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 (2) 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 the 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 the 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 the 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 CCI 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 reserves 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 must notify the State of the proposed assignment, must introduce the individual to the appropriate State representatives, and must 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 must 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 must 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 must perform their duties either primarily at Contractor's offices and facilities or at State facilities. Without limiting the generality of the foregoing, Key Personnel must, 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 must 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 must 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 the 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 must not unnecessarily or unreasonably interfere with, delay, or otherwise impede Contractor's performance under the Contract with the requests for access.

2.067 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.

2.068 Contract Management Responsibilities

The Contractor must assume responsibility for all contractual activities, whether or not that Contractor performs them. Further, the State considers 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.

2.070 Subcontracting by Contractor

2.071 Contractor Full Responsibility

Contractor has 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 the Contract, including payment of any and all charges for Services and Deliverables.

2.072 State Consent to Delegation

Contractor must not delegate any duties under the Contract to a Subcontractor unless the MDOT-Purchasing has given written consent to such delegation. The State reserves 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 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 Subcontractor(s) for the removed Subcontractor must 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 for a 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 must require the Subcontractor, to the extent of the Services to be performed by the Subcontractor, to be bound to Contractor by the terms of the Contract and to assume toward Contractor all of the obligations and responsibilities that Contractor, by the 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 is the responsibility of Contractor, and Contractor must remain responsible for the performance of its Subcontractors to the same extent as if Contractor had not subcontracted such performance. Contractor must 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 the Contract will not relieve Contractor of any obligations or performance required under the Contract.

2.074 Flow Down

Except where specifically approved in writing by the State on a case-by-case basis, Contractor must 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 must 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 must 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 must 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 72 hours of becoming aware of the use or disclosure or the shorter time period as is reasonable under the circumstances.

2.093 PCI Data Security Standard

(a) Contractors that process, transmit or store credit/debit cardholder data, must adhere to the Payment Card Industry (PCI) Data Security Standards. The Contractor is responsible for the security of cardholder data in its possession. The data may only be used to assist the State or for other uses specifically authorized by law.

(b) The Contractor must notify the CCI (within 72 hours of discovery) of any breaches in security where cardholder data has been compromised. In that event, the Contractor must provide full cooperation to the Visa, MasterCard, Discover and state Acquirer representative(s), and/or a PCI approved third party to conduct a thorough security review. The Contractor must make the forensic report available within two weeks of completion. The review must validate compliance with the current PCI Data Security Standards for protecting cardholder data.

(c) The Contractor must properly dispose of cardholder data, in compliance with DTMB policy, when it is no longer needed. The Contractor must continue to treat cardholder data as confidential upon contract termination.

(d) The Contractor must provide the CCI with an annual Attestation of Compliance (AOC) or a Report on Compliance (ROC) showing the contractor is in compliance with the PCI Data Security Standards. The Contractor must notify the CCI of all failures to comply with the PCI Data Security Standard.

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 the Contract, is marked as confidential, proprietary, or with a similar designation by the State. "Confidential Information" excludes any information (including the Contract) that is publicly available under the Michigan FOIA.

2.102 Protection and Destruction of Confidential Information

The State and Contractor must 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 the 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 must limit disclosure of the other party's Confidential Information to employees and Subcontractors who must have access to fulfill the purposes of the Contract. Disclosure to, and use by, a Subcontractor is permissible where (A) use of a Subcontractor is authorized under the 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 2.100** 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 2.100** 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 the Contract for any reason.

2.110 Records and Inspections

2.111 Inspection of Work Performed
The State's authorized representatives, at reasonable times and with 10 days prior notice, have the right to enter the Contractor's premises or any other places where work is being performed in relation to this Contract. The representatives may inspect, monitor, or evaluate the work being performed, to the extent the access will not reasonably interfere with or jeopardize the safety or operation of Contractor's systems or facilities. The Contractor must provide reasonable assistance for the State's representatives during inspections.

2.112 Retention of Records
(a) The Contractor must retain all financial and accounting records related to this Contract for a period of 7 years after the Contractor performs any work under this Contract (Audit Period).

(b) If an audit, litigation, or other action involving the Contractor's records is initiated before the end of the Audit Period, the Contractor must retain the records 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.

2.113 Examination of Records

(a) The State, upon 10 days notice to the Contractor, may examine and copy any of the Contractor's records that relate to this Contract any time during the Audit Period. The State does not have the right to review any information deemed confidential by the Contractor if access would require the information to become publicly available. This requirement also applies to the records of any parent, affiliate, or subsidiary organization of the Contractor, or any Subcontractor that performs services in connection with this Contract.

(b) In addition to the rights conferred upon the State in paragraph (a) of this section and in accordance with MCL 18.1470, DTMB or its designee may audit the Contractor to verify compliance with the Contract. The financial and accounting records associated with the Contract shall be made available to DTMB or its designee and the auditor general, upon request, during the term of the Contract and any extension of the Contract and for 3 years after the later of the expiration date or final payment under the Contract.

2.114 Audit Resolution

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

2.115 Errors

(a) If an audit reveals any financial errors in the records provided to the State, the amount in error must be reflected as a credit or debit on the next invoice and subsequent invoices until the amount is paid or refunded in full. However, a credit or debit may not be carried forward for more than four invoices or beyond the termination of the Contract. If a balance remains after four invoices, the remaining amount will be due as a payment or refund within 45 days of the last invoice on which the balance appeared or upon termination of the Contract, whichever is earlier.

(b) In addition to other available remedies, if the difference between the State's actual payment and the correct invoice amount, as determined by an audit, is greater than 10%, the Contractor must pay all reasonable audit costs.

2.120 Warranties

2.121 Warranties and Representations

The Contractor represents and warrants:

(a) It is capable in all respects of fulfilling and must fulfill all of its obligations under the Contract. The performance of all obligations under the Contract must be provided in a timely, professional, and workman-like manner and must meet the performance and operational standards required under the 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 the 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 the 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 the 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 the 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 the 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 the 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 (2) days of learning about it.

(h) If any of the certifications, representations, or disclosures made in the Contractor's original bid response change after the Contract start date, the Contractor must report those changes immediately to DTMB-Procurement.

2.122 Warranty of Merchantability

Goods provided by Contractor under this agreement must be merchantable. All goods provided under the Contract must be of good quality within the description given by the State, must be fit for their ordinary purpose, must be adequately contained and packaged within the description given by the State, must conform to the agreed upon specifications, and must 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 must, in providing goods to the State, convey good title in those goods, whose transfer is right and lawful. All goods provided by Contractor must 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 the Contract, must be delivered free of any rightful claim of any third person by of infringement or the like.

2.125 Equipment Warranty

To the extent Contractor is responsible under the Contract for maintaining equipment/system(s), Contractor must maintain the equipment/system(s) in good operating condition and must undertake all repairs and preventive maintenance according to the applicable manufacturer's recommendations for the period specified in the Contract.

The Contractor represents and warrants that the equipment/system(s) are in good operating condition and operate and perform to the requirements and other standards of performance contained in the Contract, when installed, at the time of Final Acceptance by the State, and for a period of two (2) year commencing upon the first day following Final Acceptance.

Within 5 business days of notification from the State, the Contractor must adjust, repair or replace all equipment that is defective or not performing in compliance with the Contract. The Contractor must assume all costs for replacing parts or units and their installation including transportation and delivery fees, if any.

The Contractor must provide a toll-free telephone number to allow the State to report equipment failures and problems to be remedied by the Contractor.

The Contractor agrees that all warranty service it provides under the Contract must be performed by Original Equipment Manufacturer (OEM) trained, certified and authorized technicians.

The Contractor is the sole point of contact for warranty service. The Contractor warrants that it will pass through to the State any warranties obtained or available from the original equipment manufacturer, including any replacement, upgraded, or additional equipment warranties.

2.126 Equipment to be New

If applicable, all equipment provided under the Contract by Contractor must 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, is 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 must remain consistent for the term of the Contract, unless MDOT-Purchasing 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 the Contract.

2.130 Insurance

2.131 Liability Insurance

For the purpose of this Section, "State" includes its departments, divisions, agencies, offices, commissions, officers, employees, and agents.

(a) The Contractor must provide proof that it has obtained the minimum levels of insurance coverage indicated or required by law, whichever is greater. The insurance must protect the State from claims that may arise out of, or result from, or are alleged to arise out of, or result from, the Contractor's or a Subcontractor's performance, including any person directly or indirectly employed by the Contractor or a Subcontractor, or any person for whose acts the Contractor or a Subcontractor may be liable.

(b) The Contractor waives all rights against the State for the recovery of damages that are covered by the insurance policies the Contractor is required to maintain under this Section. The Contractor's failure to obtain and maintain the required insurance will not limit this waiver.

(c) All insurance coverage provided relative to this Contract is primary and non-contributing to any comparable liability insurance (including self-insurance) carried by the State.

