



STATE OF DELAWARE

DEPARTMENT OF TRANSPORTATION

State of Delaware

Fixed Dynamic Message Signs

Invitation to Bid

Contract No. DOT1301-FIXED_DMS

Advertise Date: MAY 6, 2013

- Deadline to Respond -

JUNE 4, 2013

2:00 P.M. Local Time

STATE OF DELAWARE
Department of Transportation
Contract Administration

CONTRACT NO. DOT1301-FIXED_DMS

ALL BIDDERS:

The enclosed packet contains an "INVITATION TO BID" for Fixed Dynamic Message Signs. The invitation consists of the following documents:

INVITATION TO BID

- 1 DEFINITIONS and GENERAL PROVISIONS
- 2 SPECIAL PROVISIONS
- 3 TECHNICAL SPECIFICATIONS
- 4 BID QUOTATION REPLY SECTION
 - a. Proposal Reply Requirements
 - b. Monthly Usage Report (sample)
 - c. Subcontracting Quarterly Report (sample)
 - d. Attachment 1 - No Bid Reply Form
 - e. Attachment 2 - Bidder's Certification
 - f. Attachment 3 - Subcontractor Information Form
 - g. Attachment 4 - Business References
 - h. Attachment 5 - Confidential Information Form
 - i. Attachment 6 - Bid Forms
 - j. Attachment 7 - Office of Supplier Diversity Information

In order for your bid to be considered, the Bid Quotation Reply Section shall be executed completely and correctly and returned in a sealed envelope displaying the contract number, on or before the due date/time.

Bids shall be submitted to:
STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
CONTRACT ADMINISTRATION
800 BAY ROAD, DOVER, DE 19901

Please review and follow the information and instructions contained in these documents. Should you need additional information, please contact DelDOT Contract Administration via e-mail at dot-ask@state.de.us or call 302-760-2031.

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DEFINITIONS
AND
GENERAL PROVISIONS

The attached Definitions and General Provisions apply to all contracts and are part of each invitation to bid. The requirement to furnish a bid bond and performance bond is applicable unless waived in the Special Provisions. Should the General Provisions conflict with the Special Provisions, the Special Provisions shall prevail. Bidders or their authorized representatives are required to fully acquaint themselves as to State procurement laws and regulations prior to submitting bid.

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DEFINITIONS

Whenever the following terms are used, their intent and meaning shall be interpreted as follows:

STATE: The State of Delaware

AGENCY: Delaware Department of Transportation, or ordering Agency.

BID INVITATION: The "bid invitation" or "invitation to bid" is a packet of material sent to potential bidders and consists of General Provisions, Special Provisions, specifications, and enclosures.

BIDDER OR VENDOR: Any individual, firm, or corporation formally submitting a proposal for the material or work contemplated, acting directly or through a duly authorized representative.

BIDDER'S DEPOSIT: The security designated in the proposal to be furnished by the bidder as a guaranty of good faith to enter into a contract with the Agency if the work to be performed or the material or equipment to be furnished is awarded to the bidder.

BOND: The approved form of security furnished by the Bidders and its surety as a guaranty of good faith on the part of the Bidder to execute the work in accordance with the terms of the contract.

CENTRAL CONTRACT: A contract intended to be managed by Government Support Services (GSS) on behalf of multiple agencies procuring the same (or similar) material or non-professional service.

CONTRACT: The written agreement covering the furnishing and delivery of material or work to be performed.

CONTRACTOR: Any individual, firm, or corporation with whom a contract is made by the Agency.

DESIGNATED OFFICIAL: The agent authorized to act for the Agency.

GENERAL PROVISIONS: General Provisions are instructions pertaining to contracts in general. They contain, in summary, requirements of laws of the State, policies of the Agency, and instructions to Bidders.

PROPOSAL: The offer of the bidder submitted on the approved form and setting forth the bidder's prices for performing the work or supplying the material or equipment described in the specifications.

SPECIAL PROVISIONS: Special Provisions are specific conditions or requirements peculiar to the contract under consideration and are supplemental to the General Provisions. Should the Special Provisions conflict with the General Provisions, the Special Provisions shall prevail.

SURETY: The corporate body which is bound with and for the contract, or which is liable, and which engages to be responsible for the contractor's payments of all debts pertaining to and for its acceptable performance of the work for which it has contracted.

VENDOR OR BIDDER: Any individual, firm, or corporation formally submitting a proposal for the material or work contemplated, acting directly or through a duly authorized representative.

SECTION A - GENERAL PROVISIONS

1. **BID INVITATION:**

See "Definitions".

2. **PROPOSAL FORMS:**

The invitation to bid shall contain pre-printed forms for use by the Bidder in submitting its bid. The forms shall contain basic information such as description of the item and the estimated quantities and shall have blank spaces for use by the Bidder for entering information such as unit bid price, total bid price, etc.

3. **INTERPRETATION OF ESTIMATES:**

- a. The attention of bidders is called to the fact that, unless stated otherwise, any quantities given in the proposal form are to be considered to be approximate only and are given as a basis for the comparison of bids. The Agency may increase or decrease the amount of any item as may be deemed necessary or expedient, during the period of the contract.
- b. An increase or decrease in the quantity for any item is not sufficient ground for an increase or decrease in the unit price.

4. **SILENCE OF SPECIFICATIONS:**

The apparent silence of the specifications as to any detail, or the apparent omission from it of detailed description concerning any point, shall be regarded as meaning that only the best commercial practice is to prevail and only material and workmanship of the first quality are to be used. Proof of specifications compliance will be the responsibility of the Bidder.

5. **EXAMINATION OF SPECIFICATIONS AND PROVISIONS:**

The bidder shall examine carefully the proposal and the contract forms for the material contemplated. The bidder shall investigate and satisfy itself as to the conditions to be encountered, quality and quantities of the material to be furnished, and the requirements of the Special Provisions and the contract. The submission of a proposal shall be conclusive evidence that the bidder has made examination of the aforementioned conditions.

6. **PREPARATION OF PROPOSAL:**

- a. The bidder's proposal shall be written in ink or typewritten on the form provided.
- b. If items are listed with a zero quantity, bidder shall state unit price **ONLY** (intended for open end purchases where estimated requirements are not known). The proposal shall show a total bid price for each item bid and the total bid price of the proposal excluding zero quantity items.

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7. **PRICES QUOTED:**

The prices quoted are those for which the material will be furnished F.O.B. Ordering Agency and include all charges that may be imposed during the period of the contract. All prices to be quoted in U.S. Dollars.

8. **DISCOUNT:**

No qualifying letter or statements in or attached to the proposal, or separate discounts will be considered in determining the low bid except as may be otherwise herein noted. Cash or separate discounts should be computed and incorporated into unit bid price(s).

9. **SAMPLES OR BROCHURES:**

Samples or brochures may be required by the agency for evaluation purposes. They shall be such as to permit the Agency to compare and determine if the item offered complies with the intent of the specifications.

10. **PROPOSAL GUARANTY; BID BOND:**

Waived.

11. **DELIVERY OF PROPOSALS:**

Proposals shall be delivered in sealed envelopes, and shall bear on the outside the name and address of the bidder as well as the designation of the contract. Proposals must be delivered to the address listed below. All bids must clearly display the bid number on the envelope.

Delivery Service:
STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
CONTRACT ADMINISTRATION
800 BAY ROAD
DOVER, DE 19901

U.S. Mail:
STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
CONTRACT ADMINISTRATION
PO Box 778
DOVER, DE 19903

All proposals will be accepted at the time and place set in the advertisement. Bidder bears the risk of delays in delivery. Proposals received after the time set for public opening will be returned unopened.

12. **WITHDRAWAL OF PROPOSALS:**

A bidder may withdraw its proposal unopened after it has been deposited, if such a request is made prior to the time set for the opening of the proposal.

13. **PUBLIC OPENING OF PROPOSALS:**

The bids shall be publicly opened at the time and place specified by the Agency. Bidders or their authorized representatives are invited to be present.

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14. **PUBLIC INSPECTION OF PROPOSALS:**

If the bidder designates a portion of its bid as confidential, it shall isolate and identify in writing the confidential portions. The bidder shall include with this designation a statement that explains and supports the firm's claim that the bid items identified as confidential contain trade secrets or other proprietary data.

15. **DISQUALIFICATION OF BIDDERS:**

Any one or more of the following causes may be considered as sufficient for the disqualification of a bidder and the rejection of its proposal or proposals:

- a. More than one proposal for the same contract from an individual, firm, or corporation under the same or different names.
- b. Evidence of collusion among bidders.
- c. Unsatisfactory performance record as evidenced by past experience.
- d. If the unit prices are obviously unbalanced either in excess or below reasonable cost analysis values.
- e. If there are any unauthorized additions, interlineations, conditional or alternate bids or irregularities of any kind which may tend to make the proposal incomplete, indefinite, or ambiguous as to its meaning.
- f. Non-attendance of mandatory pre-bid meetings may be cause of disqualification.

16. **ADDENDA TO THE ITB:**

If it becomes necessary to revise any part of this ITB, revisions will be posted at <http://bids.delaware.gov/>. By submitting an offer to the State, Bidders have acknowledged receipt, understanding and commitment to comply with all materials, revisions, and addenda related to the Invitation to Bid.

SECTION B - AWARD AND EXECUTION OF CONTRACT

1. **CONSIDERATION OF BIDS:**

- a. After the proposals have been opened, the bids will be tabulated and the results will be made available to the public. Tabulations of the bids will be based on the correct summation of items at the unit price bid.
- b. The right is reserved to waive technicalities, to reject any or all bids, or any portion thereof, to advertise for new proposals, to proceed to do the work otherwise, or to abandon the work, if in the judgment of the Agency or its agent, the best interest of the State will be promoted thereby.

2. **MATERIAL GUARANTY:**

Before any contract is awarded, the successful bidder may be required to furnish a complete statement of the origin, composition and manufacture of any or all of the material to be used in the contract together with such samples as may be requested for the purpose of testing.

3. **CONTRACT AWARD:**

Within thirty days from the date of opening proposals, the contract will be awarded or the proposals rejected.

4. **EXECUTION OF CONTRACT:**

- a. The bidder to whom the award is made shall execute a formal contract and bond within twenty days after date of official notice of the award of the contract.
- b. If the successful bidder fails to execute the required contract and bond, as aforesaid, within twenty days after the date of official notice of the award of the contract, its proposal guaranty shall immediately become forfeited as liquidated damages. Award will then be made to the next lowest qualified bidder of the work or re-advertised, as the Agency may decide.

5. **REQUIREMENT OF CONTRACT BOND:**

Waived.

6. **WARRANTY:**

The successful bidder(s) shall be required to extend any policy guarantee usually offered to the general public, FEDERAL, STATE, COUNTY, or MUNICIPAL governments, on material in this contract against defective material, workmanship, and performance.

7. **THE CONTRACT(S):**

The contract(s) with the successful bidder(s) will be executed with the Department of Transportation, Contract Administration section.

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8. **RETURN OF BIDDER'S DEPOSIT:**

The deposits shall be returned to the successful bidder upon the execution of the formal contract. The deposits of unsuccessful bidders shall be returned to them immediately upon the awarding of the contract or rejection of their bids.

9. **INFORMATION REQUIREMENT:**

The successful bidder's shall be required to advise the state's Office of Management and Budget, Government Support Services of the gross amount of purchases made as a result of the contract.

10. **CONTRACT EXTENSION:**

The State reserves the right to extend this contract on a month-to-month basis for a period of up to three months.

11. **TERMINATION FOR CONVENIENCE:**

Contracts shall remain in effect for the time period and quantity specified unless the contract is terminated by the State. The State may terminate the contract at any time by giving written notice of such termination and specifying the effective date thereof, at least sixty (60) days before the effective date of termination.

12. **TERMINATION FOR CAUSE:**

If, for any reasons, or through any cause, the Contractor fails to fulfill in timely and proper manner its obligations under this Contract, or if the Contractor violates any of the covenants, agreements, or stipulations of this Contract, the State shall thereupon have the right to terminate this contract by giving written notice to the Contractor of such termination and specifying the effective date thereof, at least 5 days before the effective date of such termination. In that event, all finished or unfinished documents, data, studies, surveys, drawings, maps, models, photographs, and reports or other material prepared by the Contractor under this Contract shall, at the option of the State, become its property, and the Contractor shall be entitled to receive just and equitable compensation for any satisfactory work completed on such documents and other materials which is usable to the State.

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SECTION C - GENERAL

1. **AUTHORITY OF AGENCY:**

On all questions concerning the interpretation of specifications, the acceptability and quality of material furnished and/or work performed, the classification of material, the execution of the work, and the determination of payment due or to become due, the decision of the Agency shall be final and binding.

2. **LAWS TO BE OBSERVED:**

The contractor is presumed to know and shall strictly comply with all National, State, or County laws, and City or Town ordinances and regulations in any manner affecting the conduct of the work. The contractor shall indemnify and save harmless the State of Delaware, the Agency, and all Officers, Agency and Servants thereof against any claim or liability arising from or based upon the violation of any such laws, ordinances, regulations, orders, or decrees whether by itself or by its employees.

3. **PERMITS AND LICENSES:**

All necessary permits, licenses, insurance policies, etc. required by local, State or Federal laws, shall be provided by the contractor at its own expense.

4. **PATENTED DEVICES, MATERIAL AND PROCESSES:**

- a. The contractor shall provide for the use of any patented design, device, material, or process to be used or furnished under this contract by suitable legal agreement with the patentee or owner, and shall file a copy of this agreement with the Agency.
- b. The contractor and the surety shall hold and save harmless the State of Delaware, the Agency, the Director, their Officers or Agents from any and all claims because of the use of such patented design, device, material, or process in connection with the work agreed to be performed under this contract.

5. **EMERGENCY TERMINATION OF CONTRACT:**

- a. Due to restrictions which may be established by the United States Government on material, or work, a contract may be terminated by the cancellation of all or portions of the contract.
- b. In the event the contractor is unable to obtain the material required to complete the items of work included in the contract because of restrictions established by the United States Government and if, in the opinion of the Agency, it is impractical to substitute other available material, or the work cannot be completed within a reasonable time, the incomplete portions of the work may be cancelled, or the contract may be terminated.

6. **TAX EXEMPTION:**

- a. Material covered by this proposal is exempt from all FEDERAL and STATE TAXES. Such taxes shall not be included in prices quoted.
- b. Any material which is to be incorporated in the work or any equipment required for the work contemplated in the proposal may be consigned to the Agency. If the shipping papers show clearly that any such material is so

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consigned, the shipment will be exempt from the tax on the transportation of property under provisions of Section 3475 (b) of the Internal Revenue Code, as amended by Public Law 180 (78th Congress). All transportation charges shall be paid by the contractor. Each bidder shall take its exemption into account in calculating its bid for its work.

7. **OR EQUAL (PRODUCTS BY NAME):**

Specifications of products by name are intended to be descriptive of quality or workmanship, finish and performance. Desirable characteristics are not intended to be restrictive. Substitutions of products for those named will be considered provided the Bidder certifies that the function, characteristics, performance and endurance qualities of the material offered is equal or superior to that specified.

8. **BID EVALUATION AND AWARD:**

The Department of Transportation, Contract Administration will award this contract to the lowest responsible bidder(s) which in their judgment best serves the interest of the State of Delaware in accordance with Delaware Code Title 29, Section 6923(k). Personnel with experience and technical background may be utilized by the Department of Transportation in making judgment. In case of error in price extension, the unit price(s) shall prevail.

9. **INVOICING:**

After the awards are made, the agencies participating in the bid may forward their purchase orders to the successful bidder(s) in accordance with State Purchasing Procedures. The State will generate a payment voucher upon receipt of an invoice from the vendor.

SECTION D - EQUAL OPPORTUNITY

1. EQUALITY OF EMPLOYMENT OPPORTUNITY ON PUBLIC WORKS:

During the performance of any contract for public works financed in whole or in part by appropriation of the State of Delaware, the contractor agrees as follows:

- a. The contractor will not discriminate against any employee or applicant for employment because of race, creed, color, sex, age, or national origin. The contractor will take affirmative action to ensure that applicants are employed and that employees are treated equally during employment without regard to their race, creed, color, sex, age, or national origin. Such action shall include, but not be limited to the following: advertising, lay-off or termination, rates of pay or other forms of compensation, and selection for training including apprenticeships. The contractor agrees to post in conspicuous places, notices to be provided by the contracting agency setting forth the provisions of this non-discrimination clause.
- b. The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, creed, color, sex, age, or national origin.
- c. The term "contractor for public works" means construction, reconstruction, demolition, alteration, and/or repair work, maintenance work, and paid for in whole or in part out of the funds of a public body except work performed under a vocational rehabilitation program. The manufacture or furnishing of materials, articles, supplies or equipment is not a public work within the meaning of this subsection unless conducted in connection with and at the site of the public work.

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CONTRACT NO. **DOT1301-FIXED_DMS**
SPECIAL PROVISIONS

1. **CONTRACT REQUIREMENTS:**

This contract will be issued to cover the Fixed Dynamic Message Signs requirements.

2. **CONTRACT USE BY OTHER STATE AGENCIES:**

Other state agencies may procure product under this contract so long as the arrangement is agreeable to all parties. (REF: Title 29, Chapter 6914(e) Delaware Code)

3. **CONTRACT PERIOD:**

The initial contract term shall be valid upon contract execution for three (3) years. The contract may be renewed for up to two (2) additional one year terms through negotiation between the contractor and the Department of Transportation, Contract Administration. Negotiation should be initiated no later than ninety (90) days prior to the termination of the agreement to allow the Department time to re-advertise this contract if not renewed.

4. **PRICES:**

Prices shall remain firm for each term of the contract.

5. **PRICE ADJUSTMENT:**

During the initial term of the contract the Vendor is not prohibited from offering a price reduction on its services or materiel offered under the contract. The State is not prohibited from requesting a price reduction on those services or materiel during the initial term or any subsequent options that the State may agree to exercise.

If agreement is reached to extend this contract beyond the initial term, the Department of Transportation, Contract Administration shall have the option of offering a determined price adjustment that shall not exceed the current All Urban Consumers Price Index (CPI-U), Philadelphia-Wilmington area Average. If the CPI-U is used, any increase/decrease shall reflect the change during the previous published twelve (12) month period at the time of renegotiation.

6. **SHIPPING TERMS:**

F.O.B. destination; freight pre-paid.

7. **QUANTITIES:**

The attention of bidders is called to the fact that, unless stated otherwise, the quantities given in the proposal are best estimates and are given as a basis for the comparison of bids. Quantities ordered may be increased or decreased as deemed necessary during the period of the contract.

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8. **FUNDING OUT:**

The continuation of this contract is contingent upon funding appropriated by the legislature.

9. **BID BOND REQUIREMENT:**

Bid Bond Waived.

10. **PERFORMANCE BOND REQUIREMENT:**

Performance Bond Waived

11. **MANDATORY INSURANCE REQUIREMENTS:**

- a. Certificate of Insurance and/or copies of insurance policies for the following:
- 1) As a part of the contract requirements, the contractor must obtain at its own cost and expense and keep in force and effect during the term of this contract, including all extensions, the minimum coverage limits specified below with a carrier satisfactory to the State. All contractors must carry Comprehensive General Liability and at least one of the other coverages depending on the type of service or product being delivered.
 - a. Comprehensive General Liability - \$1,000,000.00 per person/\$3,000,000 per occurrence.
and
 - b. Medical/Professional Liability - \$1,000,000.00 per person/\$3,000,000 per occurrence.
or
 - c. Miscellaneous Errors and Omissions - \$1,000,000.00 per person/\$3,000,000 per occurrence.
or
 - d. Product Liability - \$1,000,000.00 per person/\$3,000,000 per occurrence.
 - 2) Automotive Liability Insurance covering all automotive units used in the work with limits of not less than \$100,000 each person and \$300,000 each accident as to bodily injury and \$25,000 as to property damage to others.
 - 3) Forty-five (45) days written notice of cancellation or material change of any policies is required.

**Contract Administrator, dot-ask@state.de.us
Contract No. DOT1301-FIXED_DMS
State of Delaware, Department Of Transportation
PO Box 778, DOVER, DE 19903**

Note: The State of Delaware shall not be named as an additional insured.

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12. **BASIS OF AWARD:**

The Department of Transportation, Contract Administration shall award this contract to the lowest responsible and responsive bidder(s) who best meets the terms and conditions of the bid. The award will be made on basis of price, product evaluation, and prior history of service and capability.

The Department of Transportation reserves the right to reject any or all bids in whole or in part, to make multiple awards, partial awards, award by types, item by item, or lump sum total, whichever may be most advantageous to the State of Delaware.

13. **STATE OF DELAWARE BUSINESS LICENSE:**

Prior to receiving an award, the successful Bidder shall either furnish proof of State of Delaware Business Licensure or initiate the process of application where required. An application may be requested in writing to: Division of Revenue, Carvel State Building, P.O. Box 8750, 820 N. French Street, Wilmington, DE 19899-8750 or by telephone to one of the following numbers: (302) 577-8201 - Public Service, (302) 577-8205 - Licensing Department.

Information regarding the award of this contract will be given to the Division of Revenue. Failure to comply with the State of Delaware licensing requirements may subject your organization to applicable fines and/or interest penalties.

14. **HOLD HARMLESS:**

The successful bidder agrees that it shall indemnify and hold the State of Delaware and all its agencies harmless from and against any and all claims for injury, loss of life, or damage to or loss of use of property caused or alleged to be caused, by acts or omissions of the successful bidder, its employees, and invitees on or about the premises and which arise out of the successful bidder's performance, or failure to perform as specified in the Agreement.

15. **OWNERSHIP OF INTELLECTUAL PROPERTY:**

All copyright and patent rights to all papers, reports, forms, materials, creations, or inventions created or developed in the performance of this contract shall become the sole property of the State of Delaware. On request, the contractor shall promptly provide an acknowledgment or assignment in a tangible form satisfactory to the State to evidence the State's sole ownership of specifically identified intellectual property created or developed in the performance of the contract.

