Request for Proposal
For

Permanent Dynamic Message Signs using Full Matrix and Full Color LED Technology
Issued by:

IOWA DEPARTMENT OF TRANSPORTATION
Purchasing Section
Proposal 15971
Response Due Date: June 2, 2016

Must be submitted no later than 1:00 PM Central Time
Responses received after this date will be rejected

For information about this notice, and during this procurement, interested persons shall contact only:

Zach Gillen, Purchasing Agent
800 Lincoln Way
Ames, Iowa 50010
Phone: 515-239-1347
Fax: 515-239-1538
E-Mail: zachary.gillen@dot.iowa.gov

Issued addenda will be posted to internet website:

http://www.iowadot.gov/purchasing

Procurement Timetable

The following dates are set forth for informational and planning purposes. However, the Department reserves the right to change the dates. All times listed are Central Time.

Event/Dates	Section Reference	Date/Time
Issue RFP	**cover**	**May 2, 2016**
Number of returned Responses Required **1-original Technical and 1-Cost Proposal (1-removable media for each original Technical and Cost Proposal)** **6-Hard Copies of Technical Response and 1-Public Copy of Technical Response.**	**4.1.3**	
Responder's Conference ☐ ***Box will be checked when attendance is mandatory***	**2.32**	**N/A**
DOT Response from Contractor's Conference Questions	**2.32**	**N/A**
Responder Questions, Requests for Clarification, & Changes ***(no later than)***	**2.2/2.5**	**May 12, 2016**
DOT Response to Questions Issued ***(no later than)***	**2.2/2.5**	**May 19, 2016**
Response Due Date	**2.8/2.9**	**June 2, 2016**
Presentations & Demonstrations **"Short list"** (***by invitation only***)	**2.24/ 5.3**	**June 20, 2016 – June 23, 2016**
Announce Successful Responder **Intent to Award*** ***see note below***	**2.24**	**June 27, 2016**
Completion of Contract Negotiations & Execution of the Contract	**2.25**	**July 6, 2016**
Contract Begins	**Response 6.2**	**July 13, 2016**
Contract Length **Start Date --- End Date --- Renewals**	**6.2**	**Start: July 13, 2016** **End: July 12, 2018** **Renewals: 4 – 12 month**

***Intent to Award** MATCH SECTION 4.2.13
It is intended that Responses will be evaluated and a notice of intent to award will be issued within thirty (30) days of the Response due date. Response prices, terms and conditions must be held firm for a 180-day period from the date of the notice of intent to award the contract.

Responder's Conference Details – N/A

Solicitation Response

	Response Due Date	Time	Location
	June 2, 2016	1:00 P.M.	800 Lincoln Way, Ames, IA

Proposal Number	Description
15971	Permanent Dynamic Message Signs using Full Matrix and Full Color LED Technology

Contract Begin Date	Contract Completion Date	Bid Bond	Performance Bond (Y/N)	Liquidated Damages
July 13, 2016	July 12, 2018	N/A	N/A	N/A

Purchasing Agent assigned	E-mail Address	Phone	Fax
Zach Gillen	zachary.gillen@dot.iowa.gov	515-239-1347	515-239-1538

RESPONDER INFORMATION

Company Name			Federal Tax ID
Street Address	City	State	Zip Code

Contact Name	E-mail Address	Phone	Fax

Responder agrees to sell goods/services or both at the same prices, terms and conditions to any other Iowa state agency, Regent or Political Subdivision upon request. Please check Yes or No.

☐ Yes ☐ No

Responder is an Iowa Targeted Small Business

☐ Yes ☐ No

GENERAL INFORMATION

This solicitation includes the Solicitation Response cover page, Schedule of Prices, Standard Terms and Conditions, Supplemental terms (if any), Specifications, Plans and Drawings, mailing label and all other information needed to prepare and submit a response to the solicitation. Information in the "Solicitation Response" above must be typed or completed in ink, signed, and returned in a flat style envelope along with any other information required in the solicitation prior to the response due date and time. Please use the furnished mailing label, or label the response as "Iowa Department of Transportation, proposal number and response due date on the outside of the return envelope. Responders may personally deliver, mail, or select a carrier that ensures timely delivery. **Faxed or e-mail responses will not be accepted.**

If required, each response must be accompanied by a bid bond in an accepted form, in the percent amount indicated above. Refer to the Standard Terms and Conditions for the accepted forms in which the bid bond requirement may be fulfilled. **Responses without a required bid bond will not be considered for award.** If the intended awarded responder fails to enter into a formal contract within fifteen (15) days after award is made for any reason on their part, the bid bond may be retained by the State.

The entire contents of this solicitation, Addendums, Schedule of Prices, Specifications, Plans and Drawings, Supplemental Terms and Conditions, Standard Terms and Conditions, shall become part of the contract.

We certify that we have not, either directly or indirectly, entered into any agreement or participated in any collusion or otherwise taken any action in restraint of free competition; that no attempt has been made to induce any other person or firm to submit or not to submit a response; that this response has been independently arrived at without collusion with any other responder, competitor, or potential competitor; and that this response has not been knowingly disclosed prior to the opening of responses to any other responder or competitor.

We certify that all materials, equipment goods and/or services proposed meet or exceed the specifications and will be supplied in accordance with the entire contents of this solicitation including delivery schedules. We promise to complete the contract within the contract period, or pay any liquidated damages, if stipulated, for each calendar day as set forth in the solicitation documents.

Signed _____ Date _____

Iowa Department of Transportation
Schedule of Prices
Request for Proposal 15971

Item No.	Description	Unit	Quantity	Unit Price	Extended Price
1	Overhead DMS (112 x 432 pixels), Furnish	EACH	7		
2	Overhead DMS (112 x 624 pixels), Furnish	EACH	2		
3	Arterial/Side-mount DMS (96 x 208 pixels), Furnish	EACH	3		

Grand Total _____

Optional Items (Pricing Required)					
Item No.	**Description**	**Unit**	**Quantity**	**Unit Price**	**Extended Price**
4	Overhead DMS (96 x 432 pixels), Furnish	EACH			
5	Overhead DMS (96 x 624 pixels), Furnish	EACH			

Items 1-3 will be considered for award.
Unit pricing for items 4 and 5 shall also be submitted.

I HEREBY CERTIFY THAT THIS RESPONSE MEETS OR EXCEEDS THE MINIMUM REQUIREMENT of the solicitation INCLUDING SPECIFICATIONS AND ADDENDUMS.

(Please Print)
COMPANY NAME: _____ PHONE: _____ FAX: _____

ADDRESS: _____ CITY: _____ STATE: _____ ZIP: _____

CONTACT PERSON: _____ E-MAIL: _____

SIGNATURE: _____ FED TAX ID: _____

AVAILABILITY AFTER RECEIPT OF P.O. (IN DAYS): _____

I ACKNOWLEDGE RECEIPT OF ADDENDUM NUMBERS: _____

Iowa Department of Transportation
Standard Terms and Conditions
For
Submission of Quotations, Bids or Proposals
-FORMAL-

Formal is the procurement process required by Iowa law when the estimated, aggregate amount of the purchase equals or exceeds $50,000.

The entire contents of this solicitation shall become a part of a contract or purchase order. In case of a discrepancy between the contents of the solicitation documents, the following items listed by descending order shall prevail:

- Addendums to the solicitation
- Solicitation
  - Schedule of Prices
  - Specifications
  - Plans and Drawings
- Supplemental Terms and Conditions
- Standard Terms and Conditions

(Example - if a statement in the specifications contradicts a statement in the Standard Terms and Conditions, the statement in the specifications shall apply)

Preparation of Solicitation or Bid Response: All responses must clearly address all aspects of the solicitation. Responses must be typed or completed in ink and submitted on the forms supplied by the Iowa DOT.

Responses must be signed and received prior to the opening date and time indicated on the Solicitation Response page or other specified areas throughout the solicitation document. The Responder's signed Response shall become the official Response to be considered for award.

No email, fax or web link bid Responses will be accepted. Responses must be signed, sealed and delivered in person or by a mail courier that ensures timely delivery.

A. Solicitation

1. **Opening:** The openings of responses are made public and conducted at the Iowa DOT, Ames complex unless otherwise specified. Responses received after the time of the opening will be returned unopened and considered non-compliant.
2. **Communications:** Questions concerning this solicitation should be directed to the purchasing agent listed on the Solicitation Response page. Inquiries can be written, phoned, or faxed. In all cases, written communication will take precedence over verbal communication.
3. **Bid Bond:** If required, the Solicitation Response page will indicate the fixed percent of the bid security based on the amount of the Bidder's bid. A Bid Bond can be supplied in one of the following ways: **(1)** Certified check or credit union certified share draft, cashier's check, or bank draft, drawn on a solvent bank or credit union. Certified checks and certified share drafts shall be drawn and endorsed in the amount indicated. Checks or drafts shall be made payable either to the Iowa Department of Transportation (Iowa DOT) or to the bidder. If payable to the bidder, the check or draft shall be endorsed without qualifications to the Iowa DOT by the bidder or an authorized agent. **(2)** An insurance or surety company may be retained to provide a bond in fulfillment of the Bid Bond requirement. A properly completed and signed copy of the Bid Bond *(Form 131084)* must accompany the bid. **The Iowa DOT's Bid Bond form must be used; no other forms or formats will be accepted.**

4. **Pricing and Discount:** Unit prices shown in the response shall be quoted as the price per unit (e.g., gal., case, each, etc.) as requested in the solicitation. If there is a discrepancy between the unit bid prices, extended price, or total amount of response, the unit prices shall prevail. Unless otherwise indicated, prices shall be firm for the duration of the contract or purchase order. Discounts for early payment are allowed, but not considered in award of the contract.
5. **Acceptance/Rejection:** The Iowa DOT reserves the right to accept or reject any or all responses and to waive irregularities or technicalities, provided such waiver does not substantially change the offer or provide a competitive advantage to any supplier(s) or provider. The Iowa DOT also reserves the right to accept that response which is deemed to be in the best interests of the state. Any unauthorized changes, additions, or conditional response including any ties to another response or any reservations about accepting an award or entering into a contract, may result in rejection of the response. Responses must remain available for award for thirty (30) days from opening date and time.
6. **Results & Disclosure:** Tabulation results will be posted on the Iowa DOT website at www.iowadot.gov/purchasing under the *Bid Award* link referencing the proposal number with an award recommendation indicated. At the conclusion of the selection process, the contents of all received responses will be placed in the public domain and be open to inspection by interested parties, according to state law. Trade secrets or proprietary information that are recognized as such and are protected by law may be withheld if clearly identified as such in the response.
7. **Quality of Goods:** All material shall be new and of first quality. Items which are used, demonstrators, refurbished, obsolete, seconds, or which have been discontinued are unacceptable without prior written approval by the Iowa DOT.
8. **Recycled Content:** The Iowa Code encourages purchase of products and materials with recycled content, including but not limited to paper products, oils, plastic products, compost materials, aggregate, solvents, and rubber products. Recycled items or alternatives must be noted in the Solicitation Response, if known.
9. **Shipping Terms:** Deliveries shall be F.O.B. Destination unless otherwise specified. All deliveries shall be accompanied by a packing slip indicating the Supplier, quantities shipped, and the purchase order number(s). All delivery charges shall be included in the response price and paid by the Supplier. No collect C.O.D. deliveries shall be accepted. When entering into a contract, the Supplier shall notify the freight company that all freight and delivery charges are to be prepaid by the Supplier. Goods delivered to the Iowa DOT Distribution Center at 800 Lincoln Way, Ames, IA shall be received between the hours of 7:00 a.m. and 3:00 p.m. on any day except Saturday, Sunday, or a holiday. For deliveries to other Iowa DOT locations, the Supplier may contact the destination location for available times to deliver as not all Iowa DOT locations have the same business hours. The Iowa DOT will not be liable for any freight claims or unpaid freight bills arising from contract or purchase order issues.

B. Award

The binding agreement (award) may be issued in the form a purchase order or contract or both depending on the requirements and complexity of the agreement.

1. **Method of Award:** Award shall be made to the responsible, responsive Responder whose Quotation, Bid or Proposal meets the requirements of the solicitation and is the most advantageous to the Iowa DOT. An Iowa company or individual will be given preference over an out-of-state company or individual when responses are equal in all aspects and are tied in price. By virtue of statutory authority preference will be given to products and provisions grown and coal produced within the State of Iowa.
2. **Award Protests:** Protests of award recommendations are to be addressed to the Director of Purchasing, and shall be made in accordance with paragraph 761--20.4(6)"e" of the Iowa Administrative Code.
3. **Contracts:** Successful Contractor(s) may be sent either a formal Contract, Notification of Award or Purchase Order as confirmation of acceptance and award. Any of these binding agreements shall be for the term stated in the solicitation or on a purchase order and may be renewed for additional period(s) under the same terms and conditions upon mutual agreement as defined. The successful Contractor may not assign a contract to another party without written authorization from the Iowa DOT Purchasing Section. The Iowa DOT may offer a contract extension to the Contractor when a scheduled target date cannot be met.

4. **Consumer Price Index (CPI-U):** A CPI may be allowed as specified in the terms of the solicitation and at the discretion of the Iowa DOT based on currently posted CPI-U, US City Average, All Items – non seasonally adjusted unless otherwise specified. This applies each of any subsequent renewals, extensions, amendments issued under the contract for the duration of the contract.
5. **Payment Terms:** The Iowa DOT typically pays properly submitted invoices within thirty (30) days of receipt, providing goods and/or services have been successfully delivered, installed or inspected (if required), and accepted. Invoices presented for payment must be only for quantities received by the Iowa DOT and must reference the purchase order number or contract number to be submitted for processing.
6. **Default (Supplier):** Failure of the Supplier to adhere to specified delivery schedules or to promptly replace rejected materials shall render the Supplier liable for all costs in excess of the bid price when alternate procurement is necessary. This shall not be the exclusive remedy and the Iowa DOT reserves the right to pursue other remedies available to it by law or under the terms of the binding agreement.
7. **Default (Contractor):** Failure of a Contractor other than a Supplier to meet any specified project completion deadline shall render the Contractor liable for all costs incurred by the Iowa DOT that were: a) necessary to meet said deadline; or b) necessary to complete said project after said deadline. This shall not be the exclusive remedy and the Iowa DOT reserves the right to pursue other remedies available to it by law or under the terms of the agreement.

C. General

1. **Administrative Rules:** For additional details on the rules governing the actions of the Iowa DOT Purchasing Section, refer to 761 IAC, Chapter 20, Iowa Administrative Code, entitled "Procurement of Equipment, Materials, Supplies and Services".
2. **Affirmative Action:** The Contractor (and also subcontractor, vendor, service provider or supplier) is prohibited from engaging in discriminatory employment practices forbidden by federal and state law, executive orders and rules of the Iowa Department of Management, pertaining to equal employment opportunity and affirmative action. Contractor may be required to have on file a copy of their affirmative action program, containing goal and time specifications. Contractors doing business with Iowa in excess of $5,000 annually and employing 50 or more full time employees may be required to file with the Iowa Department of Management a copy of their affirmative action plan. Failure to fulfill these non-discrimination requirements may cause the contract to be canceled and the contractor declared ineligible for future state contracts or subject to other sanctions as provided by law or rule.
3. **Applicable Law:** The contract shall be governed under the laws of the State of Iowa. The contractor shall at all times comply with and observe all federal and state laws, local laws, ordinances, and regulations which are in effect during the period of a contract and which in any manner affect the work or its conduct. Any legal action relating to a contract shall only be commenced in the Story County, Iowa, District Court or the United States District Court for the Southern District of Iowa.
4. **Conflict of Interest:** No state or county official or employee, elective or appointive shall be directly or indirectly interested in any contract issued by the Iowa DOT, see Code of Iowa 314.2.
5. **Debarment and Vendor Suspension:** By submitting a response, the contractor is certifying that it and its principals and/or subcontractors are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by the State of Iowa or any Federal department or agency.
6. **Equal Opportunity:** Responders to the solicitation must be an "Equal Opportunity Employer" as defined in the Civil Rights Act of 1964 and in Iowa Executive Order Number Thirty-four.
7. **Indemnification-Goods:** To the extent the goods are not manufactured in accordance with Iowa DOT's designs, Supplier shall defend, indemnify and hold harmless Iowa DOT, its assignees, and other users of the goods from and against any claim of infringement of any letters patent, trade names, trademarks, copyright or trade secrets by reason of sale or use of any articles purchased. Iowa DOT shall promptly notify Supplier of any such claim.
8. **Infringement:** Goods shall be delivered free of the rightful claim of any third party by way of infringement. Contractor shall indemnify and save harmless the State of Iowa and the Iowa DOT against all claims for infringement of, and/or royalties claimed under, patents or copyrights on materials and equipment furnished under this bid.

9. **Iowa Open Records Law**: All Solicitation Responses are subject to terms and provisions of Iowa Code Chapter 22 Examination of Public Records (Open Records), specifically 22.7- Confidential Records.
10. **Records Audit:** The contractor agrees that the Auditor of the State of Iowa or any authorized representative of the state, and where federal funds are involved, the Comptroller General of the U.S. Government, shall have access to and the right to examine, audit, excerpt, and transcribe any directly pertinent books, documents, papers, and records of the contractor relating to orders, invoices, or payments of a contract or purchase order.
11. **Targeted Small Businesses:** The Iowa DOT seeks to provide opportunities for women and/or minority small business enterprises. To apply for certification as an Iowa Targeted Small Business, contact the Iowa Department of Inspection and Appeals (515-281-5796). Contractors shall take documented steps to encourage participation from Targeted Small Businesses for the purpose of subcontracting and supplying of goods or services or both.
12. **Taxes:** Prices quoted shall not include state or federal taxes from which the state is exempt. Exemption certificates will be furnished upon request.
13. **Termination:**
    - **Termination Due to Lack of Funds or Change in Law**

      The Iowa DOT shall have the right to terminate this Contract without penalty by giving thirty (30) days written notice to the vendor as a result of any of the following:

      • Adequate funds are not appropriated or granted to allow the Iowa DOT to operate as required and to fulfill its obligations under contract.

      • Funds are de-appropriated or not allocated or if funds needed by the Iowa DOT, at the Iowa DOT's sole discretion, are insufficient for any reason.

      • The Iowa DOT's authorization to operate is withdrawn or there is a material alteration in the programs administered by the Iowa DOT.

      • The Iowa DOT's duties are substantially modified.

      Following a 30 day written notice, the Iowa DOT may terminate a binding agreement in whole or in part without the payment of any penalty or incurring any further obligation to the Responder. Following termination upon notice, the Responder shall be entitled to compensation upon submission of invoices and proper proof of claim for goods and services under contract up to and including the date of termination.

TABLE OF CONTENTS

Section 1 Introduction

1.1 Purpose & Overview of the RFP Process

The purpose of this Request for Proposal (RFP) is to solicit responses from responsible Responders to provide the goods and/or services identified on the RFP cover sheet and described further in Section 3 of this RFP to the Iowa Department of Transportation (Iowa DOT). The Iowa DOT intends to award a contract(s) beginning and ending on the dates listed on the Procurement Timetable, and the Iowa DOT may extend the contract(s) for up to the number of annual renewals identified on the Procurement Timetable sheet at the sole discretion of the Iowa DOT. Any contract(s) resulting from the RFP shall not be an exclusive contract.

Responders may be required to submit their responses in hardcopy and (a form of removable media (such as a CD-ROM or flash drive) as indicated on the Procurement Timetable. It is the intention of the Iowa DOT to evaluate Responses from all responsible Responders that submit timely Responses and award the contract(s) in accordance with Section 5, Evaluation and Selection.

1.2 Project Background

Iowa DOT is seeking a qualified Supplier or Service Provider that demonstrates the capabilities, experience, and resources required to provide Permanent Dynamic Message Signs using Full Matrix and Full Color LED Technology.

1.3 Definitions

The terms used in individual sections of this document are intended to be consistent with those commonly used in the application field in question. When responding, use the terms and acronyms used in this document, and define any terms or conditions that require further clarification.

1.3.1 "Cost Proposal" means the cost of the project as requested on the Schedule of Prices and submitted with the Response under separate cover.

1.3.2 "Contract" or "Resulting Contract" means the contract(s) entered into with the successful Responder(s) as described in section 6.1.

1.3.3 "Responder" means individual;, company or entity submitting a response to this RFP.

1.3.4 "Iowa DOT" means the Iowa Department of Transportation identified on the RFP cover sheet as issuer of the RFP. The Iowa DOT will also execute the Resulting Contract.

1.3.5 "Participating Agency" or "Participating Agencies" means the Political Subdivision, either City, State, County, Boards or Commission, identified on the RFB cover sheet as Participating Agencies, and any other governmental agency that decides to utilize the executed contract.

1.3.6 "Procurement Timetable" *(on the page immediately following the RFP cover)* provide timeline, event and date information.

1.3.7 "Purchase Order" means the documentation issued by the State to the successful Responder(s) for a purchase of goods and/or services in accordance with the terms and conditions of the contract. It may include an identification of the items to be purchased, the delivery date and location, the address where the successful Responder will submit the invoices, and any other requirements deemed necessary by the State. Any preprinted contract terms and conditions included on Responder's forms or invoices shall be null and void.

1.3.8 "Responsible Responder" means a Responder that has the capability in all respects to perform the requirements of the RFP specifications. In determining whether a Responder is a responsible, responsive Responder, the Iowa DOT may consider various factors including, but not limited to, the Responder's competence and qualifications to provide the goods or services requested, the Responder's integrity and reliability, the past performance of the Responder relative to the quality of the goods or services offered by the Responder, the proposed terms of delivery, and the best interest of the Iowa DOT and Participating Agencies.

1.3.9 "Response" means a Responder's Response to the RFP that complies with the material provisions listed in the RFP documents.

1.3.10 "RFP" means this Request for Proposal and any attachments, exhibits, schedules or addenda hereto.

1.3.11 "State" means the Iowa DOT, State of Iowa, and Participating Agencies identified on the title page and all state agencies, boards, and commissions, and any political subdivisions making purchases off of the resulting contract as permitted by this RFP.

1.3.12 :Sub-contractor" means every person furnishing materials, equipment or performing labor as a sublet of any part of contract.

1.4 Acronyms the following list contains acronyms used in the RFP.

1.4.1 "DOT" means Department of Transportation

1.4.2 "FAT" means Factory Acceptance Tests

1.4.3 "DMS" means Dynamic Message Sign

1.4.4 "MUTCD" means Manual on Uniform Traffic Control Devices

1.4.5 "NEMA" means National Electrical Manufacturers Association

1.4.6 "NTCIP" means National Transportation Communications for ITS Protocol

1.4.7 "MIB" means Management Information Base

Section 2 Administrative Information

2.1 Issuing Agent

The Issuing Agent, identified on the cover page is the sole point of contact regarding the RFP from the date of issuance until the notice of intent to award is issued (selection of the successful Responder).

2.2 Restrictions on Communication

The Purchasing Agent will respond only to questions regarding the procurement process. Questions related to the interpretation of this RFP must be submitted in writing to the Purchasing Agent by the deadline found in the Procurement Timetable listed immediately after the cover sheet**.** Verbal questions related to the interpretation of this RFP will not be accepted. Questions related to the interpretation of this RFP must be submitted as provided in section 2.5. Responders may be disqualified if they contact any state employee other than the Purchasing Agent. Exception: Responders may access the State Targeted Small Business website for issues related to the preference for Targeted Small Businesses. https://dia.iowa.gov/tsb/

In NO CASE shall verbal communication override written communications. Only written communications are binding on the State.

The Iowa DOT assumes no responsibility for representations concerning conditions made by its officers or employees prior to the execution of a contract, unless such representations are specifically incorporated into this RFP. Verbal discussions pertaining to modifications or clarifications of this RFP shall not be considered part of the RFP unless confirmed in writing. All such requests for clarification shall be submitted in writing. Any information provided by a Responder verbally shall not be considered part of Responder's Response. Only written communications from the Responder as received by the Iowa DOT shall be accepted.

With the exception of the written Response which must be submitted by Responders in accordance with Sections 4 and 5 herein, communications between the Purchasing Agent and Responders may be conducted by regular prepaid US mail, courier service, e-mail or facsimile transmission.

2.3 Downloading the RFP from the Internet

All correspondence for this RFP will be posted on the Iowa DOT's website at: http://www.iowadot.gov/purchasing/lettingschedule.htm

Responders will be required to visit the Iowa DOT's website periodically for any and all addendums or other pertinent information.

2.4 Procurement Timetable

The dates listed in the Procurement Timetable (on the page immediately following the RFP cover) are set forth for informational and planning purposes; however, the Iowa DOT reserves the right to change the dates. If a change is made to any of the deadlines for Responder submission, the Iowa DOT will issue an addendum to the RFP. All times listed are Central time.

2.5 Questions, Requests for Clarification, and Suggested Changes

Responders are invited to submit written questions and requests for clarifications regarding the RFP. Responders may also submit suggestions for changes to the requirements of this RFP. The questions, requests for clarifications, or suggestions must be in writing and received by the Purchasing Agent on or before the deadline stated in the Procurement Timetable. **Oral** questions will not be permitted. If the questions, requests for clarifications, or suggestions pertain to a specific section of the RFP must be referenced.

Written responses to questions, requests for clarifications or suggestions will be posted to the Iowa DOT's website on or before the deadline stated in the Procurement Timetable. The Iowa DOT's written responses will be considered part of the RFP. If the Iowa DOT decides to adopt a suggestion, the Iowa DOT will issue an addendum to the RFP and post on the website under the proposal number.

The Iowa DOT assumes no responsibility for verbal representations made by its officers or employees unless such representations are confirmed in writing and incorporated into the RFP.

Each Responder must inform themselves fully of the conditions relating to the RFP. Failure to do so will not relieve a successful Responder of their obligation to furnish all services required to carry out the provisions of the RFP and final contract. Insofar, as possible, the successful Responder, carrying out the work, must employ such methods or means as will not cause any interruption of, or interference with the work of any other contractor holder.

If a Responder discovers any significant ambiguity, error, conflict, discrepancy, omission, or other deficiency in this RFP, the Responder should immediately notify Purchasing Agent in writing of such error and request modification or clarification of the RFP document.

2.6 Addendum to the RFP

The Iowa DOT reserves the right to revise the RFP at any time. The Responder shall acknowledge receipt of an addendum in its Response. If the addendum occurs prior to the closing date for receipt of Response, the Iowa DOT may, in its sole discretion, allow Responders to amend their Response to the addendum.

