

## CHECKLIST TO DESIGNATE AREAS OF EVALUATION FOR REQUESTS FOR PROPOSAL (RFP)

MDOT PROJECT MANAGER Greg Krueger		JOB NUMBER (JN) 109721	CONTROL SECTION (CS) 84900
DESCRIPTION IF NO JN/CS Design, Furnish and Install Video Wall at MDOT Statewide Transportation Operations Center in VanWagoner Building, Lansing			
<b>MDOT PROJECT MANAGER:</b> Check all items to be included in RFP.  WHITE = REQUIRED GRAY SHADING = OPTIONAL		<b>CONSULTANT:</b> Provide only checked items below in proposal.	
Check the appropriate Tier in the box below			
<input type="checkbox"/> <b>TIER I</b> (\$25,000-\$99,999)	<input type="checkbox"/> <b>TIER II</b> (\$100,000-\$250,000)	<input checked="" type="checkbox"/> <b>TIER III</b> (>\$250,000)	
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Understanding of Service
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<i>Innovations</i>
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<i>Safety Program</i>
N/A	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Organization Chart
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Qualifications of Team
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Past Performance
Not required as part of official RFP	Not required as part of official RFP	<input checked="" type="checkbox"/>	Quality Assurance/Quality Control
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<b>Location:</b> The percentage of work performed in Michigan will be used for all selections unless the project is for on-site inspection or survey activities, then location should be scored using the distance from the consultant office to the on-site inspection or survey activity.
N/A	N/A	<input type="checkbox"/>	Presentation
N/A	N/A	<input type="checkbox"/>	Technical Proposal (if Presentation is required)
3 pages (MDOT forms not counted) <b>(No Resumes)</b>	7 pages (MDOT forms not counted)	19 pages (MDOT forms not counted)	<b>Total maximum pages for RFP not including key personnel resumes</b>

The Michigan Department of Transportation (MDOT) is seeking professional services for the project contained in the attached scope of services.

If your firm is interested in providing services, please indicate your interest by submitting a Proposal, Proposal/Bid Sheet or Bid Sheet as indicated below. The documents must be submitted in accordance with the latest "Consultant/Vendor Selection Guidelines for Service Contracts" and "Guideline for Completing a Low Bid Sheet(s)", if a low bid is involved as part of the selection process. **Referenced Guidelines are available on MDOT's website under Doing Business > Vendor/Consultant Services > Vendor/Consultant Selections.**

## RFP SPECIFIC INFORMATION

BUREAU OF HIGHWAYS       BUREAU OF TRANSPORTATION PLANNING \*\*       OTHER

THE SERVICE WAS POSTED ON THE ANTICIPATED QUARTERLY REQUESTS FOR PROPOSALS

NO       YES      DATED \_\_\_\_\_ THROUGH \_\_\_\_\_

**Prequalified Services** – See page 1 of the attached Scope of Services for required Prequalification Classifications.       **Non-Prequalified Services** - If selected, the vendor must make sure that current financial information, including labor rates, overhead computations, and financial statements, if overhead is not audited, is on file with MDOT's Office of Commission Audits. This information must be on file for the prime vendor and all sub vendors so that the contract will not be delayed. **(Form 5100J Required with Proposal)**

**Qualifications Based Selection** – Use Consultant/Vendor Selection Guidelines

**For all Qualifications Based Selections**, the section team will review the information submitted and will select the firm considered most qualified to perform the services based on the proposals. The selected vendor will be contacted to confirm capacity. Upon confirmation, that firm will be asked to prepare a priced proposal. Negotiations will be conducted with the firm selected.

**\*\*For RFP's that originate in Bureau of Transportation Planning only**, a priced proposal must be submitted at the same time as, but separate from, the proposal. Submit directly to the Contract Administrator/Selection Specialist, Bureau of Transportation Planning (see address list, page 2). The priced proposal must be submitted in a sealed envelope, clearly marked "**PRICE PROPOSAL.**" The vendor's name and return address **MUST** be on the front of the envelope. The priced proposal will only be opened for the highest scoring proposal. Unopened priced proposals will be returned to the unselected vendor(s). Failure to comply with this procedure may result in your priced proposal being opened erroneously by the mail room.

**For a cost plus fixed fee contract**, the selected vendor must have a cost accounting system to support a cost plus fixed fee contract. This type of system has a job-order cost accounting system for the recording and accumulation of costs incurred under its contracts. Each project is assigned a job number so that costs may be segregated and accumulated in the vendor's job-order accounting system.

**Qualifications Review / Low Bid** - Use Consultant/Vendor Selection Guidelines. See Bid Sheet Instructions for additional information.

For Qualification Review/Low Bid selections, the selection team will review the proposals submitted and post the date of the bid opening on the MDOT website. The notification will be posted at least two business days prior to the bid opening. Only bids from vendors that meet proposal requirements will be opened. The vendor with the lowest bid will be selected. The selected vendor may be contacted to confirm capacity.

**Best Value** - Use Consultant/Vendor Selection Guidelines. See Bid Sheet Instructions below for additional information. The bid amount is a component of the total proposal score, not the determining factor of the selection.

**Low Bid** (no qualifications review required - no proposal required.) See Bid Sheet Instructions below for additional instructions.

## BID SHEET INSTRUCTIONS

A bid sheet(s) must be submitted in accordance with the "Guideline for Completing a Low Bid Sheet(s)" (available on MDOT's website). The Bid Sheet(s) is located at the end of the Scope of Services. Submit bid sheet(s) separate from the proposal, to the address indicated below. The bid sheet(s) must be submitted in a sealed manila envelope, clearly marked "**SEALED BID.**" The vendor's name and return address **MUST** be on the front of the envelope. Failure to comply with this procedure may result in your bid being opened erroneously by the mail room and the bid being rejected from consideration.

**PROPOSAL SUBMITTAL INFORMATION**

REQUIRED NUMBER OF COPIES FOR PROJECT MANAGER 5	PROPOSAL/BID DUE DATE 4/20/10	TIME DUE 12p
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**PROPOSAL AND BID SHEET MAILING ADDRESSES**

Mail the multiple proposal bundle to the MDOT Project Manager or Other indicated below.

- MDOT Project Manager  MDOT Other

Greg Krueger  
MDOT C&T Building  
8885 Ricks Road  
Lansing, MI 48917

Mail one additional stapled copy of the proposal to the Lansing Office indicated below.

**Lansing Regular Mail****OR****Lansing Overnight Mail**

- Secretary, Contract Services Div - B470  
Michigan Department of Transportation  
PO Box 30050  
Lansing, MI 48909

Secretary, Contract Services Div - B470  
Michigan Department of Transportation  
425 W. Ottawa  
Lansing, MI 48933

- Contract Administrator/Selection Specialist  
Bureau of Transportation Planning B470  
Michigan Department of Transportation  
PO Box 30050  
Lansing, MI 48909

Contract Administrator/Selection Specialist  
Bureau of Transportation Planning B470  
Michigan Department of Transportation  
425 W. Ottawa  
Lansing, MI 48933

**GENERAL INFORMATION**

Any questions relative to the scope of services must be submitted by e-mail to the MDOT Project Manager. Questions must be received by the Project Manager at least four (4) working days prior to the due date and time specified above. All questions and answers will be placed on the MDOT website as soon as possible after receipt of the questions, and at least three (3) days prior to the RFP due date deadline. The names of vendors submitting questions will not be disclosed.

MDOT is an equal opportunity employer and MDOT DBE firms are encouraged to apply. The participating DBE firm, as currently certified by MDOT's Office of Equal Opportunity, shall be listed in the Proposal

**MDOT FORMS REQUIRED AS PART OF PROPOSAL SUBMISSION**

- 5100D** – Request for Proposal Cover Sheet
- 5100G** – Certification of Availability of Key Personnel
- 5100I** – Conflict of Interest Statement
- 5100J** - Consultant Data and Signature Sheet (Required only for Non-Prequalified Work)

**(These forms are not included in the proposal maximum page count.)**

**Notification**  
**ARRA MONTHLY EMPLOYMENT REPORTS**  
**Note: This Notification is only applicable for those projects/contracts funded with ARRA funds. If you have questions, please contact MDOT Contract Services Division at (517) 335-0071.**

The American Recovery and Reinvestment Act of 2009 (ARRA), requires states receiving stimulus funds for highway projects to provide monthly reports to the Federal Highway Administration (FHWA) regarding the number of employees of the prime contractors, all-tier subcontractors and consultants on ARRA funded projects.

The cost for complying with this Notification must be borne by the prime contractor, and all-tiers of subcontractors and consultants, as part of their overhead and is deemed to be included in the payments made under this contract.

Within 10 days after the end of each month in which work is performed on this contract, all prime contractors and consultants must provide the Engineer a monthly report on MERS at <https://sso.state.mi.us/> providing employment information on each ARRA project, which will include, for work performed in that preceding month:

- The total number of employees who performed work on this contract.
- The total number of hours worked by employees who performed work on this contract.
- The total wages of employees who performed work on this contract.

*Prime Consultants are responsible for reporting on all subconsultants' employment information in MERS, as the sub consultants will not have access to do so.*

In addition, the prime contractor must provide a total payment amount made to any subcontractor who is a certified DBE in that preceding month.

This Notification shall be included as a part of each subcontract executed by the prime contractor, and all-tiers of subcontractors and consultants.

If necessary to conform to guidance provided by FHWA concerning the ARRA reporting requirements, the prime contractor, and all-tiers of subcontractors and consultants will revise their reporting as directed by the Engineer.

**Failure to comply with the reporting requirements under ARRA would jeopardize the Department's continued receipt of ARRA funding.**

**Accordingly, if a contractor or any-tier of subcontractor or consultant fails to comply with this Notification, the Department may withhold contract payments until compliance is achieved. If the Department is compelled to incur costs because of such a breach, the amount of those costs may be deducted from payments otherwise to be made under this contract. Additional sanctions may include reduction or elimination of prequalification ratings and removal of bidding privileges.**

**NOTIFICATION**  
**REQUIRED CONTRACT PROVISIONS TO IMPLEMENT AMERICAN**  
**RECOVERY AND REINVESTMENT ACT (ARRA) SECTIONS 902 AND 1515**

**Note: This notification is only applicable for those projects/contracts funded with ARRA funds. If you have questions, please contact MDOT Contract Services Division at (517) 335-0071.**

In accordance with requirements under section 902 of the American Recovery and Reinvestment Act of 2009 (ARRA), the following language is made a part of this contract and is to be made a part of all tier subcontracts or consultant contracts:

The U.S. Comptroller General and his representatives have the authority:

- (1) To examine any records of the contractor or any of its subcontractors, or any State or local agency administering such contract, that directly pertain to, and involve transactions relating to, the contract or subcontract; and
- (2) To interview any officer or employee of the contractor or any of its subcontractors, or of any State or local government agency administering the contract, regarding such transactions.

The Comptroller General and his representatives have the authority and rights provided under Section 902 of the ARRA with respect to this contract. As provided in section 902, nothing in section 902 shall be interpreted to limit or restrict in any way any existing authority of the Comptroller General.

In accordance with the requirements of section 1515(a) of the ARRA any representatives of the Inspector General have the authority:

- (1) To examine any records of the contractor or grantee, any of its subcontractors or sub-grantees, or any State or local agency administering such contract, that pertain to, and involve transactions relating to the contract, subcontract, grant, or sub-grant; and
- (2) To interview any officer or employee of the contractor, grantee, sub-grantee or agency regarding such transactions.