16. **NON-PERFORMANCE:**

In the event the vendor does not fulfill its obligations under the terms and conditions of this contract, the ordering agency may purchase equivalent product on the open market. Any difference in cost between the contract prices herein and the price of open market product shall be the responsibility of the vendor. Under no circumstances shall monies be due the vendor in the event open market products can be obtained below contract cost. Any monies charged to the vendor may be deducted from an open invoice.

17. **FORCE MAJEURE:**

Neither the vendor nor the ordering agency shall be held liable for non-performance under the terms and conditions of this contract due, but not limited to, government restriction, strike, flood, fire, or unforeseen catastrophe beyond

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either party's control. Each party shall notify the other in writing of any situation that may prevent performance under the terms and conditions of this contract.

18. CONTRACTOR NON-ENTITLEMENT:

State of Delaware Contractors for Materiel and for Services shall not have legal entitlement to, nor seek business from another Contractors' Central Contract. Additionally, they shall not utilize other Central Contracts to fulfill the requirements of their respective contract as they are not a "Covered Agency" as defined by Title 29 Chapter 69 of the State Procurement Code.

19. MANDATORY USAGE REPORT:

A Monthly Usage Report (Sample A) shall be furnished on the 15th (or next business day after the 15th day) of each month by the successful Vendor **Electronically in Excel format** detailing the purchasing of all items on this contract. The Monthly Usage Reports shall be submitted electronically in EXCEL and sent as an attachment to vendorusage@state.de.us. The Subject line of the e-mail shall state 'MONTHLY USAGE REPORT'. Any exception to this mandatory requirement may result in cancellation of the award. Failure to provide the report with the minimum required information may also negate any contract extension clauses. Additionally, Vendors who are determined to be in default of this mandatory report requirement may have such conduct considered against them, in assessment of responsibility, in the evaluation of future proposals.

In accordance with Executive Order 14 and 29 – Increasing Supplier Diversity Initiatives within State Government and Ensuring Representation of Veteran-Owned Businesses..., the State of Delaware is committed to supporting its diverse business industry and population. The successful Vendor will be required to report on the participation by a minority, woman, or veteran owned business (Diversity Supplier) under this awarded contract. The reported data elements shall include but not be limited to; name of state contract/project, the name of the Diversity Supplier, Diversity Supplier contact information (phone, email), type of product or service provided by the Diversity Supplier and any minority, women, or veteran certifications for the subcontractor (State OSD certification, Minority Supplier Development Council, Women's Business Enterprise Council). The Subcontracting Quarterly Report (Sample B) shall be submitted to dot-ask@state.de.us on the 15th (or next business day) of the month following each quarterly period. For consistency quarters shall be considered to end the last day of March, June, September and December of each calendar year. Contract spend during the covered periods shall result in a report even if the contract has expired by the report due date.

20. BUSINESS REFERENCES:

For selection purposes, please supply three (3) business references consisting of current or previous customers with your reply. Please include name, address, telephone number, and a contact person.

21. ORDERING PROCEDURE:

Successful contractors are required to have either a local telephone number within the (302) area code, a toll free (800) number, or agree to accept collect calls. Orders may be accomplished by written purchase order, telephone, fax or computer on-line systems. The contractor or vendor must accept full payment by procurement (credit) card and/or conventional check and/or other electronic means at the State's option, without imposing any additional fees, costs or conditions.

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22. **BILLING:**

The successful vendor is required to "Bill as Shipped" to the respective ordering agency(s). Ordering agencies shall provide contract number, ship to and bill to address, contact name and phone number.

23. **PAYMENT:**

The agency will authorize and process for payment each invoice within thirty (30) days after the date of receipt of a correct invoice. The contractor or vendor must accept full payment by procurement (credit) card and/or conventional check and/or other electronic means at the State's option, without imposing any additional fees, costs or conditions.

24. **PRODUCT SUBSTITUTION:**

All items delivered during the life of the contract shall be of the same type and manufacture as specified or accepted as part of the bid proposal unless specific approval is given to do otherwise. However, awarded vendors are highly encouraged to offer any like substitute product(s); either generic or brand name, at any time during the subsequent contract term, if an opportunity for cost savings to the state exists. In such cases, the state may require the submission of written specifications and/or product samples for evaluation prior to any approvals being granted.

25. **BID/CONTRACT EXECUTION:**

Both the non-collusion statement that is enclosed with this Invitation to Bid and the contract form delivered to the successful bidder for signature **shall** be executed by a representative who has the legal capacity to enter the organization into a formal contract with the State of Delaware. The awarded vendor(s) will be required to complete the new W-9 Form by visiting the Division of Accounting's Website: <http://accounting.delaware.gov/w9.shtml>.

26. **CONTRACTOR RESPONSIBILITY:**

The State will enter into a contract with the successful contractor. The successful contractor shall be responsible for all products and services as required by this ITB. Subcontractors, if any, shall be clearly identified in the proposal.

27. **PERSONNEL:**

- a. The Contractor represents that they have, or will secure at their own expense, all personnel required to perform the services required under this contract.
- b. All of the services required hereunder shall be performed by the Contractor or under its direct supervision, and all personnel, including subcontractors, engaged in the work shall be fully qualified and shall be authorized under State and local law to perform such services.
- c. None of the work or services covered by this contract shall be subcontracted without the prior written approval of the State.

28. **LIFE CYCLE COSTING:**

If applicable, the specifications contained within this ITB have been developed through Life Cycle Cost Analysis that will allow the State to realize the lowest total cost of ownership and operation over the useful life of the

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equipment.

29. ENVIRONMENTAL PROCUREMENT REQUIREMENTS:

- a. Energy Star - If applicable, the Contractor must provide products that earn the ENERGY STAR rating and meet the ENERGY STAR specifications for energy efficiency in order to keep overall event costs to a minimum. The Contractor is encouraged to visit www.energystar.gov for complete product specifications and updated lists of qualifying products.
- b. Green Products – third party certification of green products accepted w/approved green certification shall be offered wherever available in addition to or as a substitute for non-green products.
- c. Contractors shall report all green items procured during the monthly reporting period using the Usage Report that will be provided to the awarded Vendor(s).
- d. Environmental Procurement Policies of the State shall determine acceptable consideration and credit for environmentally preferred products and services in the performance of this award. The State Environmental Procurement Policies may be found: <http://gss.omb.delaware.gov/contracting/documents/agencyboilers/espp.pdf>.

30. TERMINATION FOR CONVENIENCE:

Contracts shall remain in effect for the time period and quantity specified unless the contract is terminated by the State. The State may terminate the contract at any time by giving written notice of such termination and specifying the effective date thereof, at least sixty (60) days before the effective date of termination.

31. TERMINATION FOR CAUSE:

If, for any reasons, or through any cause, the Contractor fails to fulfill in timely and proper manner its obligations under this Contract, or if the Contractor violates any of the covenants, agreements, or stipulations of this Contract, the State shall thereupon have the right to terminate this contract by giving written notice to the Contractor of such termination and specifying the effective date thereof, at least 5 days before the effective date of such termination. In that event, all finished or unfinished documents, data, studies, surveys, drawings, maps, models, photographs, and reports or other material prepared by the Contractor under this Contract shall, at the option of the State, become its property, and the Contractor shall be entitled to receive just and equitable compensation for any satisfactory work completed on such documents and other materials which is usable to the State.

32. AUDIT ACCESS TO RECORDS:

The Vendor shall maintain books, records, documents, and other evidence pertaining to this Contract to the extent and in such detail as shall adequately reflect performance hereunder. The Vendor agrees to preserve and make available to the State, upon request, such records for a period of five (5) years from the date services were rendered by the Vendor. Records involving matters in litigation shall be retained for one (1) year following the termination of such litigation. The Vendor agrees to make such records available for inspection, audit, or reproduction to any official State representative in the performance of their duties under the Contract. Upon notice given to the Vendor, representatives of the State or other duly authorized State or Federal agency may inspect, monitor, and/or evaluate the cost and billing records or other material relative to this Contract. The cost of any Contract audit disallowances resulting from the examination of the Vendor's financial records will be borne by the Vendor. Reimbursement to the State for disallowances shall be drawn from the Vendor's own resources and not charged to Contract cost or cost pools indirectly charging Contract costs.

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33. **VENDOR EMERGENCY RESPONSE POINT OF CONTACT:**

The awarded vendor(s) shall provide the name(s), telephone, or cell phone number(s) of those individuals who can be contacted twenty four (24) hours a day, seven (7) days a week to meet a critical need for commodities or services when the Governor of the State of Delaware declares a state of emergency under the current Delaware Emergency Operations Plan. Failure to provide this information could render the bid as non-responsive.

34. **ELECTRONIC CATALOG:**

The successful vendor(s) may be required to submit their items list in electronic format designated by the State.

35. **SUBCONTRACTS:**

Subcontracting is permitted under this ITB and contract. However, every subcontractor shall be identified in the Proposal (Attachment 3) and agreed to in writing by the State or as are specifically authorized in writing by the Agency during the performance of the contract. Any substitutions in or additions to such subcontractors, associates, or consultants will be subject to the prior written approval of the State.

The Vendor(s) shall be responsible for compliance by the subcontractor with all terms, conditions and requirements of the ITB and with all local, State and Federal Laws. The Vendor shall be liable for any noncompliance by any subcontractor. Further, nothing contained herein or in any subcontractor agreement shall be construed as creating any contractual relationship between the subcontractor and the State.

If a company elects to be a subcontractor for another vendor, the subcontractor may not independently bid on this solicitation.

36. **CONFIDENTIALITY:**

All documents submitted as part of the Bidder's proposal will be deemed confidential during the evaluation process. Bidders' proposals will not be available for review by anyone other than the State of Delaware/Proposal Evaluation Committee or its designated agents. There shall be no disclosure of any Bidders' information to a competing Bidder prior to execution of the contract.

The State of Delaware is a public agency as defined by state law, and as such, it is subject to the Delaware Freedom of Information Act, 29 Del. C. Ch. 100. Under the law, all the State of Delaware's records are public records (unless otherwise declared by law to be confidential) and are subject to inspection and copying by any person. Bidder(s) are advised that once a proposal is received by the State of Delaware and a contract is executed, its contents will become public record and nothing contained in the proposal will be deemed to be confidential except proprietary information.

Bidder(s) shall not include any information in their proposal that is proprietary in nature or that they would not want to be released to the public. Proposals must contain sufficient information to be evaluated and a contract written without reference to any proprietary information. If a Bidder feels that they cannot submit their proposal without including proprietary information, they must adhere to the following procedure or their proposal may be deemed unresponsive and will not be recommended for selection. Bidder(s) must submit such information in a separate, sealed envelope labeled "Proprietary Information" with the ITB number. The envelope must contain a completed Confidential Information Form (Attachment 5) describing the documents in the envelope, representing in good faith

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that the information in each document is not “public record” as defined by 29 *Del. C.* § 10002(d), and briefly stating the reasons that each document meets the said definitions.

Upon receipt of a proposal accompanied by such a separate, sealed envelope, the State of Delaware will open the envelope to determine whether the procedure described above has been followed.

If the Bidder does not have any documents it declares confidential or proprietary, the Confidential Information Form (Attachment 5) should be completed by checking the appropriate box found near the top of the form.

37. BUY AMERICA :

References:

23 USC 313

ISTEA Section 1041(a) and 1048(a)

23 CFR 635.410

Applicability:

Applicable to all materials used in Federal-aid projects

Guidance:

This contract requires the use of domestic steel and iron in products produced for Federally funded projects. All foreign steel and iron materials and products are covered by Buy America regardless of the percentage they comprise in a manufactured product or the form they may take. The regulations allow bidders and the contracting agency some latitude through minimum use, waivers, and alternate bids.

All manufacturing processes must take place domestically. Manufacturing begins with the initial melting and mixing, and continues through the coating stage. Any process which modifies the chemical content, the physical size or shape, or the final finish is considered a manufacturing process. These processes include rolling, extruding, machining, bending, grinding, drilling and coating. "Coating" includes epoxy coating, galvanizing, painting, or any other coating that protects or enhances the value of the material.

Buy America does not apply to raw materials (iron ore and alloys), scrap, pig iron or processed, pelletized, and reduced iron ore.

If domestically produced steel billets or iron ingots are shipped overseas for any manufacturing process, and then returned to the U.S., the resulting product does not conform with the Buy America requirements.

The manufacturing process for a steel/iron product is considered complete when the product is ready for use as an item (e.g., fencing, posts, girders, pipe, manhole cover, etc.) or could be incorporated as a component of a more complex product through a further manufacturing process (e.g., the case for a traffic signal head). The final assembly process does not need to be accomplished domestically so long as the steel/iron component is only installed and no manufacturing process is performed on the steel/iron component.

For the Buy America requirements to apply, the steel or iron product must be permanently incorporated into the project. Buy America does not apply to temporary steel items, e.g., temporary sheet piling, temporary bridges, steel scaffolding and falsework, etc.

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Buy America provisions apply to all steel and iron materials that is to be permanently incorporated in a Federal-aid project, even if an item is rendered as a "donated material" in accordance with 23 U.S.C. 323 - Donations and Credits.

For additional information, refer to the following website:

<http://www.fhwa.dot.gov/programadmin/contracts/core02.cfm#s2B01>

Refer to section B. Other Contract Provisions.

38. NOTICE TO ALL PERSONNEL ENGAGED ON FEDERAL-AID HIGHWAY PROJECTS

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined not more than \$10,000 or imprisoned not more than 5 years or both."

39. XI. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

1. Instructions for Certification - Primary Covered Transactions:

(Applicable to all Federal-aid contracts - 49 CFR 29)

a. By signing and submitting this proposal, the prospective primary participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective primary participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the department or agency determined to enter into this transaction. If it is later determined that the prospective

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primary participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause of default.

d. The prospective primary participant shall provide immediate written notice to the department or agency to whom this proposal is submitted if any time the prospective primary participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "lower tier covered transaction," "participant," "person," "primary covered transaction," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the department or agency to which this proposal is submitted for assistance in obtaining a copy of those regulations.

f. The prospective primary participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.

g. The prospective primary participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," provided by the department or agency entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the nonprocurement portion of the "Lists of Parties Excluded From Federal Procurement or Nonprocurement Programs" (Nonprocurement List) which is compiled by the General Services Administration.

i. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph f of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

* * * * *

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Primary Covered Transactions

1. The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:

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a. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

b. Have not within a 3-year period preceding this proposal been convicted of or had a civil judgement rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

c. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph 1b of this certification; and

d. Have not within a 3-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

2. Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

* * * * *

2. Instructions for Certification - Lower Tier Covered Transactions:

(Applicable to all subcontracts, purchase orders and other lower tier transactions of \$25,000 or more - 49 CFR 29)

a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "primary covered transaction," "participant," "person," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations.

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

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f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the Nonprocurement List.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

* * * * *

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Covered Transactions:

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

40. XII. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

(Applicable to all Federal-aid construction contracts and to all related subcontracts which exceed \$100,000 - 49 CFR 20)

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

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b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

3. The prospective participant also agrees by submitting his or her bid or proposal that he or she shall require that the language of this certification be included in all lower tier subcontracts, which exceed \$100,000 and that all such recipients shall certify and disclose accordingly.

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CONTRACT NO. DOT1301-FIXED_DMS

SPECIAL PROVISIONS FOR FIXED DYNAMIC MESSAGE SIGNS

1. Project Description

The Delaware Department of Transportation, hereafter called The Department, is making a request for bids to furnish full matrix, LED (light emitting diode) Fixed Dynamic Message Signs (Fixed DMS or DMS), miscellaneous equipment and items and to provide DMS training and warranty support to The Department. The DMS will enable The Department to deliver traveler advisory and travel time information along critical sections of the transportation system. The DMS system is a component of the statewide Integrated Transportation Management System (ITMS) initiative undertaken to provide for the safe and efficient management of the transportation system.

This work shall involve the manufacture and delivery of DMS to The Department, and miscellaneous equipment and items statewide over a three (3) year period. These DMS will be generally controlled both from The Department's Transportation Management Center (TMC) in Smyrna, DE, utilizing the current ITMS software, and locally via the local interface provided as part of the supplied on-site field controllers. This Contract shall also include the supply of Toll Plaza DMS Signs (Size D).

The new DMS must fully comply with the National Transportation for ITS Communications Protocol (NTCIP) standards as detailed later in this Contract. As directed under this Contract, the Contractor must supply the NTCIP Management Information Base (MIB) for the DMS. Additionally, the Contractor shall provide one copy of the vendor's DMS control software to control the DMS, as defined herein. All DMS shall be equipped with standard RS-232, fiber optic, and standard Ethernet interfaces, as defined herein.

This Contract will include the fabrication, shipping and training for an estimated ninety (90) fixed DMS of Amber LED technology along with communications equipment, and other associated equipment. The DMS sign supplied in this Contract will be installed by The Department.

There will be multiple pay items for the fixed DMS types and miscellaneous equipment under this contract. A summary of the estimated fixed DMS listed by functional size includes the following:

ID	Name	Lines / Characters Per Line	Letter Height	Mount	Access
A	Large	3 X 21	18"	Full-Span	Walk-in
B	Medium	3 X 15	18"	Cantilever	Front
C	Small	3 X 12	18"	Cantilever	Front
D	Tolls	10 X 28	12"	Internal Rail	Front

Each sign shall be full matrix capable of displaying the equivalent number of 18" and 12" characters as noted above.

2. General Terms and Conditions

Unless otherwise stated, these requirements shall apply to all hardware and software components. Requirements applicable to a specific hardware component are described elsewhere in these Special Provisions.

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2.1 Time

Following the successful delivery and inspection for the first type of any DMS model ordered, each additional item and/or products shall be delivered to The Department, covered by this Contract, within ninety (90) working days from date of the individual Purchase Order. Then, the Contractor must notify The Department at least three (3) days prior to the expected delivery date. No deliveries will be accepted on weekends.

2.2 Experience Requirements and References

The bidder shall submit a cover letter on the letterhead of the firm or organization submitting the proposal. The cover letter shall briefly summarize the firm's ability (Qualifications) to provide the services specified in this Contract. The criteria to be met include:

- 1) The bidder shall demonstrate to The Department that they have supplied and/or installed at least ten (10) of each category of DMS (i.e. 10 fixed of each type), which were delivered to the satisfaction of and fulfilled the requirements of their clients' specifications, similar to that required by this DMS Project Specifications on at least one (1) project of similar size and scope in the past five (5) years. The bidder shall submit to The Department, along with their bid proposal, an itemized list of DMS signs including:
 - a) Client
 - b) Number of signs
 - c) Type of signs (fixed, full matrix, character matrix, etc)
 - d) Date of completion

- 2) The bidder shall submit at least three (3) references for work on at least three (3) different projects which were similar in nature to that required by the Project Specifications. Each of the three projects must have been completed successfully in the past five (5) years. The bidder shall submit the following information for each reference provided:
 - a) Client
 - b) Client Contact
 - c) Client Contact Telephone Number
 - d) Client Address
 - e) Project Description
 - f) Date of Project Completion

2.3 Delivery

All items shall be ordered by Purchase Order. Each Purchase Order shall be promptly acknowledged in writing stating the estimated date of delivery. Delivery must be made within ninety (90) calendar days after receipt of a Purchase Order to the location noted below:

Delaware Department of Transportation
Traffic Section
14 Sign Shop Road
Dover, DE 19901

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Notification must be given at least three (3) days prior to the delivery of any item to the above address. If this notification is not given, any and all expenses incurred because of unloading delays shall be the responsibility of the Contractor. The DMS shall be delivered via and open-bed truck to facilitate unloading. Unloading of the DMS in the staging area location designated by The Department shall be the entire responsibility of the Contractor. The Contractor shall provide suitable equipment, rigging, and sufficient personnel to safely unload the DMS without marring the finish. Any DMS that is damaged during unloading shall be rejected by The Department and replaced or repaired by the vendor to the satisfaction of The Department.

2.4 Extension of Delivery Time

The Department will only consider an extension of the delivery time specified under the terms of this Contract in cases where labor strikes shall prevent the required fulfillment of the Contract. Evidence of such delays must be submitted for consideration. Knowledge of existing or pending strikes can be taken into consideration in awarding the Contract.

2.5 Reliability and Operational Stability

The Contractor shall furnish all necessary equipment and is to be inclusive of all parts and components necessary as part of this Bid Submission to be a completely operational DMS System, unless stated otherwise in these Specifications. Compliance with the Special Provisions pertaining to individual elements of the DMS does not in itself constitute compliance with the reliability and long-term operational stability of the complete DMS system.

2.6 Materials and Fabrication

The bidder shall include in the bid cost, all cables and incidental items necessary for complete operation of each DMS.

All hardware, equipment, and component parts furnished by the Contractor shall be new and of the latest design and manufacture, and be in an operable condition at time of delivery; no used or refurbished hardware is allowed. No part or attachment shall be substituted or applied contrary to the manufacturer's recommendations and standard practices. Furthermore, firmware and software must be tested and in working order; neither prototype firmware, nor prototype software will be permitted.

The Contractor shall register with the manufacturer(s) all equipment and software in the name of The Department. Photocopies of the registration forms shall be forwarded to The Engineer.

All materials and equipment shall be stored and handled in a clean, dry location, free from construction dust, precipitation and excess moisture in such a manner as not to degrade quality, serviceability or appearance.

All electronic equipment shall be of solid-state design and modular construction. Individual electronic modules shall provide easy service access and shall be field replaceable. The design shall be such as to prevent incorrect assembly or installation of connectors, fasteners, etc., where possible malfunction or personnel hazards might occur. Each item of equipment shall be designed to protect personnel from exposure to high voltage during equipment operation, adjustments, and maintenance.

2.7 Regulations and Codes

All electrical equipment shall conform to the standards of National Electrical Manufacturers Association (NEMA), National Electric Safety Council (NESC), National Electric Code (NEC) and the Electronic Industries Association (EIA) where applicable.

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All system wiring, conduit, grounding hardware, and circuit breakers shall be in conformance with the issue of NEC in effect on the date of the bid. All electrical conductors shall be copper.

