute Resolution

2.191 In General

Any claim, counterclaim, or dispute between the State and Contractor arising out of or relating to the Contract or any Statement of Work must be resolved as follows. For all Contractor claims seeking an increase in the amounts payable to Contractor under the Contract, or the time for Contractor’s performance, Contractor must submit a letter, together with all data supporting the claims, executed by Contractor’s Contract Administrator or the Contract Administrator’s designee certifying that (a) the claim is made in good faith, (b) the amount claimed accurately reflects the adjustments in the amounts payable to Contractor or the time for Contractor’s performance for which Contractor believes the State is liable and covers all costs of every type to which Contractor is entitled from the occurrence of the claimed event, and (c) the claim and the supporting data are current and complete to Contractor’s best knowledge and belief.

2.192 Informal Dispute Resolution

(a) All disputes between the parties must be resolved under the Contract Management procedures in this Contract. If the parties are unable to resolve any disputes after compliance with the processes, the parties must meet with the Director of Purchasing Operations, DMB, or designee, for the purpose of attempting to resolve the dispute without the need for formal legal proceedings, as follows:

(i) The representatives of Contractor and the State must meet as often as the parties reasonably deem necessary to gather and furnish to each other all information with respect to the matter in issue which the parties believe to be appropriate and germane in connection with its resolution. The representatives must discuss the problem and negotiate in good faith in an effort to resolve the dispute without the necessity of any formal proceeding.

(ii) During the course of negotiations, all reasonable requests made by one party to another for non-privileged information reasonably related to the Contract will be honored in order that each of the parties may be fully advised of the other’s position.

(iii) The specific format for the discussions will be left to the discretion of the designated State and Contractor representatives, but may include the preparation of agreed upon statements of fact or written statements of position.

(iv) Following the completion of this process within 60 calendar days, the Director of Purchasing Operations, DMB, or designee, must issue a written opinion regarding the issue(s) in dispute within 30 calendar days. The opinion regarding the dispute must be considered the State’s final action and the exhaustion of administrative remedies.

(b) This Section will not be construed to prevent either party from instituting, and a party is authorized to institute, formal proceedings earlier to avoid the expiration of any applicable limitations period, to preserve a superior position with respect to other creditors, or under **Section 2.163**.

(c) The State will not mediate disputes between the Contractor and any other entity, except state agencies, concerning responsibility for performance of work under the Contract.

2.193 Injunctive Relief

The only circumstance in which disputes between the State and Contractor will not be subject to the provisions of **Section 2.162** is where a party makes a good faith determination that a breach of the terms of the Contract by the other party is the that the damages to the party resulting from the breach will be so immediate, so large or severe and so incapable of adequate redress after the fact that a temporary restraining order or other immediate injunctive relief is the only adequate remedy.

2.194 Continued Performance

Each party agrees to continue performing its obligations under the Contract while a dispute is being resolved except to the extent the issue in dispute precludes performance (dispute over payment must not be deemed to preclude performance) and without limiting either party’s right to terminate the Contract as provided in **Section 2.150**, as the case may be.



2.200 Federal and State Contract Requirements

2.201 Nondiscrimination

In the performance of the Contract, Contractor agrees not to discriminate against any employee or applicant for employment, with respect to his or her hire, tenure, terms, conditions or privileges of employment, or any matter directly or indirectly related to employment, because of race, color, religion, national origin, ancestry, age, sex, height, weight, marital status, physical or mental disability. Contractor further agrees that every subcontract entered into for the performance of this Contract or any purchase order resulting from this Contract will contain a provision requiring non-discrimination in employment, as specified here, binding upon each Subcontractor. This covenant is required under the Elliot Larsen Civil Rights Act, 1976 PA 453, MCL 37.2101, et seq., and the Persons with Disabilities Civil Rights Act, 1976 PA 220, MCL 37.1101, et seq., and any breach of this provision may be regarded as a material breach of the Contract.

2.202 Unfair Labor Practices

Under 1980 PA 278, MCL 423.321, et seq., the State must not award a Contract or subcontract to an employer whose name appears in the current register of employers failing to correct an unfair labor practice compiled under section 2 of the Act. This information is compiled by the United States National Labor Relations Board. A Contractor of the State, in relation to the Contract, must not enter into a contract with a Subcontractor, manufacturer, or supplier whose name appears in this register. Under section 4 of 1980 PA 278, MCL 423.324, the State may void any Contract if, after award of the Contract, the name of Contractor as an employer or the name of the Subcontractor, manufacturer or supplier of Contractor appears in the register.

2.203 Workplace Safety and Discriminatory Harassment

In performing Services for the State, the Contractor must comply with the Department of Civil Services Rule 2-20 regarding Workplace Safety and Rule 1-8.3 regarding Discriminatory Harassment. In addition, the Contractor must comply with Civil Service regulations and any applicable agency rules provided to the Contractor. For Civil Service Rules, see <http://www.mi.gov/mdcs/0,1607,7-147-6877---,00.html>.

2.204 Prevailing Wage

The rates of wages and fringe benefits to be paid each class of individuals employed by the Contractor, its subcontractors, their subcontractors, and all persons involved with the performance of this Contract in privity of contract with the Contractor shall not be less than the wage rates and fringe benefits established by the Michigan Department of Labor and Economic Development, Wage and Hour Bureau, schedule of occupational classification and wage rates and fringe benefits for the local where the work is to be performed. The term Contractor shall include all general contractors, prime contractors, project managers, trade contractors, and all of their contractors or subcontractors and persons in privity of contract with them.

The Contractor, its subcontractors, their subcontractors and all persons involved with the performance of this contract in privity of contract with the Contractor shall keep posted on the work site, in a conspicuous place, a copy of all wage rates and fringe benefits as prescribed in the contract. You must also post, in a conspicuous place, the address and telephone number of the Michigan Department of Labor and Economic Development, the office responsible for enforcement of the wage rates and fringe benefits. You shall keep an accurate record showing the name and occupation of the actual wage and benefits paid to each individual employed in connection with this contract. This record shall be available to the State upon request for reasonable inspection.

If any trade is omitted from the list of wage rates and fringe benefits to be paid to each class of individuals by the Contractor, it is understood that the trades omitted shall also be paid not less than the wage rate and fringe benefits prevailing in the local where the work is to be performed.



2.210 Governing Law

2.211 Governing Law

The Contract must in all respects be governed by, and construed according to, the substantive laws of the State of Michigan without regard to any Michigan choice of law rules that would apply the substantive law of any other jurisdiction to the extent not inconsistent with, or pre-empted by federal law.

2.212 Compliance with Laws

Contractor shall comply with all applicable state, federal and local laws and ordinances in providing the Services/Deliverables.

2.213 Jurisdiction

Any dispute arising from the Contract must be resolved in the State of Michigan. With respect to any claim between the parties, Contractor consents to venue in Ingham County, Michigan, and irrevocably waives any objections it may have to the jurisdiction on the grounds of lack of personal jurisdiction of the court or the laying of venue of the court or on the basis of forum non conveniens or otherwise. Contractor agrees to appoint agents in the State of Michigan to receive service of process.

2.220 Limitation of Liability

2.221 Limitation of Liability

Neither the Contractor nor the State is liable to each other, regardless of the form of action, for consequential, incidental, indirect, or special damages. This limitation of liability does not apply to claims for infringement of United States patent, copyright, trademark or trade secrets; to claims for personal injury or damage to property caused by the gross negligence or willful misconduct of the Contractor; to claims covered by other specific provisions of this Contract calling for liquidated damages; or to court costs or attorney’s fees awarded by a court in addition to damages after litigation based on this Contract.

2.230 Disclosure Responsibilities

2.231 Disclosure of Litigation

(a) Disclosure. Contractor must disclose any material criminal litigation, investigations or proceedings involving the Contractor (and each Subcontractor) or any of its officers or directors or any litigation, investigations or proceedings under the Sarbanes-Oxley Act. In addition, each Contractor (and each Subcontractor) must notify the State of any material civil litigation, arbitration or proceeding which arises during the term of the Contract and extensions, to which Contractor (or, to the extent Contractor is aware, any Subcontractor) is a party, and which involves: (i) disputes that might reasonably be expected to adversely affect the viability or financial stability of Contractor or any Subcontractor; or (ii) a claim or written allegation of fraud against Contractor or, to the extent Contractor is aware, any Subcontractor by a governmental or public entity arising out of their business dealings with governmental or public entities. The Contractor must disclose in writing to the Contract Administrator any litigation, investigation, arbitration or other proceeding (collectively, "Proceeding") within 30 days of its occurrence. Details of settlements which are prevented from disclosure by the terms of the settlement may be annotated. Information provided to the State from Contractor’s publicly filed documents referencing its material litigation will be deemed to satisfy the requirements of this Section.

(b) Assurances. If any Proceeding disclosed to the State under this Section, or of which the State otherwise becomes aware, during the term of this Contract would cause a reasonable party to be concerned about:

(i) the ability of Contractor (or a Subcontractor) to continue to perform this Contract according to its terms and conditions, or



(ii) whether Contractor (or a Subcontractor) in performing Services for the State is engaged in conduct which is similar in nature to conduct alleged in the Proceeding, which conduct would constitute a breach of this Contract or a violation of Michigan law, regulations or public policy, then the Contractor must provide the State all reasonable assurances requested by the State to demonstrate that:

- (a) Contractor and its Subcontractors will be able to continue to perform this Contract and any Statements of Work according to its terms and conditions, and
- (b) Contractor and its Subcontractors have not and will not engage in conduct in performing the Services which is similar in nature to the conduct alleged in the Proceeding.

(c) Contractor must make the following notifications in writing:

- (1) Within 30 days of Contractor becoming aware that a change in its ownership or officers has occurred, or is certain to occur, or a change that could result in changes in the valuation of its capitalized assets in the accounting records, Contractor must notify DMB PurchOps.
- (2) Contractor must also notify DMB PurchOps within 30 days whenever changes to asset valuations or any other cost changes have occurred or are certain to occur as a result of a change in ownership or officers.
- (3) Contractor must also notify DMB PurchOps within 30 days whenever changes to company affiliations occur.

2.232 Call Center Disclosure – Delete Not Applicable

2.233 Bankruptcy

The State may, without prejudice to any other right or remedy, terminate this Contract, in whole or in part, and, at its option, may take possession of the “Work in Process” and finish the Works in Process by whatever appropriate method the State may deem expedient if:

- (a) the Contractor files for protection under the bankruptcy laws;
- (b) an involuntary petition is filed against the Contractor and not removed within 30 days;
- (c) the Contractor becomes insolvent or if a receiver is appointed due to the Contractor's insolvency;
- (d) the Contractor makes a general assignment for the benefit of creditors; or
- (e) the Contractor or its affiliates are unable to provide reasonable assurances that the Contractor or its affiliates can deliver the services under this Contract.

Contractor will fix appropriate notices or labels on the Work in Process to indicate ownership by the State. To the extent reasonably possible, materials and Work in Process must be stored separately from other stock and marked conspicuously with labels indicating ownership by the State.

2.240 Performance

2.241 Time of Performance

- (a) Contractor must use commercially reasonable efforts to provide the resources necessary to complete all Services and Deliverables according to the time schedules contained in the Statements of Work and other Exhibits governing the work, and with professional quality.
- (b) Without limiting the generality of **Section 2.211(a)**, Contractor must notify the State in a timely manner upon becoming aware of any circumstances that may reasonably be expected to jeopardize the timely and successful completion of any Deliverables/Services on the scheduled due dates in the latest State-approved delivery schedule and must inform the State of the projected actual delivery date.
- (c) If the Contractor believes that a delay in performance by the State has caused or will cause the Contractor to be unable to perform its obligations according to specified Contract time periods, the Contractor must notify the State in a timely manner and must use commercially reasonable efforts to perform its obligations according to the Contract time periods notwithstanding the State’s failure. Contractor will not be in default for a delay in performance to the extent the delay is caused by the State.



2.242 Service Level Agreements (SLAs)- (Reserved)

2.243 Liquidated Damages – (Reserved)

2.244 Excusable Failure

Neither party will be liable for any default, damage or delay in the performance of its obligations under the Contract to the extent the default, damage or delay is caused by government regulations or requirements (executive, legislative, judicial, military or otherwise), power failure, electrical surges or current fluctuations, lightning, earthquake, war, water or other forces of nature or acts of God, delays or failures of transportation, equipment shortages, suppliers’ failures, or acts or omissions of common carriers, fire; riots, civil disorders; strikes or other labor disputes, embargoes; injunctions (provided the injunction was not issued as a result of any fault or negligence of the party seeking to have its default or delay excused); or any other cause beyond the reasonable control of a party; provided the non-performing party and its Subcontractors are without fault in causing the default or delay, and the default or delay could not have been prevented by reasonable precautions and cannot reasonably be circumvented by the non-performing party through the use of alternate sources, workaround plans or other means, including disaster recovery plans.

If a party does not perform its contractual obligations for any of the reasons listed above, the non-performing party will be excused from any further performance of its affected obligation(s) for as long as the circumstances prevail. But the party must use commercially reasonable efforts to recommence performance whenever and to whatever extent possible without delay. A party must promptly notify the other party in writing immediately after the excusable failure occurs, and also when it abates or ends.

If any of the above-enumerated circumstances substantially prevent, hinder, or delay the Contractor’s performance of the Services/provision of Deliverables for more than 10 Business Days, and the State determines that performance is not likely to be resumed within a period of time that is satisfactory to the State in its reasonable discretion, then at the State’s option: (a) the State may procure the affected Services/Deliverables from an alternate source, and the State is not be liable for payment for the unperformed Services/ Deliverables not provided under the Contract for so long as the delay in performance continues; (b) the State may terminate any portion of the Contract so affected and the charges payable will be equitably adjusted to reflect those Services/Deliverables terminated; or (c) the State may terminate the affected Statement of Work without liability to Contractor as of a date specified by the State in a written notice of termination to the Contractor, except to the extent that the State must pay for Services/Deliverables provided through the date of termination.

The Contractor will not have the right to any additional payments from the State as a result of any Excusable Failure occurrence or to payments for Services not rendered/Deliverables not provided as a result of the Excusable Failure condition. Defaults or delays in performance by Contractor which are caused by acts or omissions of its Subcontractors will not relieve Contractor of its obligations under the Contract except to the extent that a Subcontractor is itself subject to an Excusable Failure condition described above and Contractor cannot reasonably circumvent the effect of the Subcontractor’s default or delay in performance through the use of alternate sources, workaround plans or other means.

2.250 Approval of Deliverables

2.251 Delivery Responsibilities

Unless otherwise specified by the State within an individual order, the following must be applicable to all orders issued under this Contract.

- (a) Shipment responsibilities - Services performed/Deliverables provided under this Contract must be delivered “F.O.B. Destination, within Government Premises.” The Contractor must have complete



responsibility for providing all Services/Deliverables to all site(s) unless otherwise stated. Actual delivery dates will be specified on the individual purchase order.

(b) Delivery locations - Services will be performed/Deliverables will be provided at every State of Michigan location within Michigan unless otherwise stated in the SOW. Specific locations will be provided by the State or upon issuance of individual purchase orders.

(c) Damage Disputes - At the time of delivery to State Locations, the State must examine all packages. The quantity of packages delivered must be recorded and any obvious visible or suspected damage must be noted at time of delivery using the shipper’s delivery document(s) and appropriate procedures to record the damage.

Where there is no obvious or suspected damage, all deliveries to a State Location must be opened by the State and the contents inspected for possible internal damage not visible externally within 14 days of receipt. Any damage must be reported to the Contractor within five days of inspection.

