

Department of Administration Purchasing Division 2019 Washington Street East Post Office Box 50130 Charleston, WV 25305-0130

## State of West Virginia Master Agreement

Order Date: 07-17-2025

CORRECT ORDER NUMBER MUST APPEAR ON ALL PACKAGES, INVOICES, AND SHIPPING PAPERS. QUESTIONS CONCERNING THIS ORDER SHOULD BE DIRECTED TO THE DEPARTMENT CONTACT.

Order Number:	CMA 0803 0085 DOT2500000036 1	Procurement Folder:	1635845
Document Name:	TRAFFIC SIGNAL PARTS AND EQUIPMENT	Reason for Modification:	
Document Description:	TRAFFIC SIGNAL PARTS AND EQUIPMENT		
Procurement Type:	Central Master Agreement		
Buyer Name:			
Telephone:			
Email:			
Shipping Method:	Best Way	Effective Start Date:	2025-07-15
Free on Board:	FOB Dest, Freight Prepaid	Effective End Date:	2026-07-14

	VENDOR			DEPARTMENT CONTACT
Vendor Customer Code: MOBOTREX INC 1550 Standing Ridge Dr	VS0000014674		Requestor Name: Requestor Phone: Requestor Email:	Joshua Hemsworth 304-414-7339 josh.s.hemsworth@wv.gov
Powhatan US Vendor Contact Phone: Discount Details:	VA 804-893-8412 Extens	23139-8051 sion:		2026 FILE LOCATION
Discount Allowed	Discount Percentage	Discount Days	_	ELE LOCATION
#1 No	0.0000	0		FILE LOOK
#2 No				
#3 No				
#4 No				

INVOICE TO			SHIP TO		
DIVISION OF HIGHWAYS		DIVISION OF HIGHWAYS			
TRAFFIC ENGINEERING DIVISION		TRAFFIC ENG. TSC - SIGNAL	MAINTENANCE		
1900 KANAWHA BLVD E, BLDG 5 RM A550		180 DRY BRANCH DR			
CHARLESTON	WV 25305-0430	CHARLESTON	WV 25306		
us		us			

7/23/25/66

Purchasing Division's File Copy

Total Order Amount:

Open End

E 1/11/25

PURCHASING DIVISION AUTHORIZATION

DATE: 1. 23.23

ELECTRONIC SIGNATURE ON FILE

ATTORNEY GENERAL APPROVAL AS TO FORM

ELECTRONIC SIGNATURE ON FILE

ENCUMBRANCE CERTIFICATION

DATE:

ELECTRONIC SIGNATURE ON FILE

Date Printed: Jul 17, 2025 Order Number: CMA 0803 0085 DOT2500000036 1

Page: 1

FORM ID: WV-PRC-CMA-002 2020/01

#### **Extended Description:**

The Vendor, Mobotrex LLC, agrees to enter with the West Virginia Department of Transportation (WVDOT), West Virginia Division of Highways (WVDOH), into an open-end contract to provide Traffic Signal Parts and Equipment per the Specifications, Terms and Conditions, Bid Requirements, and the Vendor's bid dated 04/08/2025, incorporated herein by reference and made apart hereof.

Line	Commodity Code	Manufacturer	Model No	Unit	Unit Price
1	46161504			EA	5050.000000
	Service From	Service To		Service Cons	tract Amount
				0.00	

Commodity Line Description:

SIEMENS EAGLE YUNEX EPACM60 TRAFFIC CONTROLLERS

**Extended Description:** 

SIEMENS EAGLE YUNEX EPACM60 TRAFFIC CONTROLLERS

Line	Commodity Code	Manufacturer	Model No	Unit	Unit Price
2	46161504			EA	5150,000000
	Service From	Service To		Service Contract Amount	
				0.00	

**Commodity Line Description:** 

SIEMENS EAGLE YUNEX EPACM60 MASTER TRAFFIC CONTROLLERS

**Extended Description:** 

SIEMENS EAGLE YUNEX EPACM60 MASTER TRAFFIC CONTROLLERS

Line	Commodity Code	Manufacturer	Model No	Unit	Unit Price
3	46161504			EA	850.000000
	Service From	Service To		Service Contract Amount	
				0.00	

**Commodity Line Description:** 

REPAIR OF EAGLE SIEMENS EPAC TRAFFIC CONTROLLERS

Extended Description:

REPAIR OF EAGLE SIEMENS EPAC TRAFFIC CONTROLLERS

Line	Commodity Code	Manufacturer	Model No	Unit	Unit Price
4	46161504			EA	16335.000000
	Service From	Service To		Service Cont	ract Amount
				0.00	

Commodity Line Description:

EAGLE TS2 MODEL P38 POLE MOUNTED TRAFFIC SIGNAL CABINET

**Extended Description:** 

EAGLE TS2 MODEL P38 POLE MOUNTED TRAFFIC SIGNAL CABINET

Line	Commodity Code	Manufacturer	Model No	Unit	Unit Price
5	46161504			EA	16575.000000
	Service From	Service To		Service Cont	tract Amount
				0.00	

Commodity Line Description:

EAGLE TS2 SIZE P GROUND MOUNTED TRAFFIC SIGNAL CABINET

**Extended Description:** 

EAGLE TS2 SIZE P GROUND MOUNTED TRAFFIC SIGNAL CABINET WITH ANCHOR BOLTS

 Date Printed:
 Jul 17, 2025
 Order Number:
 CMA
 0803
 0085
 DOT2500000036
 1
 Page:
 2
 FORM ID: WV-PRC-CMA-002
 2020/01

Line	Commodity Code	Manufacturer	Model No	Unit	Unit Price
6	46161504			EA	2495.000000
	Service From	Service To		Service Contract Amount	
				0.00	

Commodity Line Description: ITERIS RZ4 VEHICLE DETECTION VIDEO CAMERA

**Extended Description:** 

ITERIS RZ4 VEHICLE DETECTION VIDEO CAMERA

Line	Commodity Code	Manufacturer	Model No	Unit	Unit Price
8	46161504			EA	15400.000000
	Service From	Service To		Service Contract Amount	
				0.00	

Commodity Line Description: ITERIS VEHICLE DETECTION CARD

**Extended Description:** 

ITERIS VEHICLE DETECTION CARD

Line	Commodity Code	Manufacturer	Model No	Unit	Unit Price	
10	46161504			EA	650.000000	
	Service From	Service To		Service Con	Service Contract Amount	
				0.00		

Commodity Line Description: TOMAR PREEMPTION CONTROL SYSTEMS DETECTORS

**Extended Description:** 

TOMAR PREEMPTION CONTROL SYSTEMS DETECTORS

Line	Commodity Code	Manufacturer	Model No	Unit	Unit Price
11	46161504			EA	2650.000000
	Service From	Service To		Service Contract Amor	
				0.00	

Commodity Line Description: TOMAR PREEMPTION CONTROL SYSTEMS DETECTION CARDS

**Extended Description:** 

TOMAR PREEMPTION CONTROL SYSTEMS DETECTION CARDS

Line	Commodity Code	Manufacturer	Model No	Unit	Unit Price	
12	46161504			EA	450.000000	
	Service From	Service To		Service Conf	ice Contract Amount	
		·		0.00		

Commodity Line Description: REPAIR OF TOMAR PREEMPTION CONTROL SYSTEMS CARDS

**Extended Description:** 

REPAIR OF TOMAR PREEMPTION CONTROL SYSTEMS CARDS

Line	Commodity Code	Manufacturer	Model No	Unit	Unit Price	
13	46161504			EA	1550.000000	
	Service From	Service To		Service Con	ervice Contract Amount	
				0.00		