Whenever references are made in these provisions, they are considered to mean the code, ordinance, or standard that is in effect at the time of the bid advertisement.

2.8 Reference Publications

The publications listed below, of the issue in effect on the date of the bid, form a part of these technical specifications to the extent referenced. The publications are referred to in the text by basic designation only. In the event of a conflict between the publications referenced and the detailed content of the technical specification sections that follow, the latter shall be considered a superseding requirement.

- 1) National Electrical Manufacturers Association (NEMA):
 - a) Standards Publications/No. 250 Enclosures for Electrical Equipment (1000 Volts Maximum)
 - b) NEMA TS 4-2005 - Hardware Standards for Dynamic Message Signs (DMS), with NTCIP Requirements.
- 2) Electronics Industries Association (EIA):
 - a) EIA/TIA-232-E Interface between Data Terminal Equipment and Data Circuit Terminating Equipment Employing Serial Binary Data Interchange.
 - b) EIA-310-C Racks, panels, and Associated Equipment.
 - c) EIA-359-A Colors for Color Identification and Coding.
 - d) EIA-422-A Electrical Characteristics of Balanced Voltage Digital Interface Circuits.
- 3) Delaware Standard Specifications, for Road and Bridge Construction, August, 2001 or Latest Edition.
- 4) Supplemental Specifications to the Delaware Standard Specifications for Road and Bridge Construction.
- 5) National Electric Code (NEC), 2011 or Latest Edition.
- 6) American Association of State Highway and Transportation Officials (AASHTO), Standard Specifications for Structural Supports for Highway Signs, Luminaries and Traffic Signals, 5th Edition or Latest Edition, including 2010 and 2011 Interim Revisions.
- 7) Delaware Manual on Uniform Traffic Control Devices (MUTCD), 2011 or Latest Edition.
- 8) Publications specific to power, electric, and cabling for DMS including controller cabinets, as characterized by the following organizations:
 - a) Underwriters Laboratories (UL)
 - b) Electrical Testing Laboratories (ETL)
 - c) American Society for Testing Materials (ASTM)

2.9 Plans and Specifications

Along with the requirements of the Bid Submission, Plans and Specifications shall be submitted by the Contractor to The
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Department during the Bid Submission. The Contractor shall submit with the Bid Package Submission two (2) copies of catalog cuts, diagrams, shop drawings, schematics, and descriptions for all equipment (including communications equipment) required for delivery to The Engineer. Additionally, as part of the response to the individual Purchase Orders, the Contractor shall provide individual packages for different DMS types (fixed types A, B, C, D), if the ordered DMS type has changed from the initially accepted specification. The Contractor shall be required to provide an advanced written notification prior to any delivery of any DMS, if modifications to a particular DMS type/model previously approved require different catalog parts. Regardless of this last requirement, updated documentation shall be provided by the Contractor for each delivered DMS.

NOTE: The reason for this additional requirement is that The Department recognizes that vendors continually improve their DMS models; however, The Department needs to have the correct and most-up-to-date documentation for any purchased equipment.

As part of the bid package, shop drawings shall be submitted to The Department in accordance with Delaware Standard Specifications, for Road and Bridge Construction, August 2001 or latest edition, Section 105.04 Plans and Working Drawings. Shop drawings shall clearly indicate all information pertaining to a comprehensive DMS installation and shall include the following information at a minimum:

- 1) Complete specifications on the DMS sign of size A, B, C, and D to be provided.

The Engineer may review and respond in writing on all submitted plans and specifications within fifteen (15) working days from the date of receipt of the submission (NOTE: this includes the documentation for any modified DMS models purchased later in the project via an individual Purchase Order). The Contractor shall be required to resubmit plans and specifications that have not been approved by The Engineer within fifteen (15) working days for approval, unless otherwise noted by The Engineer. The Contractor shall clearly note any deviations, changes, additions, or other modifications. No equipment shall be delivered by the Contractor until catalog cuts have been approved by The Engineer.

2.10 User Manuals and System Administrator Manuals

The Contractor shall provide operator user manuals sufficient to describe how the system can be installed, operated, and maintained.

The Contractor shall provide manuals for the system administrator sufficient to describe how the system can be administered, including setup, installation of software and catalog parts as required, configuration and testing.

After individual Purchase Orders have been issued to the vendor/contractor, user manuals and system administrator manuals shall be provided by the Contractor to The Department within twenty (20) working days. Two (2) copies of each type of manual (users and system administrator) shall be provided in both paper and electronic (PDF) formats with each Purchase Order. Separate manuals shall be provided for each DMS type ordered; The Department may choose to request the provision of these manuals only the first time a particular DMS type is ordered. The Contractor shall provide the electronic manuals in a format suitable for delivery on Compact Disc (CD-ROM) to The Department (e.g.: Adobe Portable Document Format (PDF)).

2.11 Warranty

2.11.1 DMS Component Warranty

The Contractor shall extend to The Department a policy guarantee on equipment and/or services against defective material and workmanship for a period of three (3) years from date of inspection. Any item that is normally covered by

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the warranty policy but is determined to have been damaged through misuse or operator neglect shall be exempt from coverage (Note: The DMS supplied in this contract will be installed by DelDOT; however, incidental to the cost of supplying the DMS, the DMS supplier shall provide on-site installation and inspection services to monitor the handling and installation of the DMS and appurtenances). If any part of the unit is normally covered by a warranty period, the full period of warranty policy shall be provided to The Department. The warranty period shall begin from the date of inspection by The Engineer for each complete unit. The Contractor shall be solely responsible for the warranty of equipment by other vendors, but that are provided by the Contractor as part of this Contract including parts and labor for removal and re-installation of a failed component.

The Contractor shall comply with the manufacturer's warranty or authorize a qualified dealer in the locality in which the unit is assigned to do whatever is required to comply with the manufacturer's warranty without cost to The Department. When warranty work is required, The Department shall notify the Contractor and/or his designated maintenance facility. Upon notification that warranty work is required, the Contractor shall be required to respond either by telephone or in person within three (3) working days after notification by The Department. If The Department and the vendor determine that an on-site visit is necessary, the Contractor shall provide the necessary labor force (technicians) necessary within three (3) working days after notification from The Department to perform the necessary repairs and/or adjustments to be accomplished (Note: if the provision of replacement parts requires more time, the Contractor shall inform The Department immediately with a corresponding timetable). The Contractor shall bear the cost of transporting the equipment both to and from the site as well as any labor and other direct costs to perform these activities.

The Department reserves the right to require the replacement of the whole DMS Unit and/or associated equipment under the following circumstances:

- 1) If one particular component fails more than three (3) times on the same DMS Unit and/or associated equipment within a period of six (6) months, the whole DMS shall be replaced without any costs to The Department.
- 2) If several different components such as sign controller and LED modules and power supplies and board drivers fail more than five (5) times on the same DMS within a period of six (6) months, the whole DMS shall be replaced without any costs to The Department.

The warranty period shall also cover the supply and installation of any and all software upgrades for the DMS, including COTS, MIBs, and firmware.

The Contractor shall be responsible to insure that work required on any unit component covered by this warranty is accomplished within limits prescribed herein. If required repairs are not accomplished within the prescribed limits established above, The Department shall have the right to make any necessary repairs and/or adjustment, and to charge the Contractor the cost of all labor, materials, equipment, and all other incidental costs necessary to affect such repairs.

2.11.2 DMS System Service Operation Warranty

The following service operation warranty shall apply:

- 1) A DMS system service operations warranty period shall be provided for three (3) years on all equipment provided for both the mechanical components and the electrical components for the complete Fixed DMS system.
- 2) These periods start from the date an entire DMS unit and/or System has been inspected by The Department as indicated in "General Requirements for DMS" , Section 1 of the Technical Specifications.

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- 3) The service operations warranty period shall apply to the entire DMS system and shall include replacement of any part used during the service operations period at no cost to The Department. This shall include all parts, labor, and any other costs necessary for the successful vendor to visit the location of the DMS (regardless of the current location within the State of Delaware) and to perform any replacement or repair activities.
 - a) The vendor shall acknowledge any warranty claims within three (3) working days of receipt of an e-mailed warranty claim, either in writing or via e-mail.
 - b) If the vendor or The Department determine (only one party shall be required to determine this need) that on-site assistance is necessary to fix a problem, a trained vendor-certified technician shall be dispatched within three (3) working days to the location of the DMS sign and/or associated equipment in question. The three (3) working days shall begin when the written or e-mail request is made.
 - c) If the vendor and The Department mutually determine that The Department can make a particular repair but a part is needed (i.e., not existing in The Department's catalog parts collection), this part shall be sent via mail courier and arrive at The Department's Smyrna TMC within three (3) working days after the determination has been made. If the part is too large to be sent via mail courier, the Vendor shall deliver the item to a location determined by The Department, at no additional expense to The Department.
- 4) Within the three (3) year service operations warranty period, The Department reserves the right to require the replacement of the whole DMS and/or associated equipment under the following circumstances:
 - a) If one particular component fails more than three (3) times on the same DMS Unit and/or associated equipment within a period of six (6) months, the whole DMS shall be replaced without any costs to The Department.
 - b) If several different components such as sign controller and LED modules and power supplies and board drivers fail more than five (5) times on the same DMS within a period of six (6) months, the whole DMS shall be replaced without any costs to The Department.
- 5) The service operations warranty item does not include the normal usage wear and/or costs of electrical energy from local power companies.

TECHNICAL SPECIFICATIONS

1. General Requirements for DMS

The supply of Fixed DMS Sizes A, B, C, and D shall be completed in accordance with this Contract and these Special Provisions.

The Department shall be responsible for:

- 1) Providing a facility for the pre-installation meeting and training.
- 2) Providing a contact person and location address or field location for the delivery of the items.
- 3) Arranging for the final installation and mounting of each DMS at the field site, including design and construction of the DMS support structure (including mounting I-Beams) and foundation.
- 4) The installation of a ground mounted, key access, control cabinet to house the DMS controller, power supply and communications interface.
- 5) Making arrangements for the purchase of a communication service and installing the communications connection to/from the TMC to the fixed DMS controller in the field.
- 6) Furnishing and installing a 120 VAC or 240VAC power service connection and surge protection to the DMS, as required.
- 7) Preparing and clearing the sites for construction.
- 8) Permanently affixing identification tags to the DMS equipment and a unique engraved identification number on each DMS cabinet.
- 9) Radio communication path studies, if required.

Upon the delivery and inspection of each DMS and other equipment, The Department shall accept and assume responsibility for owning, operating, and maintaining the DMS and other equipment.

The Engineer shall be responsible for contacting the Contractor in writing to schedule all on-site work relating to the delivery and training of the DMS and associated equipment. The Contractor shall commence all work within ten (10) working days after formal provision of an individual Purchase Order by The Engineer.

1.1 DMS Software

The following DMS Software requirements shall apply for DMS System Signs Size A, B, and C.

These DMS Software requirements do NOT apply to DMS signs Size D as they currently operate from an existing direct Keypad to control board via an RS-232 and do not operate from a central software package. The replacement signs Size

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D shall, however, operate from the existing central control board/computer located at each field installation and support Ethernet communications for future centralized control from the TMC (as determined by The Department).

1.1.1 DMS Remote Access Requirements

DMS shall provide at least three levels of access and authentication: This requirement is in addition to any central system access security that is provided via the ITMS or 3rd party software.

1. Users with low level access clearance will only be able to monitor the sign's displayed messages and other non-access level related information.
2. In addition to Low Level Access capabilities, Users with medium level access clearance will also be able to download messages, activate downloaded or stored messages, activate diagnostic tests and obtain the results, and other non-access level related information.
3. In addition to Medium Level Access capabilities, users with high level access clearance are to be provided with access to the DMS' database parameters, communications parameters (drop address, telephone numbers, baud rates, etc) as well as access level assignments, user names and passwords.

1.1.2 DMS Firmware / Software Requirements

The complete DMS software system shall contain six software components described herein:

- 1) Communication Software
- 2) Control Software
- 3) Character Set software
- 4) Message Capabilities
- 5) Diagnostic software
- 6) Support Capabilities

1.1.2.1 Communication Software

The DMS complying with these specifications shall respond to any communications from the central software using the NTCIP requirements as defined herein.

1.1.2.2 Control Software

- 1) Integrate all DMS sign control into single existing DMS control software operating at the DelDOT TMC.
- 2) Have all features accessible from both the local controller and remote access (i.e., the central control software).
- 3) Access from either point shall be password-protected with different levels.
 - a. Configuration items pertaining to application functions and communications configurations as well as all passwords shall be accessible by one level.
 - b. Control functions such as defining scheduling functions, message display requests, and diagnostics controls shall be accessible by another level.
 - c. Monitoring functions such as monitoring the message displays and obtaining diagnostics results shall be accessible by another level.

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- 4) Be non-copy-protected, and shall not use any form of a hardware key.
- 5) Be supplied on CD-ROM.
- 6) Be menu-driven with all operations of the software grouped under logical sub-menus. These menus shall be presented and accepted by The Department prior to delivery.
- 7) Have the following adjustable parameters:
 - a. Selection of messages.
 - b. Selection of on/off time for each page of a message.
 - c. 40 character location description.
- 8) Provide the capability from the local controller to modify the following parameters (Note: the central system software will need to provide the same capabilities):
 - a. Serial port and modem parameters (baud rate, stop bits, parity, tone/pulse dial, landline/cellular connection, dialed phone number, non-connect timeout (0-255 seconds), and number of retries until error).
 - b. Sign number / Drop address of the sign.
 - c. Phone number of DMS unit.
 - d. Allow the central system to obtain these parameters remotely.

1.1.2.3 Character Set Software

Provide signs that are capable of displaying American Standard Code for Information Interchange (ASCII) characters 32 through 126, including all uppercase and lowercase letters and digits 0 through 9, at any location in the message line.

1.1.2.4 Message Capabilities

- 1) The DMS shall support the following modes of operation and message capabilities:
 - a. Static Message - The message chosen shall be displayed constantly on the sign face until the sign controller is instructed to do otherwise.
 - b. Multi Page Messages - The message chosen shall display up to six different pages in increments set by the user. The user shall have the ability to set the increment for each page to display between 0.1 and 25.5 seconds in 0.1 second increments.
 - c. Flashing Messages – The message chosen shall be displayed and blanked alternately. The user shall have the ability to flash the message between 0.1 and 9.9 seconds in 0.1 second increments.
 - d. Scrolling Messages – The message chosen shall be movable across the sign display from one side to the other. The user shall have the ability to determine the direction of travel, left-to-right or right-to-left.
- 2) The DMS shall support the following activation modes:
 - a. Manual – An operator using the front panel LCD/keypad interface or NTCIP-compatible control software manually instructs a particular message to be activated.
 - b. Schedule – The internal time-based scheduler in the DMS may be configured to activate messages at programmable times and dates. Prior to activation, these messages and their activation times and dates shall be configured using the control software.

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- c. Events – Certain events, like a power loss, may trigger the activation of pre-configured messages when they occur. These events must be configured using the control software.
- 3) The sign shall support activation of messages based on time/date-based schedule. The format and operation of the message scheduler shall be per the NTCIP 1201 and NTCIP 1203 standards.
- 4) The sign shall be able to show a default message following a communication failure. Communication failure shall be defined as no communication within a time period that can be specified by The Department.
- 5) In the event of communication errors or controller lock-ups, the sign shall display a blank message.
- 6) In the event of a power failure, sign shall display the current message upon restoration of power.
- 7) Accommodate at least 7 pre-programmed messages and at least 200 user-definable messages which are to be used for testing purposes, to The Department, who will review and accept them or provide alternative messages. The purpose of those pre-programmed messages is to test the entire sign display using different patterns.
- 8) Be able to retrieve all messages stored in temporary memory.
 - a. Temporary memory shall be nonvolatile.
 - b. All messages and program shall remain resident in the controller's memory in the event of a power failure.

1.1.2.5 Diagnostic software

- 1) The sign controller shall provide for diagnostics software that enables an authorized user to perform certain tests.
- 2) The controller shall provide the capability to execute pixel tests and obtain the results.
- 3) The controller shall provide the capability to execute fan tests and obtain the results.
- 4) The controller shall provide the capability to execute power supply tests and obtain results.
- 5) The controller shall provide the capabilities to obtain any other failures.
- 6) The user shall be able to perform the following message display tests that will demonstrate that all pixels are properly working and that the column and row assignments for each pixel are correct.
 - a. SET TEST: All pixels are on.
 - b. RESET TEST: All pixels are off.
 - c. SET RESET TEST: Set and resets all pixels continuously
 - d. COLUMN TEST: Walking set column.
 - e. ROW TEST: Scrolling set row.
 - f. FLASH PIXEL: Flash lower right hand pixel
 - g. ALL CHARACTERS: display all ASCII Characters supported on several pages within a message

1.1.2.6 Support Capabilities

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The DMS software shall include a searchable database that can be quickly utilized to find answers to software related questions.

1.2 Communications Interfaces

The Department shall supply all modems, transceivers, and other hardware required to provide communications via the vendor supplied serial RS-232, fiber optic or Ethernet interfaces. In addition, each DMS Sign Controller [see Section 2.8(DMS Sign Controller) of the Technical Specifications] shall be outfitted with a minimum of three (3) serial RS-232, and one (1) 10/100 Base-T Ethernet communication port which may be used by the Department to communicate with each sign using an alternate topology, possibly including one of the following:

- 1) Private and leased fiber optics-routed/switched Internet Protocol (IP) based network, which uses IEEE standard Ethernet connections at end devices
- 2) Private and leased copper lines-carrying either serial or Ethernet, or other
- 3) Leased line network services-both serial and Ethernet, among others
- 4) Leased cellular network services-cellular modem (CDMA or GPRS) to serial or Ethernet
- 5) Wireless Ethernet

These communications components are defined to achieve compatibility between the existing communications system and the delivered equipment. The communications requirements for the DMS signs and the radio transceiver equipment are contained in these special provisions.

1.3 Communications Protocol - NTCIP Requirements

This Contract requires compliance to the NTCIP standards for DMS. The applicable standards for the DMS signs are contained in Section 2.2 of these Technical Specifications.

1.4 Software Interfaces

This Contract requires NTCIP Compliance, delivery of the installed NTCIP MIB for each delivered DMS, testing and proof of NTCIP Compliance for the delivered MIB, and delivery of the Contractor's commercial-off-the-shelf (COTS) central system software with unlimited usage license for The Department. The COTS central system software will be or support browser-based, open-architecture, industry standard communications control/transmission, and industry-standard open-architecture SQL central database/repository. If the central control software is available only as a thick-client interface, The Department must review and approve its' use, function, and adaptability for integration (through a 180 calendar day evaluation period at no extra charge).

This Contract will not require the Vendor/Contract to integrate the delivered control system or DMS devices with existing ITMS software systems.

1.4.1 Integration with the ITMS at the TMC

The TMC provides a central location to control and monitor the DMS. The TMC utilizes an existing NTCIP-compliant control system and existing communications network to operate the existing DMS and the new DMS acquired under this Contract.

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The Contractor shall be responsible for supplying the ordered DMS and associated equipment once executed by individual Purchase Orders. The ordered and installed DMS shall be able to be controlled via the communications system provided by The Department and using open, non-proprietary standards as defined in these specifications. The Contractor shall be responsible for ensuring that all software applications supplied under this Contract shall incorporate a published database (NTCIP compatible MIB) that can be accessed by both the supplied COTS and by The Department's customized user interface, which is NTCIP compatible.

The Department's System Integrator (under separate contract) shall be responsible for developing and providing the appropriate software interface for the DMS supplied in this Contract into The Department's central system software, called ITMS. The Contractor shall supply the necessary information directly to The Department's System Integrator when The Department's System Integrator is ready to integrate the DMS into the ITMS. The Contractor and The Department's System Integrator shall coordinate appropriate times and dates to accomplish this work, if appropriate, and notify The Department's Information Technology Manager who shall approve all such activity.

1.4.2 NTCIP MIB Delivery

The Contractor shall provide the complete NTCIP MIB, as installed within each purchased DMS, sufficient to describe how the system can be operated, including any specific details relating to operations with the supplied models of the DMS. The NTCIP MIB shall be provided within twenty (20) working days after the request of The Department, or if not requested, within two (2) working days after delivery of the Contract items. The Contractor shall provide the NTCIP MIB and instructions sufficient for the system integrator to achieve operations of the system.

The NTCIP MIB for each purchased DMS shall be provided in two (2) copies in both paper and electronic format. The Contractor shall provide the electronic NTCIP MIB on Compact Disc (CD-ROM) to The Department containing ASCII versions of the following Management Information Base (MIB) files in Abstract Syntax Notation 1 (ASN.1) format with the following information:

- 1) The relevant version of each official standard MIB Module referenced by the device functionality.
- 2) If the device does not support the full range of any given object within a Standard MIB Module, a manufacturer-specific version of the official Standard MIB Module with the supported range indicated in ASN.1 format in the SYNTAX and/or DESCRIPTION fields of the associated OBJECT TYPE macro will be provided. The filename of this file shall be identical to the standard MIB Module, except that it will have the extension ".man".
- 3) A MIB Module in ASN.1 format containing any and all manufacturer-specific objects supported by the device with accurate and meaningful DESCRIPTION fields and supported ranges indicated in the SYNTAX field of the OBJECT-TYPE macros
- 4) A MIB containing any other objects supported by the device.

The manufacturer shall allow the use of any and all of this documentation by any party authorized by the Procuring Agency for systems integration purposes at any time initially or in the future, regardless of what parties are involved in the systems integration effort.

1.4.3 COTS Software Delivery

The Contractor shall provide the complete manufacturer specific COTS central system software application sufficient to

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operate, control, and diagnose any delivered DMS, including any specific details relating to operations with the supplied models of the DMS. The COTS software shall be provided within twenty (20) working days after the request of The Department, or if not requested, within two (2) working days after delivery of the Contract items. The Contractor shall provide the COTS central system software application and/or installation files and instruction documentations sufficient for the system integrator to establish control. The Contractor shall provide two (2) copies in electronic format of the COTS central system software. The Contractor shall provide the electronic COTS software in a format suitable for delivery on Compact Disc (CD-ROM) to The Department.