Nothing set forth in section 1515 of the ARRA shall be interpreted to limit or restrict in any way any existing authority of an inspector general.

**Michigan Department of Transportation**

**SCOPE OF SERVICE  
FOR  
SPECIALTY SERVICES**

Statewide Transportation Operations Center (STOC) Video Wall Furnish

**CONTROL SECTION:** 84900

**JOB NUMBER:** 109721

**PROJECT LOCATION:** Statewide Transportation Operations Center, VanWagoner Bldg.  
Lansing, Michigan

**PRIMARY PREQUALIFICATION CLASSIFICATION:**

None

**SECONDARY PREQUALIFICATION CLASSIFICATION:**

None

**ANTICIPATED SERVICE START DATE:** August 2010

**ANTICIPATED SERVICE COMPLETION DATE:** May 2011

**DBE REQUIREMENT:** 0%

**MDOT PROJECT ENGINEER MANAGER:**

Greg Krueger, Manager ITS  
Systems Operation Management  
Construction & Technology Bldg-Secondary  
P.O. Box 30049  
8885 Ricks Road  
Lansing, MI 48909  
517-636-5009  
248-388-0729 c  
[kruegerg@michigan.gov](mailto:kruegerg@michigan.gov)

**PROJECT DESCRIPTION:**

The State of Michigan, Department of Transportation, hereinafter referred to as the “DEPARTMENT”, requests written proposals from qualified Vendors to design, furnish, install and integrate the following:

STOC Video Wall System (furnish, install and integrate);  
Incidental wiring and cabling (furnish, install, and integrate); and

In addition, the Vendor shall provide system support for five (5) years following final acceptance of all furnish, install and integration tasks.

A Vendor can submit only one (1) Proposal as the Prime Vendor. This document refers to the Vendor who submits the Proposal for the award of the MICHIGAN STOC VIDEO WALL SYSTEM project, hereinafter referred to as the STOC Video Wall System.

**SCORING CRITERIA (100 points)**

The following are key **minimum** requirements for all interested parties which should be submitted with their proposal. To be considered for this project, the VENDOR must demonstrate that they meet and/or exceed the following minimum submittal requirements:

**Understanding of Service (25 points)**

Describe your understanding of the service to be provided.

**Past Performance (20 points)**

Provide references and examples of similar work performed for other agencies.

**Qualifications of Team (20 points)**

Provide resumes for key personnel and identify each individual’s role in the team.

**Price (25 points)**

Completed bid sheet required. Low price will be given 25 points and the other bids will receive progressively lower points based on a percentage formula. The points are calculated using the following equation:

$$[\text{low bid} / \text{bid}] \times 25 = \text{Points}$$

**Safety Program (5 points)**

Please provide your program for ensuring safety, including processes and procedures used, related to the installation of a video wall, as well as other services performed under this RFP.

**Location (5 points)**

Indicate percentage of work that will be performed in Michigan.

## PROJECT OVERVIEW AND SPECIFICATIONS

### 2.1 BACKGROUND

The DEPARTMENT is building the STOC video wall system in order to continue to provide safer and more efficient freeway facilities, cost effective transportation solutions, travel choices and real time travel information to the traveling public through cooperation with local governments and operating agencies, development of integrated systems operations, flexible planning and the use of advanced technology.

The STOC will operate using the DEPARTMENT's new software being developed by Delcan. The Operators will use the software to monitor traffic via CCTV and real-time detection. Operators will identify slow-downs, congestion, and incidents. Operators will use information from CCTV and detectors to support incident management functions including incident verification, tracking, management and clearance. Operators will provide traveler information via DMS and the Internet. They will share CCTV images and information about incidents and congestion with the media.

### 2.2 PROJECT OBJECTIVES

The DEPARTMENT has issued this Request for Proposal (RFP) to solicit competitive proposals from qualified Vendors for the STOC Video Wall System and Miscellaneous Services project.

The Vendor shall be required to meet the criteria as set forth in this RFP. These criteria set forth minimum requirements regarding:

- Project management;
- Scheduling;
- Design;
- Construction and Installation;
- Integration;
- Testing and Acceptance;
- Quality Control;
- Coordination with other agencies and entities such as State and Local government, utilities, and the public.

The Vendor shall be required to demonstrate good project management practices while working on this project. These practices include communication with the DEPARTMENT and others as necessary, management of time and resources, and documentation. The Vendor will set up and maintain throughout the design of the project a contract file in accordance with DEPARTMENT procedures.

The DEPARTMENT will provide contract administration, management services, technical reviews, as necessary, of all work associated with the development and preparation of the contract plans and shop drawings, and installation and construction of the project. The DEPARTMENT will provide job specific information and/or functions as outlined in this contract.

This project shall consist of furnishing, installing and integrating the necessary hardware so that the Center is **fully operational by December 21, 2010**.

Summaries of Vendors responsibilities follow:

### **2.2.1 MICHIGAN STOC VIDEO WALL SYSTEM**

The successful Vendor shall design, furnish, install and integrate a video wall system in the STOC Control Rooms. The Vendor shall deliver a fully functional and integrated video wall system meeting the Minimum Technical Requirements described in ATTACHMENT A, Exhibit “B”.

The Vendor shall install and integrate all equipment and software comprising the Video Wall Display System at the STOC. The Video Wall Display system furnished and installed by the Vendor shall be demonstrated with the manufacturers provided software applications package to be operational and completely functional to provide the quality of image and graphics display quality specified in Exhibit B and subject to approval by the DEPARTMENT.

The Vendor shall deliver a Video Wall System that is fully integrated and interoperable with the current Advanced Traffic Management System (ATMS) software being developed by Delcan. The Vendor shall coordinate with MDOT/MDIT and MDOT’s contractor, Delcan to ensure a fully functional system.

The Vendor is responsible for reviewing the building plans of the STOC and is responsible for completing all installations to make a fully functional system described in the RFP.

### **2.2.2 CABLING, NEW ELECTRICAL POWER AND OTHER MISCELLANEOUS REQUIREMENTS**

The Vendor shall provide the required installation services and shall obtain the necessary permitting to allow the Vendor to make any video wall support structure, raised flooring, wiring, and cabling changes and installations within the building. The Vendor shall design a complete power installation and power connection plan in order to supply electrical service to all of the new equipment such as the Video Wall Display Cubes, the Operator Consoles (assigned to panel circuit ULA), audio video displays, etc., at the STOC.

Patch cords, jumpers, and other cabling necessary to provide data communications infrastructure to all equipment defined in this RFP shall be incidental to each equipment item. All cabling, outlets and connectors shall complement and enhance the existing STOC power, data, and miscellaneous wiring and connectors already provided by others as part of the building. The video wall support structure, raised flooring, wiring and cabling designs, materials and installations shall be consistent with the STOC and shall be subject to approval by the DEPARTMENT.

### **2.3 CONTRACT DURATION**

The Vendor will establish the Proposed Contract Time (PCT), in calendar days, for the subject project. The maximum allowable contract time is 240 days (with 180 days being for planning, designing, installing and operating and 60 days for system acceptance) exclusive of the (5) five year warranty and maintenance support period. Contract time will be continuous calendar days from Contract Execution to the end of the contract period. The contract duration will be submitted with the Written Technical Proposal.

### **2.4 VENDOR’S RESPONSIBILITY**

The STOC Video Wall System and Miscellaneous Services Project description given above is meant to give only an overview. It is the Vendor’s responsibility to fully familiarize its staff; any

subcontractor's, material persons, vendors, material suppliers, equipment providers, and service suppliers with the requirements listed herein and identify compatibility and integration requirements for the proposed system. Additionally, the Vendor, through review of pertinent information on the existing system and facility, will provide the proposed response to the services outlined in this RFP.

The Vendor shall design, specify, provide, and seamlessly integrate the systems specified herein to the STOC.

### **3 SERVICE REQUIREMENTS**

The DEPARTMENT requires contractual services that shall provide a complete design, development of Technical Requirements to be used with the DEPARTMENT standard specifications, project acceptance requirements, installation of STOC Video Wall, integration, testing, and system support for the duration of the project including a five (5) year maintenance and warranty period after final acceptance.

The Technical Requirements, project acceptance requirement, integration and testing shall meet or exceed all the requirements identified herein and contained within **ATTACHMENT A, Exhibit "B" – Minimum Technical Requirements**. All of the services performed shall be in accordance with standard DEPARTMENT criteria, specifications and Contract Administration practices.

The DEPARTMENT will be responsible for enforcing the terms of the contract. The selected Vendor will be responsible for the entire design, engineering, labor, equipment, materials, construction, acceptance activities, and support of the project and establishing integration with other intelligent transportation system (ITS) elements of the STOC system.

The Vendor shall prepare, submit and seek the DEPARTMENT's approval for all the required Plans, Specifications, Block Diagrams, Schematic Diagrams, Electrical Wiring Diagrams, and other pertinent information related to the equipment, materials and incidentals for the installation of equipment prior to the commencement of the equipment installation phase. The following items, as a minimum, shall be properly addressed in the design, construction and submittals:

- Human Factors;
- Environmental Issues;
- Industry Standards;
- Maintainability;
- Reliability;
- Safety; and
- Interchangeability.

The Vendor shall prepare all plans and drawings necessary for preparation of all permit applications. The Vendor shall obtain all the permits. The cost for these services shall be included within the price paid for individual equipment and material provided by the Vendor for this project.

The services will include preparation of all documents necessary to complete the project. Hardcopy full size documents shall be provided in addition to electronic copies of documents. Text documents shall be furnished in Microsoft Word 2003, or latest version, format. Plans and drawings shall be submitted in MicroStation, DEPARTMENT's latest version, format.

### 3.1 DESIGN SERVICES

The Vendor shall perform all design and engineering necessary to prepare (100%) design plans / specifications and final Engineer of Record Signed and Sealed (100%) design plans / specifications for the proposed systems, as follows:

STOC VIDEO WALL SYSTEM;

The Vendor shall secure any and all required permits, make arrangements for all the connections, etc., on relevant issues that will be required for designing, installing, and operating the system. It is the responsibility of the Vendor to gather information from local utility companies, as necessary and to coordinate with appropriate units within the DEPARTMENT.

The Vendor shall submit appropriate 100% phase plans and specifications, and final design plans and specifications to the DEPARTMENT for review.

The Vendor shall comply with the requirements herein and contained within **ATTACHMENT A, Exhibit “B” – Minimum Technical Requirements**.

#### 3.1.1 DESIGN PLANS REQUIREMENTS

The Vendor shall prepare design plans and the necessary documents for the procurement and installation of the systems described herein and contained within **ATTACHMENT A, Exhibit “B” – Minimum Technical Requirements**. The plans shall include, but will not be limited to requirements listed within each section of the RFP Technical Requirements and as defined below:

STOC Location Map showing cabling to be provided and installed;  
Scaled plans, 2D and 3D views, showing installation of the video wall and all system components, including conduit and cable;  
Complete Video Wall control system equipment layout; and  
Detailed drawings showing locations of equipment and equipment interconnects

#### 3.1.2 DESIGN SPECIFICATIONS REQUIREMENTS

The Vendor shall prepare detailed specifications for the implementation of the proposed systems consisting of, but not limited to, the following:

STOC VIDEO WALL SYSTEM;

The detailed specifications shall expand on the design requirements contained within **ATTACHMENT A, Exhibit “B” – Minimum Technical Requirements**.