(d) The State, in its sole discretion, may approve the use of a fully-funded self-insurance program in place of any specified insurance identified in this Section.

(e) Unless the State approves otherwise, any insurer must have an A.M. Best rating of "A" or better and a financial size of VII or better, or if those ratings are not available, a comparable rating from an insurance rating agency approved by the State. All policies of insurance must be issued by companies that have been approved to do business in the State.

(f) Where specific coverage limits are listed in this Section, they represent the minimum acceptable limits. If the Contractor's policy contains higher limits, the State is entitled to coverage to the extent of the higher limits.

(g) The Contractor must maintain all required insurance coverage throughout the term of this Contract and any extensions. However, in the case of claims-made Commercial General Liability policies, the Contractor must secure tail coverage for at least three (3) years following the termination of this Contract.

(h) The Contractor must provide, within five (5) business days, written notice to the Director of DTMB-Procurement if any policy required under this section is cancelled. The notice must include the applicable Contract or Purchase Order number.

(i) The minimum limits of coverage specified are not intended, and may not be construed, to limit any liability or indemnity of the Contractor to any indemnified party or other persons.
(j) The Contractor is responsible for the payment of all deductibles.
(k) If the Contractor fails to pay any premium for a required insurance policy, or if any insurer cancels or significantly reduces any required insurance without the State's approval, the State may, after giving the Contractor at least 30 days' 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 require the Contractor to pay that cost upon demand.
(l) 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 Michigan Attorney General.
(m) The Contractor is required to pay for and provide the type and amount of insurance checked ☑ below:

☑ **(i) Commercial General Liability**

Minimal Limits:

$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; and
$1,000,000 Each Occurrence Limit.

Deductible maximum:

$50,000 Each Occurrence

Additional Requirements:

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 the insurance policy contains a waiver of subrogation by the insurance company.

☐ **(ii) Umbrella or Excess Liability**

Minimal Limits:

$10,000,000.00 General Aggregate

Additional Requirements:

Umbrella or Excess Liability limits must at least apply to the insurance required in (i), General Commercial Liability. The Contractor must list the State of Michigan, its departments, divisions, agencies, offices, commissions, officers, employees, and agents as additional insureds on the certificate. The Contractor also agrees to provide evidence that insurance policies contain a waiver of subrogation by the insurance company.

☑ **(iii) Motor Vehicle**

Minimal Limits:

If a motor vehicle is used in relation to the Contractor's performance, the Contractor must have vehicle liability insurance on the motor vehicle for bodily injury and property damage as required by law.

☐ **(iv) Hired and Non-Owned Motor Vehicle**

Minimal Limits:

$1,000,000 Per Accident

Additional Requirements:

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.

☑ **(v) Workers' Compensation Insurance**

Minimal Limits:

The Contractor must provide Workers' Compensation coverage according to applicable laws governing work activities in the state of the Contractor's domicile. If the applicable coverage is provided by a self-insurer, the Contractor must provide proof of an approved self-insured authority by the jurisdiction of domicile.

For employees working outside of the state of the Contractor's domicile, the Contractor must provide certificates of insurance proving mandated coverage levels for the jurisdictions where the employees' activities occur.

Additional Requirements:

The Contractor must provide the applicable certificates of insurance and a list of states where the coverage is applicable. Contractor must provide proof that the Workers' Compensation insurance policies contain a waiver of subrogation by the insurance company, except where such a provision is prohibited or limited by the laws of the jurisdiction in which the work is to be performed.

☑ **(vi) Employers Liability**

Minimal Limits:

$100,000 Each Incident;
$100,000 Each Employee by Disease
$500,000 Aggregate Disease

Additional Requirements:

The Contractor must list the State of Michigan, its departments, divisions, agencies, offices, commissions, officers, employees, and agents as additional insureds on the certificate.

☐ **(vii) Employee Fidelity (Crime)**

Minimal Limits:

$1,000,000 Employee Theft Per Loss

Deductible Maximum:

$50,000 Per Loss

Additional Requirements:

Insurance must cover Forgery and Alteration, Theft of Money and Securities, Robbery and Safe Burglary, Computer Fraud, Funds Transfer Fraud, Money Order and Counterfeit Currency.

The Contractor must list the State of Michigan, its departments, divisions, agencies, offices, commissions, officers, employees, and agents as Loss Payees on the certificate.

☐ **(viii) Professional Liability (Errors and Omissions)**

Minimal Limits:

$3,000,000 Each Occurrence
$3,000,000 Annual Aggregate

Deductible Maximum:

$50,000 Per Loss

☐ **(ix) Medical Malpractice**

Minimal Limits:

Deductible Maximum:

$5,000 Each Occurrence

☑ **(x) Cyber Liability**

Minimal Limits:
$1,000,000 Each Occurrence
$1,000,000 Annual Aggregate

Additional Requirements:
Insurance should cover (a)unauthorized acquisition, access, use, physical taking, identity theft, mysterious disappearance, release, distribution or disclosures of personal and corporate information; (b) Transmitting or receiving malicious code via the insured's computer system; (c) Denial of service attacks or the inability to access websites or computer systems.

The Contractor must list the State of Michigan, its departments, divisions, agencies, offices, commissions, officers, employees, and agents as additional insureds on the certificate.

☐ **(xi) Property Insurance**
Property Insurance covering any loss or damage to the State-owned office space used by Contractor for any reason under this Contract, and the State-owned 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 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 a subcontract with other insurance provisions, the Contractor must require any Subcontractor to purchase and maintain the insurance coverage required in Section 2.13.1, Liability Insurance. Alternatively, the Contractor may include a Subcontractor under the Contractor's insurance on the coverage required in that Section. The failure of a Subcontractor to comply with insurance requirements does not limit the Contractor's liability or responsibility.

2.133 Certificates of Insurance

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 of Michigan, its departments, divisions, agencies, offices, commissions, officers, employees, and agents are listed as additional insureds as required. The Contractor must provide MDOT with all applicable certificates of insurance verifying insurance coverage or providing, if approved, satisfactory evidence of self-insurance as required in Section 2.13.1, Liability Insurance. Each certificate must be on the standard "Accord" form or equivalent and MUST IDENTIFY THE APPLICABLE CONTRACT OR PURCHASE ORDER NUMBER.

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 the 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 must 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 the 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 the 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 the 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 must 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 the Contract, for cause, by notifying the Contractor in writing, if the Contractor (i) breaches any of its material duties or obligations under the 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 the Contract is terminated for cause, the Contractor must pay all costs incurred by the State in terminating the 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 the 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 the Contract, provided the costs are not in excess of 50% more than the prices for the Service/Deliverables provided under the Contract.

(c) If the State chooses to partially terminate the Contract for cause, charges payable under the 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 the Contract that are terminated for cause must cease on the effective date of the termination.

(d) If the State terminates the 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 the Contract for a termination for convenience.

2.153 Termination for Convenience

The State may terminate the 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 the 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 the Contract in part, the charges payable under the Contract must be equitably adjusted to reflect those Services/Deliverables that are terminated. Services and related provisions of the 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 the Contract extends for several fiscal years, continuation of the Contract is subject to appropriation or availability of funds for the Contract. If funds to enable the State to effect continued payment under the Contract are not appropriated or otherwise made available, the State must terminate the 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 the Contract will be equitably adjusted to reflect any equipment, services or commodities not provided by reason of the reduction.

(c) If the State terminates the 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 the 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 the 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 must 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 the 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 the 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 the 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 the 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 the 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 the Contract, and may further pursue completion of the Services/Deliverables under the Contract by replacement contract or otherwise as the State may in its sole judgment deem expedient.

2.158 Reservation of Rights
Any termination of the 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 the Contract if the State (i) materially breaches its obligation to pay the Contractor undisputed amounts due and owing under the Contract, (ii) breaches its other obligations under the 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 2.190** before it terminates the Contract.

2.170 Transition Responsibilities

2.171 Contractor Transition Responsibilities
If the State terminates the 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 the 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 14 days. These efforts must include, but are not limited to, those listed in **Sections 2.171, 2.172, 2.173, 2.174, and 2.175.**

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 the 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 must 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 the Contract. The Contractor must provide the State with asset management data generated from the inception of the Contract through the date on which the Contractor is terminated in a comma-delineated format unless otherwise requested by the State. The Contractor must 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 the Contract. This must include any documentation being used by the Contractor to perform the Services under the 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 the 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 must prepare an accurate accounting from which the State and Contractor may reconcile all outstanding accounts.

2.176 State Transition Responsibilities

In the event that the 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 2.180**. 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 2.150**.

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 must 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 2.150**, 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 liable to Contractor for loss of profits because of a stop work order issued under this **Section 2.180.**

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 the Contract. If the parties are unable to resolve any disputes after compliance with the processes, the parties must meet with the Director of Procurement, DTMB, 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 (1) party to another for non-privileged information reasonably related to the Contract must 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 Procurement, DTMB, 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 must 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 2.193**.