The manufacturer shall allow the use of any and all of this documentation by any party authorized by the Procuring Agency for systems integration purposes at any time initially or in the future, regardless of what parties are involved in the systems integration effort.

1.4.4 Factory Acceptance Tests

The DMS manufacturer must provide self-certification, including a statement of conformance and copies of test reports, indicating that the following tests have been performed and passed.

Product test reports must be submitted for testing of the following National Transportation Communication for ITS Protocol (NTCIP) standards:

- a. NTCIP 1201: NTCIP Global Object Definitions
- b. NTCIP 1203: Object Definitions for Dynamic Message Signs (including Amendment 1)
- c. NTCIP 2101: Point to Multi-Point Protocol Using RS-232 Subnetwork Profile.
- d. NTCIP 2103: Point-to-Point Protocol Over RS-232 Subnetwork Profile.

The NTCIP testing must have been completed using industry accepted test tools such as the NTCIP Exerciser, Trevilon's NTester, Intelligent Devices' Device Tester, and/or Frontline's FTS for NTCIP. The NTCIP test report(s) must include testing of sub-network communications functionality, all mandatory objects in all mandatory conformance groups, and a subset of the remaining objects.

2. Concept of Operations (Size A, B, and C)

- A. This work is to furnish and install a light emitting diode (LED) based, full matrix Dynamic Message Sign (DMS) subsystem. The DMS will be utilized to disseminate traveler information to motorists that may include, but is not limited to, road closure information, adverse weather and roadway conditions, detour routes and travel times.
- B. Provide equipment to be furnished at each DMS field site and at the DelDOT TMC that includes, but is not limited to LED DMS, sign controller, conduit, cabling, and interface from controller to sign.
- C. Integrate all DMS sign control into single existing DMS control software operating on the "DMS PC" at the DelDOT TMC.
- D. Provide walk-in access panel DMS sign that will be mounted on a structure along the roadside. DelDOT will provide separate cabinet to house the controller and all associated electronics.
- E. Provide a DMS that is a full matrix LED sign capable of displaying a minimum of three (3) lines of message text with each line consisting of a minimum of eighteen (18) inch high characters, at least 21 characters per line, and legible from a minimum distance of at least eleven hundred (1,100) feet.

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F. Provide a certification letter, signed and sealed by a Professional Engineer registered in the State of Delaware, certifying that the internal structure of the DMS and the connection to the sign structure meet the requirement of the AASHTO “Standard Specifications for Structural supports for Highway Signs, Luminaries and Traffic. The Certification letter shall be prepared by the DMS manufacturer’s Professional Engineer and submitted by the Contractor.

2.1 General

A. Provide DMS with full-matrix amber LED displays, complete with a cone of vision of 30 degrees around the vertical axis of any pixel on the sign in the size and quantity in the below table. Provide DMS with walk-in accessible to maintenance crews. Furnish a DMS subsystem complete with all individual units, components, software modules, cabling, connectors, etc. that are completely compatible with each other and the existing subsystem at the DelDOT TMC. Provide a DMS subsystem where all exposed material on the DMS, enclosure, and other exposed appurtenances is corrosion-resistant. Prevent ambient magnetic and electronic fields, including fields generated by the DMS itself, from interfering with or disrupting subsystem performance. Prevent magnetic and electronic fields generated by the DMS subsystem from interfering with other electronic systems near the DMS.

The DMS shall be provided in one (1) of three (3) varying sizes as listed below:

ID	Name	Lines Characters Per Line	Letter Height	Mount	Access
A	Large	3 X 21	18"	Full-Span	Walk-in
B	Medium	3 X 15	18"	Cantilever	Front
C	Small	3 X 12	18"	Cantilever	Front

- B. Other than size, mount type, and access type, the specifications shall be identical for each DMS configuration of Size A, B, and C. DMS configurations for size D signs shall meet the existing specifications at existing toll plaza facilities, as defined in Section 3 of these Special Provisions. Each size will be bid as a separate pay item as designated on the bid form.
- C. Fabricate, weld, and inspect DMS in accordance with ANSI/AWS. Seal or otherwise make indelible all identifications, including labels, markings, and engravings, on the sign and its components.
- D. Furnish all equipment to allow maintenance access from the central corridor of a walk-in sign for ease of maintenance. Require no special tools to access the sign or its components. Enable all equipment to be accessible without disassembly for inspection and maintenance purposes. Orient all equipment indicator lights, LEDs, and user interfaces in a manner that is readily visible to maintenance or inspection crews accessing the sign. Provide readily accessible and clearly labeled test points for maintenance or inspection crews to test voltage at essential locations. Terminate all external connections using industry standard, safe, tamper resistant connectors. Key connectors to resist improper hookups.
- E. Provide the capability to store at least 132 pre-programmed messages (100 permanent and 32 temporary) locally at the DMS, and/or in the device DelDOT TMC software.
- F. Provide serviceable components that are modular, interchangeable and removable from within the sign enclosure or controller cabinet. Provide each line of the sign display composed of identical and readily interchangeable display modules.

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- G. Provide each display module containing one or more display pixels. Replacement of any display module, or pixel on a display module, cannot require the use of special tools. Provide wiring interconnecting individual components or assemblies that are modular harness assemblies with keyed latching connectors.
- H. The presence of ambient radio signals, magnetic or electromagnetic interference, including those from power lines, roadway lights, transformers or motors, within one foot of any of the components of the DMS, cannot impair the performance of the system. Provide system that does not radiate any electrical or electromagnetic signals that could adversely affect any other electrical or electronic device.
- I. Provide DMS controller that blanks the DMS display whenever any of the following conditions occur:
 - a. The number of pixels that are not working for the particular sign type exceed a specified maximum value. This value must be a configurable parameter. Determine this number for each sign type and have these numbers approved by the Engineer.
 - b. The ratio of the number of pixels that actually achieve a commanded state divided by the number of pixels actually commanded to that state exceeds a legibility threshold value. This value must be a configurable parameter. Include in the test only those pixels that are contained in the character positions of the message text.
 - c. Communication loss greater than a configurable time value measured in minutes. Provide default value of 10 minutes.
 - d. Power failure followed by power restoration where the power failure lasted longer than a configurable time value measured in minutes. Provide default value of 10 minutes.
- J. Provide DMS that is modular in design to minimize the effect of the failure of anyone component on the rest of the DMS and to allow for easy removal and replacement of individual components.
- K. Locate the sign controller cabinet to allow for routine maintenance of the DMS with no lane closures, but with permitted shoulder closures.
- L. Provide walk-in DMS housing accessible via an overhead catwalk/ access platform.

Provide DMS sign location with a local sign controller, to be located at the roadway at ground level. Install the local sign control panel in a suitable NEMA 3R enclosure with a key lockable access door. Key all local controller enclosures identically. Provide local sign controllers that allow for control of each individual sign in the event of emergencies, loss of communications with the DMS software at the DelDOT TMC, or by persons performing maintenance on the DMS.

2.2 Codes and Standards

Furnish DMS that meets the criteria of the following codes and standards:

- National Electric Code (NEC)
- AASHTO - Standard Specifications for Structural Supports for Highway Signs, Luminaries, and Traffic Signals (ITE publication No. LP-321), with current addendums.
- AWS D 1.2 Structural Welding Code – Aluminum and AWS A 5.1 & A 5.5 Structural Welding Code - Steel
- ASTM International
 - ASTM A 36 Steel
 - ASTM B 209 Aluminum and Aluminum Alloy Sheet and Plate
 - ASTM A 325 High Strength Bolts

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- ASTM B 686 Aluminum Alloy Castings, High Strength
- Electrical Testing Laboratories, Inc. (ETL)
- Electronic Institute of America (EIA). EIA/ TIA-232- E Interface Between Data Terminal Equipment and Data Circuit Terminating Equipment Employing Serial Binary Data Interchange; and EIA-422- A Electrical Characteristics Of Balanced Voltage Digital Interface Circuits
- MUTCD and Standard Alphabets for Highway Signs and Pavement Markings most current version adopted by the Department
- NEMA – TS4 Standard
- TS4-2005 Hardware Standards for Dynamic Message Signs with NTCIP requirements
- NTCIP Standards (most recent approved versions):
 - NTCIP 1101 - Signal Transportation Management Framework (STMF)
 - NTCIP 1102 - Base Standard: Octet Encoding Rules (OER)
 - NTCIP 1103 - Simple Transportation Management Protocol (STMP)
 - NTCIP 1201 - Global Object Definitions
 - NTCIP 1203 - Object Definitions for DMS – (Section 0 for full list of Functional Requirements for DMS) NTCIP 2001 - Class B Profile
 - NTCIP 2101 - Point to Multi-Point Protocol Using RS-232 Subnet Profile
 - NTCIP 2102 - Subnet Profile for PPP over FSK Modems
 - NTCIP 2103 - Subnet Profile for Point-to-Point Protocol using RS 232
 - NTCIP 2104 - Subnet Profile for Ethernet
 - NTCIP 2201 - Transportation Transport Profile
 - NTCIP 2202 - Internet (TCP/IP and UDP/IP) Transport Profile
 - NTCIP 2301 - Application Profile for Simple Transportation Management Framework (STMF)
 - NTCIP 2303 - Application Profile for File Transfer Protocol (FTP)
- Standards for Enclosures for Electrical Equipment (Publication No. 250)
- Standards for Wiring Devices - Dimensional Requirements (Publication No. WD6)
- NFPA-70
- OSHA
- UL

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- ANSI
- IEEE
- International Standards Organization (ISO)

2.3 Sign Housing

- A. Furnish DMS Sign and housing rated for continuous usage of at least 20 years. Furnish DMS sign to withstand wind loads of up to 80 MPH and 30% gust factor without deformation, damage, or unreasonable fatigue.
- B. Fabricate external skin of the sign housing of aluminum alloy 5052 H32, a minimum of 0.125 inches thick. Attach any external cables to the sign housing using clamps, or by other means accepted by the Representative; adhesive attachment is not acceptable. Encase external cabling in rigid galvanized steel (RGS) conduit. Continuously weld all external seams, joints, excluding the sign face panels or display, using inert gas welding method. The maximum number of seams at the top of the sign housing is three. Stitch weld the external sign housing to the internal housing structure to form a single, unitized structure.
- C. Fabricate all external sign mounting assembly components from aluminum alloy 6061-T6 extrusions, with minimum size of W6x15. Provide Z-Brackets, each of a minimum thickness of 0.25-inch. Attach all structural members to the internal framework of the sign.
- D. Provide a minimum of four drain holes on the bottom of the sign housing that are centered from the front to back edges of the bottom sign panel, and spaced evenly across the sign's full length. Provide drain holes complete with replaceable plugs that serve to open and close the drain. Screen all drain holes to prevent the entrance of small insects and animals. Slope the bottom of the sign housing panel towards the drain holes in order to prevent the accumulation of water at the bottom of the sign.
- E. On the top panel of the sign housing, provide multiple steel lifting eyebolts or other equivalent hoisting points to be used during transport and installation. Lifting bolts or hoisting points are to be connected directly to the sign housing internal structure. The hoist points must enable the sign to be lifted evenly during transport and installation. On the top panel of the sign housing, make provisions to prevent the pooling or collecting of water on the top of the sign housing.

2.3.1 External Sign Face Panels

- A. Furnish weather-resistant sign face panels. Provide panels to prevent moisture, dirt, dust or other foreign objects to permeate the sign face at the seams or at the edges of pixel holes. Construct sign face panels of aluminum, and coat with a matte-black coating system that meets or exceeds American Architectural Manufacturers Association (AAMA) Specification 2605. Provide sign face panels that do not limit the cone of vision of the individual LED pixels, or the sight distance of the sign as a whole.

2.3.1.1 Lens Panel Assembly

- A. Incorporate lens panel assemblies with sign face panels. Furnish lens panels that are modular in design, and allow for ease of removal, and interchangeability.
- B. Provide lens panel mask fabricated of aluminum. Finish mask with a matte-black coating system that meets or exceeds AAMA Specification 2605. Perforate the panel to provide an aperture for each pixel on the display modules. Each aperture must be as small as possible, without blocking the LED light output at the required viewing angle.
- C. Provide lens panel glazing that is 90% ultraviolet (UV) opaque polycarbonate, clear in color, and laminated to the inside surface of the lens panel aluminum mask to form lens panel assembly.

2.3.2 Interior Structure

2.3.2.1 Internal Structural Members

- A. Construct internal structural members including the structural frame out of aluminum alloy 6061-T6 or 6063-T5. Provide internal structural members to accommodate all LED mounting and air distribution subsystems as applicable. Provide internal structural members to retain the display modules in a manner that facilitates ease of maintenance, including the rapid removal of individual display modules. Enable the removal of individual display modules without interfering with adjacent or surrounding modules.

2.3.2.2 Sign Housing Surface Finish

- A. Finish sign face with coating system that meets or exceeds AAMA Specification 2605. Provide certification from the licensed coating manufacturer for all aluminum face materials.

2.3.2.3 Sign Housing Access Door for Walk-In DMS

- A. Provide a sign housing door that is fabricated from aluminum. Equip sign with a minimum of two vertically hinged access doors located at the right and left sides (while facing the front of the sign) of the DMS housing. Mount doors to door frames that are integral to the sign housing. Provide stainless steel hinges to support the door, and enable the door to open outwards. Furnish access door to be a minimum of 2 feet wide and 80 inches high. Equip door with a handle-operated locking mechanism, closed-cell neoprene gasket, and stainless steel hinges. Locate door release levers such that a person with no key and no tools cannot become trapped inside the housing. Furnish doors with a hinge/stop mechanism that retains the door in a 90-degree open position.
- B. Furnish a Grade 1 three-point center-case dead bolt locking mechanism that conforms to ANSI/Builders Hardware Manufacturers Association (BHMA) Standard A156.2 and utilizes a zinc finish. Provide a handle on both the inside and outside of the door. Furnish industrial strength handles that are corrosion resistant. Equip door with electronic monitoring subsystem that provides an alert to DelDOT TMC personnel whenever the door is opened.
- C. Equip DMS housing with an OSHA compliant anchor point at each entrance location for the connection of a personal fall arrest system. Provide anchorages strong enough to withstand a force of 5,000 pounds, as required by OSHA. Locate anchorages such that they will not allow a person to free-fall more than 6 feet when a 6 foot lifeline is used. Locate anchorages just inside each access door within easy reach from the outside, and just outside the access door within easy reach from the doorway.
- D. The DMS must be equipped with an OSHA compliant safety rail assembly, which prevents service personnel from falling out of the DMS when closed across an open access door. A rail assembly must be provided for each door in the display. The safety rail shall consist of a top rail that extends 42 inches above the interior walkway, and a mid rail that extends 21 inches above the interior walkway. The rail assembly shall require no tools to open and close.

2.3.2.4 Sign Housing Access for Front Access Signs

- A. For front access signs, provide unobstructed access that allows servicing of internal components. Access must not require specialized tools or excessive force.
- B. Provide a sign access door for each 10 or 15 pixel wide selection of the sign housing. The doors shall be vertically hinged and shall contain a section of the sign's front face. The door shall swing out from the face to provide access to the cabinet interior. Furnish doors with a retaining latch mechanism to hold the door open at a 90-degree angle

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- C. Each door shall contain a minimum of two (2) captive-type latches to lock them in the closed position. These latches shall be captive to prevent them from falling off. They shall pull the door tight and compress a gasket located around the perimeter of each door. They shall also be capable of providing leverage to easily release the gasket seal when opening the doors. The gasket shall prevent water from entering the cabinet around the doors.

2.3.2.5 Sign Housing Operating Environment

- A. Provide sign housing that conforms to the operating environment requirements established in NEMA TS4. Provide sign housing that ensures functionality of all DMS equipment in the ambient operating temperature range of -29°F to +165°F, or as defined in the most recent version of NEMA TS4.
- B. Where ventilation subsystem is utilized to ensure conformance to NEMA TS4, provide positive pressure, filtered, forced air sign housing ventilation subsystem that distributes air over all LEDs, power supplies, communications equipment and other electronic devices contained in the DMS housing. Evenly distribute circulation across display modules, in the cavity between each display module, across lens panels and the back of the display modules. Submit ventilation subsystem design calculations to the Representative for acceptance before sign installation.
- C. Provide screened or filtered intake holes to feed ventilation subsystem. Provide holes large enough to accommodate the air intake necessary to provide ventilation to the entire sign housing.
- D. Provide ventilation subsystem capable of being tested automatically once each day, and capable of being tested on command from remote and local control access locations. When a failure occurs send an error message to the DelDOT TMC or a laptop computer through the DMS controller. Provide ventilation subsystem capable of operating without any decrease in performance over an ambient operating temperature range of -29°F to +165°F as per NEMA TS 4, Subsection 2.1.5.1, with a maximum relative humidity of 100%.
- E. Provide a fail-safe ventilation subsystem that includes a snap disk thermostat that is independent of the sign controller. Preset the thermostat at 130°F. If the sign housing's interior reaches 130°F, activate the thermostat to override the normal ventilation subsystem, bypassing the sign controller and turning on all sign ventilation fans. The fans will remain under the control of the thermostat until the internal sign housing temperature falls to 115°F, at which time the fail-safe subsystem will return control of the ventilation subsystem to the sign controller.
- F. Include a manual override timer switch located just inside the access door to manually activate the ventilation subsystem. The switch must be adjustable to run for up to 4 hours.
- G. Furnish a sensor or a sensor assembly to monitor airflow volume to predict the need for a filter change. The ventilation subsystem fans must possess a 100,000-hour L10 life rating.
- H. Provide inlet and exhaust filters which are 1-inch thick, permanent, reusable, electrostatic filters that require no electrical attachment. Provide filters which are easily removable from within the sign housing without the use of tools.
- I. If blower system is provided, use a blower that is capable of providing a minimum of one sign housing volume change per minute. Position the blowers in such a manner so as to provide a balanced airflow to the ventilation subsystem in the event of failure of any blower.
- J. If ductwork is used, make all ductwork that impedes access to any sign components to be easily removable, without tools, for servicing of these components. Fabricate all ductwork from minimum 0.040 inches aluminum. Furnish ducts that are extremely efficient with minimal pressure drop throughout the subsystem.

2.3.2.6 Sign Housing Temperature Sensor

- A. Provide a temperature sensor in the sign housing that is controlled and monitored by the sign controller. Provide the capability for the sign to blank itself when a user-defined critical temperature threshold is exceeded. Provide the capability for the user defined critical temperature threshold to be changed remotely from the DelDOT TMC or other location, using the sign controller.

2.3.2.7 Sign Housing Humidity Sensor

- A. Provide a humidity sensor that detects from 0% to 100% relative humidity in 1% or smaller increments. Provide interface between the sensor and the controller. Allow for the humidity to be monitored remotely from the DelDOT TMC. Provide a sensor with accuracy that is better than plus or minus 5% relative humidity. A humidistat is not acceptable.

2.3.2.8 Photoelectric Sensor Devices

- A. Provide sensors with the capability to monitor ambient light levels. Furnish sensors that employ a sufficient number of photocells in the appropriate locations to measure ambient light conditions. Position photocells to measure light levels on both the front and rear of the sign, and light levels at the sign location.
- B. Furnish sensor that provides the DMS controller with accurate ambient light condition at the sign location. Configure controller to react to the light conditions by brightening or dimming the sign LEDs. Reduce the brightness of the pixels in low ambient light, and increase in high ambient lighting. Avoid pixel blooming in low-light conditions. Automatically adjust LED brightness in small enough increments so that the brightness of the sign changes smoothly, with no perceivable brightness change between adjacent levels. Make provision to prevent perceivable brightening of the sign due to stray headlights shining upon the photo sensors at night.
- C. Provide brightness and color of each pixel that is uniform over the sign's entire face within a minimum 30-degree viewing angle in all lighting conditions. Non-uniformity of brightness or color over the sign's face is justification for rejection of the sign by the Representative.

2.3.2.9 Sign Housing Internal Lighting and Electrical Outlets for Walk-In DMS

- A. Furnish a sign housing with a minimum of three (3) internal light fixtures. Near the door, locate a 12-hour timer without hold feature for the lights. Make certain that all fixtures are spaced evenly above the walkway and fully enclosed in shatter-proof protective fixtures. Furnish emergency lighting that automatically illuminates the interior in the event of a power outage.
- B. Prevent light produced from the internal lighting fixtures from being visible from outside the sign during nighttime or dark conditions, and prevent light from interfering with normal visible operation of the sign.
- C. Equip sign housing with at least three 15 A, 120 volt rated ground fault interrupter (GFI) outlets that include protected duplex electrical receptacles. Locate one duplex receptacle at each end of the sign housing and one at the center of the sign housing. Space the duplex receptacles evenly on the rear wall of the housing at a height of between 1.5 feet and 3 feet above the walkway.

2.4 Display Modules.

- A. Provide display modules manufactured by one source and fully interchangeable throughout the manufacturer's sign subsystem(s). Removal or replacement of a complete display module or LED board must be able to be accomplished without the use of any special tools. Furnish display modules containing solid-state electronics to control pixel data and read pixel status.

2.4.1 Full Matrix Display Module

- A. Assemble display modules to form a full matrix configuration suitable for displaying three lines of characters.

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Provide a minimum of 21 characters per line. Provide 18-inch-high display characters that are 5 pixels wide by 7 pixels high and are legible from a minimum distance of at least eleven hundred (1,100) feet.