Commodity Line Description: ENCOM PULSE S RADIO TRANSCEIVERS

**Extended Description:** 

**ENCOM PULSE S RADIO TRANSCEIVERS** 

Date Printed: Jul 17, 2025 Order Number: CMA 0803 0085 DOT2500000036 1 Page: 3 FORM ID: WV-PRC-CMA-002 2020/01

 Line
 Commodity Code
 Manufacturer
 Model No
 Unit
 Unit Price

 14
 46161504
 EA
 4000.000000

 Service From
 Service To
 Service Contract Amount

 0.00
 0.00

Commodity Line Description: ITERIS VANTAGE RADIUS RADAR SENSOR KIT

#### **Extended Description:**

ITERIS VANTAGÉ RADIUS RADAR SENSOR KIT

Line	Commodity Code	Manufacturer	Model No	Unit	Unit Price
15	46161504			EA	15800.000000
	Service From	Service To		Service Contract Amount	
				0.00	

Commodity Line Description: ITERIS VANTAGE RADIUS VEHICLE DETECTION CCU KIT

### **Extended Description:**

ITERIS VANTAGE RADIUS VEHICLE DETECTION CCU KIT

Date Printed: Jul 17, 2025 Order Number: CMA 0803 0085 DOT2500000036 1 Page: 4 FORM ID: WV-PRC-CMA-002 2020/01

#### **GENERAL TERMS AND CONDITIONS:**

- 1. CONTRACTUAL AGREEMENT: Issuance of an Award Document signed by the Purchasing Division Director, or his designee, and approved as to form by the Attorney General's office constitutes acceptance by the State of this Contract made by and between the State of West Virginia and the Vendor. Vendor's signature on its bid, or on the Contract if the Contract is not the result of a bid solicitation, signifies Vendor's agreement to be bound by and accept the terms and conditions contained in this Contract.
- 2. **DEFINITIONS:** As used in this Solicitation/Contract, the following terms shall have the meanings attributed to them below. Additional definitions may be found in the specifications included with this Solicitation/Contract.
- 2.1. "Agency" or "Agencies" means the agency, board, commission, or other entity of the State of West Virginia that is identified on the first page of the Solicitation or any other public entity seeking to procure goods or services under this Contract.
- 2.2. "Bid" or "Proposal" means the vendors submitted response to this solicitation.
- 2.3. "Contract" means the binding agreement that is entered into between the State and the Vendor to provide the goods or services requested in the Solicitation.
- 2.4. "Director" means the Director of the West Virginia Department of Administration, Purchasing Division.
- 2.5. "Purchasing Division" means the West Virginia Department of Administration, Purchasing Division.
- 2.6. "Award Document" means the document signed by the Agency and the Purchasing Division, and approved as to form by the Attorney General, that identifies the Vendor as the contract holder.
- 2.7. "Solicitation" means the official notice of an opportunity to supply the State with goods or services that is published by the Purchasing Division.
- 2.8. "State" means the State of West Virginia and/or any of its agencies, commissions, boards, etc. as context requires.
- 2.9. "Vendor" or "Vendors" means any entity submitting a bid in response to the Solicitation, the entity that has been selected as the lowest responsible bidder, or the entity that has been awarded the Contract as context requires.

3. CONTRACT TERM; RENEWAL; EXTENSION: The term of this Contract shall be determined in accordance with the category that has been identified as applicable to this Contract below:
✓ Term Contract
Initial Contract Term: The Initial Contract Term will be for a period of One (1) year  The Initial Contract Term becomes effective on the effective start date listed on the first page of this Contract, identified as the State of West Virginia contract cover page containing the signatures of the Purchasing Division, Attorney General, and Encumbrance clerk (or another page identified as), and the Initial Contract Term ends on the effective end date also shown on the first page of this Contract.
Renewal Term: This Contract may be renewed upon the mutual written consent of the Agency, and the Vendor, with approval of the Purchasing Division and the Attorney General's office (Attorney General approval is as to form only). Any request for renewal should be delivered to the Agency and then submitted to the Purchasing Division thirty (30) days prior to the expiration date of the initial contract term or appropriate renewal term. A Contract renewal shall be in accordance with the terms and conditions of the original contract. Unless otherwise specified below, renewal of this Contract is limited to
Alternate Renewal Term – This contract may be renewed for successive year periods or shorter periods provided that they do not exceed the total number of months contained in all available renewals. Automatic renewal of this Contract is prohibited. Renewals must be approved by the Vendor, Agency, Purchasing Division and Attorney General's office (Attorney General approval is as to form only)
Delivery Order Limitations: In the event that this contract permits delivery orders, a delivery order may only be issued during the time this Contract is in effect. Any delivery order issued within one year of the expiration of this Contract shall be effective for one year from the date the delivery order is issued. No delivery order may be extended beyond one year after this Contract has expired.
Fixed Period Contract: This Contract becomes effective upon Vendor's receipt of the notice to proceed and must be completed withindays.

Fixed Period Contract with Renewals: This Contract b	
receipt of the notice to proceed and part of the Contract mor	
specifications must be completed within	_ days. Upon completion of the
work covered by the preceding sentence, the vendor agrees	that:
the contract will continue for	years;
periods or shorter periods provided that they do not excontained in all available renewals. Automatic renewal Renewals must be approved by the Vendor, Agency, P. General's Office (Attorney General approval is as to for	of this Contract is prohibited. urchasing Division and Attorney
One-Time Purchase: The term of this Contract shall run Document until all of the goods contracted for have been de Contract extend for more than one fiscal year.	
Construction/Project Oversight: This Contract become date listed on the first page of this Contract, identified as the cover page containing the signatures of the Purchasing Encumbrance clerk (or another page identified as and continues until the project for which the vendor is provided.	e State of West Virginia contract Division, Attorney General, and
Other: Contract Term specified in	
4. AUTHORITY TO PROCEED: Vendor is authorized to be the date of encumbrance listed on the front page of the Award Do "Fixed Period Contract with Renewals above. If either "Fixed Period Contract" or "Fixed Period Contract" or "Fixed Period Contract" vendor must not begin work until it receives a separate notice to proceed will then be incorporated into the Contract via change or that work commenced.	cument unless either the box for "has been checked in Section 3 ct with Renewals" has been checked, proceed from the State. The notice to
<ol><li>QUANTITIES: The quantities required under this Contra with the category that has been identified as applicable to this</li></ol>	act shall be determined in accordance s Contract below.
✓ Open End Contract: Quantities listed in this Solicitation approximations only, based on estimates supplied by the Age that the Contract shall cover the quantities actually ordered for Contract, whether more or less than the quantities shown.	ency. It is understood and agreed
Service: The scope of the service to be provided will be a specifications included herewith.	nore clearly defined in the
Combined Service and Goods: The scope of the service provided will be more clearly defined in the specifications in	and deliverable goods to be cluded herewith.

Revised 10/17/2024

One-Time Purchase: This Contract is for the purchase of a set quantity of goods that are identified in the specifications included herewith. Once those items have been delivered, no additional goods may be procured under this Contract without an appropriate change order approved by the Vendor, Agency, Purchasing Division, and Attorney General's office.
Construction: This Contract is for construction activity more fully defined in the specifications.
6. EMERGENCY PURCHASES: The Purchasing Division Director may authorize the Agency to purchase goods or services in the open market that Vendor would otherwise provide under this Contract if those goods or services are for immediate or expedited delivery in an emergency. Emergencies shall include, but are not limited to, delays in transportation or an unanticipated increase in the volume of work. An emergency purchase in the open market, approved by the Purchasing Division Director, shall not constitute of breach of this Contract and shall not entitle the Vendor to any form of compensation or damages. This provision does not excuse the State from fulfilling its obligations under a One-Time Purchase contract.
7. REQUIRED DOCUMENTS: All of the items checked in this section must be provided to the Purchasing Division by the Vendor as specified:
LICENSE(S) / CERTIFICATIONS / PERMITS: In addition to anything required under the Section of the General Terms and Conditions entitled Licensing, the apparent successful Vendo shall furnish proof of the following licenses, certifications, and/or permits upon request and in a form acceptable to the State. The request may be prior to or after contract award at the State's sole discretion.
The apparent successful Vendor shall also furnish proof of any additional licenses or certifications contained in the specifications regardless of whether or not that requirement is listed above.