2.7 Revisions to a Response

Responders who submit Responses in advance of the deadline may withdraw, modify, or resubmit their Response at any time prior to the deadline. Responders must notify the Purchasing Agent in writing if they wish to withdraw their Response. A Responder must honor their prices prior to the end of the one hundred and eighty (180) day period immediately following the notice of intent to award a contract.

2.8 Submission of Responses

The Iowa DOT must receive the Response at the Department of Transportation, Purchasing Section, 800 Lincoln Way, Ames, Iowa 50010 before the deadline stated in the Procurement Timetable. This is a mandatory requirement and will not be waived by the Iowa DOT. Any Response received after this deadline will be rejected and returned unopened to the Responder.

Responders mailing Responses must allow ample mail delivery time to ensure timely receipt of Responses by the Iowa DOT. It is the Responder's responsibility to ensure that the Response is received prior to the deadline. Postmarking by the due date will not substitute for actual receipt of the Response. **Electronic mail and faxed Responses will not be accepted.**

Responders must furnish all information necessary to evaluate the Response. Responses that fail to meet the mandatory requirements of the RFP will be disqualified. Verbal information provided by the Responder shall not be considered part of the Responder's Response to the RFP.

2.9 Opening of Responses

The Iowa DOT will open Responses at the deadline stated in the Procurement Timetable. The Responses will remain confidential until the Evaluation Committee has reviewed and considered all successfully submitted Responses and the Iowa DOT has announced a notice of intent to award a contract. See Iowa Code Section 72.3.

The names of the Responders who responded within the time frame permitted will be supplied to any person who requests such information at the time of the opening date. The announcement of names of Responders who submitted a Response **does not** mean that an individual Response has been deemed technically compliant or that it has been accepted for evaluation.

2.10 Costs of Preparing a Response

The costs of preparation and delivery of the Response are solely the responsibility of the Responder.

No payments shall be made by the State to cover costs incurred by any Responder in the preparation of a Response in submission of this RFP or any other associated costs.

2.11 Reasonable Accommodations

The Iowa DOT will provide reasonable accommodations, including the provision of informational material in an alternative format, for qualified individuals with disabilities upon request. If accommodations are required at time of opening of Responses, contact the Purchasing Agent on the cover page.

2.12 Rejection of submitted Responses

The Iowa DOT reserves the right to reject any or all Responses, in whole and in part, received in response to this RFP at any time prior to the execution of a written contract. Issuance of this RFP in no way constitutes a commitment by the Iowa DOT to award a contract. This RFP is designed to provide Responders with the information necessary to prepare a competitive Response. This RFP process is for the Iowa DOT benefit and is intended to provide the Iowa DOT with competitive information to assist in the selection of a Responder to provide good and services or both as described herein.

It is not intended to be comprehensive and each Responder is responsible for determining all factors necessary for submission of a comprehensive Response.

The Iowa DOT reserves the right to negotiate the terms of the contract, including the award amount with the selected Responder prior to entering into a contract. If contract negotiations cannot be concluded successfully with the highest scoring Responder, the Iowa DOT may negotiate with the next highest scoring Responder.

2.13 Disqualification

The Iowa DOT may reject outright and shall not evaluate Responses for any one of the following reasons:

2.13.1 The Responder fails to deliver the cost proposal in a separate envelope.

2.13.2 The Responder states that a requirement of the RFP cannot be met.

2.13.3 The Responder's Response materially changes a requirement of the RFP or the Response is not compliant with the requirements of the RFP.

2.13.4 The Response limits the rights of the Iowa DOT.

2.13.5 The Responder fails to include information necessary to substantiate that it will be able to meet a service requirement. A response of "will comply" or merely repeating the requirement is not sufficient. Responses must indicate present capability; representations that future developments will satisfy the requirement are not sufficient.

2.13.6 The Responder fails to include a Bid Bond or Bid Security, *if required*. See Solicitation Response and Section 2.33.

2.13.7 The Responder fails to include any signature, certification, authorization, stipulation, disclosure or guarantee requested in Section 4 of this RFP.

2.13.8 The Responder presents the information requested by this RFP in a format inconsistent with the instructions of the RFP or otherwise fails to comply with the requirements of this RFP.

2.13.9 The Responder initiates unauthorized contact regarding the RFP with state employees.

2.13.10 The Responder provides misleading or inaccurate responses.

2.13.11 The Responder fails to attend the mandatory pre-RFP meeting or conference.

2.13.12 The Responder's Response is materially unbalanced.

2.13.13 There is insufficient evidence (including evidence submitted by the Responder and evidence obtained by the Iowa DOT from other sources) to satisfy the Iowa DOT that the Responder is a Responsible Responder.

2.13.14 The Contractor alters the language in:
Attachment 1, Certification Letter
Attachment 2, Authorization to Release Information letter.

2.14 Nonmaterial and Material Variances

The Iowa DOT reserves the right to waive or permit cure of nonmaterial variances in a Response if, in the judgment of the Iowa DOT, it is in the Iowa DOT best interest to do so. Nonmaterial variances include minor informalities that do not affect responsiveness; that are merely a matter of form or format; that do not change the relative standing or otherwise prejudice other Responders; that do not change the meaning or scope of the RFP; or that do not reflect a material change in the services. In the event the Iowa DOT waives or permits cure of nonmaterial variances, such waiver or cure will not modify the RFP requirements or excuse the Responder from full compliance with RFP specifications or other contract requirements upon award. The determination of materiality is in the sole discretion of the Iowa DOT.

2.15 Reference Checks

The Iowa DOT reserves the right to contact any reference provided by the Responder to assist in the evaluation of the Response, to verify information contained in the Response and to discuss the Responder's qualifications and the qualifications of any subcontractor identified in the Response.

2.16 Information From Other Sources

The Iowa DOT reserves the right to obtain and consider information from other sources concerning a Responder, such as the Responder's capability and performance under other Responders, the qualifications of any subcontractor identified in the Response, the contractor's financial stability, past or pending litigation, and publicly available information.

2.17 Verification of Response Contents

The content of a Response submitted by a Responder is subject to verification. Misleading or inaccurate responses shall result in disqualification and rejection.

2.18 Criminal History and Background Investigation

The Responder hereby explicitly authorizes the Iowa DOT to conduct criminal history and/or other background investigation(s) of the Responder, its officers, directors, shareholders, partners and managerial and supervisory personnel retained by the Responder for the performance of the contract.

2.19 Clarification Process

The Iowa DOT reserves the right to contact a Responder after the submission of Responses for the purpose of clarifying or ensure mutual understanding. This contact may include written questions, interviews, site visits, a review of past performance if the Responder has provided goods or services to the Iowa DOT or any other political subdivision wherever located, or requests for corrective pages in the contractor's Response. The Iowa DOT will not consider information received if the information materially alters the content of the RFP or alters the type of goods and services the Responder is offering to the Iowa DOT. An individual authorized to legally bind the Responder shall sign responses to any request for clarification. Responses shall be submitted to the Iowa DOT within the time specified in the Iowa DOT request. Failure to comply with requests for additional information may result in rejection of the Response as non-compliant.

2.20 Disposition of Responses

All Responders' Responses become the property of the Iowa DOT and shall not be returned to the Responder. At the conclusion of the selection process, the contents of all Responses will be in the public domain and be open to inspection by interested parties except for information for which contractor properly requests confidential treatment or is subject to exceptions provided in Iowa Code Chapter 22 or other applicable law. If RFP is cancelled Responses shall be destroyed.

2.21 Public Records and Requests for Confidential Treatment

The Iowa DOT may treat all information submitted by a Responder as public information following the conclusion of the selection process unless the Responder properly requests that information be treated as confidential at the time of submitting the Response. The Iowa DOT release of information is governed by Iowa Code chapter 22. Responders are encouraged to familiarize themselves with chapter 22 before submitting a Response. The Iowa DOT will copy and produce public records as required to comply with the public records laws.

Any request for confidential treatment of specific information must be included in the transmittal letter with the Responder's Response. In addition, the contractor must enumerate the specific grounds in Iowa Code Chapter 22 or other applicable law which support treatment of the material as confidential and explain why disclosure is not in the best interest of the public. **Pricing information cannot be considered confidential information.** The request for confidential treatment of information must also include the name, address, and telephone number of the person authorized by the Responder to respond to any inquiries by the Iowa DOT concerning the confidential status of the materials.

Any Response submitted which contains confidential information must be conspicuously marked on the outside as containing confidential information, and each page upon which confidential information appears must be conspicuously marked as containing confidential information. Failure to properly identify specific confidential information shall relieve the Iowa DOT or State personnel from any responsibility if confidential

information is viewed by the public, or a competitor, or is in any way accidentally released. Identification of the entire Response as confidential may be deemed non-responsive and disqualify the contractor.

If the contractor designates any portion of the RFP as confidential, **the contractor must submit one copy of the Response from which the confidential information has been excised. This excised copy is in addition to the number of copies requested in section 4 of this RFP.** The confidential material must be excised in such a way as to allow the public to determine the general nature of the material removed and to retain as much of the Response as possible.

The Iowa DOT will treat the information marked confidential as confidential information to the extent such information is determined confidential under Iowa Code Chapter 22 or other applicable law by a court of competent jurisdiction. In the event the Iowa DOT receives a request for information marked confidential, written notice shall be given to the Responder seven calendar days prior to the release of the information to allow the contractor to seek injunctive relief pursuant to Section 22.8 of the Iowa Code. The Iowa DOT will release the information marked confidential in response to a request for public record records unless a court of competent jurisdiction determines the information is confidential under Iowa Code Chapter 22 or other applicable law.

The Responder's failure to request confidential treatment of material will be deemed by the Iowa DOT as a waiver of any right to confidentiality, which the Responder may have had.

2.22 Copyrights

By submitting a Response, the contractor agrees that the Iowa DOT may copy the Response for purposes of facilitating the evaluation of the Response or to respond to requests for public records. The contractor consents to such copying by submitting a Response and warrants that such copying will not violate the rights of any third party. The Iowa DOT shall have the right to use ideas or adaptations of ideas that are presented in the Responses.

2.23 Release of Claims

By submitting a Response, the Responder agrees that it will not bring any claim or cause of action against the Iowa DOT based on any misunderstanding concerning the information provided herein or concerning the Iowa DOT failure, negligent or otherwise, to provide the contractor with pertinent information as intended by this RFP.

2.24 Evaluation of submitted Responses

The evaluation and selection of an awarded Responder will be based on but not limited to: the information submitted in the written response, references, required demonstrations or presentations; if any, and cost. If further information is requested by the Iowa DOT for clarification, Responders shall respond clearly and completely to all requirements within three (3) days upon request. Failure to respond completely may be the basis for rejecting a response.

All compliant sealed Responses will be evaluated using an evaluation matrix. If a demonstration/presentation is in the Evaluation Matrix (see Section 5.4), the Iowa DOT reserves the right to determine which Responders responses will be "short listed" for further consideration based on the written responses that best meet the requirements of the RFP.

Short-List upon selection from the overall compliant responses, some Responders shall be selected to move to the Demonstration or Presentation portion of the evaluation. They will be required to demonstrate or make a presentation illustrating their proposed solution as described and required in the RFP. It is recommended

Responder's engage key personnel shall demonstrate their proposed solution, their authority and reporting relationships within their firm, their expertise and their management style.

The successful demonstration or presentation of the Responder's product(s) and/or service(s) is only one segment of the evaluation criteria and does not solely constitute the overall award.

Selected Responders shall be provided no less than one week's notice for the scheduling of a demonstration or presentation to be held in Ames, IA unless otherwise specified. The Iowa DOT may offer a web conferencing method as an alternative if desired.

Detailed notes of demonstrations or presentation may be recorded and supplemental information (such as briefing charts, et cetera) shall be accepted. Additional written information gathered in this manner shall not constitute replacement of response contents. The Iowa DOT reserves the right to record demonstrations or presentations on audio or videotape as desired.

Any cost(s) incidental for the demonstrations or presentations shall be the sole responsibility of the Responder.

2.25 Notice of Intent to Award and Acceptance Period

Notice of intent to award will be posted on the Iowa DOT's website at www.iowadot.gov/purchasing/bidaward. **It is the Responder's sole responsibility to check daily for the final evaluation results**. Final negotiation and execution of the contract(s) shall be completed no later than thirty (30) days from the date of the Notice of Intent to Award or such other time as designated by the Iowa DOT.

If the successful Responder fails to negotiate and deliver an executed contract by that date, the Iowa DOT in its sole discretion may cancel the award and award the contract to the next highest ranked Responder the Iowa DOT believes will provide the best value to the State.

The award shall be granted to the highest scoring responsive, responsible Responder according to the evaluation matrix in Section 5.

2.26 Confidential Information

Responses containing propriety information must have the specific information considered proprietary clearly marked. All information included in the Response not indicated as proprietary will be open for inspection. All Responses become property of the Iowa DOT.

2.27 No Contract Rights until Execution

The full execution of a written contract shall constitute the making of a contract for services and no contractor shall acquire any legal or equitable rights relative to the contract services until the contract has been fully executed by the successful contractor and the Iowa DOT.

2.28 Restrictions on Gifts and Activities

Iowa Code Chapter 68B restricts gifts which may be given or received by state employees and requires certain individuals to disclose information concerning their activities with state government. Responders are responsible to determine the applicability of this Chapter to their activities and to comply with the requirements. In addition, pursuant to Iowa Code section 722.1, it is a felony offense to bribe or attempt to bribe a public official.

The laws of Iowa provide that it is a felony to offer, promise, or give anything of value or benefit to a state employee with the intent to influence that employee's acts, opinion,

judgment or exercise of discretion with respect to that employee's duties. Evidence of violations of this statute will be submitted to the proper prosecuting attorney.

2.29 No Minimum Guaranteed

The Iowa DOT anticipates that the successful Responder will provide services as requested by the Iowa DOT. The Iowa DOT will not guarantee any minimum compensation will be paid to the contractor or any minimum usage of the contractor's services.

2.30 Conflicts Between Terms

The Iowa DOT reserves the right to accept or reject any exception taken by the Responder to the terms and conditions contained in this RFP. Should a Responder take exception to the terms and conditions required by the Iowa DOT, the Responder's exceptions may be rejected and the entire Response declared nonresponsive. The Iowa DOT may elect to negotiate with the Responder regarding contract terms that do not materially alter the substantive requirements of the RFP or the contents of the Responder's Response.

2.31 News Releases

News releases or other materials made available to the media or the public, the Responder's clients or potential clients pertaining to this procurement or any part of the Response or RFPl shall not be made without the prior written approval of the Iowa DOT.

2.32 Responders' Conference

If the Procurement Timetable indicates a Responders' conference will be held in conjunction with this RFP, it will be held at the date, time, and location listed on the Procurement Timetable. If attendance at the Responders conference is a mandatory requirement, it will be indicated on the Procurement Timetable. The purpose of the Responders' conference is to discuss with prospective Responders the work to be performed and allow prospective Responders an opportunity to ask questions regarding the RFP. Verbal discussions at the Responders' conference shall not be considered part of the RFP unless confirmed in writing by the Iowa DOT and incorporated into this RFP. The conference may be recorded. Questions asked at the conference that cannot be adequately answered during the conference may be deferred and addressed at a later date. A copy of the questions and answers will be sent to Responders who submit a letter of intent to Response.

2.33 Bonds

2.33.1 Bid Bond (if required)

The Solicitation Response page will indicate the fixed percent of the bid security required based on the amount of the Responder's Response. *See also Standard Terms and Conditions Section A-3.*

Bid Bonds must be submitted on the **Iowa DOT Form No. 131084 or the bid will be rejected.**

The Bid Bond from the qualified responsive Responder will be retained until an executed contract is in place and the required Bonds and Insurance Certifiactes are in the possession of the Iowa DOT after which the bid security will promptly be returned.

2.33.2 Performance and Payment Bond

If the contracted, estimated value is $25,000 or more, the successful Responder shall furnish a performance bond covering the faithful performance of 100% of the contract and the payment of the obligations arising thereunder.

One copy of the bond shall be submitted on Iowa Department of Transportation Form 131070. All items must be properly filled in, including the Responder's signature. A Resident Commission Agent or attorney-in-fact must file a copy of the power of attorney.

2.33.3 Power of Attorney

Attorney-in-fact who signs the Bid Bond and/or Performance Bond must file with each bond a certified and effectively dated copy of the Power of Attorney.

Section 3 Specifications and Mandatory Requirements

3.1 Purpose

The Iowa Department of Transportation is seeking a qualified Responder that demonstrates the capabilities, experience and resources to provide full matrix, full color Light-emitting Diode (LED) overhead and side mount / arterial Dynamic Message Signs (DMS). The Iowa DOT encourages DMS Manufacturers to propose advances in technology and alternates to meet and/or exceed the Iowa DOT's minimum requirements. The Iowa DOT will not consider other methods to display messages except for LED. Overhead DMS that require personnel to perform work on the outside of the sign during maintenance will not be considered. The DMS submitted for this RFP must be made of current DMS manufacturer production components and parts, or close variation thereof, in use, at the time of RFP submittal.

3.2 Current Environment

The Iowa DOT currently has 77 operating overhead and 52 side-mount amber DMS that work in conjunction with the latest software from Skyline as well as TransCore's TransSuite DMS software module.

3.3 Mandatory Specifications and Requirements

This part consists of the general provisions necessary for furnishing, delivering, testing and commissioning the Dynamic Message Sign (DMS) and all associated equipment, hardware, software, materials, and mounting hardware for a fully functioning system.

The DMS Manufacturer (or Manufacturer) shall not take advantage of any apparent error, discrepancy or omission in the specifications. Upon discovery of such an error, discrepancy or omission, the Manufacturer shall notify the Purchasing Agent listed on the cover page of the RFP immediately. The Iowa DOT Engineer will make such corrections or interpretations as necessary to fulfill the intent of the specifications.

Material or work described in words which, so applied, have known technical or trade meaning shall be held to refer to such recognized standards.

Additional components, features or functions if not specified in these specifications are not required, but will be evaluated by the Iowa DOT–. If the Manufacturer includes additional components, features, or functions in its Response, the Iowa DOT will consider these additions as part of the Response and there shall be no additional cost to the Iowa DOT to request such additions.

3.3.1 Types of DMS

All DMS shall utilize full matrix and full color light emitting diode (LED) technology and shall be fully functional production units. Each DMS shall include all internal hardware and software components to make the sign fully function. DMS mounting brackets/hardware and native DMS control and maintenance software shall be provided in accordance with these specifications. All display elements and modules shall be solid state and contain no moving parts. No mechanical, electromechanical elements or shutters will be allowed.

The LED matrix shall be composed of full color LEDs with 20 mm to 22 mm pixel pitch. These specifications include five types of DMS with the minimum number of horizontal and vertical pixels shown below:

- Item 1 – Overhead Walk-in DMS (112 pixels high, 432 pixels wide)
- Item 2 – Overhead Walk-in DMS (112 pixels high, 624 pixels wide)
- Item 3 - Side-mount/Arterial Front Access DMS (96 pixels high, 208 pixels wide)
- Item 4 – Overhead Walk-in DMS (96 pixels high, 432 pixels wide)

- Item 5 – Overhead Walk-in DMS (96 pixels high, 624 pixels wide)

All types of DMS shall be capable of displaying at least three lines of messages with combination of full color text and graphical images. Items 1, 2, 4 and 5 are intended for high-volume, high-speed vehicular traffic on interstate freeways and expressways, and shall be capable of displaying 18-inch high full color alphanumerical characters in each line. Item 3 is intended for vehicular traffic on conventional roads and interchange ramps, and shall be capable of displaying 12-inch high full color alphanumerical characters in each line. All types of DMS shall display standard 5x7 fonts defined in NEMA TS-4 2005. All color graphics including route shields and trailblazer assemblies and text shall be displayed in accordance with the guide signing requirements in MUTCD 2009 Edition with Revisions 1 and 2. Refer to Appendix C for sample DMS messages.

All DMS of the same type shall contain the same pitch, pixel and housing dimensions. All types of DMS shall permit a test message using all available pixels at the maximum brightness and 100 percent duty, and shall be capable of displaying graphical symbols stored in the sign memory.

All signs shall provide a minimum of 30 degree viewing angle (15° on each side of the perpendicular axis). All messages including text and graphics shall be clearly visible and legible per MUTCD requirements for guide signs. Any variations in display color and intensity shall be thoroughly dispersed throughout the entire display, thereby creating a uniform visual appearance of both color and intensity within the required viewing angle and distance.

The signs will be capable of displaying the following:

- A static message
- Alternating messages, 3 minimum and the changing from one message to another shall be instantaneous
- Graphics based on NTCIP 1203 v03.05
- Text and graphics on the same page

3.3.2 Related Specifications and Standards

There are many different specifications referenced in this document. In the event there are two or more specifications for the same requirement, the following hierarchy shall be used in this order with 1 having the highest priority:

1. Specifications for Permanent Dynamic Message Sign Using Full Matrix and Full Color LED Technology
2. NTCIP version 03.05
3. NEMA TS 4-2005
4. Manual on Uniform Traffic Control Devices, 2009 Edition with Revisions 1 and 2

3.3.3 Support for Installation and Maintenance

Installation and maintenance of the DMS is not the responsibility of the DMS Manufacturer. The installation contractor(s) will mount the DMS on support structures. The DMS manufacturer shall work with the Iowa DOT and its installation contractor, electrical contractor and maintenance contractor and support the installation as necessary to ensure the sign is ready for the Manufacturer's testing, commissioning, and training.

The Iowa DOT's maintenance contractor will perform all normal/regular maintenance services after the sign has been commissioned. During the life of the contract and Warranty period, the Manufacturer shall provide necessary support to solve issues that require the Manufacturer's timely response. If the Iowa DOT requires a site visit from the DMS Manufacturer during the contract and Warranty period, the DMS Manufacturer shall

pay the cost of the trip. If parts are needed, the parts shall be provided and shipped overnight at the expense of DMS Manufacturer until the problem is resolved.

3.4 Technical Documentation and Submittals

The DMS manufacturer shall prepare and submit all documentation required in Sections 12.1 to 12.4 of NEMA TS 4-2005 and the technical documentation required below.

3.4.1 Shop Drawings, Details and Catalog Cut-Sheets

Prior to fabrication or purchase of any material or equipment for use on this contract, the DMS Manufacturer shall submit, for review by the Iowa DOT Engineer, a complete set of shop drawings and associated structural integrity calculations. The shop drawings shall include appropriate catalog cut sheets and specifications for all standard, off-the-shelf items, detailed drawings and other necessary data for all non-catalog or custom-made items, and structural calculations needed to assure the integrity of the sign housing assembly and the sign mounting hardware.

The DMS Manufacturer shall submit the information described herein to the Iowa DOT Engineer within 30 calendar days of issuance of a signed contract, unless otherwise noted.

The Iowa DOT Engineer will review the submitted information and provide comments or approval of the information.

Review of the submittal information by the Iowa DOT Engineer will not relieve the DMS Manufacturer of obligation to furnish and install the work in accordance with the contract documents. No time extensions will be granted to the DMS Manufacturer as a result of the need to resubmit any documentation if rejected or additional documentation.

A. Sign Drawings, Details and Cut-Sheets

The DMS Manufacturer shall prepare and submit the following detailed drawings:

- The DMS character set as detailed in Section 3.5.4 (C)
- All non-catalog or custom-made components
- Wiring schematics

Drawings shall show dimensions, sizes, assembly techniques, and a parts list that includes mechanical part manufacturer, component manufacturer, part type and class, power rating, and circuit and board designation. The DMS manufacturer shall also provide three-dimensional (3D) drawings of the outside of the DMS. The 3D drawings shall show isometric views of the DMS. Submittal will include electronic CADD files.

Each submittal shall contain sufficient information and details to permit full evaluation of each item and its interrelationship with other items. Submittals which, in the judgment of the Iowa DOT Engineer, are insufficient to permit proper evaluation will not be reviewed and will require resubmission. The functional and technical interrelationships among the various items shall be addressed in the submittals.

If reprinted materials, such as catalog cut sheets, are used to satisfy the submittal data requirements, there shall be no statements on the literature which conflict with the requirements of the contract documents. Any such statements shall be crossed off and initialed by the DMS Manufacturer. Explanation of how specifications will be met pertaining to items changed from the literature shall be documented in writing and included with the submittal information.

The DMS Manufacturer shall also submit any additional documentation not previously described, but required by these specifications and necessary to fully describe the DMS and associated equipment including complete technical information, photographs, instruction manuals, security provisions, etc.

B. Sign Housing and Attachment Hardware Structural Drawings and Calculations

The DMS Manufacturer shall prepare and submit the following detailed drawings:

- Sign housing assembly details, including the component location details and a layout of all the display elements, complete with dimensions,
- Sign housing structural details, including member details, support mechanism details required for installation of the DMS onto the sign truss, welding details, and miscellaneous hardware details; complete with dimensions and sizes,
- Sign mounting bracket structural details, including miscellaneous members and hardware required to attach the DMS to the sign truss; complete with dimensions and sizes, and weights

Shop drawings shall be submitted in accordance with Article 1105.03 of the 2015 Standard Specifications for Highway and Bridge Construction and as specified in these specifications. A copy of the Iowa DOT's 2015 Standard Specifications for Highway and Bridge Construction can be downloaded at: http://www.erl.dot.state.ia.us/. The DMS Manufacturer shall prepare and submit structural calculations for the sign housing assembly, and the sign mounting hardware.

Both the detailed drawings and structural calculations of the sign housing and sign mounting hardware shall be sealed by a Registered Professional Structural Iowa DOT Engineer licensed in the State of Iowa.

Refer to http://www.iowadot.gov/bridge/v8esignstd.htm for detailed drawings of the sign support truss for Overhead Dynamic Message Signs. Also refer to Section 4187, Materials for Sign Support Structures of the 2015 Standard Specifications for Highway and Bridge Construction.

3.4.2 Software Documentation

A. NTCIP Compliance Documentation

The DMS Manufacturer shall submit NTCIP compliance documents and declare which version of the NTCIP standard is currently implemented and whether or not the implementation meets the requirements in these specifications. The NTCIP compliance documents shall be provided from an independent testing lab with all supporting documents including, but not limited to, compliance statement, test procedures with pass/fail results, and detailed test reports.