2.4.2 LED and Pixel Specifications

- A. Provide LEDs based on AllnGaP technology. Provide diodes with a minimum 30 degree viewing angle centered around the optical axis, or zero point, of the pixel, with an amber color and a peak wavelength of 590 nanometers. The peak wavelength must not vary by more than ± 2 nanometers. Provide pixels on the DMS and in the catalog parts to have equal color and on-axis intensity.
- B. Provide sign display to produce an overall luminous intensity of at least 7440 candelas per square meter when operating at maximum intensity. Measure brightness in accordance with the International Commission on Illumination's (CIE) requirements as detailed in the Test Method A of the CIE 127 (1997) standard.
- C. Provide capability to test pixel operational status remotely from the DelDOT TMC, or at the site using a laptop computer pixel test. Provide subsystem capable of producing a log file that includes the pixel status, module number, column number, and pixel number. Provide pixel status test to determine the functional status of the pixel as stuck-on or stuck-off and does not affect the displayed message for more than half a second.
- D. Individually mount each LED directly on a printed circuit board (PCB). Provide LEDs that are individually removable and replaceable using conventional electronic repair methods. Prevent the failure of one pixel from affecting the functionality of any other LED on the PCB.
- E. Provide LED DMS composed of Light Emitting Diode pixel based matrix display modules and inserts.
- F. Provide LED DMS that is single faced, with the message face arranged as a full matrix display. Provide full matrix DMS capable of displaying three lines of text with 18 characters at a height of 18".
- G. Provide interchangeable and replaceable matrix modules, of the same form fit factor.
- H. Provide each pixel to function on a two position basis (on or off) and be individually addressable and controllable to allow for the display, on any portion of the message face, of static text or the flashing of all or any part of the text, together with message formation by alternating between two or more static or flashing text messages.
- I. Provide LED's that are automatically centered horizontally and proportionally spaced.
- J. The LED's used in the display must be obtained from batches sorted for luminous output, where the highest luminosity LED in the batch is not more than fifty percent (50%) more luminous than the lowest luminosity LED in the batch. To ensure uniformity of display and operational life, obtain all LED's used to make up a display module from the same manufacturing batch.
- K. Provide LED display modules having a minimum refresh rate of 100 frames per second.
- L. Provide LED DMS having a photocell controlled dimming circuit which automatically adjusts the luminance of the sign display pixels in accordance with ambient light conditions. As part of the Contractor's shop drawing submittal, provide a complete schematic of the LED: display power, driver and dimming circuits for approval by the Engineer.
 - a. Use continuous current drive at the maximum brightness level. The maximum brightness current cannot exceed the current used to achieve the rated Mean Time Before Failure (MTBF). Indicate the current used for maximum brightness as part of the shop drawing submittal.
 - b. For luminance levels less than maximum brightness, use either continuous current drive or current pulse width modulation to dim the LED. If pulse width modulation is used, design the dimming circuit so that the maximum, instantaneous and average currents do not exceed the rated peak and transient forward current ratings of the LED.

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- c. Equip the LED DMS with three external light sensors located as follows:
 - M. One photocell is to be a horizon type sensor scaled for 100 lux. Orient the horizon photocell in a northerly direction and away from any nearby lighting.
 - N. Two photocells, oriented in opposite directions, perpendicular to the sign face. Scale these photocells for up to 100,000 lux.
 - a. Locate all light sensors in an easily accessible location for maintenance, as approved by the Engineer. Mount all light sensors in a way that permits adjustment of the aiming angle.
 - O. Group the LED in pixels consisting of discrete LED arranged in a continuous matrix display with individual pixel addressability. Character based matrix arrangements are not acceptable. Place the centers of all pixels to maintain the same horizontal and vertical clearances between adjacent pixels. Provide pixels that are replaceable. Optimize the LED grouping and mounting angle for maximum readability.
 - P. Fully configure the LED DMS electronics to drive the total required number of LED. Failure of anyone pixel cannot affect the operation of any other pixel. Design the power driver circuitry to minimize power consumption. Provide sign controller having the ability to detect the failure of an LED display module, down to the pixel level and report the failure via the sign protocol.
 - Q. Mount the LED driver electronics on the same board as the LED displays. Provide driver boards that are easily disconnected from the LED display modules. Removal of any display module cannot affect the operation of the remaining modules.
 - R. Protect the LED DMS from degradation due to sunlight. The method used cannot obstruct the view of the display or reduce the viewing angle below that provided by an unprotected LED DMS. Submit the method and design of the LED DMS sunlight protection to the Engineer for approval.
 - S. Provide amber light emitted by the LED display, with a peak wavelength centered at 590 nanometers, plus or minus 2 nanometers and a dominant wavelength at 590 to 587 nanometers. The use of cluster lamps made up of red and green LED's, with both colors turned on simultaneously to obtain perceived amber light, as a substitute for Amber, and is not acceptable.
 - T. The typical luminous output of the LED's is 1.0 candela for 30 degree viewing angle. Provide individual discrete LED luminous outputs when driven at a current of 20 milli-amperes, measured on the mechanical axis of the lamp package.
 - U. Provide LED mean time before failure (MTBF) at a minimum of 100,000 hours of permanent use at an operating temperature of 140 degrees Fahrenheit, then driven at the specific forward current used for normal daylight LED DMS display operation. As part of the LED manufacturer's technical specification sheet submittal, denote the specific forward current.
 - V. Provide LED's used in the display having a high temperature operating life (HTOL) performance, at an ambient temperature of 131 degrees Fahrenheit, while driven at a direct current of 30 milli-amperes, as follows:
 - a. A maximum of 15% reduction in light output after 1000 hours.
 - b. A maximum of 25% reduction in light output after 100,000 hours.
 - W. Provide manufacturer's documentation for HTOL to indicate if HTOL values are based upon actual or extrapolated data.

2.4.3 Optical, Electrical, and Mechanical Specifications for Display Modules

- A. Provide display modules with connectors for power, controls, and data; contains display module control electronics and memory elements; and provides the signals to switch the LED pixels.

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- B. Furnish display modules that have identical vertical and horizontal center-to-center distances (i.e., pitch) between adjacent pixels ranging from 2.6 inches to 2.75 inches. Provide separation between the last column of one display module and the first column of the next module that is equal to the horizontal distance between the columns of a single display module.
- C. Provide NEMA FR4-rated black LED PCB. Alternate LED PCB configurations are to be submitted to and accepted by the Representative before installation. Provide PCBs that allow components to be removed and replaced without damage to PCB, traces, or tracks. Finish all PCBs with a solder mask and a component-identifying silk screen.
- D. Provide all PCBs, except for the power supply and the pixels on the front of the PCB, with a complete and uniform coating of silicone resin with a minimum thickness of 0.01 inch. Meet the material requirements of MIL-I-46058C Military Standard, United States Department of Defense (USDOD).
- E. Mount all LEDs so that the mechanical axis of the LED is ± 1 degree to the sign's face to ensure uniformity of brightness over the sign's face. Make certain that LEDs are secured perpendicular to the display module within 0.5 degrees. Prevent devices used to secure LEDs from blocking air flow to the LED leads or blocking the LED light output at the required viewing angle. Provide all-black components on the LED side of PCBs.
- F. Provide multiple power supplies to provide power to each display module. Power supplies must be redundant and rated such that if one supply fails, the remaining supply will be able to operate 100% of the pixels in that display region at maximum brightness.
- G. Furnish sign controller that continuously measures and monitors all LED module power supply voltages and provides power readings that indicate to the DelDOT TMC or a laptop computer if the power is sufficient or insufficient on command. Automatically generate an error message to be sent to the DelDOT TMC or a laptop computer when it polls the sign controller if voltages measured are outside nominal values.

Protect LEDs from external environmental conditions, including moisture, snow, ice, wind, dust, dirt, and UV rays. Do not use hoods, louvers, cylinders or visors that could impede the free flow of air over any surface of each individual LED. Do not use epoxy to encapsulate the LEDs.

2.5 Preprogrammed Message Libraries

- A. Provide each DMS having a basic message library consisting of programmed messages. Provide each DMS sign with a local message library with a capacity to store a minimum of 132 programmed display messages (100 permanent, 32 temporary) with related display parameters for each message, such as flashing rate and percent "on-time". Provide these basic messages unique to each DMS sign at its location.
- B. Store the DelDOT local message library on EPROM or EEPROM. Battery-backed RAM is not acceptable. Include all necessary hardware, software and step-by-step instructions, to allow DelDOT to create message libraries and, store them on EPROM or EEPROM. If an industrial grade PC is used then provide an available slot and a board that plugs into this slot with EEPROM, Flash RAM or similar technology memory devices programmed as described herein that contain the message library.
 - a. Provide each DMS with a "temporary" local message library stored in battery backed RAM. If an industrial grade PC is used then provide a similar means for storage of the "temporary" local message library. Provide temporary local message library programmable through both the DMS Server and a locally connectable Sign Programmer. Create and download "temporary" messages to the DMS to

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augment the sign's basic local message library. Display "temporary" messages from the local sign control station in an identical manner to the "permanent" messages.

2.6 Documentation

Software shall be supplied with full documentation, in paper and electronic forms containing ASCII versions of the following Management Information Base (MIB) files in Abstract Syntax Notation 1 (ASN.1) format:

- 1) The relevant version of each official standard MIB Module referenced by the device functionality.
- 2) If the device does not support the full range of any given object within a Standard MIB Module, a manufacturer-specific version of the official Standard MIB Module with the supported range indicated in ASN.1 format in the SYNTAX and/or DESCRIPTION fields of the associated OBJECT TYPE macro. The filename of this file shall be identical to the standard MIB Module, except that it will have the extension ".man".
- 3) A MIB Module in ASN.1 format containing any and all manufacturer-specific objects supported by the device with accurate and ON fields and supported ranges indicated in the SYNTAX field of the OBJECT-TYPE macros
- 4) A MIB containing any other objects supported by the device.

The Contractor shall allow the use of any and all of this documentation by any party authorized by the Procuring Agency for systems integration purposes at any time initially or in the future, regardless of what parties are involved in the systems integration effort.

2.7 Character Displays

- A. Provide signs that are capable of displaying American Standard Code for Information Interchange (ASCII) characters 32 through 126, including all uppercase and lowercase letters and digits 0 through 9, at any location in the message line.
- B. Display uppercase alphanumeric characters over the complete height of the matrix. Provide characters legible under all light conditions within the minimum 30-degree cone of vision centered on the pixel's vertical and horizontal optical axes. In addition to the standard character size of 5 pixels by 7 pixels, provide sign capable of displaying compressed (i.e., 4 pixel by 7 pixel), expanded (i.e., 6 pixel by 7 pixel), or double-stroke (i.e., 7 pixel by 7 pixel) character fonts, and capable of changing the default spacing between characters. Provide spacing options to include 1-, 2-, or 3-pixel columns between the characters. Provide font that conforms to The Department's requirements, including height, style, boldness, and font type. Where there is no DelDOT required standard font, load the subsystem with a default font in accordance with the Standard Font set described in NEMA TS4-2005 (Section 5.6). Font types that are not compatible with existing ITMS software may be grounds for rejection of the sign. Configure subsystem to allow the assignment of font access privileges. Provide sign controller capable of a self-updating time and/or date display on the sign.
- C. Provide sign capable of showing additional graphics or characters.

2.8 Sign Controller

- A. Each Local Controller must contain:
 - a. On/Off switch.
 - b. "Local/Remote" Mode selector switch

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- c. Sign reset push-button.
 - d. Local Control Operator Interface Console
 - e. RS-232 communications port for connection of the Sign Programmer.
- B. Provide local controller that allows for two modes of operation via the position of the mode selector switch:
- a. “Remote” mode: This is the normal mode of operation of the LED DMS, where all signs are controlled remotely from the RTMC software.
 - b. “Local” mode: When the mode selector switch is in this position, remote control of the DMS is disabled and the DMS is controlled in accordance with commands from the Local Sign Control Station.
- C. Provide sign reset push-button on the local control panel operable only when the switch is in the “Local” position. Continue to display its current message when switching from one mode to another, until it receives a command to display another message, from either remote or the local controls, as applicable.
- D. Report a change of position of the mode selector switch to the DMS server.
- E. Provide local control operator interface consisting of multi-line LCD display and alphanumeric membrane keypad. Provide operator interface that allows a user to perform all functions, and provide access to all sign controller features.
- F. Maintain remote communications with each sign for monitoring purposes while the sign is in the “local” mode; with no ability for the DMS server to remotely override the selected setting of the Local/Remote switch.
- G. Provide a sign controller with operational firmware stored in non-volatile memory.
- H. Provide controller to receive sign control commands from DeIDOT TMC and a local, on-site laptop. Program controller to transmit responses, as requested, to the DeIDOT TMC, and to control sign operation, message displays, and maintenance polls and statuses. Provide sign controller to control the following operations:
- a. Message displays
 - b. Sign blanking
 - c. Logic or data error logging
 - d. Error reporting to the DeIDOT TMC and local laptop
 - e. Providing operational status of the sign and all its components, including each individual pixel, to the DeIDOT TMC and local laptop via polling, or real-time transmissions
 - f. Provide all sensor readings including internal and external temperature, photocell, airflow, humidity, LED power supply, and sign door opening to the DeIDOT TMC and local laptop
 - g. Temperature thresholds to activate temperature control devices
- I. Transmit each sign function control to the DeIDOT TMC using related communications media. Provide controller that is capable of being polled on command, and on a user-definable schedule. Provide controller with the capability of storing a minimum of 100 logs locally in the event of communications failure.
- J. Utilize ambient environmental conditions collected by the sensors in an algorithm that activates the temperature control devices within the sign, including the ventilation subsystem, fans, and heating devices, when the temperature exceeds or dips below the temperature thresholds set in the sign controller.

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- K. Furnish sign controller that consists of, at a minimum, local control panel status indicators, including power on/off, DelDOT TMC communications status, laptop computer communications status, communications status with the electronics in the walk-in housing (as applicable), and sign diagnostics and error status.
- L. Provide sign controller that provides automatic power-up commands that blank-out the sign automatically when recovering from power off conditions, and automatically returns to standby conditions in the event that power is removed then restored. During power-up procedures, the sign must return to a preprogrammed message, is blanked, or can display graphics or characters as desired by the DelDOT TMC. Provide a hardware watchdog circuit to provide automatic recovery from critical errors, and automatic shutdown in the event of critical hardware failure. Provide a DMS controller that blanks the display in user-definable situations including, but not limited to, pixel failure, extended communications failure, or extended power failure.
- M. Provide a ground-level access point and an in-sign access point at the sign location that allows the sign to be programmed and controlled via a local laptop.
- N. Prevent pedestrians from accessing the sign controller, or changing displayed messages without permissions. Protect access to sign controller using security authentication or login when accessing the sign locally via a laptop computer.
- O. Provide a controller that contains:
- P. Clearly Labeled Manual On/Off Switch
- Q. Momentary contact switch that resets the sign controller
- R. Provide electrical field connections by barrier type terminal connection blocks as defined in NEMA TS1. Identify all terminal block connections and locate so readily accessible for maintenance. Provide all wire and cable terminations made with insulated spade terminals as defined in NEMA TS1. Soldering of field terminal connections is not permitted.
- S. Provide the latest version of the DMS client/server software on the DMS controller. The software must, at a minimum, provide password protection to restrict access to the program and the sign control functions, and the ability to fully control all programmable functions of the DMS.

2.8.1 Display Subsystem Hardware

- A. Provide data interface circuit to enable communications between the display modules and the sign controller. Contain the following display subsystem components in the sign housing or the field enclosure:
 - a. DMS controller
 - b. Display subsystem interface circuits
 - c. Display modules
 - d. Power supplies
 - e. Local and remote control switches
 - f. LED indicators
 - g. Electronic Industries Alliance (EIA)-232 plug-in connection for laptop computers, EIA-232 null modem cables (minimum of 4 feet for connection of laptop and controller)

- h. Workspace and convenience outlet for a laptop computer
- i. Communications equipment for communications with the DeIDOT TMC
- j. Transient voltage surge suppressors

2.8.2 Sign Controller Communications Interface

- A. Furnish DMS controller that includes at least two 9-pin EIA 232 serial interfaces, and one Ethernet Local Area Network (LAN) RJ45 port. The interfaces must accommodate communications to the DeIDOT TMC, the managed network switch, and to a local laptop. Provide serial interfaces to support:
 - a. Data bits: 7 bit or 8 bit
 - b. Parity: even, odd, none, mark, or spare
 - c. Number stop bits: 1 bit or 2 bit
- B. Terminate all cables for Ethernet connection over copper media as per EIA/TIA-568-A standard.
- C. Configure one EIA-232 serial interface to drive asynchronous modems for full duplex communication with the DeIDOT TMC over point-to-point dial-up lines or a multidrop fiber or copper network. Switching between dial-up, Ethernet, and multidrop operation must not require sign controller software or hardware modifications. Configure the second EIA-232 serial port for local communication with a laptop computer.
- D. Configure sign controller and software to display single-page and multi-page messages, with mixed fonts and spacing. Provide message page times and text flashing rates that are programmable between 0.5 seconds and 5 seconds in 0.1-second increments.
- E. Provide subsystem to log and report errors and failures, including data transmission errors, receipt of invalid data, communication failure recoveries, alternating current power failures, power recoveries, pixel status reads, fan and filter airflow status where applicable, temperature status, power supply status, and information on the operational status of the temperature, photocell, airflow, humidity, and LED power supply sensors. Report airflow and humidity sensor information using the objects from the msClimateCtrlStatusTable of the NTCIP 1203 V2 standard.

2.8.3 Message Status and Monitoring

- A. Provide DMS supporting two modes of operation:
 - a. Master operation, where the DeIDOT TMC commands and controls the sign and determines the appropriate message or test pattern.
 - b. Local operation, where the sign controller or a laptop computer commands and controls the sign and determines the appropriate message or test pattern.
- B. Keep electronic components away from the access door to protect them from the elements. For front access signs, keep electronic components away from the access panels where possible to protect them from damage or corrosion due to exposure to the elements. Provide DMS capable of performing the following functions:
 - a. Control Selection – Provide local/remote switch on the local control panel that functions in parallel with the local/remote switch located in the ground control box. Provide a LED indicator near the local/remote switch to indicate when either switch has selected the local mode. The operating mode is determined by

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the position of the mode switch on the local control panel. If the local control panel's switch is set to local, the operating mode is local. Otherwise, the operating mode is master.

- b. Message Selection – Use keypad to select a blank message or any one of the message stored in the sign controller's nonvolatile memory when the control mode is set to local.
 - c. Message Implementation – Activate the selected message.
- C. Provide sign controller that transmits a return message to the DelDOT TMC whenever it receives a valid status request. Return messages must contain an Internet Protocol (IP) address for the sign controller, the actual message that is visibly displayed on the sign, the displayed message's transmission origin (i.e., the DelDOT TMC, laptop computer, manual entry, etc.), remote or local control status, error and failure reports, temperature readings, access alarms, power supply voltage levels, line voltage, and Uninterrupted Power Supply (UPS) status.
- D. In the event of a sign controller failure, blank any displayed message. During power loss, provide capability to display a user-defined message, including a blank page.
- E. Message additions, deletions, and sign controller changes must be made either remotely from the DelDOT TMC or a local laptop computer. Provide capability to activate messages with specified run-time duration. Upon expiration of a run-time duration, display a user-defined message, including a blank page. Prevent perceivable flicker or ghosting of the pixels during sign erasure and writing periods.
- F. In the event of an AC power loss retain all non-volatile memory for a minimum of 30 calendar days. Provide controller that monitors messages downloaded from the DelDOT TMC or laptop computer to make sure that the message will fit in the display area of the sign. Provide internal time clock that is integral to the controller to provide for message deactivation at the correct time, even in the event of a communication loss. Maintain internal clock time during power outages and automatically display the proper message when power is restored.

2.8.4 Traffic Management Center Communications

- A. Provide all communications equipment, cables, wires, interfaces, and appurtenances to establish a connection to the DelDOT TMC using a specified communications method. The possible communications methods may include, but are not limited to, digital wireless, cellular, fiber optics, and WiMax technology.
- B. Provide DMS that complies with the NTCIP 1201 v01, 1203 v01, 2101 v01.19, 2102, 2103 v01.13, 2201 v01.14, 2202 v01.05, and 2301 v01.08 standards. Provide documentation that NTCIP testing has been completed at the factory for each DMS provided by the manufacturer.
- C. Furnish DMS meeting all mandatory requirements contained in NTCIP 1203 v02 Protocol Requirements List (PRL) contained in sections 3.3.8 and 3.3.9. Provide additional conformance to the following "Optional" User Needs (UN) and Functional Requirements (FR), as described in NTCIP 1203 v02.