2.252 Delivery of Deliverables

Where applicable, the Statements of Work/POs contain lists of the Deliverables to be prepared and delivered by Contractor including, for each Deliverable, the scheduled delivery date and a designation of whether the Deliverable is a document (“Written Deliverable”), a good (“Physical Deliverable”) or a Service. All Deliverables must be completed and delivered for State review and written approval and, where applicable, installed according to the State-approved delivery schedule and any other applicable terms and conditions of the Contract.

2.253 Testing

(a) Before delivering any of the above-mentioned Statement of Work Physical Deliverables or Services to the State, Contractor will first perform all required quality assurance activities to verify that the Physical Deliverable or Service is complete and conforms with its specifications listed in the applicable Statement of Work or Purchase Order. Before delivering a Physical Deliverable or Service to the State, Contractor must certify to the State that (1) it has performed the quality assurance activities, (2) it has performed any applicable testing, (3) it has corrected all material deficiencies discovered during the quality assurance activities and testing, (4) the Deliverable or Service is in a suitable state of readiness for the State’s review and approval, and (5) the Deliverable/Service has all Critical Security patches/updates applied.

(b) If a Deliverable includes installation at a State Location, then Contractor must (1) perform any applicable testing, (2) correct all material deficiencies discovered during the quality assurance activities and testing, and (3) inform the State that the Deliverable is in a suitable state of readiness for the State’s review and approval. To the extent that testing occurs at State Locations, the State is entitled to observe or otherwise participate in testing.

2.254 Approval of Deliverables, In General

(a) All Deliverables (Physical Deliverables and Written Deliverables) and Services require formal written approval by the State, according to the following procedures. Formal approval by the State requires the State to confirm in writing that the Deliverable meets its specifications. Formal approval may include the successful completion of Testing as applicable in **Section 2.253**, to be led by the State with the support and assistance of Contractor. The approval process will be facilitated by ongoing consultation between the parties, inspection of interim and intermediate Deliverables and collaboration on key decisions.

(b) The State’s obligation to comply with any State Review Period is conditioned on the timely delivery of Deliverables/Services being reviewed.

(c) Before commencement of its review or testing of a Deliverable/Service, the State may inspect the Deliverable/Service to confirm that all components of the Deliverable/Service have been delivered without material deficiencies. If the State determines that the Deliverable/Service has material deficiencies, the State may refuse delivery of the Deliverable/Service without performing any further inspection or testing of the Deliverable/Service. Otherwise, the review period will be deemed to have



started on the day the State receives the Deliverable or the Service begins, and the State and Contractor agree that the Deliverable/Service is ready for use and, where applicable, certification by Contractor according to **Section 2.223**.

(d) The State will approve in writing a Deliverable/Service after confirming that it conforms to and performs according to its specifications without material deficiency. The State may, but is not be required to, conditionally approve in writing a Deliverable/Service that contains material deficiencies if the State elects to permit Contractor to rectify them post-approval. In any case, Contractor will be responsible for working diligently to correct within a reasonable time at Contractor’s expense all deficiencies in the Deliverable/Service that remain outstanding at the time of State approval.

(e) If, after three opportunities (the original and two repeat efforts), the Contractor is unable to correct all deficiencies preventing Final Acceptance of a Deliverable/Service, the State may: (i) demand that the Contractor cure the failure and give the Contractor additional time to cure the failure at the sole expense of the Contractor; or (ii) keep the Contract in force and do, either itself or through other parties, whatever the Contractor has failed to do, and recover the difference between the cost to cure the deficiency and the contract price plus an additional sum equal to 10% of the cost to cure the deficiency to cover the State’s general expenses provided the State can furnish proof of the general expenses; or (iii) terminate the particular Statement of Work for default, either in whole or in part by notice to Contractor provided Contractor is unable to cure the breach. Notwithstanding the foregoing, the State cannot use, as a basis for exercising its termination rights under this Section, deficiencies discovered in a repeat State Review Period that could reasonably have been discovered during a prior State Review Period.

(f) The State, at any time and in its reasonable discretion, may halt the testing or approval process if the process reveals deficiencies in or problems with a Deliverable/Service in a sufficient quantity or of a sufficient severity that renders continuing the process unproductive or unworkable. If that happens, the State may stop using the Service or return the applicable Deliverable to Contractor for correction and re-delivery before resuming the testing or approval process.

2.255 Process For Approval of Written Deliverables

The State Review Period for Written Deliverables will be the number of days set forth in the applicable Statement of Work following delivery of the final version of the Deliverable (and if the Statement of Work does not state the State Review Period, it is by default five Business Days for Written Deliverables of 100 pages or less and 10 Business Days for Written Deliverables of more than 100 pages). The duration of the State Review Periods will be doubled if the State has not had an opportunity to review an interim draft of the Written Deliverable before its submission to the State. The State agrees to notify Contractor in writing by the end of the State Review Period either stating that the Deliverable is approved in the form delivered by Contractor or describing any deficiencies that must be corrected before approval of the Deliverable (or at the State’s election, after approval of the Deliverable). If the State notifies the Contractor about deficiencies, the Contractor will correct the described deficiencies and within 30 Business Days resubmit the Deliverable in a form that shows all revisions made to the original version delivered to the State. Contractor’s correction efforts will be made at no additional charge. Upon receipt of a corrected Deliverable from Contractor, the State will have a reasonable additional period of time, not to exceed the length of the original State Review Period, to review the corrected Deliverable to confirm that the identified deficiencies have been corrected.

2.256 Process for Approval of Services

The State Review Period for approval of Services is governed by the applicable Statement of Work (and if the Statement of Work does not state the State Review Period, it is by default 30 Business Days for Services). The State agrees to notify the Contractor in writing by the end of the State Review Period either stating that the Service is approved in the form delivered by the Contractor or describing any deficiencies that must be corrected before approval of the Services (or at the State’s election, after approval of the Service). If the State delivers to the Contractor a notice of deficiencies, the Contractor will correct the described deficiencies and within 30 Business Days resubmit the Service in a form that



shows all revisions made to the original version delivered to the State. The Contractor’s correction efforts will be made at no additional charge. Upon implementation of a corrected Service from Contractor, the State will have a reasonable additional period of time, not to exceed the length of the original State Review Period, to review the corrected Service for conformity and that the identified deficiencies have been corrected.

2.257 Process for Approval of Physical Deliverables

The State Review Period for approval of Physical Deliverables is governed by the applicable Statement of Work (and if the Statement of Work does not state the State Review Period, it is by default 30 continuous Business Days for a Physical Deliverable). The State agrees to notify the Contractor in writing by the end of the State Review Period either stating that the Deliverable is approved in the form delivered by the Contractor or describing any deficiencies that must be corrected before approval of the Deliverable (or at the State’s election, after approval of the Deliverable). If the State delivers to the Contractor a notice of deficiencies, the Contractor will correct the described deficiencies and within 30 Business Days resubmit the Deliverable in a form that shows all revisions made to the original version delivered to the State. The Contractor’s correction efforts will be made at no additional charge. Upon receipt of a corrected Deliverable from the Contractor, the State will have a reasonable additional period of time, not to exceed the length of the original State Review Period, to review the corrected Deliverable to confirm that the identified deficiencies have been corrected.

2.258 Final Acceptance

Unless otherwise stated in the Article 1, Statement of Work or Purchase Order, “Final Acceptance” of each Deliverable must occur when each Deliverable/Service has been approved by the State following the State Review Periods identified in **Sections 2.251-2.257**. Payment will be made for Deliverables installed and accepted. Upon acceptance of a Service, the State will pay for all Services provided during the State Review Period that conformed to the acceptance criteria.

2.260 Ownership

2.261 Ownership of Work Product by State

The State owns all Deliverables as they are works made for hire by the Contractor for the State. The State owns all United States and international copyrights, trademarks, patents or other proprietary rights in the Deliverables.

2.262 Vesting of Rights

With the sole exception of any preexisting licensed works identified in the SOW, the Contractor assigns, and upon creation of each Deliverable automatically assigns, to the State, ownership of all United States and international copyrights, trademarks, patents, or other proprietary rights in each and every Deliverable, whether or not registered by the Contractor, insofar as any the Deliverable, by operation of law, may not be considered work made for hire by the Contractor for the State. From time to time upon the State’s request, the Contractor must confirm the assignment by execution and delivery of the assignments, confirmations of assignment, or other written instruments as the State may request. The State may obtain and hold in its own name all copyright, trademark, and patent registrations and other evidence of rights that may be available for Deliverables.

2.263 Rights in Data

(a) The State is the owner of all data made available by the State to the Contractor or its agents, Subcontractors or representatives under the Contract. The Contractor will not use the State’s data for any purpose other than providing the Services, nor will any part of the State’s data be disclosed, sold, assigned, leased or otherwise disposed of to the general public or to specific third parties or commercially exploited by or on behalf of the Contractor. No employees of the Contractor, other than those on a strictly need-to-know basis, have access to the State’s data. Contractor will not possess or assert any lien or other right against the State’s data. Without limiting the generality of this Section, the Contractor must only use personally identifiable information as strictly necessary to provide the Services and must



disclose the information only to its employees who have a strict need-to-know the information. The Contractor must comply at all times with all laws and regulations applicable to the personally identifiable information.

(b) The State is the owner of all State-specific data under the Contract. The State may use the data provided by the Contractor for any purpose. The State will not possess or assert any lien or other right against the Contractor’s data. Without limiting the generality of this Section, the State may use personally identifiable information only as strictly necessary to utilize the Services and must disclose the information only to its employees who have a strict need to know the information, except as provided by law. The State must comply at all times with all laws and regulations applicable to the personally identifiable information. Other material developed and provided to the State remains the State’s sole and exclusive property.

2.264 Ownership of Materials

The State and the Contractor will continue to own their respective proprietary technologies developed before entering into the Contract. Any hardware bought through the Contractor by the State, and paid for by the State, will be owned by the State. Any software licensed through the Contractor and sold to the State, will be licensed directly to the State.

2.270 State Standards

2.271 Existing Technology Standards

The Contractor will adhere to all existing standards as described within the comprehensive listing of the State’s existing technology standards at <http://www.michigan.gov/dit>.

2.272 Acceptable Use Policy

To the extent that Contractor has access to the State computer system, Contractor must comply with the State’s Acceptable Use Policy, see <http://www.michigan.gov/ditservice>. All Contractor employees must be required, in writing, to agree to the State’s Acceptable Use Policy before accessing the State system. The State reserves the right to terminate Contractor’s access to the State system if a violation occurs.

2.273 Systems Changes

Contractor is not responsible for and not authorized to make changes to any State systems without written authorization from the Project Manager. Any changes Contractor makes to State systems with the State’s approval must be done according to applicable State procedures, including security, access and configuration management procedures.

2.280 Extended Purchasing – Deleted Not Applicable

2.281 MiDEAL – **Deleted Not Applicable**

2.282 State Employee Purchases – Deleted Not Applicable

2.290 Environmental Provision

2.291 Environmental Provision

Energy Efficiency Purchasing Policy – The State seeks wherever possible to purchase energy efficient products. This includes giving preference to U.S. Environmental Protection Agency (EPA) certified ‘Energy Star’ products for any category of products for which EPA has established Energy Star certification. For other purchases, the State may include energy efficiency as one of the priority factors to consider when choosing among comparable products.

Environmental Purchasing Policy – The State of Michigan is committed to encouraging the use of products and services that impact the environment less than competing products. The State is accomplishing this by including environmental considerations in purchasing decisions, while remaining



fiscally responsible, to promote practices that improve worker health, conserve natural resources, and prevent pollution. Environmental components that are to be considered include: recycled content and recyclability; energy efficiency; and the presence of undesirable materials in the products, especially those toxic chemicals which are persistent and bioaccumulative. The Contractor should be able to supply products containing recycled and environmentally preferable materials that meet performance requirements and is encouraged to offer such products throughout the duration of this Contract. Information on any relevant third party certification (such as Green Seal, Energy Star, etc.) should also be provided.

Hazardous Materials:

For the purposes of this Section, “Hazardous Materials” is a generic term used to describe asbestos, ACBMs, PCBs, petroleum products, construction materials including paint thinners, solvents, gasoline, oil, and any other material the manufacture, use, treatment, storage, transportation or disposal of which is regulated by the federal, state or local laws governing the protection of the public health, natural resources or the environment. This includes, but is not limited to, materials the as batteries and circuit packs, and other materials that are regulated as (1) “Hazardous Materials” under the Hazardous Materials Transportation Act, (2) “chemical hazards” under the Occupational Safety and Health Administration standards, (3) “chemical substances or mixtures” under the Toxic Substances Control Act, (4) “pesticides” under the Federal Insecticide Fungicide and Rodenticide Act, and (5) “hazardous wastes” as defined or listed under the Resource Conservation and Recovery Act.

(a) The Contractor must use, handle, store, dispose of, process, transport and transfer any material considered a Hazardous Material according to all federal, State and local laws. The State must provide a safe and suitable environment for performance of Contractor’s Work. Before the commencement of Work, the State must advise the Contractor of the presence at the work site of any Hazardous Material to the extent that the State is aware of the Hazardous Material. If the Contractor encounters material reasonably believed to be a Hazardous Material and which may present a substantial danger, the Contractor must immediately stop all affected Work, notify the State in writing about the conditions encountered, and take appropriate health and safety precautions.

(b) Upon receipt of a written notice, the State will investigate the conditions. If (a) the material is a Hazardous Material that may present a substantial danger, and (b) the Hazardous Material was not brought to the site by the Contractor, or does not result in whole or in part from any violation by the Contractor of any laws covering the use, handling, storage, disposal of, processing, transport and transfer of Hazardous Materials, the State must order a suspension of Work in writing. The State must proceed to have the Hazardous Material removed or rendered harmless. In the alternative, the State must terminate the affected Work for the State’s convenience.

(c) Once the Hazardous Material has been removed or rendered harmless by the State, the Contractor must resume Work as directed in writing by the State. Any determination by the Michigan Department of Community Health or the Michigan Department of Environmental Quality that the Hazardous Material has either been removed or rendered harmless is binding upon the State and Contractor for the purposes of resuming the Work. If any incident with Hazardous Material results in delay not reasonable anticipatable under the circumstances and which is attributable to the State, the applicable SLAs for the affected Work will not be counted in time as mutually agreed by the parties.

(d) If the Hazardous Material was brought to the site by the Contractor, or results in whole or in part from any violation by the Contractor of any laws covering the use, handling, storage, disposal of, processing, transport and transfer of Hazardous Material, or from any other act or omission within the control of the Contractor, the Contractor must bear its proportionate share of the delay and costs involved in cleaning up the site and removing and rendering harmless the Hazardous Material according to Applicable Laws to the condition approved by applicable regulatory agency(ies).

Michigan has a Consumer Products Rule pertaining to labeling of certain products containing volatile organic compounds. For specific details visit http://www.michigan.gov/deq/0,1607,7-135-3310_4108-



173523--.00.html

Refrigeration and Air Conditioning:

The Contractor shall comply with the applicable requirements of Sections 608 and 609 of the Clean Air Act (42 U.S.C. 7671g and 7671h) as each or both apply to this contract.

Environmental Performance:

Waste Reduction Program - Contractor shall establish a program to promote cost-effective waste reduction in all operations and facilities covered by this contract. The Contractor's programs shall comply with applicable Federal, State, and local requirements, specifically including Section 6002 of the Resource Conservation and Recovery Act (42 U.S.C. 6962, et seq.).