Revised 10/17/2024

8. INSURANCE: The apparent successful Vendor shall furnish proof of the insurance identified by a checkmark below prior to Contract award. The insurance coverages identified below must be maintained throughout the life of this contract. Thirty (30) days prior to the expiration of the insurance policies, Vendor shall provide the Agency with proof that the insurance mandated herein has been continued. Vendor must also provide Agency with immediate notice of any changes in its insurance policies, including but not limited to, policy cancelation, policy reduction, or change in insurers. The apparent successful Vendor shall also furnish proof of any additional insurance requirements contained in the specifications prior to Contract award regardless of whether that insurance requirement is listed in this section.

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Commercial General Liability Insurance in at least an amount of: \$1,000,000 occurrence.	per per
Automobile Liability Insurance in at least an amount of:	per occurrence.
Professional/Malpractice/Errors and Omission Insurance in at least an amper occurrence. Notwithstanding the forgoing, Vendor's a list the State as an additional insured for this type of policy.	
Commercial Crime and Third Party Fidelity Insurance in an amount of: _ per occurrence.	
Cyber Liability Insurance in an amount of:	_ per occurrence.
Builders Risk Insurance in an amount equal to 100% of the amount of the C	ontract.
Pollution Insurance in an amount of: per occurrence.	
Aircraft Liability in an amount of: per occurrence.	

Vendor must maintain:

- 9. WORKERS' COMPENSATION INSURANCE: Vendor shall comply with laws relating to workers compensation, shall maintain workers' compensation insurance when required, and shall furnish proof of workers' compensation insurance upon request.
- 10. VENUE: All legal actions for damages brought by Vendor against the State shall be brought in the West Virginia Claims Commission. Other causes of action must be brought in the West Virginia court authorized by statute to exercise jurisdiction over it.

11. LIQUIDATED DAMAGES: This clause shall in no way be considered exclusive and shall not limit the State or Agency's right to pursue any other available remedy. Vendor shall pay

liquidated damages in the amount specified below or as described in the specifications:		
	for	·
Liquidated Dam	ages Contained in the Specifications.	
□ Liquidated Dam	ages Are Not Included in this Contract.	

- 12. ACCEPTANCE: Vendor's signature on its bid, or on the certification and signature page, constitutes an offer to the State that cannot be unilaterally withdrawn, signifies that the product or service proposed by vendor meets the mandatory requirements contained in the Solicitation for that product or service, unless otherwise indicated, and signifies acceptance of the terms and conditions contained in the Solicitation unless otherwise indicated.
- 13. PRICING: The pricing set forth herein is firm for the life of the Contract, unless specified elsewhere within this Solicitation/Contract by the State. A Vendor's inclusion of price adjustment provisions in its bid, without an express authorization from the State in the Solicitation to do so, may result in bid disqualification. Notwithstanding the foregoing, Vendor must extend any publicly advertised sale price to the State and invoice at the lower of the contract price or the publicly advertised sale price.
- 14. PAYMENT IN ARREARS: Payments for goods/services will be made in arrears only upon receipt of a proper invoice, detailing the goods/services provided or receipt of the goods/services, whichever is later. Notwithstanding the foregoing, payments for software maintenance, licenses, or subscriptions may be paid annually in advance.
- 15. PAYMENT METHODS: Vendor must accept payment by electronic funds transfer and P-Card. (The State of West Virginia's Purchasing Card program, administered under contract by a banking institution, processes payment for goods and services through state designated credit cards.)
- 16. TAXES: The Vendor shall pay any applicable sales, use, personal property or any other taxes arising out of this Contract and the transactions contemplated thereby. The State of West Virginia is exempt from federal and state taxes and will not pay or reimburse such taxes.

- 17. ADDITIONAL FEES: Vendor is not permitted to charge additional fees or assess additional charges that were not either expressly provided for in the solicitation published by the State of West Virginia, included in the Contract, or included in the unit price or lump sum bid amount that Vendor is required by the solicitation to provide. Including such fees or charges as notes to the solicitation may result in rejection of vendor's bid. Requesting such fees or charges be paid after the contract has been awarded may result in cancellation of the contract.
- 18. FUNDING: This Contract shall continue for the term stated herein, contingent upon funds being appropriated by the Legislature or otherwise being made available. In the event funds are not appropriated or otherwise made available, this Contract becomes void and of no effect beginning on July 1 of the fiscal year for which funding has not been appropriated or otherwise made available. If that occurs, the State may notify the Vendor that an alternative source of funding has been obtained and thereby avoid the automatic termination. Non-appropriation or non-funding shall not be considered an event of default.
- 19. CANCELLATION: The Purchasing Division Director reserves the right to cancel this Contract immediately upon written notice to the vendor if the materials or workmanship supplied do not conform to the specifications contained in the Contract. The Purchasing Division Director may also cancel any purchase or Contract upon 30 days written notice to the Vendor in accordance with West Virginia Code of State Rules § 148-1-5.2.b.
- 20. TIME: Time is of the essence regarding all matters of time and performance in this Contract.
- 21. APPLICABLE LAW: This Contract is governed by and interpreted under West Virginia law without giving effect to its choice of law principles. Any information provided in specification manuals, or any other source, verbal or written, which contradicts or violates the West Virginia Constitution, West Virginia Code, or West Virginia Code of State Rules is void and of no effect.
- 22. COMPLIANCE WITH LAWS: Vendor shall comply with all applicable federal, state, and local laws, regulations and ordinances. By submitting a bid, Vendor acknowledges that it has reviewed, understands, and will comply with all applicable laws, regulations, and ordinances.
  - SUBCONTRACTOR COMPLIANCE: Vendor shall notify all subcontractors providing commodities or services related to this Contract that as subcontractors, they too are required to comply with all applicable laws, regulations, and ordinances. Notification under this provision must occur prior to the performance of any work under the contract by the subcontractor.
- 23. ARBITRATION: Any references made to arbitration contained in this Contract, Vendor's bid, or in any American Institute of Architects documents pertaining to this Contract are hereby deleted, void, and of no effect.