The compliance statement shall list clauses and sub clauses from the NTCIP standards that are complied with holly, in part or not at all. Where partial compliance is reported, the Manufacturer shall provide additional documentation to detail exactly how products comply and to which parts. For example, the Manufacturer shall declare if the allowable range of an object differs from the standard. Where NTCIP provisions are optional but required in these specifications, the Manufacturer shall indicate whether or not each option is supported. Where Manufacturer-specific objects are used in place of NTCIP objects, this information shall be described in detail. All other Manufacturer-specific objects shall be fully detailed.

All NTCIP compliance documentation shall be submitted to the Iowa DOT Engineer 30 calendar days of issuance of the signed contract. The DMS Manufacturer shall solve all non-compliance issues prior to the factory acceptance testing.

B. Software Manual

The DMS Manufacturer shall provide software manuals and data for the computer software system and components provided in this contract. As software is upgraded, updated versions of the manual shall be provided. This submittal shall include the following:

1. Five printed copies of the native DMS control software user's manuals shall be supplied to the Iowa DOT Engineer prior to the first training session by the DMS Manufacturer (see section 3.10). The software manual shall include instructions for performing a backup of all software and message libraries.
2. Two copies of the software, installation programs, instructions and software user manuals for the native DMS control software including sign controller software and central control software shall be provided on a password protected USB drive. The Iowa DOT will have the right to duplicate the sign controller software and central control software as needed for use in controlling signs under its jurisdiction.
3. The DMS Manufacturer's NTCIP Management Information Base (MIB) shall be provided to the Iowa DOT. ASCII versions of the following MIB files in Abstract Syntax Notation 1 (ASN.1) format shall be provided on a password protected USB drive:
    - A manufacturer-specific version of the official NTCIP MIB with the non-standardized range indicated in the SYNTAX field.
    - A MIB Module of all manufacturer-specific objects supported by the device with accurate and meaningful DESCRIPTION fields and the supported ranges indicated in the SYNTAX field.
4. Software Warranty information

3.4.3 Test Documentation

Testing documentation shall be provided in accordance with Section 3.7.

3.4.4 Operation and Maintenance Manuals

The DMS Manufacturer shall submit five copies of the operation and maintenance manuals to the Iowa DOT Engineer prior to the first training session by the DMS Manufacturer (see Section 3.10). The DMS Manufacturer may furnish the operation and maintenance information in two separate manuals.

The operation and maintenance manuals shall be provided in PDF format on a USB drive.

3.5 Hardware, Materials and Construction

The equipment design and construction shall utilize the latest available techniques with a minimum number of different parts, subassemblies, circuits, cards and modules to maximize standardization and commonality. The equipment shall be of the latest design and manufacture, and shall be designed for ease of maintenance.

All parts shall be of high quality workmanship, and no part or attachment shall be substituted or applied contrary to the manufacturer's recommendations and standard practices. Components that the manufacturer no longer supports or recommends for new designs, or that the manufacturer has announced plans to discontinue at the time of the Response opening shall not be used in the design of any subassemblies of the DMS.

All component parts shall be readily accessible for inspection and maintenance. Test points shall be provided and labeled for checking essential voltages. All external connections shall be made by means of connectors. The connectors shall be keyed to preclude improper hookups.

Section 3 of this RFP follows the Sections 2 thru 11 of NEMA TS 4-2005, ***Hardware Standards for Dynamic Message Signs (DMS) with NTCIP Requirements***". The requirements in NEMA TS 4-2005 for rear access and portable DMS do not apply. All

requirements in NEMA TS 4-2005 for front and walk-in access DMS shall be met unless otherwise specified in these specifications.

3.5.1 Environmental Requirements

All DMS components and equipment shall remain fully functional over an ambient temperature range of -40°F to +149°F with relative humidity of up to 95% unless otherwise specified in these specifications. All field equipment enclosures shall be designed to withstand the effects of sand, dust, and hose-directed water. All connections shall be watertight.

3.5.2 Sign Mechanical Construction

A. General Construction

The sign shall be designed and constructed so as to present a clean and neat appearance. Poor quality work will result in the rejection of the sign.

The equipment within the sign housing shall be protected from moisture, rain, snow, dust, dirt and corrosion. Sign housing floors shall contain small weep holes for draining water that accumulates due to condensation. Weep holes shall contain a stainless steel screen to prevent entrance of insects and the screen shall be removable from inside the housing to facilitate cleaning.

The sign housing shall provide service access for all LED display modules, electronics, power supplies, environmental control equipment, wiring, and other internal components. All DMS equipment, components, modular assemblies and other materials located within the sign housing shall be removable, transportable, and capable of being installed by one person.

Access doors or panels shall be fitted with a No. 2 Corbin lock with a padlock option handle. Provide 2 keys per sign.

B. Walk-in Housing

At least one access door will be required. The access door will normally be located on the sign's left side (right side when facing the front of sign). When requested prior to fabrication, the Iowa DOT may require the door be placed on the opposite side. Two access doors, one at each end of the sign housing, may also be required for specific locations when requested prior to fabrication.

The front face shall be tilted down 3 degrees from vertical. This may be accomplished by either method below as long as the floor in the walk-in housing remains level:

a) A three (3) degree tilt built into the sign housing
b) The three (3) degrees is built into the attachment hardware between the sign and support truss

Working space inside the sign housing shall meet the minimum clearance requirements in accordance with NEC. The minimum distance from the interior rear wall of the sign housing to the closest display components shall be 36 inches. This free space shall be maintained across the entire interior of the sign housing, with the exception of structural members. Structural members shall be designed and positioned so as to not be an obstruction to free movement of maintenance technicians throughout the interior of the housing. Circuit boards/display components shall be protected from accidental contact by maintenance personnel.

The sign housing shall contain interior LED lights to provide adequate uniform light distribution at floor level for maintenance purposes. The light assemblies shall be covered with a protective cage.

AC convenience outlets shall be provided for walk-in housing regardless of the AC or DC

power applied to the DMS.

Enough baseboard heaters shall be provided to warm the interior of the walk-in housing to 30˚F above ambient for the comfort and safety of maintenance personnel. These heaters shall be controllable via a wind-up timer in the sign and shall be capable of remote activation by the DMS's native software.

A forced air fan system shall be provided to refresh the air of the interior of the walk-in housing. Vents shall be provided to exchange air with the outside. All air brought into or removed from the sign shall be filtered with a MERV 7 rated filter.

C. Exterior Housing Panel

The exterior housing, door and end panels shall be 5052-H32 or approved alternative aluminum alloy sheet, 1/8 inch minimum thickness.

The number of seams in the top housing panel will be kept to a minimum. All exterior seams shall be continuously welded and waterproof.

All exterior seams and joints shall be continuously welded by an inert gas process.

The exterior housing panel material shall be stitch welded to the internal structural members to form a unitized structure.

D. Interior Structure

The interior structure members shall be 6061-T6, 6063-T5, or approved alternative aluminum.

E. Mounting

The housing shall be designed to accommodate mounting on the rear vertical plane only.

F. Structural / Wind loading

The housing shall be designed to accommodate wind loading based on the latest requirements of "AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaries and Traffic Signals, 6th Edition, with 2015 Interim Revisions".

G. Housing Face / Surface Finish

The lens panel assembly shall be modular in design, interchangeable without misalignment of the lens panel and the LED pixels.

The lens panel aluminum mask shall be 0.090" minimum thickness. It shall be perforated to provide an aperture for each pixel on the display modules. Each aperture shall be as small as possible, without blocking the LED light output at the required viewing angle.

The face (i.e., the lens panel's aluminum mask and border) shall be finished with a matte-black, licensed-factory-applied, Kynar 500 fluoropolymer-based resin coating system or approved alternative that provides a minimum outdoor service life of 20 years. The face shall be uniform in appearance, and completely free from distortion, gouges and any other flaws or defects.

A certificate, showing licensing for factory Kynar 500 coating, shall be required and submitted as part of the Responder's Response.

All other exterior surfaces shall be a natural aluminum mill finish. No painted surfaces will be allowed.

All interior surfaces shall be a natural aluminum mill finish.

The external fascia perimeter panels shall be a minimum of 12" wide (measured from the center of the outside pixel to the edge of sign). The external fascia panels shall be

thermally isolated from the rest of the sign housing.

No logos, manufacturer name, model #, etc. will be allowed on the front face of the sign.

H. Glazing

The Lens Panel Clear Glazing will be weather tight, non-glare, 90% UV opaque polycarbonate – G.E. Lexan XL10 or approved alternative. The minimum required thickness will be 1/4-inch nominal (0.236" actual).

I. Fans, Vents and Filters

Fans, vents and filters are not required for DMS components that do not functionally require them for continued operation of the sign within the required temperature range. Where the fans, vents, and filters are required for continued sign operation, all air brought into or removed from the sign shall be filtered with a MERV 7 rated filter.

For walk-in housing, fans, vents and filters are required to properly circulate air in the DMS for maintenance personnel.

3.5.3 Controller to Sign Interface

A. Location of DMS Sign Controller

The controller shall be located inside the sign housing unless otherwise directed by the Iowa DOT Engineer. If required, a ground cabinet will be provided by others to house the sign controller and power supplies. The design of the DMS controller and power supplies shall accommodate both options. Cables shall be sufficient in length between controller/power supplies and the display modules and shall be incidental with no additional cost to the Iowa DOT.

The power and communication cables from the power and communication sources to the sign controller will be provided by others.

B. Wiring

All wiring shall be protected at all points of physical contact where cables or cable jackets touch metallic frameworks. Cables shall include additional protective covering where the cable touches the framework, to prevent cable insulation rub-through from road induced vibration in the sign framework. All power and control cables shall be all copper construction.

C. Wire Entrances to Sign Housing

A minimum two (2) – 2" Meyers hubs are required on the back side of the sign.

1. AC power to the sign
2. Communication to the sign or spare for future use

Where DC power is provided to the sign, one additional 2" Meyers hub is required to separate the DC from AC power.

3.5.4 Display Properties

A. Sign Display

The sign display shall be a continuous full matrix of pixels and contain no moving parts. Each pixel shall be made from a grouping of light emitting diodes to provide full color capability using red, green and blue LEDs. All LEDs used in the DMS display shall be from one LED manufacturer. LED package shall be the through-hole or surface mount type.

B. Cone of Vision
All DMS signs shall have a minimum of 30° half-power viewing angle (15° on each side of the perpendicular axis) meeting Type class e or better as defined in NEMA TS 4-2005 Section 5.3.3.2.

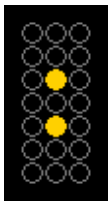
C. Font
The "standard font" as defined by NEMA TS 4-2005 (Section 5.6.1) shall be loaded in the sign controller. It will be referred to as slot 1 or font 1. It will be the default font.

All future firmware upgrades shall keep this same font configuration in the controller.

Sign controller shall be capable of allowing custom characters, symbols, graphics and spaces to the standard font pre-loaded as font 1.

Example A, the Iowa DOT may create the "degree" symbol (as shown below) and assign it to an existing symbol in font 1 such that it "overrides" the ASCII 'carrot' symbol (above the 6), HEX = 94 or DEC =5E.

Example B shows a symbol (colon) that is part of the standard font as defined by NEMA TS 4-2005, but the Iowa DOT has made the width 3 pixels wide, as opposed to the standard of 5 pixels wide.

a)  b) 

The width of these custom characters will range anywhere from 1 pixel wide to 32 pixels wide. The height of the custom character will be the same as the rest of the characters and symbols, 7 pixels tall. Note that only amber is shown in these examples; the custom characters shall apply to all colors.

The ability to incorporate custom fonts and characters is required for the DMS native software. The DMS manufacturer shall provide the font library to the Iowa DOT in response to the RFP.

D. Luminance Intensity Testing
The manufacturer shall provide testing documentation using an independent laboratory to certify sign display intensity at full brightness with full connected power in accordance with NEMA TS 4-2005 Section 5.4. The independent laboratory's certification report shall be provided with the DMS manufacturer's submittal. This report shall contain the laboratory name, address, and contact information. The report shall also contain a description of the test procedure and test equipment used, display intensity test results, date(s) the DMS manufacturer's LED display samples were tested, and the DMS manufacturer's name.

3.5.5 Optical Components

A. Pixel Spacing
Pixel spacing shall be in accordance with Section 6.1.2.5 of NEMA TS 4-2005 for full matrix signs.

B. Character Height
Character height of a 5x7 font shall be at least 18" for walk-in DMS and at least 12" for side-mount arterial DMS.

C. Pixel Pitch
The pitch (vertical or horizontal distance from center of pixel to center of pixel) shall be 20 mm to 22 mm.

D. LED and Pixel Characteristics
Pixel status and diagnostics returned from the pixel board shall include pixel failure and failed pixel location (line, module, and row and column numbers).

E. Pixel Brightness Control
The LED pixels shall be directly driven using PWM of the drive current to control the display intensity. This LED driver circuitry shall vary the current pulse width to achieve the proper display intensity levels for all ambient light conditions. The drive current pulse shall be modulated at a frequency high enough to provide flicker-free operation. The display intensity shall be adjustable in 1% increments for a total of 100 intensity levels.

The DMS controller shall provide means to change the brightness of the display matrix manually or automatically. The manual control shall allow the user to select one of the intensity levels. The brightness shall remain at that level until the user changes the level or sets the controller to automatic mode.

The automatic intensity control mode shall monitor the ambient light sensors of the DMS and will use a mathematical algorithm to automatically select one of the intensity levels. The algorithm used to calculate the intensity level shall be determined by the Manufacturer and tested under real-world lighting conditions.

F. Life, Drive Current, Degradation and Certification of LEDs
LEDs shall be rated for 100,000 hours of continuous operation (full ON, 100% PWM) at Manufacture's maximum recommended drive current, with less than 30% lumen degradation.

The actual drive current the DMS Manufacturer uses shall not exceed the LED manufacturer's recommended maximum drive current.

The DMS manufacturer shall submit test documentation to demonstrate compliance to test method CIE 127:2007 (March 2007 update) for 'Technical Report: Measurement of LEDs', for brightness testing and binning of LEDs.

Mean Time Before Failure (MTBF) shall be 100,000 hours (11.4 years) instead of the 5 years required by NEMA TS 4-2005.

G. Pixel Board Characteristics
The operational status of the LEDs in each pixel shall be tested and transmitted to the DMS controller. The pixel status test shall distinguish the difference between full-out, and fully stuck on pixels. A list of defective pixels shall be provided, listing x coordinate (from left hand edge of sign), y coordinate (measured down from the top of the sign). Coordinate (1, 1) shall be the upper left corner. The failure type (stuck on or stuck off) for each defective pixel shall also be reported.

H. Independent Performance of Pixel Boards
Design modules such that failure of one or more pixels shall not affect operation of the other pixels, and failure of any module shall not affect the operation of other modules.

I. True, Real Time, Pixel Verification
The DMS shall have true message display verification. The DMS shall perform the actual, real-time measurement of the current flowing through each LED and report the status to the central software or laptop computer. The state of the LEDs (full-ON, half-ON or OFF) from each individual pixel of the sign shall be read by the sign controller when it is polled or when a pixel test is performed. This will allow the central software or

laptop computer to show the actual message that is visibly displayed on the sign in a WYSIWYG format, including any full-out or fully stuck on pixels. This will also allow the Central controller operator to see what is actually displayed to the motorist on a pixel by pixel basis.

This pixel reading shall take place while a message is displayed on the sign, without disturbing the message in any way. No flashing, flickering, blinking, dimming, or other disturbance of the message shall occur during the pixel read.

The real time pixel read process shall be an actual real time read of the current flowing through each LED, at the time of the associated sign poll or message download; and shall not be accomplished by simulating errors based on the last pixel test.

The DMS Manufacturer shall meet this requirement using the DMS native software.

3.5.6 DMS Controller Cabinet

Ground or pole mount cabinets, if required, will be provided by others.

3.5.7 Electronics and Electrical

A. Design Life

The design life of all components shall be a minimum of 10 years unless otherwise specified in these specifications.

B. Conformal Coating on PCBs

Conformal coating on all Printed Circuit Boards (PCB) is required. The moisture resistant barrier shall be composed of a silicon resin based material that shall be mechanically applied, (not manually brushed on). The material used to coat the PCB shall meet the military specification MIL-I-46058C Type SR, and IPC-CC-830.

C. Communications

The Central Communications Port shall be a RJ-45 10/100 base-T physical port and use Ethernet communications protocol.

In addition to the serial EIA-232 port required by NEMA TS 4-2005, a second RJ-45 10/100 base-T Ethernet port shall be provided for communication to a PMC (Portable Maintenance Computer).

D. No Physical Switch for alternating between NTCIP and non-NTCIP communications

If the Manufacturer's software uses a different communications protocol than NTCIP and requires the user to drive to the DMS and "flip a switch" to change from Manufacturer's software to NTCIP software, that Manufacturer will not be allowed to respond to this RFP. The sign shall either support remote switching between NTCIP software and Manufacturer-supplied software or shall communicate using NTCIP 100% of the time. The remote switching takes the place of a physical switch that would prevent remote switching between software packages.

E. Ambient Light Sensing and Dimming Control

Section 8.8.1 of TS 4-2005 is modified to require 3 photo-electric sensors positioned in 3 different directions.

F. Watchdog Timer / Circuit to Re-boot Cellular Modem

A Watchdog Timer is required as per TS 4-2005 Section 8.9.5. Two communications loss data objects are also required per NTCIP 1203 Section 2.7.1.1.1.12 (Communications Loss Time Parameter) and Section 2.7.1.1.1.13 (Communications Loss Time Definition Parameter).

The Iowa DOT currently uses a cellular modem at some locations for DMS communications with the central system. Where the cellular modem is used, the DMS manufacturer shall combine the watchdog and NTCIP communication loss requirements in to a function that will re-boot the cellular modem (and/or controller) in the event of a communication loss of time greater than as defined in the Communications Loss Time Parameter. This will reduce the need for someone to travel to the DMS when the modem is not responsive.

To accomplish this requirement, a 120V AC outlet shall be controlled by the watchdog circuit. The controller and the cellular modem shall be plugged into this outlet. In the event of a failure monitored by the watchdog (comm. loss, or controller malfunction), the watchdog shall shut off power to the aforementioned AC outlet, thus shutting down the controller and cellular modem. After a few seconds have passed, the watchdog circuit shall restore power to the AC outlet, repowering the controller and cellular modem.

G. Graphic Images and Symbols

The sign controller will have the capability to display color graphic images and symbols downloaded from the central controller or laptop computer using the NTCIP 1203 v03.05 and the DMS native software.

Sign must be capable of displaying color graphics, symbols and text at the same time. See Appendix C for examples of what the sign must be able to display.

The manufacturer shall submit the following documentation for all of the messages shown in Appendix C:

- Software displaying the example DMS messages (operator view).
- Physical DMS displaying the example DMS messages (road user view).
    - The DMS used to display the example DMS messages must be very similar to the model that is being proposed. Any differences must be clearly defined and presented to the Iowa DOT.
    - If the DMS used to display the example DMS messages cannot meet the display height requirements, the DMS manufacturer shall display as much of the example DMS message as possible and clearly explain to the Iowa DOT which row of the example DMS message is not shown (top or bottom row).
- Flow Chart showing process, approximate time by task and the third party software(s) required to generate the messages shown in Appendix C.

H. Displaying Time and Temperature

The sign controller shall be able to put a self-updating time, temperature and/or date display on the sign.

I. Message Activation by Contact Closure (I/O)

The sign, sign controller and any additional equipment (if necessary) shall be able to receive a contact closure input to trigger and display a stored message in less than 1 second after the contact closure input is received.

This function is required only on signs where it is determined the ability is necessary. If additional hardware is required, that will be specified at the time of the order. The DMS Manufacturer shall include the additional I/O hardware and software, if any, with no additional cost to the Iowa DOT.

The contact closure stored message(s) shall be saved with a NTCIP priority level of 1 thru 255. Activation of the contact closure stored message(s) shall use the priority level assigned to it and shall only display if the priority exceeds the priority of the message currently on the sign.

J. DC Power Supplies

The LED pixel display modules shall be powered with auto-ranging regulated switching power supplies that convert the incoming AC to DC at a nominal voltage of 24 or 48 volts DC. Power supplies will be wired in a redundant configuration that uses multiple supplies for the DMS.

Power supplies shall be redundant and rated such that if one supply fails, the remaining supply(s) shall be able to operate 100% of the pixels at 100% brightness when the internal DMS air temperature is +140ºF (60ºC) or less.

Each power supply shall receive 120VAC power from separate circuits on separate circuit breakers, such that a single tripped breaker will not disconnect power from more than one supply.

The power supplies shall be sufficient to maintain the appropriate LED display intensity throughout the entire operating input voltage range.

The voltage of each power supply shall be reported to the sign controller upon request.

The power supplies used to power the LED pixel modules shall be identical and interchangeable throughout the DMS.

The regulated DC power supplies shall conform to the following specifications:

- Nominal output voltage of 24 or 48 VDC +/- 10%
- Operating input voltage range shall be a minimum of 90 to 264 VAC
- Operating temperature range shall be a minimum of –40ºF to +165ºF
- Maximum output power rating shall be maintained over a minimum temperature range of –30ºF to +140ºF
- Power supply efficiency shall be a minimum of 80%
- Power factor rating shall be a minimum of 0.95
- Power supply input circuit shall be fused or circuit breaker protected
- Automatic output shut down and restart after 5 seconds if the power supply overheats or one of the following output faults occurs: over-voltage, short circuit, or over-current
- Power supplies shall be UL listed
- The failure of two power supplies shall allow for the sign to power at least 30% of the LEDs at 50% brightness.

K. DMS Controller Electronics

DMS controllers shall have both permanent and semi-permanent memory. Permanent memory shall be EE-PROM integrated circuits and shall contain the executable sign controller software. Semi-permanent memory shall be RAM integrated circuits with a battery backup that retains the data in memory for a minimum of one year following a power failure. Semi-permanent memory shall contain the library of messages (including color images), the message display schedule and programmable operating parameters.

Contents of the DMS controller's memory shall be preserved by battery backup during AC power interruptions and the controller shall automatically resume operation once AC power is restored. Upon recovering from a power interruption, the DMS controller shall display the message identified by the Power Recovery Message parameter as defined in NTCIP. The DMS controller shall report to the central computer that it has recovered from a power failure.

3.5.8 Performance Monitoring

A. Airflow status and error monitoring

If the DMS requires fans for sign operations, status of the fans as well as error notifications are required and shall follow procedures included in NTCIP 1203 v03.05.

B. Power Supply status and error monitoring

The status of all power supplies as well as error notifications are required and shall follow procedures included in NTCIP 1203 v03.05.

C. Other Message and Status Monitoring

The sign controller shall respond to the central controller whenever it receives a request for status (a poll). The return message shall be capable of providing the following information:

1) Actual message displayed
2) Current Sign Illumination Level
3) Control mode (Central, Local or Local Override modes)
4) Error and Failure Reports
5) Temperature Measurements
6) LED Power Supply voltage levels
7) Origin of display message (central, laptop or sign controller)
8) Heat Tape / Face fans status if applicable
9) Baseboard Heater status if applicable

D. Functions the sign must perform during each "poll"

1) Each time the sign controller is polled by the central system or laptop computer, the sign controller shall test the operational status of the sensors listed below, and return this information to the central system. This operational status test will determine if each of the following sensors are functioning properly:
    a. Temperature Sensors
    b. Photocells
    c. Humidity Sensor
    d. Airflow Sensors
    e. LED Power Supply Sensors
2) The operational status of the ventilation system if applicable, including the fans and filters, will be automatically tested once per day, and upon command from the central system, laptop computer or front panel of the sign controller.
3) In the event the central system fails to communicate with the sign controller within a programmable time limit, the sign shall activate a programmable default message (which can be a blank message). This function will apply only when the sign controller is in the central mode.
4) The sign controller shall perform a consistency check of messages downloaded from the central system or laptop computer, in order to ensure that the message will fit the sign's display area. If any part of the message fails this check, the downloaded message shall not be displayed.
5) The sign controller internal time clock shall ensure that a message is taken down at the correct time, even in the event of a communications loss.
6) The sign controller shall maintain its internal time clock during power outages less than 255 minutes, and display the proper message when power is restored.
7) The sign controller shall have a special function output bit to control an auxiliary blank-out sign via a closure to ground capable of sinking at least 10mA. This special function shall be controllable from the central system.

8) The sign controller shall be capable of being remotely reset from the central system.

3.5.9 Power Requirements

A. Underwriters Laboratories Standards

The DMS shall be listed by an accredited 3rd party testing organization for conformance to Underwriters Laboratories (UL) standards 48 (Standard for Electric Signs) and 1433 (Control Centers for Changing Message Signs). Proof of this conformance shall be submitted as part of the Responder's Response.

B. Uninterruptible Power Supply (UPS)

A UPS is not required as a part of the specifications. The DMS manufacturer shall provide sufficient space in the DMS housing for future potential UPS installation.

C. Surge Protection Devices

DMS and sign controller signal and power inputs shall be protected from electrical spikes and transients. Compliance with NEC Articles 285 for circuits less than 1,000 V is required.

SPDs for 120V or 120/240V Power: Install an SPD on the load side of the service entrance or main disconnect. Leads shall be as short and straight as possible. Wire nuts will not be permitted.

SPDs shall be UL Listed and labeled to UL 1449 Third Edition. SPDs shall be listed on VZCA at UL.com with 20kA I-nominal rating. The following ratings shall not be exceeded:

	L-N	L-G
Voltage Protection Rating (VPR)	700V	700V
Maximum Continuous Operating Voltage (MCOV)	150V	150V

SPD's surge current rating shall equal or exceed 50kA per mode. Per phase rating shall equal or exceed 100kA per phase (sum of L-N plus L-G). SPDs shall include directly connected Metal Oxide Varistors (MOVs) exceeding 1.25"+/- in diameter from L-N and L-G. Each MOV shall include a thermal safety disconnector(s). SPD short circuit current rating (SCCR) shall equal or exceed 50kA or the available short circuit current, whichever is higher. Type 1 SPDs are preferred because of integral overcurrent protection (OCP). Type 2 or Two-Port SPDs shall make provisions for any UL required OCP and/or Technical Considerations. Gas Tubes or Spark Gaps are not permitted due to high initial clamp overshoot.

Every MOV's operational status shall be monitored via visual indicator, including N-G where used. SPD shall include one set of Normally Open (NO) Normally Closed (NC) Form C contacts for remote monitoring. SPD shall be outdoor rated as NEMA 4.