#### 3.1.2 PROCUREMENT AND INSTALLATION SERVICES

The Vendor shall procure all necessary DEPARTMENT approved equipment and provide installation services to meet the requirements described herein and in **ATTACHMENT A, Exhibit “B”**

- **Minimum Technical Requirements**. Installation services include all labor, tools, EQUIPMENT, machines, and ancillary components required to meet the requirements contained within **ATTACHMENT A, Exhibit “B” – Minimum Technical Requirements**.

### **3.2 DOCUMENT DELIVERABLES**

The Vendor shall prepare, at a minimum, the following document deliverables to the satisfaction of the DEPARTMENT and submit them at the end of the Operational Test period:

As-built drawings and block diagrams of the complete systems to include wiring diagrams, equipment manuals, operations manuals, and repair manuals for the systems;  
Final DEPARTMENT approved catalog cut sheets for each piece of equipment provided as a part of this project by the Vendor; and  
Hard copies and electronic copies of all device programmable data.

**Any payment due at the end of the Operational Test period shall be contingent on acceptance of these deliverables by the DEPARTMENT.**

### **MEETINGS AND PROGRESS REPORTING**

The Vendor shall anticipate, at a minimum, weekly meetings with DEPARTMENT and DEPARTMENT personnel and other agencies as required for resolution of design and/or construction issues. The Vendor's Engineer of Record shall be present at all project meetings. These meetings may include:

DEPARTMENT technical issue resolution;  
Project scheduling;  
Permit agency coordination;  
Local government agency coordination; and

During construction, the Vendor shall meet with the DEPARTMENT'S Project Representative on a weekly, or as needed basis and provide a one-week look ahead for activities to be performed during the coming week.

The Vendor shall, on a monthly basis, provide written progress reports that describe items of concern and the work performed on each task. At a minimum, monthly reports shall include tasks listed in the Vendor's approved CPM Project Schedule, QA/QC Reports, meeting minutes, and daily/weekly reports of construction activities.

### **4.0 QUALITY ASSURANCE**

All the provisions stated herein shall be applicable for the duration of the contract and system maintenance and warranty period as defined in this RFP.

### **4.1 QUALITY OF MATERIAL**

The Vendor shall furnish all tools, equipment, materials, travel, supplies, and manufactured articles and shall perform all operations and equipment integration necessary to design and construct fully operational systems as described herein. All electrical systems and appurtenances shall be complete, functional, and in operating condition at the time of acceptance. All equipment and materials furnished shall be new, unless the DEPARTMENT concurs and approves the re-use and/or relocation of existing equipment. The equipment, materials, and installation shall conform to the RFP, Minimum Technical Requirements, the latest edition of the DEPARTMENT'S Standard Specifications for Road and Bridge Construction and any applicable supplements thereto (hereinafter referred to as the "Standard Specifications"), and to the

regulations and ordinances of the **City of Lansing**. The Vendor shall conduct performance and acceptance tests as described within **ATTACHMENT A, Exhibit "B" – Minimum Technical Requirements** and elsewhere in this RFP.

#### **4.2 PROJECT SCHEDULE**

The Vendor shall develop and submit to the DEPARTMENT, a Project Schedule based on the Critical Path Method (CPM). The Project Schedule shall show the required sequence of all activities including those that are concurrent and those that must be complete before others can be started. The schedule shall include all activities, but not limited to the following:

- System Design including the development of hardware and software, design specifications and plans;
- Vendor submittals;
- Equipment deliveries;
- Major construction events;
- System element installation milestones;
- Project Manager review and approvals;
- All other coordination within and among the Vendor, DEPARTMENT, utilities and other State and Local agencies to complete the project as describe herein and contained **ATTACHMENT A, Exhibit "B" – Minimum Technical Requirements**; and
- Proposed testing procedures, Operational Test period and final acceptance plan.

#### **4.3 INSPECTION**

The Vendor shall inform DEPARTMENT's Project Manager in writing, at least 5 calendar days in advance of the time and place at which the Vendor intends to work in order that proper arrangements may be made for inspection. DEPARTMENT inspection of the work does not absolve the Vendor from its responsibility of delivering a fully functional system.

The selected Vendor shall allocate, and show on the Vendor provided schedule, an appropriate number of days for the permitting process.

The successful Vendor shall be required to submit the existing as-built plans for the **STOC** Center building with all proposed modifications and changes clearly indicated.

For any and all changes to electrical wiring for the **STOC** Center building, an "interior building permit" shall be required and the selected Vendor shall perform the following activities to expedite the permitting/inspection process:

- Conduct a dry run with the City of Lansing and MDOT to have them review the submittal package plans (pre-permit) if necessary according to the Project Manager.

#### **4.4 PARTIAL USE PRIOR TO CONDITIONAL ACCEPTANCE**

The DEPARTMENT, based on justification of public interest, may require that any completed or partially completed portion of the project be placed in service. Such action shall not be deemed an acceptance of the project in whole or in part, nor shall such action be construed as a waiver by the DEPARTMENT of any provision of the Contract for this project. The Vendor shall have no right to additional compensation or extension of time for completion of the work or any other concession because of the use of the project or any part thereof prior to Conditional Acceptance of the completed project.

#### **4.5 SYSTEM MAINTENANCE AND WARRANTY**

The Vendor shall be fully responsible for the maintenance and support of all equipment furnished and installed by the Vendor until the time of Final Acceptance. The Vendor shall also maintain every portion of the completed systems to assure a fully operational system for a minimum period of five (5) years, or as required in each section of the Technical Requirements. Any maintenance, troubleshooting, and repair required for any component failure for any reason shall be the responsibility of the Vendor. The cost of this maintenance shall be as shown in the Price Proposal submitted in accordance with ATTACHMENT AVI; no additional payment shall be made.

#### **4.6 VENDOR'S RESPONSIBILITY DURING MAINTENANCE PERIOD**

The Vendor shall furnish to the DEPARTMENT and shall maintain in effect throughout the duration of the five (5) year post final acceptance maintenance period, a warrantee bond in a sum equal to ten (10) percent of the final contract price. Before the Surety is released from the Bond, the DEPARTMENT shall certify in writing that the maintenance / warranty obligations specified herein have been duly performed.

The Vendor shall be responsible for repairing and/or replacing defective hardware within the (5) five year maintenance period that begins with the conclusion of the final acceptance testing.

The Vendor shall be responsible for providing all replacement or maintenance components, onsite labor (including diagnostics, correction action, and testing/demonstration), miscellaneous material and services during the maintenance and warranty period for the correction of operational problems identified by the DEPARTMENT related to the materials and equipment provided under this contract. The Vendor shall also bear the cost of transporting the components both to and from the site if required. The DEPARTMENT shall reserve the sole right to determine defects in hardware and material within the system maintenance and warranty period. Defective hardware and other material shall be repaired, replaced, adjusted and put back in working order and full operation within twenty four (24) hours of notification by the DEPARTMENT.

If at any time during the maintenance period the Vendor, after notice by the DEPARTMENT, shall fail to promptly repair and/or make good any defect or damage in the work within the time period stated in the request, then the DEPARTMENT shall have the right to cause such defect or damage to be repaired and made good by the DEPARTMENT or a Contactor on behalf of the DEPARTMENT and to charge to the Vendor the DEPARTMENT incurred cost of all labor, materials, plant, equipment, management and other incidental expenses necessary to such repair and making good. The Vendor shall pay said cost or be obligated to reimburse the Department for any and all such costs.

#### **5.0 SPECIAL PROVISIONS**

This section describes the minimum requirements for the material, design, quality assurance and construction of the electronic equipment to be provided by the Vendor. Unless otherwise stated, these requirements shall apply to all hardware components. Requirements applicable to specific hardware components shall be described in the Technical Requirements developed and submitted by the Vendor along with the plans.

#### **5.1 RELIABILITY AND OPERATIONAL STABILITY**

The Vendor shall furnish and install all equipment included within the design for completely operational systems, which is in compliance with the operational and technical specifications

developed for this project that meet or exceed the requirements given in the Scope of Services. The equipment and material shall have an expected design operational life of at least ten (10) years under continuous operation.

## **5.2 OTHER REQUIREMENTS**

Work persons employed by the Vendor directly or indirectly, shall be skilled in the relevant aspect of installation, manufacture, adjustment, and repair of the equipment used on this project by evidence of their experience and factory or manufacturer certifications. No part or ATTACHMENT A shall be substituted or applied contrary to the manufacturer's recommendations and standard practices.

All electronic equipment shall be of solid-state design and modular construction. Individual electrical components in any module shall be removable and replaceable without resultant damage or reducing the life of the module or equipment. The design shall be such as to prevent reversed assembly or installation of connectors, fasteners, etc. Interlocks shall be installed to prevent possible malfunction or personnel hazards that might occur by improper installation of equipment connectors or exposure to hazardous voltages or laser light levels. Each item of equipment shall be designed to protect personnel from exposure to high voltage during equipment operation, adjustment, and maintenance.

Equipment within each of the following categories shall be from one manufacturer:

- Wiring and termination blocks; and
- Video Wall System.

This requirement does not preclude different manufacturers for different equipment categories.

## **5.3 REGULATIONS AND CODES**

All electrical equipment shall conform to the applicable standards of National Electrical Manufacturers Association (NEMA), National Electric Safety Council (NESC), Underwriter's Laboratory (UL) Inc and National Fire Protection Agency (NFPA). All materials and workmanship shall conform to the applicable requirements of the National Electric Code (NEC), Rural Electrification Administration (REA), Standards of the American Society for Testing and Materials (ASTM), American Association of State Highway and Transportation Officials (AASHTO), requirements of the Plans, these Technical Requirements, the Standard Specifications, and to any other codes, standards, or ordinances which may apply. All system wiring, conduit, grounding hardware and circuit breakers shall be in conformance with the National Electrical Code, 2005 Edition. All electrical conductors shall be made of copper.

Whenever reference is made to any of the standards mentioned, the reference shall be considered to mean the code, ordinance, or standard that is in effect at the time of the bid advertisement.

## **5.4 STANDARDS/GOVERNING REGULATIONS**

The services performed by the Vendor shall be in compliance with all applicable Manuals and Guidelines including MDOT, FHWA, and AASHTO, and additional requirements specified in this document. Except to the extent inconsistent with the specific provisions in this document, the current edition, including updates, of the following Manuals and Guidelines shall be used in the performance of the work. Current edition is defined as the edition in place at the date of advertisement of this contract. It shall be the Vendor's responsibility to acquire and utilize the necessary manuals and guidelines that apply to the design work required to complete this project.

Michigan Department of Transportation CADD Manual; and  
Michigan Department of Transportation Standard Specifications for Road and Bridge  
Construction, Supplemental Specifications, and/or Special Provisions

#### **5.4.1 STRUCTURES PLANS**

All structures plans, including the Video Wall support structure, shall be prepared in accordance with the latest Structures Design Guidelines, AASHTO standards, other DEPARTMENT standards, policies, procedures and directions from the State and District Structures Design Engineer, and all city of Detroit standards, regulations and ordinances. The Vendor shall seal final structure plans by a professional engineer registered in the State of Michigan.