- 24. MODIFICATIONS: This writing is the parties' final expression of intent. Notwithstanding anything contained in this Contract to the contrary no modification of this Contract shall be binding without mutual written consent of the Agency, and the Vendor, with approval of the Purchasing Division and the Attorney General's office (Attorney General approval is as to form only). Any change to existing contracts that adds work or changes contract cost, and were not included in the original contract, must be approved by the Purchasing Division and the Attorney General's Office (as to form) prior to the implementation of the change or commencement of work affected by the change.
- 25. WAIVER: The failure of either party to insist upon a strict performance of any of the terms or provision of this Contract, or to exercise any option, right, or remedy herein contained, shall not be construed as a waiver or a relinquishment for the future of such term, provision, option, right, or remedy, but the same shall continue in full force and effect. Any waiver must be expressly stated in writing and signed by the waiving party.
- 26. SUBSEQUENT FORMS: The terms and conditions contained in this Contract shall supersede any and all subsequent terms and conditions which may appear on any form documents submitted by Vendor to the Agency or Purchasing Division such as price lists, order forms, invoices, sales agreements, or maintenance agreements, and includes internet websites or other electronic documents. Acceptance or use of Vendor's forms does not constitute acceptance of the terms and conditions contained thereon.
- 27. ASSIGNMENT: Neither this Contract nor any monies due, or to become due hereunder, may be assigned by the Vendor without the express written consent of the Agency, the Purchasing Division, the Attorney General's office (as to form only), and any other government agency or office that may be required to approve such assignments.
- 28. WARRANTY: The Vendor expressly warrants that the goods and/or services covered by this Contract will: (a) conform to the specifications, drawings, samples, or other description furnished or specified by the Agency; (b) be merchantable and fit for the purpose intended; and (c) be free from defect in material and workmanship.
- 29. STATE EMPLOYEES: State employees are not permitted to utilize this Contract for personal use and the Vendor is prohibited from permitting or facilitating the same.
- 30. PRIVACY, SECURITY, AND CONFIDENTIALITY: The Vendor agrees that it will not disclose to anyone, directly or indirectly, any such personally identifiable information or other confidential information gained from the Agency, unless the individual who is the subject of the information consents to the disclosure in writing or the disclosure is made pursuant to the Agency's policies, procedures, and rules. Vendor further agrees to comply with the Confidentiality Policies and Information Security Accountability Requirements, set forth in <a href="https://www.state.wv.us/admin/purchase/privacy">www.state.wv.us/admin/purchase/privacy</a>.

31. YOUR SUBMISSION IS A PUBLIC DOCUMENT: Vendor's entire response to the Solicitation and the resulting Contract are public documents. As public documents, they will be disclosed to the public following the bid/proposal opening or award of the contract, as required by the competitive bidding laws of West Virginia Code §§ 5A-3-1 et seq., 5-22-1 et seq., and 5G-1-1 et seq. and the Freedom of Information Act West Virginia Code §§ 29B-1-1 et seq.

DO NOT SUBMIT MATERIAL YOU CONSIDER TO BE CONFIDENTIAL, A TRADE SECRET, OR OTHERWISE NOT SUBJECT TO PUBLIC DISCLOSURE.

Submission of any bid, proposal, or other document to the Purchasing Division constitutes your explicit consent to the subsequent public disclosure of the bid, proposal, or document. The Purchasing Division will disclose any document labeled "confidential," "proprietary," "trade secret," "private," or labeled with any other claim against public disclosure of the documents, to include any "trade secrets" as defined by West Virginia Code § 47-22-1 et seq. All submissions are subject to public disclosure without notice.

32. LICENSING: In accordance with West Virginia Code of State Rules § 148-1-6.1.e, Vendor must be licensed and in good standing in accordance with any and all state and local laws and requirements by any state or local agency of West Virginia, including, but not limited to, the West Virginia Secretary of State's Office, the West Virginia Tax Department, West Virginia Insurance Commission, or any other state agency or political subdivision. Obligations related to political subdivisions may include, but are not limited to, business licensing, business and occupation taxes, inspection compliance, permitting, etc. Upon request, the Vendor must provide all necessary releases to obtain information to enable the Purchasing Division Director or the Agency to verify that the Vendor is licensed and in good standing with the above entities.

SUBCONTRACTOR COMPLIANCE: Vendor shall notify all subcontractors providing commodities or services related to this Contract that as subcontractors, they too are required to be licensed, in good standing, and up-to-date on all state and local obligations as described in this section. Obligations related to political subdivisions may include, but are not limited to, business licensing, business and occupation taxes, inspection compliance, permitting, etc. Notification under this provision must occur prior to the performance of any work under the contract by the subcontractor.

- 33. ANTITRUST: In submitting a bid to, signing a contract with, or accepting a Award Document from any agency of the State of West Virginia, the Vendor agrees to convey, sell, assign, or transfer to the State of West Virginia all rights, title, and interest in and to all causes of action it may now or hereafter acquire under the antitrust laws of the United States and the State of West Virginia for price fixing and/or unreasonable restraints of trade relating to the particular commodities or services purchased or acquired by the State of West Virginia. Such assignment shall be made and become effective at the time the purchasing agency tenders the initial payment to Vendor.
- 34. VENDOR NON-CONFLICT: Neither Vendor nor its representatives are permitted to have any interest, nor shall they acquire any interest, direct or indirect, which would compromise the performance of its services hereunder. Any such interests shall be promptly presented in detail to the Agency.

35. VENDOR RELATIONSHIP: The relationship of the Vendor to the State shall be that of an independent contractor and no principal-agent relationship or employer-employee relationship is contemplated or created by this Contract. The Vendor as an independent contractor is solely liable for the acts and omissions of its employees and agents. Vendor shall be responsible for selecting, supervising, and compensating any and all individuals employed pursuant to the terms of this Solicitation and resulting contract. Neither the Vendor, nor any employees or subcontractors of the Vendor, shall be deemed to be employees of the State for any purpose whatsoever. Vendor shall be exclusively responsible for payment of employees and contractors for all wages and salaries, taxes, withholding payments, penalties, fees, fringe benefits, professional liability insurance premiums, contributions to insurance and pension, or other deferred compensation plans, including but not limited to, Workers' Compensation and Social Security obligations, licensing fees, etc. and the filing of all necessary documents, forms, and returns pertinent to all of the foregoing.

Vendor shall hold harmless the State, and shall provide the State and Agency with a defense against any and all claims including, but not limited to, the foregoing payments, withholdings, contributions, taxes, Social Security taxes, and employer income tax returns.

- 36. INDEMNIFICATION: The Vendor agrees to indemnify, defend, and hold harmless the State and the Agency, their officers, and employees from and against: (1) Any claims or losses for services rendered by any subcontractor, person, or firm performing or supplying services, materials, or supplies in connection with the performance of the Contract; (2) Any claims or losses resulting to any person or entity injured or damaged by the Vendor, its officers, employees, or subcontractors by the publication, translation, reproduction, delivery, performance, use, or disposition of any data used under the Contract in a manner not authorized by the Contract, or by Federal or State statutes or regulations; and (3) Any failure of the Vendor, its officers, employees, or subcontractors to observe State and Federal laws including, but not limited to, labor and wage and hour laws.
- 37. NO DEBT CERTIFICATION: In accordance with West Virginia Code §§ 5A-3-10a and 5-22-1(i), the State is prohibited from awarding a contract to any bidder that owes a debt to the State or a political subdivision of the State. By submitting a bid, or entering into a contract with the State, Vendor is affirming that (1) for construction contracts, the Vendor is not in default on any monetary obligation owed to the state or a political subdivision of the state, and (2) for all other contracts, neither the Vendor nor any related party owe a debt as defined above, and neither the Vendor nor any related party are in employer default as defined in the statute cited above unless the debt or employer default is permitted under the statute.
- 38. CONFLICT OF INTEREST: Vendor, its officers or members or employees, shall not presently have or acquire an interest, direct or indirect, which would conflict with or compromise the performance of its obligations hereunder. Vendor shall periodically inquire of its officers, members and employees to ensure that a conflict of interest does not arise. Any conflict of interest discovered shall be promptly presented in detail to the Agency.

