STATE OF MICHIGAN
CENTRAL PROCUREMENT SERVICES
Department of Technology, Management, and Budget

320 S. WALNUT ST., LANSING, MICHIGAN 48933
P.O. BOX 30026 LANSING, MICHIGAN 48909

CONTRACT CHANGE NOTICE

Change Notice Number **5**

to

Contract Number **071B6600068**

CONTRACTOR	
	MIDWESTERN SOFTWARE SOLUTIONS, LLC
	3815 Plaza Drive
	Ann Arbor, MI 48108
	Ben Chen
	734-995-0200
	bc@ms2soft.com
	CV0004251

STATE			
	Program Manager	Various	MDOT
	Contract Administrator	Robin Lampert	DTMB
		(517) 582-2746	
		lampertr1@michigan.gov	

CONTRACT SUMMARY

TRAFFIC DATA MANAGEMENT SYSTEM

INITIAL EFFECTIVE DATE	INITIAL EXPIRATION DATE	INITIAL AVAILABLE OPTIONS	EXPIRATION DATE BEFORE
April 5, 2016	April 4, 2021	5 - 1 Year	April 4, 2024

PAYMENT TERMS	DELIVERY TIMEFRAME

ALTERNATE PAYMENT OPTIONS			EXTENDED PURCHASING	
☐ P-Card	☐ PRC	☐ Other	☒ Yes	☐ No

MINIMUM DELIVERY REQUIREMENTS

DESCRIPTION OF CHANGE NOTICE

OPTION	LENGTH OF OPTION	EXTENSION	LENGTH OF EXTENSION	REVISED EXP. DATE
☒	2 1- year	☐		April 4, 2026

CURRENT VALUE	VALUE OF CHANGE NOTICE	ESTIMATED AGGREGATE CONTRACT VALUE
$2,450,422.00	$392,108.00	$2,842,530.00

DESCRIPTION

Effective February 13, 2024, this Contract is exercising the 4th and 5th option years and is increased by $392,108. The revised contract expiration date is April 4, 2026.

Note: When Change Notice 2 added two option years, they were not noted as "initial available options" in the Change Notice summary block. These are the 2 option years being exercised now with $298,700.

Per the attached Statement of Work, the following enhancements to support continued improvement application efficiency and data quality are added with $93,408 funding:
* dynamic links between Roads & Highways and the Traffic Count Database System
* addition of formatted location ID labels to maps
* add a sorting function to location notes
* add custom report to compare commercial percentages between years
* add custom report to validate the Traffic Count Database System with corresponding traffic segments

Please note the Contract Administrator has been changed to Robin Lampert.

All other terms, conditions, specifications, and pricing remain the same. Per contractor and agency agreement, DTMB Central Procurement Services approval, and State Administrative Board approval on February 13, 2024.

Program Managers
for
Multi-Agency and Statewide Contracts

AGENCY	NAME	PHONE	EMAIL
MDOT	Edward Potter	517-335-2942	pottere@michigan.gov
DTMB	Dave Work	517-719-2250	workd@michigan.gov

STATEMENT OF WORK -
IT CHANGE NOTICE

Project Title: MDOT – TDMS Phase 3 Enhancement Group 3	**Period of Coverage:** 12/1/2023-12/1/2024
Requesting Department: Michigan Department of Transportation	**Date**: 10/30/2023
Agency Project Manager: Ed Potter	**Phone**: 517-243-9624
DTMB Project Manager: Dave Work	**Phone**: 517-719-2250

Brief description of services to be provided:

The Michigan Department of Transportation (MDOT) is requesting enhancements to existing functionality within the Midwestern Software Solutions (MS2 or Contractor) Transportation Data Management System (TDMS).

Additional updates to the Contract to exercise the 2 remaining option years.

BACKGROUND:

This Statement of Work is based on the existing contract between the State of Michigan (SOM) and Midwestern Software Solutions, LLC (MS2), see contract number 071B6600068. Through this contract, Contractor provides MDOT with a cloud-based software solution, called Transportation Data Management System (TDMS), that allows MDOT to map, manage and analyze vehicle traffic count data.

PROJECT OBJECTIVE:

This Statement of Work requires Contractor to create five additional customizations or enhancements to TDMS for MDOT's use.

SCOPE OF WORK:

Continue with phase 3 of the TDMS project to make requested enhancements to the Non-Motorized Database System, Traffic Count Database System (TCDS), and Highway Performance Monitoring System modules. Enhancements to TDMS and the associated price for each enhancement are listed below:

Item No	Module	Functional Description	Notes	Cost
1	TCDS	Link R&H to TCDS, Control Section and Ctrl Section MP	A dynamic link between Roads & Highways and TCDS to update location attributes with real-time Control Section and Control Section Milepoint.	$21,038
2	NMDS	Add Location ID labels to map	To include Location ID labels to map with predetermined format (XX-XXXXXN).	$15,147
3	TCDS	Enhance Location notes with sort option	Improve location note attribute to include a sorting function.	$15,147
4	TCDS	Report to compare previous years percent comparisons	Custom report that compares commercial percentages from one year to the next from a query.	$21,038
5	HPMS	Report to check TCDS attributes against segments	Custom report that validates TCDS Primary station locations with their corresponding traffic segment.	$21,038
5 Enhancements				**$93,408**

TASKS:

Technical support is required to assist with the following tasks:

- Provide project schedule and task progression throughout the life of the project
- Facilitate project status meeting and minutes
- Schedule and facilitate design meetings
- Provide design documentation for review and acceptance
- Implement features/ functionality based on approved design documentation
- Provide assistance when MDOT develops test cases
- Provide User Acceptance Testing (UAT) environment
- Schedule and support UAT sessions
- Provide support for UAT defect reporting and resolution
- Production deployment of completed features
- End User Training for new features

DELIVERABLES:

The project will have three phases, Design Phase, Implementation Phase, and User acceptance Testing Phase. Each feature can be released when ready as the items are stand alone and not depend on the others. The development will not begin until the milestone, Functional Design Document is approved. Deliverables for this project include:

Design Phase Milestone:

- Functional Design Document - references the items listed in the other project documents and provides description of each feature or functional requirement. The document will also include a general test script for design validation.

Implementation Phase Milestone:

- Vendor Testing Results Report - will provide a checklist of each functional requirement and validation that items were tested by Contractor. Contractor will complete all other testing as part of the internal development process.

User Acceptance Testing Phase Milestone:

- UAT Resolution Report

Once a group of features or all features are completed and tested by Contractor, MDOT will perform the UAT's and track through the defect logged via Basecamp (same as previous projects). A meeting will be scheduled to demonstrate the function of the features to MDOT. MDOT will then begin UAT testing. During UAT, MDOT testers will review the function using the test cases for each feature. The tester will determine if the feature passed testing or failed testing. If the test passed, the feature is considered accepted and complete.

If the test failed, the reasons for the failure must be identified and logged on Basecamp. The MDOT / Contractor team will review together defect to determine if the cause is a training, configuration, or actual defect. The team will determine the priority level and severity Level. These priority and severity levels will be used to identify the order of items to be addressed by Contractor. Once the defects are resolved by Contractor, MDOT testers will complete the UAT's when the feature is ready for testing. Once features pass the UAT or pass with items noted, they will be considered accepted and released to production.

ACCEPTANCE CRITERIA:

Deliverables will not be considered complete until the Agency and DTMB Project Manager have formally accepted them.

PROJECT CONTROL AND REPORTS:

The Contractor must conduct a weekly virtual project meeting. Additional project communication involving requirements clarification, construction, testing, and project schedule and status will take place on the Contractor's Basecamp project collaboration site.

PAYMENT SCHEDULE:

DTMB will pay Contractor upon receipt of properly completed invoice(s) which shall be submitted to the billing address on the State issued purchase order not more often than

monthly. DTMB Accounts Payable area will coordinate obtaining Agency and DTMB Project Manager approvals. All invoices should reflect actual work completed by payment date and must be approved by the Agency and DTMB Project Manager prior to payment. The invoices shall describe and document to the State's satisfaction a description of the work performed, the progress of the project, and fees. When expenses are invoiced, receipts will need to be provided along with a detailed breakdown of each type of expense.

Payment shall be considered timely if made by DTMB within forty-five (45) days after receipt of properly completed invoices.

Payment Schedule Milestones:

Milestone	Percentage	Payment
Design Phase Milestone Acceptance	25%	23,352.00
Implementation Phase Milestone Acceptance	50%	46,704.00
User Acceptance Testing Phase Milestone Acceptance	25%	23,352.00
Total	**100%**	**$ 93,408.00**

EXPENSES:

The State will NOT pay for any travel expenses, including hotel, mileage, meals, parking, etc.

PROJECT CONTACTS:

The designated Agency Project Manager is:

Name: Ed Potter
Department: Transportation
Area: Bureau of Transportation Planning, Data Inventory and Integration Division
Building/Floor: Murray D. Van Wagoner Building, 3rd Floor
Address: 425 W. Ottawa Street
City/State/Zip: Lansing, Michigan 48909
Phone Number: 517-243-9624
Email Address: PotterE@michigan.gov

The designated DTMB Project Manager(s) is:

Name: Dave Work
Department: DTMB
Area: Agency Services supporting MDOT
Building/Floor: Murray D. Van Wagoner Building, 3rd Floor
Address: 425 W. Ottawa Street
City/State/Zip: Lansing, Michigan 48909
Phone Number: 517-719-2250
Email Address: workd@michigan.gov

AGENCY RESPONSIBILITIES:

Review and approval of the deliverables and submitted invoice(s).

LOCATION OF WHERE THE WORK IS TO BE PERFORMED:

Contractor's office is located at 5200 S. State Rd, Ste 100, Ann Arbor, MI. Work will be performed by Contractor at their office or at the offices assigned to Contractor employees by Contractor.

EXPECTED CONTRACTOR WORK HOURS AND CONDITIONS:

Work hours are not to exceed eight (8) hours a day, forty (40) hours a week. Normal working hours of 8:00 am to 5:00 pm are to be observed unless otherwise agreed to in writing.

No overtime will be permitted.

STATE OF MICHIGAN
CENTRAL PROCUREMENT SERVICES
Department of Technology, Management, and Budget
320 S. WALNUT ST., LANSING, MICHIGAN 48933
P.O. BOX 30026 LANSING, MICHIGAN 48909

CONTRACT CHANGE NOTICE

Change Notice Number **4**

to

Contract Number **071B6600068**

CONTRACTOR	
	MIDWESTERN SOFTWARE SOLUTIONS, LLC
	3815 Plaza Drive
	Ann Arbor, MI 48108
	Ben Chen
	734-995-0200
	bc@ms2soft.com
	CV0004251

STATE			
	Program Manager	Various	MDOT
	Contract Administrator	Christopher Martin	DTMB
		(517) 643-2833	
		martinc20@michigan.gov	

CONTRACT SUMMARY

TRAFFIC DATA MANAGEMENT SYSTEM

INITIAL EFFECTIVE DATE	INITIAL EXPIRATION DATE	INITIAL AVAILABLE OPTIONS	EXPIRATION DATE BEFORE
April 5, 2016	April 4, 2021	0 - 0 Year	April 4, 2024

PAYMENT TERMS	DELIVERY TIMEFRAME

ALTERNATE PAYMENT OPTIONS			EXTENDED PURCHASING	
☐ P-Card	☐ PRC	☐ Other	☒ Yes	☐ No

MINIMUM DELIVERY REQUIREMENTS

DESCRIPTION OF CHANGE NOTICE

OPTION	LENGTH OF OPTION	EXTENSION	LENGTH OF EXTENSION	REVISED EXP. DATE
☐		☐		April 4, 2024

CURRENT VALUE	VALUE OF CHANGE NOTICE	ESTIMATED AGGREGATE CONTRACT VALUE
$2,356,124.00	$94,298.00	$2,450,422.00

DESCRIPTION

Effective 9/29/2022, the following amendments are incorporated into this Contract per the attached Statement of Work. This change includes the following:

1. TCDS - Improve A2A pairing with SEMCOG and their agencies. Address inconsistencies between MDOT and SEMCOG in the way traffic stations are created and data is stored to allow more local data to be used in annual HPMS submittal. Cost: $32,626.00
2. Scheduler - Direct linking from Scheduler to MDOT's count and construction map. Cost: $14,324.00
3. TMC - TMC Intersection Icons / dropdown. Expands to range of intersection types. Cost: $23,873.00
4. NMDS - NMDS Location Information Report: Expand existing report (or create a new report) to include additional fields and adjust formatting as needed to keep or create the ability to easily filter in XLS format. Cost: $13,926.00
5. TCDS - Update R&H Fields Integration: Retrieve valus from MDOT's R&H to populate the "HPMS ID" and "On HPMS" fields in TCDS. Cost: $9,549.00

The Contract is increased by $94,298.00 for MDOT use.

All other terms, conditions, specifications, and pricing remain the same. Per contractor and agency agreement, DTMB Central Procurement Services approval, and State Administrative Board approval on 9/29/2022.

Program Managers
for
Multi-Agency and Statewide Contracts

AGENCY	NAME	PHONE	EMAIL
MDOT	Edward Potter	517-335-2942	pottere@michigan.gov
DTMB	Dave Work	517-719-2250	workd@michigan.gov

MICHIGAN DEPARTMENT OF TECHNOLOGY, MANAGEMENT AND BUDGET
IT SERVICES
STATEMENT OF WORK FOR IT CHANGE NOTICES

Project Title: **TDMS Phase 3 Enhancment Group 2**	**Period of Coverage:** **Sept 2022 – August 2023**
Requesting Department: **Michigan Department of Transportation**	**Date:** **8-17--2022**
Agency Project Manager: **Ed Potter**	**Phone:** **517-243-9624**
DTMB Project Manager: **Dave Work**	**Phone:** **517-719-2250**

Brief Description of Services to be provided:

BACKGROUND:

This Statement of Work is based on the existing contract between the State of Michigan (SOM) and Midwestern Software Solutions, LLC (MS2), see contract number 071B6600068. Through this contract, MS2 provides MDOT with a cloud-based software solution, called Transportation Data Management System, that allows MDOT to map, manage and analyze vehicle traffic count data.

PROJECT OBJECTIVE:

This Statement of Work requires MS2 to create five additional customizations or enhancements to TDMS for MDOT's use. Enhancement, which are described in the Scope of Work section, will improve the end user experience and increase efficiency and data quality by accomplishing the following:

- Expand the use of Roads & Highways events to autopopulate TDMS station attributes.
- Enhance consistency in the display of data collected by local agencies and MPOs
- Improve reporting options, and expand the range of available intersection types to improve experience and ease of use by end users.

SCOPE OF WORK:

Continue with phase 3 of the TDMS project to make requested enhancements to the Non-Motorized Database System, Traffic Count Database System, Scheduler Module, and Turning Movement Count Module. Enhancments to TDMS and the associated price for each enhancements are listed below:

Item No	Module	Functional Description	Notes	Cost
1	TCDS	Improve A2A pairing with SEMCOG and their agencies. Address inconsistencies between MDOT and SEMCOG in the way traffic stations are created and data is stored to allow more local data to be used in annual HPMS submittal		$32,626
2	Scheduler	Direct linking from Scheduler to MDOT's count and construction map	11 data fields identified by MDOT with filtering by Task Status. Will include both TCDS and NMDS tasks. Overnigh update process.	$14,324

3	TMC	TMC Intersection Icons / dropdown. Expands to range of intersection types	Update signalized field to a dropdown with a fixed list of values. Update advanced search “signalized” field to use new values. Update map to display different icons based on the new values.	$23,873
4	NMDS	NMDS Location Information Report: Expand existing report (or create a new report) to include additional fields and adjust formatting as needed to keep or create the ability to easily filter in XLS format	16 fields identified by MDOT to include in the report	$13,926
5	TCDS	Update R&H Fields Integration: Retrieve valus from MDOT’s R&H to populate the “HPMS ID” and “On HPMS” fields in TCDS		$9,549
5 Enhancments				**$94,298**

TASKS:

Technical support is required to assist with the following tasks:

- Provide project schedule and task progression throughout the life of the project
- Facilitate project status meeting and minutes
- Schedule and facilitate design meetings
- Provide design documentation for review and acceptance
- Construction based on approved design documentation
- Provide assistance when MDOT develops test cases
- Provide User Acceptance Testing (UAT) environment
- Schedule and support UATsessions
- Provide UAT defect reporting and resolution
- Production deployment of completed milestones

DELIVERABLES:

Deliverables will not be considered complete until the Agency Project Manager has formally accepted them. Deliverables for this project include:

1. Functional/system design document that addesses the five enhancements noted in the Scope of Work
2. Validation testing report
3. UAT resolution log, which can be in the form of a Basecamp thread
4. Archived basecamp correspondence log
5. Minutes from each formal scheduled meeting
6. Five approved enhancements noted on the Scope of Work in MDOT’s TDMS Production environment

ACCEPTANCE CRITERIA:

Acceptance criteria for each milestone are as follows:

Design Acceptance Criteria

- Functional/System design approval
- Design Milestone Acceptance Sign-off

Implementation Acceptance Criteria

- Vendor System Acceptance Testing Results
- Implementation Milestone Sign-off

UAT Acceptance Criteria

- UAT Resolution Log
- UAT Milestone Acceptance Sign-off

Project will be deemed to be complete once all six deliverable are accepted by MDOT.

PROJECT CONTROL AND REPORTS:

An updated quarterly project schedule must be submitted to the Agency and DTMB Project Managers throughout the life of this project. Each quarterly schedule must contain information on the percent complete for each item on the schedule.

SPECIFIC DEPARTMENT STANDARDS:

Agency standards, if any, in addition to DTMB standards.

PAYMENT SCHEDULE:

Payment will be made on a **satisfactory acceptance of each Milestone** basis as noted in the project plan. Milestones are (1) the completion of the Design Phase, (2) the completion of the Implementation Phase, and (3) the completion of the UAT Testing Phase. DTMB will pay CONTRACTOR upon receipt of properly completed invoice(s) which shall be submitted to the billing address on the State issued purchase order not more often than monthly. DTMB Accounts Payable area will coordinate obtaining Agency and DTMB Project Manager approvals. All invoices should reflect actual work completed by payment date, and must be approved by the Agency and DTMB Project Manager prior to payment. The invoices shall describe and document to the State's satisfaction a description of the work performed, the progress of the project, and fees. When expenses are invoiced, receipts will need to be provided along with a detailed breakdown of each type of expense.

Payment shall be considered timely if made by DTMB within forty-five (45) days after receipt of properly completed invoices.

EXPENSES:

The State will NOT pay for any travel expenses, including hotel, mileage, meals, parking, etc.

PROJECT CONTACTS:

The designated Agency Project Manager is:

Ed Potter
Michigan Department of Transportation
Bureau of Transportation Planning, Data Inventory and Integration Division
Murry D. Van Wagoner Building, 3rd Floor
425 W. Ottawa Street
Lansing, Michigan 48909
517-243-9624
pottere@michigan.gov

The designated DTMB Project Manager is:

Dave Work
Department of Technology, Management and Budget

Agency Services MDOT – Public Services and Field Operations Section
Murray D. Van Wagoner Building, 3rd Floor
425 W. Ottawa Street
Lansing, Michigan 48909
517-719-2250
WorkD@michigan.gov

LOCATION OF WHERE THE WORK IS TO BE PERFORMED:

Consultants office is located at 5200 S. State Rd, Ste 100, Ann Arbor, MI. Work will be preformed by MS2 at their office or at the offices assigned to MS2 employees by MS2.

EXPECTED CONTRACTOR WORK HOURS AND CONDITIONS:

Work hours are not to exceed eight (8) hours a day, forty (40) hours a week. Normal working hours of 8:00 am to 5:00 pm are to be observed unless otherwise agreed to in writing.

No overtime will be permitted.

PROJECT PLAN AND MILESTONES/MILESTONE PAYMENT AMOUNTS:

ID	Task Mode	Task Name	Duration	Start	Finish	Predecessors	Fixed Cost
1		**MDOT Phase 3 Group 2 Project**	**160 days**	**Tue 9/6/22**	**Fri 4/21/23**		**$0.00**
2		**Design Phase**	**35 days**	**Tue 9/6/22**	**Mon 10/24/22**		**$0.00**
3		MS2 Draft Functional Design Document (FDD)	20 days	Tue 9/6/22	Mon 10/3/22		$0.00
4		Design Meetings (As Needed)	20 days	Tue 9/13/22	Mon 10/10/22	3SS+5 days	$0.00
5		MDOT Review Draft FDD	10 days	Tue 10/4/22	Mon 10/17/22	3	$0.00
6		MS2 Address Review Comments for FDD	5 days	Tue 10/18/22	Mon 10/24/22	5	$0.00
7		**MDOT Functional Design Acceptance**	**0 days**	**Mon 10/24/22**	**Mon 10/24/22**	**6**	**$14,145.00**
8		**Implementation Phase**	**85 days**	**Tue 10/25/22**	**Fri 2/24/23**		**$0.00**
9		MS2 Technical Design	20 days	Tue 10/25/22	Mon 11/21/22	7	$0.00
10		**MS2 Develop Features**	**50 days**	**Tue 11/22/22**	**Fri 2/3/23**	**9**	**$0.00**
11		A2A Pairing with SEMCOG & their agencies	50 days	Tue 11/22/22	Fri 2/3/23	7	$0.00
12		Direct linking from Scheduler to MDOT's application	12 days	Thu 1/19/23	Fri 2/3/23	11FF	$0.00
13		TMC Intersection Icons / Dropdown	15 days	Mon 1/16/23	Fri 2/3/23	11FF	$0.00
14		NMDS Location Information Report	12 days	Thu 1/19/23	Fri 2/3/23	11FF	$0.00
15		Update R&H Integration	10 days	Mon 1/23/23	Fri 2/3/23	11FF	$0.00
16		Design / Status Meetings	65 days	Tue 11/1/22	Fri 2/3/23	11FF	$0.00
17		MS2 QA Testing	15 days	Mon 2/6/23	Fri 2/24/23	10	$0.00
18		**Validation Testing Report**	**0 days**	**Fri 2/24/23**	**Fri 2/24/23**	**17**	**$66,008.00**
19		**MS2 Demo Features for UAT**	**0 days**	**Fri 2/24/23**	**Fri 2/24/23**	**17**	**$0.00**
20		**UAT Testing Phase**	**35 days**	**Mon 2/27/23**	**Fri 4/14/23**		**$0.00**
21		MDOT Perform UAT	20 days	Mon 2/27/23	Fri 3/24/23	19	$0.00
22		UAT Review Meetings (as needed)	20 days	Mon 3/6/23	Fri 3/31/23	18SS+5 days	$0.00
23		MS2 Resolve defects	20 days	Mon 3/6/23	Fri 3/31/23	22FF	$0.00
24		MS2 Develop Defect Log/ UAT Resolution Report	10 days	Mon 4/3/23	Fri 4/14/23	22	$0.00
25		**UAT Resolution Log Acceptance**	**0 days**	**Fri 4/14/23**	**Fri 4/14/23**	**24**	**$14,145.00**
26		Move Feature to Production	5 days	Mon 4/17/23	Fri 4/21/23	25	$0.00

STATE OF MICHIGAN
CENTRAL PROCUREMENT SERVICES
Department of Technology, Management, and Budget
525 W. ALLEGAN ST., LANSING, MICHIGAN 48913
P.O. BOX 30026 LANSING, MICHIGAN 48909

CONTRACT CHANGE NOTICE

Change Notice Number **3**

to

Contract Number **071B6600068**

CONTRACTOR	
	MIDWESTERN SOFTWARE SOLUTIONS, LLC
	3815 Plaza Drive
	Ann Arbor, MI 48108
	Ben Chen
	734-995-0200
	bc@ms2soft.com
	CV0004251

STATE			
	Program Manager	Various	MDOT
	Contract Administrator	Christopher Martin	DTMB
		(517) 643-2833	
		martinc20@michigan.gov	

CONTRACT SUMMARY			
TRAFFIC DATA MANAGEMENT SYSTEM			
INITIAL EFFECTIVE DATE	**INITIAL EXPIRATION DATE**	**INITIAL AVAILABLE OPTIONS**	**EXPIRATION DATE BEFORE**
April 5, 2016	April 4, 2021	0 - 0 Year	April 4, 2024
PAYMENT TERMS		**DELIVERY TIMEFRAME**	
ALTERNATE PAYMENT OPTIONS			**EXTENDED PURCHASING**
☐ P-Card	☐ PRC	☐ Other	☒ Yes ☐ No
MINIMUM DELIVERY REQUIREMENTS			

DESCRIPTION OF CHANGE NOTICE				
OPTION	**LENGTH OF OPTION**	**EXTENSION**	**LENGTH OF EXTENSION**	**REVISED EXP. DATE**
☐		☐		April 4, 2024
CURRENT VALUE	**VALUE OF CHANGE NOTICE**		**ESTIMATED AGGREGATE CONTRACT VALUE**	
$2,157,880.00	$198,244.00		$2,356,124.00	

DESCRIPTION

Effective 6/18/2021, the following amendments are incorporated into this Contract per attached SOW. This change includes 12 Group One enhancements for Phase Three of the TDMS project. The firm fixed price for these enhancements is $198,244.00. This Contract is increase by $198,244.00 for MDOT use.

All other terms, conditions, specifications and pricing remain the same. Per contractor and agency agreement, and DTMB Central Procurement Services approval.

Program Managers
for
Multi-Agency and Statewide Contracts

AGENCY	NAME	PHONE	EMAIL
MDOT	Chris Hundt	517-335-4600	hundtc@michigan.gov
DTMB	Dave Work	517-719-2250	workd@michigan.gov

MICHIGAN DEPARTMENT OF TECHNOLOGY, MANAGEMENT AND BUDGET
IT SERVICES
STATEMENT OF WORK FOR IT CHANGE NOTICES

Project Title: **TDMS Phase 3 Enhancment Group 1**	**Period of Coverage:** **June 2021 – June 2022**
Requesting Department: **Michigan Department of Transportation**	**Date:** **5-04-2021**
Agency Project Manager: **Chris Hundt**	**Phone:** **517-230-8710**
DTMB Project Manager: **Dave Work**	**Phone:** **517-719-2250**

Brief Description of Services to be provided:

BACKGROUND:

This Statement of Work is based on the existing contract between the State of Michigan (SOM) and Midwestern Software Solutions, LLC (MS2), see contract number 071B6600068. Through this contract, MS2 provides MDOT with a cloud-based software solution, called Transportation Data Management System, that allows MDOT to map, manage and analyze vehicle traffic count data.

PROJECT OBJECTIVE:

This Statement of Work requires MS2 to create twelve additional customizations or enhancements to TDMS for MDOT's use. Enhancements, which are described in the Scope of Work section, will improve the end user experience, and increase efficiency and data quality by accomplishing the following:

- Expand the use of Roads & Highways events to auto-populate TDMS station attributes.
- Link the nonmotorized module to the Scheduler module to permit seamless scheduling for nonmotorized traffic counts.
- Improve search and reporting options, and enhance display of traffic stations in all modules for better end user experiences

SCOPE OF WORK:

Initiate phase 3 of the TDMS project to make requested enhancements to the Non-Motorized Database System, Traffic Count Database System, Scheduler Module, and Turning Movement Count Module. Enhancments to TDMS and the associated price for each enhancements are listed below:

Item No	Module	Functional Description	Notes	Cost
1	NMDS & Scheduler	NMDS Task Creation for Scheduler: Setup functionaly similiar to existing TCDS for setting up tasks for Scheduler Module. NMDS count locations need a station attribute to designate collection group, count type. Link to open "task scheduler" is needed in NMDS. Need count equipment field as well.	Need to consider Count Type for designating count type to corespond to facility type (Omega v. Mio, etc). Multiple types of non-intrusitive count equipment may be used. Is there a way to distinguish between the various types.	$98,733

2	TCDS	(2) TCDS Speed Reports. Would like to be able to compare average speeds for a group of stations for two different time periods. Add a row that includes the average speed for all sites to the Quarterly Speed Report (combines all "area types" and "FCs"). Average speed for all searched stations could also be added to the Speed Report Multiple Sites report.	2 Mockups provided by MDOT	$7,024
3	TCDS	(1) Report added to the Volume Balancing Tool.	Mockup provided by Kyle via email 3/11/21	$3,512
4	TMC	Map Feature Site: AADTS and/ or AADTs on map. Create an option to display TCDS location IDs on the map in TMC. User should have the option to display AADTs or location ID or both in TMC map.	Provide a feature in TMC and NMDS	$13,659
5	TMC	Feature enhancement when creating TMC intersections. When creating a TMC intersection at least 2 legs or directions must be found. If a boulevard road is used R&H will pull data and create intersection. On non-divided roads where one (of two) legs is off PR network (private parking lot) then a more manual process is needed. Can this be streamlined?	MS2 will update the wizard where user will click "next" and it asks "are you sure you want to continue with just 1 route?" and then after the wizard they manually add the leg and its information	$5,463
6	TCDS	Access Backup File Naming Feature: The user will be able provide text that will be added to the subjec line of the email that provide the Access Backup file.	Background: Allow access back up files to be named by the requestor so that when multiple access requests are submitted they can be effectively managed by the requestor.	$10,146
7	TCDS	Enhance Backup feature: Should be able to request backup that only includes the two way and directional locations (i.e. should have option to exclude lane level data from the request)		$17,561
8	R&H	Update R&H Fields Integration: Need to have "community" field in TCDS, TMC, and NMDS plugged into R&H so that these field will be populated by data in R&H.		$11,707

9	TMC	Enhance behavior for editing with a multi-page search results. When search result produce more than one page of locations, and a locaiton is edited, when edit is complete and user is returned to search results, they are returned to page one of the search results. Should be returned to last page viewed.		$13,659
10	TCDS	Enhance TCDS map to Display the location ID and/or AADT on the map for stations that are identifed through the search functions. Location IDs and/or AADTs appear for surrounding stations	Searched locatoins show a different color and DOES not show AADT/ ID. User selects "locate" button , the map label should be the same as the map settings	$8,195
11	TCDS	Enhance search to allow user to query records that were transferred from AtoA.	MS2 will add a wildcard search on the Build Search: Count Source field. Ie A2A* will give anything wil A2a in the name	$3,902
12	R&H	Update R&H Fields Integration: Need to have "route" field in TCDS plugged into R&H so that the field will be populated by data in R&H.		$4,683
12 Enhancments				**$198,244**

TASKS:

Technical support is required to assist with the following tasks:

- Provide project schedule and task progression throughout the life of the project
- Facilitate project status meeting and minutes
- Schedule and facilitate design meetings
- Provide design documentation for review and acceptance
- Construction based on approved design documentation
- Provide assistance when MDOT develops test cases
- Provide User Acceptance Testing (UAT) environment
- Schedule and support UATsessions
- Provide UAT defect reporting and resolution
- Production deployment of completed milestones

DELIVERABLES:

Deliverables will not be considered complete until the Agency Project Manager has formally accepted them. Deliverables for this project include:

1. Functional/system design document that addesses the twelve enhancements noted in the Scope of Work
2. Validation testing report
3. UAT resolution log, which can be in the form of a Basecamp thread
4. Archived Basecamp correspondence log
5. Minutes from each formal scheduled meeting
6. Twelve approved enhancements noted on the Scope of Work in MDOT’s TDMS Production environment

ACCEPTANCE CRITERIA:

Acceptance criteria for each milestone are as follows:

Design Acceptance Criteria
- Functional/System design approval
- Design Milestone Acceptance Sign-off

Implementation Acceptance Criteria
- Vendor System Acceptance Testing Results
- Implementation Milestone Sign-off

UAT Acceptance Criteria
- UAT Resolution Log
- UAT Milestone Acceptance Sign-off

Project will be deemed to be complete once all six deliverable are accepted by MDOT.

PROJECT CONTROL AND REPORTS:

An updated monthly project schedule must be submitted to the Agency and DTMB Project Managers throughout the life of this project. Each monthly schedule must contain information on the percent complete for each item on the schedule.

SPECIFIC DEPARTMENT STANDARDS:

Agency standards, if any, in addition to DTMB standards.

PAYMENT SCHEDULE:

Payment will be made on a **satisfactory acceptance of each Milestone** basis as noted in the project plan. Milestones are (1) the completion of the Design Phase, (2) the completion of the Implementation Phase, and (3) the completion of the UAT Testing Phase. DTMB will pay CONTRACTOR upon receipt of properly completed invoice(s) which shall be submitted to the billing address on the State issued purchase order not more often than monthly. DTMB Accounts Payable area will coordinate obtaining Agency and DTMB Project Manager approvals. All invoices should reflect actual work completed by payment date, and must be approved by the Agency and DTMB Project Manager prior to payment. The invoices shall describe and document to the State's satisfaction a description of the work performed, the progress of the project, and fees. When expenses are invoiced, receipts will need to be provided along with a detailed breakdown of each type of expense.

Payment shall be considered timely if made by DTMB within forty-five (45) days after receipt of properly completed invoices.

EXPENSES:

The State will NOT pay for any travel expenses, including hotel, mileage, meals, parking, etc.

PROJECT CONTACTS:

The designated Agency Project Manager is:

Chris Hundt
Michigan Department of Transportation
Bureau of Transportation Planning, Data Inventory and Integration Division
Murry D. Van Wagoner Building, 3rd Floor
425 W. Ottawa Street
Lansing, Michigan 48909

517-230-8710
Fax Number
hundtc@michigan.gov

The designated DTMB Project Manager is:

Dave Work
Department of Technology, Management and Budget
Agency Services MDOT – Public Services and Field Operations Section
Murray D. Van Wagoner Building, 3rd Floor
425 W. Ottawa Street
Lansing, Michigan 48909
517-719-2250
Fax Number
WorkD@michigan.gov

LOCATION OF WHERE THE WORK IS TO BE PERFORMED:

Consultants office is located at 5200 S. State Rd, Ste 100, Ann Arbor, MI. Work will be preformed by MS2 at their office or at the offices assigned to MS2 employees by MS2.

EXPECTED CONTRACTOR WORK HOURS AND CONDITIONS:

Work hours are not to exceed eight (8) hours a day, forty (40) hours a week. Normal working hours of 8:00 am to 5:00 pm are to be observed unless otherwise agreed to in writing.

No overtime will be permitted.

PROJECT PLAN AND MILESTONES/MILESTONE PAYMENT AMOUNTS:

Phase 3 Project	**130 days**	**Tue 6/1/21**	**Fri 12/3/21**	
Design Phase	**30 days**	**Tue 6/1/21**	**Tue 7/13/21**	
MS2 Draft Functional Design Document (FDD)	15 days	Tue 6/1/21	Mon 6/21/21	
Design Meetings (As Needed)	15 days	Tue 6/8/21	Mon 6/28/21	
MDOT Review Draft FDD	10 days	Tue 6/22/21	Tue 7/6/21	
MS2 Address Review Comments for FDD	5 days	Wed 7/7/21	Tue 7/13/21	
Functional Design Doc Acceptance	**0 days**	Tue 7/13/21		**$29,736**
Implementation Phase	**65 days**	**Wed 7/14/21**	**Wed 10/13/21**	
MS2 Develop Features	**65 days**	**Wed 7/14/21**	**Wed 10/13/21**	
Design / Status Meetings	65 days	Wed 7/14/21	Wed 10/13/21	
MS2 QA Testing	5 days	Thu 10/7/21	Wed 10/13/21	
Validation Testing Rpt & MS2 Demo Feature for UAT	**0 days**	Wed 10/13/21		**$138,772**
UAT Testing Phase	**35 days**	**Thu 10/14/21**	**Fri 12/3/21**	
MDOT Perform UAT	15 days	Fri 10/15/21	Thu 11/4/21	

UAT Review Meetings (as needed)	15 days	Thu 10/21/21	Wed 11/10/21	
MS2 Develop Defect Log/ UAT Resolution Report	15 days	Thu 11/11/21	Fri 12/3/21	
UAT Resolution Log Acceptance	**0 days**	Fri 12/3/21		**$29,736**
Move features to Production	5 days	Mon 12/6/21	Fri 12/10/21	

STATE OF MICHIGAN
CENTRAL PROCUREMENT SERVICES
Department of Technology, Management, and Budget

525 W. ALLEGAN ST., LANSING, MICHIGAN 48913
P.O. BOX 30026 LANSING, MICHIGAN 48909

CONTRACT CHANGE NOTICE

Change Notice Number **2**

to

Contract Number **071B6600068**

CONTRACTOR	
	MIDWESTERN SOFTWARE SOLUTIONS, LLC
	3815 Plaza Drive
	Ann Arbor, MI 48108
	Ben Chen
	734-995-0200
	bc@ms2soft.com
	CV0004251

STATE			
	Program Manager	Various	MDOT
	Contract Administrator	Christopher Martin	DTMB
		(517) 643-2833	
		martinc20@michigan.gov	

CONTRACT SUMMARY

TRAFFIC DATA MANAGEMENT SYSTEM

INITIAL EFFECTIVE DATE	INITIAL EXPIRATION DATE	INITIAL AVAILABLE OPTIONS	EXPIRATION DATE BEFORE
April 5, 2016	April 4, 2021	0 - 0 Year	April 4, 2021

PAYMENT TERMS	DELIVERY TIMEFRAME

ALTERNATE PAYMENT OPTIONS			EXTENDED PURCHASING	
☐ P-Card	☐ PRC	☐ Other	☒ Yes	☐ No

MINIMUM DELIVERY REQUIREMENTS

DESCRIPTION OF CHANGE NOTICE

OPTION	LENGTH OF OPTION	EXTENSION	LENGTH OF EXTENSION	REVISED EXP. DATE
☐	2 one-year	☒	3 years	April 4, 2024

CURRENT VALUE	VALUE OF CHANGE NOTICE	ESTIMATED AGGREGATE CONTRACT VALUE
$1,762,880.00	$395,000.00	$2,157,880.00

DESCRIPTION

Effective 3/16/2021, this Contract is extended for three years with two additional one-year option years, and is increased by $ 395,000.00. Maintenance funding for extension years 1 & 2 previously authorized as years 4 & 5 of base Contract. See attached table for details. The revised contract expiration date is 4/4/2024.

Please note the DTMB Program Manager has been changed to Dave Work.

All other terms, conditions, specifications, and pricing remain the same. Per contractor and agency agreement, DTMB Central Procurement Services approval, and State Administrative Board approval on 3/16/2021.