#### **5.5 QUALITY CONTROL PROVISIONS**

The Vendor shall be responsible for the professional quality, technical accuracy, independent check, review, and coordination of all surveys, designs, drawings, specifications, calculations and other services or documentation furnished by the Vendor under this contract.

The Vendor shall examine carefully each component and equipment assembly it furnished to verify that the material, design and construction, markings, and workmanship comply with the requirements of this scope document including the appendices. Visual inspections shall be performed on all modules and subassemblies to determine any physical defects such as cracking, scaling, poor fastening, incorrect component values, etc. Complete electrical testing shall be performed on each module and subassembly to determine its compliance to the designed function. Housing, chassis, and connection terminals shall be inspected for mechanical sturdiness, and harnessing to sockets shall be electrically tested for proper wiring sequence.

The Vendor shall conduct quality control procedures to assure that equipment units and components are not damaged during shipping and storage. The Vendor shall develop a quality assurance program and submit it to the DEPARTMENT for review and approval within fifteen (15) days after Contract Execution. The Vendor shall follow the approved quality assurance program for the construction and installation of all hardware.

The Vendor shall, without additional compensation or contract time, correct all errors or deficiencies in the designs, drawings, specifications, construction and/or other services.

#### **5.6 VENDOR SUBMISSIONS**

The Vendor shall submit items to the DEPARTMENT as modified and supplemented by these Technical Requirements. The Vendor shall submit six (6) paper copies and an electronic copy of all required submissions. The Vendor shall distribute these submissions directly to the individuals and units, as the DEPARTMENT's Project Manager requests.

The DEPARTMENT will complete their review of the material within fourteen (14) days from the date of receipt of the submission, unless otherwise specified. The DEPARTMENT may advise the Vendor, in writing, as to the acceptability of the material submitted. The DEPARTMENT may determine that the item is approved, in which case no further action is required by the Vendor or an item may be partially or totally rejected, in which case the Vendor shall modify the submittal as required by the DEPARTMENT. It is the responsibility of the Vendor to comply with the DEPARTMENT review and make appropriate replacement. It is the responsibility of the Vendor to provide the certification of compliance on these items from the independent agency it will use for certification. In the event the DEPARTMENT does not advise the Vendor on the acceptability of the materials and products within the fourteen (14) day period,

the Vendor shall bring it to notice, in writing, to the DEPARTMENT's Project Manager, and proceed with the project. The costs of Vendor submissions shall be included within the price paid for individual pay items and no additional compensation will be made.

### **5.7 MATERIAL AND EQUIPMENT LIST**

Prior to the purchase and fabrication of any component or material for this project, and no more than seven (7) days after the DEPARTMENT accepts the Final Design, the Vendor shall submit to the DEPARTMENT for approval, a Material and Equipment List. The material and equipment lists shall identify the quantity, manufacturer, description, catalog number or other identification, and options and special features for each item furnished. A unique identification number shall be indicated for each item on the Material and Equipment lists.

Copies of catalog cuts and manufacturers descriptive literature shall be submitted with each copy of the material and equipment lists for all manufactured items. Descriptive literature shall be adequate to determine if the equipment and material meet the requirements of the Plans and Specifications. The Vendor shall clearly note any deviations, changes, additions or other modifications to the descriptive literature that are appropriate to reflect the exact equipment intended for use.

Approval by the DEPARTMENT of the Materials and Equipment list and submittal data shall not relieve the Vendor of any of his responsibility under the Contract for the successful completion of the work in conformity with the requirements included in the RFP and Attachments.

### **5.8 REVIEW PERIOD**

The Vendor shall plan for and schedule the DEPARTMENT to have a 14 calendar day review and comment period on the following:

- Shop Drawings;
- Request For Information (RFI); and
- Design Plan Reviews.

### **5.9 SHOP DRAWINGS**

Shop Drawings include catalog sheets and equipment cut sheets. Shop drawings shall be submitted with final plans and specifications.

Shop Drawings shall be submitted to the DEPARTMENT for review and shall bear the "Released for Construction" stamp and signature of both the Vendor and the engineer of record. Shop drawings shall meet the requirements of the **ATTACHMENT A, Exhibit "B" – Minimum Technical Requirements**. Shop drawings shall be required for, but not limited to, the submittals listed in **ATTACHMENT A, Exhibit "B" – Minimum Technical Requirements**.

### **5.10 PROGRESS REPORTS**

The Vendor shall prepare and submit six (6) paper copies and one electronic copy of monthly Progress Reports to the DEPARTMENT's Project Manager and/or the ENGINEER. The progress reports shall provide a complete description of activities completed by the Vendor during the preceding month. The reports shall include, but not be limited to, items such as:

- Description of material brought on-site;
- Progress since last report including any milestones reached;

- Any activity or event which has been delayed, and any anticipated problems, which may cause a delay;
- Updated schedule including revisions needed to keep the project on schedule if delays have been experienced;
- Scheduled work for the next month; and
- The chargeable time for this project, which shall begin at the Contract Execution date.

For the purpose of the progress monitoring, the month shall begin on the date that the Contract is executed, and will end at the date prior to the same date of the next calendar month. The monthly Progress Reports shall be delivered the twentieth (20<sup>th</sup>) day of the following month, or the earliest weekday in the event the twentieth (20<sup>th</sup>) falls on a weekend or holiday.

### **5.11 AS-BUILT DOCUMENTATION**

The Vendor shall keep as-built documentation of the work current (no longer than 14 calendar days behind actual) throughout the duration of the project. The Vendor shall submit the as-built documentation to the DEPARTMENT prior to initiation of the Acceptance Testing.

All as-built documentation shall be subject to the approval of the DEPARTMENT prior to acceptance. The cost for all as-built documentation shall be included in the contract price for other items and separate payment shall not be made.

For purposes of as-built documentation, fiber optic cable connection and splicing documentation shall be treated in the same manner as that for electrical wires and cables.

The as-built documentation shall consist of the following documents as a minimum and as applicable.

The Vendor shall develop plan sheets to reflect equipment locations on the plan sheets of all items in the STOC. The final document submitted by the Vendor shall be a complete set of plan sheets (excluding schematics, details, assignment tables, etc.). The Vendor shall submit to the DEPARTMENT a set of drawings on electronic media in DEPARTMENT standard format plus an additional two (2) printed copies.

The Vendor shall submit to the DEPARTMENT a manual containing a general description and detailed operating and installation instructions for each different type or model of equipment. This manual shall also contain instructions for possible modification to the equipment within the capability of the equipment. Three copies for each unit shall be provided for each model of equipment.

The Vendor shall submit to the DEPARTMENT a pictorial drawing showing the physical location and identification of each component for each different electronic unit and each different subassembly of each unit. These drawings may be included in the maintenance procedure manuals or they may be electronic files in DEPARTMENT standard design format with two (2) printed copies. The electronic files and two printed copies shall be provided for each distinct unit and subassembly model. It may also be applicable to indicate location information on the construction as-built.

The Vendor shall submit to the DEPARTMENT a wiring diagram for each equipment rack, and IMO containing wire terminals identified by location. If the diagrams are in manual form, six manuals shall be provided for each distinct equipment rack. Drawings shall be on electronic media in DEPARTMENT standard format with two (2)-printed copies.

Separate drawings and copies shall be provided for each distinct type of rack and IMO. If a set of drawings is provided, each serving more than one location, a separate drawing on electronic media in DEPARTMENT standard format with two (2) printed copies shall be

included that shows a cross-index by location and drawing.

Connection diagrams for the entire system, including block diagrams, terminal numbers, and conductor color codes for the work performed by the Vendor, shall be cross-referenced to correlate with existing wiring diagrams and shall be addenda thereto. The Vendor shall furnish a drawing on electronic media in DEPARTMENT standard format with an additional two (2) printed copies of each drawing.

The Vendor shall furnish to the DEPARTMENT configuration files for the systems on electronic media. The Vendor shall also provide documentation on all the provisions to the system configuration, such as, but not limited to Network settings, User Account Settings, Database designs, etc.

The documentation for Vendor-developed test software shall also include flowcharts, source listings, and source code in machine-readable form compatible with one of the furnished development systems or one of the DEPARTMENT's personal computers or workstations. The DEPARTMENT will hold such source materials in escrow in a safety deposit box. The DEPARTMENT may access this information if the supplier fails to provide the support, warranty, or maintenance services described herein or is otherwise unable to support the equipment. The DEPARTMENT shall be granted the right to reproduce up to 25 copies of any other document protected by copyright or other restriction for use by the DEPARTMENT at no additional cost.

#### **5.11.1 FORMATS OF DOCUMENTATION**

Except for standard bound manuals, all standard letter size documentation shall be bound in logical groupings in loose-leaf binders of the 3-ring type. Each such bound grouping of documentation shall be appropriately labeled. No documentation shall be smaller than standard letter size.

All documentation, including that which exceeds standard letter size, shall be furnished on electronic media in DEPARTMENT standard format with additional two (2)-printed copies. All drawings shall be standard half size (unless otherwise approved by the DEPARTMENT in each instance). Drawings larger than standard letter size, but smaller than standard half size, shall be placed in the lower right-hand corner of a standard half size sheet.

The Vendor shall furnish all software manuals, flowcharts, printed tables, charts, and program listings in standard letter size three ring binders. All software source code shall be furnished in duplicate on CDROM compatible with the DEPARTMENT's computer system.

#### **5.12 SYSTEMS FINAL DOCUMENTATION**

The Vendor shall compile a final set of project documentation at the completion of construction and integration activities. The documentation shall, at a minimum, include the following items:

- Final Plans;
- As-built Plans;
- Equipment Submittals;
- Copies of all Permit Documentation;
- Supplemental Technical Specifications;
- Systems Reports;
- Quality Control Reports;
- Construction Reports;
- Systems Equipment and System Testing Plan;

Test Procedures;  
Test Reports;  
Typical drawings; and

- Manuals:
  - . Installation Manuals,
  - . User Manuals,
  - . Operation Manuals,
  - . Programming Manuals,
  - . Theory of Operation Manuals,
  - . Diagnostic Manuals, and
  - . Maintenance Procedure Manuals.

Equipment Assembly Drawings;  
Wiring Diagrams;  
Electrical schematic, wiring, and logic diagrams;  
System Interconnect Diagrams;  
Commercial off the Shelf (COTS) Software documentation;  
Installation details for all new or non-standard installations;  
Warrantees and guarantees;  
Certificates of compliance and certificates of analysis;  
Shop drawings and modifications;  
Training course agendas, notes, manuals, and any other documentation pertaining to training; and  
All other written or recorded documents associated with the Contract.

The documentation shall be indexed and submitted in a hard cover three-ring binder(s) and on CDROM (if soft copy is available).

## **6.0 ACCEPTANCE TESTING**

The Vendor shall provide testing services to demonstrate that all equipment furnished, adjusted, or modified by the Vendor has been installed properly and operates in accordance with the Technical Requirements. The Vendor shall develop test plans and receive DEPARTMENT approval before the acceptance tests begin. The Vendor shall not begin any acceptance testing until the DEPARTMENT approves the test plans.

### **6.1 CONDITIONAL ACCEPTANCE TEST**

The Conditional Acceptance Test shall demonstrate that all equipment furnished, adjusted, or modified by the Vendor has been installed properly and operates as per the **ATTACHMENT A, Appendix "B" – Minimum Technical Requirements** and the DEPARTMENT approved test plans. The Conditional Acceptance Test specified herein shall be conducted by the Vendor in the presence of the DEPARTMENT's Project Manager, the DEPARTMENT, or designated representative.