39. REPORTS: Vendor shall provide the Agency and/or the Purchasing Division with following reports identified by a checked box below:	i the
Such reports as the Agency and/or the Purchasing Division may request. Requested may include, but are not limited to, quantities purchased, agencies utilizing the contract contract expenditures by agency, etc.	
Quarterly reports detailing the total quantity of purchases in units and dollars, along listing of purchases by agency. Quarterly reports should be delivered to the Purchasing via email at <a href="mailto:purchasing.division@wv.gov">purchasing.division@wv.gov</a> .	with a Division

- 40. BACKGROUND CHECK: In accordance with W. Va. Code § 15-2D-3, the State reserves the right to prohibit a service provider's employees from accessing sensitive or critical information or to be present at the Capitol complex based upon results addressed from a criminal background check. Service providers should contact the West Virginia Division of Protective Services by phone at (304) 558-9911 for more information.
- 41. PREFERENCE FOR USE OF DOMESTIC STEEL PRODUCTS: Except when authorized by the Director of the Purchasing Division pursuant to W. Va. Code § 5A-3-56, no contractor may use or supply steel products for a State Contract Project other than those steel products made in the United States. A contractor who uses steel products in violation of this section may be subject to civil penalties pursuant to W. Va. Code § 5A-3-56. As used in this section:
  - a. "State Contract Project" means any erection or construction of, or any addition to, alteration of or other improvement to any building or structure, including, but not limited to, roads or highways, or the installation of any heating or cooling or ventilating plants or other equipment, or the supply of and materials for such projects, pursuant to a contract with the State of West Virginia for which bids were solicited on or after June 6, 2001.
  - b. "Steel Products" means products rolled, formed, shaped, drawn, extruded, forged, cast, fabricated or otherwise similarly processed, or processed by a combination of two or more or such operations, from steel made by the open heath, basic oxygen, electric furnace, Bessemer or other steel making process.
  - c. The Purchasing Division Director may, in writing, authorize the use of foreign steel products if:
    - 1. The cost for each contract item used does not exceed one tenth of one percent (.1%) of the total contract cost or two thousand five hundred dollars (\$2,500.00), whichever is greater. For the purposes of this section, the cost is the value of the steel product as delivered to the project; or
    - The Director of the Purchasing Division determines that specified steel materials are not produced in the United States in sufficient quantity or otherwise are not reasonably available to meet contract requirements.

42. PREFERENCE FOR USE OF DOMESTIC ALUMINUM, GLASS, AND STEEL: In Accordance with W. Va. Code § 5-19-1 et seq., and W. Va. CSR § 148-10-1 et seq., for every contract or subcontract, subject to the limitations contained herein, for the construction, reconstruction, alteration, repair, improvement or maintenance of public works or for the purchase of any item of machinery or equipment to be used at sites of public works, only domestic aluminum, glass or steel products shall be supplied unless the spending officer determines, in writing, after the receipt of offers or bids, (1) that the cost of domestic aluminum, glass or steel products is unreasonable or inconsistent with the public interest of the State of West Virginia, (2) that domestic aluminum, glass or steel products are not produced in sufficient quantities to meet the contract requirements, or (3) the available domestic aluminum, glass, or steel do not meet the contract specifications. This provision only applies to public works contracts awarded in an amount more than fifty thousand dollars (\$50,000) or public works contracts that require more than ten thousand pounds of steel products.

The cost of domestic aluminum, glass, or steel products may be unreasonable if the cost is more than twenty percent (20%) of the bid or offered price for foreign made aluminum, glass, or steel products. If the domestic aluminum, glass or steel products to be supplied or produced in a "substantial labor surplus area", as defined by the United States Department of Labor, the cost of domestic aluminum, glass, or steel products may be unreasonable if the cost is more than thirty percent (30%) of the bid or offered price for foreign made aluminum, glass, or steel products. This preference shall be applied to an item of machinery or equipment, as indicated above, when the item is a single unit of equipment or machinery manufactured primarily of aluminum, glass or steel, is part of a public works contract and has the sole purpose or of being a permanent part of a single public works project. This provision does not apply to equipment or machinery purchased by a spending unit for use by that spending unit and not as part of a single public works project.

All bids and offers including domestic aluminum, glass or steel products that exceed bid or offer prices including foreign aluminum, glass or steel products after application of the preferences provided in this provision may be reduced to a price equal to or lower than the lowest bid or offer price for foreign aluminum, glass or steel products plus the applicable preference. If the reduced bid or offer prices are made in writing and supersede the prior bid or offer prices, all bids or offers, including the reduced bid or offer prices, will be reevaluated in accordance with this rule.

43. INTERESTED PARTY SUPPLEMENTAL DISCLOSURE: W. Va. Code § 6D-1-2 requires that for contracts with an actual or estimated value of at least \$1 million, the Vendor must submit to the Agency a disclosure of interested parties prior to beginning work under this Contract. Additionally, the Vendor must submit a supplemental disclosure of interested parties reflecting any new or differing interested parties to the contract, which were not included in the original pre-work interested party disclosure, within 30 days following the completion or termination of the contract. A copy of that form is included with this solicitation or can be obtained from the WV Ethics Commission. This requirement does not apply to publicly traded companies listed on a national or international stock exchange. A more detailed definition of interested parties can be obtained from the form referenced above.

- 44. PROHIBITION AGAINST USED OR REFURBISHED: Unless expressly permitted in the solicitation published by the State, Vendor must provide new, unused commodities, and is prohibited from supplying used or refurbished commodities, in fulfilling its responsibilities under this Contract.
- 45. VOID CONTRACT CLAUSES: This Contract is subject to the provisions of West Virginia Code § 5A-3-62, which automatically voids certain contract clauses that violate State law.
- 46. ISRAEL BOYCOTT: Bidder understands and agrees that, pursuant to W. Va. Code § 5A-3-63, it is prohibited from engaging in a boycott of Israel during the term of this contract.

**DESIGNATED CONTACT:** Vendor appoints the individual identified in this Section as the Contract Administrator and the initial point of contact for matters relating to this Contract.

(Printed Name and Title) Jason Atteberry	
(Address) 1550 Standing Ridge Drive	
(Phone Number) / (Fax Number) 804-893-8412	
(email address) Jatteberry@mobotrex.com	

CERTIFICATION AND SIGNATURE: By signing below, or submitting documentation through wvOASIS, I certify that: I have reviewed this Solicitation/Contract in its entirety; that I understand the requirements, terms and conditions, and other information contained herein; that this bid, offer or proposal constitutes an offer to the State that cannot be unilaterally withdrawn: that the product or service proposed meets the mandatory requirements contained in the Solicitation/Contract for that product or service, unless otherwise stated herein; that the Vendor accepts the terms and conditions contained in the Solicitation, unless otherwise stated herein; that I am submitting this bid, offer or proposal for review and consideration; that this bid or offer was made without prior understanding, agreement, or connection with any entity submitting a bid or offer for the same material, supplies, equipment or services; that this bid or offer is in all respects fair and without collusion or fraud; that this Contract is accepted or entered into without any prior understanding, agreement, or connection to any other entity that could be considered a violation of law; that I am authorized by the Vendor to execute and submit this bid, offer, or proposal, or any documents related thereto on Vendor's behalf; that I am authorized to bind the vendor in a contractual relationship; and that to the best of my knowledge, the vendor has properly registered with any State agency that may require registration.

By signing below. I further certify that I understand this Contract is subject to the provisions of West Virginia Code § 5A-3-62, which automatically voids certain contract clauses that violate State law; and that pursuant to W. Va. Code 5A-3-63, the entity entering into this contract is prohibited from engaging in a boycott against Israel.