3.6 Software

The DMS controlling software shall consist of the sign controller software (firmware), DMS manufacturer's native central control software and maintenance laptop software for DMS configuration management, message, control, monitoring, troubleshooting and maintenance. All software furnished under this contract shall be in accordance with the following requirements.

3.6.1 NTCIP Requirements

Communication between the sign controller and the central control software shall be NTCIP compliant for serial and IP communications. The DMS controlling software

including sign controller software, central control software and maintenance laptop software shall support all required NTCIP objects to provide full capability of displaying full color messages and graphics. The controlling software shall implement all mandatory objects of all mandatory conformance groups as defined in NTCIP 1201, v03.15, Global Object Definitions, and NTCIP 1203, v03.05, Object Definitions for Dynamic Message Signs. The controlling software shall implement all tags of the Markup Language for Transportation Information (MULTI) as defined in 1203 v03.05.

Software shall implement the following object groups as defined in NTCIP 1203 v03.05:

- Sign Configuration and Capability
- VMS Configuration
- Font Configuration
- Multi Configuration
- Message
- Sign Control
- Illumination/Brightness
- Scheduling Action
- Auxiliary I/O
- Sign Status
- Graphic Definition

The DMS controlling software shall implement the required optional objects in accordance with the NTCIP 1203 v03.05 PRL included in Appendix A.

The DMS controlling software shall support the following NTCIP standards, the latest revision as jointly approved by NEMA, AASHTO and ITE at the time of the Response opening.

- NTCIP 1101, Simple Transportation Management Framework (STMF), Conformance Level 1 (Simple Network Management Protocol (SNMP)
- NTCIP 1103, Transportation Management Protocols
- NTCIP 2001, Class B Profile. All serial ports on the device shall support communications according to these standards
- NTCIP 2101, SP-PMPP/RS232 Subnet Profile for Point-to-Multi Point Protocol (PMPP) using RS-232
- NTCIP 2103, SP-PPP/RS232 Subnet Profile for Point-to-Point Protocol (PPP) using RS-232
- NTCIP 2104, SP-Ethernet Subnet Profile for Ethernet
- NTCIP 2201, NTCIP TP-Null Transport Profile Null (TP-NULL)
- NTCIP 2202, TP-Internet Transport Profile for Internet (TCP/IP and UDP/IP)

Objects required by these specifications shall support all values within its standardized range unless otherwise specified in these specifications. The standardized range is defined by a size, range, or enumerated listing indicated in the object's SYNTAX field and/or through descriptive text in the object's description field.

3.6.2 Sign Controller Software

The central computer or laptop computer shall cause the sign controller to implement a message selected from those stored in controller memory, or a new message entered via the communication port. The DMS controller shall control the DMS for displaying full color alphanumeric character fonts and graphical images. The DMS controller software shall provide a default value for each NTCIP objects supported.

The controller software shall support both serial and IP communications, and implement the required NTCIP objects accordingly for each communication port.

When utilizing serial communication, the sign controller hardware and software shall communicate with the central computer in a polled multi-drop or point-to-point operation. The controlling software shall support both operations using NTCIP 2101 and 2103. In the polled multi-drop operation, several sign controllers shall share the same communication channel, with each controller assigned a unique ID number. Controller ID numbers shall conform to the NTCIP requirements for address numbers. A sign controller shall only reply to messages labeled with its ID. In polled multi-drop mode, sign controllers never initiate communication, but merely transmit their responses to messages from the central computer.

When utilizing Ethernet communication, the sign controller shall use the NTCIP 2104 and 2202. This shall permit the controller to be operated on any typical Ethernet network (including a routed network) using the TCP/IP and UDP/IP protocols.

3.6.3 Central Control Software

It is the intent to use TransCore's TransSuite and Skyline's Envoy DMS Central Software for day-to-day operation and maintenance of DMS.

The DMS sign controller software and hardware shall have the capability to remotely download messages and graphics from the central server and save them to permanent controller memory. It is intended to use TransSuite to call the memory slot for displaying proper messages on DMS.

3.6.4 Native DMS Software and Upgrade

The DMS Manufacturer shall provide its native DMS central control software to run signs procured under this contract. The manufacturer shall also provide DMS maintenance laptop software for troubleshooting and maintaining the DMS hardware for non-NTCIP functions the sign may have. The software shall be 32-bit or 64-bit application, designed to operate on Microsoft Windows operating system (the latest edition at the time of the Response opening). This cost of providing the native software shall be considered incidental to the cost of the DMS.

The native control software shall retrieve, display, update and download/upload the following functional parameters to the local sign controller in response to user initiated instructions. The sign controller shall not perform pixel tests when DMS are displaying messages. Software shall perform the following operations in conjunction with its monitoring and logging functions:

- Display a message
- Blank the current message
- Change message priority
- Pixel test
- Lamp and fan tests (as applicable)
- Set time and date in the sign controller
- Retrieve sign controller ID, type, and manufacturer information

The native software shall be able to test and verify all communications for errors. The software shall retrieve errors detected, error details, message number currently being displayed, and current message priority. Using different commands, the software shall retrieve message MULTI strings, a map of defective pixels, the time and date, the event schedule, and configuration parameters.

The native software shall store messages and transfer messages to a sign for storage and/or display. The software shall verify the downloaded messages for errors. Only the messages compatible with the sign controller can be stored or displayed. The sign controller shall provide notification to the native software when an error occurs.

The native software shall display all color character fonts and graphics supported by the DMS. Messages shall be displayed on the computer monitor in exactly the same format (pixel by pixel font, text centering and justification, color, and images) as on the DMS.

The Successful Responder's software may be used to connect to any of the Iowa DOT's existing DMS as well as the signs purchased through the awarded contract. No additional licensing fees per sign will be paid to allow the Iowa DOT to connect/control/maintain/etc. any of the Iowa DOT's existing DMS as well as the signs purchased through the awarded contract. The Iowa DOT shall have the right to duplicate the native software as needed.

Over the life of the DMS, the DMS manufacturer's control software and controller firmware upgrades shall be provided to the Iowa DOT at no additional cost. The cost associated with providing software and firmware upgrades shall be included in this contract in the unit price provided by the DMS manufacturer.

The DMS manufacturer shall schedule with the Iowa DOT Engineer for installing the native control software at the Iowa DOT TMC in Ames, IA prior to the sign commissioning as specified in Section 3.7.

3.7 Acceptance Testing Requirements

It is the policy of the Iowa DOT to require performance testing of materials and equipment not previously tested and approved. If technical data is not considered adequate for approval, samples may be requested from the DMS Manufacturer for testing by the Iowa DOT.

The DMS Manufacturer shall provide all test procedures and data forms for the Iowa DOT Engineer's approval at least 30 calendar days prior to the day the tests are to begin. The test procedures shall include the sequence in which the tests will be conducted. The test procedures shall have the Iowa DOT Engineer's approval prior to submission of equipment for tests.

The DMS Manufacturer shall perform the factory acceptance tests and any other testing prior to and at commissioning. The DMS Manufacturer shall furnish test reports and all associated data forms containing all of the data taken, as well as quantitative results for all tests. The test reports shall include a record of each test step, the test results, and a record of test failures, corrective action taken, and results of the retest. The test reports and data forms shall be signed by an authorized representative of the DMS Manufacturer. At least one copy of the test reports and data forms shall be sent to the Iowa DOT Engineer within 14 calendar days of the test's conclusion.

The Iowa DOT reserves the right to involve or designate a representative to witness all tests. The results of each test shall be compared with the requirements specified herein. Failure to conform to the requirements of any test will be counted as a defect and the equipment will be subject to rejection by the Iowa DOT. Rejected equipment may be corrected and offered again for retest, provided that all non-compliances have been corrected and retested by the DMS Manufacturer and evidence thereof submitted to the Iowa DOT.

Each of the tests on all or one type of equipment must be completed within five working days of each other. Any delays in performing these tests shall result in the DMS Manufacturer reimbursing the Iowa DOT for costs associated with additional time and travel needed by the Iowa DOT or the Iowa DOT's designated representative.

Final inspection and acceptance of equipment will be made after installation and commissioning at the designated location as shown on the installation plans (not part of these specifications).

The DMS Manufacturer shall be responsible for providing staff to administrate the tests as well as any testing instruments required to perform the tests.

Consequences of Test Failures: If any DMS fails to pass its test, the DMS shall be corrected or another DMS may be substituted in its place. The replacement DMS will only be accepted upon successfully meeting all requirements and tests of the original DMS.

If a DMS has been modified as a result of a test failure, a report shall be prepared and delivered to the Iowa DOT Engineer prior to shipment of the DMS. The report shall describe the nature of the failure and the corrective action taken.

If a failure pattern develops, the Iowa DOT Engineer may direct that design and construction modifications be made to all DMS without additional cost to the Iowa DOT or extension of the contract period.

3.7.1 Factory Acceptance Tests (FAT)

The DMS Manufacturer shall be responsible for conducting factory acceptance tests on all DMS at the DMS manufacturing facility. These tests shall be performed on each DMS supplied. The Iowa DOT reserves the right to involve or designate outside representatives to witness all tests.

The DMS Manufacturer shall notify the Iowa DOT Engineer a minimum of 30 calendar days before the start of tests. A shorter notification may be permitted if it does not conflict with the Iowa DOT Engineer or Representative's schedule.

The DMS Manufacturer shall demonstrate that the DMS and all components supplied under this contract fully comply with all requirements set forth in these specifications and the other referenced specifications and standards. At a minimum, each DMS is required to pass the following individual tests:

1. **Examination of Product**
   Each DMS shall be examined carefully to verify that the materials, design, construction, markings and quality of work comply with the requirements of these Specifications.

2. **Continuity Test**
   The wiring shall be checked to determine conformance with the requirements of the appropriate paragraphs in these Specifications.

3. **Operational, Environmental, Redundant and Destructive Tests**
   Each DMS shall be operated long enough to permit equipment temperature stabilization and to check and record an adequate number of performance characteristics to ensure compliance with the requirements of these Specifications. Test functions stated in the NEMA TS-4 standard Section 2.2.3 are required. Results from previous tests may be submitted for approval, such as transient tests, vibration, shock and timing accuracy tests.

   The DMS shall undergo redundancy testing. The DMS manufacturer shall provide instructions and test procedures for redundancy testing. During this testing, the DMS manufacturer shall disconnect every electrical component in the sign and test for proper sign function. Only one component at a time will be disconnected unless additional components can be disconnected according to the DMS manufacturer provided instructions. When a sign display circuit board is disconnected only the disconnected sign display circuit board shall be affected. The only acceptable failure mode is for the affected display section to go dark.

The DMS manufacturer shall provide one display circuit board for each sign type to use for destructive testing. During destructive testing, the DMS manufacturer shall cut out one or more LEDs from the display board to simulate failed LEDs. The test will determine whether the brightness of other LEDs change when LEDs in a pixel fail. The DMS manufacturer shall provide replacement LEDs for each circuit board provided for destructive testing. The DMS manufacturer shall repair the board to ensure that adjacent pixels are un-affected by the repair. Unplugging one or more electrical connections shall not result in an unacceptable failure to other connected components.

4. NTCIP Test

During the FAT the DMS Manufacturer shall use an approved NTCIP testing software (commonly accepted by the ITS industry such as Device Tester or NTester) to demonstrate the compliance of the NTCIP requirements set in these specifications. The NTCIP testing software shall be approved by the Iowa DOT prior to the FAT. A Software and Firmware programmer from the Manufacturer shall be present during this test to fix or explain any non-complying results.

The DMS Manufacturer shall perform the NTCIP testing in accordance with the testing requirements in NTCIP 1203 v03.05 Annex B. The DMS Manufacturer shall develop the following test documentation as outlined in NTCIP 1203 and incorporate the additional requirements in accordance with the PRL included in Appendix A.

- NTCIP Test Plan
- Requirements Traceability Matrix
- Requirements to Test Case Traceability Table
- Test Cases
- Test Procedures

The test plan shall describe the test scope, test environment, hardware and software configuration, schedule, and people who perform the tests. The test plan shall include the contingency plan for regression and progression tests as a result of DMS software revisions due to anomalies found during testing, The NTCIP testing shall include test cases to test boundary and error conditions, and positive and negative test scenarios. The DMS Manufacturer shall develop additional test cases and test procedures test NTCIP requirements that are not included in the NTCIP v03.05 test procedures, but required by these specifications and the PRL in Appendix A. All test documentation shall be submitted to the Iowa DOT Engineer for review and approval prior to the FAT.

The DMS Manufacturer shall develop test scripts for use during the FAT in accordance with the approved test procedures.

Upon completion of the NTCIP testing, the DMS Manufacturer shall submit the test reports with pass/fail results of each test step and anomalies noted.

The DMS Manufacturer may submit NTCIP compliance documents certified by an independent testing lab. The compliance documents shall include all test documentation and test reports as required above. The Iowa DOT will review the compliance documents and decide if any part of the NTCIP test can be waived.

5. TransSuite and Skyline Software Compatibility Tests

The vendor DMS , as part of NTCIP compliance, shall be compatible with TransSuite and Skyline DMS software. The Iowa DOT Engineer or Representative will connect to the DMS directly using TransSuite and Skyline

DMS software and conduct tests described below. Both serial and Ethernet communication ports will be checked. The DMS Manufacturer shall work with the Iowa DOT prior to the factory acceptance test to ensure remote connectivity of the test DMS with the TransSuite and Skyline DMS central software in Ames, IA.

Software and Firmware programmers from the DMS Manufacturer shall be present during this test to fix or explain any issues that arise. Sign Manufacturer is not responsible for any non-NTCIP function that TransSuite and Skyline DMS software may have. Sign Manufacturer is also not responsible for any NTCIP function that is not required by these specifications.
The testing functions will cover, but are not limited to, the following functions:

1) Read configuration from the sign
2) Send configuration data to the sign
3) Download messages with color fonts and images to sign controller for storage and/or display on DMS
4) Poll the sign (manual and automatic)
5) Activate a message with downloaded color fonts and images
6) Blank the sign
7) Upload fonts to the sign
8) Confirm controller will accept custom characters created and downloaded to sign.
9) Set the time (manually and automatically)
10) Reset the controller
11) Send a Local Mode override command to controller
12) Perform a pixel test and report results
13) Provide power supply status
14) Adjust character spacing within a single word within a line and send to the sign
15) Activate a message with a color graphic
16) Activate a message with both text and graphics on the same page

6. DMS Manufacturer's native software test
The DMS Manufacturer shall use the native DMS central control software and maintenance laptop software to test all required DMS functions including the tests performed in the step above (#5). Any problems and issues discovered during this process shall be addressed at the Manufacture's facility during the FAT.

3.7.2 On-Site Standalone Test
After the DMS has been delivered, installed and connected with electricity on site, the DMS Manufacturer shall provide a representative and conduct the standalone test of the equipment installation at the field site. The test shall, at a minimum, exercise all stand-alone (non-networked) functional operations of the field equipment with all of the equipment installed as per the contract documents.

The DMS Manufacturer shall submit a copy of the standalone test reports for each DMS that passes the test.

3.7.3 DMS Commissioning
The DMS Manufacturer's representative shall continue to be on site to commission each DMS after the sign has successfully gone through the stand-alone test. The commissioning process shall consist of connecting the DMS with the Iowa DOT central control software that includes TransSuite, Skyline server, and the DMS Manufacturer's native control software. The DMS manufacturer shall verify remote control of the DMS

from the central software. The DMS Manufacturer shall demonstrate to the satisfaction of the Iowa DOT Engineer that the DMS, at a minimum, can display diagnostic messages originating from the central software and perform all required functions and the controller is operational.

The Manufacturer shall make every effort to schedule the commissioning trip to Iowa within 21 calendar days after the Manufacturer has been notified the sign is ready for standalone test and commissioning. Manufacturer shall budget at least 1 trip per sign. The Iowa DOT will make efforts to commission multiple signs consecutively to reduce DMS Manufacturer's travel costs, but cannot guarantee this will be possible.

Costs associated with the commissioning of a DMS and associated parts shall be considered incidental to the cost of the DMS.

3.7.4 System Acceptance Test

After the commissioning of the DMS is successfully completed, a 90 calendar-day system acceptance test period of continuous operation will begin. The test will be performed by the Iowa DOT. The DMS manufacturer shall be available to address any issues during the test. The test procedure will follow normal operations for the Iowa DOT. Messages will be put on the DMS as necessary for traffic. The sign controller will be polled every 10 minutes. A pixel test and air flow test (as applicable) will be performed every night.

If malfunctions are detected due to mechanical, electrical or communications issues during the 90-day test period, the Iowa DOT Engineer will stop the test until the malfunction is corrected. If the malfunctions are a result of the DMS hardware or controlling software provided by the DMS manufacturer as determined by the Iowa DOT, the system acceptance test shall stop and test time shall be reset and a new 90-day test period will begin.

It is the responsibility of the DMS manufacturer to verify all equipment is in working order at the beginning of the test. Any adjustment or replacement of components will be considered a malfunction and cause for termination of the test period.

The DMS shall be communicating with the central computer during the entire 90-day test. Any loss of communications will be considered a malfunction.

Upon being informed of a malfunction, the DMS manufacturer shall respond within 24 hours with a representative who is thoroughly familiar with the operation of the DMS. If the Iowa DOT determines that a major failure has occurred during the 90-day test period, the Iowa DOT will require the DMS Manufacturer's representative to be on site to address the issues, at the expense of the DMS Manufacturer.

3.7.5 Final System Acceptance

Final DMS acceptance will occur when all work and materials provided have been furnished by the DMS Manufacturer, successfully installed, tested and commissioned, and all parts have been approved and accepted by the Iowa DOT Engineer and the DMS has successfully completed the 90-day test period of failure-free operation as specified in Section 3.7.4.

The Manufacturer's Warranty shall not begin until the final system acceptance. Refer to Section 3.12.

3.8 Responder Responsibilities

3.8.1 Alternative methods to meet the Specification

Responders are encouraged to propose advances in technology and alternates to meet the Iowa DOT's intent.

3.8.2 Mandatory Responses (Appendix D)

Please respond to all questions and statements in Appendix D. Please provide a response to each question or provide a page number reference in the response where the specific question is answered. .

3.8.3 Methods to display messages

Responders shall not propose any other methods to display messages except for LED.

3.8.4 Project Manager

Responder shall provide a responsible staff member that will work with the Iowa DOT on decisions regarding order of work and scheduling as needed throughout the duration of the project(s). A responsibility matrix is provided for clarity:

Table 3.4.4 Responsibility Matrix

	DMS Manufacturer	Engineer (Iowa DOT)	Sign-Truss Contractor	Statewide Maintenance Contractor
Factory Acceptance Testing	P	R		
Deliver DMS	P	C		
Install DMS on Structure		R	P	S
Commissioning DMS	P	R		S
Final Acceptance (90-day Burn)	S	R		P

P – Primary **S – Support**
R – Review **C - Coordinate**

3.9 DOT Responsibilities

3.9.1 Project Manager

A project manager will be assigned to this project**.** Iowa DOT will provide staff assistance to the Successful Responder as needed throughout the project as mutually agreed upon.

3.10 Training

Operations and maintenance training for the DMS shall be provided to designated personnel during installation, testing or debugging phases. This training shall be provided through practical demonstrations, seminars and other related technical procedures. Cost of providing the training shall be included in the response to this RFP.

Training shall be provided to a maximum of 10 people at a time and location approved by the Engineer. The training shall include, but not be limited to, the following:

1. "Hands-on" operation of all sign control hardware and software
2. Explanation of all system commands, function and usage
3. Insertion of data
4. Required preventative maintenance procedures

5. Servicing procedures including removal and replacement of sign components
6. System "troubleshooting" or problem identification procedures

A maximum of 40 hours of training will be required over the duration of the awarded contract for the integration, operational and maintenance procedures for the system. The first training session shall be conducted after the first sign is manufactured and before it is commissioned.

The DMS Manufacturer shall submit an agenda for the training and one complete set of training material (manual and schematic) along with the qualification of proposed instructors to the Engineer for approval at least 30 calendar days before the training is to begin. The Engineer will review material and approve or request changes.

The training session(s) will be conducted at a facility provided by the Iowa DOT, after the completion of all required tests. The schedule of the training sessions shall be established by the DMS Manufacturer with the approval of the Engineer.

3.11 Responder's Request for Alternatives or Exceptions

Any equipment being offered as an alternative to the specified make/model must be submitted on the enclosed form "Responder's Request for Alternatives or Exceptions." The form must specifically state the requested alternative and be accompanied by adequate supporting information to evaluate the request.

The "Responder's Request for Alternatives or Exceptions" form must be received in sufficient time ***prior*** to the opening of Responses to evaluate and respond with the appropriate action. It is suggested that any requests for alternatives be submitted either by e-mail or fax immediately upon receipt of the RFP in order to receive full consideration. Fair treatment to all Responders shall be the primary concern in evaluation of requests for of proposed alternates, particularly those submitted just prior to the Response opening. **Do not submit "Responder's Request for Alternative or Exceptions" with your Response.** Please see Appendix E.

3.12 Warranty

The equipment and parts furnished for the DMS will be new, of the latest model, and fabricated under high quality standards.

Equipment and parts furnished for the DMS will be warranted by the Manufacturer to be free from defects in assembly or fabrication and materials for a minimum of two years from the date of final acceptance, as described in Attachment 4 Specifications for Permanent Dynamic Message Signs. If component manufacturer's warranties are for a longer period, the longer warranty will apply. Any parts or equipment found to be defective during the warranty period will, upon the concurrence of the defect by the Manufacturer, be replaced free of charge.

Warranty period for pixel boards will be 7 years from the date of final acceptance, as described in Attachment 4 Specifications for Permanent Dynamic Message Signs. A pixel board must be replaced by the DMS Manufacturer after 1 week of pixel failures of one or more pixels. One week of pixel failures includes an intermittent failure occurring repeatedly under the same conditions. For example if a pixel failure occurs at night when temperatures are low, but not during the day. If this consistently occurs over 1 week, it will be declared as a failure and replacement will be required based on the warranty.

The DMS Manufacturer will furnish a certification stating that the equipment, parts, and material are covered by a warranty. Manufacturer contact information and warranty dates will be clearly shown.

All manufacturer warranties and guarantees for the DMS will be transferred to the Iowa DOT on the date of final acceptance.

Replacement pixel boards will be advance, express shipped to the Iowa DOT or its maintenance contractor prior to the Manufacturer receiving the bad pixel board. This will allow the maintenance contractor to perform only one trip to the DMS to service the pixel boards.

All other replacement parts will be shipped within one week of the Iowa DOT or its Representative notifying the DMS Manufacturer of a failed part or operational problem. Manufacturer must clearly state understanding of 2 year warranty period for the entire DMS and when it begins. Also clearly state understanding of 7 year warranty of pixel boards.

Manufacturer must clearly state understanding that during the 7 year warranty period for pixel boards, all replacement boards will be advanced shipped to the Iowa DOT or Iowa DOT's maintenance contractor. Failed pixel boards will be returned after installation.

3.13 DMS Delivery

The DMS Manufacturer shall not deliver any DMS without the Iowa DOT's approval on the FAT as specified in these specifications. The DMS manufacturer shall notify the Iowa DOT Engineer at least 14 calendar days prior to the sign shipment. The scheduled delivery date and location shall be agreed upon by the Iowa DOT Engineer. At the time of delivery, the DMS manufacturer shall include instructions for connecting signs, controllers, and all assemblies as required to power and communications. All necessary cables shall be provided for installation by others. The DMS manufacturer shall be responsible for unloading all equipment and materials.

The DMS manufacturer shall provide the following to the Iowa DOT Engineer at the time of delivery:

- A copy of all factory test reports
- Quantity of each item delivered
- Maintenance and operations manuals
- Sign and equipment schematics, equipment catalogue cut sheets, and wiring diagrams

The DMS manufacturer shall furnish 10% additional pixel boards for each DMS delivered to the Iowa DOT under this contract. The spare pixel boards shall be delivered to the Iowa DOT Engineer during the commissioning as specified in Section 3.7. The cost of the spare pixel boards shall be incidental to the DMS with no additional cost to the Iowa DOT.

Section 4 Form and Content

4.1 Instructions

The following instructions prescribe the format and content of the Response. They are designed to facilitate a uniform review process. Failure to adhere to the RFP format may result in the rejection of the Response.

It is the request of the Iowa DOT that the following section headings be used in the Responder responses to this RFP and that they be arranged in the order as listed in the RFP. Responders should provide a table of contents and should label divider tabs. Responses must be in sufficient detail to permit an understanding and comprehensive evaluation of the Responder's response.

4.1.1 The Response shall be typewritten on 8.5" x 11" paper (bound securely, double sided is allowed) and sent in a sealed envelope.

4.1.2 The Response shall be divided into two parts: (1) the Technical Response and (2) the Cost Proposal. **The Cost Proposal shall be in a separate sealed envelope**.

Example:

Technical Envelope(s) Contain(s):	Cost Proposal Envelope Contains:
Original Technical Response & Copies	Original Cost Proposal & Copies
Electronic copy of the Technical Response	Electronic Copy of the Cost Proposal
Public Copy if submitted	
Electronic Public Copy on same CD if submitted	

The envelopes shall be labeled with the information found on the cover sheet:

[RFP Title] [RFP Number]
[Issuing Officer's Name]
[Responder's Name and Address]
Iowa Department of Transportation
800 Lincoln Way
Ames, Iowa 50010

The Iowa DOT shall not be responsible for misdirected packages or premature opening of Responses if a Response is not properly labeled.

4.1.3 One (1) original, one (1) removable media (example: flash drive) each in a sealed envelope, ***and*** the additional number of copies of the Contractor Response defined on the Procurement Timetable in the cover section, shall be timely submitted to the Issuing Agent.

4.1.4 If the Responder designates any information in its Response as confidential pursuant to Section 2.20, the Responder must also submit one (1) copy of the Response from which confidential information has been excised as provided in Section 2.20 marked **"Public Copy"**.

4.1.5 Responders may include promotional materials as company information but they shall not take the place of the Response and will not be considered for the award unless they enhance the response to a specific requirement.

4.1.6 Attachments shall be referenced in the Response.

4.1.7 If a Responder proposes more than one method of meeting these requirements, each shall be labeled and submitted separately. Each will be evaluated separately.

4.2 Technical Response

The following documents shall be included in the Technical Response in the order given below:

4.2.1 Transmittal Letter (Required)

An individual authorized to legally bind the Responder shall sign the transmittal letter. The letter shall include the Responder's mailing address, electronic mail address, fax number, and telephone number.