2.300 Other Provisions

2.311 Forced Labor, Convict Labor, Forced or Indentured Child Labor, or Indentured Servitude Made Materials

Contractor has certified, to the best of its knowledge and belief no foreign (outside of the U.S.) made equipment, materials, or supplies, will be furnished to the State under this Contract, that have been produced in whole or in part by forced labor, convict labor, or indentured servitude.

“Forced or indentured child labor” means all work or service: exacted from any person under the age of 18 under the menace of any penalty for its nonperformance and for which the worker does not offer himself voluntarily; or performed by any person under the age of 18 under a contract the enforcement of which can be accomplished by process or penalties.



Attachment A, Specifications for Dynamic Message Sign, Large

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
DYNAMIC MESSAGE SIGN, LARGE

ITS:MRM

44 of 103

ITS:APPR:GK:03-11-2009

a. Description. This work consists of the furnishing of a complete dynamic message sign (DMS) system at site designated within the plans. Work includes a full-matrix light-emitting diode (LED), walk-in housing type DMS, an auxiliary control panel (ACP) and a ground mounted ITS Cabinet with required foundation placed the opposite side of traffic flow (paid under different pay item). The DMS display matrix will be 125 pixels wide by 27 pixels tall and capable of displaying up to 21 18-inch characters in each of three distinct rows of characters. The electrical work will include the cabling for the controller and the DMS sign with the wire sized as required for each DMS site.

It is the responsibility of the Contractor to furnish all appurtenances necessary for a fully operational and functional DMS. This work must be done in accordance with the current Standard Specifications for Construction, except as modified herein.

1. General.

A. Furnish and test all equipment and components necessary to provide full and complete ITS functionality in all respects, without additional expense to the Department.

B. Furnish one auxiliary control panel (ACP) as an integral part of each DMS.

C. Install the ACP within the DMS housing, the DMS controller within the ITS cabinet; the interconnecting of the power and communications cables and any other required appurtenance for a fully functional ACP/DMS as directed by the Engineer. The DMS controller shall be stored in an environmentally approved location until it is installed in the ITS cabinet.

D. Furnish, test and deliver the DMS as stipulated by the Engineer.

E. Demonstrate the DMS functions and meets the requirements in these specifications.

F. Position DMS with message facing oncoming traffic and align in such a manner as to maximize message visibility.

G. Provide temporary blocking to keep the DMS off the ground, sign power and assure the DMS is secure while in storage.



H. Provide all equipment required for testing of the DMS and DMS components contained within this procurement as an appurtenance to the electronic equipment included within the project at no additional cost to the Department.

2. Requirements of Regulatory Agencies.

The compliance with the latest edition of the following codes or standards is required:

- A. Institute of Electrical and Electronic Engineers (IEEE).
- B. American Association of State Highway and Transportation Officials (AASHTO) including, but not limited to:
 - (1) Standard Specifications for Highway Bridges, 17th Edition with interim updates.
 - (2) Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 4th Edition with interim updates.
- C. National Transportation Communications for ITS Protocol (NTCIP).
- D. American Society for Testing and Materials.
- E. American National Standards Institute Standard C2 (ANSI).
- F. American Society of Testing and Materials' (ASTM).
- G. National Electric Code (NEC).
- H. American Society of Civil Engineers (ASCE).
- I. American Institute of Steel Construction (AISC).
- J. Institute of Electrical and Electronic Engineers (IEEE) 802.3.
- K. National Electrical Manufacturers Association (NEMA).
- L. National Electrical Manufacturers Association (NEMA) TS4.
- M. AASHTO/NSBA Steel Bridge Fabrication Guide Specification.
- N. AASHTO/NSBA Steel Bridge Design and Detailing Guidelines.

If codes, standards or the requirements are in conflict with a Special Provision; the stricter standard or requirement will govern the Contractor. The Engineer will be the final authority in the resolution of any and all conflicts relating to codes and standards versus Special Provisions.

3. DMS vendor experience and qualifications.

A. MDOT requires that the DMS vendor for this project be capable of demonstrating a positive track record for delivery of functional and reliable DMS and the very highest levels of post delivery support and service. In keeping with this desire for a proven DMS vendor, the Department reserves the right to contact references to verify all submitted past performance information and to assess the quality of the vendor based on the results of the verification and assessment.

B. As an integral portion of the submittal process, the Contractor is required to submit to MDOT the following proposed DMS vendor information (see Table 1), said information and references must be a representation of a single corporate entity and that corporate entity alone.



Table 1: DMS Vendor Information

Number of References	Type of Reference	Minimum Reference Description
10	DMS Vendor Project	<ul style="list-style-type: none"> • Each project consisting of 10 or more LED DMS • Freeway application • DMS used by State DOT or Toll Agency • Within past five years
6 (may be included in 10 above)	DMS Vendor Project	<ul style="list-style-type: none"> • Each project consisting of 10 or more LED DMS • Freeway application • Walk-in enclosures • Permanently mounted • DMS used by State DOT or Toll Agency • NTCIP-compliant DMS controlled by NTCIP-compliant central computer
1	DMS Vendor Total Projects	<ul style="list-style-type: none"> • A minimum of One Hundred (100) DMS in continuous use for at least three years
10 (one for each project above)	DMS Vendor Customer	<ul style="list-style-type: none"> • Project name • Customer name • Customer contact person name • Current customer contact person phone and e-mail
1	DMS Vendor Financial	<ul style="list-style-type: none"> • DMS vendor financial resources statement (Bank Reference and DUNS Report minimum) • The financial ability to provide long-term support
1	Standards	<ul style="list-style-type: none"> • Statement with independent concurrence regarding NTCIP Standard compliance
1	Demonstration	<ul style="list-style-type: none"> • The Contractor agrees to provide DMS Factory Acceptance Test (FAT) for up to three MDOT representatives at no cost to MDOT
1	Post Award Verification	<ul style="list-style-type: none"> • The DMS vendor confirms in writing to conduct a factory testing process as required within this Special Provision, required burn-in of each DMS prior to shipment and final acceptance testing on-site post installation • Contractor provides proof of the DMS vendor's compliance from independent sources regarding: <ul style="list-style-type: none"> ○ NEMA Standards Publication TS 4, Hardware Standards for Dynamic Message Signs (DMS) ○ NEMA Requirements – Section 2, Environmental Requirements ○ UL 48 Standard for Electric Signs ○ UL 50 Enclosures for Electrical Equipment ○ UL 1433 Standard for Control Centers for Changing Message Type Electric Signs

4. DMS Testing and Acceptance Requirements.

It is the responsibility of the Contractor to conduct such tests as necessary to ensure each DMS meets the requirements and specifications. The Engineer and/or MDOT Representative reserve the right to witness and /or verify, or to appoint a representative to witness all product testing during manufacture of the DMS.

A. Manufacturing Process Testing and Burn-in.

Furnish to the Engineer, for approval, a complete DMS vendor manufacturing process testing and Quality Control and Assurance Plan. This Plan must include all appropriate tests from the component level to sign assembly completion, including a required 96 hour burn-in of each DMS.



B. Factory Acceptance Testing (FAT).

(1) The Contractor is required to furnish a factory acceptance test (FAT) at no additional cost to the Department. The Contractor will bear all travel expenses including air fare, hotel and meals for up to three representatives of MDOT for the FAT and product testing event. The FAT will be performed at the DMS vendor's manufacturing facility. FAT is required prior to installation of any DMS. For the entire contract there will be a maximum of three (3) FAT's to test multiple sizes of DMS. FAT tests include, but are not limited to:

(2) Passage the NEMA 250 water spray test with no visible signs of water leakage through any of the sign housing seams.

(2) Proof of the 96 hours of continuous operation of the FAT DMS.

(3) Post FAT, the Engineer will audit and accept all burn-in test logs for each DMS prior to that DMS shipping from the factory.

(4) The physical verification through inspection by the Engineer and/or the MDOT Representative that the DMS meets the Special Provision and the approved submittal and shop drawings.

C. Post delivery testing and operation.

Upon delivery of each DMS to the location designated by the Engineer as shown on the project plan sheets, provide permanent power within 72 hours of delivery for the demonstration of the DMS functions in accordance with the requirements and specifications and that it has not been damaged during shipment. Maintain the DMS's power feed from the day of delivery to final acceptance, thereby protecting the interior electronics within the DMS from environmental degradation. If the project site depicted within the plans is not completely prepared for the installation of the DMS, the Contractor will be required to store the DMS at a secure and protected location. Said location will be approved by the Engineer. The DMS, while in the storage location, will be fully powered up within 72 hours of delivery. If the DMS is stored in a location without power and/or in an environmentally open area, the Vendor must certify in writing that there will be no adverse impacts on the interior electronics of the sign.

(1) Post delivery test plan. Develop and submit to the Engineer for approval a post delivery test plan. The test plan must demonstrate the complete functionality and integrity of the DMS after shipment and post delivery. The plan will describe test procedures, detail features being tested and the expected values that demonstrate DMS compliance. If the DMS is stored in a location without power and/or in an environmentally open area, the Vendor must certify in writing that there will be no adverse impacts on the interior electronics of the sign. The post delivery test shall be completed upon completion of the final installation.

(2) Testing schedule. All DMS will be tested in accordance with the post delivery test Plan. Schedule and conduct the post delivery tests at a time approved by the Engineer. Power to the delivered DMS and the power up of the DMS subsystems, including all ventilation systems, must be accomplished within 72 hours of delivery. If the DMS is stored in a location without power and/or in an environmentally open area, the Vendor must certify in writing that there will be no adverse impacts on the interior electronics of the sign.



D. Reporting requirements.

(1) Submit vendor and third-party reports verifying testing procedures, testing dates and testing results. The report will document comparison of test results to the specifications detailed herein. The report will clearly identify any failure to conform to the specifications

(2) Failure to conform to testing procedures will be considered a defect in the equipment and thereby be subject to rejection by the Engineer and/or MDOT Representative. Rejected equipment may be offered again for a retest, provided that non-compliances have been corrected and the DMS successfully retested by the vendor or third party. Evidence thereof must be submitted to the Engineer and/or the MDOT Representative

(3) Failure of any DMS to conform to the specifications will be considered a defect and the DMS is thereby subject to rejection by the Engineer and/or the MDOT Representative. Rejected equipment may be offered again for a retest, provided that all non-compliances have been corrected and retested by the vendor and evidence thereof has been submitted to the Engineer and/or Representative

(4) Final FAT and product test reports showing complete compliance with specifications must be submitted and approved by the Engineer before the Contractor releases the DMS for shipment

E. Final inspection and acceptance of the DMS will be made after:

- (1) Approval of the product testing report
- (2) Approval of the FAT report
- (3) Delivery of the DMS to a site designated by the Department
- (4) Proof and verification of the DMS continuous operation post delivery or certification that continuous power is not necessary.
- (5) Approval of the reports documenting the results of the post delivery test

F. The Contractor will provide a factory-trained technician who will be present when the DMS is installed on its designated support structure and integrated with the ITS Cabinet, power supply and communication network. The technician will verify that the installation is in full compliance with the vendor’s installation specifications and certify that the DMS vendor’s warranty is in full force and in effect after the DMS and all appurtenances have been installed; are fully operational; and final acceptance has been completed.

b. Materials.

1. The source of steel and iron.

All steel and iron materials permanently incorporated in this project will be produced in the States, Territories, or Possessions of the United States, unless the materials are no longer produced in the United States. These materials will include steel, steel products, and products that include steel components.



A. All manufacturing processes, including application of a coating for these materials and products, must have occurred within the States, its Territories or Possessions of the United States.

B. Coating includes all processes that protect or enhance the value of the material to which the coating is applied. This specification allows the minimal use of foreign steel materials on the project; if the total invoice cost of the materials permanently incorporated in the project does not exceed one-tenth of one percent of the total contract cost or \$2,500, whichever is greater.

C. For purposes of this specification, the total cost is that shown to be the total value of the steel products and materials as they are delivered to the project. Written certification of compliance will be submitted by the Contractor to the Engineer.

2. Electrical work.

Conduit, grounding, and risers will meet Section 918 of the Standard Specifications for Construction. Other material required will meet local utility company specifications and the National Electric Code (NEC).

3. DMS functional requirements.

The Concept of Operations defines the minimum sign functionality in each of the following areas. The Contractor must demonstrate, to the satisfaction of the Engineer, compliance with each of these functional requirements:

A. The DMS must be capable of receiving message commands and control from the designated Traffic Management Center (TMC) or other operation centers using NTCIP Protocol central system software.

B. The DMS will provide sign and communication maintenance, and diagnostic information to the operators at the TMC as depicted within the plans or other operation centers as determined by the Department.

C. The DMS will be available for use for traffic and incident management regardless of environmental conditions.

D. The DMS must be capable of delivering back to the operator accurate displayed message verification by way of “what-you-see-is-what-you-get” (WYSIWYG).

E. Command and control requirements.

(1) MDOT will communicate with the DMS using NTCIP compliant software. All features and capabilities of the sign must be controllable through the MDOT NTCIP-compliant software.

F. Maintenance and diagnostics detection and reporting requirements.

(1) The DMS is to be capable of detecting faults with any component within the DMS Housing and ITS Cabinet and reporting those faults to the appropriate MDOT operation center. The diagnostic report will clearly describe the nature of the problem; the components involved; and any other information necessary to facilitate timely and efficient maintenance.