Program Managers
for
Multi-Agency and Statewide Contracts

AGENCY	NAME	PHONE	EMAIL
MDOT	Chris Hundt	517-335-4600	hundtc@michigan.gov
DTMB	Dave Work	517-719-2250	workd@michigan.gov

Year of Extension	FY of Payment	Maintenance Amount	Enhancement Amount	Annual Extended Total
1*	21	$ 89,600.00	$ 100,000.00	$ 189,600.00
2*	22	$ 92,300.00	$ 100,000.00	$ 192,300.00
3	23	$ 95,000.00	$ 100,000.00	$ 195,000.00
Total New Funding		$ 95,000.00	$ 300,000.00	$ 395,000.00
4 (option)	24	$ 97,900.00	$ 100,000.00	$ 197,900.00
5 (option)	25	$ 100,800.00	$ 100,000.00	$ 200,800.00

* - Funding for the Maintenance Amount for Extension years 1 & 2 previously authorized as years 4 & 5 of the Base Contract.

STATE OF MICHIGAN
CENTRAL PROCUREMENT SERVICES
Department of Technology, Management, and Budget
525 W. ALLEGAN ST., LANSING, MICHIGAN 48913
P.O. BOX 30026 LANSING, MICHIGAN 48909

CONTRACT CHANGE NOTICE

Change Notice Number **1**

to

Contract Number **071B6600068**

CONTRACTOR	
	MIDWESTERN SOFTWARE SOLUTIONS, LLC
	3815 Plaza Drive
	Ann Arbor, MI 48108
	Ben Chen
	734-995-0200
	bc@ms2soft.com
	CV0004251

STATE			
	Program Manager	Various	MDOT
		Various	
		Various	
	Contract Administrator	Christopher Martin	DTMB
		(517) 643-2833	
		martinc20@michigan.gov	

CONTRACT SUMMARY

TRAFFIC DATA MANAGEMENT SYSTEM

INITIAL EFFECTIVE DATE	INITIAL EXPIRATION DATE	INITIAL AVAILABLE OPTIONS	EXPIRATION DATE BEFORE
April 5, 2016	April 4, 2021	0 - 0 Year	April 4, 2021

PAYMENT TERMS	DELIVERY TIMEFRAME

ALTERNATE PAYMENT OPTIONS			EXTENDED PURCHASING	
☐ P-Card	☐ PRC	☒ Other	☒ Yes	☐ No

MINIMUM DELIVERY REQUIREMENTS

DESCRIPTION OF CHANGE NOTICE

OPTION	LENGTH OF OPTION	EXTENSION	LENGTH OF EXTENSION	REVISED EXP. DATE
☐		☐		April 4, 2021

CURRENT VALUE	VALUE OF CHANGE NOTICE	ESTIMATED AGGREGATE CONTRACT VALUE
$1,080,642.00	$682,238.00	$1,762,880.00

DESCRIPTION

Effective 12/19/2018, this Contract is increased by $682,238.00 for MDOT use per attached quote and SOW.

Please note the Contract Administrator has been changed to Christopher Martin.

Please note the Program Managers have been changed to Chris Hundt and Jeff Beasley.

All other terms, conditions, specifications, and pricing remain the same. Per contractor and agency agreement, DTMB Procurement approval, and State Administrative Board approval on 12/18/2018.

Program Managers
for
Multi-Agency and Statewide Contracts

AGENCY	NAME	PHONE	EMAIL
MDOT	Chris Hundt	517-335-4600	hundtc@michigan.gov
DTMB	Jeff Beasley	517-335-9646	beasleyj@michigan.gov

MICHIGAN DEPARTMENT OF TECHNOLOGY, MANAGEMENT AND BUDGET
IT SERVICES
STATEMENT OF WORK

Project Title: **Transportation Data Management System (TMS/H Modernization) Phase 2**	**Period of Coverage:** **January 2019 - March 2020**
Requesting Department: **Michigan Department of Transportation (MDOT)**	**Date:** **11/16/2018**
Agency Project Manager: **Chris Hundt**	**Phone:** **(517) 335-4600**
DTMB Project Manager: **Jeff Beasley**	**Phone:** **(517) 335-9646**

Brief Description of Services to be provided:

BACKGROUND:

This Statement of Work is based on the existing contract between the State of Michigan (SOM) and Midwestern Software Solutions (MS2), LLC, see Contract #071B6600068 to provide the SOM technical support with Initiation & Planning, Business Requirements, COTS Application Design, Implementations, TDMS application hosting center, technical support, and ongoing maintenance.

PROJECT OBJECTIVE:

- Integration with the ESRI Roads & Highways System
- Provide auto populate functionality in all modules for traffic and equipment data from Roads & Highways events on points and segments
- Provide the ability to utilize all data on the segment for year end processing, roll up to the primary, and apply to sub-segment
- Provide Dynamic Attributes within the Scheduler module and make other enhancements

SCOPE OF WORK:

Initiate phase 2 of the TDMS project to leverage the ESRI Roads & Highways and make requested enhancements to the Highway Performance Monitoring System (HPMS), Scheduler, Turning Movement Count System (TMC), Traffic Count Database System (TCDS), and Non-Motorized Database System (NMDS) modules. The TDMS application will seamlessly link point-based traffic station data with segment-based roadway characteristics to enhance data integrity and improve information availability. This link will allow the use of the most up to date technology for a Linear Referencing System (LRS) that offers automation and integration of multiple data sources from one data repository.

See attached TDMS Phase 2 High-level Requirements document.

TASKS:

Technical support is required to assist with the following tasks:

- Provide project schedule and task progression throughout the life of the project
- Facilitate project status meetings and minutes
- Schedule and facilitate design meetings
- Provide design documentation for review and acceptance
- Construction based on approved design documentation

- Create user test cases based on approved requirements and designs documentation
- Provide User Acceptance Testing (UAT) environment
- Schedule and support UAT sessions
- Provide UAT defect reporting and resolution
- Production deployment of completed milestones

DELIVERABLES:

Deliverables for this project include Design, Construction, and UAT for the following milestones:

1. **Roads & Highways and HPMS Module**
2. **AADT Sub-Segment Module**
3. **Scheduler Module**
4. **NMDS & TMC Module**
5. **TDMS Module**

Deliverables will not be considered complete until the Agency Project Manager has formally accepted them.

ACCEPTANCE CRITERIA:

The acceptance criteria for each milestone design, construction, and UAT phases to constitute as completed are as follows;

Design Acceptance Criteria
- SEM-0501 Functional Design approval
- SEM-0604 System Design Document approval
- SEM-0401 Requirements Traceability Matrix approval
- SEM-0701 Training Plan approval
- SEM-0189 Design Stage Exit approval
- Design Milestone Acceptance Sign-off

Construction Acceptance Criteria
- SEM-0600 Test Strategy approval
- SEM-0603 Detailed Test Plan approval
- SEM-0606 Test Case approval
- Vendor System Acceptance Testing Results/Metrics Report
- SEM-0189 Construction Stage Exist approval
- Construction Milestone Acceptance Sign-off

UAT Acceptance Criteria
- SEM-0607 Test Closure Report approval
- SEM-0189 UAT Stage Exist approval
- UAT Milestone Acceptance Sign-off

The SEM forms and the milestone acceptance sign-off document identify the project members who are accountable for approvals and signoffs.

PROJECT CONTROL AND REPORTS:

A bi-weekly progress report must be submitted to the Agency and DTMB Project Managers throughout the life of this project. This report may be submitted with the billing invoice. Each bi-weekly progress report must contain the following:

1. **Accomplishments**: Indicate what was worked on and what was completed during the current reporting period.

2. **Funds**: Indicate the amount of funds expended during the current reporting period, and the cumulative total to date for the project.

SPECIFIC DEPARTMENT STANDARDS:

Agency standards, if any, in addition to DTMB standards.

PAYMENT SCHEDULE:

Payment will be made on a ***Satisfactory acceptance of each Milestone*** basis. DTMB will pay CONTRACTOR upon receipt of properly completed invoice(s) which shall be submitted to the billing address on the State issued purchase order not more often than monthly. DTMB Accounts Payable area will coordinate obtaining Agency and DTMB Project Manager approvals. All invoices should reflect actual work completed by payment date and must be approved by the Agency and DTMB Project Manager prior to payment. The invoices shall describe and document to the State's satisfaction a description of the work performed, the progress of the project, and fees. When expenses are invoiced, receipts will need to be provided along with a detailed breakdown of each type of expense.

Payment shall be considered timely if made by the DTMB within forty-five (45) days after receipt of properly completed invoices.

EXPENSES:

The State will NOT pay for any travel expenses, including hotel, mileage, meals, parking, etc.

PROJECT CONTACTS:

The designated Agency Project Manager is:

Name Chris Hundt
Department Michigan Department of Transportation
Area Travel Information and Electronic Services Unit
Building/Floor Murray D. Van Wagoner Building 3rd Floor
Address 425 W. Ottawa Street
City/State/Zip Lansing, Michigan 48909
Phone Number (517) 335-4600
Fax Number
Email Address HundtC@michigan.gov

The designated DTMB Project Manager is:

Name Jeff Beasley
Department of Technology, Management and Budget
Area Enterprise Portfolio Management Office
Building/Floor Murray D. Van Wagoner Building 3rd Floor
Address 425 W. Ottawa Street
City/State/Zip Lansing, Michigan 48909
Phone Number (517) 335-9646
Fax Number
Email Address BeasleyJ@michigan.gov

LOCATION OF WHERE THE WORK IS TO BE PERFORMED:

Consultants will work at Midwestern Software Solutions, LLC 3815 Plaza Drive Ann Arbor, Michigan 48108.

EXPECTED CONTRACTOR WORK HOURS AND CONDITIONS:

Work hours are not to exceed eight (8) hours a day, forty (40) hours a week. Normal working hours of 8:00 am to 5:00 pm are to be observed unless otherwise agreed to in writing.

No overtime will be permitted.

3815 Plaza Drive
Ann Arbor, MI 48108

November 13, 2018

Mr Jeff Beasley
Project Manager
DTMB Enterprise Portfolio Management Office
Lewis Cass Building, 2nd Floor
320 S. Walnut Street
Lansing, MI 48909
BeasleyJ@michgan.gov

Re: MDOT TDMS Implementation: Phase 2

Dear Mr. Beasley,

Per your request, we are providing a summary of the scope of work for the implementation of additional items for the Traffic Data Management software (TDMS). As you are aware, MDOT has worked with MS2 to identify items that are needed to support the efforts of the Data Collection & Reporting Section. A comprehensive list was generated by MDOT and reviewed through several meetings to confirm the desired items. The list is attached to this letter.

With the identification of the items, the team further clarified the items with the following categories: Roads & Highways, Future Release, Design Revision, and Maintenance. Roads & Highways are items that are needed to integrate with a parallel MDOT project. This is an independent project that is anticipated ready for production in October, 2018. Once in production, the project will have items to integrate with the software, ESRI's Roads & Highways. The Future Release items are additional new features that are needed by the MDOT staff to support their work with the TDMS system. Design Revision are items modified from the original requirements once the system was in production. The changes required larger efforts than what could be accommodated within the original contract. Finally, Maintenance items are items that MS2 will address during the Maintenance & Support phase and do not have additional costs to the project.

Effort for each item will have three phases, Design, Implementation, and UAT Acceptance. This work will be billed as each phase for each item of work is completed by MS2 and then reviewed and accepted by MDOT staff. The following is a high summary of the list of items grouped by dependent work.

R&H and HPMS Module Items		$ 195,552	Start	End
			Jan, 2019	Sept, 2019
Design		$ 19,555		
Construction		$ 146,664		
UAT Acceptance		$ 29,333		

AADT_Subsegment Feature		$ 77,600	Start	End
			Jan, 2019	May, 2019
Design		$ 7,760		
Construction		$ 58,200		
UAT Acceptance		$ 11,640		

Scheduler Module Items		$ 49,664	Start	End
			Jan, 2019	May, 2019
Design		$ 4,966		
Construction		$ 37,248		
UAT Acceptance		$ 7,450		

NMDS & TMC Module Items		$ 101,462	Start	End
			Jan, 2019	Sept, 2019
Design		$ 10,146		
Construction		$ 76,097		
UAT Acceptance		$ 15,219		

Misc TDMS Items		$ 133,472	Start	End
			June, 2019	Feb, 2020
Design		$ 13,347		
Construction		$ 100,104		
UAT Acceptance		$ 20,021		

In addition to the Phase 2 items, there are additional costs related to supplemental support costs due to the project delays. Summaries of the item was previously submitted and attached to this letter. The cost for this item is $124,488.

Misc Support Charges	$ 124,488	Start	End
			Oct, 2018

The total of monies will be $682,238. which in includes the Phase 2 items, $557,750 and the additional support items, $124,488.

If you have any questions or need any additional information, please let me know.

Sincerely,

Jason Breault
Project Manager- MS2

Attachments

STATE OF MICHIGAN
MDOT TDMS PROJECT
PHASE 2 FEATURES LIST

Future Release Number	Item	Notes	Type	Cost
1	Local Agency- Road Soft Import is data based on the segment and will be developed in Future Release with R&H integrations	Item 99 and 100 dependent of this import	R&H	$ 15,520
2	A feature enhancement was requested from MDOT to review monthly perm data with the new UI to support a "monthly" view	Update Item Description: Enhance a class report to highlight weekends (not holidays) in the excel file. Reference Beasley email on 8/27/18/ see screen shots. Cost handled in Maintenance.	M	
3	Scheduler- Dynamic Attributes will be added to TCDS locations to support the schedule items, included Equipment Type. Estimated +/- 5 dynamic attributes will be needed and added with R&H integration (See Sec 3.6) R&H- auto update on key location items identified (i.e. primary point/segment id, sf, g, axle, state owned, class distribution, program) from the segment layer. Design meeting	MDOT: Can this be done without R&H? MS2 Response: fields were going to populated from R&H first.	DR	$ 5,820
4	Schedule- Frequency (ex. 3 times annually) Design Function has been met. Dynamic Attributes will be added to TCDS locations to support the schedule items. Attribute will be added with R&H integration		R&H	$ 5,432
5	Scheduler- Duration (ex. 48 hour) Design Function has been met. Dynamic Attributes will be added to TCDS locations to support the schedule items. Attribute will be added with R&H integration		R&H	$ 1,552
6	Scheduler- A proposed list of based on Equipment Restrictions and Limitations (Ex. Hose, Video, Wavetronix etc.) Design Function has been met. Dynamic Attributes will be added to TCDS locations to support the schedule items. Attribute will be added with R&H integration		R&H	$ 776
7	A feature enhancement was requested from MDOT to further sort an itinerary from a map search. An example was a list from the map search that can be ordered.		FR	$ 11,640
8	System must provide the ability to assign a Traffic Data Item to a Traffic Segmentation (spatially and tabular). Code to current layers provided or wait for R&Hs? Final integration is blocked by Roads & Highways	scope effort included with item 66	R&H	
9	Local Agency -System must provide the ability to append a received ADT from an External Agency to an existing traffic segment. Function is available in TCDS/ HPMS.	Clarified during Local Agency Meeting on 6/7/18. For items related to "an existing segment" would be blocked by R&H. Final clarification of the item: The ADT would be edited at the station manually by the user (not the AADT). If there are a large number of changes, MS2 could support through a periodic bulk edit.	R&H	
10	A feature enhancement was requested from MDOT for generating future AADT during year end processing.	Item clarified for effort estimate, 8/28/18. For this item, Future AADT information imported to TCDS database from R&H, then MDOT business rules are applied to the information. The future year AADT will be available through Year End Processing Reports (not directly within UI)	FR	$ 7,760
11	R&H- Allow Segmentation to be reviewed prior to producing an AADT/CAADT. This is an existing function of TCDS/ HPMS. Final workflow dependent on Roads & Highway Integration.	MS2 Response : Segmentation and year end processing can be separate. You can work on segments before year-end on TCDS has been finalized. Then when you finalize, you can update the stats in HPMS.- Closed contingent on upon R&H critical LRS items per MDOT on 8/3/18	R&H	
12	R&H- System must provide the ability to automatically assign a Traffic Segment to an Agency Generated ADT using a Spatial Referencing System by Program Type (Trunkline, Non Trunkline and Ramp). Function is available. Final integration is blocked by Roads & Highway and the Road Soft import.		R&H	$ 38,800
13	TCDS- The Design Function met for this business requirement. A feature enhancement was requested from MDOT. When adding a new station in TCDS, pull the Factor Group from the R&H segment in the map. R&H- auto update on key location items identified (i.e. primary point/segment id, sf, g, axle, state owned, class distribution, program) from the segment layer. Design meeting	scoped effort included with item 66	R&H	
14	Layers not displaying in all modules. (Scheduler, TMC, NMDS, HPMS, TCDS) Layers can be added to the maps when MDOT provides them. Final R&H implementation will also integrate.	1. Need to confirm MDOT's desired layers. 2. MS2 can add support for existing layers in the NMDS, TMC, Scheduler maps	FR	$ 7,760

Future Release Number	Item	Notes	Type	Cost
15	Creating Class AADTs from Length counts - MDOT's Miovision 6 bin as well as length counts received form MS2 users and local agencies (i.e. KATs). BCs post: "File Imports ready for MDOT Testing" and "Reports for Reviewing"	Clarified items with MDOT at 7/30/18 Training: MS2 will develop a system routine to support MDOT's 3-bin/5-bin/6-bin and allow MDOT to use to compute truck AADT's.	FR	$ 7,760
16	System must provide the ability to select by jurisdiction (i.e. .county, city), display segment information, and allow user to export traffic segments and /or traffic station information to an Excel or shapefile format. You can search by jurisdiction, but the functionality to provide additional segment attribution other than the 9 canned reports is not available		R&H	$ 7,760
17	Scheduler- Map Tool in Scheduler- to order itinerary (order counts in a single day)	same as other items listed	CLOSED	
18	System must provide the ability to offer a "Self Service" approach for External Agencies to review ADTs through a Spatial Map. System should provide a tool to allow users (external agencies) to submit changes to traffic segmentations. Function is available. Final integration is blocked by Roads & Highways	MS2 will not support this as understood through segmentation. MS2's current work flow. Local agency views data as Public viewer of the location to view ADT's and notified MDOT via email. Closed per MDOT 7/26/18	CLOSED	
19	R&H- The ability to establish Spatial Information Layers (as shapefiles) to be shared with External Systems such as Center For Shared Solutions (CSS) GIS Framework. Final integration is blocked by Roads & Highways.	Current function: User export Locations or segments to a shape file. Other GIS layers are not stored in MS2- Closed per MDOT 7/26/18	CLOSED	
20	R&H- System must adhere to the Michigan Geographical Framework (MGF) set of data layers. Final integration is blocked by Roads & Highways.	This item no longer applies to MS2- closed per MDOT 7/26/18	CLOSED	
21	R&H- System must be able to accept the annual MGF migration of the LRS and the associated data attributes by PR and PR mile point. Function is available in TCDS/ HPMS. Final workflow dependent on Roads & Highway Integration.	need to clarify- MS2 understands that this will be addressed with R&H on MDOT's GIS side and not controlled in MS2 system. MDOT comment : How will MS2 accommodate Framework changes. Discuss with MS2 during R&H integration. Scoped estimated covered with item 66	R&H	
22	R&H- System must provide the ability to add, edit and remove Traffic Segments and simultaneously update in tabular environment. Final integration is blocked by Roads & Highways.	MS2 comment: need to clarify with design with MDOT. Adding/ Editing/ and Remove and handled R&H and syncs to HPMS MDOT comment: Discuss with MS2 during R&H integration. Scoped estimated covered with item 66	R&H	
23	R&H- System must provide the ability to associate Count Location(s) with a Traffic Segment visually. Primary and/or segment id assignment (sub segments). Final Integration is dependent on implementation with R&H.	The existing function can be demonstrated when R&H integration is complete	R&H	
24	System must provide tools to create and maintain and/or link to an External Agency directory that captures the collectors, providers, and factors of NTFA traffic data. A feature enhancement was requested from MDOT. The feature will allow MDOT to average AADTS's for locals agencies through sub segments. MS2: " This feature is not directly related to this BR 3.27 but could apply to the section overall." MDOT: note, this would be for all data (i.e. turning movements, MDOT Regions), not	Review mtg 7/25/18: MDOT: Sub segments to create/roll up to all stations in the segment. Utilize all data on the segment for YEP. Roll up to primary and apply to sub segment. More design meetings needed (ability to review multiple sub segments). Will primary points be identified on the sub-points (in TCDS, HPMS)?-ans. Still need to design, but on a conceptual level, user could view the sub segment	FR	$ 58,200
25	Averaging ADT function doesn't not exist. A feature enhancement was requested from MDOT. The feature will allow MDOT to average AADTS's for locals agencies through sub segments. This feature is not directly related to this BR but could apply to the section overall. This RTM belongs with 3.16 : System must provide the ability to automatically filter for most current year, ADT/CADT discrepancies including out of range and averages ADTs/CADTs into one AADT/CAADT. Must accommodate	Review mtg 7/25/18: Sub segment feature will address the averaging the ADT's. To provide additional flexible to analyst with a UI tool would not be available. MS2 could provide 1-2 custom report to average AADTS's for locals agencies through sub. segments. This will be resolved when the above item is addressed.	DR	
26	Local Agencies- The related Historical Traffic Data. Historical data files from agencies (excels provided to MS2 with data dump) .	Data migration meeting- next steps. Final integration is blocked by Roads & Highways. How is it blocked? Files were provided with legacy data clarified during Local Agency Meeting on 6/7/18. This requirement is not related to the RTM referenced number. MDOT believes that this data still needs to be migrated. It was provided during the legacy data. During the data migration, there were	FR	$ 3,104
27	Information about the related Current Traffic Data- source of data (local agency). Final integration is blocked by Roads & Highways.	MDOT- How is it blocked by R&H? clarified during Local Agency Meeting on 6/7/18. Clarification: This is a high level BR and MS2 assumed that was related to segment attributes. We agreed that this BR is closed.	CLOSED	
28	System must relate/assign Traffic segment (TraffIDs) to each Agency. Each segment retains the agency id. Must have ability to edit and bulk load changes. Create reports, search by.	How is this addressed in TDMS? Sub segment creation? Final integration is blocked by Roads & Highways. . How is it blocked by R&H? Clarification/design meeting of what is meant by this requirement. We discussed this in the 5-3-18 meeting Clarification during Local Agency meeting on 6/7/18. To apply the Agency ID to a segment requires R&H. The attribute needs to be defined	R&H	$ 1,552
29	Local Agencies - System must assign existing Departmental Agency I.D. codes to the Agencies and allow edits and re-assignments of segment. Final integration is blocked by Roads & Highways. How is it blocked by R&H? Clarification/design meeting of what is meant by this requirement. We discussed this in the 5-3-18 meeting	Same as ITEM 28. Clarification during Local Agency meeting on 6/7/18. The design solution for Item 28 will resolve this item.	CLOSED	

Future Release Number	Item	Notes	Type	Cost
30	TMC Ped import to NMDS (cross walk)		FR	$ 23,280
31	Auto numbering Feature for NMDS and TMC locations		FR	$ 2,328
32	Modifications to current ITS data import	Assume file format is the same and file can be place on MS2's ftp server then no additional effort. Constraint: Must use ftp server	FR	$ -
33	Miscellaneous additional "wants" for Scheduler Module	Clarification provide email on 7/3/18 1. Scheduler: Status by Block and Area 2. Pull Program type from TCDS when creating new tasks in Scheduler	FR	$ 4,656
34	Map Tool in Scheduler- to order itinerary (order counts in a single day)	same as other items listed	CLOSED	
35	Report Enhancement- Tom F's request. MSP report (CVST)	based on 7/3/18 email, item is closed	CLOSED	
36	Format not available to upload. Back Data Reprocess for IRD software. iAnalyse federal format.		FR	$ 7,760
37	Crosswalk data between TMC and NMDS MS2 is looking at features to export Ped/Bike data from TMC to NMDS. This is will likely be a future enhancement. (tracking)"	same as other items listed	CLOSED	
38	Export capabilities to support FHWA annual Highway Performance Monitoring System (HPMS) traffic data reporting requirements - data export, future year calculation, Meta data and Summary reports. HPMS format: In order to be imported into the HPMS software, reports have to be in in a pipe-delimited .csv or .txt file.	Clarified and updated item on 8/28/18. A customized report/export will be created per MDOT's desire to support FHWA HPMS traffic data reporting. It is likely a pipe delimited csv file	FR	$ 9,700
39	Auto approve feature for 'Class distribution factors clustering' for locations without a current year count you could auto update with last year's AADT.	MDOT request from Kevin due to MDOT business process for class distribution. Possible work around by included class count in each group. MS2 customization beyond this workaround. Additional Items Identified with Future Release Review	FR	$ 7,760
40	Scheduler Requests- Automatic update when a count is assigned in Count Group Assign List (Frank)		FR	$ 7,760
41	Scheduler Requests-Only Site Admin can delete task, edit count status to Data Received, Data Rejected, or Task Completed.	MS2 understands the request is to only allow site admins to edit the items listed on a task and NOT allow the admin level users edit the items that they are assigned to. This is in conflict with the user levels and the design within Scheduler and not can not be provided	FR	
42	Scheduler Requests- Create search filter on Three time counts.		FR	$ 1,552
43	TMC Diagram- 8 leg Diagram		FR	$ 33,950
44	Annual upload MS2 to MS2 - build in qc checks in data transfer with rejection report to MS2 user. Automate cleanup of attributes (i.e. category's, direction, mega sites) from pulled data	MDOT Q: MS2 to provide further recommendation for setting up best practices for sharing data (DOT to local agencies). Is there the opportunity to auto populate fields (LRS and segment related fields) for data imported from other MS2 users and check for station duplication. MS2 Response: This item was developed to be a comprehensive feature. An additional customizations would have	FR	

Future Release Number	Item	Notes	Type	Cost
45	Batch processing of corridor balancing configurations- this would be customization. MS2 suggests visual review of corridors		FR	$ 7,760
46	Scheduler- Ability to pull equipment type and/or # of lanes from the TCDS into Scheduler.	Update to show equipment type so that is visible in Scheduler from station information	FR	$ 1,552
47	Data format was provided to MDOT that would be acceptable for Toll Bridge Integration. MS2 will import data based on the data format provided to MDOT. The import can be addressed in the maintenance.		M	
48	MDOT would like to be able to access/see tracking logs to identify changes made by users in TDMS and when.		FR	$ 67,900
49	Reports- Variation from Historical Trend Report- MDOT identify report needs and MS2 will identify report name or adhoc fields	MDOT closed on 8/3/18	CLOSED	
50	Agencies other than Data Collection uploading hourly data in TDMS (all modules)	MDOT/MS2 closed on 7/25/18	CLOSED	
51	HPMS - view detail -info window- incorrect- ' route/control/sec' s/b 'pr #' and 'location id' s/b 'segment id '	Should complete with R&H implementation because the attributes are coming from Segment and R&H	M	
52	Customize info box and/or label on all 3.22 requirements	MDOT closed on 8/3/18	CLOSED	
53	Parent point to children (sub segments). Further meeting/design document". See 3.16 in this document	same as other items listed	R&H	
54	Duration of collection. update solution: add dynamic attribute (done when R&H integration)	same as other items listed	CLOSED	
55	Map Construction event added to scheduler	MDOT would provide a gis map layer of construction. If MDOT host the map service (it is a map service from MDOT) then would be minimal effort from MS2. If it is actually couple with R&H then complexity would be beyond effort estimate provided.	FR	
56	Map Weather layer	MDOT would provide a gis map layer of construction. If MDOT host the map service (it is a map service from MDOT) then would be minimal effort from MS2. If it is actually couple with R&H then complexity would be beyond effort estimate provided. Per 8/28/18 Mtg: MDOT GIS Team exposes a map layer to MS2 to consume. MDOT GIS to determine if this could be provided. Per MDOT's	CLOSED	
57	R&H- 7 decimal segment and point events		R&H	$ 3,104
58	Local agency -Information about the related Current Traffic Data.	same as other items listed	CLOSED	
59	Local Agency - System must relate/assign Traffic segment (TraffIDs) to each Agency by Agency id. How is it blocked by R&H?	same as other items listed	CLOSED	

Future Release Number	Item	Notes	Type	Cost
60	R&H- Set up notification rules with R&Hs on road changes and within TDMS. How will HPMS Samples, facility type, nfc changes be treated within TCDS/HPMS modules - assigning new station IDs/Primary IDs, factor groups etc.?	Scoped estimated covered with item 66	R&H	
61	R&H- auto update on key location items identified (i.e. primary point/segment id, sf, g, axle, state owned, class distribution, program) from the segment layer and TDMS. Design meeting	same as other items listed	CLOSED	
62	R&H- auto populate ls, nfc, road name, city, twp, etc for both points and segments in all modules from R&H events	When user creates a new station in TCDS, TMC, or NMDS, uses segmentation information from R&H items	R&H	$ 62,080
63	TCDS- Community drop down- must be set up for both city and twp (two different events) this has been an ongoing bug on what TDMS calls 'community' in the TCDS. MS2 states community can be only city or only TWP. We need 'community' to include both city and TWP under the drop down or provide an additional field for TWP. R&Hs will provide both city and TWP events for TDMS to pull from. Example s: St. Joseph, Niles, Dimondale, Barton Hills/Ann arbor TWP	RTM BR :City, Village, and Township (CVT) Functional Description: The design requirement is an existing function of the COTS-TCDS solution. Community is available.7/31/18. The database should be maintained to say City of or Twp, i.e. City of Northville and Northville Twp by MDOT. No scope effort included in the estimate	DR	
64	Build Search by PR and pr mpt. You can only search on LRS, Pr you cannot, must go under advanced search. Code to current layers provided or wait for R&Hs?	7/25/18: MDOT Question: What is the effort to auto populate the PR and pr mpt from the LRS and LRS mpt? Or modify the field "LRS/PR." Ability to search by PR. MS2 Response: Suggestion Option 1; move users to using only LRS OR Option 2- If add additional support the complexity, Autopopulate PR at station (don't allow editing of that field) and using the LRS fields to populate. Per the 8/29 Version of	CLOSED	
65	Build Search by control sec and control section mlp. Search function does not exist in TCDS or we have not found it. (see event ownership sprdsht).	7/25/18:MDOT is researching to determine if they still need it. MDOT closed on 8/3/18	CLOSED	
66	R&H- TDMS segment attributes will be available in R&Hs (attributes of segments that TDMS owns). Once R&H integration is completed, these values can be exported from the HPMS module (or simply gotten internally on MDOT's side from R&H) attributes of segments that TDMS owns listed in HPMS report center, Adhoc reports, SQL builder, Build Search. Future Release Item	This item is too broad to estimate and is generally a high level view of the R&H integration. Scope provided for this item is cover the general items understood for R&H integration that are not itemized or covered with items	R&H	$ 38,800
67	System must provide the ability to present a PR Mile Point based on the Lat/Long provided in the Traffic Data set. R&H Future Release Item.	Roads and Highways Items RTM BR: System must provide the ability to present a PR Mile Point based on the Lat/Long provided in the Traffic Data set. Functional Description: The design requirement is an existing function of the COTS-HPMS. User can select point on segment and system will show PR mile point. 7/25/18 mtg. Closed. This is an existing function with integration with	CLOSED	
68	System must provide the ability to select and unselect traffic segments and /or traffic stations and allow user to export to an Excel or shapefile format. It could be considered R&Hs, but many of the attributes are not 'R&H owned' events. This would be the 'TDMS owned' fields from the segment excel spreadsheet. The big picture is that the TDMS does not have the ability to run reports based upon the segment attribution (adhoc reports or Tools) other than the 9 reports in the module	MS2: Need to review with MDOT. There is a GIS shape file export available. Propose to close item MDOT 8/3/18:R&H will should able to accommodate a GIS export of MS2 owned event tables, which will allow querying of MS2 owned attributes (stations and segments). Will need to revisit during R&H discussions. Scoped estimated covered with item 66	R&H	
69	Need Segment attributes available in adhoc and report center. System must export selected traffic segments and /or traffic stations as a shapefile or Excel by PR and MPs with predefined attributes i.e. road name, current AADT, source of data.	MS2: This item can not be supported in system. An export file can be provided with ALL attributes and User can filter outside of the system (like excel) MDOT 8/3/18 Check to see if we can get from R&H (see line above).	DR	
70	System must provide the ability to select and unselect traffic segments and /or traffic stations by use of tools (freehand polygon, rectangle, freehand polyline, or point) and allow user to export segment information to an Excel or shapefile format. The functionality to select by the tools identified is not there.	The system allows the items for stations. An enhancement would be need for map tools to select the segments in HPMS	DR	$ 3,104
71	R&H- The ability to establish Spatial Information Layers (as shapefiles) to be shared with External Systems such as Center For Shared Solutions (CSS) GIS Framework.	MS2 cant be used a portal to download their GIS data. We can provide shapefile report for TCDS. TDMS system may not be the appropriate system for retrieving spatial information and R&H MDOT GIS should be used. MS2 proposes closing this item MDOT 8/3/18 MS2 owned event should be able to be exported from R&H. See Item 68	R&H	
72	R&H- System must adhere to the Michigan Geographical Framework (MGF) set of data layers.	same as other items listed	CLOSED	
73	System must provide an info window that displays (pop up) the following attributes when a road segment or traffic point is selected – display road name/names of the segments. Display Traff_ID, count station, AADT, AADT year, road name, county, city, data source, collection date, PR number, PR mile points, latitude/longitude.	same as other items listed	M	
74	Additional attributes be displayed locations and segments (i.e. growth factor was added 3-29-18) MDOT to provide a list.	7/25/18: Clarification that this is the backup plan in case R&H is not available by YEP. Populating fields with attributes. MDOT would provide a location based file with all attributed to updated. This could be managed through maintenance with MS2	CLOSED	

Future Release Number	Item	Notes	Type	Cost
75	Auto tracking log- MDOT would like to be able to access/see tracking logs to identify changes made by users in TDMS and when.	same as other items listed	CLOSED	
76	Go Live- Public facing view- what will be our design, options, who designs it. Disclaimer.		CLOSED	
77	Go Live-Public- Instructions/navigation		CLOSED	
78	Go Live-Public- MILOGIN - set up. Will we lose the ability to view data of another user with MiLogin?		CLOSED	
79	Go Live-Public- Reports - which can be made available?		CLOSED	
80	MSP reports from CVST	Per MDOT July 3/2018 email-closed	CLOSED	
81	NMDS- additional and current version formats -per recommendations of the Non-motorized study	MDOT 8/3/18: Tool would like to upload Trafx Datanet file (file provided via email on 5/18/18)	FR	$ 5,820
82	NMDS- Qc checks -per recommendations of the Non-motorized study	Based on 5/11/18 Memo from Toole: 1. Compare Counts to neighboring values-% of previous count of same DOW 2. Apply QC rules by mode	FR	$ 3,104
83	NMDS- Specific instructions on machine setup and formats.	(NMDS was built to industry standards with formats provided by manufacturers. MDOT agreed to close on 8/3/18	CLOSED	
84	NMDS - Welcome Center data. Unable to load permanent recorder data into the NMDS	During implementation phase, a workflow was agreed to. Per MDOT 8/3/18, would like a file format for Sensource	FR	$ 5,820
85	NMDS-additional exports/reports or edits to -future release based upon recommendations of MDOT's Non-motorized study	7/25/2018:Study is still in progress. Request from MDOT on 8/3/18 • Enable users to export reports with minimally-processed data, such as by hour, reflecting any QC decisions made on the file. Other reports include annual totals (including AADT) by direction, monthly totals by direction, avg. daily totals by direction, avg hourly totals by direction	FR	$ 23,280
86	System must provide the ability to maintain historical data when a Traffic Segment is split or merged or versioned. Because we are maintaining the segmentation in TDMS this should be a function of TDMS not R&Hs (we push our edits to R&Hs, we do not edit in R&Hs) This is also a requirement of R&Hs that MS2 must retain the editing history. (we have had this discussion between R&Hs staff and MS2)	MS2 understands this to be a function of R&H so is supported in R&H and NOT in TDMS. Need to confirm with MDOT. MDOT 8/3/18 MDOT will revisit in R&H design. Scope estimated included with item 66	FR	
87	System must provide the ability to modify collection information rules by segment/corridor.	MS2: "MS2's system is station based. Through viewing, updating station information and then applying to segments. R&H will be the governing system for corridors". MDOT: How will this be done? And pushed to R&Hs? Segments can be modified in HPMS module isn't that the governing system? Email from MDOT on 7/3/18. Based on current understanding MS2 will 1. Add local agency ID in Scheduler	FR	$ 4,656
88	TMC-Possible disclaimer in TMC on legacy data		FR	$ 776
89	Local Agency - Agencies other than Data Collection uploading hourly data - formats.	7/25/2018 mtg: Any new formats will be addressed as an additional customizations. There are no new defined formats currently so item is closed	CLOSED	