Any request for confidential treatment of information shall be included in the transmittal letter in accordance with the provisions of Section 2.20 In addition to the specific statutory basis supporting the request, an explanation why disclosure of the information is not in the best interest of the public is required. The transmittal letter shall also contain the name, address, electronic mail address and telephone number of the individual authorized to respond to the Iowa DOT about the confidential nature of the information.

4.2.2 Table of Contents

The Responder should include a table of contents of its Response and submit the check list of submittals per Attachment # 3.

4.2.3 Executive Summary

The Responder shall prepare an executive summary and overview of the goods and/or services it is offering, including all of the following information:

4.2.3.1 Statements that demonstrate that the Responder has read, understands and agrees with the terms and conditions of the RFP including the contract provisions in Section 6.

4.2.3.2 An overview of the Responder's plans for complying with the requirement s of this RFP. (Including project management approach).

4.2.3.3 Any other summary information the Responder deems to be pertinent.

4.2.4 Specifications and Technical Requirements

The Responder shall answer whether or not it will comply with each requirement in Section 3 of the RFP. Responders shall explain how it will comply with each requirement in Section 3. **Merely repeating the requirements may be considered non-responsive and may disqualify the Responder.** Responses must identify any deviations from the requirements of this RFP or requirements the Responder cannot satisfy. Any deviations from the requirements of the RFP or any requirement of the RFP that the Responder cannot satisfy may disqualify the Responder.

4.2.5 Company Background Information

Provide the following general background information:

4.2.5.1 Name, address, telephone number, fax number and e-mail address of the Responder including all d/b/a's or assumed names or other operating names of the Responder.

4.2.5.2 Form of business entity, i.e., corporation, partnership, proprietorship, limited liability company.

4.2.5.3 State of incorporation, state of formation, or state of organization.

4.2.5.4 The location(s) (including address and telephone numbers) of the offices and other facilities that relate to the Responder's performance under the terms of the RFP.

4.2.5.5 Local office address and phone number (if any).

4.2.5.6 Number of employees.

4.2.5.7 Type of business.

4.2.5.8 Name, address, e-mail address and telephone number of the Responder's representative to contact regarding all contractual and technical matters concerning the Response.

4.2.5.9 Name, address, e-mail address and telephone number of the Responder's representative to contact regarding scheduling and other arrangements.

4.2.5.10 Name, contact information and qualifications of any sub-Contractors who will be involved with this project.

4.2.5.11 Responder's accounting firm.

4.2.5.12 The successful Contractor will be required to register to do business in Iowa before payments can be made. For contractor registration documents, go to: http://www.iowadot.gov/purchasing.

4.2.6 Experience

The Responder must provide the following information regarding its experience:

4.2.6.1 Number of years in business.

4.2.6.2 Number of years' experience with providing the types of goods and/or services sought by the RFP.

4.2.6.3 The level of technical experience in providing the types of goods and/or services sought by the RFP.

4.2.6.4 A list all of all goods and/or services similar to those sought by this RFP that the Responder has provided to other businesses or governmental entities within the past three years.

4.2.6.5 References from three (3) previous or current customers or clients knowledgeable of the Responder's performance in providing goods and/or services similar to the goods and/or services described in this RFP and a contact person, e-mail address and telephone number for each reference.

4.2.7 Personnel

The Responder must provide resumes for all key personnel who will be involved in providing the goods and/or services contemplated by this RFP. The following information must be included in the resumes:

4.2.7.1 Full name**.**

4.2.7.2 Education.

4.2.7.3 Years of experience and employment history particularly as it relates to the requirements of the RFP**.**

4.2.8 Financial Information (short list Responders only)

The Responder may be asked to provide the following financial information:
Short listed Responders at the time of presentation, see Section 2.33.

4.2.8.1 Audited financial statements for the last 3 years. Privately held companies may substitute Credit reports.

4.2.8.2 A minimum of three (3) financial references. Privately held companies may substitute: Letters of Reference from the bank.

4.2.9 Terminations, Litigation, Debarment

The Responder must provide the following information for the past five (5) years: (also see Attachment 1)

4.2.9.1 Has the Responder had a contract for goods and/or services terminated for any reason? If so, provide full details regarding the termination.

4.2.9.2 Describe any damages or penalties assessed against or dispute resolution settlements entered into by the Responder under any existing or past contracts for goods and/or services. Provide full details regarding the incident, including the dollar amount of damages, penalties and settlement payments.

4.2.9.3 Describe any order, judgment or decree of any Federal or State authority barring, suspending or otherwise limiting the right of the Responder to engage in any business, practice or activity.

4.2.9.4 A list and summary of all litigation or threatened litigation, administrative or regulatory proceedings, or similar matters to which the Responder or its officers have been a party, if any. The Responder must also state whether it or any owners, officers, or primary partners have ever been convicted of a felony. Failure to disclose these matters may result in rejection of the Response or in termination of any subsequent contract.

4.2.9.5 Any irregularities discovered in any of the accounts maintained by the Responder on behalf of others, describe the circumstances and disposition of resolving the irregularities.

The above disclosures are a continuing requirement of the Responder. The Responder shall provide written notification to the Iowa DOT of any such matter commencing or occurring after submission of a Response, and with respect to the successful Contractor, following execution of the Resulting Contract.

4.2.10 Certification Letter (Attachment 1)

The Responder shall sign and submit with the Response the document included as Attachment1 (Certification Letter) in which the Responder shall make the certifications included in Attachment 1.

4.2.11 Acceptance of Terms and Conditions

The Responder shall specifically agree that the Response is predicated upon the acceptance of all terms and conditions stated in the RFP. If the Responder objects to any term or condition, the Responder must specifically take exception per the RFP page and section and provide the reason for the objection. Objections or responses that materially alter the RFP may be deemed non-responsive and result in rejection of the Response.

4.2.12 Authorization to Release Information (Attachment 2)

The Responder shall sign and submit with the Response the document included as Attachment #2 (Authorization to Release Information Letter) in which the Responder authorizes the release of information to the Iowa DOT.

4.2.13 Firm Terms

The Responder shall guarantee in writing the availability of the goods and/or services offered and that all Response terms, including price, will remain firm a minimum of 180 days following the deadline for submitting Responses.

4.2.14 Work Plan

The work plan should be the Responder's overall approach to meeting or exceeding the requirements of the RFP. In addition to the detail in Section 3, Responder's work plans should include items such as timeline, additional functionality and any other pertinent information that would assist the evaluators in making the final recommended award.

Any deviations from the requirements of the RFP or any requirement of the RFP that the Responder cannot satisfy may disqualify the Responder.

4.3 Schedule of Prices – Cost Proposal

Responders shall provide a cost proposal for the proposed items listed in the **Schedule of Prices.** If applicable, Responders may submit additional pages to the Schedule of Prices to accurately reflect the overall costs of the goods or services proposed.

The Iowa DOT reserves the right to purchase any or all items on the Schedule of Prices either individually or as bundled throughout the contract period.

The amounts should exclude state and federal taxes except for taxes required to be withheld for employment purposes. The Iowa DOT is a tax exempt entity. **Cost proposal must be submitted in a separate envelope.**

4.3.1 Estimated Quantities / No Minimum Guarantee

The quantities listed in the Schedule of Prices are based on projected estimates for the next 5 years. The Iowa DOT intends to purchase 1 Overhead DMS in 2016 and estimates purchasing 1 to 4 signs per year after that. There will be zero (0) side-mount DMS purchased in 2016 and Iowa DOT estimates purchasing 1 sign per year after that. The exact amount of DMS purchased per year is dependent on funding and Iowa DOT final approval. It should also be understood there are no guaranteed minimum purchases with this contract.

Section 5 Evaluation and Selection

5.1 Introduction

This section describes the evaluation process that will be used to determine which Response provides the greatest benefit to the Iowa DOT based on the evaluation criteria in Section 5.4.

5.2 Evaluation Committee

The Iowa DOT shall conduct a comprehensive, fair and impartial evaluation of all compliant Responses received. The Iowa DOT will use an evaluation committee to review and evaluate the Responses. The Evaluation Committee shall consist of members with technical knowledge of the desired goods and/or services, users of the solution and other appropriate persons to best evaluate the Responses.

5.3 Overview of Evaluation

All submitted Responses will be first evaluated by the Purchasing Agent to determine if they comply with the mandatory requirements of the RFP. To be deemed a responsible Responder any proposed Response must comply with the mandatory requirements. Failure to meet the mandatory requirements will result in the rejection of the response. In the event that all Responders do not meet the mandatory requirements, the Iowa DOT reserves the right to continue the evaluation of the Responses and to select the Response most closely meeting the requirements specified in this RFP or may choose to reject all responses and consider the RFP closed.

5.4 Evaluation Criteria

The proposal evaluation criteria below shall be used by the Evaluation Committee for purposes of award. Items are not listed in any particular order of importance. If a demonstration/presentation is included in the evaluation criteria, only those short listed Responders shall be given a point rating and total score to be considered for award.

Evaluation Criteria
Overall content of written submitted proposal information
o Response demonstrates understanding of the products, personnel, and equipment necessary to complete the work o Response to the RFP is thorough and addresses all items requested herein o Response demonstrates adherence to NTCIP, NEMA TS 4-2005 and all specifications herein
Manufacturer Experience and References
o Qualifications and Experience of the DMS Manufacturer o Key staff experience and qualifications relative to the requested products o References
Support/Maintenance/Training
o Customer support, easy contacts and quick turnaround o Knowledgeable and friendly staff o Support Staff available to perform on-going support after installation
Presentation and Demonstration
o Presentation illustrates understanding of the products and software compatibility necessary to complete the work o Responder demonstrated the various features of the DMS sign, including quality of LED display, quality/durability of sign systems and components, ease of maintenance, sign message development and programming, and overall functional use of the DMS. o Responder provided a live demonstration of the integration and compatibility of DMS controller and software with Iowa DOT ATMS software.
Cost – See Schedule of Prices

Weighting of evaluation categories is not available to the Responders prior to the opening of all submitted responses.

5.5 Recommendation of the Evaluation Committee

The final evaluation will be based on the criteria as listed in Section 5.4.

5.6 Protest of Award

Protest of award shall be made in accordance with the Iowa Administrative Code 761-20.4(6)"e".

5.7 Presentation and Demonstration

Short list Responders will be required to provide an indoor presentation where the Manufacturer will be allowed to discuss their DMS and be available to answer questions. Presentations and Demonstrations will be held in Ames, IA.

Short list Responders will be required to provide an outdoor demonstration as well. The Manufacturer's sign will be displayed adjacent to others in a manner that will allow visual inspection, walk through and to view messages and graphics on all signs simultaneously at a distance of 1800' +/-, during both day and night conditions. The demonstrations will include integrating the signs with the Iowa DOT's TransSuite software to evaluate how easily the signs can be controlled by the Iowa DOT's ATMS software. The Iowa DOT will coordinate this integration with short list Responders prior to the demonstration date. The Iowa DOT will provide a cellular modem connection to facilitate connection from the demonstration DMS to the Iowa DOT ATMS software.

The DMS brought to the demonstration must be very similar to the model that is being proposed. Any differences must be clearly defined. During the DMS sign demonstration, the DMS manufacturer shall display all the messages shown included in Appendix C, including the two-phase messages. For two-phase messages, the DMS manufacturer shall demonstrate instantaneous transition of messages between the two phases. The DMS manufacturer is encouraged to display other messaging as well to show the full functionality of the color DMS meeting the needs of the Iowa DOT.

A pixel board from inside the demonstration DMS will be brought to the presentation and passed around for detailed viewing.

Section 6 Contract Terms and Conditions

6.1 Contract Terms and Conditions

The contract(s) that the Iowa DOT expects to award as a result of this RFP will be based upon the Response submitted by the successful Contractor and the RFP. The contract between the Iowa DOT and the successful Contractor shall be a combination of the specifications, terms and conditions of the RFP, including the terms contained in the Iowa DOT's attachment(s)**,** the offer of the Contractor contained in the Response, written clarifications or changes made in accordance with the provisions of the RFP herein and any other terms deemed necessary by the Iowa DOT, except that no objection or amendment by a Contractor to the RFP requirements shall be incorporated by reference into the Contract unless the Iowa DOT has explicitly accepted the Contractor's objection or amendment in writing.

The contract terms contained in Section 6 are not intended to be a complete listing of all contract terms but are provided only to enable contractors to better evaluate the costs associative with the RFP and the potential resulting contract. Contractors should plan on such terms being included in any contract awarded as a result of this RFP. All costs associated with complying with these requirements should be included in the cost proposal or any pricing quoted by the contractor.

By submitting a Response, each Contractor acknowledges its acceptance of the RFP specifications and the contract terms and conditions without change except as otherwise expressly stated in its Response. If a Contractor takes exception to a provision, it must state the reason for the exception and set forth in its Response the specific contract language it proposes to include in place of the provision. Exceptions that materially change the contract terms and conditions or the requirements of the RFP may be deemed non-responsive by the Iowa DOT, in its sole discretion, resulting in possible rejection of the Response. The Iowa DOT reserves the right to either award a contract(s) without further negotiation with the successful Contractor or to negotiate contract terms with the successful Contractor if the best interests of the State would be served.

6.2 Contract Period

The term of the Contract will begin and end on the dates indicated in the RFP Procurement Timetable, unless extended or terminated earlier in accordance with the termination provisions of this Contract. The Iowa DOT shall have the sole option to renew the Contract for up to the number of annual renewals specified on the Procurement Timetable.

6.3 Contractor Qualification Requirement

Prior to execution of a contract with a contractor, the contractor must qualify to do business with the State of Iowa.

6.4 Scope of Work (Services)

The services to be performed pursuant to and as a result of this contract by the contractor are described in Project Specifications, Section 3, and in the Appendices and are made a part hereof by this reference.

The contractor shall prepare and deliver specifications to the Iowa DOT which will detail the design, technical and functional capabilities, and other attributes related to the project, all as more fully described in Section 3.

Amendments to Scope of Services and Specifications. The parties agree that the Scope of Services and the specifications may be revised, replaced, amended or deleted

at any time during the term of this Contract to reflect changes in service or performance standards upon the mutual written consent of the parties.

Industry Standards. Services rendered pursuant to this Contract shall be performed in a professional and workmanlike manner in accordance with the terms of this Contract and with generally acceptable industry standards of performance for similar tasks and projects. In the absence of a detailed specification for the performance of any portion of this Contract, the parties agree that the applicable specification shall be the generally accepted industry standard.

As long as the Iowa DOT notifies the contractor promptly of any services performed in violation of this standard, the contractor will re-perform the services, at no cost to Iowa DOT, such that the services are rendered in the above-specified manner.

Non-Exclusive Rights. This Contract is not exclusive. The Iowa DOT reserves the right to select other contractors to provide services similar or identical to the Scope of Services described in this Contract during the term of this Contract.

6.5 Licenses

The Contractor shall include the cost for all software licenses and annual software maintenance fees required for its work. The Contractor must furnish a written copy of the software Terms and Conditions of software agreement with the submitted Response.

6.6 Labor Regulations

The Contractor shall give all notices and comply with all codes, laws, ordinances, rules and regulations of any public authority having jurisdiction that bears on the performance of its work.

All contractors, before entering into a contract with the Iowa Department of Transportation, must be registered with the Division of Labor in the Workforce Development Department, 515-281-3606 according to chapter 91C, Code 1993.

6.7 Contract Termination

It is imperative that the contractor consistently provides high quality services. Below are procedures that will be utilized in the event that the contract must be terminated due to the contractor's lack of ability to produce required results:

6.7.1 Immediate Termination by the Iowa DOT

The Iowa DOT may terminate this contract in writing for any of the following reasons effective immediately without advance notice:

6.7.1.1 In the event the contractor is required to be certified or licensed as a condition precedent to providing services, the revocation or loss of such license or certification will result in immediate termination of the Contract effective as of the date on which the license or certification is no longer in effect;

6.7.1.2 The Iowa DOT determines that the actions, or failure to act, of the contractor, its agents, employees or subcontractors have caused, or reasonably could cause, a client's life, health or safety to be jeopardized;

6.7.1.3 The contractor fails to comply with confidentiality laws or provisions;

6.7.1.4 The contractor furnished any statement, representation or certification in connection with this Contract or the RFP which is materially false, deceptive, incorrect or incomplete

6.7.2 Termination for Cause

The occurrence of any one or more of the following events shall constitute cause for the Iowa DOT to declare the contractor in default of its obligations under this Contract.

6.7.2.1 The contractor fails to perform to the Iowa DOT's satisfaction, per Section 3 Project Specification requirements.

6.7.2.2 The Iowa DOT determines that satisfactory performance of this Contract is substantially endangered or that a default is likely to occur.

6.7.2.3 The contractor fails to make substantial and timely progress toward performance and deliverables within the contract.

6.7.2.4 The contractor consistently misses deadlines agreed upon with the Iowa DOT project managers.

6.7.2.5 The contractor replaces key personnel with individuals who have less experience, knowledge and skills in the areas of their responsibilities.

6.7.2.6 The contractor staff's knowledge, skills, and experience are unacceptable to the Iowa DOT and do not reflect what the contractor represented the skill sets of their staff that would be assigned to this engagement.

6.7.2.7 The contractor's staff turnover is unacceptably high to Iowa DOT.

6.7.2.8 The contractor fails to effectively manage contractor staff time and/or assignments.

6.7.2.9 The contractor's quality of work is unacceptable to Iowa DOT (i.e. incorrect results, standards are not followed).

6.7.2.10 The contractor's quantity of work is unacceptable to Iowa DOT. The contractor fails to perform additional assignments as requested.

6.7.2.11 The contractor does not respond to critical issues and/or fails to participate in problem resolution when asked. This includes requests for support in the evenings and weekends.

6.7.2.12 The contractor's deliverable(s) cause a major outage to the Iowa DOT's IT infrastructure.

6.7.2.13 The contractor becomes subject to any bankruptcy or insolvency proceeding under federal or state law to the extent allowed by applicable federal or state law including bankruptcy laws; the contractor terminates or suspends its business; or the Iowa DOT reasonably believes that the contractor has become insolvent or unable to pay its obligations as they accrue consistent with applicable federal or state law.

6.7.2.14 The contractor has failed to comply with applicable federal, state and local laws, rules, ordinances, regulations and orders when performing within the scope of this Contract.

6.7.2.15 The contractor has engaged in conduct that has or may expose the Iowa DOT to liability, as determined in the Iowa DOT's sole discretion.

6.7.2.16 The contractor has infringed any patent, trademark, copyright, trade dress or any other intellectual property right.

6.7.3 Notice of Default

If there is a default event caused by the contractor, the Iowa DOT shall provide written notice to the contractor requesting that the breach or noncompliance be remedied within

the period of time specified in the Iowa DOT's written notice to the contractor. If the breach or noncompliance is not remedied by the date in the written notice, the Iowa DOT may either:

6.7.3.1 Immediately terminate the contract without additional written notice.

6.7.3.2 Enforce the terms and conditions of the contract and seek any legal or equitable remedies.

6.7.4 Termination Upon Notice
Following 30 days written notice, the Iowa DOT may terminate this Contract in whole or in part without the payment of any penalty or incurring any further obligation to the contractor.

Following termination upon notice, the contractor shall be entitled to compensation, upon submission of invoices and proper proof of claim, for services provided under this Contract to the Iowa DOT up to and including the date of Termination.

6.7.5 Termination Due to Lack of Funds or Change in Law
The Iowa DOT shall have the right to terminate this Contract without penalty by giving thirty (30) days written notice to the contractor as a result of any of the following:

6.7.5.1 Adequate funds are not appropriated or granted to allow the Iowa DOT to operate as required and to fulfill its obligations under this Contract.

6.7.5.2 Funds are de-appropriated or not allocated or if funds needed by the Iowa DOT, at the Iowa DOT's sole discretion, are insufficient for any reason.

6.7.5.3 The Iowa DOT's authorization to operate is withdrawn or there is a material alteration in the programs administered by the Iowa DOT.

6.7.5.4 The Iowa DOT's duties are substantially modified.

6.7.6 Remedies of the Contractor in Event of Termination by the Iowa DOT
In the event of termination of this Contract for any reason by the Iowa DOT, the Iowa DOT shall pay only those amounts, if any, due and owing to the contractor for services actually rendered up to and including the date of termination of the contract and for which the Iowa DOT is obligated to pay pursuant to this Contract. Payment will be made only upon submission of invoices and proper proof of the contractor's claim. This provision in no way limits the remedies available to the Iowa DOT under this Contract in the event of termination. However, the Iowa DOT shall not be liable for any of the following costs:

6.7.6.1 The payment of unemployment compensation to the contractor's employees.

6.7.6.2 The payment of workers' compensation claims, which occur during the contract or extend beyond the date on which the contract terminates.

6.7.6.3 Any costs incurred by the Successful Responder in its performance of the contract, including, but not limited to, startup costs, overhead or other costs associated with the performance of the contract.

6.7.6.4 Any taxes that may be owed by the contractor in connection with the performance of this Contract, including, but not limited to, sales taxes, excise taxes, use taxes, income taxes or property taxes.

6.7.7 Successful Responder Termination Duties
The contractor, upon receipt of notice of termination or upon request of the Iowa DOT, shall:

6.7.7.1 Cease work under this Contract and take all necessary and appropriate steps to limit disbursements and minimize costs, and furnish a report within thirty (30) days of the date of notice of termination, describing the status of all work under the contract, including, without limitation, results accomplished, conclusions resulting therein, any other matters the Iowa DOT may require.

6.7.7.2 Immediately cease using and return to the Iowa DOT any personal property or materials provided by the Iowa DOT to the contractor.

6.7.7.3 Comply with the Iowa DOT's instructions for the timely Transfer of any active files and work product produced by the contractor under this Contract.

6.7.7.4 Cooperate in good faith with the Iowa DOT, its employees, agents and contractors during the transition period between the notification of termination and the substitution of any replacement contractor.

6.7.7.5 Issue credit to the Iowa DOT for any payments made by the Iowa DOT for services that were inappropriately billed for services that were not rendered by the contractor.

6.7.7.6 Immediately deliver to the Iowa DOT any and all Deliverables for which the Iowa DOT has made payment (in whole or part) that are in the possession or under the control of the Contractor or its agents or subcontractors in whatever stage of development and form of recordation such property is expressed or embodied as that time.

6.7.8 Unacceptable Deliverables

The contractor shall be required to perform the work for each deliverable in accordance with the terms, conditions, and representations of this Contract.

6.8 Contractor's Insurance Requirements

The resulting Contract will require the successful Contractor to maintain insurance coverage(s) of the type and in the amounts set forth below.

• It shall be the Contractor's responsibility to have liability insurance covering all of the project operations incident to contract completion and the Contractor(s) must have on file with the Contracting Authority a current "Certificate of Insurance" prior to award of contract. The certificate shall identify the insurance company firm name and address, contractor firm name, policy period, type of policy, limits of coverage, and scope of work covered (single contract or statewide). This requirement shall apply with equal force, whether the work is performed by persons employed directly by the Contractor(s) including a subcontractor, persons employed by a subcontractor(s), or by an independent contractor(s).

• In addition to the above, the Contracting Authority shall be included as an insured party, or a separate owner's protective policy shall be filed showing the Contracting Authority as an insured party.

• The liability insurance shall be written by an insurance company (or companies) qualified to do business in Iowa. For independent contractors engaged solely in the transportation of materials, the minimum coverage provided by such insurance shall be not less than that required by Chapter 325A, Code of Iowa, for such truck operators or contract carriers as defined therein. For all other contractors, subcontractors, independent contractors, and the Contracting Authority, the minimum coverage by such insurance shall be as follows:

• *Commercial General Liability* including Contractual Liability;
• Contingent Liability; Explosion, Collapse and Underground Drainage;

• Damage; Occurrence Basis Bodily Injury: Broad Form Personal Injury; Broad Form Property Damage.

Bodily Injury

The contractor will purchase and maintain throughout the term of this contract the following minimum limits and coverage:

• Each person	$750,000
• Each accident/occurrence	$750,000
• Workers Compensation	$750,000
• Statutory Limits	$750,000
• Employer's liability	$750,000
• Pollution Liability	$750,000
• Occupation Disease	$750,000

Operations

• Property Damage	$250,000 each occurrence

The Contractor(s) shall require all subcontractor(s) meet the above insurance requirements.

The Certificate of Insurance must include the following;

- Iowa Department of Transportation must be listed as an additional insured
- Proposal Number
- Proposal Description
- Letting Date and Contract Period

6.9 Force Majeure

Neither Contractor nor the Iowa DOT shall be liable to the other for any delay or failure of performance of this Contract; and no delay or failure of performance shall constitute a default or give rise to any liability for damages if, and only to the extent that, such delay or failure is caused by a "force majeure". As used in this Contract, "force majeure" includes acts of God, war, civil disturbance and any other causes which are beyond the control and anticipation of the party effected and which, by the exercise of reasonable diligence, the party was unable to anticipate or prevent.

Failure to perform by a subcontractor or an agent of the Contractor shall not be considered a "force majeure" unless the subcontractor or supplier is prevented from timely performance by a "force majeure" as defined in this Contract. "Force majeure" does not include: financial difficulties of the Contractor or any parent, subsidiary, affiliated or associated company of Contractor; claims or court orders which restrict Contractor's ability to deliver the goods or services contemplated by this Contract.

If a "force majeure" delays or prevents Contractor's performance, the Contractor shall immediately commence to use its best efforts to directly provide alternate, and to the extent possible, comparable performance. Comparability of performance and the possibility of comparable performance shall be reasonably determined solely by the Iowa DOT.

During any such period, the Contractor shall continue to be responsible for all costs and expenses related to alternative performance.

This Section shall not be construed as relieving the Contractor of its responsibility for any obligation which is being performed by a subcontractor or supplier of services unless the subcontractor or supplier is prevented from timely performance by a "force majeure" as described here.