G. DMS environmental requirements.

- (1) The DMS display will be enclosed
- (2) The DMS enclosure, components, heating and ventilation and workmanship must be of new components; corrosion resistant; and adequate to ensure full sign functionality and durability in the Michigan environmental conditions
- (3) All field equipment must perform to the minimum environmental and sign hardware requirements of -29.2°F to 165°F and a relative humidity range of 0 percent to 95 percent, non-condensing
- (4) All outdoor enclosures must resist water infiltration during hose-directed water per NEMA 250 – Class 3R requirements.
- (5) Install all the field equipment to be capable of operating in all weather conditions and withstand a wind load of 90 mph without permanent damage to sign, sign structure, or mechanical and electrical equipment
- (6) All connections, internal or external to the DMS, must be watertight
- (7) If the DMS is subjected to temporary storage, the DMS will be protected from impacts and intrusion from animals, insects, water or other potentially damaging situations. Any DMS in temporary storage is required to have an energized 120/240 volt power source connected to the DMS with all subsystems operations during the storage period

H. Messaging requirements.

- (1) The DMS static RAM will be capable of storing and displaying pre-worded messages, message sequences and message lists. Message wording, language and formatting will comply with applicable NTCIP standards
- (2) The DMS will be capable of displaying user-created messages not contained within the message library
- (3) Supply the most current version of NTCIP. The Department, at its discretion, can require, at no additional cost to the Department, one firmware upgrade during the warranty period

I. Display Requirements.

- (1) The DMS will be a LED full-matrix sign
- (2) The DMS display will be comprised of LED formed into pixels
- (3) Each character will be up to 7 pixels tall and five 5 pixels wide
- (4) The full-matrix DMS will be capable of displaying a minimum 21 characters on a 125 X 27 pixel sign, per line with a character height of 18-inches
- (5) Each character is to be separated by the minimum width of one unlit pixel column



- (6) Each line of characters is to be separated by the height of three unlit pixel columns
- (7) Minimum DMS visibility distance is to be from 200 to 1,000 feet
- (8) The DMS, including enclosure and mounting hardware, will weigh no more than 5,000 pounds. A verification of the total weight must be documented and included in the certificate of compliance for each DMS

J. General requirements.

- (1) All electrical components must operate on 120/240 volt 60 Hz electricity, or Contractor must provide appropriate DC conversion for any equipment requiring DC power
- (2) The DMS vendor is to utilize new, identical and completely interchangeable components within each DMS
- (3) The Contractor is to utilize equipment designed to protect personnel from exposure to high voltage during equipment operation, adjustment and maintenance

K. Mounting requirements.

- (1) DMS must be furnished with multiple lifting eyes or marked equipment hoisting points. Lift eyes will be designed in such a way as not to negatively impact the aesthetics, water tightness or functionality of the sign. If the lifting eye bolts are removed from the DMS after installation, bolts will be supplied to plug and seal the holes to prevent water from entering the DMS housing
- (2) When mounting the sign to a new structure, the design of the DMS and its mounting structures and hardware must be fully compatible and similar in structure type to the proposed MDOT standard DMS structure depicted for information only in the contract documents. The DMS vendor must supply all mounting hardware for each sign to include, but not limited to, "Z" bars, brackets, connectors and clamps

L. Communication requirements.

- (1) All DMS components must be capable of specified NTCIP compliant communications.
- (2) All data detected by the DMS (e.g., diagnostic data) is transmitted to the Communications Network and all data required by the DMS is received by the DMS from the communications network

M. Surge protection.

- (1) The DMS surge protection will be a cascade protection system. A primary surge protection device (SPD), connected in parallel with the load, will have a surge capacity of 150kA, providing protection modes between line to neutral, line to line, and line to ground. A secondary SPD will be a series-connected device; either "power strip" type, if modules are "plug-in", or hard-wired if the DMS modules are hard wired. The secondary SPD will have a surge current capacity of no less than 50kA and a current load of minimum 12 amps neutral to ground



- (2) The primary surge protection device will utilize metal oxide varistor (MOV) technology. The secondary surge protector will be a multi-stage hybrid utilizing various technologies
- (3) The surge protection units will have both over-current and thermal safety fuses
- (4) The surge protection system will reset automatically and be maintenance free
- (5) The primary and secondary surge protection devices will have status indicators showing "power on", good condition and failed condition
- (6) Dry contacts will be incorporated into the primary surge protection device will provide remote status indication in the event of a failure & fuse activation
- (7) All wiring to/from the DMS will have "circuit appropriate" surge protectors installed at both ends, if the circuits are between the sign and controller cabinet
- (8) Operational temperature rating of the surge protection system must be a minimum -29.2°F to +165°F

4. Equipment specifications.

A. The Contractor must comply with these specifications in addition to the above requirements. The specifications are intended to supplement and clarify the functional requirements. Notify the Engineer of any apparent conflict between the requirements and specifications and request clarification.

B. DMS specifications.

(1) DMS housing

(a) The DMS housing must be constructed to present a clean, neat appearance

(b) The DMS housing will be 38 inches plus or minus 4.5 inches wide (depth) at the bottom of the housing containing a 24 inch wide plus or minus 2 inches interior walkway manufactured of pre-approved, removable flat aluminum panels with non-skid material applied to the walkway's surface. The interior walkway must give an absolute minimum of 6 feet of head clearance within the sign housing for the length and width of the walkway area. The interior walkway must extend the entire interior length of the DMS (applies only to Dynamic Message Sign, Large – Walk in)

(c) The housing must be furnished with a housing entrance door at one end of the sign; the location of the door is to be as depicted on the proposed MDOT standard DMS Structure drawing attached to this Special Provision (applies only to Dynamic Message Sign, Large – Walk in)

(d) The housing entrance doors must have three-point latching systems, with closed cell resilient gasket material applied for weather proofing. Door locks will be standard #2 key locks and pad lock capable (applies only to Dynamic



Message Sign, Large – Walk in)

(e) The DMS housing must be fabricated from a minimum 0.125 inch thick aluminum alloy 5052-H32 and must be designed to withstand an ice load as specified in the latest AASHTO LTS-4 publication entitled “Standard Specification for Structural Supports for Highway Signs, Luminaries and Traffic Signals”, with most recent interims or versions

(f) All exterior seams and joints will be continuously welded by an inert gas welding process. The exterior housing panel material will be stitch welded to the internal structural members to form a unitized structure according to standards specified by the American Welding Society (AWS)

(g) Exterior mounting assemblies are to be fabricated from aluminum alloy 6061 T6 extrusions with a minimum thickness of 0.1875 inches

(h) Interior structure framing members are to be fabricated from aluminum alloy of 6061 T6 or 6063 T5 minimum thickness of 0.1875 inches

(i) Gasket channels, dual tracks and all supports welded to the housing must be fabricated of 0.1875 inch minimum thickness aluminum sheet. Bolted-on supports must be both the same material and thickness as the housing. Two dual tracks for screen assembly must be made of the same material and thickness as the housing

(j) A border made of the same material as the housing must encompass the LED matrix module section/array and enclose any open areas around the section/array. The border must be uniform and must be painted or treated

(k) For non walk in enclosure the manufacturer must supply dimensions, access points, door latching mechanisms, Door locks will be standard #2 key locks and pad lock capable, any all other components.

(2) Front face construction

(a) Unless otherwise approved by the Department, the DMS front face will be constructed with multiple rigid panels. Each panel supports and protects a full-height section of the LED display matrix. The panels will be fabricated using aluminum sheeting on the exterior and polycarbonate sheeting on the interior of the panel

(b) Front face panels are to provide a high-contrast background for the DMS display matrix. The aluminum mask of each panel will be semi-gloss black polyvinylidene fluoride (PVDF) coated and will contain an opening for each pixel. Openings must be large enough to not block any portion of the viewing cones of the LEDs

(c) Face panels will be attached to each other using stainless steel hardware. Seams that separate adjacent panels will be sealed. Panels will not be welded or otherwise permanently mounted to the DMS housing. Panels will be mounted in such a way that they are removable from the interior of the DMS housing



(d) Each panel will have a single polycarbonate sheet attached securely to the inside of the aluminum panel. The polycarbonate sheet will cover all of the pixel openings. The polycarbonate will be sealed to prevent water and other elements from entering the DMS. The polycarbonate will contain UV inhibitors that protect the LED display matrix from the effects of ultraviolet light exposure and prevent premature aging of the polycarbonate itself. Polycarbonate sheets will have the following characteristics:

- (i) Tensile Strength, Ultimate: 10,000 PSI
- (ii) Tensile Strength, Yield: 9,300 PSI
- (iii) Tensile Strain at Break: 125%
- (iv) Tensile Modulus: 330,000 PSI
- (v) Flexural Modulus: 330,000 PSI
- (vi) Impact Strength, Izod (1/8 inch, notched): 17 ft-lbs/inch of notch
- (vii) Rockwell Hardness: M75, R118
- (viii) Heat Deflection Temperature Under Load: 264 PSI at 270F and 66 PSI at 288F
- (ix) Coefficient of Thermal Expansion: 3.9×10^{-5} in/in/F
- (x) Specific Heat: 0.30 BTU/lb/F
- (xi) Initial Light Transmittance: 85% minimum
- (xii) Change in Light Transmittance, 3 years exposure in a southern latitude: 3%
- (xiii) Change in Yellowness Index, 3 years exposure in a southern latitude: less than 5%

(e) LED display modules will mount to the inside of the DMS front face panels. Common hand tools will be used for removal and replacement

(f) DMS front face borders (top, bottom, left side, and right side), which surround the front face panels and LED display matrix, will be black to maximize display contrast and legibility

(g) In the presence of wind, the DMS front face will not distort in a manner that adversely affects LED message legibility

(h) Each adjacent panel must be alternately mounted into one of two dual tracks attached to the front face of the DMS and located above and below the LED matrix module section. There must be a series of latches to lock the panels into a fixed position with adjacent side frames overlapping in order to minimize the blockage of LEDs

(i) If overlapping side frame panels are used, provide each panel with dampening materials to reduce vibration between the overlapping side frames of adjacent panels

(j) If overlapping side frame panels are used, they must be made of aluminum or stainless steel material and the means of latching the panels will use only common hand tools

(k) The DMS will be resistant, either by active or passive subsystem, to fog and frost on front face of the DMS

(3) Front face finish



(a) The front of the housing must be finished semi-gloss black. The sign face and all its parts must be coated with PVDF

(b) The PVDF coating is to be applied by the PVDF manufacturer's certified applier

(c) All other surfaces exposed to the atmosphere must be left their natural finish

(d) No open seams are allowed. All seams must be continuous welds with their water-tightness verified by water spray test

(4) Ventilation

(a) The DMS will contain an electronically-controlled ventilation system designed to keep the internal DMS air temperature lower than +140°F, when the outdoor ambient temperature is +115°F or less

(b) The sign must be designed to meet or exceed all International Mechanical (IM) standards (formally BOCA, ICBO and SBCCI) for human occupation.

(c) Air intake port(s) will be designed and located at optimum location(s) within the housing to comply with IM standards

(d) The Contractor must submit the DMS vendor's ventilation calculations that verify that the DMS meets all IM standards for human habitation

(e) Fans and air filters will be removable and replaceable from inside the DMS housing. To ease serviceability, the fans will be mounted at a pre-approved location that does not obstruct other subsystems while meeting ventilation requirements

(f) All intake and exhaust port openings will be screened to prevent the entrance of insects and small animals

(g) The sign housing will contain two electronic temperature monitoring devices to ensure failsafe monitoring of the interior temperature. The temperature monitoring devices will be wired independently. Failure of either device will cause an alarm message to be transmitted to the appropriate central control center

(h) A manual override timer switch will be located just inside the access door to manually activate the ventilation system. The switch will be adjustable from 0 to 4 hours minimum.

(i) The intake air filter media must be readily available from at least three sources. The manufacturer recommended minimum filter replacement cycle must be a minimum of once every two months to a maximum of once every six months

C. Sign controller hardware and functional specifications.

(1) Each DMS will use an associated sign (local) controller. The sign controller and associated communication equipment may be installed using one of



the following methods:

- (a) Inside a ground-mounted ITS cabinet located near the sign
 - (b) Inside a pole-mounted ITS cabinet attached to the DMS support structure
- (2) The sign controller will have the following characteristics:
- (a) Stand-alone microprocessor-based unit with integrated watchdog circuitry
 - (b) Internal regulated DC power supply
 - (c) Memory for storing changeable and permanent messages, schedules, and other necessary files for controller operation
 - (d) Includes front panel user interface with LCD and keypad for direct operation and diagnostics
 - (e) Mounts in a standard EIA 19-inch (480 mm) equipment rack using supplied mounting hardware
 - (f) Maximum weight of 10 pounds, including its enclosure
 - (g) Minimum one NTCIP-compliant RS-232 communication port for serial communications. One of the serial ports will have a secondary RS-422 interface option
 - (h) One Ethernet port with RJ-45 connector supporting NTCIP communication.
 - (i) Built-in Hayes-compatible modem with standard RJ-11 connector
 - (j) Operate successfully throughout a temperature range of -29.6°F to 165°F.
 - (k) Communicate directly with the distribution board located in the DMS, which communicates with all sensors, LED driver circuit subsystem, and other devices
 - (l) Include DMS-specific control firmware (embedded software) that will handle all external and internal sensors and communication inputs and drive the display modules as directed by external control software
- (3) The sign controller will have non-volatile, changeable memory. This memory will be formed by a combination of Flash RAM and battery-backed static RAM integrated circuits that retain the data in memory for a minimum of 30 days following a power failure. This changeable memory will be used to store messages and schedules. The minimum number of changeable messages that can be stored within the sign controller will be 500
- (4) Front panel user interface
- (a) The sign controller's front panel will include a keypad and LCD. These devices will be used to perform the following functions with the sign controller and DMS:



- (i) Monitor the current status of the sign controller, including the status of all sensors and a representation of the message visible on the display face
- (ii) Perform diagnostics testing of various system components, including as a minimum, pixels, power systems and sensors
- (iii) Activate messages stored in memory
- (iv) Configure display parameters, including display size, colors and communications

(b) The front panel interface will also include:

- (i) Power switch to turn the controller on and off and an LED “on” indicator
- (ii) A “local/remote” switch with an LED indicator that places the controller in local mode such that it can be controlled from the front panel interface, instead of via the primary communication channel
- (iii) Reset switch to quickly restart the controller
- (iv) LED “Active” indicator blinks when the controller is operating
- (v) LED to indicate when any of the NTCIP communication channels are active
- (vi) A “local” serial communication port that will allow connecting a laptop directly to the controller

(5) Sign controller battery backup

(a) The DMS sign controller located within the ITS cabinet will be connected to a rechargeable battery backup system (UPS) that will allow the controller to operate for a minimum 30 minutes if the incoming AC power source fails. The UPS will supply power sufficient to backup all internal systems of the DMS sign controller, including RS-232, Ethernet and dialup modem communications components. A UPS shall be supplied that meets the previous requirements in this section.

(6) Sign controller display interface

(a) The DMS sign controller will transmit and receive data packets to and from a distribution board. The distribution board will communicate with all sensors, drivers, and other devices using multiple networks running throughout the DMS

(b) Data transferred will include pixel states, sensor values, and I/O readings from various devices, such as door sensors and power supply monitors. Pixel data will include the states to be displayed on the sign face as well as diagnostic data retrieved from the LED driver circuit subsystem

(c) Communication from the sign controller to the distribution board will be using fiber optic cables or copper communications cable that connects the DMS sign controller to the DMS driver board subsystem

(7) Sign controller addressing



(a) The DMS sign controller will use multiple types of addressing when operating on NTCIP communication networks. The addressing will be configurable through the front panel user interface

(b) When operating over PMPP serial networks (NTCIP 2101), the controller's address will be configured in the range 1 to 255. The default address will be 1

(c) When operating on Ethernet networks (NTCIP 2104) a static IP address and subnet will be used

(d) If a dial-up or direct connect serial network is configured for PPP (NTCIP 2103), then no addressing will be required

(8) DMS intensity control

(a) Variable message signs will include an LED intensity control system that uses pulse width modulation (PWM). Over 100 intensity levels will be available. The DMS sign controller will be able to automatically adjust the LED display matrix intensity. A system operator will be able to override the automatic system, in order to manually change the LED intensity

(b) The DMS intensity control will:

(i) Utilize three photoelectric sensors, which are provided and installed as described in the DMS specification. It will use these measurements to automatically determine which LED intensity level will provide the best legibility for the given ambient light condition

(ii) Select from a minimum of 100 LED intensity levels. LED intensity levels will be available in a range of 1% to 100% of the maximum display intensity, and in increments of 1%

(iii) Not cause any flickering of the LED display matrix

(iv) Allow manual and automatic intensity control modes to be user selectable using the DMS control software, although the typical control mode will be "automatic"

(v) Allow manual intensity control from both local and remote locations

(9) LED diagnostic test capability.

(a) Upon command from either a remote computer or local laptop running the central control software, the sign controller will test the operation of all LED pixels and determine whether their functional status is: "normal" or "stuck-off". Pixel status will be determined via A/D conversion of the LED pixel forward voltage, and the resulting data will be communicated to the DMS control software.



(b) The resulting data will be monitored via the front panel and will be transferred to the NTCIP interfaces.