Future Release Number	Item	Notes	Type	Cost
90	Local Agency - attach documents i.e. permit	A enhanced notes features developed for Local Agency Mgr. Per the 8/29 Version of the Phase 2 List provided by MDOT on Basecamp, this item is closed.	CLOSED	
91	Local Agency - module accessible by FO staff	Admin level can access this area. See Basecamp AI 142	CLOSED	
92	Local Agency – UAT -final	closed per MDOT 7/26/18	CLOSED	
93	Local Agency -Notes- time/date stamp on note field - record author- multiple note lines (to stop run on notes)	An enhanced notes feature developed for Local Agency Mgr similar to the TCDS function. This is same as the above item	CLOSED	
94	Cannot review a report; any changes (adhoc) requires you to back out. MDOT will provide video.	Per the 8/29 Version of the Phase 2 List provided by MDOT on Basecamp, this item is closed.	CLOSED	
95	Documentation- Data dictionaries, formulas, calculations	The Backup API has an available link to download the Data Dictionaries. If MDOT needs something further that what has been provided, provide a specific list of items. MS2 proposes to closed this item.	CLOSED	
96	Identify the year the Traffic Data was collected. I think this is a training issue on the 'back up access data sets'. We asked BJ why 'latest date' in the 'back up access data set ' had jan 1st as last year collected. He told us in the reports that 'latest date' was not a reliable field due to aadt calculation and we should link to the raw data set to get the actual date. For data requests we need to know what is sets/fields are reliable so we are not sending bad data.		Training	
97	Legacy - TMC, AADT prior to 2015, and Confirm all data migrated to TCDS and identify, review, and correct bad data or data that does not correspond.	Contract 4.2 Data Migration pg 179-181. Data Migration Milestone was completed and accepted. After the milestone was completed and production data was added to the system, MDOT identified additional items and is working with MS2 to resolve.	FR	
98	Local Agency collection ownership and type. Agency ID carried/maintained on segment	Bug (MDOT) THIS IS A REPEAT OF ITEM 28. (Also RTM numbers do not match verbiage)	CLOSED	
99	Local agency- Local agency to submit data with meta data items	Clarified during Local Agency Meeting, 6/5/18. In TCDS, Metadata comes from the station level. Therefore the data will be maintained at the station level for the Local Agency Stations. Specifically, MDOT also gets this information from the Roadsoft data file (count duration and date). Because this is directly related to the Roadsoft import, the team will have to review the design as a part of the Roadsoft	FR	$ 15,520
100	Local Agency -System must provide the ability to allow agency to submit collected Traffic Data with metadata attributes to meet HPMS submittal requirements. Meta data attributes include NFC, duration, count based. Possible R&Hs due to NFC set up	Same as the item above. Clarified during Local Agency Meeting, 6/5/18. In TCDS, Metadata comes from the station level. Therefore the data will be maintained at the station level for the Local Agency Stations. Specifically, MDOT also gets this information from the Roadsoft data file (count duration and date). Because this is directly related to the Roadsoft import, the team will have to review the	FR	
101	Local Agency- System must provide the ability to record which agency is responsible for performing data collection. The 'Note section' per RTM is not a viable option to retain information	Clarification during the Local Agency Meeting, 6/5/18. The changes and additions for the Local Agency ID will satisfy this requirement.	DR	
102	Local Agency- System must provide tools to manually input current and post year ADTs (Average Daily Traffic – count based) and AADTs (Annual Average Daily Traffic – factor based) received from External Agencies into the NTFA staging table. BC 'Local AgencyADT data'	Clarification during the Local Agency Meeting, 6/5/18. During this review meeting, the issue is clarified and actually is adding ADT's (not AADT's) to a local station in TCDS. MS2 suggested method, for an ADT provided by Local Agency, MDOT manually adds as to the location. A bulk edit by MS2 can be available periodically during	CLOSED	
103	Microsoft Excel reports with location ids are converted into date fields– LocID turns to Date issue. Fix to excel '12-0018' does not become 'Jan 18' in reports. Report broken	This issue is a limitation due to Micosoft Excel and how it reads the format of the station id from TDMS. MDOT 8/3/18: Can the station be separated in to two separate columns or remove the dash in the reports? MS2. Assume 4-6 reports will be modified for scope	FR	$ 7,760

Future Release Number	Item	Notes	Type	Cost
104	Must display traffic segmentation thematically by AADT. This one needs further work/discussions: It appears the functionality is there, but not correctly displaying. In the TCDS it is available on the 2015 AADT layer only (we need the current segment layer added to TCDS 3.22.5). You have an additional click to turn it on. I don't know how 'end user 'friendly this will prove to be. In the HPMS module it is wrong- the color range is by NFC codes, not AADT which creates inconsistency	MDOT request clarified 8/3/18: Shows segments by AADT for the current year for all modules. Ok with clicking to turn the layer on. Can replace the NFC code coloring in HPMS with AADT. Will need to update every year. MDOT would like the option to turn off local road AADT/segments. MS2 can add NFC layer in HPMS and TCDS.	DR	$ 3,104
105	NMDS -ECHO counter format and Echo counter bug Tier One - Toole	Bug (MDOT) -closed per Beasely's email on 6/8/2018. • *Stabilize Eco-Counter import format so that drop-down menus work more regularly; Drop-down menu functionality is currently sporadic. TOOLE believes this issue resolved, but will continue to monitor in case it should happen again and will let MDOT know if it does.*	CLOSED	
106	NMDS Import functionality - Toole Tier 1	Additional (MDOT) - closed per Beasely's email on 6/8/2018 • Stabilize Eco-Counter import format so that drop-down menus work more regularly; Drop-down menu functionality is currently sporadic. TOOLE believes this issue resolved, but will continue to monitor in case it should happen again and will let MDOT know if it does.	CLOSED	
107	NTFA reports: call list, location- MDOT collects or agency collects.	There are two requests within this item. Clarification during the Local Agency Meeting, 6/5/18. The call list will be supported in the export of the information in the Local Agency Manager. The second item is supported with the Local Agency Id item provided in the other items listed	DR	
108	Report- Default date ranges are limiting (or return blank pages) can ranges be extended? Can report list the dates that are available? (MDOT to provide examples)	MDOT to provide examples before this can move forward: MDOT's response; In our legacy system we could search based on year and station and then create reports for all available data. In TCDS we have to know the dates of the data and search for each collection separately. In the attached video I searched for 33-2019. There is data in 2006, 2008, 2011, and 2014. In TMIS I just search for the years	DR	
109	Report? Export excel of QC checks (to be shared with agency to set up under MDOT)	This request is complete. A report is available in the Admin section of Report Center. There a four reports available related to QC checks and settings.	FR	
110	Reports -Large 'Access backup' reports and large number of reports (i.e. SEMCOG or universities). Size limit, provides files not needed. Takes 4-5 days. Sent to junk mail. Job number undescriptive	Size Limits is a limitation of the supporting software (Micorsoft Access). The user is expected to select values to maintain a smaller size. The request is typically an overnight process. If the request is not met within 48 hours, the user should contact support. Closed based on Training on 7/31/18	CLOSED	
111	Reports- TDMS system has limits with size /amount of data. Requires multiple reports to be run. MDOT would like this remedied. Large reports are a regular request for MDOT	Additional (MDOT). Size limits are limitations due to the software. This would have to be further defined to a specific request. Closed based on Training on 7/31/18	CLOSED	
112	Reports- Update report descriptions for user clarification- training documents	If the reports that have been customized need a name change, MDOT provide a map of old names to new names. If there is something additional, this needs to be specifically defined before MS2 can estimate effort. MDOT to confirm with Joel. Per 7/26/18, item closed	CLOSED	
113	Scheduler- Ability to de-select polygon tool (like TCDS)	The function is working as expected. This may be a Training Issue or addressed with the additional tool that allows an ordered daily itinerary to be developed from map locations. No scope provided item.	CLOSED	
114	Scheduler- only display searched locations. Provide a locate all button for searched locations.	The function is working as expected. User feedback has shown that existing view is desired. An enhancement can be designed to allow the user to select all locations or just the search results.	FR	$ 3,104
115	Scheduler- Wrap text on description (task screen) MDOT to provide sample. Did MS2 remove description form scheduler?	The column was updated to "road" based on user requests.	CLOSED	
116	Scheduler-Sort columns by agency or jurisdiction in scheduler (assists in routing/grouping locations)	MDOT request 8/3/18. What is the effort to pull Jurisdiction information from TCDS and display it as a column in the task section of Scheduler?	FR	$ 5,820
117	System must provide the ability for the user to query and edit in both the traffic segment and traffic point files Confirm that this functionality is available; no UAT provided to test the functionality of these components of the HPMS module editing features.	The Help Guide for HPMS provides direction on queries and editing of segments in HPMS. The R&H integration will directly impact the segment editing.	Training	
118	TMC- Headers not correct in 'Custom 15 minute report' on all pages (Joel)	There is no report in TMC called "Custom 15 minute report". The reports that are in production have been reviewed and approved by MDOT.	CLOSED	

Future Release Number	Item	Notes	Type	Cost
119	TMC-Road names along roads in diagram- unable to do per MS2- can MS2 work with their software company to have this designed?	This is a limitation of the software and request can not be met.	CLOSED	
120	Segment ID searchable and displayable in HPMS module and info window of segment layer in other modules. BC "We don't currently have meaningful Segment IDs in our HPMS module. We're only using our own internal auto number identifiers. We would have to add that during R&H implementation I think. A place to store it, view it, and search on it."	MDOT closed on 8/3/18	CLOSED	
121	TMAS station export file is not in FHWA format	Based on Basecamp discussion and reviews, the format is ok. MDOT will need help updating the attributes in January. FHWA will not except major changes mid year. Based on Training Meeting closed on 7/31/18	CLOSED	
122	TMC upload files for multiple days- Miovision and Petra	added request per Joel Basecamp 8/2/18	FR	$ 3,104
123	Pull AADT from HPMS back to TCDS after sub segment averages	added based on discussions during Onsite Training 7/30/18	FR	$ 11,640
124	Report that provides AADTs on sub segments that are outside of tolerance with other sub segments	added based on discussions during Onsite Training 7/30/18	FR	$ 7,760
125	Report Center- Top 10 frequently used reports within MDOT and a "My Favorites" option	added based on discussions during Onsite Training 7/30/18. Per the 8/29 Version of the Phase 2 List provided by MDOT on Basecamp, this item is closed.	CLOSED	

Form No. DTMB-3522 (Rev. 10/2015)
AUTHORITY: Act 431 of 1984
COMPLETION: Required
PENALTY: Contract change will not be executed unless form is filed

STATE OF MICHIGAN

DEPARTMENT OF TECHNOLOGY, MANAGEMENT & BUDGET

PROCUREMENT

525 W. ALLEGAN STREET
LANSING, MI 48933

P.O. BOX 30026
LANSING, MI 48909

NOTICE OF CONTRACT NO. 071B6600068

between

THE STATE OF MICHIGAN

and

NAME & ADDRESS OF CONTRACTOR	PRIMARY CONTACT	EMAIL
Midwestern Software Solutions, LLC	Ben Chen	bc@ms2soft.com
3815 Plaza Drive	PHONE	VENDOR TAX ID # (LAST FOUR DIGITS ONLY)
Ann Arbor, MI 48108	(734) 995-0200	4124

STATE CONTACTS	AGENCY	NAME	PHONE	EMAIL
PROGRAM MANAGER	DTMB	Patrick Villareal	(517) 335-2409	villarrealp@michigan.gov
CONTRACT ADMINISTRATOR	DTMB	Jarrod Barron	(517) 284-7045	Barronj1@michigan.gov

CONTRACT SUMMARY

DESCRIPTION:

Traffic Data Management System

INITIAL TERM	EFFECTIVE DATE	INITIAL EXPIRATION DATE	AVAILABLE OPTIONS
5 Years	April 5, 2016	April 4, 2021	

PAYMENT TERMS	F.O.B.	SHIPPED TO
Net 45	N/A	N/A

ALTERNATE PAYMENT OPTIONS	EXTENDED PURCHASING
☐ P-card ☐ Direct Voucher (DV) ☐ Other	☒ Yes ☐ No

MINIMUM DELIVERY REQUIREMENTS

N/A

MISCELLANEOUS INFORMATION

ESTIMATED CONTRACT VALUE AT TIME OF EXECUTION	$1,080,642.00

For the Contractor:

_____ _____

, **Date**

Contract Administrator

For the State:

_____ _____

William Pemble, **Date**

IT Division Director

State of Michigan

Software as a Service Agreement

This Software as a Service (SaaS) Agreement (the "**Agreement**"), dated as of April 5, 2016 (the "**Effective Date**"), is by and between the Michigan Department of Technology, Management and Budget, on behalf of the Michigan Department of Transportation (MDOT), (collectively, the "**State**") and Midwestern Software Solutions, LLC, a Michigan limited liability company with offices located at 3815 Plaza Drive, Ann Arbor, MI 48108 ("**Contractor**").

1. Definitions.

"**Accept**" has the meaning set forth in **Section 4.2(b)**.

"**Acceptance**" has the meaning set forth in **Section 4.2(b)**.

"**Action**" has the meaning set forth in **Section 13.1**.

"**Actual Uptime**" means the total minutes in the Service Period that the Hosted Services are Available.

"**Agreement**" has the meaning set forth in the preamble.

"**Allegedly Infringing Features**" has the meaning set forth in **Section 13.3(b)(ii)**.

"**Authorized Users**" means all Persons authorized by the State to access and use the Services through the State's account under this Agreement, subject to the maximum number of users specified in the applicable Statement of Work.

"**Availability**" has the meaning set forth in **Section 5(a)**.

"**Availability Requirement**" has the meaning set forth in **Section 5(a)**.

"**Available**" has the meaning set forth in **Section 5(a)**.

"**Business Day**" means a day other than a Saturday, Sunday or State Holiday.

"**Change Notice**" has the meaning set forth in **Section 2.2**.

"**Code**" has the meaning set forth in **Section 19**.

"**Confidential Information**" has the meaning set forth in **Section 10.1**.

"**Contractor**" has the meaning set forth in the preamble.

"**Contractor Personnel**" means all employees and agents of Contractor, all Subcontractors and all employees and agents of any Subcontractor, involved in the performance of Services.

"**Contractor Security Officer**" has the meaning set forth in **Section 2.6(a)**.

"**Contractor Service Manager**" has the meaning set forth in **Section 2.6(a)**.

"**Contractor Systems**" has the meaning set forth in **Section 11.3**.

"**Corrective Action Plan**" has the meaning set forth in **Section 6.6**.

"**Critical Service Error**" has the meaning set forth in **Section 6.4(a)**.

"**Documentation**" means all generally available documentation relating to the Services, including all user manuals, operating manuals and other instructions, specifications, documents and materials, in any form or media, that describe any component, feature, requirement or other aspect of the Services, including any functionality, testing, operation or use thereof.

"**DR Plan**" has the meaning set forth in **Section 12.3(a)**.

"**Effective Date**" has the meaning set forth in the preamble.

"**Exceptions**" has the meaning set forth in **Section 5.2**.

"**Fees**" has the meaning set forth in **Section 8.1**.

"**Force Majeure Event**" has the meaning set forth in **Section 17.1**.

"**Harmful Code**" means any software, hardware or other technologies, devices or means, the purpose or effect of which is to: (a) permit unauthorized access to, or to destroy, disrupt, disable, distort, or otherwise harm or impede in any manner, any (i) computer, software, firmware, hardware, system or network, or (ii) any application or function of any of the foregoing or the integrity, use or operation of any data Processed thereby; or (b) prevent the State or any Authorized User from accessing or using the Services or Contractor Systems as intended by this Agreement, and includes any virus, bug, trojan horse, worm, backdoor or other malicious computer code and any time bomb or drop dead device.

"**High Service Error**" has the meaning set forth in **Section 6.4(a)**.

"**HIPAA**" has the meaning set forth in **Section 9.1**.

"**Hosted Services**" has the meaning set forth in **Section 2.1(a)**.

"**Initial Term**" has the meaning set forth in **Section 7.1**.

"**Intellectual Property Rights**" means any and all rights comprising or relating to: (a) patents, patent disclosures and inventions (whether patentable or not); (b) trademarks, service marks, trade dress, trade names, logos, corporate names and domain names, together with all of the goodwill associated therewith; (c) authorship rights, copyrights and copyrightable works (including computer programs) and rights in data and databases; (d) trade secrets, know-how and other confidential information; and (e) all other intellectual property rights, in each case whether registered or unregistered and including all applications for, and renewals or extensions of, such rights, and all similar or equivalent rights or forms of protection provided by applicable Law in any jurisdiction throughout the world.

"**Key Personnel**" means any Contractor Personnel identified as key personnel in this Agreement or any Statement of Work.

"**Law**" means any statute, law, ordinance, regulation, rule, code, order, constitution, treaty, common law, judgment, decree or other requirement or rule of any federal, state, local or foreign government or political subdivision thereof, or any arbitrator, court or tribunal of competent jurisdiction.

"**Loss**" means all losses, damages, liabilities, deficiencies, claims, actions, judgments, settlements, interest, awards, penalties, fines, costs or expenses of whatever kind, including reasonable attorneys' fees and the costs of enforcing any right to indemnification hereunder and the cost of pursuing any insurance providers.

"**Losses**" means all losses, damages, liabilities, deficiencies, claims, actions, judgments, settlements, interest, awards, penalties, fines, costs or expenses of whatever kind, including reasonable attorneys' fees and the costs of enforcing any right to indemnification hereunder and the cost of pursuing any insurance providers.

"**Low Service Error**" has the meaning set forth in **Section 6.4(a)**.

"**Medium Service Error**" has the meaning set forth in **Section 6.4(a)**.

"**Person**" means an individual, corporation, partnership, joint venture, limited liability company, governmental authority, unincorporated organization, trust, association or other entity.

"**Personal Health Information (PHI)**" has the meaning set forth in **Section 9.1**.

"**Personally Identifiable Information (PII)**" has the meaning set forth in **Section 9.1**.

"**Process**" means to perform any operation or set of operations on any data, information, material, work, expression or other content, including to (a) collect, receive, input, upload, download, record, reproduce, store, organize, combine, log, catalog, cross-reference, manage, maintain, copy, adapt, alter, translate or make other improvements or derivative works, (b) process, retrieve, output, consult, use, disseminate, transmit, submit, post, transfer, disclose or otherwise provide or make available, or (c) block, erase or destroy. "**Processing**" and "**Processed**" have correlative meanings.

"**Reject**" has the meaning set forth in **Section 4.2(b)**.

"**Rejection**" has the meaning set forth in **Section 4.2(b)**.

"**Renewal Term**" has the meaning set forth in **Section 7.2**.

"**Representatives**" means a party's employees, officers, directors, consultants, legal advisors and, with respect to Contractor, Contractor's Subcontractors.

"**Resolve**" has the meaning set forth in **Section 6.4(b)**.

"**Scheduled Downtime**" has the meaning set forth in **Section 5.3**.

"**Scheduled Uptime**" means the total minutes in the Service Period.

"**Service Availability Credits**" has the meaning set forth in **Section 5.5(a)**.

"**Service Error**" means any failure of any Hosted Service to be Available or otherwise perform in accordance with this Agreement and the Specifications.

"**Service Level Credits**" has the meaning set forth in **Section 6.5**.

"**Service Level Failure**" means a failure to perform the Support Services fully in compliance with the Support Service Level Requirements.

"**Service Period**" has the meaning set forth in **Section 5(a)**.

"**Service Support Level Requirements**" has the meaning set forth in **Section 6.4**.

"**Services**" has the meaning set forth in **Section 2.1**.

"**Software**" means Contractor's Traffic Data Management System software application or applications and any third-party or other software, and all new versions, updates, revisions, improvements and modifications of the foregoing, that Contractor provides remote access to and use of as part of the Services.

"**Source Code**" means the human readable source code of the Software to which it relates, in the programming language in which the Software was written, together with all related flow charts and technical documentation, including a description of the procedure for generating object code, all of a level sufficient to enable a programmer reasonably fluent in such programming language to understand, build, operate, support, maintain and develop modifications, upgrades, updates, adaptations, enhancements, new versions and other derivative works and improvements of, and to develop computer programs compatible with, the Software.

"**Specifications**" means the specifications for the Services set forth in the applicable Statement of Work and, to the extent consistent with and not limiting of the foregoing, the Documentation.

"**State**" has the meaning set forth in the preamble.

"**State Data**" has the meaning set forth in **Section 9.1**.

"**Statement of Work**" has the meaning set forth in **Section 2.1(a)**.

"**State Modification**" has the meaning set forth in **Section 13.2(a)**.

"**State Service Manager**" has the meaning set forth in **Section 2.9**.

"**State Systems**" means the information technology infrastructure, including the computers, software, databases, electronic systems (including database management systems) and networks, of the State or any of its designees.

"**Subcontractor**" means any entity that performs any Services under this Agreement and otherwise has the meaning set forth in **Section 2.5(a)**.

"**Support Request**" has the meaning set forth in **Section 6.4(a)**.

"**Support Service Level Requirements**" has the meaning set forth in **Section 6.4**.

"**Support Services**" has the meaning set forth in **Section 6**.

"**Term**" has the meaning set forth in **Section 7.2**.

"**Transition Period**" has the meaning set forth in **Section 7.5.**

"**Transition Responsibilities**" has the meaning set forth in **Section 7.5.**

2. Services.

2.1 Services. Throughout the Term and at all times in connection with its actual or required performance under this Agreement, Contractor will, in accordance with all terms and conditions set forth in this Agreement and each applicable Statement of Work, provide to the State and its Authorized Users the following services ("**Services**"):

(a) the hosting, management and operation of the Software and other services for remote electronic access and use by the State and its Authorized Users ("**Hosted Services**") as described in one or more written, sequentially numbered, Statements of Work referencing this Agreement, including all Specifications set forth in such Statements of Work, which, upon their execution will be attached as a Change Notice and by this reference are incorporated in and made a part of this Agreement (each, a "**Statement of Work**");

(b) service maintenance and the Support Services as set forth in **Section 6** and in the Statement of Work; and

(c) such other services as may be specified in the applicable Statement of Work.

2.2 Statements of Work. Statements of Work will be effective only when signed by the State and Contractor. Any modifications or changes to the Services under any executed Statement of Work will be effective only if and when memorialized in a mutually agreed written contract amendment ("**Change Notice**") signed by both Parties, provided, however, that for any Services provided on a limited basis (for example, on a per user, server, CPU or named-user basis), the State may, at any time, increase or decrease the number of its licenses hereunder subject to a corresponding forward-going adjustment of the Fees to reflect these changes in accordance with the pricing set forth in the applicable Statement of Work.

2.3 Change Notice. A Change Notice will only be effective if the process described in this Section has been completed. A State Agency will submit a Statement of Work (SOW) to the Contractor for the services requested. For each such SOW received from the State, the Contractor will provide a Written Proposal and a project schedule. The Written Proposal pricing will be based on the Cost Tables in this Agreement. Upon the Agency's review and written approval of the Written Proposal and project plan, the Agency will submit a Change Notice request to DTMB-Procurement. Upon review and written approval by DTMB-Procurement and the State Administrative Board, if applicable, a Change Notice will be executed. A fully executed Change Notice is required prior to issuance of any Purchase Order release and prior to beginning any work or providing any goods. **If Contractor provides products or services prior to the issuance of a Change Notice and Purchase Order in accordance with this Section 2.3, Contractor risks non-payment for the out-of-scope/pricing products and/or services**.

2.4 Compliance With Laws. Contractor must comply with all applicable Laws as they concern this Agreement, including by securing and maintaining all required and appropriate visas, work permits, business licenses and other documentation and clearances necessary for performance of the Services.

2.5 Subcontracting. Contractor will not itself, and will not permit any Person to, subcontract any Services, in whole or in part, without the State's prior written consent, which consent may be given or withheld in the State's sole discretion. Without limiting the foregoing:

(a) Contractor must ensure each Contractor subcontractor (including any subcontractor of a Contractor subcontractor, each, a "**Subcontractor**") complies with all relevant terms of this Agreement, including all provisions relating to State Data or other Confidential Information of the State;

(b) the State's consent to any such Subcontractor does not relieve Contractor of its representations, warranties or obligations under this Agreement;

(c) Contractor will remain responsible and liable for any and all: (i) performance required hereunder, including the proper supervision, coordination and performance of the Services; and (ii) acts and omissions of each Subcontractor (including, such Subcontractor's employees and agents, who, to the extent they are involved in providing any Services, are deemed Contractor Personnel) to the same extent as if such acts or omissions were by Contractor;

(d) any noncompliance by any Subcontractor or its employees or agents with the provisions of this Agreement or any Statement of Work will constitute a breach by Contractor;

(e) prior to the provision of Services by any Subcontractor, Contractor must obtain from each such proposed Subcontractor:

(i) the identity of such Subcontractor and the location of all its data centers, if any, that will be used in Processing any State Data, which information Contractor shall promptly disclose to the State in writing; and

(ii) a written confidentiality, restricted use, work-for-hire and intellectual property rights assignment agreement in form and substance acceptable to the State, giving the State rights at least equal to those set forth in **Section 9** (Ownership), **Section 10** (Confidentiality), **Section 11** (Security) and **Section 12** (Redundancy, Data Backup and Disaster Recovery) and containing the Subcontractor's acknowledgment of, and agreement to, the provisions of **Section 2.6** (Contractor Personnel), a fully-executed copy of which agreement Contractor will promptly provide to the State upon the State's request.

2.6 Contractor Personnel. Contractor will:

(a) subject to the prior written approval of the State, appoint: (i) a Contractor employee to serve as a primary contact with respect to the Services who will have the authority to act on behalf of Contractor in matters pertaining to the receipt and processing of Support Requests and the Support Services (the "**Contractor Service Manager**"); and (ii) a Contractor employee to respond to the State's inquiries regarding the security of the Contractor Systems who has sufficient knowledge of the security of the Contractor Systems and the authority to act on behalf of Contractor in matters pertaining thereto ("**Contractor Security Officer**"); and (iii) other Key Personnel, who will be suitably skilled, experienced and qualified to perform the Services;

(b) provide names and contact information for Contractor's Key Personnel on **Schedule 1** to this Agreement;

(c) maintain the same Contractor Service Manager, Contractor Security Officer and other Key Personnel throughout the Term and such additional period, if any, as Contractor is required to perform the Services, except for changes in such personnel due to: (i) the State's request pursuant to **Section 2.6(d)**; or (ii) the death, disability, resignation or termination of such personnel or other circumstances outside Contractor's reasonable control; and

(d) upon the reasonable written request of the State, promptly replace any Key Personnel of Contractor.

2.7 Management and Payment of Contractor Personnel. Contractor is solely responsible for the payment of Contractor Personnel, including all fees, expenses and compensation to, by or on behalf of any Contractor Personnel and, if applicable, the withholding of income taxes and payment and withholding of social security and other payroll taxes,

unemployment insurance, workers' compensation insurance payments and disability benefits. Contractor will ensure that no Person who has been convicted of a felony or any misdemeanor involving, in any way, theft, fraud, or bribery provides any Services or has access to any State Data or other Confidential Information of the State. If requested by the State, and at Contractor's sole cost and expense, Contractor will conduct background checks on such Contractor Personnel, which background checks must comprise, at a minimum, a review of credit history, references and criminal record, in accordance with applicable Law.

2.8 Time of the Essence. Contractor acknowledges and agrees that time is of the essence with respect to its obligations under this Agreement and that prompt and timely performance of all such obligations, including all timetables and other requirements of this Agreement and each Statement of Work, is strictly required.

2.9 State Service Manager. The State will appoint and, in its reasonable discretion, replace, a State employee to serve as the primary contact with respect to the Services who will have the authority to act on behalf of the State in matters pertaining to the Support Services, including the submission and processing of Support Requests (the "**State Service Manager**").

3. License Grant and Restrictions.

3.1 License Grant. Contractor hereby grants to the State, exercisable by and through its Authorized Users, a nonexclusive, royalty-free, irrevocable (except as provided herein) right and license during the Term and such additional periods, if any, as Contractor is required to perform Services under this Agreement or any Statement of Work, to:

(a) access and use the Hosted Services, including in operation with other software, hardware, systems, networks and services, for the State's business purposes, including for Processing State Data;

(b) generate, print, copy, upload, download, store and otherwise Process all GUI, audio, visual, digital and other output, displays and other content as may result from any access to or use of the Services;

(c) prepare, reproduce, print, download and use a reasonable number of copies of the Specifications and Documentation for any use of the Services under this Agreement; and

(d) access and use the Services for all such non-production uses and applications as may be necessary or useful for the effective use of the Hosted Services hereunder, including for purposes of analysis, development, configuration, integration, testing, training, maintenance, support and repair, which access and use will be without charge and not included for any purpose in any calculation of the State's or its Authorized Users' use of the Services, including for purposes of assessing any Fees or other consideration payable to Contractor or determining any excess use of the Hosted Services as described in **Section 3.3**.

3.2 License Restrictions. The State will not: (a) rent, lease, lend, sell, sublicense, assign, distribute, publish, transfer or otherwise make the Hosted Services available to any third party, except as expressly permitted by this Agreement or in any Statement of Work; or (b) use or authorize the use of the Services or Documentation in any manner or for any purpose that is unlawful under applicable Law.

3.3 Excess Use. If the State's uses of the Hosted Services exceeds the volume of use permitted by the license then in effect under **Section 3** and the applicable Statement of Work (including as to the number of uses, users, machines or locations), the State will pay Contractor the Fees attributable to the excess use in accordance with **Section 8**. Such Fees will be Contractor's sole and exclusive remedy for such excess use.

4. Service Preparation, Testing and Acceptance.

4.1 Service Preparation. Promptly upon the parties' execution of a Statement of Work, Contractor will take all steps necessary to make the Services procured thereunder ready and available for the State's use in accordance with the Statement of Work and this Agreement, including any applicable milestone date or dates set forth in such Statement of Work.

4.2 Testing and Acceptance.

(a) When Contractor notifies the State in writing that the Hosted Services are ready for use in a production environment, the State will have thirty (30) days (or such other period as may be agreed upon by the Parties in writing) from receipt of the notice to test the Hosted Services to determine whether they comply in all material respects with the requirements of this Agreement and the Specifications.

(b) Upon completion of the State's testing, the State will notify Contractor of its acceptance ("**Accept**" or "**Acceptance**") or, if it has identified any noncompliance with the Specifications, rejection ("**Reject**" or "**Rejection**") of the Hosted Services. If the State Rejects the Hosted Services, the State will provide a written list of items that must be corrected. On receipt of the State's notice, Contractor will promptly commence, at no additional cost or charge to the State, all reasonable efforts to complete, as quickly as possible and in any event within twenty (20) days (or such other period as may be agreed upon by the Parties in writing) from receipt of the State's notice, such necessary corrections, repairs and modifications to the Hosted Services to bring them into full compliance with the Specifications.

(c) If any corrective measures are required under **Section 4.2(b)**, upon its completion of all such measures, Contractor will notify the State in writing and the process set forth in **Section 4.2(a)** and **Section 4.2(b)** will be repeated; provided that if the State determines that the Hosted Services, as revised, still do not comply in all material respects with the Specifications, the State may, in its sole discretion:

(i) require the Contractor to repeat the correction, repair and modification process set forth in **Section 4.2(b)** at no additional cost or charge to the State; or

(ii) terminate any and all of the relevant Statement of Work, this Agreement and any other Statements of Work hereunder.

(d) The parties will repeat the foregoing procedure until the State Accepts the Hosted Services or elects to terminate the relevant Statement of Work as provided in **Section 4.2(c)(ii)** above. If the State so terminates the relevant Statement of Work, Contractor must refund to the State all sums previously paid to Contractor under such Statement of Work within ten (10) Business Days of the State's written notice of termination, and the State will be relieved of all obligations thereunder.

5. Service Availability and Service Availability Credits.

(a) Availability Requirement. Contractor will make the Hosted Services Available, as measured over the course of each calendar month during the Term and any additional periods during which Contractor does or is required to perform any Hosted Services (each such calendar month, a "**Service Period**"), at least 99.95% of the time, excluding only the time the Hosted Services are not Available solely as a result of one or more Exceptions (the "**Availability Requirement**"). "**Available**" means the Hosted Services are available and operable for access and use by the State and its Authorized Users over the Internet in material conformity with the Specifications. "**Availability**" has a correlative meaning. The Hosted Services are not considered Available in the event of a material performance degradation or

inoperability of the Hosted Services, in whole or in part. The Availability Requirement will be calculated for the Service Period as follows: (Actual Uptime – Total Minutes in Service Period Hosted Services are not Available Due to an Exception) ÷ (Scheduled Uptime – Total Minutes in Service Period Hosted Services are not Available Due to an Exception) x 100 = Availability.

5.2 Exceptions. No period of Hosted Service degradation or inoperability will be included in calculating Availability to the extent that such downtime or degradation is due to any of the following ("**Exceptions**"):

(a) failures of the State's or its Authorized Users' internet connectivity;

(b) internet or other network traffic problems other than problems arising in or from networks actually or required to be provided or controlled by Contractor; or

(c) Scheduled Downtime as set forth in **Section 5.3**.

5.3 Scheduled Downtime. Contractor must notify the State at least twenty-four (24) hours in advance of all scheduled outages of the Hosted Services in whole or in part ("**Scheduled Downtime**"). All such scheduled outages will: (a) last no longer than three (3) hours; (b) be scheduled between the hours of 12:00 a.m. and 3:00 a.m., Eastern Time; and (c) occur no more frequently than once per week; provided that Contractor may request for the State's approval, extensions of Scheduled Downtime above three (3) hours and such approval by the State may not be unreasonably withheld or delayed.

5.4 Service Availability Reports. Within thirty (30) days after the end of each Service Period, Contractor will provide to the State a report describing the Availability and other performance of the Hosted Services during that calendar month as compared to the Availability Requirement and Specifications. The report must be in electronic or such other form as the State may approve in writing and shall include, at a minimum: (a) the actual performance of the Hosted Services relative to the Availability Requirement and Specifications; and (b) if Hosted Service performance has failed in any respect to meet or exceed the Availability Requirement or Specifications during the reporting period, a description in sufficient detail to inform the State of the cause of such failure and the corrective actions the Contractor has taken and will take to ensure that the Availability Requirement and Specifications are fully met.

5.5 Remedies for Service Availability Failures.

(a) If the actual Availability of the Hosted Services is less than the Availability Requirement for any Service Period, such failure will constitute a Service Error for which Contractor will issue to the State the following credits on the Fees payable for Hosted Services provided during the Service Period ("**Service Availability Credits**"):

Availability	**Credit of Fees**
≥99.95%	None
<99.9% but ≥99.0%	15%
<99.0% but ≥95.0%	35%
<95.0%	100%

(b) Any Service Availability Credits due under this **Section 5.5** will be applied in accordance with **Section 8.12**.

(c) If the actual Availability of the Hosted Services is less than the Availability Requirement in any two (2) of four (4) consecutive Service Periods, then, in addition to all other remedies available to the State, the State may terminate

this Agreement and/or the applicable Statement of Work on written notice to Contractor with no liability, obligation or penalty to the State by reason of such termination.

6. Support and Maintenance Services. Contractor will provide Hosted Service maintenance and support services (collectively, "**Support Services**") in accordance with the provisions of this **Section 6**. The Support Services are included in the Services, and Contractor may not assess any additional Fees, costs or charges for such Support Services.

6.1 Support Service Responsibilities. Contractor will:

(a) correct all Service Errors in accordance with the Support Service Level Requirements, including by providing defect repair, programming corrections and remedial programming;

(b) provide unlimited telephone support during the hours of 8 a.m. to 5 p.m. Eastern Time on Business Days;

(c) Provide online access to technical support bulletins and other user support information and forums, to the full extent Contractor makes such resources available to its other customers; and

(d) Respond to and Resolve Support Requests as specified in this **Section 6**.

6.2 Service Monitoring and Management. Contractor will continuously monitor and manage the Hosted Services to optimize Availability that meets or exceeds the Availability Requirement. Such monitoring and management includes:

(a) proactively monitoring on a twenty-four (24) hour by seven (7) day basis all Hosted Service functions, servers, firewall and other components of Hosted Service security;

(b) if such monitoring identifies, or Contractor otherwise becomes aware of, any circumstance that is reasonably likely to threaten the Availability of the Hosted Service, taking all necessary and reasonable remedial measures to promptly eliminate such threat and ensure full Availability; and

(c) if Contractor receives knowledge that the Hosted Service or any Hosted Service function or component is not Available (including by written notice from the State pursuant to the procedures set forth herein or in the applicable Statement of Work):

(i) confirming (or disconfirming) the outage by a direct check of the associated facility or facilities;

(ii) if Contractor's facility check in accordance with clause (i) above confirms a Hosted Service outage in whole or in part: (A) notifying the State in writing pursuant to the procedures set forth herein or in the applicable Statement of Work that an outage has occurred, providing such details as may be available, including a Contractor trouble ticket number, if appropriate, and time of outage; and (B) working all problems causing and caused by the outage until they are Resolved as Critical Service Errors in accordance with the Support Request Classification set forth in **Section 6.4**, or, if determined to be an internet provider problem, open a trouble ticket with the internet provider; and

(iii) notifying the State that Contractor has fully corrected the outage and any related problems, along with any pertinent findings or action taken to close the trouble ticket.

6.3 Service Maintenance. Contractor will continuously maintain the Hosted Services to optimize Availability that meets or exceeds the Availability Requirement. Such maintenance services include providing to the State and its Authorized Users:

(a) all updates, bug fixes, enhancements, new releases, new versions and other improvements to the Hosted Services, including the Software, that Contractor provides at no additional charge to its other similarly situated customers; and

(b) all such services and repairs as are required to maintain the Hosted Services or are ancillary, necessary or otherwise related to the State's or its Authorized Users' access to or use of the Hosted Services, so that the Hosted Services operate properly in accordance with this Agreement and the Specifications.

6.4 Support Service Level Requirements. Contractor will correct all Service Errors and respond to and Resolve all Support Requests in accordance with the required times and other terms and conditions set forth in this **Section 6.4** ("**Support Service Level Requirements**"), this Agreement and the applicable Statement of Work.

(a) Support Requests. The State will classify its requests for Service Error corrections in accordance with the descriptions set forth in the chart below (each a "**Support Request**"). The State Service Manager will notify Contractor of Support Requests by e-mail, telephone or such other means as the parties may hereafter agree to in writing.

Support Request Classification	**Description: Any Service Error Comprising or Causing any of the Following Events or Effects**
Critical Service Error	• Issue affecting entire system or single critical production function; • System down or operating in materially degraded state; • Data integrity at risk; • Material financial impact; • Declared a Critical Support Request by the State; • Widespread access interruptions; or • System unable to meet federal reporting requirements by deadlines
High Service Error	• Primary component failure that materially impairs its performance; or • Data entry or access is materially impaired on a limited basis.
Medium Service Error	• Hosted Service is operating with minor issues that can be addressed with a work around.
Low Service Error	• Request for assistance, information, or services that are routine in nature.