UN	FR	DESCRIPTION
2.3.2.1.3.	N/A	DMS Type: Variable Message Sign (VMS)
2.3.2.2.2.	N/A	DMS Technology: LED
2.3.2.3.2.1.	N/A	DMS Display Matrix Configuration: Full Matrix
2.4.2.2.	All Mandatory Items	Logged Data Exchange

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UN	FR	DESCRIPTION
2.5.1.2.	All Mandatory Items	Determine the Sign Display Capabilities
	3.5.3.2.1	Monitor Information about the Currently Displayed Message
	3.5.1.3.5	Configure a Font
	3.5.1.3.6	Delete a Font
	3.5.1.3.7	Validate a Font
2.5.1.3	All Mandatory Items	Manage Fonts
	3.5.1.3.5	Configure a Font
	3.5.1.3.6	Delete a Font
	3.5.1.3.7	Validate a Font
2.5.1.4.	All Mandatory Items	Manage Graphics
	3.5.1.4.5	Store a Graphic Definition
	3.5.1.4.6	Delete a Graphic
	3.5.1.4.7	Validate a Graphic
2.5.1.5.	All Mandatory Items	Manage Automatic Brightness
2.5.2.2.	All Mandatory Items	Remotely Reset the Sign Controller
2.5.2.3.3	Mandatory	Define a Message
	3.5.1.2.4	Delete All Messages of a Message Type with One Command
	3.5.2.3.2.3	Configure Default Flash-On and Flash-Off Times
	3.5.2.3.2.4	Configure Default Font
	3.5.2.3.2.5	Configure Default Line Justification
	3.5.2.3.2.6	Configure Default Page Justification
	3.5.2.3.2.7	Configure Default Page On-Time and Page Off-Time
	3.5.2.3.2.8	Configure Default Character Set
H.2.2.1.	Set Time	

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UN	FR	DESCRIPTION
2.5.2.3.5.	All Mandatory Items	Schedule Messages for Display
2.5.3.1.1.	Mandatory	Determine Sign Error Conditions - High Level Diagnostics
	3.5.3.1.1.3	Execute Climate Control Equipment Testing
2.5.3.1.2	Mandatory	Monitor Subsystem Failure Details - Mid-Level Diagnostics
	3.5.3.1.3.8	Monitor Humidity Warnings
2.5.3.1.3	Mandatory	Monitor Subsystem Failure Details - Low-Level Diagnostics
	3.5.3.1.4.8	Monitor Sign Housing Humidity
2.5.3.1.8	All Mandatory Items	Monitor Door Status
2.5.3.1.9	All Mandatory Items	Monitor Controller Software Operations
2.5.3.1.10	All Mandatory Items	Monitor Automatic Blanking of Sign
	3.5.3.2.1	Monitor Information about the Currently Displayed Message
2.5.3.1.11	All Mandatory Items	Monitor Power Source
2.5.3.1.12	All Mandatory Items	Monitor Power Voltage
2.5.3.2	Mandatory	Monitor Current Message
3.6.6.	3.5.3.2.1	Monitor Information about the Currently Displayed Message
	Mandatory	Supplemental Requirements for Message Definition
	3.6.6.2.1	Support Multi-Page Messages
	3.6.6.2.2	Support Page Justification
	3.6.6.2.2.1	Support for One Page Justification Within a Message
	3.6.6.2.2.2	Support for Multiple Page Justification Within a Message
	3.6.6.2.3	Support Multiple Line Messages

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UN	FR	DESCRIPTION
	3.6.6.2.4	Support Line Justification
	3.6.6.2.4.1	Support for a Single Line Justification within a Message
	3.6.6.2.4.2	Support Line Justification on a Page-by-Page Basis
	3.6.6.2.4.3	Support Line Justification on a Line-by-Line Basis
	3.6.6.2.6	Support Font Commands
	3.6.6.2.6.1	Support One Font within a Message
	3.6.6.2.6.2	Support One Font per Page within a Message
	3.6.6.2.10	Support Flashing
	3.6.6.2.10.3	Support Page-by-Page Flashing
	3.6.6.2.14	Support of Graphics
3.6.13	All Mandatory Items	Supplemental Requirements for Line Justification
	3.6.13.1	Support Left Line Justification
	3.6.13.2	Support Center Line Justification
	3.6.13.3	Support Right Line Justification
	3.6.13.4	Support Full Line Justification

2.9 Mounting Requirements

- A. The DMS shall be designed and fabricated for mounting using one of the three (3) options below, which will be selected by The Department at the time the sign is ordered via a Purchase Order under this Contract:
 - a. Full span structure with sign over roadway (full span mount)
 - b. Cantilever Structure
 - c. On existing Toll Facility overhead structures (Toll DMS Size D only)

- B. The Contractor shall supply appropriate mounting and support hardware for the selected option and all other parts and equipment required to successfully install the DMS signs on one of the three above mentioned structures and support connectors for mounting on structures shall be designed in accordance with the most recent version of the following publications:
 - a. AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaries, and Traffic Signals

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- b. American Society of Civil Engineers (ASCE) standard ASCE 7-95 Minimum Design Loads for Buildings and Other Structures.

- C. The structural integrity of the sign enclosures and support connectors is solely the responsibility of the DMS manufacturer. All required calculations shall be made by a State of Delaware registered professional engineer to ensure that the sign housing will not impose shock and vibrations in excess of those defined in NEMA TS4-2005. Copies of all calculations and/or plans shall be made available to The Engineer for review. Review of these drawings by The Department does not relieve the Contractor of his responsibility. Said review is a general review only and confirmation that the loads placed on any member are within allowable stresses and to evaluate the general loads on the structure. It specifically is not an approval for the structural integrity of the support system.

- D. All support connectors will be fabricated from aluminum or galvanized steel. All welds shall be continuous except as noted. Weld sizes indicated shall be equal to the thickness of the least of the joined plates.

- E. Materials for support connectors:
 - 1) Structural Shapes, plates, and bars:
 - a) Under 6 mm: ASTM A575 Grade 1020
 - b) 6 mm to 25 mm: ASTM A36
 - c) Over 25 mm: ASTM A572 Grade 42

 - 2) Pipe: ASTM A501

 - 3) Steel Castings: ASTM A27 Grade 65 35

 - 4) Pole Tops: ASTM B26, Aluminum Alloy S5A or ASTM A126, Class A Cast Iron

 - 5) Fasteners
 - a) Clamps: ASTM A606 Type 4
 - b) Anchor Bolts: ASTM A687
 - c) Anchor Nuts: ASTM A563 Grade D.H.
 - d) Flange Bolts and Nuts: ASTM A325 or ASTM A193 BT
 - e) Other Bolts and Nuts: ASTM A307 Grade A
 - f) U Bolts: ASTM A307

 - 6) Finish
 - a) Structural: Galvanized finish ASTM A123
 - b) Fasteners: Galvanized finish ASTM A153

2.10 Catalog Parts

- A. The Contractor shall submit with his/her bid proposal a price list for recommended Catalog parts for all DMS components typically required for the DMS signs. In addition, the Contractor shall specify a percentage discount from the list prices for all catalog parts. Attached to the Bid Proposal Forms shall be the initial list prices for the catalog parts as required below. All catalog parts shall be installed components to enable The Department or its

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agent to readily replace defective components. The Department may review the suggested minimum stocked catalog parts and cost estimates, and modify/negotiate the terms with the Contractor on those items. Driver boards and controllers for DMS signs must be included.

- B. The catalog parts shall be provided as a complete assembly with all items necessary for replacement. The catalog part replacement should not require any specialized tools; however, if uncommon tools are necessary, those tools shall be provided with the catalog parts.
- C. The Contractor shall be required to provide repair parts to The Department within fifteen (15) working days after receipt of an approved purchase order, for a period of three (3) years from Initial Purchase Order.
- D. The catalog parts Price List shall be included with the final bid package and shall include but not be limited to the following:

DMS Signs Size A, B, and C

- a. Sign Controllers
 - b. LED Display Module
 - c. Power Supply Photoelectric Sensor
 - d. Temperature Sensor
 - e. Air Filters.
 - f. Heater
 - g. Ventilation Fan
- E. For the duration of this Contract, when the Contractor discontinues or improves any catalog parts or equipment, the Contractor shall submit an updated catalog parts list including the list price for each item.

3. Toll Plaza LED DMS Requirements (Size D)

3.1 Concept of Operations

- A. This work is to furnish and install a fully-operational light emitting diode (LED) based, full-color, full-matrix, Dynamic Message Sign (DMS) system; with structural support members as detailed in the following specification sections. The DMS shall be utilized to disseminate toll lane conditions at DelDOT toll plazas over designated toll lanes.
- B. Provide equipment to be furnished at each DMS location that includes, but is not limited to, full-color LED DMS, sign controllers, and manufacturer mounting brackets and structural support members.
- C. Provide all DMS control software (Non-NTCIP), firmware, and support services necessary for installation of a fully-operational system. The DMS system must have an existing interface with the toll plaza control system located within the toll tunnel at each of the bridge facilities.
 - a. The Department's system integrator (under separate contract) shall be required to update the existing software and program message libraries for the DMS system.
 - b. All DMS, at each toll plaza, shall be installed for standard remote activation from the lane controller, as well as limited control in the toll booth via a remote command module.

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- c. The Department's system integrator (under separate contract) shall install the DMS control software at the DelDOT TMC for remote monitoring via The Department's central system software, called ITMS.
- D. The existing Toll DMS System is NOT NTCIP compliant, but the DMS signs Size D purchased in this contract MUST work with the existing system AND can be readily converted to be NTCIP compliant.
- E. Each DMS shall be capable of displaying 12-inch character messages and graphics, at a minimum, approved and fully compliant to the current edition of the FHWA Manual of Uniform Traffic Control Devices (MUTCD Rev. 2009): "E-ZPASS ONLY", "LANE CLOSED", "CASH / E-ZPASS" (see Figure P1-1-D below for graphic representation of toll lane messages).

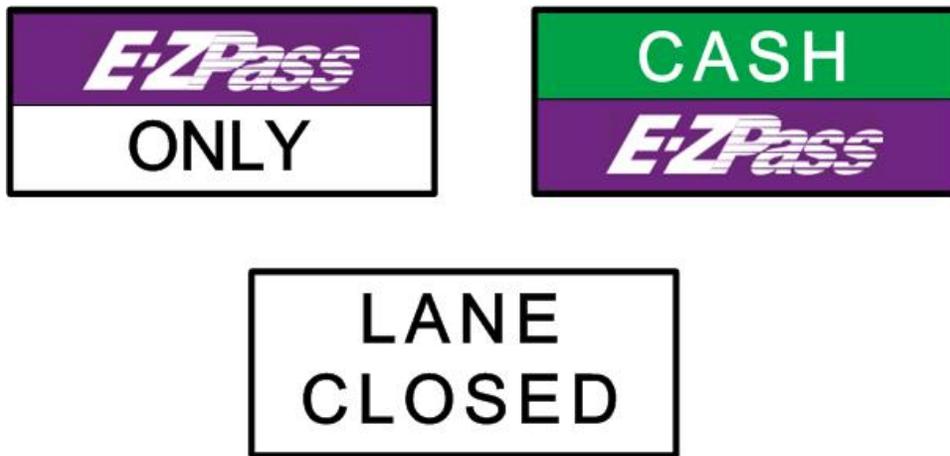


Figure 1 - Programmed Message Library Requirements for Toll Plaza (Size D)

- F. DelDOT shall install DMS at each toll canopy location over designated lanes and utilize/upgrade existing structure mounts to toll canopy superstructure, electrical and communications conduit and cables, connection to existing toll plaza backup generator, and interface equipment as necessary between the DMS sign controller to the existing tolling system for operation of the signs.
- G. Provide a certification letter, signed and sealed by a Professional Engineer registered in the State of Delaware, certifying that the internal structure of the DMS and the connection to the sign structure meet the requirement of the AASHTO "Standard Specifications for Structural supports for Highway Signs, Luminaries and Traffic. The Certification letter shall be prepared by the DMS manufacturer's Professional Engineer and submitted by the Contractor.

3.2 General

- A. Provide DMS with full-matrix amber LED displays, complete with a cone of vision of 70 degrees around the vertical axis of any pixel on the sign. Furnish a DMS subsystem complete with all individual units, components, software modules, cabling, connectors, etc. that are completely compatible with each other and the existing subsystem at the DelDOT Toll Plaza facilities.

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The DMS shall be provided in the size listed below:

ID	Name	Lines Characters Per Line	Letter Height	Mount	Access
D	Tolls	10 X 28	12"	Internal Rail	Front

- B. Provide the DMS system including the DMS housing, the LED display modules, DMS controller, sign mounting Z-brackets, and all structural connections (bolts, nuts, washers).
- C. All materials furnished, assembled, fabricated or installed under this item shall be new, corrosion resistant and in strict accordance with this specification.

3.3 Codes and Standards

Furnish DMS that meets the criteria of the following codes and standards:

- A. National Electric Code (NEC) compliant; listed and labeled as defined in National Fire Protection Association (NFPA) Code 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use. All electrical components and circuits shall be designed, wired, and color-coded per the current NEC.
- B. All equipment shall be designed in accordance with Federal Communications Commission (FCC) Part 15, Subpart B as a “Class A” digital device for radio frequency emissions.
- C. All equipment shall be designed to Uniform Building Code (UBC) or International Building Code (IBC) standards.
- D. Meet or exceed IPC (Association Connecting Electronics Industries) 610A workmanship standards.
- E. The LED module and all associated equipment and enclosures shall be listed by the Underwriters Laboratories (UL) and shall bear the UL mark on the outside of the enclosure. The module is to be listed as conformant to UL 48 Standard for Electric Signs and UL 50 Enclosures for Electrical Equipment.
- F. Federal Highway Administration (FHWA) Manual on Uniform Traffic Control Devices (MUTCD), 2010 or latest edition.
- G. AASHTO “Standard Specifications for Structural Supports for Highway Signs, Luminaries and Traffic Signals”, 2009 with current interims.

3.4 Dynamic Message Sign and Housing Requirements

- A. The DMS display housing dimensions shall not exceed 72 inches tall by 120 inches wide. The front-to-back housing depth shall not exceed 10 inches.
- B. Display weight shall not exceed 550 pounds.

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- C. The DMS display housing and structural support members and connections shall comply with American Association of State Highway and Transportation Officials (AASHTO) “Standard Specifications for Structural Supports for Highway Signs, Luminaries, and Traffic Signals”, 2009 with current interims. The sign manufacturer is to verify that the DMS display and the structural connection bracket to the DMS display are in compliance with the above referenced AASHTO standards. The sign manufacturer is to submit calculations and details signed and sealed by an engineer registered in the state the signs will be mounted with the initial DMS submittal demonstrating this compliance.
- D. Existing details of the canopy sign supports are attached in Appendix A of this specification.
- E. The DMS manufacturer shall supply all bolts, nuts, and washes to connect the DMS display to the canopy super structure. Provide 5/8” bolts that conform to ASTM A325 Type 1 galvanized per ASTM A153, nuts and washers.
- F. The DMS manufacturer shall provide 1/8” neoprene gaskets to the DRPA to separate their connection from the toll plaza canopy superstructure support posts if dissimilar metals are used in the sign support brackets. Applicable coatings such as coal tar epoxy may be submitted as an alternate acceptance after review.
- G. If structural steel brackets are used, the brackets are to be supplied with a 3 coat shop applied inorganic zinc paint system which is to match the sign frame.
- H. The following design load factors are required for compliance of the sign cabinet and mounting bracket supplied by the DMS manufacturer:
 - a. Dead Load: In accordance with Section 3.5
 - b. Ice Load: In accordance with Section 3.7
 - c. Wind Load: In accordance with Section 3.8 and the following minimums 80 mph with 30% gust factor
- I. Maximum display power shall not exceed 1990 watts when 100% of the pixels are operating at their maximum possible drive current.
- J. Display shall operate from one of the following power sources: 120VAC, 120/240 VAC, 50/60 Hz single-phase, including neutral and earth ground.
- K. The LED DMS shall be equipped with a light sensor to provide illumination control of the sign. The light sensor shall connect to the sign controller and allow for automatic, scheduled, and manual adjustment to a minimum of 64 levels of brightness according to display direction and lighting conditions.
- L. The LED DMS shall be equipped with a temperature sensor in the sign housing that is monitored by the sign controller. Provide capability for the sign to blank itself when a user-defined critical temperature threshold is exceeded. Provide the capability for the user defined critical temperature threshold that can be remotely changed through the toll plaza control system software.
- M. The DMS display housing frame is to meet the following criteria:
 - a. The display housing is to provide front service access for all LED modules, components, wiring, and other materials located within the housing.
 - b. The display housing is to meet NEMA 3R standards. Sign housing shall ensure functionality of all DMS equipment in the ambient operating temperature range of -40°F to +120°F.

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- c. The display housing is to meet 2009 AASHTO Standard Specifications for Structural Supports for Highway Signs.
 - d. The frame shall be of unibody construction with back sheets and vertical supports to provide cabinet rigidity.
 - e. To meet the anti-corrosive, degradation, and oxidation requirements, the display housing aluminum sheet quality shall be no less than the properties of alloy 5052-H32.
 - f. Adequate ventilation shall be provided, either through convection or with fans on the bottom border of the display. Display should not require perimeter spacing for airflow.
 - g. Continuous Structural support angles or Z-Brackets that can be used for mounting purposes shall be provided along the entire width of the sign display and have the ability to be adjusted vertically for alternative mounting methods. All sign mounting brackets provided shall be compatible with manufacturer recommended tilt angles for maximum visibility.
 - i. All bolts are to be ASTM A325 Type 1 galvanized per ASTM A153
 - h. Shall include lifting supports that can be removed after installation.
- N. The exterior finish of the LED display cabinet and front face border pieces is to be coated with automotive-grade acrylic urethane paint, semi-gloss black in color.
- O. Fabricate, weld, and inspect DMS housing in accordance with ANSI/AWS. Seal or otherwise make indelible all identifications, including labels, markings, and engravings, on the sign and its components.
- P. The front face of the DMS is to be constructed to provide the following requirements:
- a. Shall be constructed for high contrast, low sunlight reflection and durability in all weather and site conditions.
 - b. Shall be constructed for UV resistance to prevent discoloration.
 - c. Shall be constructed for water shedding ability (designed to meet NEMA 3R Standards). Watertightness is to be achieved by weather-stripping around each LED module along with a self sealing latching mechanism.

3.5 LED and Pixel Specifications

- A. The display shall contain a full-color LED (maximum 25 millimeter spacing) matrix measuring a minimum of 48 pixel rows high by 128 pixel columns wide. The LED display shall display messages that are continuous, uniform, and unbroken in appearance. Each display pixel shall be comprised of full-color, high-intensity discrete RGB LEDs capable of producing over 68 billion shades of color.
- B. Provide LED modules with a minimum 40° (degree) vertical and 90° (degree) horizontal half-intensity viewing angles and readability angles of 50° (degree) vertical and 120° (degree) horizontal. Provide pixels on the DMS and in the spare parts to have equal color and on-axis intensity.
- C. The LED display shall be capable of displaying high legibility alpha-numeric character fonts (ranging in height from 5 inches to 37 inches) and graphics approved and fully compliant to the current edition of the FHWA Manual of Uniform Traffic Control Devices (MUTCD Rev. 2009). The display shall be able to display messages composed of any combination of alphanumeric text, punctuation symbols, graphic images, and pre-canned video files.
- D. Provide red LEDs constructed of AlInGaP Technology and green/blue LEDs constructed of InGaN technology. LEDs shall emit red, green, and blue light that have peak wavelengths of 630±4 nm, 525±4 nm, and 470±4 nm respectively.

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- E. Provide sign display to produce an overall luminous intensity of at least 4500 cd/m² (candelas per square meter) for red, 5500 cd/m² for amber, and 5500 cd/m² for RGB when operating at maximum intensity. Measure brightness in accordance with the International Commission on Illumination's (CIE) requirements as detailed in the Test Method A of the CIE 127 (1997) standard.
- F. Individually mount each LED directly on a Printed Circuit Board (PCB). Provide LEDs that are individually removable and replaceable using conventional electronic repair methods. Prevent the failure of one pixel from affecting the functionality of any other LED on the PCB.
- G. Provide interchangeable and replaceable matrix modules, of the same form fit factor.
- H. Provide each pixel to function on a two position basis (on or off) and be individually addressable and controllable to allow for the display, on any portion of the message face, of static text or the flashing of all or any part of the text, together with message formation by alternating between two or more static or flashing text messages.
- I. Provide LED's that are automatically centered horizontally and proportionally spaced.
- J. The LED's used in the display shall be obtained from batches sorted for luminous output, where the highest luminosity LED in the batch is not more than fifty percent (50%) more luminous than the lowest luminosity LED in the batch. To ensure uniformity of display and operational life, each color of LEDs used in all LED displays provided for this contract shall be from the same bin.
- K. Provide LED display modules having a minimum refresh rate of 100 frames per second.
- L. Provide LED DMS having a photocell controlled dimming circuit which automatically adjusts the luminance of the sign display pixels in accordance with ambient light conditions. As part of the item submittal, provide a complete schematic of the LED: display power, driver and dimming circuits for approval by the Engineer.
- M. Use continuous current drive at the maximum brightness level. The maximum brightness current cannot exceed the current used to achieve the rated Mean Time Before Failure (MTBF). Indicate the current used for maximum brightness as part of the shop drawing submittal.
- N. For luminance levels less than maximum brightness, use either continuous current drive or current pulse width modulation to dim the LED. If pulse width modulation is used, design the dimming circuit so that the maximum, instantaneous and average currents do not exceed the rated peak and transient forward current ratings of the LED.
- O. Group the LED in pixels consisting of discrete LED arranged in a continuous matrix display with individual pixel addressability. Character based matrix arrangements are not acceptable. Place the centers of all pixels to maintain the same horizontal and vertical clearances between adjacent pixels. Provide pixels that are replaceable. Optimize the LED grouping and mounting angle for maximum readability.
- P. Fully configure the LED DMS electronics to drive the total required number of LED. Failure of anyone pixel cannot affect the operation of any other pixel. Design the power driver circuitry to minimize power consumption.
- Q. Protect the LED DMS from degradation due to sunlight. The method used cannot obstruct the view of the display or reduce the viewing angle below that provided by an unprotected LED DMS. Submit the method and design of the LED DMS sunlight protection to the Engineer for approval.

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- R. Provide LED mean time before failure (MTBF) at a minimum of 100,000 hours of permanent use at an operating temperature of 140 degrees Fahrenheit, then driven at the specific forward current used for normal daylight LED DMS display operation. As part of the LED manufacturer's technical specification sheet submittal, denote the specific forward current.
- S. Provide LED's used in the display having a high temperature operating life (HTOL) performance, at an ambient temperature of 131 degrees Fahrenheit, while driven at a direct current of 30 milli-amperes, as follows:
 - a. A maximum of 15% reduction in light output after 1000 hours.
 - b. A maximum of 25% reduction in light output after 100,000 hours.
- T. Provide manufacturer's documentation for HTOL to indicate if HTOL values are based upon actual or extrapolated data.
- U. LED modules are to present a clean and neat appearance as specified in the general requirements. Poor workmanship shall be cause for rejection of the sign. Have the complete sign housing of the LED module designed and manufactured in-house by the LED module manufacturer.