Mobotrex LLC	
(Company) Jason Atteberry	
(Signature of Authorized Representative)	_
Jason Atteberry Inside Sales Representative 7/15/2025	
(Printed Name and Title of Authorized Representative) (Date)	
804-893-8412 804-379-1016	
(Phone Number) (Fax Number)	
Jatteberry@mobotrex.com	
(Email Address)	

#### **SPECIFICATIONS**

- PURPOSE AND SCOPE: The West Virginia Purchasing Division is soliciting bids on behalf of the West Virginia Division of Highways (WVDOH) to establish an open-end contract for Parts and Equipment for existing Traffic Signal Systems (TSS) and Intelligent Transportation Systems (ITS) infrastructure.
- DEFINITIONS: The terms listed below shall have the meanings assigned to them below. Additional definitions can be found in section 2 of the General Terms and Conditions.
  - 2.1 "Contract Item" or "Contract Items" means the list of items identified in Section 3.1 below and on the Pricing Pages.
  - 2.2 "Pricing Pages" means the schedule of prices, estimated order quantity, and totals contained in WVOASIS or attached hereto as Exhibit A, and used to evaluate the Solicitation responses.
  - 2.3 "Solicitation" means the official notice of an opportunity to supply the State with goods or services that is published by the Purchasing Division.
  - 2.4 "LED" means Light Emitting Diode.
  - 2.5 "MMU" means Malfunctioning Monitoring Unit.
  - 2.6 "TS1" means NEMA Standards Publication TS 1-2003 (R2008) Traffic Controller Assemblies for Traffic Signal Systems [updated in 2003, revised in 2008].
  - 2.7 "TS2" means NEMA Standards Publication TS 2-2003 (R2008) Traffic Controller Assemblies for Traffic Signal Systems [updated in 2003, revised in 2008].
  - 2.8 "RFO" means Request for Quotation.
  - 2.9 "ASTM" means American Society for Testing and Materials.
  - 2.10 "AASHTO" means American Association of State Highway Transportation Officials.
  - 2.11 "NEMA" means National Electrical Manufacturers Association.

- 2.12 "Equivalent" means equal in value, function or quality.
- 2.13 The symbol " %" means percent which means one part in every hundred.
- 2.14 "SEPAC®" is a registered trade name (trademark) for a traffic signal control software program owned by Siemens/Eagle.
- 2.15 "TACTICS®" is a registered trade name (trademark) for a traffic signal control software program owned by Siemens/Eagle.
- 2.16 "SEMARC®" is a registered trade name (trademark) for a traffic signal control software program owned by Siemens/Eagle.
- 2.17 "BIU" means Bus Interface Unit.
- 2.18 "RC" means Resistive/Capacitive.
- 2.19 "DC" means Direct Current.
- 2.20 "AC" means Alternating Current.
- 2.21 "AWG" means American Wire Gauge.
- 2.22 "PVC" means PolyVinyl Chloride.
- 2.23 "SDLC" means Synchronous Data Link Control.
- 2.24 "HACR" means Heating, Air-Conditioning and Refrigeration.
- 2.25 "UL" means Underwriters Laboratories.
- 2.26 "VDC" means Volts Direct Current.
- 2.27 "VAC" means Volts Alternating Current.
- 2.28 "GFI" means Ground-Fault Interrupting.

- 2.29 "ETL" means Environmental Testing Laboratories.
- 2.30 "EMTRAC" is a registered trade name (trademark) for a traffic signal control software program and system owned by STC, Inc.
- 2.31 "FPM" means Flashes Per Minute.
- 2.32 "I/O" means Input/Output.
- 2.33 "ARIES®" is a registered trade name (trademark) for a traffic signal control software program owned by Econolite.
- 2.34 "CENTRACS®" is a registered trade name (trademark) for a traffic signal control software program owned by Econolite.
- 2.35 "RTV" is a designation for high-temperature resistive silicone gasket material.
- 2.36 "GE" means General Electric.
- 2.37 "MUTCD" means Manual on Uniform Traffic Control Devices (2009 Edition with Revisions 1 and 2, May 2012).
- 2.38 "EMI" means ElectroMagnetic Interference.
- 2.39 "RFI" means Radio Frequency Interference.
- 2.40 "FCC" mean Federal Communications Commission.
- 2.41 "GHZ" means GigaHertZ, a measurement of frequency.
- 2.42 "MHZ" means MegaHertZ, a measurement of frequency.
- 2.43 "CPU" means Central Processing Unit.
- 2.44 "MPH" means Miles Per Hour.
- 2.45 "dB" means decibel, a unit of measuring sound power.

2.46 "VSWR" means Voltage Standing Wave Ratio.

2.47 "BUS" is a designation for a metal strip or bar.

#### 3. GENERAL REQUIREMENTS:

3.1 Contract Items and Mandatory Requirements: Vendor shall provide Agency with the Contract Items listed below on an open-end and continuing basis. Contract Items must meet or exceed the mandatory requirements as shown below. The specifications of this RFQ and or any WVDOH Standards referenced in and/or attached to this RFQ may include references to specific recognized "industry standard" specifications which are issued by third parties, such as the American Society for Testing and Materials (ASTM) and the American Association of State and Highway Transportation Officials (AASHTO). Such specifications are protected by strict copyright restrictions and cannot be published as part of this RFQ. The ability to access such specifications shall be considered a mandatory requirement for participation in this RFQ process as a Vendor or as a supplier to the Vendor, as applicable.

### 3.1.1 Contract Item #1 - Siemens Eagle (Yunex Traffic) Traffic Controller or Equal

3.1.1.1 Contract Item #1 shall be a Siemens Eagle (Yunex Traffic)
EPACM60 series or Equal, 16-phase, NEMA TS2 Type 2 traffic
controller with Siemens SEPAC® software or equivalent that is
backwards compatible with NEMA TS1 and TS2, Type 1 controller
cabinets. The controller must have an Ethernet port. An equal
controller is defined as a controller that can be interchanged with the
existing controllers using the SEPAC® or TACTICS® software at
100% capacity and without changes to the existing software and
controllers.

### 3.1.2 Contract Item #2 - Siemens Eagle Master (Yunex Traffic) Traffic Controller or Equal

3.1.2.1 Contract Item #2 shall be a Siemens Eagle (Yunex Traffic) EPAC M60 series or Equal, 16-phase, NEMA TS2 Type 2, closed-loop, master traffic controller with Siemens SEMARC® software or equivalent that is backwards compatible with NEMA TS1 and TS2, Type 1 controller cabinets. The controller must have an Ethernet port. Controller must have either a radio connection or hard-wired connection or equivalent, per purchase order. An equal controller is defined as a controller that can be interchanged with the existing controllers using the SEMARC® software at 100% capacity and without changes to the existing software and controllers

Commented [EDL1]: Updated for new upgraded equipment

Commented [EDL2]: Updated for new upgraded equipment

### 3.1.3 Contract Item #3 - Repairs of Siemens Eagle (Yunex Traffic) Traffic Signal Controllers or Equal

3.1.3.1 Contract Item #3 shall be for the repair of Siemens Eagle (Yunex Traffic) EPAC series or Equal traffic controllers and master traffic controllers compatible with NEMA TS1, TS2, Type 1 and TS2, Type 2 cabinets. The repaired items shall be repaired to new working conditions and with a description of the repair and certificate of repair confirming it was repaired and verifying the date of repair. Repairs must be made by a Siemens Eagle or Equal certified factory workshop and by a technician with a manufacturer's certification that they are certified to work on these items.

#### 3.1.4 Contract Item #4 – Siemens Eagle (Yunex Traffic) Traffic Control Systems TS2 Traffic Signal Cabinet or Equal - Pole Mounted

3.1.4.1 Contract Item # 4 shall be a Siemens Eagle (Yunex Traffic) Traffic Control Systems (a division of Mobotrex) Size M36 (Model #EL704S2 or equivalent) with two (2) pole-mount brackets (UL26).

Cabinets: The following are minimum design requirements for a TS2 Type I or Type 2 traffic control cabinet assembly. As a minimum, the cabinet assembly shall meet all applicable sections of the NEMA Standard publication No.TS2-2003 (Revised 2008) or most recent version. Where differences occur, this specification shall govern.