(b) Response and Resolution Time Service Levels. Response and Resolution times will be measured from the time Contractor receives a Support Request until the respective times Contractor has (i) responded to, in the case of response time and (ii) Resolved such Support Request, in the case of Resolution time. "**Resolve**" (including "**Resolved**", "**Resolution**" and correlative capitalized terms) means that, as to any Service Error, Contractor has provided the State the

corresponding Service Error correction and the State has confirmed such correction and its acceptance thereof. Contractor will respond to and Resolve all Service Errors within the following times based on the severity of the Service Error:

Support Request Classification	Service Level Metric (Required Response Time)	Service Level Metric (Required Resolution Time)	Service Level Credits (For Failure to Respond to any Support Request Within the Corresponding Response Time)	Service Level Credits (For Failure to Resolve any Support Request Within the Corresponding Required Resolution Time)
Critical Service Error	Thirty (30) minutes	Two (2) hours	Ten percent (10%) of the Fees for the month in which the initial Service Level Failure begins and ten percent (10%) of such monthly Fees for each additional hour or portion thereof that the corresponding Service Error is not responded to within the required response time.	Ten percent (10%) of the Fees for the month in which the initial Service Level Failure begins and ten percent (10%) of such monthly Fees for the first additional hour or portion thereof that the corresponding Service Error remains un-Resolved, which amount will thereafter double for each additional two (2) hour increment.
High Service Error	Two (2) hours	Eight (8) hours	Ten percent (10%) of the Fees for the month in which the initial Service Level Failure begins and five percent (5%) of such monthly Fees for each additional hour or portion thereof that the corresponding Service Error is not responded to within the required response time.	Ten percent (10%) of the Fees for the month in which the initial Service Level Failure begins and five percent (5%) of such monthly Fees for each additional hour or portion thereof that the corresponding Service Error remains un-Resolved.
Medium Service Error	Four (4) hours	Twenty-four (24) hours	Five percent (5%) of the Fees for the month in which the initial Service Level Failure begins and two and one-half percent (2.5%) of such monthly Fees for each additional hour or portion	Five percent (5%) of the Fees for the month in which the initial Service Level Failure begins and two and one-half percent (2.5%) of such monthly Fees for each additional half day thereafter or

			thereof that the corresponding Service Error is not responded to within the required response time.	portion thereof that the corresponding Service Error remains un-Resolved.
Low Service Error	Twenty-four (24) hours	Forty-eight (48) hours	One percent (1%) of the Fees for the month in which the initial Service Level Failure begins and One percent (1%) of such monthly Fees for each additional hour or portion thereof that the corresponding Service Error is not responded to within the required response time.	One percent (1%) of the Fees for the month in which the initial Service Level Failure begins and One percent (1%) of such monthly Fees for each additional half day thereafter or portion thereof that the corresponding Service Error remains un-Resolved.

(c) Escalation. With respect to any Critical Service Error Support Request, until such Support Request is Resolved, Contractor will escalate that Support Request within sixty (60) minutes of the receipt of such Support Request by the appropriate Contractor support personnel, including, as applicable, the Contractor Service Manager and Contractor's management or engineering personnel, as appropriate, each of whom must be Key Personnel.

6.5 Support Service Level Credits. Failure to achieve any of the Support Service Level Requirements will constitute a Service Level Failure for which Contractor will issue to the State the corresponding service credits set forth in **Section 6.4(b)** ("**Service Level Credits**") in accordance with **Section 8.12**.

6.6 Corrective Action Plan. If two or more Critical Service Errors occur in any thirty (30) day period during (a) the Term or (b) any additional periods during which Contractor does or is required to perform any Hosted Services, Contractor will promptly investigate the root causes of these Service Errors and provide to the State within five (5) Business Days of its receipt of notice of the second such Support Request an analysis of such root causes and a proposed written corrective action plan for the State's review, comment and approval, which, subject to and upon the State's written approval, shall be a part of, and by this reference is incorporated in, this Agreement as the parties' corrective action plan (the "**Corrective Action Plan**"). The Corrective Action Plan must include, at a minimum: (a) Contractor's commitment to the State to devote the appropriate time, skilled personnel, systems support and equipment and other resources necessary to Resolve and prevent any further occurrences of the Service Errors giving rise to such Support Requests; (b) a strategy for developing any programming, software updates, fixes, patches, etc. necessary to remedy, and prevent any further occurrences of, such Service Errors; and (c) time frames for implementing the Corrective Action Plan. There will be no additional charge for Contractor's preparation or implementation of the Corrective Action Plan in the time frames and manner set forth therein.

7. Term and Termination.

7.1 Term. The initial term of this Agreement commences as of the Effective Date and will continue in effect until five (5) years from such date unless and until terminated as provided under this Agreement (the "**Initial Term**").

7.2 Renewal. Throughout the useful life of the System, this Agreement may be renewed in writing by mutual agreement of the parties prior its expiration for additional successive twelve (12) month increments (each a "**Renewal Term**") by providing written notice to Contractor of its intent to renew at least sixty (60) days prior to the expiration of the then pending term (the Initial Term together with any Renewal Terms, collectively, the "**Term**").

7.3 Termination for Cause. In addition to any right of termination set forth elsewhere in this Agreement:

(a) The State may terminate this Agreement for cause, in whole or in part, if Contractor, as determined by the State: (i) endangers the value, integrity, or security of State Systems, State Data, or the State's facility or personnel; (ii) becomes insolvent, petitions for bankruptcy court proceedings, or has an involuntary bankruptcy proceeding filed against it by any creditor; (iii) engages in any conduct that may expose the State to liability; or (iv) breaches any of its material duties or obligations under this Agreement. Any reference to specific breaches being material breaches within this Agreement will not be construed to mean that other breaches are not material.

(b) If the State terminates this Agreement under this **Section 7.3**, the State will issue a termination notice specifying whether Contractor must: (a) cease performance immediately, or (b) continue to perform for a specified period. If it is later determined that Contractor was not in breach of this Agreement, the termination will be deemed to have been a termination for convenience, effective as of the same date, and the rights and obligations of the parties will be limited to those provided in **Section 7.4**.

(c) The State will only pay for amounts due to Contractor for Services accepted by the State on or before the date of termination, subject to the State's right to set off any amounts owed by the Contractor for the State's reasonable costs in terminating this Agreement. The Contractor must pay all reasonable costs incurred by the State in terminating this Agreement for cause, including administrative costs, attorneys' fees, court costs, transition costs, and any costs the State incurs to procure the Services from other sources.

7.4 Termination for Convenience. The State may immediately terminate this Agreement in whole or in part, without penalty and for any reason, including but not limited to, appropriation or budget shortfalls. The termination notice will specify whether Contractor must: (a) cease performance immediately, or (b) continue to perform in accordance with **Section 7.5**. If the State terminates this Agreement for convenience, the State will pay all reasonable costs, as determined by the State, for State approved Transition Responsibilities to the extent the funds are available.

7.5 Transition Responsibilities. Upon termination or expiration of this Agreement for any reason, Contractor must, for a period of time specified by the State (not to exceed 90 calendar days; the "**Transition Period**"), provide all reasonable transition assistance requested by the State, to allow for the expired or terminated portion of the Agreement to continue without interruption or adverse effect, and to facilitate the orderly transfer of the Services to the State or its designees. Such transition assistance may include but is not limited to: (a) continuing to perform the Services at the established Statement of Work rates; (b) taking all reasonable and necessary measures to transition performance of the work, including all applicable Services to the State or the State's designee; (c) taking all necessary and appropriate steps, or such other action as the State may direct, to preserve, maintain, protect, or return to the State all State Data; and (d) preparing an accurate accounting from which the State and Contractor may reconcile all outstanding accounts (collectively, the "**Transition Responsibilities**"). The Term of this Agreement is automatically extended through the end of the Transition Period.

7.6 Effect of Termination. Upon and after the termination or expiration of this Agreement or one or more Statements of Work for any or no reason:

(a) Contractor will be obligated to perform all Transition Responsibilities specified in **Section 7.5**.

(b) All licenses granted to Contractor in State Data will immediately and automatically also terminate. Contractor must promptly return to the State all State Data not required by Contractor for its Transition Responsibilities, if any.

(c) Contractor will (i) return to the State all documents and tangible materials (and any copies) containing, reflecting, incorporating, or based on the State's Confidential Information; (ii) permanently erase the State's Confidential Information from its computer systems; and (iii) certify in writing to the State that it has complied with the requirements of this **Section**, in each case to the extent such materials are not required by Contractor for Transition Responsibilities, if any.

(d) Notwithstanding any provisions of this Agreement or any Statement of Work to the contrary, upon the State's termination of this Agreement or any Statement of Work for cause pursuant to **Section 7.3**, the State will have the right and option to continue to access and use the Services under each applicable Statement of Work, in whole and in part, for a period not to exceed one hundred and eighty (180) days from the effective date of such termination pursuant to the terms and conditions of this Agreement and each applicable Statement of Work and at a reduced rate of fifty (50%) off the applicable Fees set forth in each such Statement of Work.

7.7 Survival. The rights, obligations and conditions set forth in this **Section 7.7** and **Section 1** (Definitions), **Section 7.5** (Effect of Termination; Data Retention), **Section 9** (Ownership), **Section 10** (Confidentiality), **Section 11** (Security), **Section 13.1** (Indemnification), **Section 14** (Limitations of Liability), **Section 15** (Representations and Warranties), **Section 0** (Insurance) and **Section 19** (Effect of Contractor Bankruptcy) and **Section 20** (General Provisions), and any right, obligation or condition that, by its express terms or nature and context is intended to survive the termination or expiration of this Agreement, survives any such termination or expiration hereof.

8. Fees and Expenses.

8.1 Fees. Subject to the terms and conditions of this Agreement and the applicable Statement of Work, including the provisions of this **Section 8**, the State shall pay the fees set forth in the applicable Statement of Work, subject to such increases and adjustments as may be permitted pursuant to **Section 8.2** ("**Fees**").

8.2 Fees During Renewal Terms. Contractor's Fees are fixed during the Initial Term. Contractor may increase Fees for any Renewal Term by providing written notice to the State at least sixty (60) calendar days prior to the commencement of such Renewal Term. An increase of Fees for any Renewal Term may not exceed the lesser of:

(a) three percent (3%) of the Fees effective during the immediately preceding twelve (12) month period; or

(b) the amount equal to eighty percent (80%) of the percentage by which the then most-recently published Consumer Price Index (CPI) exceeds the CPI published in the same month of the preceding calendar year, it being understood and agreed that, if the CPI is no longer published, Contractor and the State will negotiate, in good faith to select a new index that best reflects and accounts for cost changes relevant to Contractor's business.

No increase in Fees is effective unless made in compliance with the provisions of this **Section 8.2**.

8.3 Administrative Fee and Reporting. Contractor must pay an administrative fee of 1% on all payments made to Contractor under the Contract including transactions with the State (including its departments, divisions, agencies, offices,

and commissions), MiDEAL members, and other states (including governmental subdivisions and authorized entities). Administrative fee payments must be made by check payable to the State of Michigan and mailed to:

Department of Technology, Management and Budget
Financial Services – Cashier Unit
Lewis Cass Building
320 South Walnut St.
P.O. Box 30681
Lansing, MI 48909

Contractor must submit an itemized purchasing activity report, which includes at a minimum, the name of the purchasing entity and the total dollar volume in sales. Reports should be mailed to DTMB-Procurement. The administrative fee and purchasing activity report are due within 30 calendar days from the last day of each calendar quarter.

8.4 Responsibility for Costs. Contractor is responsible for all costs and expenses incurred in or incidental to the performance of Services, including all costs of any materials supplied by Contractor, all fees, fines, licenses, bonds, or taxes required of or imposed against Contractor, and all other of Contractor's costs of doing business.

8.5 Taxes. The State is exempt from State sales tax for direct purchases and may be exempt from federal excise tax, if Services purchased under this Agreement are for the State's exclusive use. Notwithstanding the foregoing, all Fees are inclusive of taxes, and Contractor is responsible for all sales, use and excise taxes, and any other similar taxes, duties and charges of any kind imposed by any federal, state, or local governmental entity on any amounts payable by the State under this Agreement.

8.6 Invoices. Contractor will invoice the State for all Fees in electronic format, via such delivery means and to such address as are specified by the State in writing from time to time. If more than one Statement of Work is in effect, Contractor shall provide separate invoices for each Statement of Work. Each separate invoice must: (a) clearly identify the Statement of Work to which it relates, in such manner as is required by the State; (b) list each Fee item and Service Credit separately; (c) include sufficient detail for each line item to enable the State to verify the calculation thereof; (d) for Fees determined on a time and materials basis, report details of time taken to perform Services, and such other information as the State requires, on a per-individual basis; and (e) include such other information as may be required by the State as set forth in the applicable Statement of Work.

8.7 Payment Terms.

(a) The State will pay all properly invoiced amounts payable and due hereunder within forty-five (45) days after the State's receipt of Contractor's proper invoice therefor, except that the State may withhold from any payment any charge or amount disputed in good faith by the State pending resolution of such dispute.

(b) All payments hereunder must be in US dollars and made by wire transfer. Payments shall be made to the address or account specified in the Statement of Work or such other address or account as is specified by Contractor in writing from time to time, provided that Contractor gives the State at least thirty (30) days' prior notice of any account, address or other change in payment instructions. The State will not be liable for any late or misdirected payment caused by Contractor's failure to provide timely notice of any such change.

8.8 Most Favored Pricing. All Fees and other charges under this Agreement must be the lowest fees, prices and rates contemporaneously charged by Contractor to any of its customers for similar volumes of services of the same or comparable type and scope. If at any time Contractor charges any comparable customer a lower fee, rate or price for similar volumes of such comparable services than the corresponding Fees or other amounts charged hereunder,

Contractor will immediately apply such lower rate or amount, as applicable, for all comparable Services provided to the State. Such lower rates or amounts, as applicable, apply retroactively to the date on which Contractor began charging them to such comparable customer.

8.9 State Audits of Contractor. During the Term and for three (3) years after, Contractor must maintain complete and accurate books and records regarding its business operations relevant to the calculation of Fees and any other information relevant to Contractor's compliance with this **Section 8**. During the Term and for three (3) years after, upon the State's request, Contractor must make such books and records and appropriate personnel, including all financial information, available during normal business hours for inspection and audit by the State or its authorized representative, provided that the State: (a) provides Contractor with at least fifteen (15) days prior notice of any audit, and (b) conducts or causes to be conducted such audit in a manner designed to minimize disruption of Contractor's normal business operations.

The State may take copies and abstracts of materials audited. The State will pay the cost of such audits unless an audit reveals an overbilling or over-reporting of five percent (5%) or more, in which case Contractor shall reimburse the State for the reasonable cost of the audit. Contractor must immediately upon written notice from the State pay the State the amount of any overpayment revealed by the audit, together with any reimbursement payable pursuant to the preceding sentence.

8.10 Payment Does Not Imply Acceptance. The making of any payment or payments by the State, or the receipt thereof by Contractor, will in no way affect the responsibility of Contractor to perform the Services in accordance with this Agreement, and will not imply the State's Acceptance of any Services or the waiver of any warranties or requirements of this Agreement, including any right to Service Credits.

8.11 Withhold Remedy. In addition and cumulative to all other remedies in law, at equity and under this Agreement, if Contractor is in material default of its performance or other obligations under this Agreement or any Statement of Work and fails to cure the default within fifteen (15) days after receipt of the State's written notice of default, the State may, without waiving any other rights under this Agreement, elect to withhold from the payments due to Contractor under this Agreement during the period beginning with the sixteenth (16th) day after Contractor's receipt of such notice of default, and ending on the date that the default has been cured to the reasonable satisfaction of the State, an amount that, in the State's reasonable judgment, is in proportion to the magnitude of the default or the Service that Contractor is not providing. Upon Contractor's cure of the default, the State will cause the withheld payments to be paid to Contractor, without interest. Upon a final and binding legal determination that the State has withheld any payment in bad faith, such payment shall promptly be paid to Contractor, plus interest at the maximum legal rate.

8.12 Availability and Support Service Level Credits. Contractor acknowledges and agrees that each of the Service Availability Credits and Service Level Credits assessed pursuant to **Section 5** and **Section 6**, respectively: (a) is a reasonable estimate of and compensation for the anticipated or actual harm to the State that may arise from the corresponding Service Error or Service Level Failure, which would be impossible or very difficult to accurately estimate; and (b) may, at the State's option, be credited or set off against any Fees or other charges payable to Contractor under this Agreement or be payable to the State upon demand. No Service Availability Credits, Service Level Credits, or combination thereof, for any Service Period may exceed the total amount of Fees that would be payable for that Service Period if the Services were fully provided in accordance with this Agreement and the Specifications.

8.13 Right of Set-off. Without prejudice to any other right or remedy it may have, the State reserves the right to set off at any time any amount then due and owing to it by Contractor against any amount payable by the State to Contractor under this Agreement.

8.14 Support Not to be Withheld or Delayed. Contractor may not withhold or delay any Hosted Services or Support Services or fail to perform any other Services or obligations hereunder by reason of: (a) the State's good faith withholding of any payment or amount in accordance with this **Section 8**; or (b) any dispute whatsoever between the parties, including any payment or other dispute arising under or concerning this Agreement or any other agreement between the parties.

9. State Data.

9.1 Ownership. The State's data ("**State Data**," which will be treated by Contractor as Confidential Information) includes: (a) the State's data collected, used, processed, stored, or generated as the result of the Services; (b) personally identifiable information ("**PII**") collected, used, processed, stored, or generated as the result of the Services, including, without limitation, any information that identifies an individual, such as an individual's social security number or other government-issued identification number, date of birth, address, telephone number, biometric data, mother's maiden name, email address, credit card information, or an individual's name in combination with any other of the elements here listed; and, (c) personal health information ("**PHI**") collected, used, processed, stored, or generated as the result of the Services, which is defined under the Health Insurance Portability and Accountability Act ("**HIPAA**") and its related rules and regulations. State Data is and will remain the sole and exclusive property of the State and all right, title, and interest in the same is reserved by the State. This **Section 9.1** survives termination or expiration of this Agreement.

9.2 Contractor Use of State Data. Contractor is provided a limited license to State Data for the sole and exclusive purpose of providing the Services, including a license to collect, process, store, generate, and display State Data only to the extent necessary in the provision of the Services. Contractor must: (a) keep and maintain State Data in strict confidence, using such degree of care as is appropriate and consistent with its obligations as further described in this Agreement and applicable law to avoid unauthorized access, use, disclosure, or loss; (b) use and disclose State Data solely and exclusively for the purpose of providing the Services, such use and disclosure being in accordance with this Agreement, any applicable Statement of Work, and applicable law; and (c) not use, sell, rent, transfer, distribute, or otherwise disclose or make available State Data for Contractor's own purposes or for the benefit of anyone other than the State without the State's prior written consent. This **Section 9.2** survives termination or expiration of this Agreement.

9.3 Extraction of State Data. Contractor must, within three (3) Business Days of the State's request, provide the State, without charge and without any conditions or contingencies whatsoever (including but not limited to the payment of any fees due to Contractor), an extract of State Data in the format specified by the State.

9.4 Backup and Recovery of State Data. Unless otherwise specified in the Statement of Work, Contractor is responsible for maintaining a backup of State Data and providing for an orderly and timely recovery of such data. Unless otherwise described in the Statement of Work, Contractor must maintain a contemporaneous backup of State Data that can be recovered within two (2) hours at any point in time.

9.5 Loss of Data. In the event of any act, error or omission, negligence, misconduct, or breach that compromises or is suspected to compromise the security, confidentiality, or integrity of State Data or the physical, technical, administrative, or organizational safeguards put in place by Contractor that relate to the protection of the security, confidentiality, or integrity of State Data, Contractor must, as applicable: (a) notify the State as soon as practicable but no later than twenty-four (24) hours of becoming aware of such occurrence; (b) cooperate with the State in investigating the occurrence, including making available all relevant records, logs, files, data reporting, and other materials required to comply with applicable law or as otherwise required by the State; (c) in the case of PII or PHI, at the State's sole election, (i) notify the affected individuals who comprise the PII or PHI as soon as practicable but no later than is required to comply with applicable law, or, in the absence of any legally required notification period, within five (5) calendar days of the occurrence; or (ii) reimburse the State for any costs in notifying the affected individuals; (d) in the case of PII, provide

third-party credit and identity monitoring services to each of the affected individuals who comprise the PII for the period required to comply with applicable law, or, in the absence of any legally required monitoring services, for no less than twenty-four (24) months following the date of notification to such individuals; (e) perform or take any other actions required to comply with applicable law as a result of the occurrence; (f) pay for any costs associated with the occurrence, including but not limited to any costs incurred by the State in investigating and resolving the occurrence, including reasonable attorney's fees associated with such investigation and resolution; (g) without limiting Contractor's obligations of indemnification as further described in this Agreement, indemnify, defend, and hold harmless the State for any and all claims, including reasonable attorneys' fees, costs, and incidental expenses, which may be suffered by, accrued against, charged to, or recoverable from the State in connection with the occurrence; (g) be responsible for recreating lost State Data in the manner and on the schedule set by the State without charge to the State; and (h) provide to the State a detailed plan within ten (10) calendar days of the occurrence describing the measures Contractor will undertake to prevent a future occurrence. Notification to affected individuals, as described above, must comply with applicable law, be written in plain language, not be tangentially used for any solicitation purposes, and contain, at a minimum: name and contact information of Contractor's representative; a description of the nature of the loss; a list of the types of data involved; the known or approximate date of the loss; how such loss may affect the affected individual; what steps Contractor has taken to protect the affected individual; what steps the affected individual can take to protect himself or herself; contact information for major credit card reporting agencies; and, information regarding the credit and identity monitoring services to be provided by Contractor. The State will have the option to review and approve any notification sent to affected individuals prior to its delivery. This **Section 9.5** survives termination or expiration of this Agreement.

9.6 HIPAA Compliance. The State and Contractor must comply with all obligations under HIPAA and its accompanying regulations, including but not limited to entering into a business associate agreement, if reasonably necessary to keep the State and Contractor in compliance with HIPAA.

10. Confidentiality.

10.1 Meaning of Confidential Information. The term "**Confidential Information**" means all information and documentation of a party that: (a) has been marked "confidential" or with words of similar meaning, at the time of disclosure by such party; (b) if disclosed orally or not marked "confidential" or with words of similar meaning, was subsequently summarized in writing by the disclosing party and marked "confidential" or with words of similar meaning; and, (c) should reasonably be recognized as confidential information of the disclosing party. The term "Confidential Information" does not include any information or documentation that was or is: (a) subject to disclosure under the Michigan Freedom of Information Act (FOIA); (b) already in the possession of the receiving party without an obligation of confidentiality; (c) developed independently by the receiving party, as demonstrated by the receiving party, without violating the disclosing party's proprietary rights; (d) obtained from a source other than the disclosing party without an obligation of confidentiality; or, (e) publicly available when received, or thereafter became publicly available (other than through any unauthorized disclosure by, through, or on behalf of, the receiving party). Notwithstanding the above, in all cases and for all matters, State Data is deemed to be Confidential Information.

10.2 Obligation of Confidentiality. The parties agree to hold all Confidential Information in strict confidence and not to copy, reproduce, sell, transfer, or otherwise dispose of, give or disclose such Confidential Information to third parties other than employees, agents, or subcontractors of a party who have a need to know in connection with this Agreement or to use such Confidential Information for any purposes whatsoever other than the performance of this Agreement. The parties agree to advise and require their respective employees, agents, and subcontractors of their obligations to keep all Confidential Information confidential. Disclosure to the Contractor's subcontractor is permissible where: (a) the subcontractor is a Permitted Subcontractor; (b) the disclosure is necessary or otherwise naturally occurs in connection with work that is within the Permitted Subcontractor's responsibilities; and (c) Contractor obligates the Permitted

Subcontractor in a written contract to maintain the State's Confidential Information in confidence. At the State's request, any of the Contractor's Representatives may be required to execute a separate agreement to be bound by the provisions of this **Section 10.2**.

10.3 Cooperation to Prevent Disclosure of Confidential Information. Each party must use its best efforts to assist the other party in identifying and preventing any unauthorized use or disclosure of any Confidential Information. Without limiting the foregoing, each party must advise the other party immediately in the event either party learns or has reason to believe that any person who has had access to Confidential Information has violated or intends to violate the terms of this Agreement. Each party will cooperate with the other party in seeking injunctive or other equitable relief against any such person.

10.4 Remedies for Breach of Obligation of Confidentiality. Each party acknowledges that breach of its obligation of confidentiality may give rise to irreparable injury to the other party, which damage may be inadequately compensable in the form of monetary damages. Accordingly, a party may seek and obtain injunctive relief against the breach or threatened breach of the foregoing undertakings, in addition to any other legal remedies which may be available, to include, in the case of the State, at the sole election of the State, the immediate termination, without liability to the State, of this Agreement or any Statement of Work corresponding to the breach or threatened breach.

10.5 Surrender of Confidential Information upon Termination. Upon termination or expiration of this Agreement or a Statement of Work, in whole or in part, each party must, within five (5) calendar days from the date of termination, return to the other party any and all Confidential Information received from the other party, or created or received by a party on behalf of the other party, which are in such party's possession, custody, or control; provided, however, that Contractor must return State Data to the State following the timeframe and procedure described further in this Agreement. If Contractor or the State determine that the return of any non-State Data Confidential Information is not feasible, such party must destroy the non-State Data Confidential Information and certify the same in writing within five (5) calendar days from the date of termination to the other party

11. Security.

11.1 Protection of the State's Confidential Information. Throughout the Term and at all times in connection with its actual or required performance of the Services hereunder, Contractor will:

(a) maintain and enforce an information security program including safety and physical and technical security policies and procedures with respect to its Processing of the State's Confidential Information that comply with the requirements of the State's data security policies as set forth in **Schedule 2** (Data Security Requirements) and, to the extent such practices and standards are consistent with and not less protective than the foregoing requirements, are at least equal to applicable best industry practices and standards;

(b) provide technical and organizational safeguards against accidental, unlawful or unauthorized access to or use, destruction, loss, alteration, disclosure, transfer, commingling or Processing of such information that ensure a level of security appropriate to the risks presented by the Processing of the State's Confidential Information and the nature of such Confidential Information, consistent with best industry practice and standards.

(c) take all reasonable measures to:

(i) secure and defend all locations, equipment, systems and other materials and facilities employed in connection with the Services against "hackers" and others who may seek, without authorization, to

disrupt, damage, modify, access or otherwise use Contractor Systems or the information found therein;

(ii) prevent (A) the State and its Authorized Users from having access to the data of other customers or such other customer's users of the Services; (B) the State's Confidential Information from being commingled with or contaminated by the data of other customers or their users of the Services; and (C) unauthorized access to any the State's Confidential Information;

(d) continuously monitor its systems for potential areas where security could be breached.

11.2 Unauthorized Access. Contractor may not access, and shall not permit any access to, State Systems, in whole or in part, whether through Contractor's Systems or otherwise, without the State's express prior written authorization. Such authorization may be revoked by the State in writing at any time in its sole discretion. Any access to State Systems must be solely in accordance with this Agreement, and in no case exceed the scope of the State's authorization pursuant to this **Section 11.2**. All State-authorized connectivity or attempted connectivity to State Systems shall be only through the State's security gateways and firewalls and in compliance with the State's security policies set forth in **Schedule 2** as the same may be supplemented or amended by the State and provided to Contractor from time to time.

11.3 Contractor Systems. Contractor will be solely responsible for the information technology infrastructure, including all computers, software, databases, electronic systems (including database management systems) and networks used by or for Contractor to access State Systems or otherwise in connection with the Services ("**Contractor Systems**") and shall prevent unauthorized access to State Systems through the Contractor Systems.

11.4 Security Audits. During the Term, Contractor will:

(a) maintain complete and accurate records relating to its data protection practices and the security of any of the State's Confidential Information, including any backup, disaster recovery or other policies, practices or procedures relating to the State's Confidential Information and any other information relevant to its compliance with this **Section 11**;

(b) upon the State's request, make all such records, appropriate personnel and relevant materials available during normal business hours for inspection and audit by the State or an independent data security expert that is reasonably acceptable to Contractor, provided that the State: (i) gives Contractor at least five Business Days prior notice of any such audit; (ii) undertakes such audit no more than once per calendar year, except for good cause shown; and (iii) conducts or causes to be conducted such audit in a manner designed to minimize disruption of Contractor's normal business operations and that complies with the terms and conditions of all data confidentiality, ownership, privacy, security and restricted use provisions of this Agreement. The State may, but is not obligated to, perform such security audits, which shall, at the State's option and request, include penetration and security tests, of any and all Contractor Systems and their housing facilities and operating environments; and

(c) if Contractor engages a third party auditor to perform a Statement on Standards for Attestation Engagements No. 16 (SSAE 16) audit of Contractor's operations, information security program or disaster recovery/business continuity plan, Contractor will provide a copy of the audit report to the State within thirty (30) days after Contractor's receipt of such report. Any such audit reports will be recognized as Contractor's Confidential Information.

11.5 Nonexclusive Remedy for Security Breach. Any failure of the Services to meet the requirements of this Agreement with respect to the security of any State Data or other Confidential Information of the State, including any related backup, disaster recovery or other policies, practices or procedures, is a material breach of this Agreement for which the State, at its option, may terminate this Agreement immediately upon written notice to Contractor without any

notice or cure period, and Contractor must promptly reimburse to the State any Fees prepaid by the State prorated to the date of such termination.

12. Redundancy, Data Backup and Disaster Recovery. Contractor must, in accordance with the provisions of this **Section 12**, maintain or cause to be maintained disaster avoidance procedures designed to safeguard the State Data and the State's other Confidential Information, Contractor's Processing capability and the availability of the Hosted Services, in each case throughout the Term and at all times in connection with its actual or required performance of the Services hereunder. The force majeure provisions of **Section 17.1** do not limit Contractor's obligations under this **Section 12**.

12.1 Redundant Hosting and Connectivity. Contractor will simultaneously operate a mirror system at a location in the United States that is geographically remote from the primary system on which the Software and Hosted Services are hosted. Except for its location, the mirror system must: (a) be identical in all respects to the primary system; (b) have hardware and software, network connectivity, power supplies, backup generators and other similar equipment and services that operate independently of the primary system; (c) have fully current backups of all the State Data stored on the primary system; and (d) have the ability to provide the Hosted Services in accordance with this Agreement and the Specifications during the performance of routine and remedial maintenance or any outage or failure of the primary system fails. Contractor will operate, monitor and maintain such mirror system so that it may be activated within five (5) hours of any failure of the Hosted Services to be Available.

12.2 Data Backup. Contractor will conduct, or cause to be conducted, daily back-ups of State Data and perform, or cause to be performed, other periodic back-ups of State Data on at least a weekly basis and store such back-ups as specified in **Schedule 3**. On written notice from the State and, in any case, on a quarterly basis, Contractor will provide the State with a copy of the backed up State Data in such machine readable format as is specified in **Schedule 3** or the State otherwise reasonably requests. Contractor will provide all quarterly back-ups at its sole cost and expense. The State will reimburse Contractor for all media costs and shipping charges reasonably incurred in fulfilling the State's additional requests for copies of backed up the State Data.

12.3 Disaster Recovery/Business Continuity. Throughout the Term and at all times in connection with its actual or required performance of the Services hereunder, Contractor will:

(a) maintain a Business Continuity and Disaster Recovery Plan for the Hosted Services (the "**DR Plan**"), and implement such DR Plan in the event of any unplanned interruption of the Hosted Services. Contractor's current DR Plan, revision history, and any reports or summaries relating to past testing of or pursuant to the DR Plan are attached as **Schedule 4**. Contractor will actively test, review and update the DR Plan on at least an annual basis using industry best practices as guidance. Contractor will provide the State with copies of all such updates to the Plan within fifteen (15) days of its adoption by Contractor. All updates to the DR Plan are subject to the requirements of this **Section 12.3**; and

(b) provide the State with copies of all reports resulting from any testing of or pursuant to the DR Plan promptly after Contractor's receipt or preparation. If Contractor fails to reinstate all material Hosted Services within the periods of time set forth in the DR Plan, the State may, in addition to any other remedies available under this Agreement, in its sole discretion, immediately terminate this Agreement as a non-curable default under **Section 7.3(a)**.

13. Indemnification.

13.1 General Indemnification. Contractor must defend, indemnify and hold harmless the State, and the State's agencies, departments, officers, directors, employees, agents, and contractors from and against all Losses arising out of

or resulting from any third party claim, suit, action or proceeding (each, an "**Action**") that does or is alleged to arise out of or result from:

(a) the Contractor's breach of any representation, warranty, covenant or obligation of Contractor under this Agreement (including, in the case of Contractor, any action or failure to act by any Contractor Personnel that, if taken or not taken by Contractor, would constitute such a breach by Contractor); or

(b) any negligence or more culpable act or omission (including recklessness or willful misconduct) in connection with the performance or nonperformance of any Services or other activity actually or required to be performed by or on behalf of, Contractor (including, in the case of Contractor, any Contractor Personnel) under this Agreement, provided that, to the extent that any Action or Losses described in this **Section 13.1** arises out of, results from, or alleges a claim that any of the Services does or threatens to infringe, misappropriate or otherwise violate any Intellectual Property Rights or other rights of any third party, Contractor's obligations with respect to such Action and Losses, if any, shall be subject to the terms and conditions of **Section 13.2(a)** through **Section 13.2(b)** and **Section 13.3**.

13.2 Infringement Indemnification By Contractor. Contractor must indemnify, defend and hold the State, and the State's agencies, departments, officers, directors, employees, agents, and contractors harmless from and against all Losses arising out of or resulting from any Action that does or is alleged to arise out of or result from a claim that any of the Services, or the State's or any Authorized User's use thereof, actually does or threatens to infringe, misappropriate or otherwise violate any Intellectual Property Right or other right of a third party, provided however, that Contractor shall have no liability or obligation for any Action or Loss to the extent that such Action or Loss arises out of or results from any:

(a) alteration or modification of the Hosted Services or Software by or on behalf of the State or any Authorized User without Contractor's authorization (each, a "**State Modification**"), provided that no infringement, misappropriation or other violation of third party rights would have occurred without such State Modification and provided further that any alteration or modification made by or for Contractor at the State's request shall not be excluded from Contractor's indemnification obligations hereunder unless (i) such alteration or modification has been made pursuant to the State's written specifications and (ii) the Hosted Services, as altered or modified in accordance with the State's specifications, would not have violated such third party rights but for the manner in which the alteration or modification was implemented by or for Contractor; and

(b) use of the Hosted Services by the State or an Authorized User pursuant to this Agreement in combination with any software or service not provided, authorized or approved by or on behalf of Contractor, if (i) no violation of third party rights would have occurred without such combination and (ii) such software or service is not commercially available and not standard in Contractor's or the State's industry and there are no Specifications, Documentation, or other materials indicating Contractor's specification, authorization or approval of the use of the Hosted Services in combination therewith.

13.3 Mitigation.

(a) If Contractor receives or otherwise learns of any threat, warning or notice alleging that all, or any component or feature, of the Services violates a third party's rights, Contractor must promptly notify the State of such fact in writing, and take all commercially reasonable actions necessary to ensure the State's continued right to access and use such Services and otherwise protect the State from any Losses in connection therewith, including investigating such allegation and obtaining a credible opinion of counsel that it is without merit.

(b) Subject to the exclusions set forth in clauses (a) and (b) of **Section 13.2**, if any of the Services or any component or feature thereof is ruled to infringe or otherwise violate the rights of any third party by any court of competent

jurisdiction, or if any use of any Services or any component thereof is threatened to be enjoined, or is likely to be enjoined or otherwise the subject of an infringement or misappropriation claim, Contractor must, at Contractor's sole cost and expense:

(i) procure for the State the right to continue to access and use the Services to the full extent contemplated by this Agreement and the Specifications; or

(ii) modify or replace all components, features and operations of the Services that infringe or are alleged to infringe ("**Allegedly Infringing Features**") to make the Services non-infringing while providing equally or more suitable features and functionality, which modified and replacement services shall constitute Services and be subject to the terms and conditions of this Agreement.

(c) If neither of the remedies set forth in **Section 13.3(b)** is reasonably available with respect to the Allegedly Infringing Features then Contractor may direct the State to cease any use of any materials that have been enjoined or finally adjudicated as infringing, provided that Contractor will:

(i) refund to the State any prepaid Fees for Services that have not been provided; and

(ii) in any case, at its sole cost and expense, secure the right for the State to continue using the Allegedly Infringing Features for a transition period of up to six (6) months to allow the State to replace the affected Services or Allegedly Infringing Features without disruption.

(d) The remedies set forth in this **Section 13.3** are in addition to, and not in lieu of, all other remedies that may be available to the State under this Agreement or otherwise, including the State's right to be indemnified pursuant to **Section 13.1** and **Section 13.2**.

13.4 Indemnification Procedure. The State will notify Contractor in writing if indemnification is sought; however, failure to do so will not relieve Contractor, except to the extent that Contractor is materially prejudiced. Contractor must, to the satisfaction of the State, demonstrate its financial ability to carry out these obligations. The State is entitled to: (i) regular updates on proceeding status; (ii) participate in the defense of the proceeding; (iii) employ its own counsel; and to (iv) retain control of the defense, at its own expense, if the State deems necessary. Contractor will not, without the State's prior written consent (not to be unreasonably withheld), settle, compromise, or consent to the entry of any judgment in or otherwise seek to terminate any claim, action, or proceeding. Any litigation activity on behalf of the State or any of its subdivisions, under this **Section 13**, must be coordinated with the Department of Attorney General. An attorney designated to represent the State may not do so until approved by the Michigan Attorney General and appointed as a Special Assistant Attorney General.

14. Limitations of Liability.

(a) The State's Disclaimer of Damages. THE STATE WILL NOT BE LIABLE, REGARDLESS OF THE FORM OF ACTION, WHETHER IN CONTRACT, TORT, NEGLIGENCE, STRICT LIABILITY OR BY STATUTE OR OTHERWISE, FOR ANY CLAIM RELATED TO OR ARISING UNDER THIS AGREEMENT FOR CONSEQUENTIAL, INCIDENTAL, INDIRECT, OR SPECIAL DAMAGES, INCLUDING WITHOUT LIMITATION LOST PROFITS AND LOST BUSINESS OPPORTUNITIES.

(b) The State's Limitation of Liability. IN NO EVENT WILL THE STATE'S AGGREGATE LIABILITY TO CONTRACTOR UNDER THIS AGREEMENT, REGARDLESS OF THE FORM OF ACTION, WHETHER IN CONTRACT, TORT, NEGLIGENCE, STRICT LIABILITY OR BY STATUTE OR OTHERWISE, FOR ANY CLAIM RELATED TO OR

ARISING UNDER THIS AGREEMENT, EXCEED THE MAXIMUM AMOUNT OF FEES SPECIFIED IN THE STATEMENT OF WORK.

15. Contractor Representations and Warranties.

15.1 Authority and Bid Response. Contractor represents and warrants to the State that:

(a) it is duly organized, validly existing, and in good standing as a corporation or other entity as represented under this Agreement under the laws and regulations of its jurisdiction of incorporation, organization, or chartering;

(b) it has the full right, power, and authority to enter into this Agreement, to grant the rights and licenses granted under this Agreement, and to perform its contractual obligations;

(c) the execution of this Agreement by its Representative has been duly authorized by all necessary organizational action;

(d) when executed and delivered by Contractor, this Agreement will constitute the legal, valid, and binding obligation of Contractor, enforceable against Contractor in accordance with its terms;

(e) all written information furnished to the State by or for Contractor in connection with this Agreement, including Contractor's bid response, is true, accurate, and complete, and contains no untrue statement of material fact or omits any material fact necessary to make the information not misleading; and

(f) Contractor is not in material default or breach of any other contract or agreement that it may have with the State or any of its departments, commissions, boards, or agencies. Contractor further represents and warrants that it has not been a party to any contract with the State or any of its departments that was terminated by the State within the previous five (5) years for the reason that Contractor failed to perform or otherwise breached an obligation of the contract.