(10) Real-time DMS message verification

(a) The DMS sign controller and LED module hardware will be capable of enabling the DMS central control operator to verify the actual message displayed on the DMS on a real-time basis

(b) This message verification will be presented in a WYSIWYG format without disrupting the message displayed on the DMS

(c) WYSIWYG will be performed automatically each time the DMS is polled for status by the central control software

(11) Power supply diagnostic test capability

(a) The sign controller will be able to determine the functional status of regulated DC power supplies located in the DMS by monitoring diagnostic outputs located on the supplies

(b) This information will be reportable as “pass” or “fail” to the DMS control software

(12) Response to errors

(a) In the event of communication error between the DMS sign controller and the system control computer; the “communications loss message” will be displayed. This will be factory disabled

(b) In the event of a power failure, the “power recovery message” will be displayed. This will be factory set to blank the DMS

(c) The DMS sign controller will contain a hardware watchdog that automatically resets the controller’s microprocessor in the event of a controller lock-up

(13) Over temperature shutdown

(a) The DMS will utilize an internal temperature sensor circuit that will be monitored by the sign controller

(b) The DMS will be capable of being configured to automatically blank the sign face if the internal temperature of the DMS exceeds a configurable threshold

(c) If this occurs, the sign controller will also notify the central control system

(14) Auxiliary control panel

(a) The DMS will include a 19 inch rack mountable or shelf mountable auxiliary control panel that will provide a secondary user interface panel for DMS control, configuration, and maintenance



(i) The auxiliary control panel will meet the same electrical, mechanical, and environmental specifications as the DMS controller

(ii) The auxiliary control panel will have an LCD panel and keypad identical to those found on the DMS controller

(iii) The ACP will interface with the DMS controller and provide sign control through the ACP key pad and LCD

(iv) The auxiliary control panel will include an identical menu system to the DMS controller with all of its features and functionality

(v) The auxiliary control panel is to be mounted inside the DMS housing

(15) Messaging

(a) Static RAM capacity:

- (i) Minimum storage of 200 preprogrammed messages
- (ii) Minimum storage of 100 user-originated messages
- (iii) Minimum storage of 50 message sequences
- (iv) Maintain a stored message list

(b) The sign must have the capability to display up to four messages in sequence with Dynamic timing in 500 millisecond maximum increments under computer control. The entire sign must completely change all lines of message copy in not more than 500 milliseconds.

(c) Control programming to present sequenced messages under operator control through keyboard entry.

(d) Full support of the most current adopted NTCIP standards for messages, storage of messages and communication is required

(16) Display

(a) Discrete light-emitting diode (LED) specification

(i) The LED will have a 15 degree viewing angle for freeway DMS. All 15 degree LEDs will have a nominal viewing cone angle of 15 degrees with a half-power angle of 7.5 degrees measures from the longitudinal axis of the LED. Viewing cone tolerances will be as specified in the LED manufacturer's product specifications and will not be exceeded more than +/- 2.0 degrees.

(ii) Discrete LEDs will be manufactured by either the Toshiba Corporation or Avago Technologies formally Agilent Technologies. Substitutes will not be accepted. Discrete LEDs will conform to the following specifications:



- 1) LEDs will be non-tinted, non-diffused, high-intensity, solid-state lamps that utilize AlInGaP semiconductor technology
- 2) LED lenses will be fabricated from UV light resistant epoxy
- 3) The LED lens diameter will be 0.2 inches
- 4) LEDs will emit amber light that has a peak wavelength of 590 ± 5 nm LEDs will be obtained from no more than two consecutive color "bins"

(iii) The LED manufacturer will perform color sorting of the bins

1) LEDs will be obtained from no more than two luminous intensity "bins" The LED manufacturer will perform intensity sorting of the bins

2) The various LED color and intensity bins will be distributed evenly throughout the sign and will be consistent from pixel to pixel. Random distribution of the LED bins will not be accepted

3) All LEDs used in all DMS provided for this contract will be from the same manufacturer and of the same part number

4) The LEDs will be driven with a nominal current of 20mA

(b) Discrete pixel specification

(i) Each pixel will be a maximum of 1.375 inches \pm 0.1 inches in diameter.for 15 degree LED DMS applications

(ii) Pixels will be spaced at 2.6 inches \pm 0.2 pixel center to pixel center

(iii) The LEDs in each pixel will be clustered to maximize long-range visibility

(iv) Each pixel's intensity will be a minimum of 40 candelas. The brightness of each LED will be measured in accordance with the International Commission on Illumination (CIE) requirements detailed in Test Method A of the CIE 127 (1997) standard. The LED brightness and color bins that are used in each pixel will be provided to the engineer for approval. A letter of certification from the LED manufacturer that demonstrates testing and binning according to the CIE 127 (1997) standard will be provided with the submittals

(v) All pixels in all signs in a project, including spare parts, will have equal color and on-axis intensity

(c) Interlaced strings

(i) A pixel will contain two interlaced strings of LEDs. The pixel strings will be powered from a regulated power source. The LED drive current will be no greater that the LED manufacturer recommended maximum drive current. The failure of an LED in one string within a pixel will not affect the operation of any other string or pixel. The LEDs



will be individually mounted directly on a PCB, and will be easily replaceable and individually removable using conventional electronic repair methods. Pixels in which the LEDs are encapsulated will not be permitted

(d) Uniformity of brightness

(i) All LEDs will be mounted so that their mechanical axis is normally ± 1 degree to the sign's face to ensure uniformity of brightness over the sign's face.

(e) DMS Message Panel

(i) The DMS panel message background must be flat black in color

(ii) The sign panel must be designed so that external light reflection is minimized

(f) LED module panel

(i) The panel must be fabricated such that the structure integrity is maintained in all environmental conditions

(ii) Each LED display module will consist of one LED pixel board and a connection to a LED driver circuit subsystem. They will be electrically connected via one or more header-type connectors. The header connectors will be keyed such that the boards cannot be connected incorrectly

(iii) Each LED display module will be mounted to the rear of the display's front face panels using durable, non-corrosive hardware. No tools will be required for module removal and replacement. The modules will be mounted such that the LEDs emit light through the face panel's pixel holes and such that the face panel does not block any part of the viewing cone of any of the LEDs in any pixels

(iv) LED display module power and signal connections will be a quick-disconnect locking connector type. Removal of a display module from the DMS, or a pixel board from its display module, will not require a soldering operation

(v) Removal or failure of any LED module will not affect the operation of any other LED module or sign component. Removal of one or more LED modules will not affect the structural integrity of any part of the sign

(vi) It will not be possible to mount an LED display module upside-down or in an otherwise incorrect position within the DMS display matrix



(vii) All LED display modules, as well as the LED pixel boards and driver circuit subsystem boards, will be identical and interchangeable throughout the DMS

(g) Dynamic message sign internal interface panel

(i) Service equipment and conductors must be separated and isolated from the controller interface terminal blocks and harness

(ii) The equipment ground must be connected directly to the DMS frame

(iii) The driver circuit subsystem will be microprocessor-controlled and will communicate with the sign controller on a wire or fiber optic communication network using an addressable network protocol. The microprocessor will process commands from the sign controller to display data; perform diagnostic tests; and report pixel and diagnostic status

(iv) Constant current LED driver IC's will be used to prevent LED forward current from exceeding the maximum discrete LED drive current defined by these specifications when a forward voltage is applied

(v) The LED pixels will be directly driven using pulse width modulation (PWM) of the drive current to control the display intensity. This LED driver circuitry will vary the current pulse width to achieve the proper display intensity levels for all ambient light conditions. The drive current pulse will be modulated at a frequency high enough to provide flicker-free operation and a minimum of 200 brightness levels

(vi) The power regulation circuit will monitor the incoming power supply feeds and automatically select one or more of them to power the LEDs. If any of the incoming power sources fail, the power system will automatically switch to one or more of the remaining power sources. The voltage of each power input will be measured to the nearest tenth-of-a-volt and reported to the sign controller upon request. The driver circuit subsystem will also visually indicate if the power source is or is not present

(vii) The LED driver circuitry subsystem will be able to detect that individual LED strings or pixels are stuck "off" and will report the pixel status to the sign controller upon request

(viii) The LED driver circuit subsystem will contain a seven-segment, numeric LED display that indicates the functional status of the driver circuit subsystem and pixel boards. At a minimum, it will indicate error states of the LED pixels and communication network.



The indicator will be positioned such that a maintenance technician can easily view the status code for diagnostic purposes. The status codes will also be reported to the sign controller upon request

(ix) Light level control

1) The DMS will include sensors that monitor and report ambient (external) light level

2) The DMS will have sensors that measure the outdoor ambient light level. This ambient light measurement system will consist of three electronic light sensors

3) Two of the light sensors will be placed such that they measure the ambient light levels striking the front and rear of the DMS. The third light sensor will be mounted to the floor of the DMS housing and will face toward the ground. The DMS sign controller will continuously monitor the light sensors and adjust the LED display matrix intensity to a level that creates a legible message on the DMS face

(17) Regulated power supply

(a) The Underwriter’s Laboratory (UL) report numbers for all DMS and control equipment manufactured by the DMS manufacturer will be submitted to the Department and the products will bear the UL mark.

(b) The following assemblies and their respective associated devices must electrically and mechanically inter-mate and be compatible with each other:

- (i) LED driver subsystem assembly
- (ii) Power distribution assembly
- (iii) Power supply

(c) The electronic circuit design must be such that all components of the same generic type, regardless of manufacturer, must function equally in accordance with the specifications.

(d) Electrical.

(i) Applied Line Voltage: 120/240 VAC

(ii) Frequency: 60 (+/- 3.0) Hertz

(iii) All circuits, unless otherwise noted, must commence operation at or below 90 VAC as the applied voltage is raised from 50 VAC to 90 VAC at a rate of 2 (+/-0.5) volts per second.

(iv) All equipment, when housed with DMS sign housing, must be unaffected by transient voltages normally experienced on commercial power lines, by generators, or other anticipated power sources

(e) The LED pixel display modules will be powered with a system of redundant auto-ranging regulated power supplies



(f) Power supplies will be arranged in redundant fashion within the display such that each pair supplies power to a defined region of the sign, i.e., pixel module or row. Each pair of power supplies will contain two physically and electrically independent supplies. Power supplies must be wired in such a manner as to ensure that with the failure of one power supply, the redundant power supply will maintain uninterrupted power to the sign region or pixel module. Failure of any power supply will generate an alarm notification to the appropriate central control center

(g) Power supplies within each pair will be redundant and rated such that if one supply fails, the remaining supply will be able to operate 100% of the pixels in that display region at 100% brightness when the internal DMS air temperature is +140°F or less

(h) The power supplies will be sufficient to maintain the appropriate LED display intensity throughout the entire operating input voltage range

(i) The output of each power supply will be connected to multiple circuits that provide power to the LED modules. Each output circuit will not exceed 15 amperes and will be fused

(j) Each group of power supplies will be monitored by a microprocessor-controlled circuit. This circuit will monitor the voltage of each power supply and the status of each output circuit's fuse. The power supply voltages and fuse states will be reported via a controller area network (CAN) communication network to the sign controller upon request

(k) The power supplies used to power the LED pixel modules will be identical and interchangeable throughout the DMS

(l) Regulated DC power supplies will conform to the following specifications:

- (i) Nominal output voltage of 24 VDC +/- 10%
- (ii) Nominal maximum output power rating of 1000 watts
- (iii) Operating input voltage range will be a minimum of 90 to 260 VAC
- (iv) Operating temperature range will be a minimum of -29.2°F to +165°F
- (v) Maximum output power rating will be maintained over a minimum temperature range of -29.2°F to +165°F
- (vi) Power supply efficiency will be a minimum of 80%
- (vii) Power factor rating will be a minimum of 0.95
- (viii) Power supply input circuit will be fused
- (ix) Automatic output shut down and restart if the power supply overheats or one of the following output faults occurs: over-voltage, short circuit or over-current.
- (x) Power supplies will be UL listed

D. Communication specifications

(1) The DMS sign controller will contain a minimum of one 10/100Base-T Ethernet communication port. This port will be available for optional use for communicating from the central control system to the DMS sign controller



when an Ethernet network is available. The Ethernet port will be a standard RJ-45 jack.

(2) The DMS equipment and software must comply with the most recent version of the following standards, including all recommended or approved amendments, in effect as of the bid date:

- (i) NTCIP 1101, NTCIP Simple Transportation Management Framework (STMF)
- (ii) NTCIP 1103, NTCIP Transportation Management Protocol (TMP)
- (iii) NTCIP 1201, NTCIP Global Object (GO) Definitions
- (iv) NTCIP 1203, NTCIP Object Definitions for Dynamic Message Signs (DMS)
- (v) NTCIP 2202, NTCIP Internet (TCP/IP and UDP/IP) Transport Profile
- (vi) NTCIP 2301, NTCIP AP-STMF

E. Software and NTCIP documentation

(1) Any and all software provided must be supplied with full documentation in hard copy and on CD-ROM. The manufacturer must allow the use of any and all of the documentation described above by any party authorized by MDOT for system integration purposes; system maintenance; or system enhancement at any time; regardless of what parties are involved in the system integration effort.

(2) The Contractor must supply full documentation on a CD-ROM containing ASCII versions of the following management information base (MIB) files in Abstract Syntax Notation 1 (ASN.1) format

(3) If the device does not support the full range of any given object within a standard MIB module, a manufacturer-specific version of the official standard MIB module with the supported range indicated in ASN.1 format in the “syntax” and/or “description” field of the associated object type macro. The filename of this file must be identical to the standard MIB Module, except that it must have the extension “.man”

c. Construction.

1. The Contractor is to supply all mounting bracket and required Z-bars for the permanent mounting of the DMS.

2. If the lifting eyebolts are removed from the DMS after installation, bolts will be supplied to plug and seal the holes to prevent water from entering the DMS housing.

3. Warranty.

A. The DMS system must carry a manufacturer’s standard warranty (parts, labor, any required MOT) of five years from the date of final acceptance. The Contractor is required to supply a DMS factory-trained Technician to observe and oversee the DMS and ACP installation process for each sign. The technician is to verify that the installation practices follow the DMS vendor’s Standard Operating Procedure (SOP) and during the

installation did not in any way void or limit the DMS vendor's warranty. Once released by the Department and with the Contractor technician's approval, the DMS Warranty will begin. The Contractor warrants that:

- (1) All Work furnished pursuant to the Contract Documents will conform to all professional engineering principles generally accepted as standards of the industry in the State
- (2) The Project will be free of defects
- (3) Materials and equipment furnished under the Contract Documents will be new when installed
- (4) The Work will meet all of the requirements of the Contract Documents
- (5) The specifications and/or drawings selected or prepared for use during construction are appropriate for their intended use
- (6) The Project will be fit for use for the intended function

d. Measurement and Payment. The Contractor will be paid for at the contract unit prices for the following contract items:

Contract Item	Pay Unit
Dynamic Message Sign, Large	Each

Dynamic Message Sign, Large will be measured as each sign furnished.



Attachment B, Specifications for Dynamic Message Sign, Small

MICHIGAN DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION
FOR
DYNAMIC MESSAGE SIGN, SMALL

ITS:MRM

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ITS:APPR:GK:03-11-2009

a. Description. This work consists of the furnishing of a full-matrix light emitting diode (LED) arterial display type Dynamic Message Sign (DMS). The DMS will be permanently mounted, accessible from the front or rear of the sign (site specific as depicted in the Plans) and capable of displaying alpha-numeric characters in each of one, two or three distinct rows of characters, as defined and depicted within the Project Plans. This work must be done in accordance with the current Michigan Department of Transportation Standard Specifications for Construction, except as modified.

1. General.

A. Furnish and test all equipment and components necessary to provide full and complete ITS functionality in all respects, without additional expense to the Department.

B. Furnish, test and deliver the DMS as stipulated by the MDOT MITS Representative.

C. Demonstrate the DMS functions and meets the requirements in these specifications.

D. Position DMS with message facing oncoming traffic and align in such a manner as to maximize message visibility.

E. Provide temporary sign power and blocking to keep the DMS off the ground and to ensure the DMS is secure while in storage. If the DMS is stored in a location without power and/or in an environmentally open area, the Vendor must certify in writing that there will be no adverse impacts on the interior electronics of the sign.