(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 2.192** 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, or physical or mental disability. Contractor further agrees that every subcontract entered into for the performance of the Contract or any purchase order resulting from the Contract must 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 – Delete- Not Applicable

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 must 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 attorneys' 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 the Contract would cause a reasonable party to be concerned about:

(i) the ability of Contractor (or a Subcontractor) to continue to perform the 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 the 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 must be able to continue to perform the 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 DTMB-Procurement.

(2) Contractor must also notify DTMB Procurement 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 DTMB Procurement within 30 days whenever changes to company affiliations occur.

2.232 Call Center Disclosure- Deleted Not Applicable

2.233 Bankruptcy

The State may, without prejudice to any other right or remedy, terminate the 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 the 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 2.241(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)

(a) SLAs will be completed with the following operational considerations:

(i) SLAs will not be calculated for individual Incidents where any event of Excusable Failure has been determined; Incident means any interruption in Services.

(ii) SLAs will not be calculated for individual Incidents where loss of service is planned and where the State has received prior notification or coordination.

(iii) SLAs will not apply if the applicable Incident could have been prevented through planning proposed by Contractor and not implemented at the request of the State. To invoke this consideration, complete documentation relevant to the denied planning proposal must be presented to substantiate the proposal.

(iv) Time period measurements will be based on the time Incidents are received by the Contractor and the time that the State receives notification of resolution based on 24x7x365 time period, except that the time period measurement will be suspended based on the following:

1. Time period(s) will not apply where Contractor does not have access to a physical State Location and where access to the State Location is necessary for problem identification and resolution.
2. Time period(s) will not apply where Contractor needs to obtain timely and accurate information or appropriate feedback and is unable to obtain timely and accurate information or appropriate feedback from the State.

(b) Chronic Failure for any Service(s) is defined as three unscheduled outage(s) or interruption(s) on any individual Service for the same reason or cause or if the same reason or cause was reasonably discoverable in the first instance over a rolling 30 day period. Chronic Failure will result in the State's option to terminate the effected individual Service(s) and procure them from a different vendor for the chronic location(s) with Contractor to pay the difference in charges for up to three additional months. The termination of the Service must not affect any tiered pricing levels.

(c) Root Cause Analysis must be performed on any business critical outage(s) or outage(s) on Services when requested by the Contract Administrator. Contractor must provide its analysis within two weeks of outage(s) and provide a recommendation for resolution.

(d) All decimals must be rounded to two decimal places, with five and greater rounding up and four and less rounding down, unless otherwise specified.

2.243 Liquidated Damages – Delete – Not Applicable

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, 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 the Contract.

(a) Shipment responsibilities - Services performed/Deliverables provided under the 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 must be specified on the individual purchase order.

(b) Delivery locations - Services must be performed/Deliverables must 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 must 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 2.253**.

(d) The State must 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 (3) opportunities (the original and two (2) 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 (5) 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 must 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 must be made at no additional charge. Upon receipt of a corrected Deliverable from Contractor, the State must 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 must 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 must be made at no additional charge. Upon implementation of a corrected Service from Contractor, the State must 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 must 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 must be made at no additional charge. Upon receipt of a corrected Deliverable from the Contractor, the State must 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 must 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 must 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 must 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 must adhere to all existing standards as described within the comprehensive listing of the State's existing technology standards at http://www.michigan.gov/dmb/0,4568,7-150-56355-108233--,00.html.

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/cybersecurity/0,1607,7-217-34395_34476---,00.html. 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.

2.274 Electronic Receipt Processing Standard

All electronic commerce applications that allow for electronic receipt of credit/debit card and electronic check (ACH) transactions must be processed via the Centralized Electronic Payment Authorization System (CEPAS).

2.280 Extended Purchasing Program

2.281 Extended Purchasing Program

The Agreement will be extended to MiDEAL members. MiDEAL members include local units of government, school districts, universities, community colleges, and nonprofit hospitals. A current list of MiDEAL members is available at www.michigan.gov/mideal. Upon mutual written agreement between the State of Michigan and the Contractor, this Agreement may be extended to (a) State of Michigan employees, or (b) other states (including governmental subdivisions and authorized entities

If extended, the Contractor must supply all goods and services at the established Agreement prices and terms. The State reserves the right to negotiate additional discounts based on any increased volume generated by such extensions.

The Contractor must submit invoices to, and receive payment from, extended purchasing program members on a direct and individual basis."

2.290 Environmental Provision

2.291 Environmental Provision

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 such 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 **Section 2.242** for a 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 must 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 the Contract.

Environmental Performance:
Waste Reduction Program: Contractor must establish a program to promote cost-effective waste reduction in all operations and facilities covered by the Contract. The Contractor's programs must 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

Equipment, materials, or supplies, that will be furnished to the State under the Contract must not be produced in whole or in part by forced labor, convict labor, forced or indentured child 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: Proposal Pricing

(Amended 7-25-2013)

	Item	Estimated Annual Quantity	Unit	Estimated Contract Quantity (3 Yr)	Unit Price	Extended Price (3 yr)	Comments
Equipment							
	Non-WMT AVL Package	NA	Each	2243	$ 494.40	$1,133,916.80	For Non-Winter Maintenance Trucks (NWMT's). Includes smaller AVL controller with modem and on board storage. Also includes sensors and wiring to monitor engine hours and miles traveled. Must be capable of accepting sensors for additional metrics in the future. Must meet the requirements of the RFP.
	WMT AVL Package Breakdown						
	MDC-004 Unit				$ 2,754.46	ea	
	Material Flow Meter Solid				$ 179.15	ea	
	Road Watch Temperature Sensor Converter Box				$ 153.76	ea	For Winter Maintenance Trucks (WMT's). Larger AVL controller with modem with larger on board storage capacity and more sensor ports. Also includes sensors and wiring harness for hours, miles, air and pavt temp, blade with wing up/down, gate/flow meter, dickey-john corrector/ material type/rate. Must be capable of accepting sensors for additional metrics in the future. Must meet the requirements of the RFP.
	Pre-wet Sensors				$ 254.25	ea	
	Hydraulic Flow Meter Sensor				$ 521.40	ea	
	Plow Blade Sensors				$ 265.48	ea	
	WMT AVL Package	NA	Each	338	$ 4,250.49	$1,436,666.84	
	In-cab Display Screen Package (Optional)	NA	Each	200	$ 270.00	$54,000.00	Optical touch screen and wiring for WMT's. For displaying MOSS recommendations and maps to operator.
	Camera Package (Optional)	NA	Each	200	$ 72.00	$14,400.00	Optional front view camera and wiring for WMT's.
	Miscellaneous Equipment	NA	Each	1	NA	NA	Included non identified components that are part of the equipment packages that may be purchased by Department individually for replacement parts after equipment warranty period is over. (such as individual sensors and wires, etc) The vendor shall submit a price per component type before filling an order, for review by the Department.
Communications							
	Monthly WMT High Data Cellular Data Plan	2028	Month	6084	$ 49.50	$ 301,158.00	For WMT's during the winter months (338 WMT * 6 month = 2028). To keep website and MOSS within 1 minute of real-time conditions. Data provider invoices must be disclosed to MDOT.
	Monthly WMT Low Data Cellular Data Plan	2028	Month	6084	$ 22.00	$ 133,848.00	For WMT's in summer months (338 WMT * 6 month = 2028). To update website at least once per day. Data provider invoices must be disclosed to MDOT.
	Monthly Non-WMT Low Data Cellular Data Plan	26964	Month	80892	$ 7.70	$ 622,868.42	For non-WMT's year round (2243 Non-WMT * 12 month = 26964). To update website at least once per day. Data provider invoices must be disclosed to MDOT.
MOSS							
	MOSS Annual Service Fee	1	Annual LSUM	3	$ 132,011.86	$ 396,035.58	Forecasting, Decision support tools, and license fees.
	MOSS Route Configuration	NA	Each	150	$ 146.92	$ 21,992.85	One time set up of maintenance route parameters to represent adjacent routes. It is anticipated that 4-5 primary routes will be required per MDOT garage location/geographical region (routes will be determined by CO). MOSS routes must be configured for the MOSS to be considered functional.
	Monthly MOSS 3-Way WMT Communication	1200	Month	3600	$ 3.54	$ 13,353.42	Monthly weather forecasting and treatment recommendations to WMT's w/in cab display screen (200 WMT * 6 month = 1200)
	Monthly MOSS Website Management Per Truck	2028	Month	6084	$ 54.83	$ 329,333.00	For WMT's and in winter months. To provide treatment recommendations and monitor parameters for each WMT (338 WMT * 6 month = 2028).
Vendor Services							
	Project Management	12	Month	36	$ 9,495.37	$ 341,833.32	Monthly fee for managing aspects of the contract including reports, orders and invoices.
	Installation and Equipment Maintenance Training Oversight	40	Hour	40	$ 1,387.50	$55,800.00	On site time at MDOT facility for equipment installation and maintenance training. Per MDOT request. 1 AVL rep per request.
	Contractor Travel Expenses	1	Each	1	NA	NA	Reimbursement of Travel Expenses with receipts per MDOT Travel Regulations see Attachment E.
	Annual Website Usage Training	20	Hour	60	$ 8,268.82	$19,105.86	On site time at MDOT facility to train users on use of AVL site and features. Per MDOT request. 1 AVL rep per request. Must also provide users guide/manual plus video tutorial.
	Annual Technical Support	1	Annual LSUM	3	$ 59,472.00	$178,416.00	Yearly fee for troubleshooting issues with website(s), equipment, data needs, etc. Remote assistance within one hour of problem detected. On site support must occur within 2 business days if requested by CO.
	Annual Data Storage	1	Annual LSUM	3	$ 83,143.33	$ 249,429.99	Yearly fee for storing all requested data off MDOT vehicles, on Vendor Servers. Unlimited data capacity is included in this item. Servers must be new.
	Annual AVL Website Management	NA	Each	2535	$ 30.63	$ 77,673.33	Yearly fee for AVL vendor to maintain secure website and format collected data for mapping and reporting purposes by MDOT for all assets instrumented with AVL units, from the site. Unlimited licenses and secure log in will be given to MDOT to use at the department's discretion.
						Extended Price Total	
						$ 5,363,036.35	