6.10 Indemnification by Contractor

The Contractor agrees to defend, indemnify and hold the Iowa DOT, and the State of Iowa, its employees, agents, board members, appointed officials and elected officials, harmless from any and all demands, debts liabilities, damages, loss, claims, suits or actions, settlements, judgments, costs and expenses, including the reasonable value of time expended by the Attorney General's Office, and the costs and expenses and attorney fees of other counsel required to defend the Iowa DOT or the State of Iowa related to or arising from: Any violation or breach of this Contract including without limitation any of the Contractor's representations or warranties; or Any acts or omissions, including, without limitation, negligent acts or omissions or willful misconduct of Contractor, its officers, employees, agents, board members, contractors, subcontractors, or counsel employed by Contractor in the performance of this Contract, or any other reason in connection with the goods and services provided under this Contract; or Claims for any violation of any intellectual property right including but not limited to infringement of patents, trademarks, trade dress, trade secrets, or copyrights arising from the any of the goods or service performed in accordance with this Contract; or The Contractor's performance or attempted performance of this Contract; or *Any failure by the Contractor to comply with all local, State and Federal laws and* regulations; or Any failure by the Contractor to make all reports, payments and withholdings required by Federal and State law with respect to social security, employee income and other taxes, fees or costs required by the Contractor to conduct business in the State of Iowa.

The Contractor's duty to indemnify as set forth in this section shall survive the expiration or termination of this Contract and shall apply to all acts taken in the performance of this Contract regardless of the date any potential claim is made or discovered by the STATE.

6.11 Indemnification by Iowa DOT

The State shall, only to the extent consistent with Article VII, Section 1 of the Iowa Constitution and Iowa Code Chapter 669, indemnify and hold harmless the Contractor from and against any and all costs, expenses, loses, claims, damages and liabilities arising directly out of the negligence or wrongful acts or omissions of any employee of the Iowa DOT while acting within the scope of the employee's office of employment in connection with the performance of this Contract.

At the option of the Iowa DOT, the Contractor shall be represented by the Attorney General of the State or special counsel retained by the Iowa DOT or the Attorney General of the State with respect to any litigation brought by or against the Contractor or such persons with respect to any claims, damages, judgments, liabilities or causes of action to which such persons may be subject and to which they are entitled to be indemnified hereunder.

Indemnification under this Section shall survive the termination of this Contract and shall include reasonable fees and expenses of counsel and expenses of litigation. If the Iowa DOT shall have made any indemnity payments pursuant to this Section and the person to or on behalf of whom such payments are made thereafter shall collect any of such amounts from others, such person shall promptly repay such amounts to the Iowa DOT, without interest.

6.12 Payment

Payment shall be made according to the deliverables listed below:

- 80% of the contract price of each item will be paid upon delivery of said item
- 15% of the contract price of each item will be paid upon satisfactory completion of the commissioning as described in section 3.7.3 of the Specifications
- 5% of the contract price of each item will be paid upon satisfactory completion of the final system acceptance as described in section 3.7.5 of the Specifications

6.13 Travel Expenses

Travel expenses shall not be allowed.

6.14 Care of Property

The contractor shall be responsible for the proper custody and care of any the State-owned tangible personal property furnished for the contractor's use in connection with the performance of the contract, and the contractor will reimburse the Iowa DOT for such property's loss or damage caused by the contractor, normal wear and tear excepted.

6.15 Contractor Conduct

The contractor shall adhere to State and other written established work rules. The Iowa DOT Workplace Environment Policies and Procedures will be provided to the contractor. These rules consist of commonly accepted, professional business conduct.

6.16 Public Contract Termination

The Provisions of Iowa Law as contained in Chapter 573A of the Code of Iowa, an Act to provide for termination of contracts for the construction of public improvements when construction or work thereon is stopped because of national emergency shall apply to and be a part of this Contract, and shall be binding upon all parties hereto including sub-contractors and sureties upon any bond given or filed in connection herewith.

Legislative Changes. The Contractor expressly acknowledges that the contracted Deliverables are subject to legislative change by either the federal or state government. Should either legislative body enact measures which alter the project, the Contractor shall not hold the Agency liable in any manner for the resulting changes. The Agency shall use best efforts to provide thirty (30) days' written notice to the Contractor of any legislative change. During the thirty (30) – day period, the parties shall meet and make a good faith effort to agree upon changes to the Contract to address the legislative change. Nothing in this Subsection shall affect or impair the Agency's right to terminate the Contract pursuant to the termination provisions.

Repayment Obligation. In the event that any State and/or federal funds are deferred and/or disallowed as a result of any audits or expended in violation of the laws applicable to the expenditure of such funds, the Contractor shall be liable to the Agency for the full amount of any claim disallowed and for all related penalties incurred. The requirements of this paragraph shall apply to the Contractor as well as any subcontractors.

6.17 Confidential Information

6.17.1 The Contractor's employees, agents and subcontractors may have access to confidential information maintained by the Iowa DOT to the extent necessary to carry out its responsibilities under the Contract.

The Contractor shall presume that all information received pursuant to this Contract is confidential unless otherwise designated by the Iowa DOT. The Contractor shall provide to the Iowa DOT a written description of its policies and procedures to safeguard confidential information. Policies of confidentiality shall address, as appropriate, information conveyed in verbal, written, and electronic formats. The Contractor must designate one individual who shall remain the responsible authority in charge of all data collected, used, or disseminated by the Contractor in connection with the performance of the Contract. The Contractor shall provide adequate supervision and training to its agents, employees and subcontractors to ensure compliance with the terms of this Contract. The private or confidential information shall remain the property of the Iowa DOT at all times.

6.17.2 No confidential information collected, maintained, or used in the course of performance of the Contract shall be disseminated by Contractor except as authorized by law and only with the prior written consent of the Iowa DOT, either during the period of the Contract or thereafter. Any data supplied by the Iowa DOT to the Contractor or created by the Contractor in the course of the performance of this Contract shall be considered the property of the Iowa DOT. The Contractor must return any and all data collected, maintained, created or used in the course of the performance of the Contract in whatever form it is maintained promptly at the request of the Iowa DOT. The Contractor may be held civilly or criminally liable for improper disclosure of confidential information.

6.17.3 In the event that a subpoena or other legal process is served upon the Contractor for records containing confidential information, the Contractor shall promptly notify the Iowa DOT and cooperate with the Iowa DOT in any lawful effort to protect the confidential information.

6.17.4 The Contractor shall immediately report to the Iowa DOT any unauthorized disclosure of confidential information.

6.17.5 The Contractor's obligations under this section shall survive termination or expiration of this Contract.

6.18 Contractor Warranties

Construction of Warranties Expressed in this Contract with Warranties Implied by Law. All warranties made by the Contractor in all provisions of this Contract and the Response by the Contractor, whether or not this Contract specifically denominates the Contractor's promise as a warranty or whether the warranty is created only by the Contractor's affirmation or promise, or is created by a description of the materials and services to be provided, or by provision of samples to the Iowa DOT shall not be construed as limiting or negating any warranty provided by law, including without limitation, warranties which arise through course of dealing or usage of trade. The warranties expressed in this Contract are intended to modify the warranties implied by law only to the extent that they expand the warranties applicable to the goods and services provided by the Contractor.

The Contractor warrants that all the concepts, materials produced, the work product and the information, data, designs, processes, inventions, techniques, devices, and other such intellectual property furnished, used, or relied upon by the Contractor or the Iowa DOT will not infringe any copyright, patent, trademark, trade dress, or other intellectual property right of the Contractor or others. Any intellectual property provided to the Iowa

DOT pursuant to the terms of this Contract, shall be wholly original with the Contractor or the Contractor has secured all applicable interests, rights, licenses, permits, or other intellectual property rights in such concepts, materials and work.

The Contractor represents and warrants that the concepts, materials and the Iowa DOT's use of same and the exercise by the Iowa DOT of the rights granted by this Contract shall not infringe upon any other work, other than material provided by the Iowa DOT to the Contractor to be used as a basis for such materials, or violate the rights of publicity or privacy of, or constitute a libel or slander against, any person, firm or corporation and that the concepts, materials and works will not infringe upon the copyright, trademark, trade name, literary, dramatic, statutory, common law or any other rights of any person, firm or corporation or other entity.

The Contractor warrants that all of the services to be performed hereunder will be rendered using sound, professional practices and in a competent and professional manner by knowledgeable, trained and qualified personnel. The Contractor warrants that the deliverables under this Contract will operate in conformance with the terms and conditions of this Contract.

The Contractor warrants that it has full authority to enter into this Contract and that it has not granted and will not grant any right or interest to any person or entity, which might derogate, encumber, or interfere with the rights granted to the Iowa DOT.

The Contractor warrants that all obligations owed to third parties with respect to the activities contemplated to be undertaken by the Contractor pursuant to this Contract are or will be fully satisfied by the Contractor so that the Iowa DOT will not have any obligations with respect thereto.

The Contractor warrants that it is the owner of or otherwise has the right to use and distribute the software, the materials owned by the Contractor and any other materials, and methodologies used in connection with providing the services contemplated by this Contract.

The Contractor warrants that any software used in connection with the Internet Service shall not contain any Trojan horses, worms, viruses or other disabling devices.

The Contractor expressly warrants to the standards in the industry all aspects of the goods and services provided by it or used by the Contractor and the Iowa DOT in performance of this Contract.

Contractor warrants that during the term of this Contract and any extension or renewal term, the Contractor shall continually use and integrate the most current and up-to-date technology commercially available into the Internet Service and any components necessary for the Internet Service to function subject to the prior written approval of the Iowa DOT.

Attachment # 1 – Certification Letter

Alterations to this document are prohibited (see Section 2.13.14)

Note: Effective Date follows signature of last page

Ms. Renee R. Shirley, Director of Purchasing
Iowa Department of Transportation
Office of Finance
Purchasing Section
800 Lincoln Way
Ames, Iowa 50010

Re: PROPOSAL CERTIFICATIONS

Dear Ms. Shirley:

I certify that the contents of the Response submitted on behalf of authorized Vendor/Contractor Company name designated in response to Iowa Department of Transportation's Request for Proposal (RFP) designated on the cover page and specified following the signature line of this document are true and accurate. I also certify I have not knowingly made any false statements in its Response as the representative for the Vendor/Contractor.

Certification of Independence

I certify that I am a representative of the Contractor expressly authorized to make the following certifications on behalf of the Contractor. By submitting a Response to the RFP, I certify on behalf of the Contractor the following:

1. The Response has been developed independently, without consultation communication or agreement with any employee or consultant to the Iowa DOT or any Participating Agency, or with any person serving as a member of the evaluation committee.
2. The Response has been developed independently, without consultation, communication or agreement with any other contractor or parties for the purpose of restricting competition.
3. Unless otherwise required by law, the information found in the Response has not been and will not be knowingly disclosed directly or indirectly prior to the Iowa DOT's issuance of the Notice of Intent to Award the contract.
4. No attempt has been made or will be made by the Contractor to induce any other Contractor to submit or not to submit a Response for the purpose of restricting competition.
5. No relationship exists or will exist during the contract period between the Contractor and the Iowa DOT or any Participating Agencies that interferes with fair competition or constitutes a conflict of interest.

Certification Regarding Debarment

6. I certify that, to the best of my knowledge, neither Contractor nor any of its principals: (a) are presently or have been debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by a Federal Agency or State Agency; (b) have within a three year period preceding this Response been convicted of, or had a civil judgment rendered against them for commission of fraud, a criminal offense in connection with obtaining, attempting to obtain, performing a public (federal, state, or local) transaction or contract under a public transaction, violation of antitrust statutes commission of embezzlement, theft, forgery, falsification or destruction of records, making false statements, or receiving stolen property; (c) are presently indicted for, or criminally or civilly charged by a government entity (federal, state, or local) with the commission of any of the offenses enumerated in (b) of this certification; and (d) have not within a three year period preceding this RFP had one or more public transactions (federal, state, or local) terminated for cause. This certification is a material representation of fact

upon which the Iowa DOT has relied upon when this transaction was entered into. If it is later determined that the Contractor knowingly rendered an erroneous certification, in addition to other remedies available, the Iowa DOT may pursue available remedies including suspension, debarment, or termination of the contract.

Certification Regarding Registration, Collection, and Remission of Sales and Use Tax

7. Pursuant to Iowa Code Sections 423.2(10) and 423.5(8) (2009) a retailer in Iowa or a retailer maintaining a business in Iowa that enters into a contract with a state agency must register, collect, and remit Iowa sales tax and Iowa use tax levied under Iowa Code chapter 423 on all sales of tangible personal property and enumerated services. Contractors are required to certify their compliance with sales tax registration, collection, and remission requirements and provides potential consequences if the certification is false or fraudulent.

By submitting a Response to the RFP, the Contractor certifies the following: (check the applicable box)

_ Contractor is registered with the Iowa Department of Revenue, collects, and remits Iowa sales and use taxes as required by Iowa Code chapter 432; or

_ Contractor is not a “retailer” or a “retailer maintaining a place of business in this state” as those terms are defined in Iowa Code subsections 423.1(42) and (43).

Contractor also acknowledges that the Iowa Department of Transportation may declare the Contractor’s Response or resulting contract void if the above certification is false. The Contractor also understands that fraudulent certification may result in the Iowa Department of Transportation or its representative filing for damages for breach of contract in additional to other remedies available to Iowa Department of Transportation.

Sincerely,

_____	_____
[Signature of authorized representative]	**[Print Name and Title]**
_____	_____
[Printed Name of Contractor Organization]	**[Date]**

Request for Proposal Number: _____

Attachment #2 – Authorization to Release Information Letter

Alterations to this document are prohibited (see Section 2.13.14)

Note: Effective Date follows signature of last page

Ms. Renee R. Shirley, Director of Purchasing
Iowa Department of Transportation
Office of Finance
Purchasing Section
800 Lincoln Way
Ames, Iowa 50010

Re: AUTHORIZATION TO RELEASE INFORMATION

Dear Ms. Shirley:

I certify that I am an authorized representative of the Vendor/Contractor and hereby authorize the Iowa Department of Transportation or a member of the Evaluation Committee to obtain information regarding its performance on other contracts, agreements or other business arrangements, its business reputation, and any other matter pertinent to evaluation and the selection of a successful Contractor in response to Request for Proposal Number (RFP) designated on the cover page and specified following the signature line of this document.

The Contractor acknowledges that it may not agree with the information and opinions given by such person or entity in response to a reference request. The Contractor acknowledges that the information and opinions given by such person or entity may hurt its chances to receive contract awards from the State or may otherwise hurt its reputation or operations. The Contractor is willing to take that risk. The Contractor hereby releases, acquits and forever discharges the State of Iowa, the Iowa DOT, Participating Agencies, their officers, directors, employees and agents from any and all liability whatsoever, including all claims, demands and causes of action of every nature and kind affecting the undersigned that it may have or ever claim to have relating to information, data, opinions, and references obtained by the Iowa DOT or the Evaluation Committee in the evaluation and selection of a successful Contractor in response to the RFP.

The Contractor authorizes representatives of the Iowa DOT or the Evaluation Committee to contact any and all of the persons, entities, and references which are, directly or indirectly, listed, submitted, or referenced in the Contractor's Response to the RFP.

The Contractor further authorizes any and all persons, entities to provide information, data, and opinions with regard to its performance under any contract, agreement, or other business arrangement, its ability to perform, business reputation, and any other matter pertinent to the evaluation of the Contractor's Response. The Contractor hereby releases, acquits and forever discharges any such person or entity and their officers, directors, employees and agents from any and all liability whatsoever, including all claims, demands and causes of action of every nature and kind affecting the Contractor that it may have or ever claim to have relating to information, data, opinions, and references supplied to the Iowa DOT or the Evaluation Committee in the evaluation and selection of a successful contractor in response to the RFP.

A photocopy or facsimile of this signed Authorization is as valid as an original.

Sincerely,

_____ _____
[Signature of authorized representative] **[Print Name and Title]**

_____ _____
[Printed Name of Contractor Organization] **[Date]**

Request for Proposal Number: _____

Attachment # 3 Requirements Check List

Section	RFP REFERENCE	PAGE NUMBER IN RESPONDER'S RESPONSE
Cover	Response Sheet	
4.3	Schedule of Prices -Cost Proposal	*In separate sealed envelope*
2.3/2.6	Vendor signed Addenda *if issued*. Posted on internet website: http://www.iowadot.gov/purchasing	
3	Mandatory/Desired Requirements	
4.1.3	One (1) Original hard copy (marked), and 1 Removable Media and the number of copies as specified (Procurement Timetable)	
4.1.4	One (1) Public Copy with Confidential Information Excised – If Applicable	
4.2.1	Transmittal Letter	
4.2.5	Company Background Information	
4.2.5.10	Sub-Contractors	
4.2.6	Experience – Including 3 References	
4.2.7	Personnel	
4.2.9	Termination, Litigation, Debarment	
4.2.10	Certification Letter **(Attachment 1)**	
4.2.11	Acceptance of Terms and Conditions	
4.2.12	Authorization to Release Information **(Attachment 2)**	
4.2.14	Work Plan	

This page is supplied as a checklist and is not intended to be used as an all-inclusive Response requirement.

Protocol Requirements List (PRL)							
User Need Section Number	**User Need**	**FR Section Number**	**Functional Requirement**	**Conformance**	**Support / Project Requirement**	**Additional Project Requirements**	**Comments**
2.3.2	DMS Characteristics			M	Yes		
2.3.2.1	DMS Type			M	Yes		
2.3.2.1.1 (BOS)	BOS			O.1 (1)	~~Yes~~ / No		
2.3.2.1.2 (CMS)	CMS			O.1 (1)	~~Yes~~ / No		
2.3.2.1.3 (VMS)	VMS			O.1 (1)	Yes / ~~No~~		
2.3.2.2	DMS Technology			M	Yes	Note that certain combinations of the following technologies might not be supported by any product.	
2.3.2.2.1 (Fiber)	Fiber			O	~~Yes~~ / No		
2.3.2.2.2 (LED)	LED			O	Yes / ~~No~~		
2.3.2.2.3 (Flip/Shutter)	Flip/Shutter			O	~~Yes~~ / No		
2.3.2.2.4 (Lamp)	Lamp			O	~~Yes~~ / No		
2.3.2.2.5 (Drum)	Drum			O	~~Yes~~ / No		
2.3.2.3	DMS Display Matrix Configuration			M	Yes	The DMS shall be ___ millimeters wide (0..65535) and ___ millimeters high (0..65535), inclusive of borders. The Sign's Border shall be at least ___ millimeters wide (0..65535) and ___ millimeters high (0..65535).	Varies. See Specifications.
2.3.2.3.1	Non-Matrix			O.2 (1)	~~Yes~~ / No		
2.3.2.3.2 (Matrix)	Matrix			O.2 (1)	Yes / ~~No~~	The pitch between pixels shall be at least ___ millimeters (0..255).	Varies. See Specifications.
2.3.2.3.2.1	Full Matrix			O.3 (1)	Yes / ~~No~~	The sign shall be ___ pixels wide (0..65535) and ___ pixels high (0..65535).	Varies. See Specifications.
2.3.2.3.2.2	Line Matrix			O.3 (1)	~~Yes~~ / No	The sign shall have ____ lines with each line being ___ pixels wide and ___ pixels high.	
2.3.2.3.2.3	Character Matrix			O.3 (1)	~~Yes~~ / No	The sign shall be ___ characters wide and ___ characters high with each character being ___ pixels wide (0..255) and ___ pixels high (0..255).	
2.3.2.4 (Beacons)	DMS Display Support of Beacons			M	Yes	The DMS shall support the following Beacon configuration:_____ Select one from the following (or define your own): - none - one Beacon - two Beacons with Sync-ed Flash - two Beacons with Opposing Flash ~~- four Beacons with Sync-ed Flash~~ ~~- four Beacons with Alternate Row Flash~~ ~~- four Beacons with Alternate Column Flash~~ ~~- four Beacons with Alternate Diagonal Flash~~ ~~- four Beacons with No Sync-ed Flash~~ ~~- one Beacon Strobe~~ ~~- two Beacon Strobe~~ ~~- four Beacon Strobe~~	
2.4.2	Operational Environment			M	Yes		
2.4.2.1	Live Data Exchange			M	Yes		
		3.4.1.1	Retrieve Data	M	Yes		
		3.4.1.2	Deliver Data	M	Yes		
		3.4.1.3	Explore Data	M	Yes		
		3.4.4.1	Determine Current Access Settings	M	Yes		
		3.4.4.2	Configure Access	M	Yes	The DMS shall support at least _____ access levels in addition to the administrator.	
2.4.2.2	Logged Data Exchange			O	Yes / ~~No~~		
		H.2.2.1	Set Time	M	Yes		
		H.2.2.2	Set Time Zone	H.2.2.1:O	Yes / ~~No~~	Note: Users are cautioned that this object definition has been revised to address interoperability in version 01, but remains at the same ObjectID. Pay close attention to the implementation, and interoperability of this object.	
		H.2.2.3	Set Daylight Savings Mode	H.2.2.1:O	Yes / ~~No~~		
		H.2.2.4	Verify Current Time	M	Yes	Place a checkmark below, if the DMS is NOT required to	

User Need Section Number	User Need	FR Section Number	Functional Requirement	Conformance	Support / Project Requirement	Additional Project Requirements	Comments
		H.2.2.4	Verify Current Time	M	Yes	Place a checkmark below, if the DMS is NOT required to support the major version that is checked. Version v01____ Version v02____	
		H.2.6 †	Supplemental Requirements for Event Monitoring	M	Yes		
		3.4.2.1	Determine Current Configuration of Logging Service	M	Yes		
		3.4.2.2	Configure Logging Service	M	Yes		
		3.4.2.3	Retrieve Logged Data	M	Yes		
		3.4.2.4	Clear Log	M	Yes		
		3.4.2.5	Determine Capabilities of Event Logging Service	M	Yes		
		3.4.2.6	Determine Total Number of Events	M	Yes		
2.4.2.3	Exceptional Condition Reporting			X	No	Exception Reporting is not yet supported by NTCIP.	
2.5	Features			M	Yes		
2.5.1	Manage the DMS Configuration			M	Yes		
2.5.1.1	Determine the DMS Identity			M	Yes		
		3.5.1.1.1	Determine Sign Type and Technology	M	Yes		
		H.2.1	Determine Device Component Information	M	Yes		
		H.2.4	Determine Supported Standards	M	Yes		
2.5.1.2	Determine Sign Display Capabilities			O	Yes / ~~No~~		
		3.5.1.2.1.1	Determine the Size of the Sign Face	M	Yes		
		3.5.1.2.1.2	Determine the Size of the Sign Border	M	Yes		
		3.5.1.2.1.3	Determine Beacon Type	M	Yes		
		3.5.1.2.1.4	Determine Sign Access and Legend	M	Yes		
		3.5.1.2.2.1	Determine Sign Face Size in Pixels	Matrix:M	Yes / ~~NA~~		
		3.5.1.2.2.2	Determine Character Size in Pixels	Matrix:M	Yes / ~~NA~~		
		3.5.1.2.2.3	Determine Pixel Spacing	Matrix:M	Yes / ~~NA~~		
		3.5.1.2.3.1	Determine Maximum Number of Pages	VMS:M	Yes / ~~NA~~	The DMS shall support at least _99_ (1..255) pages for a single message.	
		3.5.1.2.3.2	Determine Maximum Message Length	VMS:M	Yes / ~~NA~~	The DMS shall support a Multi-String message of at least 1200 (0..65535) bytes.	
		3.5.1.2.3.3	Determine Supported Color Schemes	VMS:M	Yes / ~~NA~~		
		3.5.1.2.3.4	Determine Message Display Capabilities	VMS:M	Yes / ~~NA~~		
		3.5.1.3.1	Determine Maximum Number of Fonts Supported	Fonts:M	Yes / ~~NA~~	See PRL 3.6.1.1	
		3.5.1.3.3	Determine Maximum Number of Characters per Font	Fonts:M	Yes / ~~NA~~		
		3.5.1.3.4	Retrieve a Font Definition	Fonts:M	Yes / ~~NA~~		
		3.5.1.4.1	Determine Maximum Number of Graphics	Graphics:M	Yes / ~~NA~~	The DMS shall support at least _255_ graphics.	
		3.5.1.4.4	Retrieve a Graphic Definition	Graphics:M	Yes / ~~NA~~		
		3.5.2.3.2.1	Determine Default Message Display Parameters	VMS:M	Yes / ~~NA~~		
		3.5.3.2.1	Monitor Information about the Currently Displayed Message	O	Yes / ~~No~~		
		3.5.3.2.2	Monitor Dynamic Field Values	Fields:M	Yes / ~~NA~~		
		3.6.6 †	Supplemental Requirements for Message Definition	VMS:M	Yes / ~~NA~~		
2.5.1.3 (Fonts)	Manage Fonts			VMS:O	Yes / ~~No / NA~~		
		3.5.1.3.1	Determine Maximum Number of Fonts Supported	M	Yes		
		3.5.1.3.2	Determine Maximum Character Size	M	Yes	The DMS shall support at least _95_ characters per font (1...65535).	
		3.5.1.3.3	Determine Maximum Number of Characters per Font	M	Yes		
		3.5.1.3.4	Retrieve a Font Definition	M	Yes	Note: Users are cautioned that this object definition has been revised to address interoperability issues in version	
		3.5.1.3.5	Configure a Font	O	Yes / ~~No~~		