3.6 Optical, Electrical, and Mechanical Specifications for Display Modules

- A. Printed Circuit Boards
 - a. Provide all PCBs, except for the power supply and the pixels on the front of the PCB, with a complete and uniform coating of silicone resin with a minimum thickness of 0.01 inch. Meet the material requirements of MIL-I-46058C Military Standard, United States Department of Defense (USDOD).
 - b. PCB design shall be such that components may be removed and replaced without damage to boards, traces, or tracks. Finish all PCBs with a solder mask and a component-identifying silk screen.
 - c. All components to be second sourced and of such design, fabrication, nomenclature, or other identification so as to be purchased from a wholesale electronics distributor, or from the component manufacturer. Circuit design to be such that all components of the same generic type, regardless of manufacturer, function equally in accordance with the specifications.
 - d. Operate no component above 80% its maximum rated voltage, current or power ratings.
 - e. No component is to be provided where the manufactured date is two years older than the contract award date.
 - f. All discrete components, such as resistors, capacitors, diodes, transistors, and integrated circuits are to be individually replaceable. Arrange components so they are easily accessible for testing and replacement.
- B. Capacitors
 - a. The DC and AC voltage ratings as well as the dissipation factor of a capacitor are to exceed the worst case design parameters of the circuitry by 50%.
 - b. Provide mechanical support by a clamp or fastener for all capacitors that can be damaged by a shock or vibration.
 - c. Capacitor encasements shall be resistant to cracking, peeling, and discoloration.
- C. Resistors
 - a. Resistors are to be within 5% of tolerance over the specified temperature range.
 - b. Any resistor operated in excess of 50% of its power rating shall have an adequate heat sink.
- D. Soldering - All workmanship shall comply with ANSI/IPC-A-610A Class 2 titled "Acceptability of Electronic Assemblies" and ANSI/IPC-R-700C titled "Suggested Guidelines for Modification, Rework, and Repair of Printed Circuit Board Assemblies.

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- E. Regulated DC Power Supplies shall power the LED modules and protect the LED pixel, LED display, and driver circuitry in the event of power spikes or surges.
- F. Regulated DC power supplies shall conform to the following specifications:
 - a. Maximum output power rating of 135 Watts
 - b. Operating input voltage range: +90 to +264 VAC
- G. Wiring for LED display modules and other components is to be installed in the housing as to not impede removal of modules, power supplies, or other display components. Wires shall not make contact with or be bent around sharp edges.
- H. Provide protection devices such as surge suppressors and lightning arrestors installed or incorporated in the sign subsystem by the manufacturer to guard against lightning, transient voltage surges, and induced current. Use transient voltage surge suppression devices on all electric power and data communication connections entering and exiting the DMS housing and in the DMS enclosure.
- I. No heating element shall be required to ensure operation of LED display.
- J. Internal display component hardware (nuts, bolts, screws, standoffs, rivets, fasteners, etc.) shall be fabricated from stainless steel, aluminum, nylon, or other durable corrosion-resistant materials suitable for the signage application.
- K. The presence of ambient radio signals and magnetic or electromagnetic interference, including those from power lines, transformers, and motors, shall not impair performance of the display system. The display system shall not radiate electromagnetic signals that adversely affect any other electronic device.
- L. Photo sensor controls are to be capable of communicating with sign controller to monitor and control brightness level. An 'over-brightness' level of operation in fog or intense sunlight is required.

3.7 Sign Controller

- A. Each DMS controller is to be housed within the sign.
- B. A secondary local DMS controller, located in the toll booth, shall be installed to allow for toll booth for easy message activation of pre-programmed messages.
- C. The lane controller must already have an interface to the proposed DMS.
- D. The controller shall be equipped with minimum 2GB of memory.
- E. Each controller shall be connected to photo sensor controls (allowing each LED display to automatically adjust to levels of brightness according to display direction and lighting conditions) and a temperature sensor (providing accurate site temperatures).
- F. Active presentations, stored presentations, schedules, display configuration, time and date shall be stored in non-volatile memory. No external power or battery backup shall be required to maintain this data.

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- G. The controller shall be capable of blanking the sign, or placing the sign in neutral condition following termination of a displayed message. Under communications or power failure, the controller shall contain a fail-safe mechanism to automatically blank the sign or post a default message that is selectable.
- H. Provide a controller capable of operating without any decrease in performance over an ambient temperature range of -30 degrees F to 165 degrees F, with a relative humidity of up to 95%.

3.8 Sign Controller Communications Interface

- A. Exchanges between the DMS sign controller and the lane controller are to be made only upon a request inviting the DMS sign controller to send (select) or receive (poll) data.
- B. The DMS controller shall be capable of operating via Ethernet communication to the lane controller. The controller is to be individually addressable by the lane controller via the communications system for the control monitoring.
- C. A central system DMS control software is to be provided by the sign manufacturer to support DMS sign control, monitoring, and maintenance with unlimited license usage for The Department. This contract does not require NTCIP compliance.
- D. All DMS, at each toll plaza, shall be installed for remote control from the lane controller as outlined in specification Section 3.1.C.

4. Catalog Parts

- A. The Contractor shall submit with his/her bid proposal a price list for recommended Catalog parts for all DMS components typically required for the DMS signs. In addition, the Contractor shall specify a percentage discount from the list prices for all catalog parts. Attached to the Bid Proposal Forms shall be the initial list prices for the catalog parts as required below. All catalog parts shall be installed components to enable The Department or its agent to readily replace defective components. The Department may review the suggested minimum stocked catalog parts and cost estimates, and modify/negotiate the terms with the Contractor on those items. Driver boards and controllers for DMS signs must be included.
- B. The catalog parts shall be provided as a complete assembly with all items necessary for replacement. The catalog part replacement should not require any specialized tools; however, if uncommon tools are necessary, those tools shall be provided with the catalog parts.
- C. The Contractor shall be required to provide repair parts to The Department within fifteen (15) working days after receipt of an approved purchase order, for a period of three (3) years from Initial Purchase Order.
- D. The catalog parts Price List shall be included with the final bid package and shall include but not be limited to the following:
 - a. Sign Controllers
 - b. LED Display Module
 - c. Power Supply Temperature Sensor

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- E. For the duration of this Contract, when the Contractor discontinues or improves any catalog parts or equipment, the Contractor shall submit an updated catalog parts list including the list price for each item.

5. Training

- A. This work is to provide The Department's personnel and/or its representative with an installation, operations, maintenance, and support training program including courseware, material, and services for the DMS.
- B. The training requirements defined herein shall consist of, but not be limited to, furnishing ALL labor, materials, and transportation for the planning, organizing, and executing of training.
- a. The Contractor shall provide a training plan and schedule for The Department's approval prior to performing any training.
 - b. Provide an instructor at a location of The Department's choice to conduct "classroom and "hands-on" training.
 - c. Conduct training following the successful completion of the system performance test of the first sign of a particular DMS Type and at additional times as requested by The Department.
 - d. Submit to The Engineer a schedule for approval at least 21 calendar days prior to conducting the training program so that attendance of staff can be coordinated.
 - e. Provide sufficient copies of training manuals for each participant's use during the training program and for back-up (i.e., one (1) complete set of approved training materials to each participant). In addition, the Contractor shall submit one copy of all final text-based workshop materials and visual aids on CD-ROM to The Engineer. The training material shall include detailed installation, operation, and maintenance procedures for the operation of hardware and software associated with the DMS and its components.
 - f. Provide a minimum quantity of six (6) training sessions for up to ten (10) people at each session. Each training session should last approximately four to six (4-6) hours. Bidders should assume that each training session will occur on separate days, although The Department and the Vendor may be able to determine a more advantageous schedule. The training sessions shall be broken down into two (2) classes for each of three (3) different training types, whose requirements are outlined below:
 - System Installation
 - System Operation
 - System Maintenance

5.1 Installation Training Requirements

- A. The portion of the training session covering System Installation shall cover the proper installation techniques for the installation of DMS equipment. The installer training shall include as a minimum:
- 1) DMS handling
 - 2) DMS mounting
 - 3) DMS installation

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- 4) DMS communications
- 5) DMS software
- 6) DMS installation safety
- 7) Catalog Parts

B. The training shall include all materials and manuals required for a complete installation of the equipment.

5.2 Operations Training Requirements

A. This portion of the training session shall cover, as a minimum, the following:

- a. Basic operational procedures and instructions for the field controller and remote operations
- b. Software features
- c. Equipment manuals
- d. System and software trouble shooting

B. The training shall include all materials and manuals required for a complete demonstration of the system, procedures, operation, and equipment operation. This training shall stress the day-to-day operation of the completed system, its capabilities, and troubleshooting techniques.

5.3 Maintenance Training Requirements

A. This portion of the training session shall cover, as a minimum the following

- a. Review of basic system configuration and operation
- b. Review of preventative maintenance procedures
- c. Review of system and software trouble shooting procedures
- d. Theory of operation, circuit description
- e. Calibration, alignment, and adjustment procedures for all sensors
- f. Wiring diagrams
- g. Complete schematics and sub-component parts listing

B. The training shall include all materials and manuals required for The Department to maintain and repair all field equipment. The training shall include theory of operation, circuit description, preventive maintenance procedures, troubleshooting, field adjustments, and/or calibration of the sensors and repair of all equipment.

5.4 Follow-up/Refresher Training Requirements

A. The purpose of this training is to provide new Department employees as well as others with a refresher course of all three (3) previous training items. The Refresher Course shall fulfill the same requirements as defined for the initial course above, including the provision of training materials to each participant. One Refresher Course shall be provided. Bidders should assume that each training session will occur on separate days, although The Department and the Vendor may be able to determine a more advantageous schedule.

B. The previous training items include:

- a. Installation
- b. Operations
- c. Maintenance

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- C. The contractor shall be responsible to update the training material, if the DMS provided during the latter part of the projects have been upgraded.

5.5 Technical Assistance

- A. The Contractor shall provide manufacturer-authorized service center staff to provide technical assistance if needed. This office shall provide a phone number that can be contacted for this purpose and be available on-call Monday through Friday starting at 8:00 AM on Monday until 5:00 PM on Friday Eastern time for service calls and parts as needed. This service shall be provided within 24 hours after a call has sent during the above hours. If a call has been sent during any other times, the return call shall be placed within 4 hours after 8:00 AM of the next business day (after a weekend or any Federal and State holidays).
- B. The manufacturer shall have trained vendor-certified technical personnel to assist the Contractor in the event assistance is needed at each/any sign installation site and to assist with the installation, deployment, and operation of the DMS. The manufacturer's representative shall provide assistance in the following areas:
 - a. Sign Panel
 - b. Sign Controller
 - c. Electrical and communication systems/software

MEASUREMENT AND PAYMENT

The Special Provisions and Technical Specifications within this Contract define the DMS System which includes DMS, along with ancillary items and miscellaneous equipment including catalog parts. In addition, Training, Maintenance, Warranties, Support, Plans, Specifications, and Documentation for the DMS, Software, and associated ancillary equipment the successful furnishing and installation of a complete DMS System, as outlined within this Contract and the Special Provisions and Technical Specifications, will be provided to The Department by the Contractor as defined within this Contract, and measured and paid for as defined herein.

The quantity of Supply Fixed DMS Signs of Size A, B, C and D will be measured as the number of each type constructed and accepted.

Measurement of the individual items of this Contract shall be made on the actual number of each item, as defined below, delivered complete as specified and accepted to the satisfaction of The Engineer.

The quantity of supplying Fixed DMS Signs of Size A, B, C, and D will be paid for at the Contract unit price per each type and size specified. Price and Payment will constitute full compensation for furnishing all materials for Fixed DMS Signs, complete in place in accordance with the Contract Documents, and for all labor, equipment, tools and incidentals required to complete the work. This work shall consist of but not limited to LED signs together with associated hardware, software, and equipment, supplied for The Department to the satisfaction of The Engineer, complete in place and accepted.

The accepted unit pay quantities shall be paid for at the applicable Contract unit price per unit set forth in the bid proposal form schedule. Payment shall be made on individual items after the items have been completed and accepted by The Engineer.

Two Quantity sections comprise the base bid items. Each section is optional and contractors may bid upon one or both of the quantity sections of this contract. However, to avoid an irregular bid, The Contractor shall bid upon each payment item within the quantity section being bid. Items 1001, 1002, 1003, 2001, 3001, 5001, 5002, 5003, and 6001 comprise the base bid items of quantity section one. Items 1004, 2001, 3001, 5001, 5002, 5003, and 6001 comprise the base bid items of quantity section two. (Item 4001, Catalog Parts List, shall be provided at no charge and must be submitted along with the bidder's response.) The bidder shall specify a unit price for each of these items. Failure to specify a unit price bid for each item will result in the Bid Proposal being declared irregular and shall be rejected as non-responsive, under Delaware Standard Specifications, for Road and Bridge Construction, August 2001 or latest edition, Section 102.07, Irregular Proposals.

ITEM 1001 - SUPPLY FIXED DMS SIZE A (3x21)

Description:

This item shall consist of furnishing and providing to The Department a complete DMS Sign Size A with a 3x21 LED display matrix that shall meet all performance, operation, and reliability standards of the DMS as described within this Contract, the Special Provisions, and the Technical Specifications. This shall include, but not be limited to the hardware and software interfaces, power and communication supplies, brackets, hardware, cables, and appurtenances as specified. The DMS Size A (3x21) shall include all necessary electrical and communication cable jumpers, splices, connectors and cable terminations, and furnishing all the necessary training such that Department forces can provide proper labor and materials to independently install the DMS System.

Method of Measurement and Basis of Payment:

The payment for this item shall be made at the Contract unit bid price per each for "Supply Fixed DMS Size A (3x21) " and shall include full compensation for providing all materials, transportation, storage, and other incidentals necessary to furnish and provide the equipment and comply with this Contract, the Special Provisions, and the Technical Specifications. The Contractor shall be responsible within this payment item to provide an NTCIP compliant sign as required, sign panel, LED's, controller, enclosures, display face window, other appurtenances, and supply The Department with all satisfactory testing results defined in the Factory Acceptance Tests, along with warranties, documentation, standards, and certifications as specified in this Contract, the Special Provisions, and Technical Specifications. Training for the DMS System shall be paid for under a separate bid item.

The Contractor shall be paid one-hundred percent (100%) of the accepted Contract unit bid price for Supply Fixed DMS Size A (3x21) only after the successful completion and submission of these item requirements necessary for supply to the Department are met, as specified in this Contract, the Special Provisions, the Technical Specifications, and as approved by The Engineer.

ITEM 1002 - SUPPLY FIXED DMS SIZE B (3x15)

Description:

This item shall consist of furnishing and providing to The Department a complete DMS Sign Size B with a 3x15 LED display matrix that shall meet all performance, operation, and reliability standards of the DMS as described within this Contract, the Special Provisions, and the Technical Specifications. This shall include, but not be limited to the hardware and software interfaces, power and communication supplies, brackets, hardware, cables, and appurtenances as specified. The DMS Size B (3x15) shall include all necessary electrical and communication cable jumpers, splices, connectors and cable terminations, and furnishing all the necessary training such that Department forces can provide proper labor and materials to independently install the DMS System.

Method of Measurement and Basis of Payment:

The payment for this item shall be made at the Contract unit bid price per each for "Supply Fixed DMS Size B (3x15)" and shall include full compensation for providing all materials, transportation, storage, and other incidentals necessary to furnish and provide the equipment and comply with this Contract, the Special Provisions, and the Technical Specifications. The Contractor shall be responsible within this payment item to provide an NTCIP compliant sign as required, sign panel, LED's, controller, enclosures, display face window, other appurtenances, and supply The Department with all satisfactory testing results defined in the Factory Acceptance Tests, along with warranties, documentation, standards, and certifications as specified in this Contract, the Special Provisions, and Technical Specifications. Training for the DMS System shall be paid for under a separate bid item.

The Contractor shall be paid one-hundred percent (100%) of the accepted Contract unit bid price for Supply Fixed DMS Size B (3x15) only after the successful completion and submission of these item requirements necessary for supply to the Department are met, as specified in this Contract, the Special Provisions, the Technical Specifications, and as approved by The Engineer.

ITEM 1003 - SUPPLY FIXED DMS SIZE C (3x12)

Description:

This item shall consist of furnishing and providing to The Department a complete DMS Sign Size C with a 3x12 LED display matrix that shall meet all performance, operation, and reliability standards of the DMS as described within this Contract, the Special Provisions, and the Technical Specifications. This shall include, but not be limited to the hardware and software interfaces, power and communication supplies, brackets, hardware, cables, and appurtenances as specified. The DMS Size C (3x12) shall include all necessary electrical and communication cable jumpers, splices, connectors and cable terminations, and furnishing all the necessary training such that Department forces can provide proper labor and materials to independently install the DMS System.

Method of Measurement and Basis of Payment:

The payment for this item shall be made at the Contract unit bid price per each for "Supply Fixed DMS Size C (3x12)" and shall include full compensation for providing all materials, transportation, storage, and other incidentals necessary to furnish and provide the equipment and comply with this Contract, the Special Provisions, and the Technical Specifications. The Contractor shall be responsible within this payment item to provide an NTCIP compliant sign as required, sign panel, LED's, controller, enclosures, display face window, other appurtenances, and supply The Department with all satisfactory testing results defined in the Factory Acceptance Tests, along with warranties, documentation, standards, and certifications as specified in this Contract, the Special Provisions, and Technical Specifications. Training for the DMS System shall be paid for under a separate bid item.

The Contractor shall be paid one-hundred percent (100%) of the accepted Contract unit bid price for Supply Fixed DMS Size C (3x12) only after the successful completion and submission of these item requirements necessary for supply to the Department are met, as specified in this Contract, the Special Provisions, the Technical Specifications, and as approved by The Engineer.

ITEM 1004 - SUPPLY FIXED DMS SIZE D (10x28)

Description:

This item shall consist of furnishing and providing to The Department a complete DMS Sign Size D with a 2x10 LED display matrix that shall meet all performance, operation, and reliability standards of the DMS as described within this Contract, the Special Provisions, and the Technical Specifications. This shall include, but not be limited to the hardware (and software interfaces if necessary), power and communication supplies, brackets, hardware, cables, and appurtenances as specified. The DMS Size D (10x28) shall include all necessary electrical and communication cable jumpers, splices, connectors and cable terminations, and furnishing all the necessary training such that Department forces can provide proper labor and materials to independently install the Size D DMS signs for replacement purposes on the existing Toll DMS System.

Method of Measurement and Basis of Payment:

The payment for this item shall be made at the Contract unit bid price per each for "Supply Fixed DMS Size D (10x28)" and shall include full compensation for providing all materials, transportation, storage, and other incidentals necessary to furnish and provide the equipment and comply with this Contract, the Special Provisions, and the Technical Specifications. The Contractor shall be responsible within this payment item to provide an NTCIP compliant sign as required, sign panel, LED's, controller, enclosures, display face window, other appurtenances, and supply The Department with all satisfactory testing results defined in the Factory Acceptance Test Plan, along with warranties, documentation, standards, and certifications as specified in this Contract, the Special Provisions, and Technical Specifications. Training for the DMS System shall be paid for under a separate bid item.

The Contractor shall be paid one-hundred percent (100%) of the accepted Contract unit bid price for Supply Fixed DMS Size D (10x28) only after the successful completion and submission of these item requirements necessary for supply to the Department are met, as specified in this Contract, the Special Provisions, the Technical Specifications, and as approved by The Engineer.

ITEM 2001 - DMS APPLICATION SOFTWARE

Description:

This item shall consist of furnishing and installing the DMS Application Software for Fixed DMS Size A, B, C, or D on a Department formatted computer and/or server including, but not limited to, the procurement of DMS Application Software with procurement of software licenses for the subject installation as specified. The complete DMS Application Software System shall contain software components, as described within the Special Provisions and Technical Specifications, which require integration with or support browser-based, open-architecture, industry standard communications control/transmission, and industry-standard open-architecture SQL central database/repository.

Method of Measurement and Basis of Payment:

The payment for this item shall be made at the Contract unit bid price for "Supply and Install DMS Application Software" and shall include at a minimum the COTS Software, software supporting a standard Oracle DBMS, software supporting a GUI, MIB Software, DMS Device Maintenance and Configuration Software, and terms set forth in Appendix A, "Intellectual Property/Software Author Documentation and Ownership Agreement". Upon final acceptance of the software, payment shall be one-hundred percent (100%) for providing all mobilization, labor, tools, equipment, materials, transportation, storage, and other incidentals necessary to furnish and install the software and comply with this Contract, the Special Provisions, and the Technical Specifications.

ITEM 3001 - DMS USER MANUALS AND TRAINING APPLICATION MATERIALS

Description:

This item shall consist of furnishing and installing the DMS User Manuals and Training Application Materials to DelDOT as specified. These user manuals and training materials shall provide operators sufficient information to describe how the DMS system can be installed, operated, and maintained, as defined within this Contract, the Special Provisions, and the Technical Specifications.

Method of Measurement and Basis of Payment:

The payment for this item shall be made at the Contract unit bid price for "Supply and Install DMS User Manuals and Training Application Materials" and shall include at a minimum the necessary material to provide sufficient information on how to install, operate, and maintain the DMS system, as defined in these Special Provisions and Technical Specifications. Upon final acceptance of the user manuals and training application materials, payment shall be one-hundred percent (100%) for providing all mobilization, labor, tools, equipment, materials, transportation, storage, and other incidentals necessary to furnish and supply the manuals and training materials and comply with this Contract, the Special Provisions, and the Technical Specifications.

ITEM 4001 - CATALOG PARTS LIST

Description:

This item shall consist of providing to The Department a list of Catalog Parts including quantities and cost estimates for the Dynamic Message Signs types/model specified within this Contract. The Contractor shall provide to The Department an inventory of all suggested minimum stocked catalog parts that should be kept on hand in the parts room for each of the Dynamic Message Signs, and/or associated equipment that are used typically for DMS System, including all associated equipment, Software component catalog parts, and other components that provide for a fully functional Dynamic Message Sign over a period of three years. Catalog parts needed shall be calculated on the quantity of DMS as indicated on the bid proposal form, with all associated equipment specified within this Contract, the Special Provisions, and the Technical Specifications.

The catalog parts shall be provided as a complete assembly with all items necessary for replacement. The spare part replacement should not require any specialized tools; however, if uncommon tools are necessary, those tools shall be provided with the catalog parts list.