Attachment B:

MDOT AVL-GPS System Requirements

Requirements listed below are minimum specifications for the AVL-GPS System and Services

Category 1	Equipment
	General
B.1.1	Vehicle Mounted Hardware – All equipment must be solid state with no moving parts such as fans and all communication hardware shall be fully integrated into the housing with no openings. The unit will be enclosed by a ruggedized case.
B.1.2	All equipment must be "off the shelf" and currently used by other agencies/ groups for AVL.
B.1.3	All equipment shall be uniform within the two asset classifications (WMT and Non-WMT) and must be operational across all vehicle types.
B.1.4	System Data Storage - The system must support at least 1 GB flash memory for storage of data over extended periods of power loss or 48 hours of observations whichever is greater. (This allows for storing all readings until 802.11 b/g or GPRS coverage is re-established then transmitting the stored data to provide an updated history of the vehicle.)
B.1.5	Delayed Data Transmission - The system must provide *Store and Forward* capabilities capable of storing over 1 GB of information while out of cellular communications coverage and automatically forwarding the same when back in coverage. (System collects vehicle activity data and geo-stamp data and stores onboard until data can be securely transmitted to provide a detailed historical record of activity while in the field.)
B.1.6	Power Loss - The system must provide ability to detect and report previous power loss if unit is disconnected then reconnected. (This reports if someone was to disable the system during their shift whether inadvertent or intentional.)
B.1.7	Power – The unit shall run off the vehicles power system.
B.1.8	Upon vehicle ignition, the vehicle will automatically report to the system. No operator interface will be necessary to begin transmitting position and sensor data. All information on vehicle status shall be stored and accessible on through an online database
B.1.9	AVL control unit must feature a power management feature or "sleep mode" and/or "Charge guard". This is to ensure that the vehicle battery is not discharged, after the vehicle is turned off. The current draw (Amps) of the AVL package must be minimal and allow for vehicles to sit unused for up to 2 months without discharging battery.
B.1.10	Power Surge/Failure – Unit shall have built in protection from low and high voltages.
B.1.11	System Operation - System must meet SAE J1455 environmental specifications and provide +/- 25g shock rating (Provides a ruggedized solution in the high abuse environment that system will be used in.) Operating temperature shall be in the range from -40 F to 140 F and operating humidity up to 95%.
B.1.12	The unit will produce low heat and have a low power consuming processer with a minimum processing speed of 1 Ghz.

B.1.13	GPS unit shall be satellite based GPS with WAAS enhanced accuracy. There will be a 12 parallel channel, Wide Area Augmentation System (WAAS) enabled GPS receiver.
B.1.14	GPS receiver must be accurate to less than 2 meters.
B.1.15	GPS output interval shall be programmable as determined by the Department with collection intervals at least once every second. The ability to remotely configure collection intervals on GPS units shall be available.
B.1.16	Remote Updates - System must support over-the-air firmware updates. (This allows for updating the system without the need to physically connect to each unit to manually update them.)
B.1.17	Antenna – The antenna shall be internal to the system.
B.1.18	Universal Time – System will synchronize both the unit and database to the universal time clock and time stamp all data collected.
B.1.19	System Operation – The system shall transmit from all integrated sensors simultaneously with the timestamp.
B.1.20	All connections between sensors and equipment must be hard-wire ruggedized connections.
B.1.21	System must not interfere with Original Equipment Manufacturer (OEM) electronics
B.1.22	Sensor Output – Capable of sending sensor data in its original format for data integrity and/or processing controller, camera and/or other data for in vehicle display and other purposes.
B.1.23	The system must be able to interface to on-board discrete sensor inputs and 3rd party data logging systems simultaneously.
B.1.24	The AVL control unit must be able to communicate with on-board equipment sensors installed on the vehicle to report their present status and changes to their status in real-time. The sensors, such as proximity switches, infrared, magnetic read switches, micro limit switches or equivalent must be able to communicate their present status to the equipment with necessary cabling connected to onboard equipment when required.
B.1.25	The AVL system shall be programmable in common full programming language such as JAVA, to accept input from sensors provided by the contractor, or third party.
B.1.26	Additional Software – The system will be capable of carrying additional VPN software at the department's discretion.
B.1.27	Troubleshooting – the system shall have self diagnostic capabilities to facilitate troubleshooting and maintenance activities.
B.1.28	Warranty – The system shall be warranted for a two year period following installation and final acceptance of each package as defined in the RFP
B.1.29	The system must allow for future enhancements that can allow for easy configuration, expansion and scalability. (examples include: additional sensors, control units, hardware)
B.1.30	System Transfer – The AVL system must allow for transferal to replacement vehicles with minimal reprogramming and downtime. If a memory chip is used, there must be easy access to it should its replacement or reprogramming be necessary.
	Non-WMT Package Only
B.1.31	*Non-WMT Package AVL Control Unit*: Simple Tracking unit must at a minimum be able to interface to two (2) inputs.

	WMT Package Only
B.1.32	*WMT Package AVL Control Unit (with on-board systems integration functionality)*: AVL control unit must at a minimum be able to interface at least 16 digital sensor inputs, four (4) analog to digital input, four (4) dedicated outputs, two (2) RS232 communication Ports, two (2) USB Ports, and an Ethernet port.
B.1.33	System Display Screen – Internally configured to support an in vehicle display screen, whether screen is used or not.
B.1.34	The display screen shall be sized a minimum of 6 x 8 inches.
B.1.35	In cab display system controls- Any operator controls for the display screen must only be allowed to function when the vehicle is stopped or traveling less than 3 mph.
B.1.36	The AVL system shall include sensors able to collect data from the spreader controller or other supplemental equipment for the following data:
a.	Plow Sensor (front plow, wing, underbody, tow plow)
b.	Pavement Temperature and Ambient Sensor
c.	Auger Feedback Sensor
d.	Gate Sensor
e.	Hydraulic Flow Meter Sensor
f.	Material Flow Meter Sensor (to monitor if material is dispensing from WMT and to verify spreader controller).
B.1.37	For all salt spreader controls, the data should be collected, stored and reported whenever a change to any of the following fields occurs: solid material type (eg salt/sand), solid material spread rate, solid material spread width, gate setting, blast on/off, pause on/off, liquid material spread rate, prewet on/off, and error status – depending on the availability for the particular spreader controller.
B.1.38	The system shall be capable of interfacing to the vehicle's on-board computer to collect engine data available via OBDII and the SAE standard J1708/1587, CANBUS, and J1939 networks. Such information may include but not be limited to: • Engine Speed; • RPM; • Coolant Temperature; • Fuel Level; • Trip Fuel; • Oil Pressure; and • Battery Voltage.
B.1.39	If Engine Hours and Odometer values are unavailable from the vehicle's on-board computer the system must be able to calculate virtual Odometer and Engine Hours based on the reporting of the vehicle and GPS distance. However, The system must provide user-configurable odometer and hour meter synching to the vehicle's actual odometer and hour meter. On board odometer and hour meter takes precedence over any virtual data.
B.1.40	Spreader Controller Integration – The system must integrate with Dickey John Control Point and ICS2000 controllers and the AVL modem. Any modification to the system is at the expense of the contractor.