Cabinet Design and Construction: The cabinet shall be constructed from type 5052-H32 aluminum with a minimum thickness of 0.090 to 0.125 inches. The cabinet shall have the following features:

- The cabinet shall be designed and manufactured with materials that will allow rigid mounting, whether intended for pole, base or pedestal mounting.
- 2. The cabinet must not flex on its mount.
- A rain channel shall be incorporated into the design of the main door opening to prevent liquids from entering the enclosure.

- The cabinet door opening must be a minimum of 80 percent of the front surface of the cabinet.
- A stiffener plate shall be welded across the inside of the main door to prevent flexing.
- Top of the cabinet shall incorporate a slope toward the rear to prevent rain accumulation.
- 7. The cabinet shall be supplied with a natural aluminum
- Sufficient care shall be taken in handling to ensure that scratches are minimized.
- All surfaces shall be free from weld flash. Welds shall be smooth, neatly formed, free from cracks, blowholes and other irregularities.
- 10. All sharp edges shall be ground smooth.
- All seams that are not welded shall be sealed with RTV sealant or equivalent material on the interior of the cabinet.
- 12. All cabinets shall be supplied with a minimum of two (2) removable shelves manufactured from 5052-H32aluminum. Shelf shall be a minimum of 10 inches deep. Shelves to be designed to accommodate a minimum 50-pound loading. The shelf shall have horizontal slots at the rear and vertical slots at the front of the turned down side flange. The shelf shall be installed securely at the rear edge of the shelf on cabinet rear sidewall mounting studs, then lowering the shelf on the front sidewall mounting studs. The front edge of the shelf shall have holes punched every 6 inches to accommodate tiewrapping of cables/harnesses.
- 13. A minimum of two (2) sets of vertical "C" channels shall be mounted on each interior wall of the cabinet for the purpose of mounting the cabinet components. The channels shall accommodate spring mounted not studs. All mounting rails shall extend to within 7 inches of the top and bottom of the cabinet. Sidewall rail spacing shall be no more than 9.0 inches center-to-center. Rear wall rail spacing shall be 19.0 inches center-to-center.
- 14. The main door and police door-in-door shall close against a weatherproof and dust-proof, closed-cell neoprene gasket seal. The gasket material for the main door shall be a minimum of 0.250 inches thick by 1.00 inch wide. The gasket material for the police door shall be a minimum of 0.250 inches thick by 0.500 inches wide. The gaskets shall be permanently bonded to the cabinet.

- 15. The cabinet shall be equipped with a louvered air entrance. The air inlet shall be large enough to allow sufficient air flow per the rated fan capacity. Louvers must satisfy the NEMA rod entry test for 3R ventilated enclosures. A non-corrosive, vermin- and insect-proof, removable air filter shall be secured to the air entrance. The filter shall fit snugly against the cabinet door wall. The roof of the cabinet shall incorporate an exhaust plenum with a vent screen. Perforations in the vent screen shall not exceed 0.125 inches in diameter.
- 16. The main door of the cabinet shall be equipped with a three-point latching mechanism. The handle on the main door of the cabinet shall be manufactured from cast aluminum or stainless steel. The handle shall include a hasp for the attachment of an optional padlock. The cabinet door handle shall rotate counterclockwise to open. The handle shall not extend beyond the perimeter of the main door at any time.
- 17. The lock assembly shall be positioned so that the handle shall not cause any interference with the key when opening the cabinet door.
- 18. The main door hinge shall be a one-piece, continuous piano hinge with a stainless-steel pin running the entire length of the door. The hinge shall be attached in such a manner that no rivets or bolts are exposed.
- 19. The main door shall include a mechanism capable of holding the door open at approximately 90, and/or (165 or 180) degrees under windy conditions. The main door shall be equipped with a standard Corbin No. 2 lock or exact equivalent.
- 20. Minimum of two keys shall be supplied.

The police door-in-door shall be provided with a treasury-type lock Corbin No. R357SGS or exact equivalent and have a minimum of one key. Each cabinet shall be of sufficient size to accommodate all equipment. At a minimum, the cabinet sizes are as follows:

#### POLE MOUNTED EAGLE CABINETS

51.00 INCHES HEIGHT 36.00 INCHES WIDTH 17.00 INCHES DEPTH

Main door shall incorporate a shroud to cover the filtered louvered openings. The assembly is secured on the interior of the door over the filtered Louvers. The shroud is louvered downward and matches the door louvers. All enclosures must be constructed, approved and marked in accordance with the requirements for Type I Industrial Control Panel Enclosures contained in UL 508A, the Standard for Industrial Control Panels. Enclosure must meet NEMA 3R rating requirements and be marked with UL approval relations.

Terminals and Facilities/Main panel Design and Construction: The main panel shall be constructed from 5052-H32 brushed aluminum of 0.125 inch minimum thickness and installed so as to minimize flexing when plug-in components are installed. All main panels are provided with a mounting mechanism which allows access to all wiring on the rear of the panel without the removal of any cabinet shelves. Lowering of the main panel can be accomplished. Complete removal can be accomplished by use of hand tools.

#### The cabinet shall have the following features:

- The terminals and facilities shall be available as a
  minimum in the following configuration: Sixteen load
  switch sockets, six flash transfer relay sockets, one
  flasher socket, 2-BIU sockets (expandable to 4), one
  16-channel detector rack (expandable to 4) with one
  BIU, and one Type-16 MMU.
- 2. All load switch and flash transfer relay socket reference designators shall be silk-screen labeled on the front and rear of the main panel to match drawing designations. Socket pins shall be marked for reference on the rear of the panel. A maximum of eight load switch sockets may be positioned horizontally or stacked in two rows on the main panel.
- Main panels requiring more than eight load switch sockets shall be mounted in one horizontal or two vertical rows. All load switches shall be supported by a bracket, extending at least half the length of the load
- 4. The 16 load switch position main panels shall have all field wires contained on two rows of horizontally mounted terminal blocks. The upper row shall be wired for the pedestrian and overlap field terminations.

The lower row shall be reserved for phase one through phase eight vehicle field terminations.

 All field output circuits shall be terminated on a nonfused barrier type terminal block with a minimum rating of 10 amps.

 All field input/output (I/O) terminals shall be identified by permanent alphanumerical labels. All labels shall use standard nomenclature per the NEMA TS2 specification.

7. It shall be possible to flash either the yellow or red indication on any vehicle movement and to change from one color indication to the other by use of a screwdriver. Field terminal blocks shall be wired to use four positions per vehicle or overlap phase (green, yellow, and red, flash).

8. It shall not be necessary to de-buss field terminal blocks for flash programming. The main panel shall contain at least one flasher socket (silk screen labeled) capable of operating a 15-amp, 2-pole, NEMA solidstate flasher. The flasher shall be supported by a bracket, extending at least half its length.

 One RC network shall be wired in parallel with each group of three flash-transfer relays and any other relay coils.

 All logic-level, NEMA-controller and Malfunction Management Unit input and output terminations on the main panel shall be permanently labeled.

 Cabinet prints shall identify the function of each terminal position.

 At a minimum, three 20-position terminal blocks shall be provided at the top of the main panel to provide access to the controller unit's programmable and nonprogrammable I/O.

 Terminal blocks for DC signal interfacing shall have a number 6-32 x 7/32-inch screw as minimum.