15.2 Software and Service Warranties. Contractor represents and warrants to the State that:

(a) Contractor has, and throughout the Term and any additional periods during which Contractor does or is required to perform the Services will have, the unconditional and irrevocable right, power and authority, including all permits and licenses required, to provide the Services and grant and perform all rights and licenses granted or required to be granted by it under this Agreement;

(b) neither Contractor's grant of the rights or licenses hereunder nor its performance of any Services or other obligations under this Agreement does or at any time will: (i) conflict with or violate any applicable Law, including any Law relating to data privacy, data security or personal information; (ii) require the consent, approval or authorization of any governmental or regulatory authority or other third party; or (iii) require the provision of any payment or other consideration by the State or any Authorized User to any third party, and Contractor shall promptly notify the State in writing if it becomes aware of any change in any applicable Law that would preclude Contractor's performance of its material obligations hereunder;

(c) as accessed and used by the State or any Authorized User in accordance with this Agreement and the Specifications, the Hosted Services, Documentation and all other Services and materials provided by Contractor under this Agreement will not infringe, misappropriate or otherwise violate any Intellectual Property Right or other right of any third party;

(d) there is no settled, pending or, to Contractor's knowledge as of the Effective Date, threatened Action, and it has not received any written, oral or other notice of any Action (including in the form of any offer to obtain a license): (i) alleging that any access to or use of the Services or Software does or would infringe, misappropriate or otherwise violate any Intellectual Property Right of any third party; (ii) challenging Contractor's ownership of, or right to use or license, any software or other materials used or required to be used in connection with the performance or receipt of the Services, or alleging any adverse right, title or interest with respect thereto; or (iii) that, if decided unfavorably to Contractor, would reasonably be expected to have an actual or potential adverse effect on its ability to perform the Services or its other obligations under this Agreement, and it has no knowledge after reasonable investigation of any factual, legal or other reasonable basis for any such litigation, claim or proceeding;

(e) the Software and Services will in all material respects conform to and perform in accordance with the Specifications and all requirements of this Agreement, including the Availability and Availability Requirement provisions set forth in **Section 5**;

(f) all Specifications are, and will be continually updated and maintained so that they continue to be, current, complete and accurate and so that they do and will continue to fully describe the Hosted Services in all material respects such that at no time during the Term or any additional periods during which Contractor does or is required to perform the Services will the Hosted Services have any material undocumented feature;

(g) the Contractor Systems and Services are and will remain free of Harmful Code;

(h) Contractor will perform all Services in a timely, professional and workmanlike manner with a level of care, skill, practice and judgment consistent with generally recognized industry standards and practices for similar services, using personnel with the requisite skill, experience and qualifications, and will devote adequate resources to meet Contractor's obligations (including the Availability Requirement and Support Service Level Requirements) under this Agreement;

(i) During the term of this Contract, any audit rights contained in any third-party software license agreement or end user license agreement for third-party software incorporated in or otherwise used in conjunction with the Services, will apply solely to Contractor's (or its subcontractors) facilities and systems that host the Services (including any disaster recovery site), and regardless of anything to the contrary contained in any third-party software license agreement or end user license agreement, third-party software providers will have no audit rights whatsoever against State systems or networks; and,

(j) Contractor acknowledges that the State cannot indemnify any third parties, including but not limited to any third-party software providers that provide software that will be incorporated in or otherwise used in conjunction with the Services, and that notwithstanding anything to the contrary contained in any third-party software license agreement or end user license agreement, the State will not indemnify any third party software provider for any reason whatsoever.

15.3 DISCLAIMER. EXCEPT FOR THE EXPRESS WARRANTIES IN THIS AGREEMENT, CONTRACTOR HEREBY DISCLAIMS ALL WARRANTIES, WHETHER EXPRESS, IMPLIED, STATUTORY OR OTHERWISE UNDER OR IN CONNECTION WITH THIS AGREEMENT OR ANY SUBJECT MATTER HEREOF.

16. Insurance.

16.1 Required Coverage. At all times during the Term, Contractor will procure and maintain, at its sole cost and expense, all insurance coverage required by applicable Law, and in any event insurance coverage in the following types and amounts:

(a) Commercial General Liability with limits no less than One Million US Dollars ($1,000,000 USD) per occurrence and Two Million US Dollars ($2,000,000 USD) in the aggregate, including bodily injury and property damage and products and completed operations and advertising liability, which policy will include contractual liability coverage insuring the activities of Contractor under this Agreement;

(b) Cyber Liability Insurance, including first party and third party coverage, with limits no less than One Million US Dollars ($1,000,000 USD) per occurrence and One Million US Dollars ($1,000,000 USD) in the aggregate for all claims each policy year, including coverage for information security and privacy liability, privacy notification costs, regulatory defense and penalties, and website media content liability;

(c) Worker's Compensation and employers' liability insurance with limits no less than the greater of (i) Five Hundred Thousand US Dollars ($500,000 USD) and (ii) the minimum amount required by applicable Law for each accident, including occupational disease coverage;

(d) Commercial Automobile Liability with limits no less than One Million US Dollars ($1,000,000 USD), each occurrence combined single limit of liability for bodily injury, death and property damage, including owned and non-owned and hired automobile coverages, as applicable; and

(e) Errors and Omissions/Professional Liability with limits no less than One Million US Dollars ($1,000,000 USD) per occurrence and One Million US Dollars ($1,000,000 USD) in the aggregate for all claims each policy year.

16.2 Policy Terms. All insurance policies required pursuant to this **Section 0** must:

(a) be issued by insurance companies with a A.M. Best's Rating of no less than "A" and a financial size of VII or better;

(b) provide that such insurance carriers give the State at least thirty (30) days' prior written notice of any cancellation or non-renewal of, or material change in, the coverage, scope or amount of such policy and, prior to any such cancellation, non-renewal or material change in coverage, Contractor will have new insurance policies in place that meet the requirements of this **Section 0**;

(c) waive any right of subrogation of the insurers against the State;

(d) provide that such insurance be primary insurance and any similar insurance in the name of and/or for the benefit of the State will be excess and non-contributory; and

(e) name "the State of Michigan, its departments, divisions, agencies, offices, commissions, officers, employees, and agents" as additional insureds on the certificate, as pertains to the Commercial General Liability policy.

16.3 Coverage. To the extent any insurance coverage required under this **Section 0** is purchased on a "claims-made" basis, such insurance must cover all prior acts of Contractor during the Term and any additional periods during which Contractor does or is required to perform the Services, and such insurance must be continuously maintained until at

least four (4) years beyond the expiration or termination of the Term, or Contractor will purchase "tail" coverage, effective upon termination of any such policy or upon termination or expiration of the Term, to provide coverage for at least four (4) years from the occurrence of either such event.

16.4 Certificates of Insurance. Upon the written request of the State, Contractor will provide the State with copies of the certificates of insurance and policy endorsements for all insurance coverage required by this **Section 0**, and will not do anything to invalidate such insurance. Certificates of Insurance evidencing all coverages described in this **Section 0** must be furnished to the State upon written request. Contractor must give thirty (30) days' prior written notice to the State of any cancellation, non-renewal or material change in coverage, scope, or amount of any insurance policy required by or affecting the State's rights or remedies under this Agreement.

16.5 Non-waiver. This **Section 0** is not intended to and is not be construed in any manner as waiving, restricting or limiting the liability of either party for any obligations under this Agreement (including any provisions hereof requiring Contractor to indemnify, defend and hold harmless the State).

17. Force Majeure.

17.1 Force Majeure Events. Subject to **Section 17.2**, neither party will be liable or responsible to the other party, or be deemed to have defaulted under or breached this Agreement, for any failure or delay in fulfilling or performing any term hereof, when and to the extent such failure or delay is caused by: acts of God, flood, fire or explosion, war, terrorism, invasion, riot or other civil unrest, embargoes or blockades in effect on or after the date of this Agreement, national or regional emergency, or any passage of law or governmental order, rule, regulation or direction, or any action taken by a governmental or public authority, including imposing an embargo, export or import restriction, quota or other restriction or prohibition (each of the foregoing, a "**Force Majeure Event**"), in each case provided that: (a) such event is outside the reasonable control of the affected party; (b) the affected party gives prompt written notice to the other party, stating the period of time the occurrence is expected to continue; (c) the affected party uses diligent efforts to end the failure or delay and minimize the effects of such Force Majeure Event.

17.2 State Performance; Termination. In the event of a Force Majeure Event affecting Contractor's performance under this Agreement, the State may suspend its performance hereunder until such time as Contractor resumes performance. The State may terminate this Agreement by written notice to Contractor if a Force Majeure Event affecting Contractor's performance hereunder continues substantially uninterrupted for a period of five (5) Business Days or more. Unless the State terminates this Agreement pursuant to the preceding sentence, any date specifically designated for Contractor's performance under this Agreement will automatically be extended for a period up to the duration of the Force Majeure Event.

17.3 Exclusions; Non-suspended Obligations. Notwithstanding the foregoing or any other provisions of this Agreement:

(a) in no event will any of the following be considered a Force Majeure Event:

(i) shutdowns, disruptions or malfunctions of the Contractor Systems or any of Contractor's telecommunication or internet services other than as a result of general and widespread internet or telecommunications failures that are not limited to the Contractor Systems; or

(ii) the delay or failure of any Contractor Personnel to perform any obligation of Contractor hereunder unless such delay or failure to perform is itself by reason of a Force Majeure Event; and

(b) no Force Majeure Event modifies or excuses Contractor's obligations under **Section 5** (Service Availability and Service Availability Credits), **Section 6.5** (Support Service Level Credits), **Section 9** (State Data), **Section 10** (Confidentiality), **Section 11** (Security), **Section 12** (Data Backup and Disaster Recovery) or **Section 13** (Indemnification), or any Availability Requirement, Support Service Level Requirement, Service Availability Credit or Service Level Credit obligations under this Agreement or an applicable Statement of Work.

18. Software Escrow. The parties may enter into a separate intellectual property escrow agreement. Such escrow agreement will govern all aspects of Source Code escrow and release.

19. Effect of Contractor Bankruptcy. All rights and licenses granted by Contractor under this Agreement are and shall be deemed to be rights and licenses to "intellectual property," and the subject matter of this agreement, including the Services, is and shall be deemed to be "embodiments" of "intellectual property" for purposes of and as such terms are used in and interpreted under section 365(n) of the United States Bankruptcy Code (the "**Code**") (11 U.S.C. § 365(n) (2010)). The State has the right to exercise all rights and elections under the Code and all other applicable bankruptcy, insolvency and similar laws with respect to this Agreement (including all executory Statements of Work). Without limiting the generality of the foregoing, if Contractor or its estate becomes subject to any bankruptcy or similar proceeding: (a) subject to the State's rights of election, all rights and licenses granted to the State under this Agreement will continue subject to the respective terms and conditions of this Agreement, and will not be affected, even by Contractor's rejection of this Agreement; and (b) the State will be entitled to a complete duplicate of (or complete access to, as appropriate) all such intellectual property and embodiments of intellectual property, and the same, if not already in the State's possession, will be promptly delivered to the State, unless Contractor elects to and does in fact continue to perform all of its obligations under this Agreement.

20. General Provisions.

20.1 Further Assurances. Each party will, upon the reasonable request of the other party, execute such documents and perform such acts as may be necessary to give full effect to the terms of this Agreement.

20.2 Relationship of the Parties. The relationship between the parties is that of independent contractors. Nothing contained in this Agreement is to be construed as creating any agency, partnership, joint venture or other form of joint enterprise, employment or fiduciary relationship between the parties, and neither party has authority to contract for or bind the other party in any manner whatsoever.

20.3 Media Releases. News releases (including promotional literature and commercial advertisements) pertaining to this Agreement or project to which it relates must not be made without the prior written approval of the State, and then only in accordance with the explicit written instructions of the State.

20.4 Notices. All notices, requests, consents, claims, demands, waivers and other communications hereunder, other than routine communications having no legal effect, must be in writing and addressed to the parties as follows (or as otherwise specified by a party in a notice given in accordance with this Section):

If to State:
State of Michigan
DTMB-Procurement
Attention: Jarrod Barron
PO Box 30026
Lansing, MI 48909-7526

If to Contractor:
Midwestern Software Solutions, LLC
Attention: Ben Chen
3815 Plaza Drive
Ann Arbor, MI 48108

Notices sent in accordance with this **Section 20.4** will be deemed effectively given: (a) when received, if delivered by hand (with written confirmation of receipt); (b) when received, if sent by a nationally recognized overnight courier (receipt requested); (c) on the date sent by e-mail (with confirmation of transmission), if sent during normal business hours of the recipient, and on the next business day, if sent after normal business hours of the recipient; or (d) on the fifth (5^{th}) day after the date mailed, by certified or registered mail, return receipt requested, postage prepaid.

20.5 Headings. The headings in this Agreement are for reference only and do not affect the interpretation of this Agreement.

20.6 Entire Agreement. This Agreement, including all Statements of Work and other Schedules and Exhibits, constitutes the sole and entire agreement of the parties to this Agreement with respect to the subject matter contained herein, and supersedes all prior and contemporaneous understandings and agreements, both written and oral, with respect to such subject matter. In the event of any conflict between the terms of this Agreement and those of any Schedule, Exhibit or other document, the following order of precedence governs: (a) first, this Agreement, excluding its Exhibits and Schedules; and (b) second, the Exhibits and Schedules to this Agreement as of the Effective Date. NO BROWSE-WRAP, SHRINK-WRAP, CLICK-WRAP OR OTHER NON-NEGOTIATED TERMS AND CONDITIONS PROVIDED WITH ANY OF THE SERVICES, OR DOCUMENTATION HEREUNDER WILL CONSTITUTE A PART OR AMENDMENT OF THIS AGREEMENT OR IS BINDING ON THE STATE OR ANY AUTHORIZED USER FOR ANY PURPOSE. ALL SUCH OTHER TERMS AND CONDITIONS HAVE NO FORCE AND EFFECT AND ARE DEEMED REJECTED BY THE STATE AND THE AUTHORIZED USER, EVEN IF ACCESS TO OR USE OF SUCH SERVICE OR DOCUMENTATION REQUIRES AFFIRMATIVE ACCEPTANCE OF SUCH TERMS AND CONDITIONS.

20.7 Assignment. Contractor may not assign or otherwise transfer any of its rights, or delegate or otherwise transfer any of its obligations or performance, under this Agreement, in each case whether voluntarily, involuntarily, by operation of law or otherwise, without the State's prior written consent. The State has the right to terminate this Agreement in its entirety or any Services or Statements of Work hereunder, pursuant to **Section 7.4**, if Contractor delegates or otherwise transfers any of its obligations or performance hereunder, whether voluntarily, involuntarily, by operation of law or otherwise, and no such delegation or other transfer will relieve Contractor of any of such obligations or performance. For purposes of the preceding sentence, and without limiting its generality, any merger, consolidation or reorganization involving Contractor (regardless of whether Contractor is a surviving or disappearing entity) will be deemed to be a transfer of rights, obligations, or performance under this Agreement for which the State's prior written consent is required. Any purported assignment, delegation, or transfer in violation of this **Section 20.7** is void.

20.8 No Third-party Beneficiaries. This Agreement is for the sole benefit of the parties and nothing herein, express or implied, is intended to or will confer on any other person or entity any legal or equitable right, benefit or remedy of any nature whatsoever under or by reason of this Agreement.

20.9 Amendment and Modification; Waiver. This Agreement may only be amended, modified or supplemented by an agreement in writing signed by each party. No waiver by any party of any of the provisions hereof is effective unless explicitly set forth in writing and signed by the party so waiving. Except as otherwise set forth in this Agreement, no failure to exercise, or delay in exercising, any right, remedy, power or privilege arising from this Agreement will operate or be construed as a waiver thereof; nor will any single or partial exercise of any right, remedy, power or privilege hereunder preclude any other or further exercise thereof or the exercise of any other right, remedy, power or privilege.

20.10 Severability. If any term or provision of this Agreement is invalid, illegal or unenforceable in any jurisdiction, such invalidity, illegality or unenforceability will not affect any other term or provision of this Agreement or invalidate or render unenforceable such term or provision in any other jurisdiction. Upon such determination that any term or other

provision is invalid, illegal or unenforceable, the parties hereto will negotiate in good faith to modify this Agreement so as to effect the original intent of the parties as closely as possible in a mutually acceptable manner in order that the transactions contemplated hereby be consummated as originally contemplated to the greatest extent possible.

20.11 Governing Law. This Agreement is governed, construed, and enforced in accordance with Michigan law, excluding choice-of-law principles, and all claims relating to or arising out of this Agreement are governed by Michigan law, excluding choice-of-law principles. Any dispute arising from this Agreement must be resolved in the Michigan Court of Claims. Complaints against the State must be initiated in Ingham County, Michigan. Contractor waives any objections, such as lack of personal jurisdiction or forum non conveniens. Contractor must appoint agents in Michigan to receive service of process.

20.12 Equitable Relief. Each party to this Agreement acknowledges and agrees that (a) a breach or threatened breach by such party of any of its obligations under this Agreement would give rise to irreparable harm to the other party for which monetary damages would not be an adequate remedy and (b) in the event of a breach or a threatened breach by such party of any such obligations, the other party hereto is, in addition to any and all other rights and remedies that may be available to such party at law, at equity or otherwise in respect of such breach, entitled to equitable relief, including a temporary restraining order, an injunction, specific performance and any other relief that may be available from a court of competent jurisdiction, without any requirement to post a bond or other security, and without any requirement to prove actual damages or that monetary damages will not afford an adequate remedy. Each party to this Agreement agrees that such party will not oppose or otherwise challenge the appropriateness of equitable relief or the entry by a court of competent jurisdiction of an order granting equitable relief, in either case, consistent with the terms of this **Section 20.12**.

20.13 Schedules, Appendices and Exhibits. All Exhibits that are referenced herein and attached hereto are hereby incorporated by reference. The following Schedules and Exhibits are attached hereto and incorporated herein:

Schedule 1	Key Personnel
Schedule 2	Data Security Requirements
Schedule 3	Data Backup Requirements
Schedule 4	Business Continuity and Disaster Recovery Plan
Schedule 5	Statement of Work
Appendix A	Functional Requirements
Appendix B	Technical Requirements
Appendix C	Recommended Hardware & Software
Appendix D	Resume Templates
Appendix E	Cost Tables

20.14 Counterparts. This Agreement may be executed in counterparts, each of which will be deemed an original, but all of which together are deemed to be one and the same agreement and will become effective and binding upon the parties as of the Effective Date at such time as all the signatories hereto have signed a counterpart of this Agreement. A signed copy of this Agreement delivered by facsimile, e-mail or other means of electronic transmission (to which a signed PDF copy is attached) is deemed to have the same legal effect as delivery of an original signed copy of this Agreement.

Schedule 1: Key Personnel

Senior Project Manager	Ben Chen Midwestern Software Solutions, LLC 3815 Plaza Drive Ann Arbor, MI 48108 (734) 995-0200
Senior Technical Lead	Steve Wiggins Midwestern Software Solutions, LLC 3815 Plaza Drive Ann Arbor, MI 48108 (734) 995-0200
System Trainer	William J. Tomiko Midwestern Software Solutions, LLC 3815 Plaza Drive Ann Arbor, MI 48108 (734) 995-0200

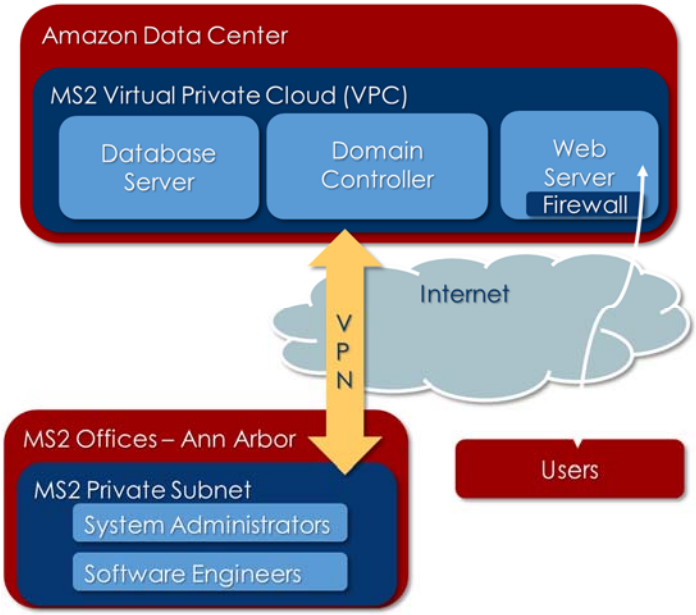
Schedule 2: Data Security Requirements

Contractor's Software and Services must comply with all applicable State IT policies and standards, as may be amended from time to time. Enterprise IT Policies, Standards and Procedures are found at:
http://michigan.gov/dtmb/0,4568,7-150-56355_56579_56755---,00.html

Contractor will ensure data resides in a highly secure and stable hosting environment. The system will be password protected to ensure data integrity but can also be opened to the general public at the State's option. Contractor will ensure that its data QA/QC process meets the State's project goals and data security needs. Data imported into the Software will pass through numerous QA/QC filters based upon FHWA rules. Data in the system will be highly reliable and will meet the best QC industry standards.

Contractor will utilize Amazon Web Services for hosting and will make extensive use of the security provided thereby. In addition to the physical and infrastructure level security provided by Amazon, Contractor will ensure the Contractor's virtual infrastructure is secure. Administrative access to modify contractor's virtual infrastructure will be restricted to: the IT Manager, the Software Architect, and the MS2 Principal. Contractor has a secure Virtual Private Network (VPN) between Contractor's offices in Ann Arbor and the Amazon data center in Virginia. All administrative activity will be restricted to this VPN. Access to the servers will be restricted to ports necessary to make the system function (e.g. web and FTP ports).

The following schematic diagram illustrates the overall MS2/Amazon Web Services security arrangement:



Schedule 3: Data Backup Requirements

To ensure the highest level of data safety MS2 utilizes a robust system backup process capable of handling a wide variety of failure scenarios.

Volume Backups
All critical data pertaining is stored on Amazon Elastic Block Storage (EBS) volumes. MS2 makes extensive use of:

Instant Backup
MS2's virtual server configuration utilizes multiple redundant physical servers. In the event of a hardware failure of one of the storage server Amazon's systems will immediately provision a replacement server and restore data to it from the remaining healthy servers. If this occurs there may be a small impact to performance but servers will remain online. Amazon's storage volumes are designed to provide 99.999% availability.

Hourly Backup
Every hour MS2 performs a snapshot backup of all critical volumes. Amazon's systems automatically replicates snapshot data to secondary data centers within the same region. In the event of a failure of a volume MS2 can restore data from the previous snapshot.

Database Backups
In addition to volume level backups, MS2 also performs database level backups.

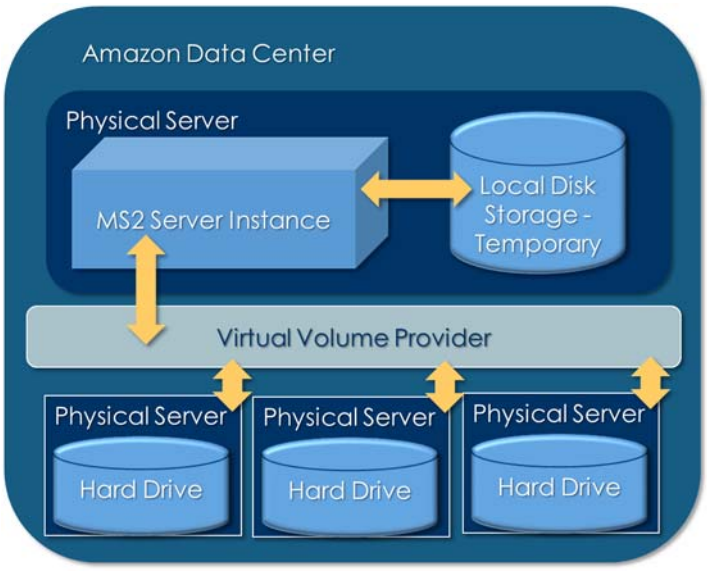
Full Backup
Every weekend a full backup of all critical databases and integrity checks are performed. These full backups represent a complete image of the database.

Differential Backup
Every night MS2 performs a differential backup which contains everything that has changes since the previous full backup.

Once the database backup files have been generated MS2 performs additional backups:

- Volume Based Backups - Volumes used to store the database backups are also backed up like all other critical volumes following the same rules outlined above.
- Secondary Cloud Backups - MS2 also stores secondary backups of critical databases with Microsoft Azure in a data center located on the West Coast of the United States.
- On-Premises Backup – MS2 routinely downloads and restores backups from the secondary cloud provider to MS2 offices in Ann Arbor. This also serves as a method to verify backups are working properly.

MS2 Backup API
In addition to all of the backups MS2 performs, customers are able to download backups using the MS2 Backup API. This data is provided in a platform agnostic format that can be loaded into a database within the DOT datacenter or simply stored.



Schedule 4: Business Continuity and Disaster Recovery Plan

MS2 will notify the State in the event of any failure within 24 hours or next business day, whichever is earlier.
MS2's Disaster Recovery plan focuses on four different failure levels:

Low – These are minor cases of data corruption or loss caused by hardware failure or human error. This includes accidental deletion or modification of data by customers or MS2 staff.

Low-Medium – These scenarios involve a more serious levels of failure including the failure of a single server or the loss of one or more volumes. This may be the result of a multi-node hardware failure within our primary Amazon data center.

Medium –These scenarios include the loss, or incapacitation, of an entire data center. This would typically be the result of fire or natural disaster.

High – An enterprise level failure is highly unlikely but would include scenarios like Amazon abruptly deleting all MS2's data for some reason, or going out of business.

Low

If the data loss or corruption occurs on the file system, MS2 staff will:

1) Restore volume from the latest known-good snapshot,
2) attach the restored snapshot to a functioning server,
3) copy the files from the restored snapshot to the volume currently being used.

If there is minor data loss or corruption within a database, MS2 staff would:

1) Provision an additional temporary database server,
2) restore the backup volume from the last known-good snapshot – if the volume backup is unavailable backups from the secondary cloud provider would be utilized,
3) restore the full backup taken previous to the problem,
4) restore differential backups as needed,
5) copy relevant tables from the restored database to the production database,
6) replace the deleted or modified records within the production database,
7) terminate the temporary database server.

If there is a major database corruption, MS2 staff will first run SQL Server's repair utilities. If those utilities are unable to repair the damage, MS2 staff will:

1) Provision an additional temporary database server,
2) restore the backup volume from the last known-good snapshot – if the volume backup is unavailable backups from the secondary cloud provider would be utilized,
3) restore the backup taken previous to the failure,
4) restore each differential backup between the full backup selected and the failure,
5) replace the production database with the restored version.

MS2's nightly database backups can be used to restore data as it as the previous night (or any night within the previous 90 days). MS2 can restore critical volumes to any hour within the previous 48 hours, any day within the previous 30 days, any week within the previous 60 days, and any month within the last year.

Medium-Low

In the event of serious volume corruption MS2 staff would:

1) Provision a new volume based on the last known-good snapshot,
2) disconnect corrupt volume from server,
3) attach newly provisioned volume to server.

In the event of a hardware failure on the server that hosts an MS2 virtual server MS2 staff would:

1) Stop the server,
2) restart the server which would force Amazon's systems to migrate the server to new, fully-operational servers.

Medium

In the event of a catastrophic failure of MS2's primary data center automated systems will alert key MS2 personnel. MS2 staff will utilize the Amazon support contract for guidance regarding the nature of the failure. If Amazon support anticipates the outage will last less than 15 minutes MS2 staff will monitor the outage and wait for systems to return to normal. If Amazon is unsure of the nature of the outage, or indicates that the data center may have been permanently lost, MS2 staff will begin the process of setting up the virtual environment in a second data center.

MS2 staff will:

1) Setup servers with identical configurations in the new data center,
2) restore the last known-good volumes from snapshots,
3) associate those new volumes with the newly created servers,
4) contact Amazon support again for status update before continuing (if amazon indicates the failure has been resolved, stop the process and monitor, otherwise continue)
5) associate IP addresses and network configurations with the new servers.

MS2 would prioritize the restoration of servers in the following order:

1) SQL Server Database,
2) web servers,
3) GIS servers,
4) FTP servers,
5) secondary support servers.

High

In the event of a regional or enterprise level failure MS2 staff would work to restore services to MS2's offices in Ann Arbor. In the short term MS2's test environment would be restaged to be used for production using the last known-good production database backup. Once services have been restored MS2 would start the process of migrating the environment to Microsoft Azure.

Ann Arbor Office Service Interruption or Disaster

All systems critical to MS2's operation are located in Amazon's data center. No failure within the infrastructure at MS2 offices would impact the production environment itself.

Loss of Connectivity

Staff would continue to work on site with the test and development environments. Access to the production environment would be handled with cellular connectivity.

Loss of Electricity

Staff would continue to work from home until power has been restored.

Fire

In event of a fire staff would work from home in the short term. MS2 staff would setup a new test environment in the Amazon data center so that work could continue. All source code for the system is automatically backed up to a cloud based solution as well as stored on premises. All internal business documents are stored on site and routinely backed up offsite as well.

Business Disruption

MS2 is majority owned by Midwestern Consulting, LLC. Midwestern has been in business since 1967 and has a well-established track record. In addition, several key members of MS2's staff have an ownership position in the company which increases the stability of the company as a whole.

Loss of Key Personnel

There is overlap between the skillset's offered by each member of the staff. If a key member of the staff were to leave the organization other staff members would be able to compensate while a replacement was found.

MS2 Project manager

If the Project manager were to leave the organization his or her duties would be split as following:

Organizational Leadership

Midwestern Consulting, LLC's principals would take over day-to-day operations of MS2. They would ensure that the company continues to meet its obligations to customers and employees.

Technical Leadership

MS2's Software Architect would take over responsibilities for technical leadership within MS2.

Subject Matter Expertise

Other qualified traffic engineers within the company would provide subject matter expertise.

Training Specialist

If the Training Specialist left the organization his or her support responsibilities would be handled by other support staff. The rest of the staff would work to provide customer training.

Senior Technical Lead

If the Senior Technical Lead were to leave the organization his or her responsibilities would be handled by senior developers on staff.

Company Insolvency

In the unlikely event that the company were to become insolvent the company would first seek additional investment from its current owners to cover costs. If the money raised was inadequate MS2 would leverage its assets to seek external investments or loans.

If it proved impossible to raise enough capital to continue MS2's owners would insure a responsible wind-down of operations by offering customers the opportunity to download all data. Customers would also have the opportunity to combine resources to continue running MS2's software indefinitely.

Process Review

Business continuity plans are reviewed annually. Disaster recovery plans are reviewed quarterly.

Schedule 5: Statement of Work

SCOPE

The following are **in scope** for this contract:

- Software
- Implementation services
- Training
- Documentation
- Hosting and operation services
- Maintenance and Support
- Knowledge Transfer/Transition
- Future Enhancements

The following is **out of scope** for this contract:

- Hardware

SPECIFICATIONS

Contractor must provide, install, configure, customize, implement, and support a web-based Traffic Data Management System (TDMS) Software for the State that fulfills all requirements in the manner stated in Appendices A and B. Contractor will provide an Enterprise License of MS2 TDMS that allows an unlimited number of State and public citizen users and unlimited data storage. The Software must continuously provide the ability to produce reports that comply with all State and Federal Traffic Standards and reporting requirements for the entire Michigan road network, including but not limited to, AASHTO, TMG, HPMS, MAP-21, and FAST.

The Software must include the following system modules:

- Traffic Count Database System (TCDS)
- Turning Movement Count System (TMC)
- Non-Motorized Database System (NMDS)
- Highway Performance Monitoring System (HPMS)

The TCDS module must include the following primary functions:

- Traffic data collection management by auto-polling or importing of machine-readable volumes, bins, or per vehicle records
- Traffic data collection site management for traffic station identification and reference
- Data workflow management to allow users to review and edit imported data prior to submitting the data into the database
- Automated quality control and quality checking of data with the generation of alerts/flags to inform users of potential data issues or errors
- The ability to calculate Seasonal and Axle Adjustment Factors in accordance with Federal Highway Administration (FHWA) Traffic Monitoring Guide procedures, or any alternative solution at the State's discretion. Contractor will seek the State's advice and consent in deciding how these factor algorithms are created and changed prior to any creation or changes occurring.
- The ability to calculate Average Daily Traffic (ADT), Annual Average Daily Traffic (AADT), and Vehicle Mile Traveled (VMT)
- The ability to calculate Design Hourly Volumes (DHV), Annual Hourly Day of Week, and Annual Day of Week Percentage Statistics
- The ability to process and store short count data and continuous count data including volume, classification, weigh-in-motion, speed, gap, and length data
- Data summary and reporting of data in various timeframes: daily, monthly, and annual
- Database management tools for the storage, modification, importing, and extraction of traffic information
- Export capabilities to support FHWA monthly Traffic Management Analysis System (TMAS) reporting requirements, including 3-Card, S-Card, C-Card, and W-Card records
- Export capabilities to support FHWA annual Highway Performance Monitoring System (HPMS) traffic data reporting requirements

The TMC module must include the following primary functions:

- Management of vehicle turning movements, pedestrian and bicycle data
- Import process for count data from popular formats such as JAMAR, Miovision, and Excel

- Peak hour volume calculation for individual intersection or corridor
- Intersection turning movement diagram
- Export function for UTDF in Synchro
- Integration with TCDS for network traffic estimate and flow map development

The NMDS module must include the following primary functions:

- Management of pedestrian and bicycle data
- Import process for count data from popular formats such as Eco Counter and Excel
- Data workflow management to allow users to review and edit imported data prior to submitting the data into the database
- Automated quality control and quality checking of data with the generation of alerts/flags to inform users of potential data issues or errors
- Data summary and reporting of data in various timeframes: daily, monthly, and annual
- Database management tools for the storage, modification, importing, and extraction of non-motorized traffic information

The HPMS module must include the following primary functions:

- Road network segmentation management
- Spatial editing of traffic segments (e.g., volume or functional class)
- Assignment of count station to road segments
- Estimating of HPMS traffic statistics for segments without actual traffic count data
- Network VMT Calculation
- FHWA HPMS traffic reporting

PROJECT TASKS AND DELIVERABLES

Contractor will perform the tasks detailed below. See Cost Tables for project and payment schedule.

A. Project Initiation and Management

Software Activation

Upon execution of the Contract, Contractor will activate the Software in its off-the-shelf form.

Project Kick-off Meeting

Within five (5) business days from execution of the Contract, the Contractor must attend a project kick-off meeting to discuss the content and procedures of the Contract. The meeting may be held in Lansing, Michigan or via webinar, at a date and time mutually acceptable to the State and the Contractor. At this meeting, Contractor will present:

- Software Overview
- Project plan
- Project schedule
- Contractor and State resources and responsibilities
- Risk mitigation plan

Final Project Plan

Within fifteen (15) days of the Effective Date, Contractor will submit a final project plan and schedule to the DTMB Project Manager(s) for approval, which must include:

- The Contractor's project organizational structure
- The Contractor's staffing table with names and title of personnel assigned to the project. This must be in agreement with staffing of accepted proposal. Necessary substitutions due to change of employment status and other unforeseen circumstances may only be made with prior approval of the State.
- The project work breakdown structure (WBS) showing sub-projects, resources required and their allocation
- The time-phased plan in the form of a graphic display, showing each event, task, and decision point in the WBS
- Project Scope Document
- Communication Plan
- Project Schedule
- Resource Plan
- Issue Management Plan and issue log
- Risk Management Plan and identified risks
- Change Management Plan

- UAT iteration and approval timing

Performance Review Meetings
Beginning after the project kick-off meeting and continuing until Final Acceptance, Contractor will attend weekly meetings with the State's project team to review Contractor's performance. The meetings will be held in Lansing, Michigan or by teleconference, as mutually agreed to by the State and the Contractor.

Project Control
Contractor will work jointly with the State to manage the project in accordance with SUITE or the Contractor's comparable forms and templates, provided such forms and templates are agreed to by the State. The Contractor will use an automated tool for planning, monitoring, and tracking the Contract's progress and the level of effort of any Contractor personnel spent performing services under the Contract. Any tool(s) used by the Contractor for such purposes must produce information of a type and in a manner and format that will support reporting in compliance with the State standards. The tool will have the capability to produce the following:

- Staffing tables with names of personnel assigned to Contract tasks
- Project plans showing tasks, subtasks, deliverables, and the resources required and allocated to each, including proposed services to be performed within the next two (2) weeks (updated every two weeks)
- Graphs showing critical events, dependencies and decision points during the course of the Contract

Reports
Within fifteen (15) days of the Effective Date, Contractor must submit reporting formats to the DTMB Project Manager. When both parties have agreed to the format of the report, it becomes the standard to follow for the duration of the Contract.

Every two weeks, the Contractor must provide a Project Update Report on the overall status of the Software implementation. This report must contain the following minimum elements.

- Updated project plan
- Updated project schedule
- Deliverable and Schedule status
- Risks and Issues

Issue Management
An issue is an identified event that affects the schedule, scope, quality, or budget. Contractor must maintain an issue log for issues relating to the provision of services under this Contract. The issue management log must be communicated to the DTMB Project Manager on an agreed upon schedule at a minimum of every two weeks, with email notifications and updates. The issue log must be updated and contain the following minimum elements.

- Description of issue
- Issue identification date
- Responsibility for resolving issue
- Priority for issue resolution (to be mutually agreed upon by the State and the Contractor)
- Resources assigned responsibility for resolution
- Resolution date and resolution description

Issues will be escalated for resolution from level 1 through level 2 as defined below:

- Level 1 – Project Managers / Business Owner
- Level 2 – Executive Sponsor

Risk Management
A risk is an identified event that, if not addressed, may affect schedule, scope, quality or budget. The Contractor must establish a risk management plan and process, including the identification and recording of risk items, prioritization of risks, definition of mitigation strategies, monitoring of risk items, and periodic risk assessment reviews with the State.

Within fifteen (15) days of the Effective Date, Contractor must submit the risk management plan to the State. The risk management plan must be in accordance with the State's PMM methodology or Contractor's comparable format. Once both parties have agreed to the format of the plan, it becomes the standard to follow for the duration of the Contract. The plan must be updated every two weeks or as agreed upon.