B.1.41	The system shall allow for an optional front mount camera, to be powered off of the AVL.
Category 2	**Communications**
B.2.1	Communications – The communications technology to be used for transmitting data must be dual mode – 802.11 b/g and GSM/GPRS. System must include all necessary hardware items, processors, antennas, etc. (This provides the flexibility to use either 802.11 b/g wireless or GPRS to do automatic data downloads if necessary.)
B.2.2	Data Transfer – Unit shall transmit data using the TCP/IP protocol. All services used shall be RFC compliant.
B.2.3	Cellular communications – The unit shall be able to operate on multiple major cellular carriers and or private networks, in different parts of the state, with the simple replacement of the communications module.
B.2.4	Cellular Coverage - The AVL system must be able to transmit data from at least 90% of the MDOT roadway network across the state.
B.2.5	Non-WMT Communications– The Cellular data plan must allow for data transmittal to the mapping website at least once per day for non-WMTs from January 1st thru December 31st
B.2.6	WMT Communications– The Cellular data plan must allow for data transmittal to the mapping website at least once per day for WMTs during non-winter months, defined as being from April 30th to October 31st. The cellular data plan must allow for data transmittal to the MDSS provider and the mapping website(s) to be at least 60 seconds within real time conditions for WMTs during winter months, which is defined as being from November 1st thru April 30th. The definition of winter, and non-winter months are subject to change by the CCI.
B.2.7	Communications – Capable of using and changing carriers by changing carrier connection card or module without changing or replacing unit or other equipment.
B.2.8	Communications – Capable of migrating to next generation communication technologies with change of connection card or module without changing or replacing unit or other equipment.
B.2.9	Vehicle remote configuration must be web browser based, which is capable of logging into the AVL control unit to: • Set distance and time reporting intervals • Set destinations for data communications • Detect Sensor status changes and expansion of devices
B.2.10	2 way communication capabilities – provide capability to send messages and images to the vehicle as well as receive data and images from the vehicle when 2-way communication equipment is installed in vehicle.
B.2.11	Individual vs. Group/Fleet messaging – When 2 way communication is set up with vehicle it will provide messaging capabilities for one, all or groups of trucks, without use or additional cost of "text messaging".

B.2.12	The data from the equipment to the database shall include the following near real-time as well as recorded historical information, a) Vehicle speed, direction and location, b) Engine on or off, c) Engine idling vs. running time comparisons, d) Time and distance by each monitored sensor, e) Stop time data.
Category 3	**MDSS (also refer to Attachment D-MDSS System Requirements)**
B.3.1	MDSS Integration
a.	In vehicle mobile data collection units with integrated maintenance decision support systems, in accordance with these Specifications – The unit shall be of such design and construction as to comply with the requirement hereinafter stated and any parts or attachments necessary to form a complete, functioning unit must be furnished, whether specifically mention herein or not.
b.	Required NTCIP Compliance – All equipment and software must be compliant with NTCIP standard 1204.
c.	All costs to enable proper communication between the MDSS and weather forecasting provider and the optional in vehicle display screen will be borne by the contractor. The in vehicle display screen shall display local radar, short term weather forecast and recommended maintenance treatment.
d.	The MDSS shall also conform to specifications detailed in Attachment D
B.3.2	a. The Contractor shall demonstrate an understanding of Michigan weather and climatology, as well as a thorough knowledge of winter weather patterns and the variations within the State. b. The Contractor shall demonstrate an understanding of MDOT's trunk line system and its winter maintenance practices. c. The weather forecasting system shall include integrated MDSS functionality to support appropriate road maintenance actions that result in optimal road surface results with efficient use of resources for specific weather conditions. Treatment recommendations shall be provided for each hour of the forecast when indicated by the current and future pavement and weather forecast parameters. d. The system shall support the FHWA Pavement Recommendation Rules of Practice regime as the default treatment recommendations for specific weather situations. It shall also allow users to incorporate their own customized treatment plan recommendations to reflect individual best practices in chemical application, timing, type and rate as well as plowing actions. Users must also be able to select the appropriate route cycle times or times for their routes. Treatment recommendations must be provided for the next 48 hours to indicate required actions prior to, during, and after a storm.
B.3.3	All forecasts provided by the Contractor will become the property of the Department. The Department may, at its discretion, share the forecast with other agencies as appropriate. A unique forecast shall be provided for each localized area/route.
B.3.4	Maintenance Decision Support tools including road treatment recommendations

	will be required November 1st through April 30th, unless otherwise instructed by the CCI
B.3.5	Short-Term Forecasts Nov 1 to April 30 only- Shall be provided in accordance with Attachment D-MDSS System Requirements.
B.3.6	Long-Term Forecast shall be provided once daily and shall cover a period of 1 to 10 days. The long-term forecast shall be provided year round.
B.3.7	A system shall be provided that allows a user to obtain all forecast and treatment data, both in the office and at home, through an internet connection at all times.
B.3.9	Forecasting parameters shall be selectable enabling each one to be turned on or off.
B.3.10	Forecasts shall be displayed hourly for 48 hours and daily for 10 days.
B.3.11	Users shall be able to select customizable alerts for specific weather data or sensor data. Limits shall be selectable for each alert. Users will have the option of getting alerts via text, phone, or email
Category 4	**Vendor Services**
B.4.1	As it pertains to this contract Business days are defined as 8:00 a.m. to 5:00 p.m. Eastern Standard Time, Monday thru Friday.
B.4.2	WMT Installation – A minimum of 10 AVL/GPS WMT packages, at two locations (total of 20 equipment packages), shall be installed by Department staff with onsite guidance by the contractor. A detailed installation manual must be provided to Department before installation.
B.4.3	On-site maintenance training – The contractor shall provide at least one on-site, in-person training session on preventative maintenance and basic repairs of AVL equipment packages and any furnished sensors. Site to be determined by CCI
B.4.4	All trainings shall be available on-site and consist of at least ½ day sessions. Training sessions shall accommodate up to 15 people per session. Training materials shall be given as hard copy and available electronically. Site to be determined by CCI
B.4.5	Specialty Installation Tools – The contractor shall provide any and all specialty tools required to perform the installations.
B.4.6	User Training – The contractor shall provide at least one annual training session on how to use all furnished software.
B.4.7	Collected data shall be accessible to Department staff on-line for a period of up to two (2) years from date of collection. Data beyond the 2 year period may be archived but shall be reinstated online and available to the users upon request by the Department. Data shall be archived indefinitely.
B.4.8	Archived Data – All data collected on behalf of the Department shall be stored by the vendor for the entire life of the contract and must be readily accessible on website within 2 business days of a request.
B.4.9	All data collected is the property of the Department and shall be turned over to the Department at the end of the contract.
B.4.10	Technical Support – The contractor shall provide support via telephone and email

	for maintenance problems regarding the AVL system hardware or software and provide remote assistance within one hour of problem detected. On-site support must occur within 2 business days if requested by CCI.
B.4.11	Single Contact – The contractor shall provide a single point of contact for technical support for the entire AVL system, with the exception of non-contractor furnished sensors and communications.
B.4.12	Software Edition or Version – Unless otherwise specified, the software and firmware must be the latest edition or version offered.
B.4.13	Spares – The contractor shall have sufficient amount of replacement AVL equipment packages on hand to provide Department replacement packages within 2 business days of being notified of defective/non-functioning equipment to provide a consistent level of service.
B.4.14	Preventative Maintenance – Documentation on preventative maintenance of hardware will be included with AVL Equipment Packages and be required to occur no more than twice a year.
B.4.15	AVL Data Management and Access – the AVL information collection, storage, and mapping website shall be designed, owned and operated by the contractor at a location of the contractor's choice, outside of the Department network and accessible to the Department and other agencies via the internet, using a standard web-browser.
B.4.16	The contractor server must receive data from all vehicles with AVL purchased to be processed on a secure website.
Category 5	**Website, Mapping, and Reports**
B.5.1	User Website - The system must be a web-hosted solution accessible from any web browser with the appropriate User Name and Login credentials.
B.5.2	User Logins – The system must provide unlimited user names and unlimited access. It is expected that potentially 500 Department staff statewide will require user names and passwords.
B.5.3	Multiple users shall be able to access the information simultaneously from multiple locations.
B.5.4	User privileges shall be based on assigned username and password. System shall allow modification of the number of vehicles to be monitored, sensors to be monitored and monitor characteristics. User access levels shall be configurable for type of user (i.e. administrator, management, various office/agency level), as defined by the CCI.
B.5.5	Database – The AVL database system must have the ability to be in continuous operation 24 hours per day, 365 days per year and must be capable of handling year-end changes and daylight savings changes with no impact to the system.
B.5.6	Database Backup/Recovery – The AVL database system must provide for automatic recovery after any type of network failure. System must allow a means of automatic data archival and backup without system interruption.
B.5.7	Database Access – Data can be accessed, stored and archived by the Department in a relational database. Database should be designed to preserve the integrity of