User Need Section Number	User Need	FR Section Number	Functional Requirement	Conformance	Support / Project Requirement	Additional Project Requirements	Comments
		3.5.1.3.6	Delete a Font	O	Yes / ~~No~~	01. The associated objects were deprecated and replaced by newer objects that have a wider scope or that have been changed to ease implementation. Pay close attention to the implementation and interoperability of these objects. Place a checkmark below, if the DMS is NOT required to support the major version that is checked." Version v01____ Version v02____	
		3.5.1.3.7	Validate a Font	O	Yes / ~~No~~		
		3.6.1 †	Supplemental Requirements for Fonts	M	Yes	If desired, the procurement officer should define the fonts or leave this up to the vendor. If officer defines the font(s), attach sheet(s) with definitions. Note: The Project Specifications may ask vendor to propose the fonts.	
2.5.1.4 (Graphics)	Manage Graphics			VMS:O	Yes / ~~No / NA~~		
		3.5.1.4.1	Determine Maximum Number of Graphics	M	Yes	The DMS shall support at least _50_ graphics.	
		3.5.1.4.2	Determine Maximum Graphic Size	M	Yes	The DMS shall support a maximum graphic size of ___65535___ bytes.	
		3.5.1.4.3	Determine Available Graphics Memory	M	Yes	The DMS shall support a maximum graphic block size of ___1024____ bytes.	
		3.5.1.4.4	Retrieve a Graphic Definition	M	Yes		
		3.5.1.4.5	Store a Graphic Definition	O	Yes / ~~No~~		
		3.5.1.4.6	Delete a Graphic	O	Yes / ~~No~~		
		3.5.1.4.7	Validate a Graphic	O	Yes / ~~No~~		
		3.6.11 †	Supplemental Requirements for Graphics	M	Yes	If desired, the procurement officer should define the graphics or leave this up to the vendor. If officer defines the graphic(s), attach sheet(s) with definitions. Note: The Project Specifications may ask vendor to propose the graphics.	
2.5.1.5	Manage Automatic Brightness			AutoBright:O	Yes / ~~No / NA~~		
		3.5.1.5.1	Determine Maximum Number of Light Sensor Levels	M	Yes		
		3.5.1.5.2	Configure Light Output Algorithm	O	Yes / ~~No~~		
		3.5.1.5.3	Determine Current Light Output Algorithm	O	Yes / ~~No~~		
		3.5.2.5.1	Determine Number of Brightness Levels	M	Yes		
		3.6.2 †	Supplemental Requirements for General Illumination Brightness	M	Yes		
		3.6.3 †	Supplemental Requirements for Automatic Brightness Control	O	Yes / ~~No~~		
2.5.1.6	Configure Speed Limit			O	Yes / ~~No~~		
		3.5.1.6	Configure Current Speed Limit	M	Yes		
2.5.1.7	Configure Low Fuel Threshold			O	~~Yes~~ / No		
		3.5.1.7	Configure Low Fuel Threshold Value	M	Yes		
2.5.2	Control the DMS			M	Yes		
2.5.2.1	Control a DMS from More than One Location			M	Yes		
		3.5.2.1	Manage Control Source	M	Yes		
		3.6.4 †	Supplemental Requirements for Control Modes	M	Yes		
2.5.2.2	Remotely Reset the Sign Controller			O	Yes / ~~No~~		
		3.5.2.2	Reset the Sign Controller	M	Yes		
2.5.2.3	Control the Sign Face			M	Yes		
2.5.2.3.1	Activate and Display a Message			M	Yes		
		3.5.2.3.1	Activate a Message	M	Yes		
		3.5.2.3.3.5	Retrieve Message	M	Yes		
		3.5.2.3.6	Activate a Message with Status	Drum:M	Yes / ~~NA~~		

User Need Section Number	User Need	FR Section Number	Functional Requirement	Conformance	Support / Project Requirement	Additional Project Requirements	Comments
		3.6.5 †	Supplemental Requirements for Message Activation Request	M	Yes		
		3.6.7 †	Supplemental Requirements for Locally Stored Messages	M	Yes		
2.5.2.3.2	Prioritize Messages			M	Yes		
		3.5.2.3.1	Activate a Message	M	Yes		
		3.5.2.3.3.3	Define a Message	VMS:M	Yes / ~~NA~~		
		3.5.2.3.6	Activate a Message with Status	Drum:M	Yes / ~~NA~~		
		3.6.5.4 †	Supplemental Requirements for Message Activation Priority	M	Yes		
		3.6.6.4 †	Priority to Maintain a Message	M	Yes		
2.5.2.3.3	Define a Message			VMS:M	Yes / ~~NA~~		
		3.5.1.2.1.3	Determine Beacon Type	M	Yes		
		3.5.1.2.3.1	Determine Maximum Number of Pages	M	Yes		
		3.5.1.2.3.2	Determine Maximum Message Length	M	Yes		
		3.5.1.2.3.3	Determine Supported Color Schemes	M	Yes		
		3.5.1.2.3.4	Determine Message Display Capabilities	M	Yes		
		3.5.1.2.4	Delete All Messages of a Message Type with One Command	O	Yes / ~~No~~		
		3.5.1.3.1	Determine Maximum Number of Fonts Supported	Fonts:M	Yes / ~~NA~~		
		3.5.1.3.3	Determine Supported Characters	Fonts:M	Yes / ~~NA~~		
		3.5.1.4.1	Determine Maximum Number of Graphics	Graphics:M	Yes / ~~NA~~		
		3.5.2.3.2.1	Determine Default Message Display Parameters	M	Yes		
		3.5.2.3.2.2	Configure Default Background and Foreground Color	O	Yes / ~~No~~		
		3.5.2.3.2.3	Configure Default Flash-On and Flash-Off Times	O	Yes / ~~No~~	The DMS shall support all flash on times from __5_ tenths of a second (0..255) to _50_ tenths of a second (0..255) in __1_ tenths of a second increments. The DMS shall support all flash off times from __5_ tenths of a second (0..255) to _50_ tenths of a second (0..255) in __1_ tenths of a second increments.	
		3.5.2.3.2.4	Configure Default Font	O	Yes / ~~No~~		
		3.5.2.3.2.5	Configure Default Line Justification	O	Yes / ~~No~~		
		3.5.2.3.2.6	Configure Default Page Justification	O	Yes / ~~No~~		
		3.5.2.3.2.7	Configure Default Page On-Time and Page Off-Time	O	Yes / ~~No~~	The DMS shall support all page on times from _5___ tenths of a second (1..255) to _100___ tenths of a second (1..255) in __1__ tenths of a second increments. The DMS shall support all page off times from __5__ tenths of a second (0..255) to __100__ tenths of a second (0..255) in __1__ tenths of a second increments.	
		3.5.2.3.2.8	Configure Default Character Set	O	Yes / ~~No~~		
		3.5.2.3.3.1	Determine Available Message Types	M	Yes		
		3.5.2.3.3.2	Determine Available Message Space	M	Yes		
		3.5.2.3.3.3	Define a Message	M	Yes		
		3.5.2.3.3.4	Verify Message Contents	M	Yes		
		3.5.2.3.3.5	Retrieve Message	M	Yes		
		H.2.2.1	Set Time	O	Yes / ~~No~~	Mandatory if time fields tags are used	
		H.2.2.2	Set Time Zone	H.2.2.1:O	Yes / ~~No~~	1) Mandatory if time fields tags are used 2.) Note: Users are cautioned that this object definition has been revised to address interoperability issues in version 01, but remains at the same ObjectID. Pay close attention to the implementation, and interoperability of this object. Place a checkmark below, if the DMS is NOT required to support the major version that is checked." Version v01____	
		H.2.2.3	Set Daylight Savings Mode	H.2.2.1:O	Yes / ~~No~~		
		H.2.2.4	Verify Current Time	H.2.2.1:O	Yes / ~~No~~		

User Need Section Number	User Need	FR Section Number	Functional Requirement	Conformance	Support / Project Requirement	Additional Project Requirements	Comments
						Version v02____	
		3.6.1 †	Supplemental Requirements for Fonts	Fonts: M	Yes /~~ NA~~		
		3.6.6 †	Supplemental Requirements for Message Definition	M	Yes		
		3.6.7 †	Supplemental Requirements for Locally Stored Messages	M	Yes		
		3.6.8 †	Supplemental Requirements for Color Scheme	M	Yes		
		3.6.11 †	Supplemental Requirements for Graphics	Graphics: M	Yes /~~ NA~~		
		3.6.13 †	Supplemental Requirements for Page Justification	M	Yes		
		3.6.14 †	Supplemental Requirements for Line Justification	M	Yes		
2.5.2.3.4	Blank a Sign			M	Yes		
		3.5.2.3.1	Activate a Message	M	Yes		
		3.5.2.3.6	Activate a Message with Status	Drum:M	Yes /~~ NA~~		
		3.6.5 †	Supplemental Requirements for Message Activation Request	M	Yes		
2.5.2.3.5	Schedule Messages for Display			O	Yes /~~ No~~		
		3.5.2.3.1	Activate a Message	M	Yes		
		3.5.2.3.4.1	Retrieve a Schedule	M	Yes		
		3.5.2.3.4.2	Define a Schedule	M	Yes		
		3.5.2.3.6	Activate a Message with Status	Drum:M	Yes /~~ NA~~		
		H.2.2.1	Set Time	M	Yes		
		H.2.2.2	Set Time Zone	M	Yes	Note: Users are cautioned that this object definition has been revised to address interoperability issues in version 01, but remains at the same ObjectID. Pay close attention to the implementation, and interoperability of this object. Place a checkmark below, if the DMS is NOT required to support the major version that is checked." Version v01____ Version V02____	
		H.2.2.3	Set Daylight Savings Mode	M	Yes		
		H.2.2.4	Verify Current Time	M	Yes		
		H.2.3.1	Determine Maximum Number of Schedules	M	Yes		
		H.2.3.2	Monitor Current Schedule	M	Yes		
		3.6.5 †	Supplemental Requirements for Message Activation Request	M	Yes		
		3.6.10 †	Supplemental Requirements for Scheduling	M	Yes		
		H.2.5 †	Supplemental Requirements for Scheduling	M	Yes		
2.5.2.3.6	Change Message Display based on an Internal Event			O	Yes /~~ No~~		
		3.5.2.3.5.1.1	Configure Message for Short Power Loss Recovery Event	O.4 (1..*)	Yes /~~ No~~		
		3.5.2.3.5.1.2	Configure Message for Long Power Loss Recovery Event	O.4 (1..*)	Yes /~~ No~~		
		3.5.2.3.5.1.3	Configure Message for Power Loss Event	Flip/Shutter OR Drum:O.4 (1..*)	Yes /~~ No / NA~~		
		3.5.2.3.5.1.4	Configure Message for Controller Reset Event	O.4 (1..*)	Yes /~~ No~~		
		3.5.2.3.5.1.5	Configure Message for Communications Loss Event	O.4 (1..*)	Yes /~~ No~~		
		3.5.2.3.5.1.6	Configure Message for End Message Display Duration Event	O.4 (1..*)	Yes /~~ No~~		
		3.5.3.3.2	Monitor Short Power Recovery Message	3.5.2.3.5.1.1:M	Yes		
		3.5.3.3.3	Monitor Long Power Recovery Message	3.5.2.3.5.1.2:M	Yes		
		3.5.3.3.4	Monitor Power Loss Message	3.5.2.3.5.1.3:M	Yes		

User Need Section Number	User Need	FR Section Number	Functional Requirement	Conformance	Support / Project Requirement	Additional Project Requirements	Comments
		3.5.3.3.5	Monitor Reset Message	3.5.2.3.5.1.4:M	Yes		
		3.5.3.3.6	Monitor Communications Loss Message	3.5.2.3.5.1.5:M	Yes		
		3.5.3.3.7	Monitor End Duration Message	3.5.2.3.5.1.6:M	Yes		
		3.6.5.1 †	Supplemental Requirements for Internal or External Message Activation	M	Yes		
2.5.2.4	Control External Devices			O	Yes / ~~No~~	Note: Users are cautioned that the object definitions have been revised to address interoperability issues in version 01. The associated objects were deprecated and replaced by newer objects that have a wider scope or that have been changed to ease implementation. Pay close attention to the implementation and interoperability of this object. Place a checkmark below, if the DMS is NOT required to support the major version that is checked." Version v01____(defined in NTCIP 1203) Version v02____(defined in NTCIP 1201)	
		3.5.2.4	Control External Devices	M	Yes	The DMS shall support at least __0__ analog ports (0..255) and __4__ digital ports (0..255) for auxiliary input and output. The DMS shall be provided with the following external devices: 1. ___NA___ Add another sheet, if necessary	
		3.5.2.4.1	Determine Configuration of External Device Ports	M	Yes		
		3.5.2.4.1.1	Determine Base - Configuration of External Device Ports	M	Yes		
		3.5.2.4.1.2	Further Define Ports	O	Yes / ~~No~~		
		3.5.2.4.1.3	Number of External Devices Supported	M	Yes		
		3.5.2.4.2	Monitoring of External Devices	O.5 (1.. *)	Yes / ~~No~~		
		3.5.2.4.2.1	Retrieving Data from External Devices	M	Yes		
		3.5.2.4.3	Controlling of External Devices	O.5 (1.. *)	Yes / ~~No~~		
		3.5.2.4.3.1	Passing Data to External Devices	M	Yes		
		3.5.2.4.3.2	Determine Status of External Devices	M: version 2 NA: version 1	Yes	This functionality is not applicable to Version 1.	
		3.5.2.4.4	Controlling of Bi-directionally Connected External Devices	O.5 (1.. *)	Yes / ~~No~~		
		3.5.2.4.4.1	Retrieving Data from External Devices	M	Yes		
		3.5.2.4.4.2	Passing Data to External Devices	M	Yes		
		3.5.2.4.4.3	Determine Status of External Devices	M: version 2 NA: version 1	Yes	This functionality is not applicable to Version 1.	
2.5.2.5	Control the Brightness Output			Lamp OR LED OR Fiber:M	Yes / ~~NA~~		
		3.5.2.5.1	Determine Number of Brightness Levels	M	Yes		
		3.5.2.5.2	Determine Current Photocell Readings	AutoBright:M	Yes / ~~NA~~		
		3.5.2.5.3	Manually Direct-Control Brightness	O.6	Yes / ~~No~~	This functionality is not applicable to Version 1. Select this or the next option (Manually Index-Control Brightness) depending on desired operation.	
		3.5.2.5.4	Manually Index-Control Brightness	O.6	Yes / ~~No~~	This functionality is not applicable to Version 1. Select this or the previous option (Manually Direct-Control Brightness) depending on desired operation.	
		3.5.2.5.5	Manually Control Brightness	O	Yes / ~~No~~	This functionality is only applicable to Version 1. Describe in detail how this operation is supposed to work to achieve backwards compatibility.	
		3.5.2.5.6 (AutoBright)	Switch Brightness Control Modes	O	Yes / ~~No~~		
		3.6.2 †	Supplemental Requirements for General Illumination Brightness	O	~~Yes~~ / No		

User Need Section Number	User Need	FR Section Number	Functional Requirement	Conformance	Support / Project Requirement	Additional Project Requirements	Comments
		3.6.3 †	Supplemental Requirements for Automatic Brightness Control	AutoBright:M	~~Yes~~ / NA		
2.5.2.6	Perform Preventative Maintenance			Fiber OR Flip/Shutter:O	Yes / ~~No / NA~~		
		3.4.2.6	Manage the Exercise of Pixels	M	Yes		
		H.2.2.1	Set Time	O	Yes / ~~No~~		
		H.2.2.2	Set Time Zone	H.2.2.1:O	Yes / ~~No~~	Note: Users are cautioned that this object definition has been revised to address interoperability issues s in version 01, but remains at the same ObjectID. Pay close attention to the implementation, and interoperability of this object. Place a checkmark below, if the DMS is NOT required to support the major version that is checked." Version v01____ Version v02____	
		H.2.2.3	Set Daylight Savings Mode	H.2.2.1:O	Yes / ~~No~~		
		H.2.2.4	Verify Current Time	H.2.2.1:O	Yes / ~~No~~		
		3.6.6.6 †	Pixel Service Flag	M	Yes		
2.5.3	Monitor the Status of the DMS			M	Yes		
2.5.3.1	Perform Diagnostics			M	Yes		
2.5.3.1.1	Determine Sign Error Conditions - High-Level Diagnostics			M	Yes		
		3.5.3.1.1.1 (LampTest)	Execute Lamp Testing	Lamp OR Fiber:M	~~Yes~~ / NA		
		3.5.3.1.1.2 (PixelTest)	Activate Pixel Testing	Matrix:M	Yes / ~~NA~~		
		3.5.3.1.1.3 (ClimateTest)	Execute Climate-Control Equipment Testing	O	Yes / ~~No~~		
		3.5.3.1.2	Provide General DMS Error Status Information	M	Yes		
2.5.3.1.2	Monitor Sign Subsystem Failures - Mid-Level Diagnostics			M	Yes		
		3.5.3.1.3.1	Monitor Power Errors	M	Yes		
		3.5.3.1.3.2	Monitor Lamp Errors	LampTest:M	~~Yes~~ / NA		
		3.5.3.1.3.3	Monitor Pixel Errors	PixelTest:M	Yes / ~~NA~~		
		3.5.3.1.3.4	Monitor Light Sensor Errors	AutoBright:M	Yes / ~~NA~~		
		3.5.3.1.3.5	Monitor Controller Software Operations	ControllerOp:M	Yes / ~~NA~~		
		3.5.3.1.3.6	Monitor Climate-Control System Errors	ClimateTest:M	Yes / ~~NA~~		
		3.5.3.1.3.7	Monitor Temperature Warnings	M	Yes		
		3.5.3.1.3.8	Monitor Humidity Warnings	O	Yes / ~~No~~		
		3.5.3.1.3.9	Monitor Drum Sign Rotor Errors	Drum:O	~~Yes / No~~ / NA		
		3.5.3.1.3.10	Monitor Door Status	Door:M	~~Yes~~ / NA		
2.5.3.1.3	Monitor Subsystem Failure Details - Low-Level Diagnostics			O	Yes / ~~No~~		
		3.5.3.1.4.1	Monitor Power Error Details	M	Yes		
		3.5.3.1.4.2	Monitor Lamp Error Details	LampTest:M	~~Yes~~ / NA		
		3.5.3.1.4.3	Monitor Pixel Error Details	PixelTest:M	Yes / ~~NA~~		
		3.5.3.1.4.4	Monitor Light Sensor Error Details	AutoBright:M	Yes / ~~NA~~		
		3.5.3.1.4.5	Monitor Message Activation Error Details	M	Yes		
		3.5.3.1.4.6	Monitor Climate-Control System Error Details	ClimateTest:M	Yes / ~~NA~~		
		3.5.3.1.4.7	Monitor Sign Housing Temperatures	Environment:M	Yes / ~~NA~~		
		3.5.3.1.4.8	Monitor Sign Housing Humidity	O	Yes / ~~No~~		
		3.5.3.1.4.9	Monitor Control Cabinet Temperatures	O	~~Yes~~ / No	Does not have a control cabinet	
		3.5.3.1.4.10	Monitor Control Cabinet Humidity	O	~~Yes~~ / No	Does not have a control cabinet	
		3.5.3.1.4.11	Monitor Drum Sign Rotor Error Details	Drum:O	~~Yes / No~~ / NA		
		3.5.3.1.8	Determine Critical Temperature Threshold	Environment:M	Yes / ~~NA~~		
2.5.3.1.4	Monitor Message Errors			M	Yes		
		3.5.3.1.4.5	Monitor Message Activation Error Details	M	Yes		

User Need Section Number	User Need	FR Section Number	Functional Requirement	Conformance	Support / Project Requirement	Additional Project Requirements	Comments
2.5.3.1.5 (Environment)	Monitor Sign Environment			O	Yes / ~~No~~		
		3.5.3.1.4.7	Monitor Sign Housing Temperatures	M	Yes		
		3.5.3.1.4.8	Monitor Sign Housing Humidity	O	Yes / ~~No~~		
		3.5.3.1.4.9	Monitor Control Cabinet Temperatures	O	~~Yes~~ / No	Does not have a control cabinet	
		3.5.3.1.4.10	Monitor Control Cabinet Humidity	O	~~Yes~~ / No	Does not have a control cabinet	
		3.5.3.1.7	Monitor Ambient Environment	Temp:M	Yes / ~~NA~~		
2.5.3.1.6	Monitor the Sign Control Source			M	Yes		
		3.5.3.1.5	Monitor the Sign's Control Source	M	Yes		
2.5.3.1.7	Monitor Attached Speed Detectors			O	~~Yes~~ / No		
		3.5.3.1.9 (Speed)	Monitor Speed Detector Reading	O	~~Yes~~ / No		
2.5.3.1.8 (Door)	Monitor Door Status			O	~~Yes~~ / No		
		3.5.3.1.3.10	Monitor Door Status	M	Yes		
2.5.3.1.9 (ControllerOp)	Monitor Controller Software Operations			O	Yes / ~~No~~		
		3.5.3.1.3.5	Monitor Controller Software Operations	M	Yes		
2.5.3.1.10	Monitor Automatic Blanking of Sign			O	Yes / ~~No~~		
		3.5.3.1.1.1 (LampTest)	Execute Lamp Testing	Lamp OR Fiber:M	~~Yes~~ / NA		
		3.5.3.1.1.2 (PixelTest)	Activate Pixel Testing	Matrix:M	Yes / ~~NA~~		
		3.5.3.1.2	Provide General DMS Error Status Information	M	Yes		
		3.5.3.1.3.2	Monitor Lamp Errors	LampTest:M	~~Yes~~ / NA		
		3.5.3.1.3.3	Monitor Pixel Errors	PixelTest:M	Yes / ~~NA~~		
		3.5.3.1.4.2	Monitor Lamp Error Details	LampTest:M	~~Yes~~ / NA		
		3.5.3.1.4.3	Monitor Pixel Error Details	PixelTest:M	Yes / ~~NA~~		
		3.5.3.2.1	Monitor Information about the Currently Displayed Message	O	Yes / ~~No~~		
		3.5.3.2.2	Monitor Dynamic Field Values	Fields:M	Yes / ~~NA~~		
		3.6.6 †	Supplemental Requirements for Message Definition	VMS:M	Yes / ~~NA~~		
2.5.3.1.11	Monitor Power Source			O	Yes / ~~No~~		
		3.5.3.1.6.1	Monitor Power Source	M	Yes		
2.5.3.1.12	Monitor Power Voltage			O	Yes / ~~No~~		
		3.5.3.1.6.2	Monitor Power Voltage	M	Yes		
2.5.3.1.13	Monitor Fuel Level			O	~~Yes~~ / No		
		3.5.3.1.6.3	Monitor Current Fuel Level	M	Yes		
2.5.3.1.14	Monitor Engine RPM			O	~~Yes~~ / No		
		3.5.3.1.6.4	Monitor Current Engine RPM	M	Yes		
2.5.3.2	Monitor the Current Message			M	Yes		
		3.5.3.2.1	Monitor Information about the Currently Displayed Message	O	Yes / ~~No~~		
		3.5.3.2.2	Monitor Dynamic Field Values	Fields:M	Yes / ~~NA~~		
		3.6.6 †	Supplemental Requirements for Message Definition	VMS:M	Yes / ~~NA~~		
2.5.4	Provide for Backwards Compatibility of the DMS to NTCIP 1203 Version 1			O	Yes / ~~No~~	Notes: Users are cautioned that these object definitions have been revised to address interoperability issues in version 01. The associated objects were deprecated and replaced by newer objects that have a wider scope or that have been changed to ease implementation. Pay close attention to the implementation and interoperability of these objects. Place a checkmark below, if the DMS is NOT required to support the major version that is checked." NTCIP 1203:1997 (version v01) ____	
		3.5.4.1	Obtaining Number of Fan Failures	3.5.4.2: M	Yes / ~~No~~		

User Need Section Number	User Need	FR Section Number	Functional Requirement	Conformance	Support / Project Requirement	Additional Project Requirements	Comments
		3.5.4.2	Activating Fan Failure Test	O	Yes / ~~No~~		
		3.5.4.3	Activating the 'Simulation' control mode	O	Yes / ~~No~~	If the version 01 of the object definitions is to be deployed for backwards compatibility reasons, the specification writer MUST include a detailed description of how the object definitions within the version 01 are to be deployed. Backward compatibility is not required.	