Contractor must provide the tool to track risks and will work with the State to allow input into the prioritization of risks. Contractor must identify risks for each phase of the project. Mitigating and/or eliminating assigned risks is the

responsibility of the Contractor, if agreed to by the State. The State assumes the same responsibility for risks assigned to the State.

Deliverable(s)
- Project Kick-off Meeting
- Performance Review Meetings
- Final Project Plan and Schedule
- Report Format

Acceptance Criteria
- Contractor has conducted required meetings in timely manner
- Documents are complete and accurate in all material respects
- Documents are dated and in electronic format, compatible with State of Michigan software
- DTMB and business owner approval

B. Requirements Validation and Configuration Planning

Software Orientation Workshop
Contractor will conduct a Software Orientation Workshop in Lansing, Michigan at a date and time mutually acceptable to the State and the Contractor to:
- Demonstrate Software off-the-shelf functionality
- Review detailed business and technical requirements

Software and Screen Configuration Plans
Contractor will identify any functional or technical issues that need to be addressed for successful implementation and propose resolutions to be undertaken. Within fifteen (15) business days of the Software Orientation Workshop, Contractor will provide a Software Configuration Plan to detail how the Software will be set up to provide the State's requested functionality and will provide a Screen Configuration Plan to portray data to the State's satisfaction. At the State's request, Contractor will provide Software and Network Architecture information relevant to DTMB submitting and approving a finalized Enterprise Architecture Solution Assessment (EASA) and an IT Security Assessment.

Deliverable(s)
- Software orientation workshop
- Software Configuration Plan or Functional Design
- Software Screen Configuration Plan
- Software and Network Architecture information
- Software Test Plan including base and customized test cases

Acceptance Criteria
- Contractor has conducted required meetings in timely manner
- Documents are complete and accurate in all material respects
- Documents are dated and in electronic format, compatible with State of Michigan software
- Software Configuration Plan and Screen Configuration Plan comply with State specifications
- Software and Network Architecture information contains sufficient detail to support State assessment needs
- DTMB and business owner approval

C. Data Conversion Planning and Configuration

Data Conversion Planning
Contractor will work with State staff to plan data conversion, mapping, migration, and testing of business data from existing sources for use with the Software development environment.

Configuration
Contractor will configure the Software to meet requirements in accordance with the approved Software Configuration Plan and Screen Configuration Plan.

Deliverable(s)
- Data Conversion Plan
- Configured Software

Acceptance Criteria

- Contractor has conducted required tasks in a timely manner
- Documents are complete and accurate in all material respects
- Documents are dated and in electronic format, compatible with State of Michigan software
- Configured Software conforms to approved Software Configuration Plan and Screen Configuration Plan.
- Software functions in accordance with technical and functional requirements that do not require customization.
- Successful execution of the portions of the Software Test Plan related to configurations.
- DTMB and business owner approval

D. Customization, Data Conversion and Testing

Customization
Contractor will perform all customizations detailed in the requirements tables.

Data Conversion / Migration
Contractor will work with State staff to perform data conversion, mapping, and migration of business data from existing sources for use with the Software development environment. The amount and types of data to be converted / migrated are listed in Section 1.104.2, Appendix A, and Appendix B. Contractor will work with State staff to migrate Software data from the development environment to the quality assurance/testing and production environments to support further project services and deliverables. In the event the parties encounter bad data or data that does not correspond to the new system, the parties will identify, review and correct that data. Contractor must collaborate with State to ensure the correction of same.

Interfaces
Contractor will interface the Software with the below-listed systems in the manner detailed in the requirements. Direct updates occur between the current TDMS and the systems listed in the following table. Indirect updates are processed through TMS, the Corporate Oracle database, exports, or other actions.

Direct or Indirect Data Updates	System	Description	Data Source
Direct	ATMS	Advance Traffic Management System	Data Feeds
	TMS	Traffic Management System	Oracle
	ArcGIS Server	SDE Server provided through CSS	SDE SQL, Edit ArcGIS Server to read
	DUAP	Data Use Analysis and Processing Project	cloud data feed, external hosted, inward facing
Indirect	RITIS	Regional Integrated Transportation Information System	Cloud/data feeds
	Safety Analyst	AASHTOWare	Provide exports of data
	TMAS	Travel Monitoring Analysis System (FHWA)	Exporting of data for input into FHWA TMAS
	Prep-ME	AASHTOWare	Exporting of data which is then imported by Prep-ME
	HPMS	Highway Performance Monitoring System	Exporting of data and summary tables
	CSS NTFA Local	Agency Submittal/Review Tool	importing, staging, and review of data for the NTFA by local (external agencies)
	MDOT NTFA Schedule	table sent annually to data collection to be loaded into the scheduling app	Importing of schedule of work

	Road Soft	MTU software used by locals for roadway monitoring	Import of data from Roadsoft
	Bridge Toll Systems	Bridge toll application reporting vehicle volume and type at three major public locations	Import of traffic from the Contractor application

Testing

Contractor will conduct System Testing and User Acceptance Testing (UAT). Contractor's testing responsibilities are:

- Assist State staff in the development of the test plans.
- Assist State staff in the establishment and verification of the Software quality assurance/testing environment.
- Assist State staff in the migration of Software data from the development environment to the quality assurance/testing environment.
- Participate in on-site test activities as requested by the DTMB Project Manager.
- Verify and remedy software defects encountered during testing activities.
- Obtain official sign-off from the State upon successful completion of testing activities.

Production Go-live

Following successful completion of UAT activities, Contractor will migrate the Software application from the quality assurance/testing environment into the production environment. Contractor responsibilities with respect to the above testing activities are as follows:

- Assist State staff in the establishment and verification of the Software production environment.
- Assist State staff in the migration of Software data from the quality assurance/testing environment to the production environment.
- Participate in on-site Go-live activities as requested by the DTMB Project Manager.
- Obtain official sign-off from the State upon successful completion of Go-live activities.

Deliverable(s)

- Customized Software in conformance with requirements
- Successful completion of Data Conversion / Migration Plan
- Successful completion of Interfaces
- Software UAT plan
- Accepted Production Software

Acceptance Criteria

- Contractor has conducted required tasks in a timely manner
- Documents are complete and accurate in all material respects
- Documents are dated and in electronic format, compatible with State of Michigan software
- Customized Software conforms to approved Software Configuration Plan and Screen Configuration Plan.
- Interfaces function in accordance with requirements.
- Software functions in accordance with all technical and functional requirements.
- Successful execution of Software Test Plan.
- DTMB and business owner approval

E. Training

Contractor will develop a training plan and provide the State with a plan document. After acceptance of a training plan, Contractor will provide training and associated documentation in accordance with this plan to State-designated trainees. Contractor will provide training in-person at various locations in the greater Lansing, MI area to be identified by the State. Specific training will include:

- Train-the-Trainer training for State staff that will then provide training for all other State staff to use and administer the Software. Estimated participants: 12
- System administration training for State personnel who will be responsible for infrastructure related issues, including security. Estimated participants: 7-14
- End-User training for designated State personnel and other external users of the system as identified as Subject Matter Experts by system roles. Estimated participants: 30. Each training session will consume no more than 8 contact hours and will include the following topics:
    - Introduction to cloud based data solutions
    - Introduction to MS2
    - System administration and access levels and controls

    - System configuration
    - Data migration
    - System Polling and Data Import Procedures
    - Dashboard
    - Navigating the Dashboard
    - QC rules
    - Edits
    - Reports
    - Searches
    - Customizations
    - Year-end reporting
    - Monthly reporting
- Just In Time Training Modules for critical procedures, as requested by the State from time to time. Estimated participants: 7-14.
- Training Plan Document- training in detail

Additionally, Contractor will provide online access to all types of training, so that State staff can access the training as desired and when needed. Contractor will provide additional training (e.g. classroom or online training, training flier, release features, etc.) at no additional cost for all upgrades and new versions to the system that affect end-user functionality.

Deliverable(s)
- Training Plan Document
- Train-the-Trainer training
- Technical training
- System administration training
- End-User training
- Just In Time Training
- Training documentation
- Online access to Training
- Additional training (e.g. classroom or online training, training flier, release features, etc.)

All training manuals, training plans and other documentation created for the State become the property of the State.

Acceptance Criteria
- Contractor has conducted required tasks in a timely manner
- Documents are complete and accurate in all material respects
- Documents are dated and in electronic format, compatible with State of Michigan software
- Trainees are proficient in the subject matter trained
- DTMB and business owner approval

F. Documentation

Contractor must provide a complete set of Software Documentation to the State including, but not limited to, the deliverables specified below. The Contractor must notify the State of any discrepancies or errors outlined in the system, operations, and user Documentation within seven (7) days.

Deliverable(s)
- User manuals
- Technical manuals
- Data Element Dictionary
- Operations Manual
    - Algorithms and/or data is used to create factors (i.e., axle correction factors aadt., caadt, K factor, D factor)
    - Updates of same

Acceptance Criteria
- Contractor has conducted required tasks in a timely manner

- Documents are complete and accurate in all material respects
- Documents are dated and in electronic format, compatible with State of Michigan software
- Documents are available in the system
- DTMB and business owner approval

FINAL ACCEPTANCE

Final Acceptance will entitle Contractor to be paid for all amounts previously withheld (Final Acceptance Payment). Final Acceptance will be granted after (1) Contractor completes and State has formally accepted all items detailed in **PROJECT TASKS AND DELIVERABLES** section above and (2) the Software has performed error-free for 90 days following formal acceptance of all **PROJECT TASKS AND DELIVERABLES.**

ROLES AND RESPONSIBILITIES

A. Contractor Staff, Roles, and Responsibilities

On Site Work Requirements

As necessary and as determined by the State, the work is to be performed, completed, and managed in the greater Lansing, Michigan area. Where appropriate and as agreed upon by the State, Contractor may perform work at Contractor's location.

Hours of Operation

Normal State working hours are 8:00 a.m. to 5:00 p.m. EST, Monday through Friday, with work performed as necessary after those hours to meet project deadlines. No overtime will be authorized or paid. The State is not obligated to provide State management of assigned work outside of normal State working hours. The State reserves the right to modify the work hours in the best interest of the project. Contractor shall observe the same standard holidays as State employees. The State does not compensate for holiday pay.

Travel

No travel time or expenses will be reimbursed.

B. State Staff, Roles, and Responsibilities

State-Provided Resources

The State will provide the following resources for the Contractor's use on this project:

- Work space
- Minimal clerical support
- Desk
- Access to copiers and scanners
- Network connectivity

State Project Manager and Business Lead

The State designates the below-listed Project Manager and Business Lead who will provide the following services:

- Provide State facilities, as needed
- Coordinate the State resources necessary for the project
- Facilitate coordination between various external contractors
- Facilitate communication between different State departments/divisions
- Provide acceptance and sign-off of deliverable/milestone
- Review and sign-off of timesheets and invoices
- Resolve project issues
- Escalate outstanding/high priority issues
- Utilize change control procedures
- Conduct regular and ongoing review of the project to confirm that it meets original objectives and requirements
- Document and archive all important project decisions
- Arrange, schedule and facilitate State staff attendance at all project meetings
- Support the management of the Contract

Name	Agency/Division	Title
Jane Rademacher	DTMB	Project Manager/SPOC

Larry Whiteside	MDOT	Business Lead

State Program Manager
The State designates the following Program Manager:

Name	Agency/Division	Title
Patrick Villarreal	DTMB	Program Manager

State Contract Administrator
The State designates the following Contract Administrator:

Name	Agency/Division	Title
Jarrod Barron	DTMB	Contract Administrator

TDMS Glossary

Days	Means calendar days unless otherwise specified.
AADT	Annual Average Daily Traffic The estimated mean daily traffic volume. Michigan collects this data on all state owned roads for this purpose.
AASHTO	American Association of State Highway Transportation Officials
ACUB	Adjusted Census Urban Boundary
ADT	Average Daily Traffic
CCS	Continuous Count Stations. Permanent Counting Site provides 24 hours a day and 7 days a week of data for either all days of the year or at least for a seasonal collection.
CAADT	Commercial Annual Average Daily Traffic The estimated mean daily traffic volume for commercial vehicles.
Class	Used in the AADT report to indicate that a vehicle classification was conducted on that section of road.
Collection Cycle	The period for which the data are collected; typically annually or every 2 or 3 years. This is in contrast to the HPMS reporting cycle which is annual for all data.
Count	Used in the AADT report to indicate that a count was conducted on that section of road.
DBMS	Database Management Systems
DHV	Design Hourly Volume The hourly traffic volume used in the design of highways, usually represented by the 30th highest hourly volume.
DF	Directional Factor Percentage of Design Hour Volume flowing in the peak direction.
External Agencies	Local agencies
FHWA	Federal Highway Administration
GIS	Geographic Information System A system for the management, display and analysis of spatial information.
HPMS	Highway Performance Monitoring System HPMS is a national level highway information system that includes data on the extent, condition, performance, use and operating characteristics of the nation's highways
LRS	Linear Referencing System
MDOT	Michigan Department of Transportation
MGF	Michigan Geographical Framework
MPO	Metropolitan Planning Organization
NFC	National Functional Class
NTFA	Non Trunkline Federal Aid Road Program
RFP	Request for Proposal designed to solicit proposals for services
RPA	Regional Planning Agencies
Recycling	The series of activities by which materials that are no longer useful to the generator are collected, sorted, processed, and converted into raw materials and used in the production of new products. This definition excludes the use of these materials as a fuel substitute or for energy production.
Reuse	Using a product or component of municipal solid waste in its original form more than once.
SUITE	(State Unified Information Technical Environment) DTMB initiative that integrates effective methodologies for project management and systems development across all projects.
Short Counts	The most common method for counting traffic is by using a pneumatic hose placed across the road attached to a portable recording device to detect the passage of vehicle axles. The recording device does an internal adjustment to reflect and report the passage of one (two axle) vehicle
Sovereign Tribal Governments	Sovereign Tribal Governments
TDMS	Traffic Data Management System
TL	Trunkline
TMAS	Travel Monitoring Analysis System Raw data submitted to FHWA from permanent traffic recorder collections on a monthly basis.
TMG	Traffic Monitoring Guide

TMIS	Traffic Monitoring Information System
TMS	Transportation Management System The overall framework within which the PMS operates, which includes subsystems for pavements, bridges, public transit, congestion, safety and intermodal transportation systems.
TRAFF_ID	Traffic Segment based on Traffic Pattern
TWIS	Traffic Weighing Information System Provides the ability to process, edit, validate, analyze, and report truck weight information collected by permanent weigh-in-motion equipment.
TWP	Township
Vehicle Classification	The collection of vehicle volumes by type of vehicle. This data is recorded by a device that works in conjunction with computerized electronic equipment that counts and classified vehicles by type and axle configuration.
Vehicle Counts	A sensor is used to detect the presence of a vehicle. One count is recorded for all types of vehicles (cars, buses, and multi-axle trucks).
WIM	Weigh-In-Motion - The process of measuring the dynamic tire forces of a moving vehicle and estimating the corresponding tire loads of the static vehicle.

Appendix A – Functional Requirements

Req. No.	Detailed Functional Requirement Description	Yes	Off the Shelf	Configuration	Customization	No	Comments
	Data Archival & Deletion – **Define Traffic For Archival** - User interacting with the System						
3.1	System provide the ability for removing any data records from immediate retrieval to a more permanent and offline storage mechanism (tape, offline databases etc.)	✓	✓				
3.1.1	System provide the ability to display the main Files, Databases and Tables with which to build the definition of an Archive.	✓	✓				
3.1.2	System provide the ability to allow the user to select and submit all criteria/attributes to set the Data Archive, such as to select and submit:	✓	✓				
3.1.2.1	• All Files, Databases, Table and Table Columns as criteria for the Data Archive.	✓	✓				
3.1.2.2	• All metadata such as delivery format, max number of records, date range to set the Data Archive.	✓	✓				
3.1.2.3	• All scheduling criteria such as Date and Time and Recurrence to set the Data Archive.	✓		✓			TDMS Data Backup API can be configured to perform periodic archiving
3.1.3	System provide the ability to allow for recovery of archived data.	✓		✓			The archives created from the API can be restored at the configured times
3.1.3.1	System provide the ability to manage and constrain data from being overwritten by data recovered from archived state.	✓		✓			Database attribute constraints need to set in the TDMS to prevent being overwritten
	Data Archival & Deletion – **Define Traffic For Deletion** - User interacting with the System						
3.2	System provide the ability for both "logical deletions" of records and when policy dictates "physical deletion" of records.	✓	✓				
3.2.1	System provide the ability to display the main Files, Databases and Tables in which to build the definition for a Data Deletion.	✓	✓				

Req. No.	Detailed Functional Requirement Description	Yes	Off the Shelf	Configuration	Customization	No	Comments
3.2.2	System provide the ability to allow the user to select and submit all criteria/attributes to set the Data Deletion, such as to select and submit:	✓	✓				
3.2.2.1	• All Files, Databases, Tables, and Table Columns as criteria for the Data Deletion.	✓	✓				
3.2.2.2	• All metadata such as delivery format, max number of records, date range to set the Data Deletion.	✓	✓				
3.2.2.3	• All scheduling criteria such as Date and Time and Recurrence to set the Data Deletion.	✓		✓			TDMS Data Backup API can be configured to perform periodic archiving
3.2.3	System provide the ability to retrieve data that was "logically deleted".	✓		✓			The database can be configured to recover data from the archived backup snapshots
	***Scheduling & Process Management* – Schedule A Work Task** - User Interacting with the System						
3.3	System provide the ability to allow the user to automatically schedule work task to the system to routinely execute.	✓		✓			In addition to the existing scheduled task such as data loading and QC, new auto tasks can be set up based on MDOT's business needs.
3.3.1	System provide the ability to offer the User various automated work tasks for selection.	✓		✓			Interface to the control of automated tasks need to be configured based on the specific MDOT needs
3.3.2	Based on user's role in the system, the system provide a screen for the user with the ability to select an automated work task.	✓			✓		Access to the control of automated tasks need to be customized based on the specific MDOT needs
3.3.3	System provide the ability to process all selected and entered input by the User to schedule the work task.	✓			✓		The work flow needs to be customized based on the outcomes of the MDOT business process review
	***Scheduling & Process Management*- Manage Traffic Data Collection Task (MDOT)** - User interacting with the System						
3.4 (H)	System must provide the ability to manage the various statuses of a Traffic Data Collection.	✓	✓				

Req. No.	Detailed Functional Requirement Description	Yes	Off the Shelf	Configuration	Customization	No	Comments
3.4.1	System provide the ability to record all key communication with Field Team as it relates to collection process.	✓	✓				
3.4.1.1	System provide the ability to record Field Notes and Documents (ex. Accident observed, more lanes than planned for, sketches, photos, and images).	✓	✓				
3.4.1.2	System provide the ability to record all key metadata such as but not limited to (Who is assigned, Which County, What Equipment was Used).	✓	✓				
3.4.2	System provide the ability to record all status changes as they relate to collection process (Receipt of Data, Scheduled, In Progress, Tried & Failed, Rescheduled, Collected, Field Validation Complete, and Submitted).	✓	✓				
3.4.3 (H)	System must analyze the collected data, such as:	✓	✓				
3.4.3.1 (H)	• "Variation from Historical trend(s)".	✓	✓				
3.4.3.2	• "Classification Maximum and Minimum tolerance levels", "Maximum Peak Hour".	✓	✓				
3.4.3.3 (H)	• "HPMS Reporting Requirements".	✓	✓				
3.4.4	System provide the ability to delete bad data.	✓	✓				
3.4.5 (H)	System must provide the ability to record all status changes as it relates to collection process, such as:	✓	✓				
3.4.5.1 (H)	• **review of data**	✓	✓				
3.4.5.2 (H)	• **preparation of reporting out** the collected data	✓	✓				
3.4.5.3 (H)	• **reporting out** the collected data	✓	✓				
3.4.5.4	• acceptance of data	✓	✓				
	***Scheduling & Process Management* – Manage Traffic Data Collection Task (External Agency)** – User interacting with the System						
3.5 (H)	System must provide the ability to manage the various Traffic Data Collection deliverables from an External Agency.	✓	✓				

Req. No.	Detailed Functional Requirement Description	Yes	Off the Shelf	Configuration	Customization	No	Comments
3.5.1 (H)	System must provide the ability to record all key communication with External Agency as it relates to the collection process.	✓	✓				
3.5.1.1 (H)	System must provide the ability to record which Agency is responsible for performing the collection.	✓	✓				
3.5.2 (H)	System must provide the ability to record all status changes as it relates to collection process, such as:	✓	✓				
3.5.2.1	• "Scheduled with Agency"	✓	✓				
3.5.2.2	• "Did Not Receive Data"	✓	✓				
3.5.2.3	• "Data Received"	✓	✓				
3.5.3	System provide a flexible program level dashboard.	✓	✓				
3.5.4 (H)	System must provide the ability to allow agency to submit collected Traffic Data with metadata attributes to meet HPMS submittal requirements.	✓	✓				
	***Scheduling & Process Management* – Schedule A Traffic Data Collection** - User interacting with the System						
3.6 (H)	System must provide the ability to schedule data collections from stations with various types of collecting hardware (video, hoses) for varying durations (ex. 48hr, 72hr, one week).	✓			✓		The scheduling feature needs to be customized based on the outcomes of the MDOT business process review. The customization will be completed before the "go live" date.
3.6.1 (H)	System must provide the ability to generate a proposed list of Stations within the Segments based on predefined rules, such as:	✓			✓		The scheduling feature needs to be customized based on the outcomes of the MDOT business process review. The customization will be completed before the "go live" date.
3.6.1.1 (H)	• Frequency (ex. 3 times annually)	✓	✓				
3.6.1.2 (H)	• Duration (ex. 48 hour)	✓		✓			
3.6.1.3	• A proposed list of based on Equipment Restrictions and Limitations (Ex. Hose, Video, Wavetronix etc.)	✓			✓		Various restrictions need to be added to the scheduling filter.

Req. No.	Detailed Functional Requirement Description	Yes	Off the Shelf	Configuration	Customization	No	Comments
3.6.1.4 (H)	• Periodicity (ex. Once every 3 years).	✓	✓				
3.6.1.5 (H)	• Type of Data (Ex. Volume, Class, Speed).	✓	✓				
3.6.1.6 (H)	• Direction (Ex. Both Directions, Single Direction).	✓	✓				
3.6.1.7 (H)	• Program Type (Trunkline, NonTrunkline Federal Aid (NTFA), Ramp)	✓		✓			
3.6.1.8 (H)	System must allow edit/overrides to the schedule to accommodate balancing of year cycles.	✓	✓				
3.6.2 (H)	System must provide the ability to modify collection information rules by segment/corridor, such as:	✓			✓		The user interface will be customized based on MDOT's needs
3.6.2.1 (H)	• Frequency (ex. 3 times annually).	✓	✓				
3.6.2.2 (H)	• Duration (ex. 48 hour).	✓		✓			
3.6.2.3 (H)	• Equipment Restrictions and Limitations (Ex. Hose, Video, Wavetronix etc.).	✓			✓		Various restrictions need to be added to the scheduling filter.
3.6.2.4 (H)	• Periodicity (ex. Once every 3 years).	✓	✓				
3.6.2.5 (H)	• Type of Data (Ex. Volume, Class, Speed).	✓	✓				
3.6.2.6 (H)	• Direction (Ex. Both Direction, Single Direction).	✓	✓				
3.6.3 (H)	System must provide the ability to output the created schedule(s) as a report or export.	✓	✓				
3.6.4 (H)	System must provide the ability to allow the user to edit a created schedule.	✓	✓				
3.6.5 (H)	System must provide the ability to re-schedule a collection.	✓	✓				
3.6.6 (H)	System must provide the ability to schedule multiple collections in a year.	✓	✓				
	Scheduling & Process Management- **Schedule Collections For The Field Team** - User interacting with the System						

Req. No.	Detailed Functional Requirement Description	Yes	Off the Shelf	Configuration	Customization	No	Comments
3.7 (H)	System must provide the ability to schedule a set of Traffic Data Collection tasks based upon a given Field Team's resources and constraints.	✓			✓		Applying resource constrains in count scheduling is a feature on MS2's to do list. It will be available before the system "go live" date.
3.7.1 (H)	System must provide the ability to store all the Traffic Data Collection tasks to occur during the calendar year.	✓		✓			
3.7.2 (H)	System must provide the ability to set all the Traffic Data Collection tasks to occur during the calendar year by area as a list (there are 10 Areas in Michigan).	✓		✓			
3.7.3 (H)	System must provide the ability to retrieve all the Traffic Data Collection tasks to occur during the calendar year by Area as a tabular list or as a visual Spatial Map (there are 10 Areas in Michigan).	✓		✓			
3.7.4 (H)	System must provide the ability to allow the User to set "Blackout Dates" in which a Traffic Data Collection cannot occur (due to staff holiday/vacation or due to external events.	✓			✓		A new feature to be developed before the "go live" date
3.7.5 (H)	System must provide the ability to store Traffic Data Collection "schedule and routing" criteria to be used for the processing of a candidate or draft schedule for a Field Team, such as:	✓			✓		A new feature to be developed before the "go live" date
3.7.5.1 (H)	• Count Type.	✓			✓		A new feature to be developed before the "go live" date
3.7.5.2 (H)	• Type of Machines.	✓			✓		A new feature to be developed before the "go live" date
3.7.5.3 (H)	• Number of Available Fields Team Members.	✓			✓		A new feature to be developed before the "go live" date
3.7.5.4 (H)	• Data Range.	✓			✓		A new feature to be developed before the "go live" date
3.7.5.5 (H)	• Prior Year Schedules.	✓			✓		A new feature to be developed before the "go live" date
3.7.6 (H)	System must provide the ability to allow the User to modify the candidate schedule.	✓		✓			

Req. No.	Detailed Functional Requirement Description	Yes	Off the Shelf	Configuration	Customization	No	Comments
3.7.7 (H)	System must provide the ability to retrieve a schedule on demand for hard copy printing.	✓	✓				
	Scheduling & Process Management- **Manage Key Performance Indicators**						
3.8	System provide the ability to collect task driven metadata to determine quality of performance.	✓			✓		A new feature to be developed before the “go live” date
3.8.1	System provide the ability to set the tolerance values to measure and report on the quality of incoming traffic collection data.	✓	✓				
3.8.2	System provide the ability to track the timely completions of traffic data collections.	✓			✓		A new feature to be developed before the “go live” date
3.8.3	System provide the ability to track Traffic Data Collection scheduling compliance (start times, end times, recommended travel duration).	✓			✓		A new feature to be developed before the “go live” date
3.8.4	System provide the ability to measure the completion and timeliness of internal and external reporting demands.	✓			✓		A new feature to be developed before the “go live” date
3.8.5	System provide the ability to measure time to complete (processing, acceptance and information available for use), lags to start or failures to finish processing of the Traffic Data Collections.	✓			✓		A new feature to be developed before the “go live” date
3.8.5.1	System provide the ability to measure performance information of External data collected by a Contractor or Agency.	✓			✓		A new feature to be developed before the “go live” date
	Data Collection & Validation- **Retrieve Bridge Summarized Traffic Information** - User interacting with the System						
3.9	System provide the ability to collect summarized traffic information from Michigan's major bridges (Blue Water, Mackinac, and International Bridge).	✓			✓		A new feature to be developed before the “go live” date
3.9.1	System provide the ability to request Summarized Data from Bridge Authorities.	✓			✓		A new feature to be developed before the “go live” date
3.9.2	System provide the ability to receive Summarized Data from Bridge Authorities.	✓			✓		A new feature to be developed before the “go live” date

Req. No.	Detailed Functional Requirement Description	Yes	Off the Shelf	Configuration	Customization	No	Comments
3.9.2.1	System provide the ability to receive Summarized Data from Bridge Authorities such as WIM data from the Toll Booth.	✓			✓		A new feature to be developed before the "go live" date
3.9.3	System provide the ability to bulk upload and store Summarized Data from Bridge Authorities per defined schedule.	✓	✓				
3.9.4	System provide the ability to transform the data being uploaded into Class Information and Excess Passenger Car Equivalents (EPCE).	✓			✓		A new feature to be developed before the "go live" date
	Data Collection & Validation- **Retrieve External Source Traffic Data** - User interacting with the System						
3.10 (H)	System must provide the ability to collect traffic data (Volume, Class, CCS and /or hourly AADT, ADT) from an External Agency.	✓	✓				
3.10.1	System provide the ability to make an initial request for Traffic Data from an External Agency.	✓	✓				
3.10.2 (H)	System must provide the ability to receive Traffic Data (continuous, hourly, per vehicle, ADT) from an External Agency In various preconfigured data formats (Michigan Format, Common Standard Contractor Formats).	✓	✓				
3.10.3	System provide the ability to process and store traffic data in per vehicle format.	✓	✓				
3.10.4 (H)	System must provide the ability to load Traffic Data received from an External Agency.	✓	✓				
3.10.5 (H)	System must provide the ability to assign a Traffic Data Item to a Traffic Segmentation (spatially and tabular).	✓	✓				
3.10.6 (H)	System must provide the ability to perform processing on Hourly Data received from an External Agency to create an Average Daily Traffic (ADT) report.	✓	✓				
3.10.7 (H)	System must provide the ability to append a received ADT from an External Agency to an existing traffic segment.	✓	✓				
3.10.8 (H)	System must provide the ability apply factor(s) to a received ADT from an External Agency.	✓	✓				

Req. No.	Detailed Functional Requirement Description	Yes	Off the Shelf	Configuration	Customization	No	Comments
3.10.9 (H)	System must provide the ability to append an Annual Average Daily Traffic or Commercial Annual Average Daily Traffic report (AADT/CAADT) to existing AADT/CAADT information stored.	✓	✓				
3.10.10 (H)	System must provide tools to manually input current and post year ADTs (Average Daily Traffic – count based) and AADTs (Annual Average Daily Traffic – factor based) received from External Agencies into the NTFA staging table.	✓	✓				
	Data Collection & Validation- **Process CCS 24x7 Traffic Data** - User interacting with the System						
3.11 (H)	System must provide the ability to process Continuous Count Station (CCS) data.	✓	✓				
3.11.1 (H)	System must provide the ability to process data from different equipment for CCSs on a scheduled basis by lane and provide the ability to:	✓	✓				
3.11.1.1 (H)	• Process data from Contractor Specific Data Formats.	✓	✓				
3.11.1.2 (H)	• Allow for the polling of continuous count stations	✓	✓				
3.11.1.3 (H)	• Process data from Potential Contractors.	✓			✓		A new reader can be developed when the new format is known.
3.11.2 (H)	System must provide the ability to store by different Traffic Data Types (Vehicle Class, Volume, Speed, WIM etc.) by lane.	✓	✓				
3.11.2.1	System provide the ability to convert to multiple Measurement Units including but not limited to British Imperial/Metric, International Standard (miles, kilometers)	✓	✓				
3.11.3 (H)	System must provide the ability to translate traffic data into ASCII text.	✓	✓				
3.11.3.1 (H)	System must translate to multiple ASCII formats including Michigan Data Format., Michigan Bridge Format, and FHWA Format.	✓			✓		FHWA Format is built-in. Michigan Formats need customizations
3.11.3.2 (H)	System must translate from Contractor specific data (machine data -ASCII coded hexadecimal with a little binary included).	✓	✓				

Req. No.	Detailed Functional Requirement Description	Yes	Off the Shelf	Configuration	Customization	No	Comments
3.11.3.3	System provide the ability to process and store traffic data in per vehicle format.	✓	✓				
3.11.4	System provide the ability to ensure sensors are recording properly.	✓	✓				
3.11.5 (H)	System must provide the ability to initially store valid ASCII translated Traffic Data.	✓	✓				
3.11.5.1 (H)	System must provide the ability to perform reasonable validation checks, such as:	✓	✓				
3.11.5.1.1 (H)	• Duplicate Date and Data	✓	✓				
3.11.5.1.2 (H)	• Hours of repeated zeroes	✓	✓				
3.11.5.1.3	• Compare Historic Data against Current Data.	✓	✓				
3.11.6	System provide the ability to create an error report for Translated Traffic Data records (refer to reasonable validation checks).	✓	✓				
3.11.7	System provide the user the ability to evaluate the quality of the data by allowing the flagging of data (good, bad, situational) and associated comments regarding why.	✓	✓				
3.11.8 (H)	System must provide the ability to evaluate information as Traffic Data is collected and produce evaluation results.	✓	✓				
3.11.8.1	System provide the ability to evaluate **Vehicle Class** Traffic information once Traffic Data is collected by:	✓	✓				
3.11.8.1.1	• Using last year's seasonal factors to produce a preliminary CAADT, AADT for comparison.	✓	✓				
3.11.8.1.2	• Percentage of Vehicles by Class.	✓	✓				
3.11.8.1.3	• Ensuring there are no Consecutive Zeroes.	✓	✓				
3.11.8.1.4	• Ensuring Count Hour Duration (less than 24hours, less than 48 hours).	✓	✓				
3.11.8.1.5	• Ensuring whether Count Station Exists.	✓	✓				
3.11.8.1.6	• Ensuring Consistent Direction Codes.	✓	✓				

Req. No.	Detailed Functional Requirement Description	Yes	Off the Shelf	Configuration	Customization	No	Comments
3.11.8.2 (H)	System must provide the ability to evaluate **Volume** Traffic information once Traffic Data is collected by ensuring:	✓	✓				
3.11.8.2.1	• Consistent 15 minute or 1 hour increments.	✓	✓				
3.11.8.2.2 (H)	• There are an acceptable number of consecutive zeroes.	✓	✓				
3.11.8.2.4 (H)	• Whether count station exists.	✓	✓				
3.11.8.2.5 (H)	• Consistent direction codes.	✓	✓				
3.11.8.3	System provide the ability to evaluate **Bicyclist** Traffic information once Traffic Data is collected by ensuring:	✓	✓				
3.11.8.3.1	• That last year's seasonal factors are used to produce a preliminary AADT for comparison against the current Bicycle Traffic Data.	✓	✓				
3.11.8.3.2	• Consistent 15 minutes to 1 hour increments.	✓	✓				
3.11.8.3.3	• There are an acceptable number of consecutive zeroes.	✓	✓				
3.11.8.3.5	• Whether count station exists.	✓	✓				
3.11.8.3.6	• Consistent direction codes.	✓	✓				
3.11.8.3.7	• Information is MAP21 Compliant	✓	✓				
3.11.8.4	System provide the ability to evaluate **Pedestrian** Traffic information once Traffic Data is collected by ensuring:	✓	✓				
3.11.8.4.1	• That last year's seasonal factors are used to produce a preliminary AADT for comparison against the current Pedestrian Traffic Data.	✓	✓				
3.11.8.4.2	• There are an acceptable number of consecutive zeroes.	✓	✓				
3.11.8.4.4	• Whether count station exists.	✓	✓				
3.11.8.4.5	• Consistent direction codes.	✓	✓				
3.11.8.4.6	• Information is MAP21 Compliant.	✓	✓				
3.11.8.5	System provide the ability to evaluate Traffic **Speed** information once Traffic Data is collected by ensuring:	✓	✓				

Req. No.	Detailed Functional Requirement Description	Yes	Off the Shelf	Configuration	Customization	No	Comments
3.11.8.5.2	• Whether count station exists.	✓	✓				
3.11.8.5.3	• Consistent direction codes.	✓	✓				
3.11.8.8	System provide the ability for the User to designate Traffic Information as Valid or Invalid or Situational/Provisional and to capture associated comments as to why.	✓	✓				
3.11.9	System provide the ability to flag (Approved, Unapproved, and Circumstantial) collected translated data and to capture associated comments as to why.	✓	✓				
3.11.10	System provide for minor manual modifications of substandard data to establish a valid collection and capture associated comments with date stamp.	✓	✓				
	Data Collection & Validation- **Operation Study** - User interacting with the System						
3.12	System provide the ability to evaluate Vehicle **Operational Study (1776 Request Form) Information** as Traffic Data is collected, such as:	✓			✓		Customizations will be required for this is MDOT specific work flow
3.12.1	• Data that matches the hour duration and time of year, time of day etc.	✓			✓		Customizations will be required for this is MDOT specific work flow
3.12.2	• Data that meets the 1776 Request Form Requirements.	✓			✓		Customizations will be required for this is MDOT specific work flow
	Data Collection & Validation- **Retrieve Short Term Traffic Data** - User interacting with the System						
3.13 (H)	System must provide the ability to retrieve short term traffic data.	✓	✓				
3.13.1 (H)	System must provide the ability to retrieve Traffic Data from various external hardware devices and equipment, such as:	✓	✓				
3.13.1.1 (H)	• From Unicorn (Hoses).	✓	✓				
3.13.1.2 (H)	• From Wavetronix (Microwave).	✓	✓				
3.13.1.3 (H)	• From Miovision (Video).	✓	✓				
3.13.1.4 (H)	• From Jamar Board.	✓	✓				

Req. No.	Detailed Functional Requirement Description	Yes	Off the Shelf	Configuration	Customization	No	Comments
3.13.1.5 (H)	• In Contractor Specific Data Collection Formats.	✓	✓				
3.13.1.6	• From Potential Contractors.	✓			✓		New reader will be developed when the format is known
3.13.1.7	• System provide the ability to process and store traffic data in per vehicle format.	✓	✓				
3.13.1.8 (H)	• The ability to load Traffic Data received, translated into ASCII Michigan Format.	✓			✓		A new reader will be developed before the “go live” date
3.13.2 (H)	System must provide the ability to archive by different Traffic Data Types (Vehicle Class, Volume, Speed, etc.).	✓	✓				
3.13.2.1	System provide the ability to convert to multiple Measurement Units - British Imperial/Metric, International Standard Miles/ Kilometers	✓	✓				
3.13.3 (H)	System must provide the ability to translate traffic data into ASCII text.	✓	✓				
3.13.3.1 (H)	System must provide the ability to translate to multiple ASCII formats including Michigan Data Format.	✓			✓		New readers will be developed before the “go live” date
3.13.4 (H)	System must provide the ability to initially validate ASCII translated incoming Traffic Data.	✓	✓				
3.13.4.1 (H)	System must provide the ability to perform reasonable checks, including:	✓	✓				
3.13.4.1.1 (H)	• Duplicate date and data checks.	✓	✓				
3.13.4.1.2 (H)	• There are an acceptable number of consecutive zeroes.	✓	✓				
3.13.4.1.3 (H)	• Ability to compare Historic Data against Current Data.	✓	✓				
3.13.5	System provide the ability to create an error report for Translated Traffic Data records (refer to reasonable checks).	✓	✓				
3.13.6	System provide the ability to allow an analyst responsible for collected translated data to offer approval of the quality of the data.	✓	✓				
3.13.6.1	System provide the ability to flag unapproved collected translated data.	✓	✓				