	collected data, include a dictionary and relationship diagram for translation, and facilitate access and integration into other systems and applications.
B.5.8	Website – Data must be on-line at all times. Vendor must take precautions to prevent downtime.
B.5.9	User interface shall utilize point and click features as much as possible to increase ease of use and limit input user error.
B.5.10	Website - Color coded icons for at-a-glance status will be used.
B.5.11	Data Access - The system must include a web services Application Programming Interface (API) to allow read only secured access for raw data retrieval for use in other relational database applications (such as GIS mapping or other customer uses).
	Mapping
B.5.12	Users shall be able to view the position of their fleet vehicles at any point of time via a standard web browser on from a computer, tablet, and/or smartphone. The primary display shall be a map view of fleet vehicles and indicate the status of vehicles on when it last reported.
B.5.13	Each vehicle on the map should have a unique identifier, such as license plate, as determined by CCI.
B.5.14	The system must provide a minimum of the following mapping and reporting information: a. Last known asset location map view – fleet wide view b. Dispatch map (full screen "live" view) c. Asset last location relative to home (pre-determined address) d. Asset Odometer readings e. Total engine hours f. Last time asset reported in g. Last known location (individual asset map view) h. Historical trip report (individual asset map view) i. Raw data report showing exact data string as it was sent from spreader control (required for analyzing reports) i. Speed ii. Idling iii. Operating during "off" hours iv. Power v. Geo fence (in/out) vi. Temperature (custom attention required) j. View Maintenance History/Update Maintenance Record k. Ping Asset (Short Message Service(SMS) report) n. Distance measurement tool within the fleet-wide map view
B.5.15	The system must also provide the following mapping and reporting information: a. Vehicle Identifier (required) This should be an identifier that is unique to the organization from which the data is being collected. b. Time (required) This should be a complete description of the date and time of the report

	to within 1 second of accuracy. It can be in the form of a string (e.g., "12/20/2013 3:43 AM EST" or "1-20-2005 9:43 UTC") or numeric (such as a Unix timestamp, which is a count of seconds since a certain point in history). The form of string representations of the date & time is flexible, but should include at least the year, month, day, hour, minute, second and time zone of the observation (Eastern Standard Time). c. Location (required) Location information should be provided in the form of a GPS latitude and longitude associated with the vehicle's location at the time of the report. Three or more decimals of accuracy are required. d. Lane Identifier (required) This should be an identifier that can be used to uniquely determine the lane or lanes that a report applies to. e. Maintenance Data i. Plow Position (optional) ii. Scraper/Underbody Position (required) iii. Wing Position (optional) iv. Material Applied (required) v. Material Form (required) vi. Application Rate (required) vii. Application Rate Units (required) viii. Road Temperature (required) ix. Air Temperature (optional) x. Camera Feed (optional) Programmed to collect a time stamped forward camera image when option is installed.
B.5.16	The map display shall be such that vehicle position and status automatically update on screen without any input form the end-user, additionally, end-users shall be able to view the status of monitored on-board vehicle equipment.
B.5.17	The system shall allow viewing of a vehicle in motion leaving tracks or "breadcrumbs" as it travels with arrow indicators for direction and showing all operations (GPS & Telematic data) as they occur including exact street location. Users shall be able to view the above mentioned data for their entire fleet or select a specific vehicle(s) for a login session using a Filter Tool.
B.5.18	User shall be able to toggle back and forth between mapping interface and other features without having to close screens.
B.5.19	The System shall have the capability to enter an address or select a landmark to display at a minimum the 5 closest vehicles to that location including vehicle ID & distance to the specified location.
B.5.20	The system must have the capability to create, edit, and delete landmarks and/or geofences to be displayed on the map. In addition the landmark/geofence shall be identified in the reports.
B.5.21	The system must have an easy 'intuitive' navigation sequence (i.e. navigator bar and/or tabs for easy access to various functional screens). Tools shall include but not be limited to: • Map navigational tools (zoom in/out, center, pan, etc.);

	• Automatic Vehicle Location Tool; • Breadcrumbs; • Filter Tool; • Historical Data; and Reports.
B.5.22	User shall have options to select from different map views of the map in order to accommodate varying business requirements, desktop equipment performance and Internet connectivity.
B.5.23	The system shall include a playback feature allowing users to review historical data for selected vehicle(s), date(s) and timeframe. This data shall be made outputted via map based (graphical) and/or text based report. When reviewing the data graphically, the playback feature shall have pause, fast forward and rewind capabilities for ease of use.
B.5.24	Playback history shall include the ability to leave tracks or "breadcrumbs" depicting progress and direction along a roadway. This function shall enable the user to view data that has been collected from the vehicle (GPS and telematic data).
B.5.25	Maps – fully licensed maps included. Maps must also integrate with the Department's GIS framework which includes all route and mile marker identifications.
B.5.26	Reports shall be available for users by interactively selecting an area using the map interface.
	Reports
B.5.27	Data Exports – Reports must be exportable to Microsoft Excel, Microsoft Word, .csv format , and other relational databases.
B.5.28	Vehicle Usage Report - The system must provide Daily, Weekly, Monthly and Custom usage reports to accurately display vehicle utilization as well as hourly usage reports to reflect how many minutes in each hour a vehicle was in use.
B.5.29	M5 Vehicle Usage Reports - The system must also be capable of formatting the data for vehicle usage according to Attachment C, "M5 Standard Meter Interface Directions".
B.5.30	Vehicle Mileage Report **(All Vehicles)** – The system must provide a vehicle mileage report with user selectable date ranges showing miles traveled per day and first start/last stop times for each day in the selected date range.
B.5.31	Vehicle Hours Report **(All Vehicles)** – The system must provide an engine hour report with user selectable date ranges showing engine hour usage per day and first start/last stop times for each day in the selected date range.
B.5.32	Custom Reports **(WMT Fleet only)** – The system must provide a custom input usage report with user selectable date ranges showing usage of monitored auxiliary equipment such as underbody blades, temperature sensors, and additional components. Report must be able to show all activity or be run on a single auxiliary equipment input such as plow position.
B.5.33	Material Usage Report **(WMT Fleet only)** - System must provide material usage reports to accurately track the amount of granular material, pre-wet and/or direct liquid that was applied to a predefined section of roadway, or "zone". (for spreader integrated equipment only).

B.5.34	Vendor must be able to provide data from all salt spreader controllers into one report. Users shall be able to select all, multiple, or individual vehicles and date(s) and timeframe for each report. Report shall output at a minimum vehicle ID, date/time, vehicle spreading time/distance, deadheading time/distance, vehicle total travel time/distance, dry material usage (pounds / lane mile), liquid material usage, avg. application rate.
B.5.35	The system shall provide easy to use reporting tools to provide all reported data. Reports should have the option of exporting to Excel, .CSV or other relational databases.
B.5.36	The system shall be able to generate summary reports based on the user's input parameters. Each user shall have the ability to configure the parameters included in a report
B.5.37	Reports shall be configured to select either a single vehicle or group of vehicles.
B.5.38	It must be possible to generate additional user defined reports. These include, but are not limited to:
a.	Zone/Route report
b.	Fleet Start/Stop Report
c.	Individual Vehicle Mileage Report
d.	Daily/Weekly/Monthly Asset Usage Report
e.	Custom Asset Usage Report
f.	Custom Input Usage Report (6 discreet inputs)
g.	Asset Distance Report
h.	Exception Reports
B.5.39	In addition to standard reports, the system must be capable of generating exception reports for parameters such as • Stop times • Speed • Idle time • Zones • Input based exceptions (i.e. Panic buttons, PTO times, etc.) • Data logging exceptions (i.e. mileage, odometer value, etc.) • Exception reports
B.5.40	Exception reports shall be configurable by each user and the capability to generate an exception report from a combination of 2 or more parameters must be possible. i.e it must be possible for a user to create an exception report for WMTs that are applying material and traveling above a requested speed.
B.5.41	All exception report shall have the capability to be displayed on the website and as well as being sent automatically to specified users via email and or text message (as defined by the user).
B.5.42	The system shall provide an easy to use reporting tool to provide vehicle and material information such as date, time started, time completed, total miles traveled, total miles spread, total dead head miles, material usage (Ton), application rate, Liquid usage (gal), liquid application rate, and totals of the above information per snow event/storm.

Attachment D:
Maintenance Decision Support System (MDSS) Requirements

The MDSS ("System") shall detect, diagnose, forecast, and display surface transportation weather phenomena, road condition information, and winter maintenance treatment recommendations (described herein) for supporting winter road maintenance operations (e.g., snow plowing, deicing, anti-icing, etc.).

The System shall include the capability to selectively archive data and display archived data and products. The System shall include the capability to routinely monitor the system status. The System shall be fault tolerant with high reliability. The System shall be designed in accordance with standard commercial practices for software development. The System shall be designed to make reasonable allowance for expansion of computing power. The System software shall be designed to ensure that it can run on commercial-off-the-shelf hardware commonly available; that is, no special hardware development will be necessary. The System shall be designed to ensure that it can incorporate weather and road data from disparate sources (e.g., National Weather Service (NWS), Department AVL/GPS, Department Connected Vehicle projects, mesonetworks, RWIS, AWOS, etc.). The System (including all servers and displays) shall be synchronized using a time standard. The System shall include the capability to playback historical data for demonstration, training, and analysis purposes. The System shall use Local Time (LT) for all displays.