Protocol Requirements List - Supplemental Table						
Req ID	**Requirement**	**Req ID**	**Requirement**	**Conformance**	**Support**	**Additional Specifications**
	Supplemental Requirements					
3.6.1	Supplemental Requirements for Fonts					
		3.6.1.1	Support for a Number of Fonts	M	Yes	The DMS shall support at least _10_ fonts (1..255). NOTE: The specification may optionally specify the fonts to be stored in the sign controller upon initial delivery by using an additional attached sheet to define the desired pixel-by-pixel bitmaps of each character of each font. A Specific font is required see specs.
3.6.2	Supplemental Requirements for General Illumination Brightness					
		3.6.2.1	Support a Number of Brightness Levels	M	Yes	The DMS shall support at least __8___ brightness levels (1..255).
3.6.3	Supplemental Requirements for Automatic Brightness Control					
		3.6.3.1	Automatically Control Brightness	M	Yes	
		3.6.3.2	Inhibit Flickering of Message Brightness	O	Yes /~~ No~~	
		3.6.3.3	Support a Number of Light Sensor Levels	M	Yes	The DMS shall support at least _100_ light sensor levels (0..65535)
3.6.4	Supplemental Requirements for Control Modes					
		3.6.4.1	Support Central Control Mode	M	Yes	
		3.6.4.2	Support Local Control Mode	M	Yes	
		3.6.4.3	Support Central Override Control Mode	O	Yes /~~ No~~	
		3.6.4.4	Processing Requests from Multiple Sources	M	Yes	
3.6.5	Supplemental Requirements for Message Activation Request					
		3.6.5.1	Supplemental Requirements for Internal Message Activation	M	Yes	
		3.6.5.1.1	Activate Any Message	M	Yes	
		3.6.5.1.2	Preserve Message Integrity	VMS:M	Yes /~~ NA~~	
		3.6.5.1.3	Ensure Proper Message Content	M	Yes	
		3.6.5.2	Indicate Message Display Duration	M	Yes	
		3.6.5.3	Indicate Message Display Requester ID	M	Yes	
		3.6.5.4	Supplemental Requirements for Message Activation Priority	M	Yes	
3.6.6	Supplemental Requirements for Message Definition					
		3.6.6.1	Identify Message to Define	M	Yes	
		3.6.6.2	Define Message Content	M	Yes	
		3.6.6.2.1	Support Multi-Page Messages	O	Yes /~~ No~~	The DMS shall support at least _6_ pages (1..255) per message.
		3.6.6.2.2	Support Page Justification	O	Yes /~~ No~~	
		3.6.6.2.2.1	Support for One Page Justification within a Message	O.7 (1)	Yes /~~ No~~	

Req ID	Requirement	Req ID	Requirement	Conformance	Support	Additional Specifications
		3.6.6.2.2.2	Support for Multiple Page Justifications within a Message	O.7 (1)	Yes / ~~No~~	
		3.6.6.2.3	Support Multiple Line Messages	O	Yes / ~~No~~	The DMS shall support at least _3__ lines (1..255) per page.
		3.6.6.2.4	Support Line Justification	O	Yes / ~~No~~	
		3.6.6.2.4.1	Support for a Single Line Justification within a Message	O.8 (1)	Yes / ~~No~~	
		3.6.6.2.4.2	Support Line Justification on a Page-by-Page Basis	O.8 (1)	Yes / ~~No~~	
		3.6.6.2.4.3	Support Line Justification on a Line-by-Line Basis	O.8 (1)	Yes / ~~No~~	
		3.6.6.2.5	Support Color	O	Yes / ~~No~~	
		3.6.6.2.5.1	Support a Single Color Combination per Message	O.9 (1)	Yes / ~~No~~	
		3.6.6.2.5.2	Support a Color Combination for each Page	O.9 (1)	Yes / ~~No~~	
		3.6.6.2.5.3	Support a Color Combination for each Character within a Message	O.9 (1)	Yes / ~~No~~	
		3.6.6.2.6	Support Font Commands	O	Yes / ~~No~~	
		3.6.6.2.6.1	Support One Font within a Message	O.10 (1)	Yes / ~~No~~	
		3.6.6.2.6.2	Support One Font per Page within a Message	O.10 (1)	~~Yes~~ / No	
		3.6.6.2.6.3	Support Character-by-Character Selection of Fonts within a Message	O.10 (1)	~~Yes~~ / No	
		3.6.6.2.7	Support Moving Text	O	Yes / ~~No~~	
		3.6.6.2.8	Support Character Spacing	O	Yes / ~~No~~	
		3.6.6.2.9	Support Customizable Page Display Times in a Message	O	Yes / ~~No~~	
		3.6.6.2.10 (Flash)	Support Flashing	O	Yes / ~~No~~	
		3.6.6.2.10.1	Support Character-by-Character Flashing	O.11 (1)	Yes / ~~No~~	
		3.6.6.2.10.2	Support Line-by-Line Flashing	O.11 (1)	Yes / ~~No~~	
		3.6.6.2.10.3	Support Page-by-Page Flashing	O.11 (1)	Yes / ~~No~~	
		3.6.6.2.11	Support Customizable Flashing Times within a Message	Flash:O	Yes / ~~No / NA~~	
		3.6.6.2.12	Support Hexadecimal Character	O	Yes / ~~No~~	
		3.6.6.2.13 (Fields)	Support Message Data Fields	O	Yes / ~~No~~	
		3.6.6.2.13.1 (Time)	Support Current Time Field without AM/PM Field	O.12 (1..*)	Yes / ~~No~~	
		3.6.6.2.13.2	Support Current Time with AM/PM Field	O.12 (1..*)	Yes / ~~No~~	

Req ID	Requirement	Req ID	Requirement	Conformance	Support	Additional Specifications
		3.6.6.2.13.3	Support Current Time with am/pm Field	O.12 (1..*)	Yes /~~ No~~	
		3.6.6.2.13.4 (Temp)	Support Current Temperature Field	O.12 (1..*)	Yes /~~ No~~	
		3.6.6.2.13.5	Support Detected Vehicle Speed Field	Speed:O.12 (1..*)	Yes /~~ No / NA~~	
		3.6.6.2.13.6 (DoW)	Support Current Day of Week Field	O.12 (1..*)	Yes /~~ No~~	
		3.6.6.2.13.7 (DoM)	Support Current Day of Month Field	O.12 (1..*)	Yes /~~ No~~	
		3.6.6.2.13.8 (Month)	Support Current Month of Year Field	O.12 (1..*)	Yes /~~ No~~	
		3.6.6.2.13.9 (Year)	Support Current Year Field	O.12 (1..*)	Yes /~~ No~~	
		3.6.6.2.13.10	Support User-Definable Field	O.12 (1..*)	~~Yes~~ / No	Note: For interoperability reasons, it is not recommended to use this field.
		3.6.6.2.13.11	Data Field Refresh Rate	M	Yes	The DMS shall update the fields at least every __1__ seconds.
		3.6.6.2.14	Support of Graphics	O	Yes /~~ No~~	
		3.6.6.2.15	Specify Location of Message Display	O	Yes /~~ No~~	
		3.6.6.2.16	Support of Text	M	Yes	
		3.6.6.2.16.1	Support of Textual Content	M	Yes	
		3.6.6.2.16.2	Support of Message Lengths Compatible with Sign Face	M	Yes	
		3.6.6.2.17	Support of Manufacturer Specific Message Definitions	O	~~Yes~~ / No	The DMS shall support a manufacturer-specific tag _____ [msx,y]. Note: For interoperability reasons, it is not recommended that this field be selected.
		3.6.6.3	Identify Message Owner	M	Yes	
		3.6.6.4	Priority to Maintain a Message	M	Yes	
		3.6.6.5	Beacon Activation Flag	Beacons:M	Yes /~~ NA~~	
		3.6.6.6	Pixel Service Flag	Fiber OR Flip/Shutter:M	~~Yes~~ / NA	
		3.6.6.7	Message Status	M	Yes	
3.6.7	Supplemental Requirements for Locally Stored Messages					
		3.6.7.1	Support Permanent Messages	VMS:O;M	Yes /~~ No / NA~~	The DMS shall support at least _10_ different permanent messages. (0..65535) The Permanent Messages are: (attach separate sheet defining the message number and the content and layout of each permanent message)
		3.6.7.2	Support Changeable Messages	VMS:O.13 (1..*)	Yes /~~ No / NA~~	The DMS shall support _50_ changeable messages (0..65535) and __655370__ bytes of changeable memory (0..4294967295).

Req ID	Requirement	Req ID	Requirement	Conformance	Support	Additional Specifications
		3.6.7.3	Support Volatile Messages	VMS:O.13 (1..*)	~~Yes~~ / No / ~~NA~~	The DMS shall support __0__ volatile messages (0..65535) and ___0____ bytes of volatile memory (0..4294967295). An equivalent number of changeable messages and memory may be / shall not be (select one) substituted for volatile messages per the requirements of NTCIP 1203 v02.
3.6.8	Supplemental Requirements for Color Scheme					
		3.6.8.1	Support 256 Shades Scheme	O.14 (1)	Yes / ~~No~~	
		3.6.8.2	Support Classic NTCIP Scheme	O.14 (1)	Yes / ~~No~~	The sign shall support the following colors: Color Fore/Background/Both _____ _____ _____ _____ _____ _____
		3.6.8.3	Support 24-Bit Color Scheme	O.14 (1)	Yes / ~~No~~	
		3.6.8.4	Support Single Color	M	Yes	
3.6.9	Supplemental Requirements for Monitoring Subsystems					The primary power source shall be _____ These tests shall be performed at least once every ____ seconds.
3.6.10	Supplemental Requirements for Scheduling					
		3.6.10.1	Support a number of Actions	M	Yes	The DMS shall support at least ___ actions (0..255) for the schedule.
		3.6.10.2	Support the Activate Message Action for the Scheduler	M	Yes	
		3.6.10.3	Perform Actions at Scheduled Times	M	Yes	
3.6.11	Supplemental Requiements for Graphics					
		3.6.11.1	Support for a Number of Graphics	M	Yes	The DMS shall support at least _50__ graphics (0..255).
		3.6.11.2	Support for Graphic Memory	M	Yes	The DMS shall support at least __32768500___ bytes (0..4294967295) of graphic memory.
H.2.5	Supplemental Requirements for Scheduling					
		H.2.5.1	Support a Number of Day Selection Patterns	M	Yes	The sign shall support at least __1__ day patterns.
		H.2.5.2	Support a Number of Day Plan Events	M	Yes	The sign shall support at least __2__ day plan events.
		H.2.5.3	Support a Number of Day Plans	M	Yes	The sign shall support at least __1__ day plans.
H.2.6	Supplemental Requirements for Event Monitoring					
		H.2.6.1	Record and Timestamp Events	M	Yes	
		H.2.6.2	Support a Number of Event Classes	M	Yes	The sign shall support at least __1__ event classes.
		H.2.6.3	Support a Number of Event Types to Monitor	M	Yes	The sign shall support at least __1__ event types.
		H.2.6.4	Support Monitoring of Event Types	M	Yes	
		H.2.6.4.1	Support On-Change Events	O.15 (1..*)	~~Yes~~ / No	
		H.2.6.4.2	Support Greater Than Events	O.15 (1..*)	~~Yes~~ / No	

Req ID	Requirement	Req ID	Requirement	Conformance	Support	Additional Specifications
		H.2.6.4.3	Support Less Than Events	O.15 (1..*)	~~Yes~~ / No	
		H.2.6.4.4	Support Hysteresis Events	O.15 (1..*)	~~Yes~~ / No	
		H.2.6.4.5	Support Periodic Events	O.15 (1..*)	~~Yes~~ / No	
		H.2.6.4.6	Support Bit-flag Events	O.15 (1..*)	~~Yes~~ / No	
		H.2.6.5	Support Event Monitoring on Any Data	M	Yes	
		H.2.6.7	Support a Number of Events to Store in Log	M	Yes	The sign shall be capable of storing at least __1_ events in the event log file.
3.6.12	Supplemental Requirements for Page Justification					
		3.6.12.1	Support top Page Justification	O.16 (1..*)	Yes /~~No~~	
		3.6.12.2	Support middle Page Justification	O.16 (1..*)	Yes /~~No~~	
		3.6.12.3	Support bottom Page Justification	O.16 (1..*)	Yes /~~No~~	
3.6.13	Supplemental Requirements for Line Justification					
		3.6.13.1	Support left Line Justification	O.17 (1..*)	Yes /~~No~~	
		3.6.13.2	Support center Line Justification	O.17 (1..*)	Yes /~~No~~	
		3.6.13.3	Support right Line Justification	O.17 (1..*)	Yes /~~No~~	
		3.5.13.4	Support full Line Justification	O.17 (1..*)	Yes /~~No~~	

MULTI Field Traceability Matrix				
Requirement ID	**Requirement**	**MULTI Tag ID**	**MULTI Tag Name**	**MULTI Tag**
3.6.6.2.1	Support Multi-Page Messages			
		6.4.15	New Page	[np]
3.6.6.2.2	Support Page Justification			
		6.4.11	Justification - Page	[jpx]
		6.4.11	Top Justification	[jp2]
		6.4.11	Middle Justification	[jp3]
		6.4.11	Bottom Justification	[jp4]
3.6.6.2.2.1	Support for One Page Justification within a Message			
		6.4.11	Justification - Page	[jpx]
		6.4.11	Top Justification	[jp2]
		6.4.11	Middle Justification	[jp3]
		6.4.11	Bottom Justification	[jp4]
3.6.6.2.2.2	Support for Multiple Page Justifications within a Message			
		6.4.11	Justification - Page	[jpx]
		6.4.11	Top Justification	[jp2]
		6.4.11	Middle Justification	[jp3]
		6.4.11	Bottom Justification	[jp4]
3.6.6.2.3	Support Multiple Line Messages			
		6.4.14	New Line	[nlx]
3.6.6.2.4	Support Line Justification			
		6.4.10	Justification - Line	[jlx]
		6.4.10	Left Justification	[jl2]
		6.4.10	Center Justification	[jl3]
		6.4.10	Right Justification	[jl4]
		6.4.10	Full Justification	[jl5]
3.6.6.2.4.1	Support for a Single Line Justification within a Message			
		6.4.10	Justification - Line	[jlx]
		6.4.10	Left Justification	[jl2]
		6.4.10	Center Justification	[jl3]

Requirement ID	Requirement	MULTI Tag ID	MULTI Tag Name	MULTI Tag
		6.4.10	Right Justification	[jl4]
		6.4.10	Full Justification	[jl5]
3.6.6.2.4.2	Support Line Justification on a Page-by-Page Basis			
		6.4.10	Justification - Line	[jlx]
		6.4.10	Left Justification	[jl2]
		6.4.10	Center Justification	[jl3]
		6.4.10	Right Justification	[jl4]
		6.4.10	Full Justification	[jl5]
3.6.6.2.4.3	Support Line Justification on a Line-by-Line Basis			
		6.4.10	Justification - Line	[jlx]
		6.4.10	Left Justification	[jl2]
		6.4.10	Center Justification	[jl3]
		6.4.10	Right Justification	[jl4]
		6.4.10	Full Justification	[jl5]
3. 6.6.2.5	Support Color			
3.6.6.2.5.1	Support a Single Color Combination per Message			
		6.4.1	Color Background (Version 1 only)	[cbx]
		6.4.3	Color Foreground (Version 1 and 2)	[cfx] or [cfr,g,b]
		6.4.2	Page Background Color (Version 2 only)	[pbz] or [pbr,g,b]
3.6.6.2.5.2	Support a Color Combination for each Page			
		6.4.1	Color Background (Version 1 only)	[cbx]
		6.4.3	Color Foreground (Version 1 and 2)	[cfx] or [cfr,g,b]
		6.4.2	Page Background Color (Version 2 only)	[pbz] or [pbr,g,b]

Requirement ID	Requirement	MULTI Tag ID	MULTI Tag Name	MULTI Tag
3.6.6.2.5.3	Support a Color Combination for each Character within a Message			
		6.4.1	Color Background (Version 1 only)	[cbx]
		6.4.3	Color Foreground (Version 1 and 2)	[cfx] or [cfr,g,b]
		6.4.2	Page Background Color (Version 2 only)	[pbz] or [pbr,g,b]
3.6.6.2.5.4	Color for each Pixel within a Message			
		6.4.1	Color Background (Version 1 only)	[cbx]
		6.4.3	Color Foreground (Version 1 and 2)	[cfx] or [cfr,g,b]
		6.4.2	Page Background Color (Version 2 only)	[pbz] or [pbr,g,b]
		6.4.4	Color Rectangle (Version 2 only)	[crx,y,w,h,r,g,b] or [crx,y,w,h,z]
3.6.6.2.6	Support Font Commands			
		6.4.7	Font	[fox]
3.6.6.2.6.1	Support One Font within a Message			
		6.4.7	Font	[fox]
3.6.6.2.6.2	Support One Font per Page within a Message			
		6.4.7	Font	[fox]
3.6.6.2.6.3	Support Character by Character Selection of Fonts within a Message			
		6.4.7	Font	[fox]
3.6.6.2.7	Support Moving Text			
		6.4.13	Moving Text	[mvtdw,s,r,text]
3.6.6.2.8	Support Character Spacing			
		6.4.17	Spacing - Character	[scx]
3.6.6.2.9	Support Customizable Page Display Times in a Message			
		6.4.16	Page Time	[ptxoy]

Requirement ID	Requirement	MULTI Tag ID	MULTI Tag Name	MULTI Tag
3.6.6.2.11	Support Customizable Flashing Times within a Message			
		6.4.6	Flash Time	[fltxoy]
3.6.6.2.10	Support Flashing			
		6.4.6	Flash Time	[fltxoy]
3.6.6.2.10.1	Support Character-by-Character Flashing			
		6.4.5 6	Flash Time	[fltxoy]
3.6.6.2.10.2	Support Line-by-Line Flashing			
		6.4.5 6	Flash Time	[fltxoy]
3.6.6.2.10.3	Support Page-by-Page Flashing			
		6.4.5 6	Flash Time	[fltxoy]
3.6.6.2.12	Support Hexadecimal Character			
		6.4.8 9	Hexadecimal Character	[hcx]
3.6.6.2.13	Support Message Data Fields			
		6.4.3 5	Local Time 12 Hour	[f1,y]
		6.4.3 5	Local Time 24 Hour	[f2,y]
		6.4.3 5	Ambient Temperature Celsius	[f3,y]
		6.4.3 5	Ambient Temperature Fahrenheit	[f4,y]
		6.4.3 5	Speed km/h	[f5,y]
		6.4.3 5	Speed mph	[f6,y]
		6.4.3 5	Day of Week	[f7,y]
		6.4.3 5	Date of Month	[f8,y]
		6.4.3 5	Month of Year	[f9,y]
		6.4.3 5	Year 2 Digit	[f10,y]
		6.4.3 5	Year 4 Digit	[f11,y]
		6.4.3 5	Local time, 12 hour format with capital AM/PM indicator present	[f12,y]

Requirement ID	Requirement	MULTI Tag ID	MULTI Tag Name	MULTI Tag
		6.4.3 5	Local time, 12 hour format with lowercase am/pm indicator present	[f13,y]
3.6.6.2.13.1	Support Current Time Field without AM/PM Field			
		6.4.3 5	Local Time 12 Hour	[f1,y]
		6.4.3 5	Local Time 24 Hour	[f2,y]
3.6.6.2.13.4	Support Current Temperature Field			
		6.4.5	Ambient Temperature Celsius	[f3,y]
		6.4.5	Ambient Temperature Fahrenheit	[f4,y]
3.6.6.2.13.5	Support Detected Vehicle Speed Field			
		6.4.5	Speed km/h	[f5,y]
		6.4.5	Speed mph	[f6,y]
3.6.6.2.13.6	Support Current Day of Week Field			
		6.4.5	Day of Week	[f7,y]
3.6.6.2.13.7	Support Current Day of Month Field			
		6.4.5	Date of Month	[f8,y]
3.6.6.2.13.8	Support Current Month of Year Field			
		6.4.5	Month of Year	[f9,y]
3.6.6.2.13.9	Support Current Year Field			
		6.4.5	Year 2 Digit	[f10,y]
		6.4.5	Year 4 Digit	[f11,y]
3.6.6.2.13.2	Support Current Time with uppercase AM/PM Field			
		6.4.5	Local time, 12 hour format with capital AM/PM indicator present	[f12,y]
3.6.6.2.13.3	Support Current Time with lowercase am/pm			

Requirement ID	Requirement	MULTI Tag ID	MULTI Tag Name	MULTI Tag
		6.4.5	Local time, 12 hour format with lowercase am/pm indicator present	[f13,y]
3.6.6.2.13.10	Support User-Definable Field			
		6.4.5	User-Definable Field	[f50,y] to [f99,y]
3.6.6.2.13.11	Data Field Refresh Rate			
		6.4.5	Fields	[fx,y]
3.6.6.2.14	Support of Graphics			
		6.4.8	Graphic	[gn] or [gn,x,y] or [gn,x,y,cccc]
3.6.6.2.15	Specify Location of Message Display			
		6.4.18	Cursor Placement / XY LocationText Rectangle	[trx,y,w,h]
		6.4.1	Color Background	[cbx]
		6.4.2	Page Background Color	[pbz] or [pbr,g,b]
		6.4.3	Color Foreground	[cfx]
		6.4.4	Color Rectangle	[crx,y,w,h,r,g,b] or [crx,y,w,h,z]
3.6.8.2	Support Classic NTCIP Scheme			
		6.4.1	Color Background (Version 1 only)	[cbx]
		6.4.2	Page Background Color (Version 2 only)	[pbz] or [pbr,g,b]
		6.4.3	Color Foreground (Version 1 and 2)	[cfx] or [cfr,g,b]
		6.4.4	Color Rectangle (Version 2 only)	[crx,y,w,h,r,g,b] or [crx,y,w,h,z]
3.6.8.3	Support 24-Bit Color Scheme			
		6.4.1	Color Background	[cbx]
		6.4.2	Page Background Color	[pbz] or [pbr,g,b]
		6.4.3	Color Foreground	[cfx]

Requirement ID	Requirement	MULTI Tag ID	MULTI Tag Name	MULTI Tag
		6.4.4	Color Rectangle	[crx,y,w,h,r,g,b] or [crx,y,w,h,z]
3.6.8.4	Support Single Color			
		6.4.1	Color Background (Version 1 only)	[cbx]
		6.4.2	Page Background Color (Version 2 only)	[pbz] or [pbr,g,b]
		6.4.3	Color Foreground (Version 1 and 2)	[cfx]
3.6.12	Supplemental Requirements for Page Justification			
3.6.12.1	Support top Page Justification			
		6.4.11	Top Justification	[jp2]
3.6.12.2	Support middle Page Justification			
		6.4.11	Middle Justification	[jp3]
3.6.12.3	Support bottom Page Justification			
		6.4.11	Bottom Justification	[jp4]
3.6.13	Supplemental Requirements for Line Justification			
3.6.13.1	Support left Line Justification			
		6.4.10	Left Justification	[jl2]
3.6.13.2	Support center Line Justification			
		6.4.10	Center Justification	[jl3]
3.6.13.3	Support right Line Justification			
		6.4.10	Right Justification	[jl4]
3.6.13.4	Support full Line Justification			
		6.4.10	Full Justification	[jl5]

Appendix D – Mandatory Responses

General

1) Clearly state what specifications are not met and how what is being proposed is a benefit compared to what is stated in the specifications. Include all conformance statements and / or 3rd party conformance testing results.

2) State any items or issues the specification should have addressed.

3) Explain Manufacturer's Quality Control and Quality Assurance program. Describe if Manufacturer is ISO 9001:2008 certified or ISO 9001 compliant and for how long. Tell us how many years Manufacturer has been in this status in the categories below. Provide a copy of the ISO certification. Confirm the certification provided is for the same physical facility and branch of Manufacturer that designs and manufactures the DMS being provided for with this proposal. Address the following areas of certification:

    a. Design
    b. Manufacture
    c. Maintenance
    d. Installation
    e. Sales
    f. Service / Customer Service
    g. Other

4) How long does it take for delivery once a purchase order is submitted?

5) State any on-going maintenance issues the Iowa DOT will have as the owner of the DMS. Tell the DOT about the choices the Manufacturer has made to reduce or assist the owner with maintenance issues.

6) Call to our attention features the DMS has that are in addition to meeting the specifications.

Hardware, Materials and Construction

7) LED's:
    a. Describe the LEDs proposed and provide a "cut sheet".
    b. Are individual pixels driven by one or two strings?
    c. Cut sheets should show the conditions necessary to reach 100,000 hours of "on time" with less than 30% degradation (maintaining 70% brightness).
    d. Confirm that PWM (Pulse Width Modulation) is used to adjust the brightness of the pixels.
    e. What is the LED manufacturer's recommended drive current?
    f. What is the constant drive current (milliamps) being delivered to each pixel?

g. State all features sign uses to protect and enhance the life of the LEDs so reaching the 100,000 hours before failure is achieved.
h. How many LEDs will be used per pixel?
i. For each string, if one LED fails, will all the LEDs fail in the string?
j. How many LEDs need to fail until a pixel failure is reported?
k. What is the overall pixel luminous intensity (brightness) at the constant drive current at 80% pulse modulation /brightness?
l. Confirm the LED manufacturer uses CIE 127:2008 for testing and binning of LEDs.

8) How is external face of the DMS painted/coated? What process is used? Is the Manufacturer a licensed-factory Kynar 500 coater?

9) Provide information about the power supplies proposed for the sign. Cut sheets, specifications and information showing compliance to the Specifications for Permanent Dynamic Message Signs.

10) Describe in detail the sign's electrical surge protection device(s). Does it conform to National Electrical Code (NEC) 285 for circuits less than 1,000 volts? Does sign's surge protection exceed these requirements? Are there additional surge protection options on top of what is required in these specs?

11) What is the weight, length, width and height of the DMS? Include drawing.

12) Describe controller and confirm it can be mounted inside the DMS or in a ground mount cabinet and is Ethernet ready.

13) What is the vertical and horizontal pitch of pixels?

14) What type of conformal coating material is used on the printed circuit boards? How is it applied? Does coating material meet military specification MIL-I-46058C Type SR and IPC-CC-830?

15) How many photo cells are provided?

16) Explain how the air is filtered, circulated and exhausted inside the DMS housing. Is it a positive or negative pressure system? Describe in detail the fresh-air filter material, thickness and maintenance required. What is the MERV rating of the filters? Explain the benefits of system.

17) Who will be doing the design calculations and drawings of the attachment hardware? Provide the valid Iowa Structural PE license number.

18) Explain how DMS keeps fog / condensation from occurring inside the DMS.

19) Does Manufacturer understand that DMS bid items include everything necessary for attachment and operation of the DMS according to the specifications? This includes everything inside the DMS housing and all attachment hardware to sign truss. Ground/Pole cabinets are not required. Wiring external to the DMS is not required. Modem is supplied by the Iowa DOT.

20) Include UL Conformance certificate as required.

21) Does sign require any additional hardware to activate a message via a contact closure input, or do all signs have this ability? Confirm sign and sign controller can activate a stored message within one second of receiving the input. Confirm the stored message(s) is only displayed if its NTCIP assigned priority is greater than the message currently displayed on the sign.

22) Confirm the failure of one individual pixel or the failure of an entire pixel board will not affect the rest of the sign.

23) What is the width of the Contrast Border around the outside LEDs on the DMS housing face?

24) Describe the layers and material type of protection the LEDs have from the outside elements and potential vandalism (bullets, paint, etc). Describe how easy/hard is it to replace various sections of the front housing of the DMS display. If ¼" (0.236" actual) LEXAN is not used for the lens glazing, what is being proposed?

Software

25) Provide 3rd party NTCIP testing results from a previous project. State DOT projects are preferred.

26) Do pixel boards support the NTCIP pixel test, with feedback to central software?

27) When controller performs a pixel test, can it detect when a pixel is stuck on and/or half on? Does the report show this as a pixel failure?

28) Does the DMS have true message display verification? Meaning, can native DMS software show the ACTUAL, real-time measurement of the current flowing through each string of LEDs at the time of the last sign poll or message download? This is different than a simulation of what the message looks like based on what the controller thinks is on the front of the DMS. Explain how DMS and native software performs this function if available.

29) Confirm controller will have the font specified in Section 3.5.C of the Specifications for Permanent Dynamic Message Signs loaded in the controller as "Font 1" and will be the default font. Confirm all future firmware upgrades will continue this requirement. Also confirm controller will accept custom made characters or symbols added to "Font 1".

Photographs

30) Provide color photographs of the DMS showing at minimum:

a. Sample messages shown in Appendix C
b. Overall aesthetics of the DMS
c. Sign interior
d. Open doorway
e. Air vents and filters
f. Heating systems
g. Pixel Boards in place and removed front and back
h. Sign controller and wiring

Responder's Request for Alternatives or Exceptions – Appendix E

Response Opening: June 2, 2016

Proposal No.: 15971 BRAE form due on or before: May 12, 2016

Item: _____ Spec. No.:

Request: _____

_____

Bidder Proposes to furnish in lieu of above: _____

_____

_____

_____

NOTE: The determination of acceptance of this BRAE request is only valid for the bid for which it was submitted. BRAE approvals received for this bid do not determine or set a precedent for what is acceptable in any other bid posted by the State of Iowa.

Email/Fax to:

Iowa Department of Transportation
Purchasing Section
Attention: Zach Gillen
Email: zachary.gillen@dot.iowa.gov

Fax No.: 515-239-1538

Submitted By _____

Company _____

Address _____

_____
City State Zip

Phone No. _____

Fax No. _____

==========

DOT USE ONLY

Approved _____ Disapproved _____

Reason _____

_____

_____

Signature: _____ Date: _____

Bidder _____

_____

_____

_____

SEALED BID

LETTING DATE: June 2, 2016
PROPOSAL NO: 15971
PROPOSAL DESCRIPTION: Permanent Dynamic Message Sign using Full Matrix and Full Color LED Technology

Iowa Department of Transportation
PURCHASING - SEALED BID PROPOSAL
800 Lincoln Way
Ames, IA 50010