F. Provide all equipment required for testing of the DMS and DMS components contained within this procurement as an appurtenance to the electronic equipment included within the project at no additional cost to the Michigan Department of Transportation (MDOT).

2. Requirements of Regulatory Agencies. Compliance with the latest edition of the following codes or standards is required:

A. Institute of Electrical and Electronic Engineers (IEEE).

B. American Association of State Highway and Transportation Officials (AASHTO) including, but not limited to:

(1) Standard Specifications for Highway Bridges, 17th Edition with interim updates

(2) Standard Specifications for Structural Supports for Highway Signs, Luminaries and Traffic Signals, 4th Edition with interim updates



- C. National Transportation Communications for ITS Protocol (NTCIP).
- D. American Society for Testing and Materials
- E. American National Standards Institute Standard C2 (ANSI).
- F. American Society of Testing and Materials' (ASTM).
- G. National Electric Code (NEC).
- H. American Society of Civil Engineers (ASCE).
- I. American Institute of Steel Construction (AISC).
- J. Institute of Electrical and Electronic Engineers (IEEE) 802.3.
- K. National Electrical Manufacturers Association (NEMA).
- L. National Electrical Manufacturers Association (NEMA) TS4.
- M. AASHTO/NSBA Steel Bridge Fabrication Guide Specification.
- N. AASHTO/NSBA Steel Bridge Design and Detailing Guidelines.
- O. National Cooperative Highway Research Program (NCHRP).

If codes, standards or the requirements are in conflict with a Special Provision; the stricter standard or requirement will govern the Contractor. The Engineer will be the final authority in the resolution of any and all conflicts relating to codes and standards versus Special Provisions.

3. DMS vendor experience and qualifications.

A. MDOT requires that the Contractor proposed a DMS vendor for this project that has a positive track record for delivery of functional and reliable DMS and the very highest levels of post-delivery support and service. In keeping with this desire for a proven DMS vendor the Department reserves the right to contact references to verify all submitted past performance information and to assess the quality of the vendor based on the results of the verification and assessment.

B. As an integral portion of the submittal process, submit to MDOT the following proposed DMS vendor information (see Table 1), said information and references must be a representation of a single corporate entity and that corporate entity alone.



Table 1: Vendor Information

Number of References	Type of Reference	Minimum Reference Description
8	Project	<ul style="list-style-type: none"> • One or more Arterial Type LED DMS • DMS used by State DOT, Municipal or Toll Agency • Within past five years
1	Total Projects	<ul style="list-style-type: none"> • A minimum of 25 full matrix arterial type LED DMS in continuous use for at least two years
8 <i>(one for each project above)</i>	Customer	<ul style="list-style-type: none"> • Project name • Customer name • Customer contact person name • Current customer contact person phone and e-mail
1	Financial	<ul style="list-style-type: none"> • Financial resources statement (Bank Reference and DUNS Report minimum) • The financial ability to provide long-term support
1	Standards	<ul style="list-style-type: none"> • Statement with independent concurrence regarding NTCIP Standard compliance
1	Demonstration	<ul style="list-style-type: none"> • The vendor agrees to provide DMS demonstration at MDOT site, upon request
1	Post Award Verification	<ul style="list-style-type: none"> • The vendor agrees to conduct factory testing as required within this Special Provision, required burn-in of each DMS prior to shipment and final acceptance testing on-site post installation • Vendor provides proof of compliance from independent sources regarding: <ul style="list-style-type: none"> ○ NEMA Standards Publication TS4, Hardware Standards for Dynamic Message Signs (DMS); ○ NEMA Requirements – Section 2, Environmental Requirements ○ UL 48 Standard for Electric Signs ○ UL 50 Enclosures for Electrical Equipment ○ UL 1433 Standard for Control Centers for Changing Message Type Electric Signs

4. DMS Testing and acceptance requirements. Conduct such tests as necessary to assure each DMS meets the requirements and specifications. The Engineer and/or MDOT representative reserve the right to witness and /or verify, or to appoint a representative to witness all product testing during manufacture of the DMS.

A. Manufacturing process testing and burn-in. Furnish to the Engineer for approval a complete DMS vendor manufacturing process testing and Quality Control and Assurance Plan. This Plan must include all appropriate tests from the component level to sign assembly completion, including a required 96-hour burn-in of each DMS.

B. Factory Acceptance Testing (FAT). The Contractor is required to furnish a Factory Acceptance Test (FAT) at no additional cost to MDOT. The Contractor will bear



all travel expenses including, air fare, hotel and meals for up to three representatives of MDOT for the FAT and product testing event. The FAT will be performed at the DMS vendor's manufacturing. FAT is required prior to installation of any DMS. For the entire contract there will be a maximum of three (3) FAT's to test multiple sizes of DMS. FAT tests include, but are not limited to:

- (1) NEMA 250 Water Spray Test with no visible signs of water leakage through any of the sign housing seams
- (2) Proof of the 96-hours of continuous operation of the FAT DMS
- (3) Post FAT, the Engineer will audit and accept all burn-in test logs for each DMS prior to that DMS shipping from the factory
- (4) The physical verification through inspection by the Engineer and/or MDOT representative that the DMS meets the Special Provision and the approved submittal and shop drawings

C. Post Delivery Testing and Operation. Upon delivery of each DMS to the location designated by the Department and as shown on the project plan sheets, provide permanent power within 72 hours of delivery for the demonstration of the DMS functions in accordance with the requirements and specifications and that it has not been damaged during shipment. Maintain the DMS's power feed from the day of delivery to final acceptance and thereby protecting the interior electronics within the DMS from environmental degradation. If the DMS is stored in a location without power and/or in an environmentally open area, the Vendor must certify in writing that there will be no adverse impacts on the interior electronics of the sign.

- (1) Post-delivery Test Plan: Develop and submit to the Engineer for approval a post-delivery test plan. The test plan must demonstrate the complete functionality and integrity of the DMS after shipment and post delivery. The plan will describe test procedures, detail features being tested and the expected values that demonstrate DMS compliance. The post delivery test shall be completed upon completion of the final installation.
- (2) Testing Schedule: All DMS will be tested in accordance with the post delivery test plan

D. Reporting Requirements.

- (1) Submit vendor and third-party reports verifying testing procedures, testing dates and testing results. The report will document comparison of test results to the specifications detailed herein. The report will clearly identify any failure to conform to the specifications
- (2) Failure to conform to testing procedures will be considered a defect and the equipment and thereby be subject to rejection by the Engineer and/or MDOT representative. Rejected equipment may be offered again for a retest, provided that complying test procedures have been corrected and the DMS retested by the vendor or third party and evidence thereof has been submitted to the Engineer and/or the MDOT representative



(3) Failure of any DMS to conform to the specifications will be considered a defect and the DMS is thereby subject to rejection by the Engineer and/or the MDOT representative. Rejected equipment may be offered again for a retest, provided that all non-compliances have been corrected and retested by the vendor and evidence thereof has been submitted to the Engineer and/or representative

(4) Final FAT and product test reports showing complete compliance with specifications must be submitted and approved by the Engineer before the Contractor releases the DMS for shipment

(5) Submit vendor and third-party reports verifying testing procedures, dates and results. The report will document comparison of test results to the specifications detailed herein. The report will clearly identify any failure to conform to the specifications

E. Final inspection and acceptance of the DMS will be made after:

- (1) Approval of the Product Testing report
- (2) Approval of the FAT report
- (3) Delivery of the DMS to a site designated by the Department
- (4) Delivery of proof and verification of the DMS continuous operation following DMS delivery or certification that continuous power is not necessary.
- (5) Approval of the reports documenting the results of the post delivery test

F. Provide a factory trained technician who will be present when the DMS is installed on its designated support structure and integrated with the ITS Cabinet, power supply and communication network. The technician will verify that the installation is in full compliance with the vendor's installation specifications and certify that the DMS vendor's warranty is in full force and effect after the DMS and all appetencies have been installed, are fully operational and final acceptance has been completed.

b. Materials.

1. The Source of Steel and Iron. All steel and iron materials permanently incorporated in this project must be produced in the States, Territories, or Possessions of the United States, unless the materials are no longer produced in the United States. These materials will include steel, steel products and products that include steel components.

A. All manufacturing processes, including application of a coating, for these materials and products must have occurred within the States, Territories, or Possessions of the United States.

B. Coating includes all processes which protect or enhance the value of the material to which the coating is applied. This specification allows the minimal use of foreign steel materials on the project, if the total invoice cost of the materials permanently incorporated in the project does not exceed one-tenth of one percent of the total contract cost or \$2,500, whichever is greater.



C. For purposes of this specification, the total cost is that shown to be the total value of the steel products and materials as they are delivered to the project. Written certification of compliance will be submitted by the DMS vendor to the Engineer.

2. Electrical Work. Conduit, grounding and risers will meet section 918 of the Standard Specifications for Construction. Other material required will meet local utility company specifications and the National Electric Code (NEC).

3. DMS Functional Requirements. The Concept of Operations defines the minimum sign functionality in each of the following areas. The Contractor must demonstrate, to the satisfaction of the Engineer, compliance with each of these functional requirements:

A. The DMS must be capable of receiving message commands and control from the MDOT designated Traffic Management Center (TMC) or other operation centers using NTCIP Protocol central system software.

B. The DMS will provide sign and communication maintenance and diagnostic information to the operators at the TMC or other operation center as determined by the Department.

C. The DMS will be available for use for traffic and incident management regardless of environmental conditions.

D. The DMS must be capable of delivering back to the operator accurate displayed message verification by way of “what-you-see-is-what-you-get” (WYSIWYG).

E. Command and Control Requirements.

(1) MDOT will communicate with the DMS using NTCIP-compliant software. All features and capabilities of the sign must be controllable through the MDOT NTCIP-compliant software

F. Maintenance and Diagnostics Detection and Reporting Requirements.

(1) The DMS is to be capable of detecting faults with any component within the DMS Housing and DMS Cabinet and reporting those faults to the appropriate MDOT operation center. The diagnostic report will clearly describe the nature of the problem; the components involved; and any other information necessary to facilitate timely and efficient maintenance

G. General Requirements.

(1) All electrical components must (1) operate on 120/240 volt 60 Hz electricity, or Contractor must provide appropriate DC conversion for any equipment requiring DC power

(2) The DMS vendor is to utilize identical and completely interchangeable components within all DMS furnished under this contract

(3) The DMS vendor and the Contractor are to utilize equipment designed to protect personnel from exposure to high voltage during equipment operation, adjustments and maintenance

H. DMS Environmental Requirements.



- (1) The DMS display will be enclosed in either a front access or rear access housing
- (2) The DMS enclosure, components, heating and ventilation and workmanship must be of new components; corrosion resistant; and adequate to assure full sign functionality and durability in the Michigan environmental conditions
- (3) All field equipment must perform to the minimum environmental and sign hardware requirements specified in NEMA TS2. Currently these specifications require a temperature range of -29.2°F to 165° F and a relative humidity range of 0 percent to 95 percent, non-condensing
- (4) All outdoor enclosures must resist hose-directed water per NEMA 250 – Class 3R requirements
- (5) Install all the field equipment to be capable of operating in all weather conditions and withstand a wind load of 90 mph without permanent damage to sign, sign structure, or mechanical equipment and electrical equipment
- (6) All connections, internal or external to the DMS enclosure must be watertight
- (7) If the DMS is subjected to temporary storage, the DMS will be protected from impacts and intrusion from animals, insects, water, or other potentially damaging situations. Any DMS in temporary storage is required to have an energized 120/240 volt power source connected to the DMS with all subsystems operations during the storage period

I. Messaging Requirements.

- (1) The DMS Static RAM will be capable of storing and displaying pre-worded messages, message sequences and message lists. Message wording, language and formatting will comply with applicable NTCIP standards
- (2) The DMS will be capable of displaying user-created messages not contained within the message library
- (3) The DMS vendor must supply the most current version of NTCIP. Additionally the Department, at its discretion, can require at no additional cost to the Department, one firmware upgrade during the warranty period

J. Display Requirements.

- (1) The DMS will be a LED full-matrix sign
- (2) The DMS display will be comprised of LEDs formed into pixels
- (3) Each character will be comprised of a variable-size font, nominally 7 pixels tall and 5 pixels wide. This can be considered the standard font; however, the sign control software must have the ability to adjust the height and width of characters



(4) The full-matrix DMS will be capable of displaying a minimum either 9-inch or 12-inch characters in one of several configurations. The 12 desired configurations are listed in Table 2 below:

Table 2: DMS Configurations

Character Size	Lines/ Characters/Line	Minimum Sign Dimensions (Inches)
9 inch	2/10	34H X 98W
9 inch	2/16	34H X 140W
9 inch	2/21	34H X 183W
9 inch	3/10	55H X 98W
9 inch	3/16	55H X 140W
9 inch	3/21	55H X 183W
12 inch	2/10	45H X 132W
12 inch	2/16	45H X 189W
12 inch	2/21	45H X 247W
12 inch	3/10	74H X 132W
12 inch	3/16	74H X 189W
12 inch	3/21	74H X 247W

(5) Each character is to be separated by the minimum width of one unlit pixel column

(6) Each line of characters is to be separated by the minimum height of two unlit pixel columns

(7) Minimum DMS visibility distance is based on character size. Minimum required visibility will be 450 feet for 9-inch characters and 600 feet for 12-inch characters

K. Mounting Requirements.

(1) DMS must be furnished with multiple lifting eyes or marked equipment hoisting points. Lift eyes will be designed in such a way as not to negatively impact the aesthetics, water tightness or functionality of the sign. If the lifting eye bolts are removed from the DMS after installation, bolts will be supplied to plug and seal the holes to prevent water from entering the DMS housing

(2) The DMS vendor must supply all mounting hardware for each sign to include but not limited to, “Z” bars, brackets, connectors and clamps

(3) When the DMS will be mounted to a legacy structure, as specified by the Engineer, the mounting hardware will conform to that of the legacy structure. An Engineer, registered in the State of Michigan, must review the legacy structure and verify whether the structure is satisfactory for mounting the new DMS

L. Communication Requirements.



(1) All DMS components must be capable of specified NTCIP-compliant communications

(2) All data detected by the DMS (e.g., diagnostic data) is transmitted to the Communications Network and all data required by the DMS is received by the DMS from the Communications Network

M. Surge Protection.

(1) The DMS surge protection system will have a surge capacity of 10kA, providing protection between Line to Neutral, Line to Line, Line to Ground and Neutral to Ground

(2) The surge protection system will reset automatically and be maintenance free

(3) Operational temperature rating of the surge protection system must be a minimum of -29.2° F to +165° F

4. ITS Cabinet (under separate Special Provision)

5. Equipment Specifications.

A. The Contractor must comply with these specifications in addition to the above requirements. The specifications are intended to supplement and clarify the functional requirements. Bring to the Engineer's attention any apparent conflict between the requirements and specifications and request clarification.