The System displays shall be implemented in English with English units as the default setting. The System shall integrate environmental (weather), road condition and transportation operational data in a manner that allows it to provide predictions of pavement conditions (e.g., pavement temperature, precipitation accumulation, anti-icing chemical effectiveness, etc.) associated with winter road maintenance.

Using the pavement condition and environmental prediction information, the System shall provide decision support guidance to winter road maintenance practitioners and the guidance shall include information related to treatment options (e.g., plow, deice, anti-ice, etc.), timing of application, location of application, and amount of application) based on current and predicted weather conditions. The System shall notify users when data updates (e.g., new forecasts) are available and the updates shall be loaded when the user selects to do so.

MDSS Coverage Area

The System shall be designed to operate (via configurable files) in any user-defined region (e.g., state, city, county, etc.) that has input data necessary to support its operations. The System shall generate weather forecasts for zones or regions around the State as identified by the user (e.g., forecast zones, maintenance zones, etc.). The System shall provide weather and road condition products (via configurable files) for road routes (maintenance routes) identified by the user. The System shall be configured to provide weather and road condition products for user identified road maintenance routes.

Weather Forecast Products

Weather forecast products refer to weather elements above the ground. Weather forecast products shall be provided out to at least 48 hours. Weather forecast products shall have a temporal resolution of at least one hour. Weather forecast products shall be updated no less than every three hours; that is, a new 48-hour forecast shall be provided every three hours.

The following weather forecast products shall be provided 2 meters above ground level (AGL), unless otherwise noted:

a) Surface air temperature
b) Surface dew point
c) Surface relative humidity
d) Surface wind speed & direction
e) Surface wind gust
f) Precipitation type
g) Precipitation rate
h) Snowfall accumulation (e.g., 3-hr total, 6-hr total, and total accumulation during the forecast period)
i) NWS watches, warnings and advisories

The weather forecast products shall be geo-referenced to the DOT domain using map overlays that include roads, road designators, political boundaries, etc.

Surface Air Temperature Forecast Product

The output (content) of the Surface Air Temperature Forecast Product on the display shall have the following characteristics:

a) The surface air temperature shall be provided in degrees Fahrenheit
b) Time series information (text and graphical formats) of the surface air temperature shall be provided.
c). Reference lines (configurable) associated with frequent thresholds (e.g., freezing) shall be provided.

Surface Dew Point Temperature Forecast Product

The output (content) of the Surface Dew Point Temperature Forecast Product on the display shall have the following characteristics: a) The surface dew point temperature shall be provided in degrees Fahrenheit b) Time series information (text and graphical formats) of the surface dew point temperature shall be provided.

Surface Wind Speed & Direction Forecast Product

The output (content) of the Surface Wind Speed & Direction Forecast Product on the display shall have the following characteristics:

a) The wind speed shall be provided in statute miles per hour by default
b) The wind direction shall be provided in degrees with respect to true north.
c) Time series information (text and graphical formats) of the wind speed and direction

Surface Wind Gust Forecast Product

The output (content) of the Surface Wind Gust Forecast Product on the display shall have the following characteristics: a) The wind gust speed shall be provided in statute miles per hour. c) Time series information (text and graphical formats) of the wind gust speed shall be provided.

Conditional Probability of Precipitation Type Forecast Product

The conditional probability of precipitation type is a product that describes the probability that a particular precipitation type (e.g., rain, snow, freezing rain, etc.) will occur if there is any precipitation at all.

The Precipitation Type Forecast Product shall include the conditional probability of precipitation type. That is, the user shall be able to view the probability of each type of precipitation as well as the predominant type.

a. The precipitation type shall be provided for at least the following:
    a. Rain
    b. Snow
    c. Ice
    d. Mixed (rain, snow, ice)
b. The predominant precipitation type (the type that the model selects as the most likely kind that will occur) shall be identified.
c. Time series information (text and graphical formats) of the predominant precipitation type shall be provided.

Precipitation Rate Forecast Product
The output (content) of the Precipitation Rate Forecast Product on the display shall have the following characteristics:

a. The liquid equivalent precipitation rate shall be provided in inches per hour (to a precision of a hundredth of an inch).
b. The snowfall precipitation rate shall be provided in inches per hour (to a precision of a tenth of an inch).
c. Time series information (text and graphical formats) of the precipitation rate shall be provided.

Snowfall Accumulation Forecast Product
The Snowfall Accumulation Product shall indicate the amount of snow that is expected to reach the surface (ground) over a specified period. Melting of precipitation due to warm surface conditions is not considered in this product.

The output (content) of the Snowfall Accumulation Forecast Product on the display shall have the following characteristics:

a. The snowfall accumulation shall be provided in inches (to a precision of a tenth of an inch).
b. Time series information (text and graphical formats) of the snowfall accumulation shall be provided.
c. Snowfall accumulation shall be provided at user-defined temporal increments out to 48 hours (e.g., 3-hour, 6-hour, 12-hour accumulation, etc.).

Weather Observation Products
Weather observation products shall be provided by the System. The weather observations products shall be geo-referenced to the DOT domain using map overlays that include roads, road designators, political boundaries, etc.

Weather observation products shall include, but not be limited to, observations from the following sources: NWS, DOT, FAA, and other sources as available.

Weather observation products shall include the following parameters, where available:

a. Air temperature (degrees F)
b. Relative humidity (percent)
c. Dew point (degrees F)
d. Wind speed & wind direction (miles per hour & degrees with respect to true north)
e. Radar Imagery

The weather observation products shall update as new data arrive. The output (content) of the weather observation products on the display shall have the following characteristics:

a. The surface observation data shall expire off the screen after a configurable number of minutes.
b. The expiration time shall be independently configurable for each observation product.
c. Time series (text and graphical formats) shall be provided.
d. Animation of the observations shall be provided.

adar Product

The radar product shall be based on data provided by NOAA. Other radar data sources may be used if applicable (e.g., FAA Terminal Doppler Weather Radar, local media owned radars). The radar product shall be based on the reflectivity (intensity) field. The radar product shall update as new data arrive.

The output (content) of the radar product on the display shall have the following characteristics:

- The radar reflectivity (intensity) field shall be displayed (plus color legend).
- Radar products shall be provided for user-defined domains.

NWS Watch, Warnings and Advisories Product

NWS watch, warnings and advisories for the DOT domain shall be provided.

The NWS watch, warnings and advisories shall include, but not limited to:

a. Winter storm watches and warnings
b. Flood watches and warnings
c. Flash flood watches and warnings
d. Severe thunderstorm watches and warning
e. Tornado watches and warnings
f. High wind watches and warnings
g. Special weather statement
h. Freeze watches and warnings
i. Winter weather advisories
j. Dense fog advisories
k. Snow advisories

The NWS watch, warning and advisory product shall be provided in text format. Graphical depictions of NWS watches and warnings may be provided, where applicable.

When an NWS watch, warning or advisory is in effect for an area (configurable) that covers the DOT domain, the display shall provide an indicator (e.g., highlighted button).

Road Condition Observation Products

Road condition observation products shall be provided and shown on the display.

Road condition observation products may include, but not be limited to, observations or measurements from the following sources:

a. Environmental Surface Stations (ESS)
b. Road Weather Information Systems (RWIS)
c. GPS/AVL data and Connected Vehicle data from Department fleet

(The CCI will decide which sources are used, and how).

Road condition observation products shall include the following parameters, where available

a. Road temperature (degrees F)
b. Subsurface temperature (degrees F)
c. Chemical concentration on road (percent by weight)
d. Freeze point temperature (degrees F)
e. Pavement condition as: Wet, Dry, or Chemically Wet
f. Snow, frost, and ice depth (inches
g. Blowing snow (yes/no)
h. Visibility (miles or fractions of miles)

The road condition observation products shall update as new data arrive. The output (content) of the road condition observation products on the display shall have the following characteristics:

a. The surface observation data shall expire off the screen after a configurable number of minutes
b. The expiration time shall be independently configurable for each observation product.
c. Viewing of the product shall be user selectable.
d. Time series (text or graphical formats) of the observations shall be provided.
e. Animations of the road condition products shall be provided.

Road Condition Prediction Products

The road condition prediction products shall be provided out to at least 48 hours. The road condition prediction products shall have a temporal resolution of at least one hour. The road condition prediction products shall be updated every three hours; that is, a new 48-hour forecast shall be provided no less than every three hours.

The following road condition prediction products shall be provided:

a. Road temperature
b. Road chemical concentration
c. Snow depth on road
d. Blowing snow potential
e. Pavement frost potential
f. Pavement condition

Road Temperature Prediction Product

The Road Temperature Prediction Product shall be provided at predefined (configurable) locations associated with each DOT maintenance route. The Road Temperature Prediction Product shall be based on a thermal energy balance model and/or empirically based model.