The Conditional Acceptance Test will begin within seven (7) days after the DEPARTMENT is advised by the Vendor that he is ready to begin the test. The test may begin at such time that the Vendor has satisfied himself and the DEPARTMENT that all work has been completed.

Upon determination from the DEPARTMENT in writing that the **STOC** Center Video Wall System and Miscellaneous Services Project has completed the Conditional Acceptance Test and is in conformance with the requirements of the Plans and Technical Requirements, the **STOC** Center Video Wall and all components therein will be conditionally accepted.

**6.2 OPERATIONAL TEST PERIOD**

A forty-five (45) calendar day Operational Test period will be required for the project. An Operational Test period shall commence upon successful completion of the Conditional Acceptance Test. The DEPARTMENT, with assistance from the DEPARTMENT, will operate the systems during the Operational Test Period.

In the event that any Vendor provided component of the project malfunctions or operates below the level specified, the Operational Test period will be suspended, and the Vendor shall be required to determine and correct the problems, including repair or replacement of equipment, at no cost to the DEPARTMENT. The Vendor shall respond with a qualified technical representative on site to determine and correct any problems within 24 hours, following notification by the DEPARTMENT. Upon correction of the problems, to the satisfaction of the DEPARTMENT, the Operational Test period will be started anew from day one (1). In the event a malfunction is the result of equipment not installed by the Vendor (e.g., power service, leased telephone circuits, freeway management system field devices, Center-to-Field communications), the Operational Test period will be suspended until correction of these problems by others and restarted at the same day count as when the suspension occurred. In the event the malfunction is the result of a problem with the DEPARTMENT’s software the Operational Test period will be suspended until correction of these problems by MDOT/MDIT and will be restarted at the same day count as when the suspension occurred. The Vendor shall cooperate with the DEPARTMENT, and any others involved while a problem resulting in a suspension is being resolved. All costs incurred for the cooperation of the Vendor shall be considered incidental to the Vendor’s bid price.

**7.0 FINAL ACCEPTANCE TESTS**

Upon satisfactory completion of the Operational Test Period, the project will be inspected for final acceptance in accordance with the tests described in the **ATTACHMENT A, Appendix “B”** –

**Minimum Technical Requirements** and approved by the DEPARTMENT.

**8.0 WARRANTY**

The Vendor shall warrant the material and services provided under this contract. Warranty services shall be as described in this request for proposal. The Vendor shall provide a certificate of compliance for the warranty prior to final acceptance of the work provided by the Contactor under any contract that results from this request for proposal.

**8.1 CERTIFICATE OF COMPLIANCE BY THE VENDOR**

After the final acceptance the Vendor is required to maintain the system for a five (5) year period from the date of Final Acceptance or as defined in the requirements listed RFP Technical Requirements, whichever is longer. The cost of all the parts, labor, and equipment provided under any contract that results from this Request for Proposal will be borne by the Vendor. No separate payment shall be made for this work.

**8.2 SCOPE OF WARRANTY SERVICES**

The Vendor shall be responsible for correcting any operational defects through repair/replacement and adjustment of the materials and products provided under any contract that results from this Request for Proposal. All costs for warranty shall be borne by the Vendor, as no separate payment shall be made for this work. The DEPARTMENT shall reserve the sole right to determine defects in the materials and systems installed or modified by this project and the acceptability of the warranty repair and defect correction, including adjustment of equipment

provided as a part of this project.

- Warranty for all individual ITS and Communications devices provided by the Consultant is to be five years (unless noted differently within that device's Special Provision) with the full warranty period beginning at final acceptance. The Consultant will be responsible for maintenance of all subsystems and systems during the integration period and for the warranty period. Upon the end of the first year of warranty, the Consultant will transfer the warranty to the MDOT. The Consultant will still be required to provide maintenance, including bulbs, for the full 5 year warranty period.
- The Vendor shall provide 4 additional bulbs per unit at the end of the 5 year warranty period.

## **9.0 CONTRACT PAYOUT**

The contract payout shall be as noted on the following pages:

The Vendor shall submit the schedule of values within fifteen (15) days from Contract Execution for review and approval by the DEPARTMENT. The schedule of values shall be based on the Lump Sum Price submitted as part of the Vendor's proposal, completion of the Video Wall System, completion of all work required by the RFP excluding maintenance, and completion of the (5) five year maintenance and warranty support period..

Contract amount is defined as the original Contract amount adjusted by approved supplemental agreements.

Contract time is defined as the original Contract time adjusted by approved Contract time extensions.

At any time during the progress of the work, the percentage (%) of contract value paid to the Vendor shall not exceed the percentage (%) of the total value of the work completed.

## **9.1 LIQUIDATED DAMAGES FOR CONTRACT TIME**

The selected Vendor shall be liable for liquidated damages for exceeding contract time in the amount of two thousand dollars (\$2,000.00) per day up to a maximum of one hundred thousand dollars (\$100,000.00). Liquidated damages will be assessed for each calendar day until final acceptance for all contract requirements excluding warranty and maintenance supports have been granted.

## **9.2 LIQUIDATED DAMAGES – VIDEO DISPLAY WALL SYSTEM MILESTONE**

The selected Vendor shall be liable for liquidated damages of two thousand dollars (\$2,000.00) per day for exceeding the Video Display Wall System completion date, up to a maximum of fifty thousand dollars \$50,000.00. Liquidated damages will be assessed for each calendar day until final acceptance of the Video Wall Display System has been granted.

## **REQUIRED MDOT GUIDELINES AND STANDARDS:**

Work shall conform to current MDOT, FHWA, and AASHTO practices, guidelines, policies, and standards (i.e., Road Design Manual, Standard Plans, Drainage Manual, Roadside Design Guide, A Policy on Geometric Design of Highways and Streets, Michigan Manual of Uniform Traffic Control Devices, etc.).

Integrator is required to use MDOT's current version of Bentley MicroStation for CADD

applications and Bentley GEOPAK for road design. Integrator shall comply with all MDOT CADD standards and file naming conventions.

### **CONSULTANT RESPONSIBILITIES:**

- Meet with the MDOT Project Manager to review project, location of data sources and contact persons, and review relevant MDOT operations. The Integrator shall review and clarify project issues, data needs and availability, and the sequence of events and team meetings that are essential to complete the project plan completion date.
- Complete the planning, design, procurement and integration of the equipment for this project, all inclusive.
- The Consultant representative shall record and submit type-written minutes for all project related meetings to the MDOT Project Manager within two weeks of the meeting. The Consultant shall also distribute the minutes to all meeting attendees.
- The Consultant will provide to MDOT at the scheduled submittal dates, copies of the required documents for distribution by MDOT for all reviews for this project. The Consultant shall contact the project manager prior to the submittal dates for the exact number of copies that will be required for submittal.
- Attend any project-related meetings as directed by the MDOT Project Manager.

The MDOT Project Manager shall be the official MDOT contact person for the Consultant **and shall be made aware of all communications regarding this project.**

- Consultant must either address or send a copy of all correspondence to the MDOT Project Manager. This includes all Subcontractor correspondence and verbal contact records.
- On the first of each month, the Consultant Project Manager shall submit a monthly project progress report to the Project Manager.
- The Consultant will be responsible for all Project Management activities of work awarded in response to this RFP. Project Management consists of organizing and managing this project, coordination, scheduling, cost control, quality control, inventory control, and performance reporting as defined below.
- The Consultant is to develop and implement a QA/QC Plan that will be provided to the MDOT PROJECT MANAGER within fifteen (15) days of the Notice to Proceed for approval by the MDOT PROJECT MANAGER. The Plan will reflect all elements that are unique to this project including, but not be limited to procurement, installation, device testing, device configuration, inventory control, system integration, system testing, asset management and system documentation. This Plan will be utilized by the Consultant to ensure a fully functional and integrated system.
- The Consultant will procure new equipment that meets or exceeds these specifications. Used or refurbished materials will not be permitted to be installed on the project under any circumstance without specific approval of the Project Manager. If there is any

equipment, hardware, software, or incidental items that are not specifically mentioned in the plans or specifications but is necessary for the Consultant to complete the installation, integration and testing, it will be the Consultant's responsibility to procure the equipment, hardware, software or incidentals without additional compensation from the Department. However, prior to incorporation of the equipment into the project the Consultant must demonstrate to the PROJECT MANAGER that the additional pieces will not cause deterioration of system function, performance, sustainability and durability.

- All equipment, hardware, materials and incidentals required by the Consultant to complete the work will remain in the possession and ownership of the Consultant until completion and approval by the MDOT PROJECT MANAGER final acceptance testing and acceptance program. It will be the Consultant's responsibility to replace any devices that fail prior to acceptance by the MDOT PROJECT MANAGER at no additional cost to the Department.
- Warranty for all components and devices provided by the Consultant are to be five years (unless noted differently within that device's Special Provision) with the full warranty period beginning at final acceptance. The Consultant will be responsible for maintenance of all subsystems and systems during the integration period and for the warranty period. The Consultant will still be required to provide maintenance, including bulbs, for the full 5 year warranty period.
- At final acceptance the Consultant is required to deliver to MDOT PROJECT MANAGER five copies of all product manuals, maintenance manuals and operations manuals bound and tab divided for ease of reference.
- Training requirements for this project will include demonstration of Video Wall(s) that are installed and how they are integrated into the current system.

**MDOT RESPONSIBILITIES:**

- Provide access to the facility.

**DELIVERABLES:**

- Shop Drawings for devices.
- Warranty documentation (both device and integrator).

**PAYMENT SCHEDULE:**

This project will be a lump sum dollar value. The payment will be made based on the following milestones and percentage allowed at that time:

Video Wall layout design completion and approval from MDOT Project Manager	10%
Video Wall shop drawing approval for all components involved for the project	30%
Video Wall complete installation and fully operational	50%

Complete payment at end of 5 year warranty time period

10%

### **CONSULTANT (INTEGRATOR) PAYMENT:**

This procurement will be paid on a lump sum basis by milestone as listed above in under **Payment Schedule**. No interim payments are planned.

The MDOT Project Manager may authorize payment if a milestone is delayed due to circumstances beyond the Consultant's control.

All billings for services must be directed to the Department and follow the current guidelines. The latest copy of the "Professional Engineering Service Reimbursement Guidelines for Bureau of Highways" is available on MDOT's website. This document contains instructions and forms that must be followed and used for billing. Payment may be delayed or decreased if the instructions are not followed.

Payment to the Consultant for services rendered shall not exceed the maximum amount unless an increase is approved in accordance with the contract with the Consultant. Typically, billings must be submitted within 60 days after the completion of services for the current billing. The final billing must be received within 60 days of the completion of services. Refer to your contract for your specific contract terms.

The fixed fee allowed for this project is 11.0%.

### **SCORING CRITERIA (100 points)**

#### **Past Performance (20 points)**

Provide references and examples of similar work performed for other agencies.

#### **Understanding of Service (25 points)**

Describe your understanding of the service to be provided.

#### **Qualifications of Team (20 points)**

Provide resumes for key personnel.

#### **Price (25 points)**

Completed bid sheet required. Low price will be given 25 points. High price will be given 0 points. Bids between the low and high score will be interpolated to generate a score commensurate with the price bid.

#### **Safety Program (5 points)**

Indicate compliance with all MDOT, state, and federal workplace and right-of-way requirements.