Req. No.	Detailed Functional Requirement Description	Yes	Off the Shelf	Configuration	Customization	No	Comments
3.13.7	System provide the ability to validate received Traffic Data received (as is) from various external hardware devices and equipment.	✓	✓				
3.13.8	System provide the ability to allow the User to analyze reports received from validation/diagnostic hardware and equipment.	✓	✓				
3.13.9	System provide the ability to allow the user to record whether the Traffic Data collected is acceptable or unacceptable.	✓	✓				
3.13.10	System provide for minor manual modifications of substandard data to establish a valid collection and capture associated comments with date stamp.	✓	✓				
	***Staging*-** **Produce AADT/ CAADT (Apply Traffic Data Factors)** - User interacting with the System						
3.14 (H)	System must provide the ability to apply statistical data factors, segment and cluster information for the benefit of producing an AADT/CAADT and other Annual Average Statistics (Directional, Single and Multi-Unit CAADT, K Factor/Percent Peak, Design Hour Volume) by user defined groupings. System to provide the ability to:	✓	✓				
3.14.1 (H)	Allow Segmentation to be reviewed prior to producing an AADT/CAADT.	✓	✓				
3.14.2 (H)	Ensure a Traffic Data Collection has been completed prior to producing an AADT/CAADT.	✓	✓				
3.14.3 (H)	Ensure Seasonal Factors have been created prior to producing an AADT/CAADT by Program Type (Trunkline, Non Trunkline, and Ramp).	✓	✓				
3.14.4 (H)	Ensure Growth Factors have been created prior to producing an AADT/CAADT by Program Type (Trunkline, Non Trunkline, and Ramp).	✓	✓				
3.14.5 (H)	Ensure Holiday Rules and Day of Week rules have been created prior to producing an AADT/CAADT.	✓	✓				
3.14.6 (H)	Ensure a Traffic Segment has been assigned to Collected Traffic Data prior to producing an AADT/CAADT.	✓	✓				

Req. No.	Detailed Functional Requirement Description	Yes	Off the Shelf	Configuration	Customization	No	Comments
3.14.7 (H)	Identify the year the Traffic Data was collected.	✓	✓				
3.14.8 (H)	Retrieve all available processed Traffic Data.	✓	✓				
3.14.9 (H)	Apply prior years' statistics.	✓	✓				
3.14.10 (H)	System must provide the ability to apply existing Holiday and Day of Week Rules and calculate into ADTs, CADTs, D Factor, K Factor, Single, Combo, Percent Peak information.	✓	✓				
3.14.11 (H)	System must provide the ability to apply growth factors by Program Type (Trunkline, Non Trunkline and Ramp).	✓	✓				
3.14.12 (H)	System must provide the ability to apply factors to calculate AADT/CAADT by Program Type (Trunkline, Non Trunkline and Ramp).	✓	✓				
3.14.13 (H)	System must provide the ability to apply factors to calculate other Annual Average Statistics by Program Type (Trunkline, Non Trunkline and Ramp).	✓	✓				
3.14.13.1 (H)	System must provide the ability to exclude Circumstantial and Unapproved flagged Statuses of Traffic Data Collections	✓	✓				
	Staging- **Assign A Traffic Segment To ADTs** – System automation						
3.15 (H)	System must provide the ability to automatically assign a Traffic Segment to an Agency Generated ADT using a Spatial Referencing System by Program Type (Trunkline, Non Trunkline and Ramp).	✓	✓				
3.15.1 (H)	System must provide the ability to retrieve Traffic Data.	✓	✓				
3.15.2 (H)	System must provide the ability to allow the User to enter or modify Location Information if it was not applied originally as expected.	✓	✓				
3.15.3 (H)	System must provide the ability to present a PR Mile Point based on the Lat/Long provided in the Traffic Data set.	✓			✓		A "reverse geocoding" feature will be developed.
3.15.3.1 (H)	System must provide the ability to manage reference versioning.	✓	✓				

Req. No.	Detailed Functional Requirement Description	Yes	Off the Shelf	Configuration	Customization	No	Comments
3.15.4 (H)	System must provide the ability to allow the User to associate a Traffic Segment for an ADT with defined Location Information.	✓	✓				
	Staging **–** **Filter Out ADTs For AADT/CAADT** – System automation						
3.16(H)	System must provide the ability to automatically filter for most current year, ADT/CADT discrepancies including out of range and averages ADTs/CADTs into one AADT/CAADT.	✓	✓				
3.16.1(H)	System must provide the ability to automatically filter out ADTs/CADTs from an available set of ADTs based on pre-established filtering criteria (year, volume segment, outliers).	✓	✓				
3.16.2(H)	System must provide the ability to report out the filtered list of ADTs/CADTs to the User for a manual review by Program Type (Trunkline, Non Trunkline, and Ramp).	✓	✓				
3.16.3	System provide the ability to drill down into the hourly data for the current and prior years.	✓	✓				
3.16.4	System provide the ability to allow the user to remove one or more ADTs/CADTs and submit the remaining list of ADTs/CADTs back into the system.	✓	✓				
3.16.5(H)	System must provide the ability to average the remaining ADTs/CADTs.	✓	✓				
3.16.6(H)	System must provide the ability to flag all Traffic Data as “Unapproved” or “Circumstantial”.	✓	✓				
3.16.6.1	System provide the ability to allow the User to add a descriptive Comment Log on all flagged Traffic Data.	✓	✓				
	Staging- **Manage Statistical Factors -** User interacting with the System						
3.17(H)	System must provide the ability to allow the management of Cluster Information and application of statistical factors for Traffic Data Collections by Program Type (Trunkline, Non Trunkline, and Ramp), by Cluster and by TMG and AASHTO guidelines.	✓	✓				

Req. No.	Detailed Functional Requirement Description	Yes	Off the Shelf	Configuration	Customization	No	Comments
3.17.1	System provide the ability to create and modify cluster assignments for Traffic Data Collections (either in a Tabular or Spatial approach) to Traffic Segments.	✓	✓				
3.17.2	System provide tools to assist with grouping of CCS into clusters for the purpose of developing seasonal factors.	✓	✓				
3.17.3	System provide tools to assist with group of one-week seasonal counts into clusters for the purpose of developing seasonal factors.	✓	✓				
3.17.4	System provide the ability to graphically display Traffic Data Collections so that Clusters can be visually identified.	✓	✓				
3.17.5	System provide the ability to assign Clusters to Traffic Segments.	✓	✓				
3.17.6	System provide the ability to calculate, edit and make available statistical factors from the assigned CCS clusters.	✓	✓				
3.17.7	System provide the ability to calculate, edit and make available statistical factors from the assigned one-week seasonal clusters.	✓	✓				
3.17.8(H)	System must provide the ability to apply established and available statistical factors to the established Clusters.	✓	✓				
	***Staging*-Apply Vehicle Weight Statistics to Weight In Motion (WIM) Data -** User interacting with the System						
3.18(H)	System must provide the ability to produce vehicle weight statistics from the individual vehicle records.	✓	✓				
3.18.1(H)	System must provide the ability to upload the available WIM data on a weekly (Saturday Night) cadence at minimum and daily at maximum.	✓	✓				
3.18.2(H)	System must provide the ability to evaluate the records for each day of the week as a quality and duplicated record check and flags the records as good, bad or situational.	✓	✓				
3.18.3(H)	System must provide the ability to calculate statistics against Michigan's Legal Weight Limits for all Commercial Vehicles.	✓	✓				
3.18.4(H)	System must be able to identify each Vehicle record as overweight or within weight limits.	✓	✓				

Req. No.	Detailed Functional Requirement Description	Yes	Off the Shelf	Configuration	Customization	No	Comments
3.18.5	System provide a comment area associated with the individual vehicle records.	✓	✓				
	***Data Exporting & Reporting*-Define A Traffic Data Export** - User interacting with the System						
3.19(H)	System must provide the ability to define the parameters of an export of data for the requesting person or source.	✓	✓				
3.19.1(H)	System must provide the ability to ensure a data export has been requested by either an internal or external source.	✓	✓				
3.19.2(H)	System must provide the ability to make available different Record Types (Tables Objects) to build an export from.	✓	✓				
3.19.3(H)	System must provide the ability to set export criteria such as date range and other common filters.	✓	✓				
3.19.3.1(H)	System must provide the ability to incorporate data values that are derived from pre-defined formulas and factors.	✓	✓				
3.19.4(H)	System must provide the ability to set export delivery preferences such as file format type, file delivery destination (ftp, network drive etc.), max records and other common preferences.	✓		✓			
3.19.5(H)	System must provide the ability to save all the export information so that it can be retrieved at a later time and used to generate or schedule the export in the delivery format selected.	✓		✓			
3.19.6(H)	System must provide the ability to preview output of the export.	✓	✓				
	***Data Exporting & Reporting*- Define A Traffic Data Report** – User interacting with the System						
3.20(H)	System must provide the ability to define the parameters of a report for the requesting person or agency.	✓	✓				
3.20.1(H)	System must provide the ability to make available different Record Types (Tables Objects) to build a report from.	✓	✓				
3.20.2(H)	System must provide the ability to set report criteria such as date range and other common filters.	✓	✓				

Req. No.	Detailed Functional Requirement Description	Yes	Off the Shelf	Configuration	Customization	No	Comments
3.20.2.1(H)	System must provide the ability to incorporate data values that are derived from pre-defined formulas and factors.	✓	✓				
3.20.3(H)	System must provide the ability to set report delivery preferences such as file format type, layout type and other common preferences.	✓	✓				
3.20.4(H)	System must provide the ability to save, based on the user's credentials, all the report criteria so that it can be retrieved at a later time and used to generate a Report.	✓	✓				
3.20.5(H)	System must provide the ability to preview output of the report.	✓	✓				
3.20.6(H)	System must provide the ability to produce standard reports, including:	✓			✓		MS2 TDMS has most of the reports except the following noted
3.20.6.1(H)	HPMS Reports.	✓	✓				
3.20.6.2	Metadata Reports.	✓	✓				
3.20.6.3(H)	CCS Reports	✓	✓				
3.20.6.4(H)	Vehicle Class Reports.	✓	✓				
3.20.6.5(H)	Speed Reports.	✓	✓				
3.20.6.6(H)	Truck Weight Reports.	✓	✓				
3.20.6.7(H)	Volume and Commercial 48 Hour Traffic Counts.	✓	✓				
3.20.6.8(H)	AADT and CAADT Reports.	✓	✓				
3.20.6.9(H)	3 year and 5 year Trending Reports.	✓	✓				
3.20.6.10(H)	High Hour CCS Reports.	✓	✓				
3.20.6.11(H)	Performance Reports for Management and Staff.	✓			✓		The new reports will be developed based on the MDOT needs
	***Data Management & Analysis*-Manage Historical Trend Analysis (Scheduled & On Demand)**						
3.21(H)	System must provide the ability to generate historical trend analysis for Physical Equipment and Sensors on a scheduled (batch) basis.	✓	✓				
3.21.1(H)	System must provide the ability to generate an Error Report based upon criteria and variance parameter values.	✓	✓				

Req. No.	Detailed Functional Requirement Description	Yes	Off the Shelf	Configuration	Customization	No	Comments
3.21.2(H)	System must provide the ability to generate Minimum and Maximum typical Traffic Volume Levels.	✓			✓		The new reports will be developed based on the MDOT needs
3.21.3(H)	System must provide the ability to generate output on Weight Accuracy.	✓	✓				
3.21.4(H)	System must provide the ability to generate output on Vehicle Class (in excess of expectation and tolerance).	✓	✓				
3.21.5(H)	System must provide the ability to generate reporting information visually (like a dashboard).	✓	✓				
	***Data Management & Analysis* - Manage Information (Spatial) -** User interacting with the System						
3.22(H)	System must provide the ability to view, create and update and manage key information (Traffic Segments, Traffic Data Collections, and Traffic Count Stations) in a spatial format.	✓	✓				
3.22.1(H)	System must provide the ability to present multiple record types (Points [i.e. Count Station], line [i.e. traffic Segments], Polygons [i.e. Counties], and the best available imagery on the spatial map simultaneously (layering).	✓	✓				
3.22.2(H)	System must provide the ability to navigate with use of map tools i.e. Zoom In, Zoom Out, Pan, and by Area Info like: MDOT Region, Planning Region, MDOT TSC, Place, and County.	✓	✓				
3.22.3(H)	System must provide the ability to search for a location, including by:	✓	✓				
3.22.3.1(H)	County.	✓	✓				
3.22.3.2(H)	City, Village and Township (CVT).	✓	✓				
3.22.3.3(H)	Zip Code.	✓			✓		The attribute needs to be added into the MS2 TDMS data structure
3.22.3.4(H)	Intersection.	✓	✓				
3.22.3.5(H)	Physical Road (PR) and PR Mile Point.	✓		✓			
3.22.3.6(H)	Control section number.	✓		✓			
3.22.3.7(H)	A Traffic Segment or Route or/and Year.	✓	✓				
3.22.3.8(H)	Traffic Collection Location.	✓	✓				

Req. No.	Detailed Functional Requirement Description	Yes	Off the Shelf	Configuration	Customization	No	Comments
3.22.3.9(H)	Street name.	✓	✓				
3.22.4(H)	System must provide the ability to present a map legend defining map layers by predefined symbols and their labels i.e.Framework (All Roads), NTFA segmentation, NTFA count stations, TL segmentation, TL count stations, ramp segmentation, ramp count stations, MPO AND RPA, ACUB, and AADTs and CAADTS, NFC, MDOT Regions, city/villages, counties, townships.	✓		✓			
3.22.5(H)	System must provide the ability to present map segmentation.	✓		✓			
3.22.5.1(H)	System must display traffic segmentation thematically by AADT.	✓	✓				
3.22.5.2(H)	System must display beginning and end of traffic segments, for example with arrows.	✓	✓				
3.22.6(H)	System must display current version base map Tile cache.	✓		✓			
3.22.7(H)	System must label predefined attributes for layers.	✓	✓				
3.22.7.1(H)	System must label traffic segment with predefined attribute i.e. Traff_ID, AADT.	✓	✓				
3.22.7.2(H)	System must label layers - i.e. roads, city, village, county, MPO/RPA etc. if labels are not available in cache.	✓	✓				
3.22.8(H)	System must provide a map service containing Framework (All Roads), NTFA segmentation, NTFA count stations, TL segmentation, TL count stations, ramp segmentation, ramp count stations, MPO and RPA, ACUB, and AADTs and CAADTS, NFC, MDOT Regions, city/villages, counties, townships.	✓		✓			
3.22.8.1(H)	System must export selected traffic segments and /or traffic stations as a shapefile or Excel by PR and MPs with predefined attributes i.e. road name, current AADT, source of data.	✓		✓			
3.22.8.2(H)	System must provide the ability to select and unselect traffic segments and /or traffic stations and allow user to export to an Excel or shapefile format.	✓	✓				

Req. No.	Detailed Functional Requirement Description	Yes	Off the Shelf	Configuration	Customization	No	Comments
3.22.8.3(H)	System must provide the ability to select by jurisdiction (i.e. .county, city), display segment information, and allow user to export traffic segments and /or traffic station information to an Excel or shapefile format.	✓	✓				
3.22.8.4(H)	System must provide the ability to select and unselect traffic segments and /or traffic stations by use of tools (freehand polygon, rectangle, freehand polyline, or point) and allow user to export segment information to an Excel or shapefile format.	✓	✓				
3.22.9(H)	System must provide the ability for the user to query and edit in both the traffic segment and traffic point files	✓	✓				
3.22.10(H)	System must provide the ability to offer a “Self Service” approach for External Agencies to review ADTs through a Spatial Map.	✓	✓				
3.22.10.1(H)	System must assign security access by roles and responsibilities.	✓	✓				
3.22.10.2(H)	System must use Login/password (to review data previews on map): Login for MPO/RPA, city, village User would only be able to review data/map area for their jurisdiction/security	✓	✓				
3.22.10.3	System provide a tool to allow users to submit changes to traffic segmentations.	✓	✓				
3.22.11.4	System provide the ability to allow the External Agencies user to “upload” Traffic data.	✓	✓				
3.22.12(H)	System must provide the ability to “drill down” to detailed data once an entity (i.e. traffic station or segment) is identified on the Spatial Map (such as identifying a Traffic Segment to drill down to An Hourly Count or An Operational Study).	✓	✓				
3.22.13(H)	System must adhere to the Michigan Geographical Framework (MGF) set of data layers.	✓	✓				
3.22.14(H)	System must be able to accept the annual MGF migration of the LRS and the associated data attributes by PR and PR mile point.	✓		✓			

Req. No.	Detailed Functional Requirement Description	Yes	Off the Shelf	Configuration	Customization	No	Comments
3.22.15(H)	System must provide the ability to add, edit and remove Traffic Segments and simultaneously update in tabular environment.	✓	✓				
3.22.16(H)	System must provide the ability to add, edit (within limits) and remove Traffic Points (Count Location) and simultaneously update in tabular environment.	✓	✓				
3.22.17(H)	System must provide the ability to associate Count Location(s) with a Traffic Segment visually.	✓	✓				
3.22.18(H)	System must provide the ability to maintain historical data when a Traffic Segment is split or merged or versioned.	✓	✓				
3.22.19(H)	System must provide an info window that displays (pop up) the following attributes when a road segment or traffic point is selected – display road name/names of the segments. Display Traff_ID, count station, AADT, AADT year, road name, county, city, data source, collection date, PR number, PR mile points, latitude/longitude.	✓		✓			
3.22.19.1(H)	System must provide the ability to view or link to multiple years of traffic data.	✓	✓				
3.22.20(H)	System must allow users to turn on and off layers.	✓	✓				
3.22.21(H)	System must provide print functionality and show a map that will be previewed for printing. Legend will display layers that are checked on.	✓	✓				
	***Data Management & Analysis*-Manage Information (Tabular, View, Create, Modify)** – User interacting with the System						
3.23(H)	System must provide the ability to view, create and update information in a tabular format.	✓	✓				
3.23.1(H)	System must provide the ability to view a record of a selected record type.	✓	✓				
3.23.1.1(H)	System must provide the ability to navigate to a record with a browsing feature.	✓	✓				
3.23.1.2(H)	System must provide the ability navigate to a record with a searching feature.	✓	✓				

Req. No.	Detailed Functional Requirement Description	Yes	Off the Shelf	Configuration	Customization	No	Comments
3.23.2(H)	System must provide the ability to modify an existing record of a selected record type.	✓	✓				
3.23.2.1 (H)	System must provide the ability to restrict the editing of the values of certain fields (i.e. direction) of a selected record based upon that record type's predefined business rules.	✓	✓				
3.23.2.2(H)	System must provide the ability to inform the User of malformed data values for given attributes of a given record type so that the User can change the value to a value conforming to the business rules surrounding the data attribute within the record.	✓	✓				
3.23.2.3(H)	System must provide the ability to logically delete a record of a selected record type as the record types business rules allow.	✓	✓				
3.23.3(H)	System must provide the ability to Create A New Record of a selected record type.	✓	✓				
3.23.3.1(H)	System must provide the ability to create a new record by offering the minimum required data attributes values as defined by business rules defined for that record type.	✓	✓				
3.23.3.2(H)	System must provide the ability to validate the values entered for data fields of a given record type before creating the new record based upon predefined business rules associated with the record type.	✓	✓				
3.23.3.3(H)	System must provide the ability to establish a unique identifier that can be used to retrieve the newly created record at a later time.	✓	✓				
3.23.4(H)	System must provide the ability to View and Modify a list of records of a common record type.	✓	✓				
3.23.4.1(H)	System must provide the ability to View multiple records in a list of a selected record type and be able to view one or more records by selecting it from the list.	✓	✓				
3.23.4.2(H)	System must provide the ability to modify one or more common attributes across multiple records in a list of a selected record type.	✓	✓				

Req. No.	Detailed Functional Requirement Description	Yes	Off the Shelf	Configuration	Customization	No	Comments
	***Data Management & Analysis*-Analyze For Operational Study Request -** User interacting with the System						
3.24	System provide the ability to allow an external requestor or internal system user to analyze historical Traffic Information to find what information can be reused for an Operational Study Request.	✓			✓		Customizations will be made based on the MDOT business process review
3.24.1	System provide the ability to allow the requestor to make the request for an Operational Study.	✓			✓		Customizations will be made based on the MDOT business process review
3.24.2	System provide the ability to query (such as Data Range, Traffic Segment) historical Traffic Collections for data that might fulfill the request.	✓	✓				
3.24.3	System provide the ability to allow the requestor or system user to select whether the returned and displayed Traffic Collections can be reused to fulfill the request.	✓			✓		Customizations will be made based on the MDOT business process review
3.24.4	System provide the ability to associate the Historical Traffic Collection with the request	✓			✓		Customizations will be made based on the MDOT business process review
3.24.5	System inform the requestor that the request has been fulfilled.	✓			✓		Customizations will be made based on the MDOT business process review
3.24.6	System generate a new Traffic Study Request if there are no Historical Traffic Studies that can be reused.	✓			✓		Customizations will be made based on the MDOT business process review
	***Data Management & Analysis*-Manage Ramp Information -** User interacting with the System						
3.25(H)	System must provide the ability to allow for the collection, calculation and segmentation tasks related to Ramp traffic.	✓	✓				
3.25.1	System provide the ability to view and edit Ramp Information on a Spatial Map including:	✓	✓				
3.25.1.1	Ramp Point Locations.	✓	✓				
3.25.1.2	(CCS) Control Point Locations.	✓	✓				

Req. No.	Detailed Functional Requirement Description	Yes	Off the Shelf	Configuration	Customization	No	Comments
3.25.1.3	Mainline Point Locations.	✓	✓				
3.25.2(H)	System must provide the ability to view a Historical Count (as a table view) by selecting a Ramp.	✓	✓				
3.25.3(H)	System must allow the user to calculate corridor AADT based on ramp volumes by:	✓	✓				
3.25.3.1(H)	The addition/subtraction of vehicles coming onto the mainline from an on ramp.	✓	✓				
3.25.3.2(H)	The addition/subtraction of vehicles coming off the mainline from off ramp.	✓	✓				
3.25.4(H)	System must provide the ability to allow the User to view a produced AADT for the Ramp Collection.	✓	✓				
3.25.5(H)	System must provide the ability to allow the User to request revisions from the produced AADT for the Ramp Collection.	✓	✓				
3.25.6(H)	System must provide the ability to store the Ramp Collection as the “Count of Record” for future use.	✓	✓				
3.25.7(H)	System must have the ability to interact (update/replace) with the entire Enterprise system. That is referring to updating the ADT file with the completed AADT Estimations from the Ramp Program.	✓	✓				
	Data Management & Analysis*-Manage Shared Views-** External System interfacing with the System ***Critical for data linking						
3.26(H)	System must provide the ability to Manage and Share Views so that external systems can reflect data that is sourced in the TDMS database.	✓	✓				
3.26.1(H)	System must provide the ability to establish Views to be shared with External Systems, including but not limited to:	✓	✓				
3.26.1.1(H)	TMS.	✓	✓				
3.26.1.2(H)	SAFESTAT.	✓	✓				
3.26.1.3(H)	DUAP.	✓	✓				

Req. No.	Detailed Functional Requirement Description	Yes	Off the Shelf	Configuration	Customization	No	Comments
3.26.1.4(H)	The ability to establish Spatial Information Layers (as shapefiles) to be shared with External Systems such as Center For Shared Solutions (CSS) GIS Framework.	✓		✓			
3.26.1.5(H)	RITIS.	✓	✓				
3.26.1.6(H)	External Contractor System**.**	✓	✓				
3.26.2(H)	System must provide the ability to manage Views as source data for External Systems.	✓	✓				
3.26.3(H)	System must provide the ability to restrict access to Views based upon agreed upon access privileges of the External Systems.	✓	✓				
	***Data Management & Analysis*-Manage External Agencies-** External Agencies interfacing with the System						
3.27(H)	System must provide tools to create and maintain and/or link to an External Agency directory that captures the collectors, providers, and factors of NTFA traffic data.	✓	✓				
3.27.1(H)	System must allow user to view, delete, add, and edit information about the **External Agency information**.	✓	✓				
3.27.1.1 (H)	System must provide a directory to Agency data files	✓			✓		Customizations will be made based on the MDOT business process review
3.27.1.2	System allow user access to 'look up State data base' to populate application	✓			✓		Customizations will be made based on the MDOT business process review
3.27.1.3(H)	System must allow user to filter by Agency type (MPO/RPA, County, City)	✓	✓				
3.27.2(H)	System must allow user to view, delete, add, and edit related information about the **External Agency Contacts and Contact Information**, including:	✓			✓		Customizations will be made based on the MDOT business process review
3.27.2.1(H)	Identifying the primary contact for an agency.	✓			✓		Customizations will be made based on the MDOT business process review

Req. No.	Detailed Functional Requirement Description	Yes	Off the Shelf	Configuration	Customization	No	Comments
3.27.3(H)	Related information about the **External Agency Phones**.	✓			✓		Customizations will be made based on the MDOT business process review
3.27.4(H)	Related information about the **External Agency Traffic Pattern Group(s).**	✓			✓		Customizations will be made based on the MDOT business process review
3.27.5(H)	Related External Agency **Growth, Seasonal, and Daily adjustment factors**. These factors are used in calculating AADT values from hourly count data.	✓	✓				
3.27.6(H)	Related information about the **Jurisdictions.**	✓	✓				
3.27.7(H)	The related **Historical Traffic Data.**	✓	✓				
3.27.8(H)	Information about the related **Current Traffic Data.**	✓	✓				
3.27.9(H)	System must relate/assign Traffic segment (TraffIDs) to each Agency	✓			✓		Customizations will be made based on the MDOT business process review
3.27.10(H)	System must assign existing Departmental Agency I.D. codes to the Agencies.	✓			✓		Customizations will be made based on the MDOT business process review
	Data Management & Analysis-Reporting						
3.28.1(H)	Examples of required reports are located in RFP Appendix K – Report Samples.	✓	✓				

Appendix B – Technical Requirements

Technical Req. No.	Technical Requirement	Yes	Off the Shelf	Configuration	Customization	No	Comments
4.1	**Client/Workstation** - These technical requirements apply to a user's computer device. The intent is to ensure that applications operate successfully on State-owned and managed personal computing devices including desktops, laptops, handheld, and mobile devices. DTMB's Office Automation Services may need to be consulted for the latest standard desktop/laptop components and versions.						
4.1.1 (H)	System must be able to collect traffic data from existing physical equipment and sensors.	✓		✓			To automate count data processing, MDOT station ID conventions need to be configured in TDMS
4.1.2 (H)	System must function in following desktop web browser(s) in INTRANET and INTERNET environment: • Microsoft IE 9.0 or above • Firefox 23.0 or above • Chrome 33.0 or above	✓	✓				
4.1.3 (H)	System must support deployment in following desktop Operating System (OS) : • Microsoft Windows 7 64-bit	✓	✓				
4.1.4	System be able to view reports and dashboards from handheld/mobile devices with the same functionality as the desktop. • Recommend HTML5	✓	✓				
4.2	**Documentation and Standards** - These technical requirements apply to software and hardware which will be purchased and/or used by the State. Documentation is critical for long-term support and maintenance.						
4.2.1 (H)	System must provide a logical network diagram that describes how the infrastructure components will meet the functional requirements.	✓	✓				
4.2.2 (H)	System must provide conceptual and logical data-flow diagrams.	✓	✓				
4.2.3	System provide a complete installation and configuration documentation library.	✓	✓				
4.2.4 (H)	Contractor must provide a high-level architecture diagram, including logical and physical components.	✓	✓				
4.2.5 (H)	Contractor documentation must describe error logging and how to access the error logs.	✓	✓				
4.2.6 (H)	Contractor documentation must describe Disaster Recovery capabilities (including Hot and Cold standby options, licensing implications, and critical vs. non-critical functionality and data).	✓	✓				
4.2.7 (H)	Contractor documentation must describe any batch processing requirements for the application.	✓	✓				
4.2.8	Contractor documentation describe required application maintenance activities and time frames.	✓	✓				

Technical Req. No.	Technical Requirement	Yes	Off the Shelf	Configuration	Customization	No	Comments
4.2.9	Application/Contractor documentation provide FAQ and/or Support Information for frequent issues staff/users may encounter.	✓	✓				
4.2.10 (H)	If Oracle based, Contractor must provide a detailed list of all Oracle options utilized and/or Oracle parameters set that are not part of the standard Oracle Server – Enterprise Edition. Provide character set requirements for database (s/b Western European).	✓			✓		N/A - MS2 TDMS is SQL Server based.
4.3	**Installation** - These technical requirements apply to software and hardware installation procedures and methods on both user devices and servers. DTMB's Agency Services, Office Automation Services, Field Services, and Infrastructure Services may need to be consulted to ensure availability of resources and compliance with supported end-user processes.						
4.3.1(H)	Contractor must provide a detailed work plan (in hours) and duration (in days) of a typical installation of the base package, including all modules. Include both SOM and Contractor effort.	✓	✓				
4.3.2(H)	Contractor must provide a high-level project plan outlining activity descriptions, work effort, duration and resources for a typical base-package installation.	✓	✓				
4.3.3(H)	Contractor must provide a description of the skill sets of all resources required for a typical install of the base package.	✓	✓				
4.3.4	Contractor provide a list of functional issues encountered by other users during a typical implementation of your software.	✓	✓				
4.3.5	Contractor provide a list of technical issues encountered by other users during a typical implementation of your software.	✓	✓				
4.3.6(H)	Contractor must provide a detailed list of any browser plug-ins (e.g., ActiveX, Java, Flash) required by the application (and versions).	✓	✓				
4.3.7(H)	Contractor must provide a detailed list of client components (e.g. ODBC, JDBC, Java Beans, other) required by the application, including permission(s) levels.	✓	✓				
4.3.8(H)	For All System Agents and bots used for monitoring or maintenance of servers and software, they must be listed including function, install location, permission level, and resource usage.	✓	✓				
4.3.9(H)	Contractor must provide a detailed list of any third-party tools required by the application and how they will be supported over the System Development Life Cycle (SDLC).	✓	✓				
4.3.10(H)	Contractor must provide any scripts necessary to upgrade system specific database objects.	✓	✓				
4.3.11(H)	Contractor must provide support staff (including DBA, Server Teams etc.) for troubleshooting/assistance during system installation and upgrades.	✓	✓				
4.3.12(H)	Contractor must not require for installation of database objects/privileges, require access to sys or system passwords. Passwords must be encrypted and must follow State standards.	✓	✓				
4.4	**Product Development** - These technical requirements apply to software development and the tools needed to support it. Development includes purchase of ready-to-install commercial products to those designed, coded and tested by Contractors and/or DTMB Agency Services staff.						
4.4.1(H)	Contractor must provide a report of all known current application defects and the timeline for mitigation efforts.	✓	✓				
4.4.2(H)	Contractor must provide a roadmap for all platform / application enhancements that are planned for the next three years.	✓	✓				

Technical Req. No.	Technical Requirement	Yes	Off the Shelf	Configuration	Customization	No	Comments
4.4.3(H)	Contractor must follow the SUITE testing processes and documentation of testing and testing types/levels must be provided.	✓			✓		We will adjust our product development process based on this requirement.
4.4.4	System Application development done in the following development framework: • .NET Framework 4.0 (standard) • • J2EE 7.x (standard)	✓	✓				
4.4.5	System Programming done in the following language(s): • ASP.Net (standard) • C# (standard) • Java (standard) • JavaScript (standard) • JDK 7.0 (standard) • VB .NET (standard)	✓	✓				
4.4.6 (H)	System Commercial Off The Shelf (COTS) third-party libraries included within the application must be owned and supportable by the State. Inclusion of any third-party code library or tool must be approved by the SOM Contract Manager or Project Manager.	✓	✓				
4.4.7(H)	System Custom-developed third-party libraries included within the application must be owned and supportable by the State. Inclusion of any 3rd party code library or tool must be approved by the SOM Contract Manager or Project Manager.	✓	✓				
4.4.8(H)	System Software developed under contract to SOM must be able to provide a complete change/history log upon request.	✓	✓				
4.4.9	System Software development adhere to the System Engineering Methodology (SEM) described in the State Administrative Guide (Section 1360): Policy 1360 Systems Engineering Methodology http://www.michigan.gov/documents/dmb/1360.00_281429_7.pdf	✓	✓				
4.4.10(H)	System documentation must clearly describe the type of caching, if any, the system employs.	✓	✓				
4.4.11 (H)	System application testing must occur in DTMB environment (providing DTMB will be hosting the system in production).	✓	✓				

Technical Req. No.	Technical Requirement	Yes	Off the Shelf	Configuration	Customization	No	Comments
4.4.12	System follow the SUITE testing processes and documentation of testing and testing types/levels provided. Detailed information can be found at the following link: http://michigan.gov/suite	✓			✓		We will adjust our product development process based on this requirement.
4.5	**Reporting** - These technical requirements apply to all technologies and the tools needed to support them.						
4.5.1(H)	Systems reporting framework must be compatible with n-Tier architecture	✓	✓				
4.5.2(H)	System reporting product technology must be compatible with the following Server Operating Systems: Window Server 2008, 2012	✓	✓				
4.5.3(H)	System reporting tool/system must be certified for use with the VMWare x86 based virtualization platform.	✓	✓				
4.5.4	System reporting product technology is compatible with desktop virtualization.	✓	✓				
4.5.5	System reporting product technology not require any installed component on the user desktop.	✓	✓				
4.5.6	System reporting product technology not require any installed component in the user browser other than the following: • MS-Excel • Adobe Acrobat Reader	✓	✓				
4.5.7	System reporting product technology is compatible with the following Reporting tools: • Business Objects (BO) XI rel. 3.1 (standard) • Crystal Reports 2011 (standard)	✓			✓		The new reporting function will be defined during the business process review. The development will be completed before the "go live" date.
4.5.8 (H)	System reporting product technology must support ad-hoc reporting via custom-built queries.	✓	✓				
4.5.9	System software delivers standard reports including standard headings and footers on each page, printing capabilities in PDF, XLS format, etc.	✓	✓				
4.5.10	If the System utilizes an existing reporting package, this package uses the State reporting standard of business objects.	✓	✓				

Technical Req. No.	Technical Requirement	Yes	Off the Shelf	Configuration	Customization	No	Comments
4.5.11	System standard (e.g., regularly scheduled, recurring) reporting environment allows: • Standard reports to be executed, viewed on-line, printed (centrally or remotely) and dispersed. • The State to control the information that appears on standard reports so that data security is maintained.	✓	✓				
4.6	**Application Security** - These technical requirements apply to security measures which are intended to protect both the application itself and the data handled by the application. Since application security is continually being improved, consult the agency Michigan Cyber Security (MCS) Liaison and the DTMB-0170 for any changes/additions.						
4.6.1 (H)	System must have built-in security controls and meet or exceed current SOM security requirements as described in the State Administrative Guide which can be found at the following link: 1300 Information Standards and Planning http://www.michigan.gov/dtmb/0,4568,7-150-9131_9347---,00.html.	✓	✓				
4.6.2(H)	System access must be logged and have a viewable audit trail(s).	✓	✓				
4.6.3(H)	System must log the following application change event(s): • Changes to individual permission level • Changes to role membership • Changes to role permissions • Changes to access to application functions	✓	✓				
4.6.4(H)	System access to audit trail logs must be able to be restricted to approved administrators.	✓	✓				
4.6.5(H)	System access and changes to system access must log the following information: • Date/time • Nature of operation • Name of changed item • Name of who made the change • Before and after value of the changed item	✓	✓				
4.6.6(H)	System must restrict the user from having direct access to the program libraries (i.e., Base codes)	✓	✓				
4.6.7 (H)	System Passwords and User ID's must: • Protect sensitive data • Restrict access to only those intended • Meet State/Agency Security Standards • Encrypted	✓	✓				

Technical Req. No.	Technical Requirement	Yes	Off the Shelf	Configuration	Customization	No	Comments
4.6.8	System Session State is stored and maintained in an encrypted manner.	✓			✓		The new system feature will be defined during the business process review. The development will be completed before the "go live" date.
4.6.9	System Session State is stored and maintained in one or more of the following manners: • Cookie • URL String • Database	✓	✓				
4.6.10(H)	System must be accessible (and administrable) through the following Virtual Private Network (VPN) : • LGNET • Contractor Network • UTNet	✓			✓		The new system feature will be defined during the business process review. The development will be completed before the "go live" date.
4.6.11(H)	System must comply with any of the following application and data processing standards: • Health Insurance Privacy & Portability Act (HIPPA) • Sarbanes-Oxley (SOX) • PCI-DSS	✓	✓				
4.6.12 (H)	System Application and database communication must use the following port(s) and protocol(s): • 80 / 443 using HTTP(s) • 1521/1433 using TCP • 80 / 443 using SOAP/XML	✓	✓				

Technical Req. No.	Technical Requirement	Yes	Off the Shelf	Configuration	Customization	No	Comments
4.6.13(H)	System applications must adhere to SOM Policy 1335 regarding Access to Networks, Systems, Computers, Databases, and Applications. Policy 1335 Information Technology Access Control http://www.michigan.gov/documents/dmb/1335_193161_7.pdf	✓	✓				
4.6.14 (H)	System applications must adhere to SOM Policy 1350.20 regarding Access to Protected Data Resources: http://www.michigan.gov/documents/dmb/1350.20_184600_7.pdf	✓	✓				
4.6.15	System End-user software applications, or components thereof, do not require privileged, super-user or administrator mode in order to function properly.	✓	✓				
4.6.16 (H)	Systems and applications must operate in a secure manner and comply with State Enterprise IT Security Policy and Procedures as found on the website: Policy 1335 Information Technology Access Control http://www.michigan.gov/documents/dmb/1335_193161_7.pdf Policy 1340 Information Technology Information Security http://www.michigan.gov/documents/dmb/1340_193162_7.pdf Policy 1345 Information Technology Network and Infrastructure http://www.michigan.gov/documents/dmb/1345.00_282982_7.pdf	✓	✓				
4.6.17 (H)	System must ensure that the integrity and confidentiality of data is protected by safeguards to prevent release of information without proper consent.	✓	✓				
4.6.18 (H)	System must include a security assessment of the purchased application, and its components, must be provided and verified by an independent third party.	✓	✓				
4.7	**Identity Management Security** - These technical requirements apply to security measures which are intended to restrict access to the application, system and the data. Since application security is continually being improved, consult the MCS Liaison and the DTMB-0170 for any changes/additions.						
4.7.1(H)	System must support one or more the following chosen authentication requirements from the list below : • LDAP v3• Active Directory 2003• External radius server• Two factor authentication• Novell IDM v3.5• User ID and Passwords • Biometrics • Directories • Smart cards • Single sign-on solutions • Tokens • PKI and Certificates • Voice recognition • Shared secrets • Access control lists and files • Unique business process	✓	✓				
4.7.2(H)	System authentication and authorization must be by individual user. User account information must be stored securely in a database. Users may belong to groups and roles.	✓	✓				