Method of Measurement and Basis of Payment:

In conjunction with the Bid Submission, the **Contractor shall submit to The Department with the Bid Package all suggested minimum stocked catalog parts** as described above and within this Contract and the Special Provisions. **The Contractor shall provide a discounted price from the manufacturers recommended catalog parts list price and shall be incidental with the Bid Submission.** Items purchased from the catalog parts list will be purchased under individual purchase orders. Price and quantities ordered will be as agreed upon by The Department and the Contractor from the approved catalog parts list, or as negotiated at time of purchase between The Department and the Contractor. Upon final delivery of individual catalog part purchase orders, payment shall be one-hundred percent (100%) for the delivery of the catalog part(s) and all other associated appurtenances, as defined within this Contract and individual purchase orders.

ITEM 5001 - INSTALLATION TRAINING PROGRAM

Description:

This item shall cover all costs associated with the preparation and implementation of the Installation Training Programs specified as part of this Contract and the Special Provisions. The work shall include but not be limited to furnishing ALL necessary labor, materials, and transportation for the planning, organization, and executing of training for installation of the complete Dynamic Message Sign (DMS), and/or associated equipment for each DMS type/model ordered.

Method of Measurement and Basis of Payment:

The payment for this item shall be made at the Contract unit bid price for each "Prepare and Implement Installation Training Program", and shall include full compensation for providing all necessary labor, materials, and transportation for the planning, organization, and executing of training for operations, along with training on the proper installation, assembly, testing, transportation and handling, support, and safety of all installation operations for the complete DMS, and/or associated equipment for each DMS type/model ordered.

The Contractor shall prepare and implement an Installation Training Program for DMS Size A, B, C, and D, along with DMS Application Software. One (1) copy of the Installation Technique Training manual be submitted to The Engineer at least thirty (30) calendar days before the training begins, and shall contain at a minimum the basic operational procedures and instructions for the field controller and remote operations, communications equipment, software features, equipment manuals, preventative maintenance procedures, and system and software troubleshooting. At least one (1) copy of this manual shall be provided for up to ten (10) trainees on the day of the training course. This training shall also include all materials and manuals required for a complete demonstration of the system installation, procedures, operation, and equipment operation, as well as all other items described within the training requirements of these Special Provisions.

Upon the completion of each Installation Training Programs, payment shall be one-hundred percent (100%) of the accepted Contract unit bid price for each Operations Training Program offered, as completed to the satisfaction of The Engineer by the terms set forth in this Contract.

ITEM 5002 - OPERATIONS TRAINING PROGRAM

Description:

This item shall cover all costs associated with the preparation and implementation of the Operations Training Programs specified as part of this Contract and the Special Provisions. The work shall include but not be limited to furnishing ALL necessary labor, materials, and transportation for the planning, organization, and executing of training for operations for the complete Dynamic Message Sign (DMS),-and/or associated equipment for each DMS type/model ordered.

Method of Measurement and Basis of Payment:

The payment for this item shall be made at the Contract unit bid price for each "Prepare and Implement Operations Training Program", and shall include full compensation for providing all necessary labor, materials, and transportation for the planning, organization, and executing of training for operations, along with training on the software features, system and software trouble shooting, operational procedures, and equipment operation for the complete DMS, and/or associated equipment for each DMS type/model ordered.

The Contractor shall Prepare and Implement an Operations Training Program for DMS Size A, B, C, and D, along with DMS Application Software. One (1) copy of the Operations Technique Training Program manual shall be submitted to The Engineer at least thirty (30) calendar days before the training begins, and shall contain at a minimum the basic operational procedures and instructions for the field controller and remote operations, communications equipment, software features, equipment manuals, preventative maintenance procedures, and system and software troubleshooting. At least one (1) copy of this manual shall be provided for up to ten (10) trainees on the day of the training course. This training shall also include all materials and manuals required for a complete demonstration of the system, procedures, operation, and equipment operation, as well as all other items described within the training requirements of these Special Provisions.

Upon the completion of each Operations Training Programs, payment shall be one-hundred percent (100%) of the accepted Contract unit bid price for each Operations Training Program offered, as completed to the satisfaction of The Engineer by the terms set forth in this Contract.

ITEM 5003 - MAINTENANCE AND REPLACEMENT TECHNIQUE TRAINING PROGRAM

Description:

This item shall cover all costs associated with the preparation and implementation of the Maintenance and Replacement Technique Training Programs specified as part of this Contract and the Special Provisions. The work shall include but not be limited to furnishing ALL necessary labor, materials, and transportation for the planning, organization, and executing of training for Maintenance and Replacement Techniques for the complete Dynamic Message Sign (DMS), and/or associated equipment for each DMS type/model ordered.

Method of Measurement and Basis of Payment:

The payment for this item shall be made at the Contract unit bid price for each "Prepare and Implement Maintenance and Replacement Technique Training Program", and shall include full compensation for providing all necessary labor, materials, and transportation for the planning, organization, and executing of training for operations, along with maintenance and replacement technique training on the proper operation, support, and safety of all operations for the complete DMS, and/or associated equipment for each DMS type/model ordered.

The Contractor shall Prepare and Implement a Maintenance and Replacement Technique Training Program for DMS Size A, B, C, and D, along with DMS Application Software. One (1) copy of the Maintenance and Replacement Technique Training Program manual shall be submitted to The Engineer at least thirty (30) calendar days before the training begins, and shall contain at a minimum the basic system configuration for operational procedures, review of preventative maintenance procedures, review of system and software troubleshooting procedures, replacement technique training requirements, theory of operation, circuit description, calibration, alignment, and adjustment procedures for all DMS sensors and LED's, wiring diagrams, and complete schematics and sub-component parts listing. At least one (1) copy of this manual shall be provided for up to ten (10) trainees on the day of the training course. This training shall also include all materials and manuals required for a complete demonstration of the system, procedures, operation, and equipment operation, as well as all other items described within the training requirements of these Special Provisions.

Upon the completion of each Maintenance and Replacement Technique Training Programs, payment shall be one-hundred percent (100%) of the accepted Contract unit bid price for each Program offered, as completed to the satisfaction of The Engineer by the terms set forth in this Contract.

ITEM 6001 - TECHNICAL ASSISTANCE AND TELEPHONE SUPPORT

Description:

This item shall consist of providing to The Department a manufacturer-authorized service center staff to provide Technical Assistance and Support for the DMS Systems outlined within this Contract, if needed.

Method of Measurement and Basis of Payment:

The successful bidder shall have manufacturer trained vendor-certified technical personnel to assist the Contractor in the event assistance is needed at each/any DMS deployment site for installation, operation, maintenance, and replacement techniques of the DMS, and/or associated equipment, for the duration of this Contract which The Department utilizes these DMS Systems and/or associated equipment. Technical Assistance and Support shall be procured on an initial three (3) year basis. The Department shall reserve the right to extend or discontinue this Technical Assistance agreement on an annual basis.

Payment for this item shall be made at the Contract unit bid price for "Supply of Technical Assistance and Telephone Support" and shall be paid by The Department to the Contractor for each hour of service provided to The Department. Service and available on-call assistance shall be available during normal Department business hours, Monday through Friday, 8:00 AM until 5:00 PM daily, Eastern Time for service calls and parts as needed.

APPENDIX A

Intellectual Property/Software Documentation and Ownership

Intellectual Property Rights

The Contractor shall license all software provided as part of the DMS to The Department and all information and printed graphs, tables and reports from the DMS shall be the property of The Department and may be used and/or distributed at The Department's discretion for its purposes as defined in Appendix A, Intellectual Property /Software Author Agreement.

The Contractor shall be required to submit a copy of Appendix A, Intellectual Property/Software Documentation and Ownership signed by an authorized officer of the firm, after the award of the Contract.

Software Documentation

The Contractor shall deliver to The Department all central system software executables used in this project to control the delivered DMS types. The Contractor must deliver a statement giving The Department unrestricted use of this software within the State of Delaware.

Copies of the utilized firmware, i.e., the software running in the DMS controller, do not need to be provided. However, copies of the utilized NTCIP Management Information Database (MIB) shall be provided for each DMS separately. Additionally, each sign shall be provided with an operational description describing how to initialize the sign (including initialization of the communications), how to reboot the sign, etc.

The Contractor shall provide valid licenses to The Department for all applications that are used in the DMS.

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BID QUOTATION REPLY SECTION

Please fill out the attached forms fully and completely and return with your bid in a sealed envelope clearly displaying the contract number prior to the bid date and time.

Bids shall be submitted to:

Via Delivery Service:
STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
CONTRACT ADMINISTRATION
800 BAY ROAD
DOVER, DE 19901

via U.S. Mail:
STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
CONTRACT ADMINISTRATION
PO Box 778
DOVER, DE 19903

PUBLIC BID OPENINGS

The public bid opening insures the citizens of Delaware that contracts are being bid fairly on a competitive basis and comply with Delaware procurement laws. The agency conducting the opening is required by law to publicly open the bids at the time and place specified and the contract shall be awarded within thirty (30) days thereafter. The main purpose of the bid opening is to reveal the name(s) of the bidders(s), not to serve as a forum for determining the apparent low bidders. The disclosure of additional information, including prices, shall be at the discretion of the contracting agency until such time that the responsiveness of each bid has been determined.

After receipt of a fully executed contract(s), the Delaware public and all bidders are invited to make an appointment with the contracting officer in order to review pricing and other non-confidential information.

NOTE: ONLY THE BIDDER'S NAME WILL BE READ AT THE BID OPENING

PROPOSAL REPLY REQUIREMENTS

Bidders are reminded of the following requirements. In the event of a discrepancy between this Proposal Reply Requirements document and the ITB Bid contract, the ITB contract will prevail.

- BIDS MUST BE SUBMITTED IN HARDCOPY FORMAT. BIDS ARE NOT TO BE FAXED, E-MAILED, OR INCLUDED IN A COMPUTER DISC.

- BID DOCUMENTS MUST CONTAIN ORIGINAL SIGNATURES.

- BIDS MUST BE DELIVERED TO:

Via Delivery Service:

via U.S. Mail:

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
CONTRACT ADMINISTRATION
800 BAY ROAD
DOVER, DE 19901

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
CONTRACT ADMINISTRATION
PO Box 778
DOVER, DE 19903

Bidders MUST provide the following with their bid:

1. **Attachment 2 - BIDDER'S CERTIFICATION**
One (1) complete, signed and notarized copy
MUST HAVE ORIGINAL SIGNATURES AND NOTARY MARK
2. **Attachment 3 - Subcontractor Information Form**
Fill out at least section 1 through 3a.
If using any Subcontractors, fill out the complete page for each Subcontractor.
3. **Attachment 4 - Business References**
You do not have to use this form; however, you must submit a single page that includes all information for all three references.
4. **Attachment 5 - Confidential Information Form**
Submit this form even if your proposal does not contain confidential information.
5. **Attachment 6 – Bid Forms**
Note instructions on the bid form regarding hand written versus typewritten.
Enter only the information requested. Submit both pages!
6. **Catalog Parts List** – Refer to Item 4001 in the Technical Specifications section.

The items listed above provide the basis for evaluating each Bidders' proposal.

Please review and follow the information and instructions contained in these documents. Should you need additional information, please contact DelDOT Contract Administration via e-mail at dot-ask@state.de.us or call 302-760-2031.

STATE OF DELAWARE
Department of Transportation
Contract Administration

Sample B

State of Delaware																				
Subcontracting Quarterly Report (2nd tier)																				
Prime Name:						Report Start Date:														
Contract Name/Number:						Report End Date:														
Contact Name:						Today's Date:														
Contact Phone:						*Minimum Required			Requested detail											
Vendor Name*	Vendor TaxID*	Contract Name/Number*	Vendor Contact Name*	Vendor Contact Phone*	Report Start Date*	Report End Date*	Amount Paid to Subcontractor*	Work Performed by Subcontractor UNSPSC	M/WBE Certifying Agency	Veteran/Service Disabled Veteran Certifying Agency	2nd tier Supplier Name	2nd tier Supplier Address	2nd tier Supplier Phone Number	2nd tier Supplier email	Description of Work Performed	2nd tier Supplier Tax Id	Date Paid			
S A M P L E																				

Note: A copy of the Subcontracting Quarterly Report will be sent by electronic mail to the Awarded Vendor.

Completed reports shall be saved in an Excel format, and submitted to the following email address: dot-ask@state.de.us.

NO BID REPLY FORM (optional)

CONTRACT No. DOT1301-FIXED_DMS

TITLE: Fixed Dynamic Message Signs

To assist us in obtaining good competition on our Request for Bids, we ask that each firm that has received an invitation, but does not wish to bid, state their reason(s) below and return in a clearly marked envelope displaying the contract number. This information will not preclude receipt of future invitations unless you request removal from the Bidder's List by so indicating below, or do not return this form or bona fide bid.

Unfortunately, we must offer a "No Bid" at this time because:

_____ 1. We do not wish to participate in the bid process.

_____ 2. We do not wish to bid under the terms and conditions of the Request for Bid document.
Our objections are:

_____ 3. We do not feel we can be competitive.

_____ 4. We cannot submit a Bid because of the marketing or franchising policies of the manufacturing company.

_____ 5. We do not wish to sell to the State. Our objections are: _____

_____ 6. We do not sell the items/services on which Bids are requested.

_____ 7. Other: _____

FIRM NAME

SIGNATURE

STATE OF DELAWARE
Department of Transportation
Contract Administration

CONTRACT NO.: DOT1301-FIXED_DMS
TITLE: Fixed Dynamic Message Signs
OPENING DATE: JUNE 4, 2013

Attachment 2

BIDDER'S CERTIFICATION

NON-COLLUSION STATEMENT

This is to certify that the undersigned bidder has neither directly nor indirectly, entered into any agreement, participated in any collusion or otherwise taken any action in restraint of free competitive bidding in connection with this bid submitted this date.

It is agreed by the undersigned bidder that the signed delivery of this bid represents the bidder's acceptance of the terms and conditions of this Invitation to Bid including all specifications and special provisions.

NOTE: Signature of the authorized representative **MUST** be of an individual who legally may enter his/her organization into a formal contract with the State of Delaware.

	Corporation
	Partnership
	Individual

COMPANY NAME _____ (Check one)

COMPANY ADDRESS _____

PHONE NUMBER _____ FAX NUMBER _____

EMAIL ADDRESS _____

FEDERAL E.I. NUMBER _____ STATE OF DELAWARE LICENSE NUMBER _____
(circle one) (circle one) (circle one)

COMPANY CLASSIFICATIONS: CERT. NO. _____	<u>Women</u>	Yes	No	<u>Minority</u>	Yes	No	<u>Disadvantaged</u>	Yes	No
	<u>Business</u>			<u>Business</u>			<u>Business</u>		
	<u>Enterprise</u>			<u>Enterprise</u>			<u>Enterprise</u>		
	<u>(WBE)</u>			<u>(MBE)</u>			<u>(DBE)</u>		

[The above table is for information and statistical use only.]

PURCHASE ORDERS SHOULD BE SENT TO:
(COMPANY NAME) _____

ADDRESS _____

CONTACT _____

PHONE NUMBER _____ FAX NUMBER _____

EMAIL ADDRESS _____

AFFIRMATION: Within the past five years, has your firm, any affiliate, any predecessor company or entity, owner, Director, officer, partner or proprietor been the subject of a Federal, State, Local government suspension or debarment?

YES _____ NO _____ if yes, please explain _____

NAME OF AUTHORIZED REPRESENTATIVE (type or print): _____

SIGNATURE _____ TITLE _____

THIS PAGE SHALL BE SIGNED, NOTARIZED AND RETURNED FOR YOUR BID TO BE CONSIDERED

SWORN TO AND SUBSCRIBED BEFORE ME this _____ day of _____, 20 _____

Notary Public _____ My commission expires _____

City of _____ County of _____ State of _____

Subcontractor Information Form

CONTRACT NO. **DOT1301-FIXED_DMS**
 CONTRACT NAME: **Fixed Dynamic Message Signs**

PART I – STATEMENT BY PROPOSING BIDDER

1. CONTRACT NO. DOT1301-FIXED_DMS	2. Proposing Bidder Name:	3. Mailing Address
3a. <input type="checkbox"/> Check Box if no Subcontractor will be used, otherwise, complete remainder of the form.		
4. SUBCONTRACTOR		
a. NAME	4c. Company OMWBE Classification (if applicable): Certification Number: _____	
b. Mailing Address:	4d. Women Business Enterprise <input type="checkbox"/> Yes <input type="checkbox"/> No 4e. Minority Business Enterprise <input type="checkbox"/> Yes <input type="checkbox"/> No 4f. Disadvantaged Business Enterprise <input type="checkbox"/> Yes <input type="checkbox"/> No 4g. Veteran Owned Business Enterprise <input type="checkbox"/> Yes <input type="checkbox"/> No	
5. DESCRIPTION OF WORK BY SUBCONTRACTOR		
6a. NAME OF PERSON SIGNING	7. BY (<i>Signature</i>)	8. DATE SIGNED
6b. TITLE OF PERSON SIGNING		
PART II – ACKNOWLEDGEMENT BY SUBCONTRACTOR		
9a. NAME OF PERSON SIGNING	10. BY (<i>Signature</i>)	11. DATE SIGNED
9b. TITLE OF PERSON SIGNING		

Business References

CONTRACT NO. **DOT1301-FIXED_DMS**
Contract Name: **Fixed Dynamic Message Signs**

BIDDER: _____

List three business references, including the following information:

- Business Name and Mailing address
- Contact Name and phone number
- Number of years doing business with
- Type of work performed

If you have held a State contract within the last 5 years, please also list the contract number.

1. Business Name/Mailing Address:
Contact Name/Phone Number:
Number of years doing business with :
Describe type of work performed:

2. Business Name/Mailing Address:
Contact Name/Phone Number:
Number of years doing business with :
Describe type of work performed:

3. Business Name/Mailing Address:
Contact Name/Phone Number:
Number of years doing business with :
Describe type of work performed:

(Use of this form to list references is not required. Do not exceed one page total.)

BID QUOTATION

CONTRACT NO.: DOT1301-FIXED_DMS
 CONTRACT TITLE: FIXED DYNAMIC MESSAGE SIGNS

BIDDER NAME: _____

UNIT PRICE IN FIGURES MUST BE TYPEWRITTEN OR HANDWRITTEN IN INK

LOT # 1

ITEM NO.	APPROX QTY	UNIT OF MEASURE	ITEM DESCRIPTION	UNIT PRICE	EXTENDED TOTAL
1001	5	EACH	Fixed DMS Size A (3x21)		
1002	30	EACH	Fixed DMS Size B (3x15)		
1003	5	EACH	Fixed DMS Size C (3x12)		
2001	1	EACH	DMS Application Software		
3001	1	EACH	DMS User Manuals and Training Application Materials		
5001	1	EACH	Installation Training Program		
5002	1	EACH	Operations Training Program		
5003	1	EACH	Maintenance and Replacement Technique Training Program		
6001	1	EA HOUR	Technical Assistance and Support		
LOT # 1 TOTAL					\$

For informational purposes only – not to be used in evaluation of award:

DISCOUNT OFF OF MANUFACTURERS LIST PRICE OF PARTS: _____% LOT # 1

BID QUOTATION

CONTRACT NO.: DOT1301-FIXED_DMS
 CONTRACT TITLE: FIXED DYNAMIC MESSAGE SIGNS

BIDDER NAME: _____

UNIT PRICE IN FIGURES MUST BE TYPEWRITTEN OR HANDWRITTEN IN INK

LOT # 2

ITEM NO.	APPROX QTY	UNIT OF MEASURE	ITEM DESCRIPTION	UNIT PRICE	EXTENDED TOTAL
1004	50	EACH	Fixed DMS Size D (10x28)		
2001	1	EACH	DMS Application Software		
3001	1	EACH	DMS User Manuals and Training Application Materials		
5001	1	EACH	Installation Training Program		
5002	1	EACH	Operations Training Program		
5003	1	EACH	Maintenance and Replacement Technique Training Program		
6001	1	EA HOUR	Technical Assistance and Support		
LOT # 2 TOTAL					\$

For informational purposes only – not to be used in evaluation of award:

DISCOUNT OFF OF MANUFACTURERS LIST PRICE OF PARTS: _____% LOT # 2

BID TOTAL

\$

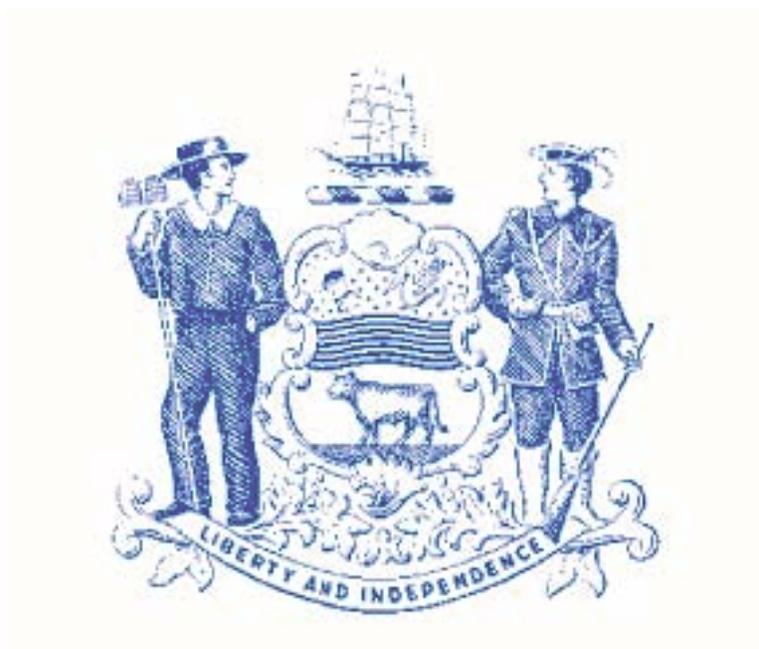


State of Delaware

Office of Supplier Diversity Certification Application

The most recent application can be downloaded from the following site:

<http://gss.omb.delaware.gov/osd/index.shtml>



Complete application and mail, email or fax to:

Office of Supplier Diversity (OSD)

100 Enterprise Place, Suite 4

Dover, DE 19904-8202

Telephone: (302) 857-4554 Fax: (302) 677-7086

Email: osd@state.de.us

Web site: <http://gss.omb.delaware.gov/osd/index.shtml>