B. DMS Specifications.

(1) DMS Housing

(a) The housing will protect internal components from rain, ice, dust and corrosion in accordance with NEMA enclosure Type 3R standards, as described in NEMA Standards Publication 250-1997, Enclosures for Electrical Equipment (1000 Volts Maximum)

(b) The DMS housing bottom side will contain small weep holes for draining any water that may accumulate due to condensation

(c) Weep holes and ventilation/exhaust hoods will be screened to prevent the entrance of insects and small animals

(d) No internal electrical wiring or internal electrical components of any type (fans, power supplies, transformers, LED display modules, circuit boards, surge suppression devices, fuses, relays, power and signal termination panels, utility outlets and other electrical components) will be located within 4 inches of the DMS housing floor. This is to prevent short circuits from occurring, in the event of internal water buildup. The only allowable exception to this requirement will be the bottom-facing photo sensor assembly, which will be insulated to prevent water-related short circuits

(e) The DMS housing must be constructed to present a clean, neat appearance



(f) The DMS housing will provide safe and convenient access to all modular assemblies, components, wiring and other materials located within the DMS housing. All LED display modules and internal components will be removable and replaceable by a single technician

(2) Front Face Construction

(a) The DMS front face will be constructed with multiple LED display modules, each of which support and protect the display matrix. Seams that separate adjacent LED display modules will be sealed. LED display modules will not be welded to the DMS housing

(b) Front face LED display modules will provide a high-contrast background for the DMS display matrix. The front of each LED display module will be semi-gloss black for the LED pixels. The DMS front face border will be covered with a shroud that is 2/3 the width of the minimum character height of the display. The shroud will be formed from 0.090-inch aluminum alloy 5052-H32 sheeting. DMS shroud will be coated with semi-gloss black polyvinylidene fluoride (PVDF), which has an expected outdoor service life of 15 years

(c) In the presence of wind, rain and snow, the DMS front face will not distort in a manner that adversely affects LED message legibility

(3) Front face finish

(a) The front of the housing must be finished semi-gloss black. The sign face and all its parts must be coated with PVDF

(b) The PVDF resin coating is to be applied by the PVDF manufacturer's certified applier

(c) All other DMS housing surfaces and DMS mounting Z-bars will be natural mill-finish aluminum

(4) Display

(a) The full-matrix display units must have the minimum number of pixel rows and columns as listed in Table 3. These minimums are based upon the number of desired characters listed in the table, displayed in a 5 pixel wide by 7 pixel tall character font, with one unlit pixel column between adjacent characters and two unlit pixel rows between lines. These represent the minimum acceptable number of pixels per unit

Table 3: Pixel Rows and Columns

Character Size	Number of Lines	Characters Per Line	Minimum Pixel Rows	Minimum Pixel Columns
9 inch	2	10	16	59
9 inch	2	16	16	95
9 inch	2	21	16	125
9 inch	3	10	25	59
9 inch	3	16	25	95
9 inch	3	21	25	125



12 inch	2	10	16	59
12 inch	2	16	16	95
12 inch	2	21	16	125
12 inch	3	10	25	59
12 inch	3	16	25	95
12 inch	3	21	25	125

(b) LED Display Modules. The DMS will contain LED display modules, which will be placed side by side to form the LED pixel matrix. Each display module will be constructed as follows:

(i) LED display module electrical connections will use the quick-disconnect locking connector type. Removal of a display module from the DMS, or a pixel board from its display module, will not require a soldering operation.

(ii) It will not be possible to mount a display module upside-down or in an otherwise incorrect position within the DMS display matrix

(iii) All LED display modules, as well as the LED pixel boards, will be identical and interchangeable throughout the DMS

(iv) Removal of a single display module from the DMS, or failure of a single module, will not affect the performance of any other module in the sign. Removal of one or more modules will not affect DMS structural integrity or the structural integrity of the rest of the LED display matrix

(c) LED Display Boards

Each display module will contain a printed circuit board to which LEDs are soldered. Each module will contain an appropriate number of LED pixels determined by size of module. Each pixel will contain a cluster of closely spaced discrete LEDs. Pixels will conform to the following specifications:

(i) The distance from the center of 1 pixel to the center of each adjacent pixel, both horizontally and vertically, will be 1.33 inches for 9-inch character signs and 1.81 inches for 12-inch character signs

(ii) A pixel will consist of two strings of discrete LEDs

(iii) Current-limiting resistors or constant-current LED driver subsystem ICs will be used to prevent LED forward current from exceeding 30 mA whenever a forward voltage is applied. LED drive currents greater than 30 mA will not be allowed to maximize LED service life

(iv) Pixels will contain the quantity of discrete LEDs needed to generate a sign display luminous intensity of 9,200 Cd/m² minimum when the pixel is driven at its proper forward current. However, the minimum number of LEDs for 1 pixel is four

(v) The failure of an LED string will not cause the failure of any other LED string or pixel in the DMS. Failure of a pixel will not cause the failure of any other pixel in the DMS



- (vi) Each pixel string will contain an identical quantity of LEDs
 - (vii) LED pixel forward voltage drop, measured from the DC power supply output to ground, will not exceed 24 VDC. This includes the drive circuit voltage drop and any internal DC line loss
 - (viii) LED pixel power will not exceed 1.5 watts
 - (ix) The circular base of the discrete LEDs will be soldered so that they are flush and parallel to the surface of the printed circuit board. The longitudinal axis of the LEDs will be perpendicular to the circuit board
 - (x) All exposed metal on both sides of the LED pixel board, except the power connector, will be protected from water and humidity exposure by a thorough application of acrylic conformal coating. Bench level repair of individual pixels, including discrete LED replacement and conformal coating repair, will be possible. The LED driver circuit subsystem is to be able to determine if the pixel is operating normally. This information will be reported to a system control computer upon command from the DMS control software
 - (xi) All LED pixel boards will be identical and interchangeable throughout the DMS
- (d) DMS pixels will be constructed with discrete LEDs manufactured by the Toshiba Corporation or Avago Technologies formerly Agilent Technologies. Substitutes will not be accepted. Discrete LEDs will conform to the following specifications:
- (i) LEDs will be non-tinted, non-diffused, high-intensity, solid-state lamps that utilize AlInGaP semiconductor technology
 - (ii) LED lenses will be fabricated from UV light-resistant epoxy
 - (iii) The LED lens diameter will be 0.2 inches in a T1-3/4 style LED package (surface mounted LEDs will be considered upon submittal)
 - (iv) LEDs will emit amber light that has a peak wavelength of 590 ±5 nm. Color sorting will be performed by the LED manufacturer
 - (v) LEDs will be obtained from no more than two bins luminous intensity sort. Intensity sorting will be performed by the LED manufacturer
 - (vi) All 30-degree LEDs will have a nominal viewing cone angle of 30-degrees with a half-power angle of 15-degrees measures from the longitudinal axis of the LED
 - (vii) LED view tolerance will be +/- 3 degrees
 - (viii) LED package style will be through-hole flush-mount; LEDs with standoffs. Surface-mount LEDs will be considered upon submittal
 - (ix) All LEDs used in all DMS provided for this contract will be from the same manufacturer and of the same part number

(e) Pixel Drive Circuitry



(i) LED pixels will be directly driven using pulse width modulation. This drive method varies the current pulse width to achieve the proper display intensity level for a given ambient light condition. The drive current pulse will be modulated from a 1.024 millisecond period and pulse amplitude will not be allowed to exceed 20 mA per LED string

(ii) The pixel modules will be driven by a driver circuit subsystem that will control all applicable pixels on that module or modules

(5) Regulated DC Power Supplies

(a) The LED pixel display matrix will be powered with regulated redundant DC power supplies that operate from 120 VAC/60 Hz input power and have an output of no more than 24 volts DC. Power supplies will:

(i) Protect the LED pixel matrix and driver circuitry in the event of power spikes or surges

(ii) Maintain the appropriate LED display intensity in the event of a brownout (low power) condition

(iii) Power supplies will be wired in a redundant parallel configuration that uses multiple supplies for the DMS display matrix

(iv) Power supplies will be rated such that if one supply fails, the remaining supplies will be able to operate 100% of the pixels in that display section at full brightness when the internal DMS air temperature is less than or equal to +140° F

(v) Regulated DC power supplies will conform to the following specifications:

- 1) Maximum output power rating of 1000 watts
- 2) Operating input voltage range: +90 to +250 volts AC
- 3) Operating temperature range: -40 to +140° F
- 4) Power supply output at an ambient temperature of +140° F: 65% of the room temperature (+72° F) output
- 5) Power supply efficiency: 74%
- 6) Power factor rating: 0.95
- 7) Short circuit protection: DC power off, with an automatic reset after 5 seconds of AC power off
- 8) Minimum overload allowance protection: 105%
- 9) UL listed

(vi) Power supplies will be identical and interchangeable throughout the total number of DMS furnished under this contract

(vii) The DMS sign controller will be able to monitor power supply operational status (as “pass” or “fail”) by reading a diagnostic signal located on each supply’s DC output. The operational status of all power supplies will be reported to the DMS control software upon request

(6) Interior DMS Environment Control



(a) The DMS will contain a ventilation system that exhausts air out of the housing whenever the internal DMS air temperature exceeds +90° F. This system will be designed to keep the internal DMS air temperature lower than +140° F, when the outdoor ambient temperature is +115° F or less

(b) Exhaust fans will be the ball-bearing type and will be mounted in a line across the upper rear DMS housing wall. One fan at a minimum will be installed per each exhaust port

(c) One filtered air intake port will be provided for each exhaust fan. Intake ports will be located in a line across the bottom portion of the rear DMS wall. Each intake port will be covered with a filter that removes airborne particles measuring 500 microns in diameter and larger

(d) Fans and air filters will be removable and replaceable from the front or rear of the DMS housing

(e) An aluminum hood attached to the rear wall of the DMS will cover each air intake and exhaust port. Openings will be screened to prevent the entrance of insects and small animals. All intakes and exhaust hoods will be thoroughly sealed to prevent water from entering the DMS

(f) A thermostat used to activate the ventilation system will be located near the top of the DMS interior

(7) Communication Specifications

(a) The DMS sign controller will contain a minimum of one serial port, one dial up port and one 10/100Base-T Ethernet communication port. This port will be available for optional use for communicating from the central control system to the DMS sign controller when an Ethernet network is available. The Ethernet port will be a standard RJ-45 jack

(b) The DMS equipment and software must comply with the most recent version of the following standards, including all recommended or approved amendments, in effect as of the bid date

- (i) NTCIP 1101, NTCIP Simple Transportation Management Framework (STMF)
- (ii) NTCIP 1103, NTCIP Transportation Management Protocol (TMP)
- (iii) NTCIP 1201, NTCIP Global Object (GO) Definitions
- (iv) NTCIP 1203, NTCIP Object Definitions for Dynamic Message Signs (DMS)
- (v) NTCIP 2101, NTCIP SP-PMPP/RS232
- (vi) NTCIP 2201, NTCIP TP-Transportation Transport Profile
- (vii) NTCIP 2202, NTCIP Internet (TCP/IP and UDP/IP) Transport Profile
- (viii) NTCIP 2301, NTCIP AP-STMF

(8) Software and NTCIP Documentation

(a) Any and all software provided must be supplied with full documentation in hard copy and on CD-ROM. The manufacturer must allow the use of any and all



of the documentation described above by any party authorized by MDOT for system integration purposes, system maintenance, or system enhancement at any time, regardless of what parties are involved in the system integration effort

(b) Supply full documentation on a CD-ROM containing ASCII versions of the following Management Information Base (MIB) files in Abstract Syntax Notation 1 (ASN.1) format

(c) If the device does not support the full range of any given object within a Standard MIB Module, a manufacturer specific version of the official Standard MIB Module with the supported range indicated in ASN.1 format in the "syntax" and/or "description" field of the associated object type macro. The filename of this file must be identical to the standard MIB Module, except that it must have the extension ".man"

(9) Ambient Light and Temperature Measurement System

(a) Sensors that measure outdoor ambient light levels at the DMS site, as well as the outdoor ambient temperature, will be mounted in-line with the DMS housing walls. This ambient light and temperature measurement system will consist of three photoelectric sensors, one internal temperature sensor and one external temperature sensor

(b) Two of the photo sensors will be placed such that they measure the ambient light levels striking the front and rear DMS housing walls. The third photo sensor will be mounted to the DMS housing bottom or top. A change in the amount of light striking a photo sensor will cause its output frequency to vary. The DMS sign controller will continuously adjust LED display matrix intensity to a level that creates a legible DMS message

(10) Internal Temperature Measurement System

(a) The DMS will contain a minimum of one temperature sensor that is mounted near the top of the DMS interior. Sensors will measure a minimum temperature range of -29.2° F to +165° F. The internal temperature sensor output will be continuously monitored by the DMS sign controller and will be reported to the DMS control software upon request

(b) An ambient temperature sensor will be mounted to either the rear wall or bottom side of the DMS housing. The sensor will be placed such that it is never in direct contact with sunlight or is in any location that will generate a false temperature measurement. The external temperature sensor output will be continuously monitored by the DMS sign controller and will be reported to the DMS control software upon request

(11) Transient Protection

(a) The DMS surge protection will be a cascade protection system. A primary surge protection device (SPD), connected in parallel with the load, will have a surge capacity of 150kA, providing protection modes between Line to Neutral, Line to Line, Line to Ground. A secondary SPD will be a series connected device, either "power strip" type if modules are "plug-in" or hard wired if the DMS modules are hard wired. The secondary SPD will have a surge



current capacity of no less than 50kA and a current load of minimum 12 amps and neutral to ground

(b) The primary surge protection device will utilize metal oxide varistor (MOV) technology. The secondary surge protector will be a multi-stage, hybrid utilizing various technologies

(c) The surge protection units will have both over current and thermal safety fuses

(d) The surge protection system will reset automatically and be maintenance free

(e) The primary and secondary surge protection device will have status indicators showing "power on", good condition and failed condition

(f) Dry contacts will be incorporated into the primary surge protection device that will provide remote status indication in the event of a failure & fuse activation

(g) All wiring to/from the DMS will have "circuit appropriate" surge protectors installed at both ends, if the circuits are between the sign and controller cabinet

(h) Ambient temperature rating of the surge protection system must be a minimum of -29.2° F to +165° F

(12) Earth Grounding

(a) The DMS manufacturer will provide one earth ground lug that is electrically bonded to the DMS housing

(b) The lug will be installed near the power entrance location on the DMS housing's rear wall

(c) The DMS installation contractor will provide the balance of materials and services needed to properly earth ground the DMS

C. Sign Controller Hardware and Functional Specifications.

(1) Each DMS will use an associated sign (local) controller. The sign controller and associated communication equipment may be installed using one of the following methods:

(a) Inside ground-mounted ITS Cabinet located near the sign

(b) Inside a pole-mounted ITS Cabinet attached to the DMS support structure

(2) The sign controller will have the following characteristics:

(a) Stand-alone microprocessor-based unit with integrated watchdog circuitry

(b) Internal regulated DC power supply

(c) Memory for storing changeable and permanent messages, schedules and other necessary files for controller operation



- (d) Includes front panel user interface with LCD and keypad for direct operation and diagnostics
- (e) Mounts in a standard EIA 19-inch equipment rack using the supplied mounting hardware
- (f) Maximum weight of 10 pounds, including its enclosure
- (g) Built-in rechargeable battery backup circuit that can provide the controller with power briefly when the primary AC power source fails. Must be supplied with the sign.
- (h) Minimum one NTCIP-compliant RS-232 communication port for serial communications. One of the serial ports will have a secondary RS-422 interface option
- (i) One Ethernet port with RJ-45 connector supporting NTCIP communication
- (j) Built-in Hayes-compatible modem with standard RJ-11 connector
- (k) Operate successfully throughout a temperature range of -29.6°F to 165°F
- (l) Communicate directly with the distribution board located in the DMS, which communicates with all sensors, LED driver circuit subsystem and other devices
- (m) Include DMS-specific control firmware (embedded software) that will handle all external and internal sensors and communication inputs and drive the display modules as directed by external control software

(3) The sign controller will have non-volatile changeable memory. This memory will be formed by a combination of Flash RAM and battery-backed static RAM integrated circuits that retain the data in memory for a minimum of 30 days following a power failure. This changeable memory will be used to store messages and schedules. The sign controller will store a minimum of 500 changeable messages. Must be supplied with the sign.