#### **Location (5 points)**

Indicate percentage of work that will be performed in Michigan.

## BID SHEET

### MDOT Statewide Transportation Operations Center Video Wall

All entries on this page must be handwritten in ink or computer generated.

Task	Bid Price
Video Wall Design	\$
Video Purchase	\$
Video Wall Installation	\$
Testing & Warranty	\$
Project Management	\$

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**TOTAL BID PRICE:**           \$      

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<b>Consultant Name:</b>	
<b>Consultant Signature:</b>	
<b>Consultant Address:</b>	
<b>Date:</b>	

The Michigan Department of Transportation reserves the right to reject any or all bids.

**MICHIGAN DEPARTMENT OF TRANSPORTATION**  
**ATTACHMENT A**  
**MICHIGAN STATEWIDE TRAFFIC OPERATIONS CENTER (STOC)**  
**VIDEO WALL SYSTEM**  
**EXHIBIT "B" MINIMUM TECHNICAL**  
**REQUIREMENTS**

**VIDEO WALL DISPLAY SYSTEM**

**1.0 GENERAL**

The STOC operators will utilize CCTV traffic monitoring cameras viewed on various video and computer output devices to assist with traffic incident detection, verification, response, management and clearance, as well as for traveler information. The Vendor shall furnish, install and integrate video display sub-systems to support these functions within the STOC. The requirements for the Wall Display System shall adhere to MDOT Standard Specification unless otherwise specified or elaborated herein.

**1.1 SCOPE OF WORK**

The Vendor shall provide the following services in response to the minimum technical requirements in this RFP:

- Provide project management and coordination with other STOC activities including any other contractors or Vendors working in the building;
- Furnish, install and integrate a fully functional and operational video wall display system and ancillary hardware, software, wiring, workstations and remote displays within the STOC control room;
- Prepare final design plans and specifications for all elements of the video display systems and submit these to the SYSTEM MANAGER for review and approval;
- Develop a video display test and acceptance plan and submit the plan to the ENGINEER for review and approval;
- Implement the system test and acceptance plan; to verify that all elements of the video display systems perform as described in these minimum technical requirements;
- Train STOC staff operators in use and configuration of video wall and ancillary displays; and,
- Maintain all elements of the video display systems for a period of (5) five years after final testing and acceptance.
- Provide warranty support as described in the minimum technical requirements.

**1.2 PRE-QUALIFICATIONS**

The VENDOR video wall display team shall meet the pre-qualifications stated in the RFP.

**2.0 PRODUCTS**

The Video Wall Display (VWD) system shall be comprised of one video display assembly (VDA) and a video display controller (VDC). The VDA shall consist of an array of rear projection cubes utilizing Digital Light Processing™ (DLP) technology connected to a VDC with the latest up-to-date advances in rear projection and screen management technology to provide a completely integrated and fully functional video wall display system. The VWD shall also consist of, at a minimum, the following additional control equipment:

- Media Processor Controller (MPC);
- Hardwired Touch Panel (HTP);
- Wireless Touch Panel Remote Control System (WTP);
- RGBHV Switch Matrix (RSM);
- Distributed Audio System (DAS);
- All cables; coax, data cables, video cables and power cables; and

- Any and all ancillary items required for a fully operational video display system.

The VWD shall be capable of displaying analog and streaming IP-Video signals, RGBHV signals, DVI signals and network based applications represented as windows on the VDA desktop. The VWD shall include a software package that can manipulate the above signals and be capable of saving/storing pre-designed "layouts" on the VDC consisting of preferred window locations on the VDA. These layouts shall be launched via the touch panels, processor software and/or keyboard/mouse set of controls. The software package shall also include an application to control the VWD via a keyboard/mouse on a workstation with network visibility over the LAN. The VDC is defined as the control system (hardware and software) that enables the operator to control and manage the display of video and computer generated graphics on the display equipment connected to the system, as well as provide selection and switching of multiple sources

for display, including video streams available on the TMC network. The analog Video and RGBHV signals shall be routed to the VDC by way of the RSM and controlled through the MPC, while the audio signals associated with the analog video sources shall be routed to the operator stations for local listening via headsets or PC speakers. Audio source selection by the operators shall be through web pages stored on the MPC in addition to being available through the touch panels, while volume levels shall be controlled at the workstations. All components, software and hardware, of the VWD system shall be compatible with each other. All specified equipment and software shall be installed and integrated as part of the VWD system at the STOC. The VWD shall be furnished, installed, fully operational, and meet all herein specified image quality specifications, prior to receiving final approval and acceptance by the ENGINEER.

The VENDOR shall add, change and/or relocate power outlets and communications connectors within the STOC as necessary to complete a fully functional system. Outlet and communications connector additions and changes shall be performed when necessary to avoid the use of extension cords and shall be considered incidental to the project completion. All adds, changes, and relocations of power outlets shall be done in accordance with the NEC and state and local building codes.

## 2.1 VIDEO DISPLAY ASSEMBLY (VDA)

The VENDOR shall design, furnish and install one (1) VDA consisting of six (6) 70-inch diagonal digital rear XGA projection color video cubes arranged in a three (3) across by two (2) high video matrix. The active maximum display area for the 2 x 2 matrix of cubes shall be 183- inch wide by 68.6-inch high and each cube shall utilize a projection engine capable to display native WXGA resolution of 1360 (H) x 768 (V) pixels which the entire array displays an aggregate resolution of 2,720(H) x 1,536(V) pixels across the entire Video Display Assembly. Each 70-inch cube shall incorporate a diagonal screen with high contrast ratio to ensure maximum brightness uniformity across the screen. The VWC multiple screen control applications software shall treat the sixteen-cube matrix as one single high-resolution display. The VENDOR shall design, furnish, and install borders, kick-plates, knee walls, headers, valances, side-walls and all other finishing material needed to provide a seamless installation. The VENDOR shall supply a full video wall including pedestal structures and face for all front facing surfaces. The VENDOR shall fix all control hardware in the video wall assembly. All materials shall have acoustical properties matching that of the existing finished control room. All materials shall match in quality and color to the existing finished control room.

### 2.1.1 VDA TECHNICAL REQUIREMENTS

The VENDOR shall be required to submit shop drawings and construction plans for review and approval by the ENGINEER. The VENDOR shall design, furnish and install a video display system that provides sufficient intensity such to ensure an effective and comfortable viewing by the ENGINEER's Operators under normal lighting conditions. The Video Display System's intensity shall at a minimum have light output of 560 ANSI lumens. The VDA video cubes shall have the following minimum features

and characteristics:

- Screen brightness shall be achieved by a combination of projection techniques and screen materials such that it provides a minimum brightness measurement of 170 candelas per square meter of illumination across the outside (audience) surface of the rear screen, as measured using a photometer;
- Brightness uniformity shall meet or exceed 92% across the module, as measured using a photometer;
- Display modules shall meet or exceed an acceptable viewing angle of 160-degree visibility;
- Minimum Contrast ratio of 650:1;
- Light Emitting Diode (LED) Lamp shall be utilized to ensure consistent brightness uniformity across the screen;
- Each Lamp shall exceed 4,000 hours with a guaranteed warranty of 100% for the first 40,000 hours, and prorated to 60,000 hours;
- A maximum viewable screen separation of 2mm between adjacent cubes. Each completed structure shall be enclosed to ensure no ambient light effect on the screen from behind the display;
- The display module shall utilize modular component architecture to permit end-user service and/or replacement of the fan module, lamp and power supply without removing the projection engine;
- All major components of the display module shall be sourced and manufactured from a single provider to ensure compatibility between each component;
- Each cube shall be completely enclosed and light tight, with fixed panels for access to the lamp, power supply and projection engine. Each cube shall utilize a single optical quality first surface glass mirror and high contrast rear projection screen; and
- The color video cubes supplied shall operate within the manufacturer specifications and this Technical Special Provision within an ambient temperature range of 50 degrees F to 104 degrees F.

## 2.2 VIDEO WALL AND ANCILLARY VIDEO DISPLAY ELECTRICAL/COMMUNICATIONS/LIGHTING REQUIREMENT

All of the equipment to be furnished and installed by the VENDOR, including the color video wall cubes for the VWD, the VSM, processor PCs, controllers, monitors, ancillary displays and accessories shall operate subject to the following electrical power specifications:

- Voltage 110 - 120 VAC; and
- Frequency 60 Hz.

In addition, the VENDOR shall conduct STOC field reviews to examine the electrical/communications distribution panels allocated for the various equipments and the electrical/communications schedules. It shall be the sole responsibility of the VENDOR and an incidental cost to said VENDOR, to make any necessary changes, additions or corrections to the electrical/communications panels, wiring, outlets and connectors that the VENDOR may deem necessary to adequately power and communicate all of the equipment proposed for this project. Further, the VENDOR shall conduct an ambient/direct lighting review to determine how the existing ambient lighting may affect the visual acuity of the proposed video wall and ancillary displays. It shall be the sole responsibility of the VENDOR and an incidental cost to said VENDOR, to make any necessary changes, additions, or corrections to the existing ambient lighting where the video wall or ancillary displays are to be installed. Any changes and/or additions must be formally issued to the ENGINEER for approval in the form of proposed as-built plan sheets, signed and sealed by an Electrical Engineer registered in the State of Michigan. Any changes to the electrical building wiring shall meet shall be in accordance with any applicable local codes/permits and comply with NEC.

## 2.3 STRUCTURAL CHARACTERISTICS FOR THE VDA, THEIR FRAMES, AND PLATFORMS

The provided VDA shall include a structural frame in which the cubes are to be installed. The VENDOR shall furnish and install a VDA aluminum frame or steel constructed platform capable

of supporting the color video cubes displays mounted and stacked in forming an independent VDA rectangular matrix configuration. Ensure that the support structure consists of stackable project modules delivering a one-to-one relationship between the number of projectors and the number of screens. This structure shall maintain consistent horizontal and vertical minimum spacing (mullion) of 2-millimeter between adjacent video cubes. The structure shall be mounted to the existing

concrete floor of the control room to the optimal height associated with the VENDOR's calculated operator sight lines. The VENDOR shall "finish out" any spaces left between the VDA and existing walls and floors. No ambient light from the rear of the VDA shall be visible. All materials used for the finishing shall be submitted to the ENGINEER for approval and shall, at a minimum, address color coordination with the existing interior, acoustical characteristics, and visual contrast between the VDA and the finishing material. The support structure shall be specifically fabricated to ensure that a continuous accurate image is projected on the screens without any distortion and unused screen space. No observable vibrations shall be present in the installed VDA due to vibration in the building.

The VENDOR shall prepare and submit, for approval by the ENGINEER, construction plans for the VDA frame and platform. The VDA aluminum or steel frame shop drawings and associated construction plans shall be in agreement with the video color cube manufacturers' specifications and recommendations. The VENDOR shall submit to the ENGINEER for approval, shop drawings of the structural frame which shall include dead weight calculations. These items shall be submitted to ENGINEER for review and approval. The VDA shall be designed to be brought into the STOC of the VanWagoner building and assembled in place without making modifications to existing permanent doorways, load-bearing walls, sub-floors, or ceilings. Modifications to existing non-load-bearing walls, partitions, soffits, valances, and modular raised floors are not permitted. The Vendor shall restore the building to the condition it was prior to any installation. No modifications to plumbing or HVAC infrastructure will be allowed. The components of the individual video cubes shall be serviceable and allow for replacement of said components without disturbing the integrity of the entire display wall. The rear projection cubes shall facilitate lamp replacement without the need for readjusting the image being projected on the screen. The VVD, the VDA and any of its components shall comply with the physical dimensions, characteristics and requirements stipulated in this document, the building plans and the as-built building. The VENDOR shall provide all fully connectorized cabling required with adequate lengths to interconnect the various components and devices of the VVD and Ancillary Displays and with the various existing power and communications points of service.