Technical Req. No.	Technical Requirement	Yes	Off the Shelf	Configuration	Customization	No	Comments
4.7.3(H)	System must enforce the following rules on individual passwords for allowable characters, length and expiration period: • Standard Windows characters allowed • Minimum of 8 characters in length • Expires every 90 days • Cannot reuse password for 1 year Policy 1340 Information Technology Information Security http://www.michigan.gov/documents/dmb/1340_193162_7.pdf	✓			✓		The new system feature will be defined during the business process review. The development will be completed before the "go live" date.
4.7.4(H)	System must lock out users after three invalid login attempts due to bad passwords.	✓	✓				
4.7.5(H)	System must provide the system administrators with the ability to define roles and privileges.	✓	✓				
4.7.6(H)	System must provide the system administrators with the ability to create groups whose members can be either role-based or individual login account names.	✓	✓				
4.7.7	System is capable of integrating with the SOM Standards "Identity and Access Management" tool, Tivoli SSO.	✓			✓		The new system feature will be defined during the business process review. The development will be completed before the "go live" date.
4.7.8(H)	System must restrict the access based on the individual user authorization (Role Based Access Control - RBAC). Users may belong to groups and roles.	✓	✓				

Technical Req. No.	Technical Requirement	Yes	Off the Shelf	Configuration	Customization	No	Comments
4.7.9	System is capable of integrating with the MDOT standard authorization system, SAM “System Access Manager” using web services.	✓			✓		The new system feature will be defined during the business process review. The development will be completed before the “go live” date.
4.8	**Network Security** - These technical requirements apply to security measures which are intended to protect the SOM/DTMB network. As network security is continually being improved, consult the agency's MCS Liaison and the DTMB-0170 for any changes/additions.						
4.8.1(H)	System must adhere to SOM Policy 1340.00 regarding "Information Security": Policy 1340 Information Technology Information Security http://www.michigan.gov/documents/dmb/1340_193162_7.pdf	✓	✓				
4.8.2(H)	System must adhere to SOM Policy 1335.00.02 (formerly Admin Guide 1350.10) regarding "Access to Networks, Systems, Computers, Databases, and Applications	✓	✓				
4.8.3(H)	System Web interface or browser technology must use TCP/IP protocol through Ports 80 or 443.	✓	✓				
4.8.4(H)	System must conform with SOM Policy 1345 regarding "Network and Infrastructure": Policy 1345 Information Technology Network and Infrastructure http://www.michigan.gov/documents/dmb/1345.00_282982_7.pdf	✓	✓				
4.8.5	System communication between users and system components over the network is able to be logged and the log file accessible to the system administrator.	✓	✓				
4.8.6(H)	System must adhere to SOM Policy 1350.20 regarding "Access to Protected Data Resources": Policy 1350.20 Authorization Prerequisite for Access to Protected Data Resources http://www.michigan.gov/documents/dmb/1350.20_184600_7.pdf	✓	✓				
4.8.7(H)	System Application servers must be hardened prior to implementation. The hardening process is handled by DTMB Infrastructure Services and Agency Services in conjunction with MCS.	✓	✓				

Technical Req. No.	Technical Requirement	Yes	Off the Shelf	Configuration	Customization	No	Comments
4.8.8(H)	System End-user software applications, or components thereof, must **not** require privileged, super-user or administrator mode in order to function properly.	✓	✓				
4.8.9(H)	System Servers must have the most recent security patches applied to them and be configured in least privileged mode prior to implementation.	✓	✓				
4.8.10(H)	System server-based agents, bots and monitoring components must be listed along with a description of their function, required permission level and resource usage.	✓	✓				
4.9	**Server Security -** These technical requirements apply to security measures which are intended to protect SOM/DTMB hosted servers. Server security is continually being improved. Consult the agency's MCS Liaison and the DIT-0170 for any changes/additions.						
4.9.1(H)	System Servers must adhere to SOM Policy 1350.20 regarding Access to Protected Data Resources: Policy 1350.20 Authorization Prerequisite for Access to Protected Data Resources http://www.michigan.gov/documents/dmb/1350.20_184600_7.pdf	✓	✓				
4.10	**Application Server** - These technical requirements apply to software and application servers. This includes any tools needed to support the software and application server(s). Development includes purchase of ready-to-install commercial products to those designed, coded and tested by Contractors and DTMB Agency Services staff.						
4.10.1(H)	System application server technology must be compatible with n-Tier architecture.	✓	✓				
4.10.2(H)	System application server must support one of the following Server Operating Systems (OS): • Microsoft Windows 2008 or 2012 (standard) • Unix Sun Solaris 10.x or higher (standard) • Linux Redhat Enterprise Server 5.x or 6.x (standard) • Linux Suse Enterprise 10.x (standard) • VMWare vSphere 4 (standard)	✓	✓				
4.10.3(H)	System application server software components must operate the same, without regard to the hosting platform or OS. They expose the same functionality and API's regardless of OS.	✓	✓				
4.10.4(H)	System application server software component updates must occur at the same time without regard to the hosting platform or OS, unless an exception is granted.	✓	✓				
4.10.5(H)	System application tier must be certified for use with VMWare x86 based virtualization platform.	✓	✓				
4.10.6	Systems running on the application server support horizontal scaling.	✓	✓				
4.10.7(H)	Systems running on the application server must support vertical scaling.	✓	✓				

Technical Req. No.	Technical Requirement	Yes	Off the Shelf	Configuration	Customization	No	Comments
4.10.8	System application tier is restricted to the following job scheduling agents: • Windows Scheduler • Oracle Scheduler • UNIX Cron http://www.michigan.gov/documents/dit/Service_Automation_446600_7.pdf	✓	✓				
4.10.9	System is capable of sharing the application server with multiple applications.	✓	✓				
4.10.10	System software running on the application tier is coded in the following DTMB supported language:ASP.Net 4.0 (standard)C# 4.0 (standard)Java 7.x (standard)JavaScript 1.x(standard)JDK 7.x (standard)	✓	✓				
4.10.11(H)	System end-user software applications, or components thereof, must **not** require privileged, super-user or administrator mode in order to function properly.	✓	✓				
4.11	**Database Server**- These technical requirements apply to database technologies and the tools needed to support databases.						
4.11.1 (H)	System database server must be compatible with the following **Server Operating Systems:** • Solaris 11 (Oracle) (refer to 4.10.2) (standard) • Windows Server 2012 (Oracle or SQL Server)	✓	✓				
4.11.2 (H)	Where applicable, System database tier must be certified for use with the VMWare x86 based virtualization platform	✓	✓				
4.11.3 (H)	System must use the following Database Management Systems (DBMS) and Version: • Oracle 11c or later Enterprise Edition (Standard) • MS SQL Server 2012	✓	✓				
4.11.4	System database server supports **horizontal** scaling by partitioning of tables and clustering of server instances.	✓	✓				
4.11.5	System database server supports replication and mirroring across multiple servers.	✓	✓				
4.11.6	System database software supports table and index partitioning.	✓	✓				
4.11.7	The database software supports parallel indexing operations.	✓	✓				
4.11.8 (H)	System database tier must support a shared connection with connection pooling.	✓	✓				
4.11.9 (H)	System database must be able to operate in an n-Tier server architecture.	✓	✓				
4.11.10 (H)	System database must support table and row level locking during read/write operations.	✓	✓				
4.11.11	System database server supports heterogeneous cross-DBMS and distributed transactions.	✓	✓				
4.11.12 (H)	System database must provide support for spatial data.	✓	✓				

Technical Req. No.	Technical Requirement	Yes	Off the Shelf	Configuration	Customization	No	Comments
4.11.13	System database provides support for XML data.	✓	✓				
4.11.14 (H)	System database server must support auditing and logging for DML events (insert, update, delete).	✓	✓				
4.11.15 (H)	System database server must support auditing and logging for DCL events (grant, revoke, deny).	✓	✓				
4.11.16 (H)	System database must not require users to have elevated database privileges/accounts for normal operation.	✓	✓				
4.11.17 (H)	System must not create database objects in the system and sysaux tablespaces (Oracle) or system database (SQL Server)	✓	✓				
4.11.18 (H)	System must provide a list if all database data types used (e.g. nchar, long, blob, etc.)	✓	✓				
4.11.19 (H)	System must provide a list of all database options required as listed in dba_registry (e.g. Multimedia, Partitioning, Spatial, Java) (Oracle)	✓	✓				
4.11.20 (H)	System must provide information on how database security is handled and if the name of database accounts and password are customizable.	✓	✓				
4.11.21 (H)	System must provide a Logical Data Model that will be reviewed for business accuracy and logical consistency by MDOT.	✓	✓				
4.12	**Web Server**- These technical requirements apply to software and web servers. This includes any tools needed to support the software and web server. Development includes purchase of ready to install commercial products to those designed, coded and tested by Contractors and DTMB Agency Services staff.						
4.12.1 (H)	System Web Server must be compatible with the following **Server Operating Systems:** • Windows Server 2012	✓	✓				
4.12.2 (H)	System Web Server components must operate the same without regard to the hosting platform or OS.	✓	✓				
4.12.3 (H)	System Web Server component updates must occur at the same time without regard to the hosting platform or OS.	✓	✓				
4.12.4 (H)	System web server for this application must be: • MS IIS 8.0, (standard) • Apache 2.2.x (standard) • IBM IHS 6.1, 7.0 (standard) 2 • Jboss 5.x (standard)	✓	✓				
4.12.5	System is capable of sharing a web server with multiple applications.	✓	✓				
4.12.6	System Web Server supports **horizontal** scaling.	✓	✓				
4.12.7	System Web Server supports **vertical** scaling.	✓	✓				
4.12.8 (H)	System application tier must be certified for use with the VMWare x86 based virtualization platform.	✓	✓				

Technical Req. No.	Technical Requirement	Yes	Off the Shelf	Configuration	Customization	No	Comments
4.12.9	System supports clustering and/or load balancing across several servers.	✓	✓				
4.12.10 (H)	System web server technology must be compatible with n-Tier architecture (client-server & web).	✓	✓				
4.13	**Solution Architecture** - These technical requirements are to assist in overall solution development.						
4.13.1	System Solution architecture is expandable and portable, with specific reference to the system capacity requirements presented in this Requirement Specifications.	✓	✓				
4.13.2 (H)	For State hosted systems, System Solution architecture must be fully self-contained and capable of being operated by State staff with no dependency on Contractor services for its routine operation.						N/A for MS2-Hosted Solution
4.13.3 (H)	System Solution architecture must be compatible with the State's technical architecture and is sized suitable for the system specified.	✓	✓				
4.13.4 (H)	System Solution architecture must be an open system, with no dependency on the use of specific models or models of equipment operating systems.	✓	✓				
4.13.5 (H)	System Solution architecture must have the ability to keep logs of each transaction which alters the database. Logs are date and time stamped to allow the system to reconstruct activity for any period.	✓	✓				
4.13.6 (H)	System Solution architecture must have an approved Enterprise Architecture (EA) Solution Assessment, prior to production.	✓	✓				
4.13.7	System Solution architecture follows the Service Oriented Architecture (SOA) design	✓	✓				
4.13.8 (H)	For State hosted systems, System must require a detailed network/server diagram must be provided illustrating the relative architecture of the proposed system. It includes: • Network security zones and firewalls • Server types and network components (e.g., switches) • Ports and protocols used to cross security zones • How users will access the system • Clustering of servers						N/A for MS2 Hosted Solution
4.13.9 (H)	For State hosted systems, System must utilize the features and capabilities of the SOM enterprise data storage services for the following data storage needs: • Storage Area Network (SAN) • Network Attached Storage (NAS) • Content Addressable Storage (CAS)						N/A for MS2 Hosted Solution
4.13.10 (H)	System must support installation and operation in one or more disparate hosting centers. Fail-over from one hosting center to another must be possible without exceeding parameters specified in the SLA.						N/A for MS2 Hosted Solution
4.13.11 (H)	System must require that An SLA be in effect for the solution/system specifying, at a minimum, the following: • Criticality Level (Critical, High, Medium) • Recovery Point Objective (time in hours) • Recovery Time Objective (time in hours)	✓	✓				
4.13.12 (H)	System must support distributed deployment of application components and database tier components (n-Tier architecture).	✓	✓				

Technical Req. No.	Technical Requirement	Yes	Off the Shelf	Configuration	Customization	No	Comments
4.13.13 (H)	System must provide a technology roadmap for the proposed system showing a five (5) year plan for new software version releases, support window, and sun setting.	✓	✓				
4.13.14 (H)	For State hosted systems, Systems operating on an application server must interoperate with CA Unicenter monitoring agents.						N/A for MS2 Hosted Solution
4.13.15 (H)	For State hosted systems, Systems operating on an application server must interoperate with Veritas Backup and Recovery agents.						N/A for MS2 Hosted Solution
4.13.16 (H)	System Product/software must adhere to federal (508) and state web, and ADA accessibility and compliance standards for web accessibility as mentioned in SOM Look and Feel Standards Guide: http://www.michigan.gov/emichigan/0,4575,7-112-10666---,00.html	✓			✓		Customizations will be made based on this requirement.
4.14	**Solution Integration** - These technical requirements describe how the system communicates with other computer systems.						
4.14.1 (H)	System integration must support the following method(s): • API • Web Services • • SOAP	✓	✓				
4.14.2	System integration supports the following method(s) to interface with industry standard databases such as but not limited to Oracle and MS databases: • Native Client API • DB Links and DB Objects • ODBC • JDBC	✓	✓				
4.14.3	System Application Programming Interface (API) for reporting and analysis is supplied and supported for the following technologies: • Java (standard) • .NET (standard)	✓	✓				
4.14.4 (H)	System must provide pre-defined connector(s) to the following industry standard data source(s): • Oracle • PeopleSoft • Microsoft • SAP	✓	✓				
4.14.5	System provides a method to import data from the following proprietary sources: • Fox Pro • MS Office 2003	✓	✓				

Technical Req. No.	Technical Requirement	Yes	Off the Shelf	Configuration	Customization	No	Comments
4.14.6 (H)	System must provide connectivity to the following relational database(s) must be provided and supported: • Oracle 11g Enterprise Edition (Standard)	✓	✓				
4.14.7	System able to import and export data to and from the following external source(s): • Fox Pro	✓	✓				
4.14.8	System provides the ability to export data in the following output formats: • XML • MS-Excel file formats • Text file /.CSV	✓	✓				
4.14.9	System provides the ability to make use of the External Agency FTP upload site.	✓	✓				
4.14.10	In a hybrid database environment, System has the ability to interface between databases.	✓	✓				
4.14.11 (H)	System must provide spatial data through ArcSDE.	✓	✓				
4.14.12 (H)	System must provide an ArcGIS for viewing, querying and editing of data.	✓			✓		The new system feature will be defined during the business process review. The development will be completed before the “go live” date.
4.14.13	System has capability to use the State base map (Michigan) and MDOT asset layers.	✓	✓				
4.14.14	System embedded application mapping has basic map navigation features including but not limited to: • Zoom • Pan • Aerial view • Scale • Overview Map • Legend	✓	✓				
4.14.15 (H)	System must include printing capability including but not limited to the information that is displayed in the current spatial view.	✓	✓				

Technical Req. No.	Technical Requirement	Yes	Off the Shelf	Configuration	Customization	No	Comments
4.15	**System Administration and Licensing** - These technical requirements specify that the system is supportable by SOM and is compliant with Contractor licensing requirements.						
4.15.1 (H)	Contractor Software licensing must be inclusive for all packages included in the solution, unless explicitly listed and detailed.	✓	✓				
4.15.2 (H)	Contractor documentation must provide access to FAQ and/or Support Information for frequent issues administrative staff may encounter.	✓	✓				
4.15.3 (H)	Contractor documentation must indicate recommended staffing requirements to administer and support the system.	✓	✓				
4.15.4 (H)	Contractor documentation must provide backup/recovery information using the SOM Veritas solution, including information on hot/online backups.	✓			✓		MS2 TDMS API document will be updated for this specific setup
4.15.5 (H)	A system maintenance window must be designed into the application which will allow the system to be taken off-line for updates, upgrades and maintenance.	✓	✓				
4.15.6 (H)	Contractor documentation describing how to take the system off-line for maintenance, updates and upgrades must be provided.	✓	✓				
4.15.7	Contractor documentation describes the level of effort and anticipated downtime for product upgrade installation.	✓	✓				
4.15.8 (H)	Contractor documentation must provide the anticipated frequency and requirements of patches (releases, break-fix, 0-day), minor, and major releases.	✓	✓				
4.15.9 (H)	Contractor documentation must provide information on certification/compatibility with OS patches, Service Pack, and upgrade paths.	✓	✓				
4.15.10 (H)	Contractor documentation must address upgrade paths and procedures for each component/tier.	✓	✓				
4.15.11 (H)	System documentation must clearly describe any special requirements (such as middleware, Operating System (OS), hardware, etc.) that could affect the capabilities or performance of the system.	✓	✓				
4.15.12 (H)	System documentation must clearly describe all critical factors in sizing or configuring the application (e.g., number of concurrent users, specific transaction volumes, number of products, number of layers in the product hierarchy, etc.).	✓	✓				
4.15.13 (H)	System software license must be for perpetual use for a fixed fee without additional royalties or service fees, except for ongoing software maintenance.	✓	✓				
4.15.14 (H)	System software license must be able to handle as many concurrent or named users as needed.	✓	✓				
4.16	**System Performance -** These technical requirements are intended to ensure that applications and systems perform in a manner which guarantees a good user experience, carries the workload and performs as designed.						

Technical Req. No.	Technical Requirement	Yes	Off the Shelf	Configuration	Customization	No	Comments
4.16.1	System provides performance-optimization capabilities.	✓	✓				
4.16.2	System has the capability to handle large-volume batch processing via multi-threading.	✓	✓				
4.16.3	System maintains optimum performance over both Wide Area Network (WAN) and Local Area Network (LAN).	✓	✓				
4.16.4	System maintains optimum performance over Local Area Network (LAN).	✓	✓				
4.16.5	System documentation clearly describes all versions of the package that are deployed for different scaling situations.	✓	✓				
4.16.6 (H)	System documentation must clearly describe what performance support will be provided to the State for performance optimization activities.	✓	✓				
4.16.7 (H)	System must provide support for the following third-party products, within the product stack: • Centurion Gold (CCS Communication Software)	✓	✓				
4.16.8 (H)	System documentation must clearly describe all activities that affect optimum performance such as service recycling, rebooting, or batch jobs and their frequency.	✓	✓				
4.16.9	System supports as many concurrent users needed in order to provide sufficient capacity for growth.	✓	✓				
4.17	**Application Configuration Management (PCI-DSS) -** These technical requirements apply to software and hardware installation procedures and methods on servers which will host credit card transactions.						
4.17.1 (H)	System must require that all known security vulnerabilities be addressed in accordance with industry-accepted system hardening standards. Industry-accepted standards include: • SysAdmin Audit Network Security (SANS) • National Institute of Standards Technology (NIST) • Center for Internet Security (CIS)	✓	✓				
4.17.2 (H)	System must require that only one primary function can be implemented per server (i.e. web, database, domain, etc.).	✓	✓				
4.17.3 (H)	System must require that all unnecessary and unsecure services and protocols (those not directly needed to perform the device's specified function) are disabled.	✓	✓				
4.17.4 (H)	System security parameters must be configured to prevent misuse.	✓	✓				
4.17.5 (H)	System must require that all unnecessary functionality is removed, such as: • Scripts • Drivers • Features • Subsystems • File Systems • Unnecessary Web Servers	✓	✓				
4.18	**Application Development Management – (PCI-DSS)** - These technical requirements apply to software design, coding and installation procedures and methods on servers which will host credit card transactions.						
4.18.1 (H)	System must be developed in accordance with PCI DSS (for example, secure authentication and logging) and based on industry best practices. Information security must be incorporated throughout the Systems Development Life Cycle (SDLC).	✓	✓				

Technical Req. No.	Technical Requirement	Yes	Off the Shelf	Configuration	Customization	No	Comments
4.18.2 (H)	System must require that all security patches and system and software configuration changes must be tested before deployment, including but not limited to: • All input must be validated to prevent such things as cross-site scripting, injection flaws and malicious file execution. • Proper error handling must be incorporated into the software. • Data at rest must use secure cryptographic storage. • Data in motion must use secure communications. • Role-based access control (RBAC) must be used to control and audit user actions.	✓	✓				
4.18.3 (H)	System must require that there will be separate development, test and production environments.	✓	✓				
4.18.4 (H)	System must require that there must be separation of duties between development, test and production environments	✓	✓				
4.18.5 (H)	System must perform data validation prior to testing.	✓	✓				
4.18.6 (H)	Contractor must demonstrate that Software works in test environment before turning over to MDOT for testing.	✓	✓				
4.18.7 (H)	System must require that the Personally Identifiable Information (PI/PII) Production data are not used for testing or development purposes.	✓	✓				
4.18.8 (H)	System must require that the all test data and accounts must be removed before production systems become active.	✓	✓				
4.18.9 (H)	System must require that the all custom and developer accounts, user IDs, and passwords must be removed before applications become active or are released to agencies.	✓	✓				
4.18.10 (H)	System must require that a code review must be performed of custom code prior to release to production or agencies, in order to identify any potential coding vulnerabilities.	✓	✓				
4.18.11 (H)	System must require that the all web applications (internal, external, and web administrative access to applications) must be developed based on secure coding guidelines such as the Open Web Application Security Project Guide. http://www.owasp.org	✓	✓				
4.18.12 (H)	System must require that the prevention of common coding vulnerabilities must be covered in software development processes, including: • Cross-side scripting (XSS). • Injection flaws, particularly SQL injection. Also consider LDAP and Xpath injection flaws. • Malicious file execution. • Unsecure direct object references. • Cross-site request forgery (CSRF). • Information leakage and improper error handling. • Broken authentication and session management • Unsecure cryptographic storage. • Unsecure communications. • Failure to restrict URL access.	✓	✓				

Technical Req. No.	Technical Requirement	Yes	Off the Shelf	Configuration	Customization	No	Comments
4.18.13 (H)	System must allow for execution of vulnerability scanning tools and any found vulnerabilities must be remediated.	✓	✓				
4.19	**Application Password Management – (PCI-DSS) -** The following technical requirements apply to password management procedures and methods for applications and servers which will host credit card transactions.						
4.19.1 (H)	System must require that the only approved personnel may add, delete, or modify user IDs, credentials, and other identifier objects on production systems containing PCI data.	✓	✓				
4.19.2 (H)	System requires that a user's identity must be verified before performing a password reset.	✓	✓				
4.19.3 (H)	System must comply with rules defined in the SOM Password Management document referred to below: Policy 1335 Information Technology Access Control http://www.michigan.gov/documents/dmb/1335_193161_7.pdf	✓	✓				
4.20	**Additional Software Requirements**						
4.20.1 (H)	System must require that the software must have maintenance and support available from the developer, Contractor or an approved 3rd party.	✓	✓				
4.20.2 (H)	System must require that the software providers must make available for inspection the End User License Agreement (EULA) prior to purchase or contract signing.	✓	✓				
4.20.3 (H)	System must require that the End User License Agreements (EULA) must be approved by DTMB Purchasing or DTMB Enterprise Project Management Office prior to purchase or contract signing.	✓	✓				
4.21	**Information Technology Network and Enterprise Architecture** - These technical requirements apply to all aspects of wired and wireless components associated with the State's data, voice and video communication network.						
4.21.1 (H)	System must contain values for projected capacity and special needs requirements covering all aspects of data transport & security across the information technology network and infrastructure.	✓	✓				
4.21.2 (H)	System must address projected capacity requirements for all aspects of the information technology network and infrastructure.	✓	✓				
4.21.3 (H)	System must be subject to an Enterprise Architecture Review. http://www.michigan.gov/documents/dit/2007_EA_Strategic_Approach_206296_7.pdf?20140418162510	✓	✓				
4.22	**System Auditing**						
4.22.1 (H)	System must have the ability to maintain a historical record of all changes made to any item within the system (e.g., data element, business rule, process control, software program), the ID of the person or process that made the change, the before images of the affected data records, and the date and time the change was made.	✓	✓				
4.22.2 (H)	System must ensure that all system events for software, hardware, interfaces, operating system, network, etc. are written to a system event log in a manner that facilitates debugging of all system problems.	✓	✓				
4.22.3 (H)	System must have the ability to query, view, filter, and sort the system audit trail. The system is able to store the queries.	✓	✓				

Technical Req. No.	Technical Requirement	Yes	Off the Shelf	Configuration	Customization	No	Comments
4.22.4 (H)	System must have the ability to identify and track data back to its input source (e.g., imaged document, keyed from form, interface file, etc.).	✓	✓				
4.22.5 (H)	System must have the ability to audit all override of edits and audits and identify the login ID, date, and time.	✓	✓				
4.22.6 (H)	System must enable the user to modify data entry transactions that have already been posted to the database while maintaining an audit trail of the change.	✓	✓				
4.22.7 (H)	System internal control functionality must ensure that the data entry and processing associated with a business event has been completed before updating the database.	✓	✓				
4.22.8 (H)	System Audit Logs must be able to be exported.	✓			✓		The new system feature will be defined during the business process review. The development will be completed before the "go live" date.
4.23	**Error Handling**						
4.23.1 (H)	System must ensure that all errors are written to an error log.	✓	✓				
4.23.2 (H)	System must allow administrator to view, filter, sort, and search the error log.	✓	✓				
4.23.3 (H)	System must allow administrator to archive error log entries based upon user-defined criteria.	✓	✓				
4.23.4 (H)	System must provide the obfuscation of error details displayed to users (provide user friendly message for referral purposes).	✓	✓				
4.24	**Backup and Recovery**						
4.24.1 (H)	System must require that whoever hosts the database is responsible for the backup and recovery.	✓	✓				
4.24.2 (H)	System must require that the developer of source code will be responsible for the backup and recovery of source code.	✓	✓				

Technical Req. No.	Technical Requirement	Yes	Off the Shelf	Configuration	Customization	No	Comments
4.24.3 (H)	System must require that the all versions of source code must be placed in escrow.					✓	Since software escrow is a complex issue, MS2 will work with the SOM for a feasible solution.
4.25	**Software Package Specifications**						
4.25.1	System Software hosted in SOM environment.					✓	MS2 TDMS is hosted on Amazon
4.25.2 (H)	System must operate in a recognized industry standard operating environment.	✓	✓				
4.25.3 (H)	System must allow the State and consultants, from computing devices to access and update all necessary information to complete a transaction.	✓	✓				
4.25.4 (H)	The software must allow for the accurate and timely input and extraction of State data.	✓	✓				
4.25.5 (H)	System software provides a Graphical User Interface (GUI) that is user-friendly and provides data, calculation, reporting, and communication capabilities to State users.	✓	✓				
4.25.6 (H)	System is modular in design to accommodate phased implementation and future expansion.	✓	✓				
4.25.7 (H)	System modularity must allow the capabilities of the core systems to function without the entire system complement.	✓	✓				
4.25.8 (H)	System additional modules must be integrated into the system without a major impact to the installed components.	✓	✓				
4.25.9 (H)	System modules must be integrated and designed to work together using a single input and a common database with no redundant data entry or data storage.	✓	✓				
4.26	**Edit and Validation Control**						
4.26.1 (H)	System must include comprehensive field edits to prevent incomplete or incorrect data from entering the system.	✓	✓				
4.26.2 (H)	System must ensure data integrity and controls processing without hard-coded values	✓	✓				
4.27	**Additional Requirements**						
4.27.1 (H)	At a minimum, System must be available from 6:00 AM to 6:00 PM EST, Monday through Friday.	✓	✓				
4.28	**Physical Security -** For any activities not performed on State sites or facilities, at a minimum, the Contractor will (Items 4.28.1 thru 4.28.5):						

Technical Req. No.	Technical Requirement	Yes	Off the Shelf	Configuration	Customization	No	Comments
4.28.1	Provide effective physical security measures for all proposed equipment sites, all processing and operations areas (including the mailroom), and secured storage areas through a card key or other comparable solution.	✓	✓				
4.28.2	Restrict perimeter access to equipment sites, State-specified processing and storage areas, and storage areas through a card key or other comparable solution.	✓	✓				
4.28.3	Provide accountability control to record access attempts, including attempts of unauthorized access.	✓	✓				
4.28.4	Physical security includes additional features designed to safeguard site(s) through required provision of fire retardant capabilities, as well as other electrical alarms, monitored by security personnel on a twenty-four (24) hours a day, seven (7) days a week basis.	✓	✓				
4.28.5	Maintain a current annual security rating as audited by an independent third party auditing firm that certifies that they meet federal and State guidelines for the handling of confidential data.	✓	✓				

Appendix C – Cost Tables & Project Schedule

Table 1: Cost Summary

Products/Services	Cost
Software License	$307,500
Implementation	$277,448
Training	$40,334
Documentation	$19,960
Annual Maintenance and Support	$435,400
TOTAL	**$1,080,642**

Table 2: Cost Detail by Milestone

MILESTONE	DELIVERABLE	COST	20% HOLDBACK	COST LESS HOLDBACK
Project Initiation and Management	MS2 TDMS Enterprise Software License	307,500	0	307,500
	Project Initiation Meeting	5,460	1,092	4,368
	Final Project Plan	15,784	3,157	12,627
Requirements Validation and Configuration Planning	Software Orientation Workshop	5,460	1,092	4,368
	Software Configuration Plan	19,512	3,902	15,610
	Screen Configuration Plan	13,664	2,733	10,931
Data Conversion Planning and Configuration	Software Configuration	9,096	1,819	7,277
	Data Conversion Plan	0	0	0
Customization, Data Conversion and Testing	Software Customization*	105,720	21,144	84,576
	Data Conversion / Migration	62,040	12,408	49,632
	System Testing	19,256	3,851	15,405
	UAT Testing	10,728	2,146	8,582
	Production Go-Live	10,728	2,146	8,582
Training Services	2-day Train-the-Trainer session	7,440	1,488	5,952
	2-day Technical training session	7,440	1,488	5,952
	1-day System administration training session	4,414	883	3,531
	2-day End User training session	7,440	1,488	5,952
	Unlimited Online access to training	2,776	555	2,221
	Training Documentation	10,824	2,165	8,659
Additional Documentation	User manuals	9,980	1,996	7,984
	Technical manuals	9,980	1,996	7,984
Annual Software Support and Maintenance	Year 1	82,000	0	82,000
	Year 2	84,500	0	84,500
	Year 3	87,000	0	87,000
	Year 4	89,600	0	89,600
	Year 5	92,300	0	92,300
TOTAL		**$1,080,642**	**$67,549**	**$1,013,093**

*See Table 4 for itemized customizations

Table 3: Project and Payment Schedule

Action	Duration	Start	Finish	Payment
Software Activation	0 days	Tues 4/5/2016	Tues 4/5/2016	
Payment: 50% Software enterprise license fee	0 days	Tues 4/5/2016	Tues 4/5/2016	$153,750
Final Project Plan Development	15 days	Tues 4/5/2016	Mon 4/25/16	
Payment : Final Project Plan	0 days	Mon 4/25/16	Mon 4/25/16	$12,627
Project Initiation Meeting	5 days	Wed 4/6/16	Tue 4/12/16	
Payment: Project Initiation Meeting	0 days	Tue 4/12/16	Tue 4/12/16	$4,368
Software Orientation Workshop	5 days	Tue 4/26/16	Mon 5/2/16	
Software Configuration Plan	15 days	Tue 4/26/16	Mon 5/16/16	
Screen Configuration Plan	10 days	Tue 5/3/16	Mon 5/16/16	
Payment: Orientation Workshop, SW Configuration Plan, Screen Configuration Plan	0 days	Mon 5/16/16	Mon 5/16/16	$30,909
Configure Software and Develop Data Conversion Plan	5 days	Tue 5/17/16	Mon 5/23/16	
Payment: Software Configuration and 50% Software enterprise license fee	0 days	Mon 5/23/16	Mon 5/23/16	$161,027
Customization per Final Plan	132 days	Tue 5/17/16	Wed 11/16/16	
Ref 3.3 Customization	3 days	Tue 5/17/16	Thu 5/19/16	
Ref 3.6 Customization	11.2 days	Fri 5/20/16	Mon 6/6/16	
Ref 3.7 Customization	13.7 days	Mon 6/6/16	Thu 6/23/16	
Ref 3.8 Customization	12.2 days	Thu 6/23/16	Tue 7/12/16	
Ref 3.9 Customization	10.6 days	Tue 7/12/16	Tue 7/26/16	
Ref 3.11 Customization	4.1 days	Tue 7/26/16	Mon 8/1/16	
Ref 3.12 Customization	6.1 days	Mon 8/1/16	Tue 8/9/16	
Ref 3.13 Customization	6.1 days	Tue 8/9/16	Wed 8/17/16	
Ref 3.15 Customization	2 days	Thu 8/18/16	Fri 8/19/16	
Ref 3.20 Customization	4.1 days	Mon 8/22/16	Fri 8/26/16	
Ref 3.21 Customization	2 days	Fri 8/26/16	Tue 8/30/16	
Ref 3.22 Customization	2 days	Tue 8/30/16	Thu 9/1/16	
Ref 3.24 Customization	12.2 days	Thu 9/1/16	Mon 9/19/16	
Ref 3.27 Customization	13.2 days	Mon 9/19/16	Thu 10/6/16	
Ref 4.4 Customization	5.1 days	Thu 10/6/16	Thu 10/13/16	
Ref 4.5 Customization	2 days	Thu 10/13/16	Mon 10/17/16	
Ref 4.6 Customization	6.6 days	Mon 10/17/16	Wed 10/26/16	
Ref 4.7 Customization	7.1 days	Wed 10/26/16	Fri 11/4/16	
Ref 4.13 Customization	2 days	Fri 11/4/16	Tue 11/8/16	
Ref 4.14 Customization	2 days	Tue 11/8/16	Thu 11/10/16	
Ref 4.15 Customization	2 days	Thu 11/10/16	Mon 11/14/16	
Ref 4.22 Customization	2 days	Mon 11/14/16	Wed 11/16/16	
Payment: Customizations	0 days	Wed 11/16/16	Wed 11/16/16	$84,576
Legacy Data Conversion/Migration	60 days	Tue 4/26/16	Mon 7/18/16	
System Testing	147 days	Tue 4/26/16	Wed 11/16/16	
UAT Testing	132 days	Tue 5/17/16	Wed 11/16/16	
Production Go-Live	20 days	Thu 11/17/16	Wed 12/14/16	
Catch-Up Data Migration	60 days	Thu 11/17/16	Wed 2/8/17	
Payment: Data conversion/migration, Testing & Go-Live	0 days	Wed 12/14/16	Wed 12/14/16	$79,253
Train-the-Trainer Training	2 days	Fri 12/2/16	Mon 12/5/16	
Technical Training	2 days	Tue 12/6/16	Wed 12/7/16	
System Administration Training	1 day	Thu 12/1/16	Thu 12/1/16	
End User Training	2 days	Thu 12/8/16	Fri 12/9/16	
Online Access Training	174 days	Mon 12/12/16	Thu 8/10/17	
Training Documentation	15 days	Thu 11/17/16	Wed 12/7/16	
Payment: Training	0 days	Wed 12/7/16	Wed 12/7/16	$32,267
User Manuals	10 days	Thu 11/17/16	Wed 11/30/16	
Technical Manual	10 days	Thu 12/1/16	Wed 12/14/16	
Payment: Documentation	0 days	Wed 12/14/16	Wed 12/14/16	$15,968
Payment: Final Acceptance (amounts previously held back)	0 days	Thu 12/15/16	Thu 12/15/16	$70,497
Payment: Software Maintenance & Support - Year 1	0 days	Thu 12/15/16	Thu 12/15/16	$82,000
Payment: Software Maintenance & Support - Year 2	0 days	Fri 12/15/17	Fri 12/15/17	$84,500
Payment: Software Maintenance & Support - Year 3	0 days	Sat 12/15/18	Sat 12/15/18	$87,000
Payment: Software Maintenance & Support - Year 4	0 days	Sun 12/15/19	Sun 12/15/19	$89,600
Payment: Software Maintenance & Support - Year 5	0 days	Tue 12/15/20	Tue 12/15/20	$92,300
TOTAL				**$1,080,642**

Table 4: Itemized Customizations

Requirement	Cost
3.3.2	1206
3.3.3	1206
3.6	1206
3.6.1	1608
3.6.1.3	1206
3.6.2	1608
3.6.2.3	1206
3.7	2010
3.7.4	1206
3.7.5	3216
3.7.5.1	1608
3.7.5.2	1206
3.7.5.3	1206
3.7.5.4	1206
3.7.5.5	1206
3.8	1608
3.8.2	1608
3.8.3	1608
3.8.4	1608
3.8.5	1608
3.8.5.1	1608
3.9	2010
3.9.1	1608
3.9.2	1608
3.9.2.1	1608
3.9.4	1608
3.11.1.3	1608
3.11.3.1	1608
3.12	1608
3.12.1	1608
3.12.2	1608
3.13.1	1608
3.13.1.8	1608
3.13.3.1	1608
3.15.3	1608
3.20.6	1608
3.20.6.11	1608
3.21.2	1608
3.22.3.3	1608
3.24	1608
3.24.1	1608
3.24.3	1608
3.24.4	1608
3.24.5	1608
3.24.6	1608
3.27.1.1	1608
3.27.1.2	1608
3.27.2.1	1608
3.27.3	1608
3.27.4	1608
3.27.9	1206
3.27.10	1206
4.4.3	2010
4.4.12	2010
4.5.7	1608
4.6.8	2010
4.6.10	3216
4.7.3	1608
4.7.7	2010
4.7.9	2010
4.13.16	3216
4.14.12	1608
4.15.4	1608
4.22.8	1608
TOTAL	**$105,720**

Table 5: Future Enhancements Rate Card

Staffing Category	Hourly Rate
Project Manager	$204
Business Analyst	$143
Software Developer	$143
Programmer	$108
Trainer	$143
Technical Writer	$108
Software Architect	$180