(4) Front Panel User Interface

(a) The sign controller's front panel will include a keypad and LCD. These devices will be used to perform the following functions with the sign controller and DMS:

- (i) Monitor the current status of the sign controller, including the status of all sensors and a representation of the message visible on the display face
- (ii) Perform diagnostics testing of various system components, including pixels, power systems, sensors and more
- (iii) Activate messages stored in memory



(iv) Configure display parameters, including display size, colors and communications

(b) The front panel interface will also include:

(i) Power switch to turn the controller on and off and an LED “on” indicator

(ii) A “local/remote” switch with an LED indicator that places the controller in local mode such that it can be controlled from the front panel interface, instead of via the primary communication channel

(iii) Reset switch to quickly restart the controller

(iv) LED “Active” indicator blinks when the controller is operating

(v) LED to indicate when any of the NTCIP communication channels are active

(vi) A serial communication port (“Local”) will allow connecting a laptop directly to the controller

(5) Sign controller battery backup

(a) The DMS sign controller located within the ITS Cabinet will be connected to a rechargeable battery backup circuit (UPS) that will allow the controller to operate for a minimum of 30 minutes if the incoming AC power source fails. The UPS will supply enough power to backup all internal systems of the DMS sign controller, including RS-232, Ethernet and dialup modem communications. The UPS shall be supplied with the sign controller.

(6) Sign Controller Display Interface

(a) The DMS sign controller will transmit and receive data packets to and from a distribution board. The distribution board will communicate with all sensors, drivers and other devices using multiple networks running throughout the DMS

(b) Data transferred will include pixel states, sensor values and I/O readings from various devices, such as door sensors and power supply monitors. Pixel data will include the states to be displayed on the sign face as well as diagnostic data retrieved from the LED driver circuit subsystem

(c) Communication from the sign controller to the distribution board will be using fiber optic cables or copper communications cable that connect the DMS sign controller to the DMS driver board subsystem

(7) Sign Controller Addressing

(a) The DMS sign controller will use multiple types of addressing when operating on NTCIP communication networks. The addressing will be configurable through the front panel user interface



(b) When operating over PMPP serial networks (NTCIP 2101), the controller's address will be configured in the range 1 to 255. The default address will be 1

(c) When operating on Ethernet networks (NTCIP 2104), a static IP address and subnet will be used

(d) If a dial-up or direct connect serial network is configured for PPP (NTCIP 2103), then no addressing will be required

(8) DMS Intensity Control

(a) Variable message signs will include an LED intensity control system that uses pulse width modulation (PWM). Over 100 intensity levels will be available. The DMS sign controller will be able to automatically adjust the LED display matrix intensity. A system operator will be able to override the automatic system, in order to manually change the LED intensity

(b) The DMS intensity control will:

(i) Utilize three photoelectric sensors, which are provided and installed as described in the DMS specification. It will use these measurements to automatically determine which LED intensity level will provide the best legibility for the given ambient light condition

(ii) Select from a minimum of 100 LED intensity levels. LED intensity levels will be available in a range of 1% to 100% of the maximum display intensity and in increments of 1%

(iii) Not cause any flickering of the LED display matrix

(iv) Allow manual and automatic intensity control modes to be user selectable using the DMS control software, although the typical control mode will be "automatic"

(v) Allow manual intensity control from both local and remote locations

(9) LED Diagnostic Test Capability

(a) Upon command from either a remote computer or local laptop running the central control software, the sign controller will test the operation of all LED pixels and determine whether their functional status is: "Normal" or "Stuck-Off". Pixel status will be determined via A/D conversion of the LED pixel forward voltage and the resulting data will be communicated to the DMS control software

(b) The resulting data will be monitored via the front panel and will be transferred to the NTCIP interfaces

(10) Real-Time DMS Message Verification

(a) The DMS sign controller and LED module hardware will be capable of enabling the DMS Central Control operator to verify the actual message displayed on the DMS on a real-time basis



(b) This message verification will be presented in a WYSIWYG format without disrupting the message displayed on the DMS

(c) WYSIWYG will be performed automatically each time the DMS is polled for status by the central control software

(11) Power Supply Diagnostic Test Capability

(a) The sign controller will be able to determine the functional status of regulated DC power supplies located in the DMS by monitoring diagnostic outputs located on the supplies

(b) This information will be reportable as “Pass” or “Failed” to the DMS control software

(12) Response to Errors

(a) In the event of communication error between the DMS sign controller and the system control computer; the “communications loss message” will be displayed. This will be factory disabled

(b) In the event of a power failure, the “power recovery message” will be displayed. This will be factory set to blank the DMS

(c) The DMS sign controller will contain a hardware watchdog that automatically resets the controller’s microprocessor in the event of a controller lock-up.

(13) Over Temperature Shutdown

(a) The DMS will utilize an internal temperature sensor circuit that will be monitored by the sign controller

(b) The DMS will be capable of being configured to automatically blank the sign face if the internal temperature of the DMS exceeds a configurable threshold

(c) If this occurs, the sign controller will also notify the central control system.



c. Construction.

1. The Contractor is to supply all mounting bracket and required Z-bars for the permanent mounting of the DMS.

2. If the lifting eyebolts are removed from the DMS after installation, bolts will be supplied to plug and seal the holes to prevent water from entering the DMS housing.

3. Warranty.

A. The DMS must carry a manufacturer’s standard warranty (parts, labor, any required MOT) of five years from the date of installation of the individual DMS. Supply a factory trained Technician to observe and oversee the DMS installation process for each sign. The Technician is to verify that the installation practices follow the DMS vendor’s standard operating procedure (SOP) and during the installation did not in any way void or limit the vendor’s warranty. Once released by the Department and with the vendor Technician’s approval, the Warranty will begin.

(1) All Work furnished pursuant to the Contract Documents will conform to all professional engineering principles generally accepted as standards of the industry in the State

(2) The Project will be free of defects

(3) Materials and equipment furnished under the Contract Documents will be new when installed

(4) The Work will meet all of the requirements of the Contract Documents

(5) The specifications and/or drawings selected or prepared for use during construction are appropriate for their intended use

(6) The Project will be fit for use for the intended function

d. Measurement and Payment. The completed work will be paid for at the contract unit prices for the following contract items:

Contract Item (Pay Item)	Pay Unit
Dynamic Message Sign, Small	Each

Dynamic Message Sign, Small will be measured as each sign furnished. The DMS sign physical size and general matrix configuration will be as depicted by the MDOT MITS Representative.



Attachment C, Contract Price

<u>RFP</u>		<u>Unit Cost</u>
<u>ITEM</u>	<u>Unit</u>	
001	EA	52,920.00
Dynamic Message Sign, Large – Walk In		
002	EA	51,750.00
Dynamic Message Sign, Large – Front Access		
003	EA	51,750.00
Dynamic Message Sign, Large – Rear Access		
004	EA	N/A
Dynamic Message Sign, Small		
005	EA	18,200.00
Dynamic Message Sign, Small - 34H X 98W, 9 inch, 2/10		
006	EA	21,080.00
Dynamic Message Sign, Small - 34H X 140W, 9 inch, 2/16		
007	EA	23,500.00
Dynamic Message Sign, Small - 34H X 183W, 9 inch, 2/21		
008	EA	22,040.00
Dynamic Message Sign, Small - 55H X 98W, 9 inch, 3/10		
009	EA	27,860.00
Dynamic Message Sign, Small - 55H X 140W, 9 inch, 3/16		
010	EA	34,250.00
Dynamic Message Sign, Small - 55H X 183W, 9 inch, 3/21		



Attachment C, Contract Price (con't)

<u>RFP</u> <u>ITEM</u>	<u>Unit</u>	<u>Unit Cost</u>
011	EA	21,250.00
Dynamic Message Sign, Small - 45H X 132W, 12 inch, 2/10		
012	EA	24,750.00
Dynamic Message Sign, Small - 45H X 189W, 12 inch, 2/16		
013	EA	29,900.00
Dynamic Message Sign, Small - 45H X 247W, 12 inch, 2/21		
014	EA	26,140.00
Dynamic Message Sign, Small - 74H X 132W, 12 inch, 3/10		
015	EA	32,100.00
Dynamic Message Sign, Small - 74H X 189W, 12 inch, 3/16		
016	EA	39,700.00
Dynamic Message Sign, Small - 74H X 247W, 12 inch, 3/21		
017	On Site Storage Unit Delivery	0.00

This will only be paid in situations where MDOT has provided a delivery date to a specific site location and the site is not ready in the 45 calendar days as specified in Article 1.0713. This must be pre approved by MDOT MITS representative.

Exact quantities to be purchased are unknown, however, the Contractor will be required to furnish all such materials and services as may be ordered during the CONTRACT period. Quantities specified, if any, are estimates based on prior purchases, and the State is not obligated to purchase in these or any other quantities.



Attachment D, Criteria for Dynamic Message Sign, Large
MICHIGAN DEPARTMENT OF TRANSPORTATION
DYNAMIC MESSAGE SIGN PROCUREMENT

(CONTRACTOR MUST MEET THE REQUIREMENTS OUTLINED IN THE REQUEST FOR PROPOSAL DOCUMENT 07119200147)

Special Provision Section	Special Provision Page No.	Description
1 B.	1	The Vendor will provide one Auxiliary Control Panel (ACP) with each DMS
4 A.	3	Manufacturing Process Testing and Burn-in
4 A.	4	...including a required 96-hour burn-in of each DMS.
4 C.	4	Post Delivery Testing
4 D.	4	Reporting Requirements
4 E.	5	Final inspection and acceptance of the DMS will be made after
b 1.	5	The Source of Steel and Iron
b 3.	6	DMS Functional Requirements
b 3 G.	6	DMS Environmental Requirements
b I.	7	Display Requirements
b K 2.	8	The DMS vendor must supply all mounting hardware for each sign to include but not limited to, "Z" bars, brackets, connectors, clamps, etc
b M.	8	Surge Protection
B (2) b.	10	Front face panels are to provide a high-contrast background for the DMS display matrix. The aluminum mask of each panel will be semi-gloss black polyvinylidene fluoride (PVDF) coated and will contain an opening for each pixel.
B (2) c.	10	Face panels will be attached to each other using stainless steel hardware.
B (2) h.	11	Each adjacent panel must be alternately mounted into one (1) of two (2) dual tracks attached to the front face of the DMS and located above and below the LED matrix module section. There must be a series of latches to lock the panels into a fixed position with adjacent side frames overlapping in order to minimize the blockage of LED's.
B (4) (a).	12	The DMS will contain an electronically-controlled ventilation system designed to keep the internal DMS air temperature lower than +140°F, when the outdoor ambient temperature is +115°F or less.
B (4) (e).	12	Ventilation system must be positive pressure and filtered.
B (4) (h).	12	A manual override timer switch will be located just inside the access door to manually activate the ventilation system. The switch will be adjustable from zero (0) to at least four (4) hours.
C 14.	16	Auxiliary Control Panel
C (16) (a) (i).	17	The LED will have a 15-degree viewing angle for freeway DMS.
C (16) (a) (iii).	17	The LED manufacturer will perform color sorting of the bins.
C (16) (a) (iii) 1.	18	LEDs will be obtained from no more than two (2) luminous intensity "bins." The LED manufacturer will perform intensity sorting of the bins.
C (16) (b) (i).	18	Each pixel will be a maximum of 1.375 inches ± .1 inches in diameter for 15-degree LED DMS applications.



C (16) (b) (iv).	18	The LED brightness and color bins that are used in each pixel will be provided to the engineer for approval. A letter of certification from the LED manufacturer that demonstrates testing and binning according to the CIE 127 (1997) standard will be provided with the submittals.
C (16) (c) (i).	18	A pixel will contain two interlaced strings of LEDs. The pixel strings will be powered from a regulated power source.... The failure of an LED in one string within a pixel will not affect the operation of any other string or pixel.
D (2).	22	The DMS equipment and software must comply with the most recent version of the following standards, including all recommended or approved amendments, in effect as of the bid date. NTCIP 1101, Simple Transportation Management Framework (STMF). NTCIP 1103, Transportation Management Protocol (TMP). NTCIP 1201, Global Object (GO) Definitions. NTCIP 1203, Object Definitions for Dynamic Message Signs (DMS). NTCIP 2202, Internet (TCP/IP and UDP/IP) Transport Profile. NTCIP 2301, AP-STMF.
C (5) a.	23	The DMS must carry a manufacturer's standard warranty (parts, labor, any required MOT) of (5) five-years from the date of installation of the individual DMS.



Attachment E, Criteria for Dynamic Message Sign, Small

**MICHIGAN DEPARTMENT OF TRANSPORTATION
DYNAMIC MESSAGE SIGN PROCUREMENT**

(CONTRACTOR MUST MEET THE REQUIREMENTS OUTLINED IN THE REQUEST FOR PROPOSAL DOCUMENT 07119200147)

Special Provision Section	Special Provision Page No.	Description
a 4 A	3	Manufacturing Process Testing and Burn-in
a 4 A	3	...including a required 168-hour burn-in of each DMS.
a 4 C	4	Post Delivery Testing
a 4 D	4	Reporting Requirements
a 4 E	6	Final inspection and acceptance of the DMS will be made after
b 1	6	The Source of Steel and Iron
b 3	7	DMS Functional Requirements
b 3 H	7	DMS Environmental Requirements
b 3 J	8	Display Requirements
b 3 L 2	9	The DMS vendor must supply all mounting hardware for each sign to include but not limited to, "Z" bars, brackets, connectors, clamps, etc
b 3 N	10	Surge Protection
b 5 B 2 b	11	Front face panels are to provide a high-contrast background for the DMS display matrix. The aluminum shroud will be semi-gloss black polyvinylidene fluoride (PVDF) coated ...
b 5 B 3 a	12	The front of the housing must be semi-gloss PVDF...
b 5 B 4 b iv	13	Removal of a single display module from the DMS,...shall not affect the performance of any other module
b 5 B 4 c ii	13	A pixel shall consist of two (2) strings of discrete LEDs (Interlaced)
b 5 B 4 d iv	14	The LED manufacturer will perform color sorting of the bins.
b 5 B 5 a vii	15	The DMS sign Controller shall be able to monitor power supply operational status...
b 5 B 7 b	16	The DMS equipment and software must comply with the most recent version of the following standards, including all recommended or approved amendments, in effect as of the bid date. NTCIP 1101, Simple Transportation Management Framework (STMF). NTCIP 1103, Transportation Management Protocol (TMP). NTCIP 1201, Global Object (GO) Definitions. NTCIP 1203, Object Definitions for Dynamic Message Signs (DMS). NTCIP 2104, Ethernet. NTCIP 2101, SP-PMPP/RS232 NTCIP 2201, TP-Transportation Transport Profile. NTCIP 2202, Internet (TCP/IP and UDP/IP) Transport Profile. NTCIP 2301, AP-STMF.
b 5 B 9	17	Ambient Light and Temperature Measurement system
b 5 B 10	17	Internal Temperature Measurement system
b 5 C	18	Sign Controller Hardware Specifications
b 5 C 4	19	Front Panel User Interface
c 5 A	23	The DMS must carry a manufacturer's standard warranty (parts, labor, any required MOT) of (5) five-years from the date of installation of the individual DMS.