The output (content) of the Road Temperature Prediction Product on the display shall have the following characteristics:

a. The road temperature shall be provided in degrees F
b. The road temperature shall be presented graphically at each forecast location within the chosen (configurable) maintenance routes.
c. Time series information (text and graphical formats) shall be provided.

Road Snow Depth Prediction Product

The Road Snow Depth Prediction Product shall provide information that describes the amount of snow that is predicted to accumulate on a road surface without traffic and for specific winter maintenance treatments

Calculation of the Road Snow Depth Prediction Product shall take into account (at a minimum) the forecasted precipitation type and rate, and road temperature to estimate the amount of snow that will accumulate on the road surface.

The Snow Depth Prediction Product shall be provided at predefined (configurable) locations within each DOT maintenance route.

Calculation of the Snow Depth Prediction Product shall take into account treatment options including the amount of snow expected to accumulate on the road when; a) no treatment is performed, b) the recommended treatment is performed, and c) a user-defined treatment is performed.

The output (content) of the Snow Depth Product on the display shall have the following characteristics:

a. The snow/ice amount shall be given in inches by default (to a tenth of an inch)
b. The snow depth shall be shown for various treatment options including: no treatment, recommended treatment, and user-defined treatment.
c. The road snow depth shall be presented graphically at each forecast location associated with the chosen (configurable) maintenance routes.
d. Time series information (text and graphical formats) of the road contamination accumulation shall be provided.

Blowing Snow Potential Product

The Blowing Snow Potential Product shall provide information that describes the likelihood for blowing snow (e.g., low, medium, high). Calculation of the Blowing Snow Potential Product shall take into account (at a minimum) recent snowfall characteristics, the forecasted precipitation type and rate, predicted wind speed, local topography, and predicted air temperature. The Blowing Snow Potential Product shall be provided at predefined (configurable) locations within each DOT maintenance route.

The output (content) of the Blowing Snow Potential Product on the display shall have the following characteristics:

a. The likelihood value for blowing snow (e.g., low, medium, high or as a percentage)
b. Likelihood values shall be provided at hourly increments.
c. Likelihood values shall be provided at hourly increments.
d. Time series information (text and graphical formats) shall be provided.

Pavement Frost Potential Product

The Pavement Frost Potential Product shall provide information that describes the likelihood for frost on the pavement surface (road and/or bridges) (e.g., low, medium, high or as a percentage). Calculation of the Pavement Frost Potential Product shall take into account (at a minimum) predicted pavement temperature, predicted precipitation type and rate, predicted wind speed, predicted relative humidity (considerations of dew point/frost point), and predicted air temperature. The Pavement Frost Potential Product shall be provided at predefined (configurable) locations within each DOT maintenance route.

The output (content) of the Pavement Frost Potential Product on the display shall have the following characteristics:

a. The likelihood value for pavement frost (e.g., low, medium, high or as a percentage)
b. Likelihood values shall be provided at hourly increments
c. Likelihood values shall be provided for each road forecast segment (e.g., plow route).
d. Time series information (text and graphical formats) shall be provided.

Pavement Condition Prediction Product

The Pavement Condition Prediction Product shall provide information on the predicted state of the pavement and include:

a. Wet
b. Dry
c. Chemical wet
d. Percent coverage of snow and
e. Snow, frost, and ice depth (inches)

The output (content) of the Pavement Condition Prediction Product on the display shall have the following characteristics:

a. The pavement condition shall be presented in text format indicating the pavement condition (e.g., wet, dry, chemical wet, etc.) for each road forecast location (e.g., plow routes).
b. Time series information (text and graphical formats) shall be provided.

Calculation of the Pavement Condition Prediction Product shall take into account the pavement condition when; a) no treatment is performed, b) the recommended treatment is performed, and c) a user-defined treatment is performed.

Forecast Confidence Product

A measure of confidence shall be provided for the following weather forecast and road condition prediction products:

a. Snow accumulation
b. Precipitation type
c. Road temperature

The calculation of prediction confidence shall take into account recent statistical performance of each parameter and other appropriate metrics.

The output (content) of the Prediction Confidence Product on the display shall have the following characteristics:

a. The prediction confidence shall be given as a percentage, and shall be able to be displayed graphically.

b. Error statistics shall be calculated that reflect recent skill.
c. Time series information of the prediction confidence or error statistics shall be provided for the above-mentioned products.

Generation of Treatment Recommendation Predictions
The System shall provide treatment recommendation predictions for winter road maintenance at user defined (configurable) locations (e.g., plow routes).

The System shall provide treatment recommendation predictions out to no less than 24 hours into the future.

The winter maintenance rules of practice used in the System shall be based on the Manual of Practice for Effective Anti-Icing Program and NCHRP report #526 - Snow & Ice Control: Guidelines for Materials and Methods, and be configurable, as necessary, to reflect local DOT practices.

Treatment recommendations shall include the following for each user defined route:

a. Recommended initial treatment start time
b. Recommended subsequent treatment start time
c. Recommended treatment type (e.g., chemical, abrasives, plow)
d. Recommended chemical type based on available chemicals as identified by the Department
e. Recommended material rate (e.g., amount per lane mile)
f. Recommended pre-treatment type (solid or liquid), where applicable

The System shall have a capability to incorporate constraints (configurable) for each route so that irrelevant treatment recommendations are not provided. For example, the use of NaCl should not be recommended if the user does not use that chemical. Constraints may include:

a. Available materials (e.g., NaCl, $MgCl_2$, $CaCl_2$, abrasives etc.)
b. Application rate limits (based on truck spreading limits)
c. Route cycle limits (minimum turn around time to repeat treatments)

Treatment recommendations shall be calculated, to the greatest extent possible, using a combination of current observational data on the state of the roadway and predicted weather and road conditions.

Treatment recommendation calculations should consider, to the greatest extent possible, factors that impact treatment effectiveness (e.g., chemical scatter, splatter, traffic impacts, spreader characteristics, etc.).

System Alert Function
The System shall provide a capability to alert the user when specific data thresholds (configurable) have been exceeded. Users shall be able to query the System and view the information related to an alert.

The System shall indicate that an alert is active by one or more of the following methods: a) Highlighting an alert button b) Changing the color of an alert button c) Flashing an alert button d) Audible alert (finite series of beeps or tones) The System shall include a capability to send e-mail or text message notices or cell phone calls (to a configurable list of aliases) when specific alerts (configurable) are generated.

Display

The display shall have the following general capabilities:

a. Ability to view plan-view graphics
b. Ability to view time-series information
c. Animation
d. Time selection whereby the user can select the time period for data viewing
e. Print function
f. Alert function
g. Ability to review historical data
h. Ability to select viewing area
i. Ability to select products for viewing
j. Help function
k. Ability to combine data on time series plots
l. Ability to configure data ranges (scale) for each time series plot
m. Ability to overlay and combine graphical products

In vehicle display:

a. Ability to view plan view graphics
b. Ability to view local radar
c. Ability to view route specific treatment recommendations
d. Ability to view route specific weather and pavement forecast

Map Overlays

The System shall make it straightforward (e.g., via configuration files) to incorporate new map data.

Map overlays shall be available for the following:

a. Roads (State and local highways and secondary roads)
b. Road designators (e.g., route numbers, etc.)
c. Road Control section and mile marker identification.
d. Political boundaries (e.g., States, counties, maintenance zones, MDOT region and TSC area, etc.)
e. Cities
f. Weather and road condition observation sites

Data Archive and Historical Data Review

The System shall include a short and long-term data storage capability. The process of saving data shall not interfere with the normal operation of the System.

Short-Term Archive

The short-term archive shall consist of the latest fourteen (14) days of data. The oldest stored data shall be routinely (scrubbed) overwritten by new incoming data, such that the integrity of incoming data is preserved. Data within the short-term archive shall be viewable by selecting the date and time of interest from the display interface.

Long-Term Archive

The long-term archive shall consist of data sets specifically saved by the user. The System shall not delete (scrub) data within the long-term archive. The user shall have the capability to select the date, time, and filename for the long-term archive. The System shall provide a capability for the user to

review data from the long-term archive. This review shall not interfere with the operation of the real-time system. This requirement could be met by having a separate System available to view data from the historical archive.

Historical Data Viewer
The system shall have a capability to view (recent) historical weather and road condition prediction products together with actual observational data to give the user an indication of the performance of the weather and road condition predictions.

Users shall have the ability to select any of the forecasts from the previous 24-hour period. For example, the user shall be able to select a forecast 6 hours previous and compare the predicted conditions to the actual conditions.

Security
Means shall be provided to prevent the unauthorized use or misuse of the facilities provided in the System. This particularly applies to those functions that can be used to reconfigure or change the operating status of the System or subsystems.

Security shall be provided (e.g., password protection) to ensure that the System cannot be accidentally disabled from any display device or network system.