#### 2.4 VIDEO DISPLAY CONTROLLER (VDC)

The VENDOR shall furnish and install one (1) VDC to interface and control the VDA. The VDC shall include an open API/interface to permit third-party software to control the VDC. The VENDOR shall include full documentation of the open API/interface as part of the initial design submittals for MDOT review.

The VENDOR shall furnish and install the VDC in the VENDOR supplied equipment rack. Location of said equipment rack shall be indicated in the shop drawings. The VDC is described as the Hardware and Software required to satisfy the functional and performance specifications contained herein. The VDC shall be the latest up-to-date PC model/type having the following minimum performance characteristics:

- Intel Core 2 Duo 2.13 GHz processor;
- Windows XP Professional Operating System latest version available at the time of product submittal and after Contract Execution;
- Minimum 3GB DDR RAM or more as necessary for function and performance required herein;
- Two (2) 200 GB Hard Drives, configured in RAID 1;
- DVD SATA DRIVE;
- DVD-RW SATA DRIVE;

- Minimum Video Outputs;
    - o Sixteen (16) DVI outputs, each with an XGA resolution of 1024 by 768 pixels to the VDA; and,
    - o Four (4) additional (spare) DVI outputs, each with an XGA resolution of 1024 by 768 pixels to the VDA.
  - Minimum Video Inputs;
    - o Six (6) Composite Video/S-Video Inputs;
    - o Six (6) inputs for direct RGBHV inputs;
    - o Twenty (20) digital video inputs, MPEG-4 decoded video streams;
    - o Four (4) digital video inputs, MPEG-2 decoded video streams;
    - o Four (4) DVI inputs;
  - The VENDOR vendor to verify that their decoder cards will decode video from any of the existing MDOT video encoders as well as VLC. Any new encoders will be required to work with the video decoder cards.
  - Two (2) 10/100/1000 Base-T network cards;
  - The VDC shall incorporate a flat screen active color LCD/ Keyboard/mouse combo capable of being mounted as a pull out drawer in the same 19-inch rack as the VDC at appropriate working height. Minimum LCD screen size shall be 14" diagonal.
- The VDC shall allow for any number of Windows® applications to be opened, sized, positioned and dragged across the entire 3 by 2 video matrix without regard to individual cube border. Any video window maybe overlaid on top of the other, with each window filling all of the six (6) video cubes. The VDC shall be expandable to a minimum of 128 discreet inputs and 128 discrete outputs. The VDC shall treat the VDA as one logical desktop. The VDC shall be capable of launching and displaying applications directly across the entire display assembly. The Operators shall be able to move, resize, and re-locate any application launched in this manner across the entire display assembly without regard to seams between display modules. Ensure that a single input can be routed to multiple displays (outputs) simultaneously and that multiple inputs can be routed to a single display (output) simultaneously for viewing in separate windows. All inputs and outputs shall be synchronized by the VDC. Switching between any input to any output shall not cause any image to lock, roll, or otherwise exhibit visible distortion.
- The VDC shall be provided and loaded with a multiple screen applications software package from the video wall manufacturer having the following minimum requirements:
- A mouse and keyboard selection and picture display control at the click of a mouse to paste images anywhere on the video wall;
  - Select the graphical information displayed on any operator's workstation monitor and send it to the VDA as a scalable window;
  - Allow operators to open, size and position a minimum of thirty-two (32) video images as dynamic windows across the entire 3 x 2 video display matrix without regard to individual cube borders; and
  - Permit multiple operator workstation monitor screens to be sent and displayed on the VDA as sized and scalable windows positioned anywhere across the 3 by 2 matrix of cubes without regard to individual cube borders.

The VENDOR shall furnish and install seven (7) RGBHV Splitters, at each of four (4) operator workstation location. Operator Workstations will be supplied by the ENGINEER. The Operator Workstations shall meet the minimum Michigan Department of Information Technology (MDIT) requirements for a CAD/GIS workstation ([http://www.michigan.gov/documents/dit/CADGIS\\_11-2-06\\_177349\\_7.pdf](http://www.michigan.gov/documents/dit/CADGIS_11-2-06_177349_7.pdf) - CCAH CAD/GIS Workstation Standard, 2.3.2010) with dual DVI outputs. The VENDOR shall include, with the bid, required modifications to this standard. Each RGBHV splitter shall be connected to the high-resolution output of the selected operator workstations. The VENDOR shall include, as necessary, video scalers for proper display to the VWD. The RGBHV splitter shall take each of the TMC Operators' selected workstation's video signal and create two signals, one buffered signal for local connectivity and an amplified output for signal

transmission. The buffered output shall be connected into the local operator monitor(s), while the amplified signal shall be sent back to one input of the RGBHV Switch Matrix through high-bandwidth 5-wire RGBHV cables with adequate length and external noise insulation/shield to be furnished and installed by the VENDOR.

## 2.5 VWD MANAGEMENT SOFTWARE

The VENDOR shall supply a VWD management system software package that utilizes a Windows® family platform with the following minimum capabilities:

- Create, edit and save user created layouts;
- Recall and automatically launch the saved layouts to the VDC via RS 232 control from a touch panel;
- Restrict user control by means of a user name and sign-on password;
- A user friendly intuitive thin client Graphical User Interface (GUI); and
- Make the GUI available on any workstation connected to the same network that the VWP is residing on.

*The VENDOR shall furnish and install two (2) VWD Management Workstations. The VWD Management Workstations shall meet the minimum Michigan Department of Information Technology (MDIT) requirements for a CAD/GIS workstation ([http://www.michigan.gov/documents/dit/CADGIS\\_11-2-06\\_177349\\_7.pdf](http://www.michigan.gov/documents/dit/CADGIS_11-2-06_177349_7.pdf) - CCAH CAD/GIS Workstation Standard, 2.3.2010) with dual DVI outputs. The VENDOR shall include, with the bid, required modifications to this standard.*

## 2.6 MEDIA PROCESSOR CONTROLLER (MPC)

The VENDOR shall furnish and install an MPC capable of interfacing with and controlling all devices of this project. The media control system will have the following minimum requirements:

- Shall be LAN accessible via IP address;
- Include sufficient COM ports for all control devices;
- Preferred control protocol shall be via RS232 communications;
- Interface with the VWD to recall presets stored in the VDC;
- Control switching of RGBHV matrix;
- Control channel selection for the tuner;
- Control VCR & DVD transport functions; and
- Shall incorporate GUI for ease of setup.

The primary function of the MPC is to allow operators to select and control the sources that comprise the layouts stored on the VDC. The MPC shall manipulate the various sources available feeding the layouts and it shall control the transport functions of video source devices such as the tuner, VCR and DVD.

## 2.7 TOUCH PANELS

The VENDOR shall provide hardwired and wireless touch panel keypads.

### 2.7.1 HARDWIRED TOUCH-PANEL (HTP)

The VENDOR shall furnish and install a HTP that shall have a 15" diagonal active color LCD screen with 1024 x 768 pixel resolution with  $\pm 60^\circ$  horizontal,  $+45^\circ/-55^\circ$  vertical viewing angle and a resistive touch-screen membrane. The HTP shall act as the primary human machine interface between the operators in the control room and the sources, switching mechanism and display system that comprise the VWD system.

Additional HTPs are required in the Ancillary Display System described in Section 2.15. This unit shall be of modular tilt case design and connect to the media controller via TCP/IP communication protocol over Ethernet and required cabling infrastructure.

### 2.7.2 WIRELESS TOUCH PANEL REMOTE CONTROL (WTP)

The VENDOR shall furnish and install a WTP that shall have a 10.4" diagonal active color LCD

screen with 800x600 pixel resolution and a resistive touch-screen membrane and include a matching docking station and all associated hardware required to make the unit fully functional in this environment. The WTP shall act as the back-up human-machine interface between the manager and the sources, switching mechanism and display system in the control room. This unit shall be of versatile ergonomic design and connect to the media controller via 802.11g Wi-Fi wireless communication protocol.

## 2.8 MPC PROGRAMMING AND TOUCH PANEL PAGES

The VENDOR shall develop and submit to the ENGINEER for review and approval, a functionality document providing a list of all controllable devices of the VWD system with control functions available. This document shall serve as the basis for the creation and installation of the MPC controlling program and GUI for the HTP & WTP and MPC stored web pages. The VENDOR shall develop and submit for review and approval to the ENGINEER an interactive presentation demonstrating how the touch-panel pages flow and what control functions are on each touch panel pages.

## 2.9 RGBHV SWITCH MATRIX (RSM)

The VENDOR shall furnish and install a minimum of one (1) RGBHV Switch Matrix unit. This device shall be modular and expandable meeting the following minimum requirements:

- The RGBHV Switch Matrix shall be equipped with a minimum sixteen (16) RGBHV inputs and sixteen (16) RGBHV outputs. The RSM shall be controlled by TCP/IP over Ethernet to distribute the output displays from seven (7) Operator workstations via two VWP to the peripheral VDA video cubes;
- Equipped with RS232 control port and LED Front Control Panel installed in an equipment rack;
- Each RGBHV input on the RSM shall receive a high resolution RGBHV signal from the RGBHV Splitter connected to an operator workstation; and
- Each RGBHV output on the RSM shall be connected to the 1st RGBHV input on each video cube on the side VDA.

## 2.10 TV TUNER

The VENDOR shall furnish and install four (4) Digital TV tuners (SD tuner type) TV, AM, and FM tuner with the following minimum requirements and features:

- TV input adapter;
- Digital –TV compatible CATV Tuner;
- Stand alone enclosure;
- Rack mount accessories;
- Two (2) F-type coaxial inputs for TV and FM antennas;
- BNC for Analog format video out – NTSC;
- Power - 120 VAC, 60 Hz; and
- The unit shall be provided with a display/adaptor cable, an audio cable and an A/V cable.

VENDOR shall provide and install an AM antenna thereby allowing for the monitoring of broadcasts through the DAS.

## 2.11 DISTRIBUTED AUDIO SYSTEM (DAS)

The VENDOR shall design and furnish a DAS capable of delivering audio signals from the video sources to each of the four (4) operators in the control room. The system shall be designed as to allow each of the operators in the control room the ability to monitor the TV tuner, AM tuner, VCR or DVD player. The DAS shall include headsets that allow the operator/s to listen to the TV tuner and other audio-visual (AV) equipment installed in the system.

## 2.12 RACK SYSTEMS

The VENDOR shall furnish and install all video equipment, with the exception being that equipment to be installed within the operator consoles, in the VDA pedestal supporting the VDA. The VENDOR shall follow proper ventilation and cooling procedures for installation of

equipment as determined by equipment manufacturers. The VENDOR shall provide electrical requirements and power distribution units and/or power supplies to the racks from horizontal and vertical cabling trays suspended from the ceiling. These cabling trays shall be part and parcel of the rack system and shall be paid for as an ancillary portion of the rack system.

### 2.13 CABLE TELEVISION SERVICE

The VENDOR shall integrate into existing cable television service at the VanWagoner building for use in the control room, VDW, and Ancillary Displays utilizing a local CATV provider. The VENDOR shall install any cabling needed. The VENDOR shall provide all cabling and equipment necessary to display and tune CATV on all displays within the TMC as indicated on the plans or identified herein.

## 3.0 EXECUTION

The VENDOR shall furnish and install equipment in accordance with these Technical Special Provisions, equipment supplier recommendations, and the VENDOR submitted design plans and specifications that shall be reviewed and approved by the ENGINEER prior to any work. The VWD equipment items furnished and installed herein shall be connected, terminated, and interconnected as part of the STOC system. All VDA components shall be demonstrated to be functional, operational and compatible with the MDOT/ATMS software being developed by Delcan and software components and subject to approval by the ENGINEER. The VENDOR shall provide all cabling of adequate length, compatible connectors, and ancillary equipment necessary to fully interconnect the VDW with the VDC, and the VDA video cubes, to achieve the functionality required herein.

### 3.1 DESIGN SERVICES

The VENDOR shall design the video wall display system in conjunction with the video wall display manufacturer. These drawings will depict the viewing angles from the operator eye perspective while sitting at the Operator Console Furniture (OCF) to the video wall display assemblies based on the existing console furniture layout for the Control Room.

The VENDOR shall develop a criteria to select video display cubes that provide optimal viewing of VDA images based on a detailed and documented analysis of the room dimensions, existing Operator's console furniture layout, various distances from the operator's eyes to the video wall display and the viewing angles to the video wall display at the proposed height for the VDA support structure. Under no circumstances shall any part of the procurement, construction or installation of the VDA commence prior to approval of the signed and sealed construction plans by the ENGINEER.

### 3.2 DESIGN SUBMITTALS

The VENDOR shall submit to the ENGINEER for review and approval detailed construction plans, which shall be signed and sealed by a registered Architect in the State of Michigan. These plans shall be for the entire video wall space. The Architect shall take into consideration equipment provisions, installation, and layout; to ensure an aesthetic appearance is attained. This includes paying close attention to installation details and covered/blended/color matched any gaps between the control room wall opening and the VWD system.

#### **3.2.1 COMMUNICATIONS INTERCONNECT BLOCK DIAGRAM**

The VENDOR shall submit to the ENGINEER for review and approval a communications interconnect block diagram design produced by a certified Building Industries Consulting Services, International (BICSI) RCDD. This design shall depict the video wall display equipment configuration and interconnections by identifying all of the connections to and between the different video wall assemblies. At a minimum this detailed block diagram shall identify the following subsystem components:

- Video Wall Display;

- RGBHV Video Switch Matrix;
- Video Wall Computer;
- Video Wall Display Control System; and
- TV Tuner, VCR & DVD.

The VENDOR shall clearly identify all cable quantities, lengths and communication signal types at each cable connector end.

### **3.2.2 SHOP DRAWINGS**

The VENDOR shall submit to the ENGINEER for review and approval shop drawings and manufacturer's product specification sheets for all subsystems and components.

The manufacturer's product specification sheets and a line-by-line description of the item's functionality confirming that it meets or exceeds the specification requirements for the VWD shall support all submittals. No products may be fabricated or procured prior to review and acceptance of the subsystem or component shop drawing.

### **3.3 ACCEPTANCE TEST PLAN**

The VENDOR shall submit a detailed Acceptance Test Plan (ATP) to the ENGINEER for review and approval. A draft of the ATP shall be provided 45 calendar days after the Contract Execution is issued to the successful VENDOR. Final ATP shall be submitted to the ENGINEER 10 calendar days after the successful VENDOR receives the ENGINEER'S review comments.

The VENDOR ATP shall at a minimum consider the following:

- Video Display Stand Alone Test Plan;
- Video Wall Sub-System Test Plan; and
- Video Wall System Acceptance Test Plan.

The testing shall include all components that comprise the entire Video Wall System.

The VENDOR's test plans shall test all areas of system functionality described herein and be in accordance with the various equipment manufacturer recommendations.

### **3.4 TRAINING REQUIREMENTS**

The VENDOR shall conduct training classes for the Video Wall Display and ancillary display systems installed as required by this RFP. The VENDOR shall submit to ENGINEER for review and approval the training courses and materials in accordance with these requirements and the manufacturer's recommendations. Within 30 days after final acceptance of Video Walls Systems and start of the Maintenance and Warranty Support, the VENDOR shall provide two (2) training courses covering operation and maintenance of the video wall and associated subsystems. One of the courses shall be designed to train ENGINEER Personnel in the proper operation and general maintenance of the video wall and associated subsystems described in this document. The other course shall be designed to train maintenance technicians in maintaining and repairing the video wall and associated subsystems. Manufacturer's representatives, or VENDOR personnel approved by the ENGINEER, will conduct the training courses.

The length of each course shall be as described below. Each course shall be conducted during normal working hours during contiguous time periods, exclusive of non-working hours and breaks. The course for the ENGINEER shall be presented within 30 days after the beginning of the maintenance support period. The course for maintenance technicians shall be conducted within the last 30 days of the Vendor's maintenance support period. The final course materials and presentation will be updated to address lessons learned during the maintenance support period. At least 30 days prior to commencement of the training courses, the Vendor shall submit detailed

course curriculums including course syllabus, draft handouts, and resumes of the instructors.

The courses shall be conducted at an ENGINEER approved location, and at a time agreed to by the ENGINEER. The training material generated for each course shall contain manuals and other handouts for each attendee, which shall serve not only as subject guidance, but as quick reference material for future use by the students. All course material, in reproducible form, shall

be delivered to the ENGINEER immediately following course completion. Each training course shall be video recorded, using DVD media. The DVD media will be delivered to the ENGINEER at the conclusion of the training. This training shall be done onsite at the STOC.

### **3.4.1 OPERATOR TRAINING**

The Operator Training course shall train ENGINEER Personnel in the use of all features and functions of the video wall system and associated subsystems. This training course shall be a minimum of six (6) hours in duration, and will include "hands-on" activities with the equipment and software. Training groups shall be limited to 10 participants per session, with two sessions scheduled to address morning and afternoon shifts. This training shall be done onsite at the STOC.

### **3.4.2 TECHNICIAN TRAINING**

The technician-training course shall be designed to train technician-level personnel in the detection and correction of malfunctions in the video wall system and associated subsystems. It will also cover the preventive maintenance recommended by the manufacturer. The course will be a minimum of twelve (12) hours in duration. The course content will range from basic equipment operation theory to identification of malfunctions in the equipment through use of diagnostic programs inherent in the maintenance software. The course will include board level troubleshooting. Training class shall be limited to a maximum of 10 participants. The course shall consist of a classroom presentation of the control and monitoring functions, followed by a "hands-on" workshop. A second classroom presentation will cover routine maintenance and troubleshooting procedures. This shall be followed by a "hands-on" workshop wherein personnel troubleshoot simulated faults to the board level. These courses will cover proper installation of all mission critical spare boards and light bulbs provided under this Contract. This training shall be done onsite at the STOC.

### **3.4.3 COURSE MATERIALS**

The VENDOR shall furnish twelve (12) sets of approved training course materials for each training session provided. All materials, including any figures and drawings, shall also be submitted in electronic format on CD-ROM. Twelve (12) copies of the CD-ROM shall be submitted to the ENGINEER and shall adhere to the CD-ROM Requirement and CADD deliverable sections.

## **3.5 GUARANTY AND WARRANTIES REQUIREMENTS**

The following minimum warranties, services and requirements apply to the video wall and associated systems:

**Beginning at the date of FINAL acceptance by the DEPARTMENT, the Vendor shall provide guaranty, warranty and maintenance support as described in ATTACHMENT AI to the RFP. This support shall be available to the DEPARTMENT 24 x 7 x 365 with a maximum 6-hour response time. This guaranty, warranty and maintenance support shall apply to the video display system, ancillary display system and all Vendor furnished components and subsystems including but not limited to all hardware, system, and ancillary items.**

The video wall and associated subsystems are considered by the ENGINEER to be a mission critical part of the STOC and emergency management operations. As such, the VENDOR shall supply a spare parts kit to be furnished as part of the warranty to ensure rapid correction of any warranty problem. The spare parts kit shall be in accordance with the video wall and associated subsystem manufacturer's recommendations. The spare parts kit shall be subject to the review and approval of the ENGINEER. The guaranty and warranty period will apply to the entire video wall and associated subsystems, but not less than FIVE (5) years from final system acceptance and will include the following:

- The VENDOR shall replace any spare parts used during this warranty period at no additional cost to ENGINEER. This requirement includes lightning damage;
- Regularly scheduled preventive maintenance every six months for the (5) five year period (six times); and
- Maintenance wherein no more than 6 hours will elapse between the time of notification by the MDOT and the time repair commences.

### 3.6 FINAL CLEANING

#### 3.6.1 GENERAL

Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations. Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions. Comply with safety standards for cleaning. Do not discharge volatile, harmful, or dangerous materials in the building. Remove waste materials from Project site and dispose of lawfully.

#### 3.6.2 REQUIREMENTS

Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:

- Clean Project site, yard, and grounds, in areas disturbed by delivery of furniture activities, including rubbish, waste material, litter, and other foreign substances brought by Contractor;
- Remove tools, construction equipment, machinery, and surplus material from Project site;
- Clean exposed hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Restore reflective surfaces to their original condition;
- Remove labels that are not permanent;
- Touch up and otherwise repair and restore marred, exposed finishes and surfaces.
- Replace finishes and surfaces that cannot be satisfactorily repaired or restored to the ENGINEER's satisfaction or that already show evidence of repair or restoration;
- Protection Removal: Immediately before final inspection, remove protective wrappings;
- Wipe surfaces of equipment. Remove excess lubrication and other foreign substances;
- Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain; and
- Leave Project clean and ready for occupancy.

### 3.7 GUARANTY AND WARRANTIES REQUIREMENTS

All furnishings and accessories shall perform as specified in manufacturer's literature and brochures or as defined in the RFP, which ever is more stringent. All items supplied from subcontractors must stand up to the same warranty and performance as the original manufacturer. The Warranty period shall not commence until the final acceptance of the project by the ENGINEER. The following warranties, services and requirements apply to the console desk furniture and associated systems:

- The Furniture Manufacturer shall warrant all fixed steel and aluminum structural components to be free from defects for a period of twenty years from the date of project final acceptance by ENGINEER. The manufacturer must warrant all static exterior panels and work surface components to be free from defects for a period of five years from the date of final acceptance by ENGINEER. All adjustable, sliding or hinged mechanism or parts must be warranted to be free from defects in materials for a period of (3) three years. Defective furnishings are to be replaced and assembled at the TBSG Center at no cost to the ENGINEER.
- The VENDOR shall replace any spare parts used during this warranty period at no additional cost to DEPARTMENT.
- The Vendor shall provide three (3) years parts and labor maintenance on all furniture,

hardware, systems, and associated items provided.

### 3.8 GUARANTY AND WARRANTIES REQUIREMENTS

All filling systems shall perform as specified in manufacturer's literature and brochures. All items supplied from subcontractors must stand up to the same warranty and performance as the original manufacturer. The Warranty period shall not commence until the final acceptance of the project by the DEPARTMENT.