All main panel wiring shall conform to the following wire size exactly and color:

- Green/Walk load switch output brown wire 14 gauge
- 2. Yellow load switch output yellow wire 14 gauge
- Red/Don't Walk load switch red wire output 14 gauge
- 4. MMU (other than AC power) violet wire 22 gauge

- 5. Controller I/O blue wire 22 gauge
- AC Line (power panel to black wire main panel) 8 gauge
- 7. AC Line (main panel) black wire 10 gauge
- AC Neutral (power panel to white wire main panel) -8 gauge
- 9. AC Neutral (main panel) white wire 10 gauge
- 10. Earth ground (power panel) green wire 8 gauge
- 11. Logic ground gray wire 22 gauge
- 12. Flash programming orange wire
- Flasher terminal Black wire red or yellow field terminal - 14 gauge

All wiring, 14 AWG and smaller, shall conform to MIL-W-16878/1, type B/N, 600V, 19-strand tinned copper. The wire shall have a minimum of 0.010 inches thick PVC insulation with clear nylon jacket and rated to 105 degrees Celsius. All wiring shall have the following features:

- All 12 AWG and larger wires shall have UL listed THHN/THWN-2 90 degrees Celsius, 600V, 0.020 inches thick PVC insulation and clear nylon jacketing.
- Connecting cables shall be sleeved in a braided nylon mesh or poly jacketed.
- The use of exposed tie wraps or interwoven cables is unacceptable.
- All Terminals and Facilities configurations shall be provided with BIU wiring assignments consistent with NEMA TS2-2003 specifications.
- All Terminals and Facilities configurations shall be provided with sufficient RS-485 Port 1 communication cables to allow for the intended operation of that cabinet.
- Each SDLC communication cable connector shall be a 15-pin metal shell D subminiature type. The cable shall be a shielded cable suitable for RS-485 communications.
- All main panels shall be pre-wired for a Type-16 Malfunction Management Unit.
- 8. All wiring shall be neat in appearance.
- All cabinet wiring shall be continuous from its point of origin to its termination point.
- 10. Butt type connections or splices are not acceptable.

- All connecting cables and wire runs shall be secured by mechanical clamps. Stick-on type clamps are not acceptable.
- 12. The grounding system in the cabinet shall be divided into three separate circuits (AC Neutral, Earth Ground, and Logic Ground). These ground circuits shall be connected together at a single point as outlined in the NEMA TS2 Standard. The main panel shall incorporate a relay, to be designed as K1, to remove +24 VDC from the common side of the load switches when the intersection is placed into mechanical flash. The relay shall have a momentary push button located on the relay to apply power to the load switch inputs for ease of troubleshooting.
- 13. All pedestrian push button inputs from the field to the controller shall be opto-isolated through the BIU and operate at 12 VAC. All wire (size 16 AWG or smaller) at solder joints shall be hooked or looped around the eyelet or terminal block post prior to soldering to ensure circuit integrity. Lap joint soldering is not acceptable.

Power Panel Design and Construction: The power panel shall be integrated into the main panel and be located on the lower right portion of the cabinet. The power panel shall be wired to provide the necessary filtered power to the load switches, flasher(s), and power bus assembly. The power components shall be equipped with a removable plastic front cover for protection. The design will allow a technician to access the main and auxiliary breakers without removing the protective front cover. The power panel portion of the main panel shall include the following components:

- A minimum of one (1) 40-amp main breaker for 16
  position cabinets. This breaker shall supply power to
  the controller, MMU, signals, cabinet power supply
  and auxiliary panels. Breakers shall be at minimum,
  a thermal magnetic type, UL listed for HACR service,
  with a minimum of 10,000 amp interrupting capacity.
- A minimum of one (1) 15-amp auxiliary breaker.
   This breaker shall supply power to the fan, light and GFI utility outlet.
- A HESCO/RLS, Inc. model HE1750 or exact approved equivalent surge arrester.
- A 50-amp, 125 VAC radio interference line filter.

- A normally open, 50-amp, Solid State Relay (SSR).
   Shall be Crydom Model Number HA4875H or approved equal.
- A minimum of one (1) 8-position neutral bus bar capable of connecting three #12 wires per position.
- A minimum of one (1) 6-position ground bus bar capable of connecting three #12 wires per position.
- A minimum of one (1) NEMA type 5-15R GFI utility outlet.
- The cabinet shall have a roll-out/swing-out concealable shelf/platform that can be used as platform for a laptop computer or other tools when the cabinet door is opened.

Power and SDLC Bus Panel: The Power and SDLC BUS Panel shall be manufactured from 0.090 to 0.125 inch thick, 5052-H32 aluminum. It shall provide a central location to supply filtered power for the controller, malfunction management unit, cabinet power supply, and all auxiliary equipment. It shall have the following features:

- It shall include the SDLC Bus connecting cables wired to a barrier type terminal block. As an alternative, SDLC Bus connections may be made via an SDLC Hub Assembly.
- All cabinet equipment requiring filtered power to operate shall be hardwired directly to the supplied barrier type terminal blocks on the Power and SDLC BUS Panel.
- All AC+ power sources shall be protected with a removable plastic cover plate.
- The SDLC Hub Assembly shall accommodate all D-Subminiature Female 15 (DB15) connectors as required, and a minimum of five (5) SLDC connections shall be provided.

Auxiliary Cabinet Equipment: The cabinet shall be provided with a thermostatically controlled (adjustable between 55-160 degrees Fahrenheit) ventilation fan in the top of the cabinet plenum. The fan plate shall be removable with the use of hand tools for serviceability. A minimum of one, maximum of two, exhaust fans shall be provided. The fan shall be abil bearing type fan and shall be capable of drawing a minimum of 100 cubic feet of air per minute (CFM). The Fan/Thermostat assembly shall be connected to the Power panel by means of a 4-position plug-in cable or hardwired to an appropriate circuit breaker.

A LED cabinet lighting system may be used to illuminate the internal structure of the cabinet assembly. The LED cabinet lighting shall be a Luxembright LED module Model #770-W0013 and approved power supply or approved equivalent. This lighting system shall be wired directly to a door active switch mounted near the top of the door. Alternately, a fluorescent lighting fixture shall be mounted on the inside top of the cabinet near the front edge. The fixture shall be rated to accommodate at minimum a F15T8 lamp operated from a normal power factor UL or ETL listed ballast. The lamp shall be wired on the power panel or to a door activated switch mounted near the top of the door.

A re-sealable print pouch shall be mounted to the door of the cabinet. The pouch shall be of sufficient size to accommodate one complete set of folded cabinet prints. A minimum of two sets of complete and accurate cabinet drawings shall be supplied with each cabinet.

<u>Vehicle Detection:</u> A minimum of one Detector rack shall be provided in each cabinet. The detector rack shall have the following features:

- Shall support up to 16 channels of loop detection (either eight 2 channel detectors or four 4 channel detectors), two 2channel preemption devices and one BlU.
- All connections to the back of the detector racks to the detector cards shall be soldered to a 44 terminal, double row, 3.962 mm (0.156 in.) contact spacing, Cinch Jones card edge connector 50-44A-30M, or equivalent centered vertically for each detector module.
- All designations shall correspond to the requirements of the TS2-2003 specification. Card guides shall be provided on the top and bottom of the card rack for each connector position.
- 4. Each cabinet shall contain a detector interface panel per each detector rack for the purpose of connecting field loops and vehicle detector amplifiers. The panels shall be manufactured from 0.090 or 0.125 inch thick 5052- H32 Aluminum and use barrier type terminal blocks.
- One 16-position interface panel shall be provided for a 16channel rack cabinet. The interface panel shall be secured to the left wall of the cabinet.
- Each interface panel shall allow for the connection of a minimum of eight independent field detectors.
- In the case of loop detection, a ground bus terminal shall be provided between each loop pair terminal to provide a

termination for the loop lead-in cable ground wire. Each interface panel shall provide a barrier style terminal block to terminate the field wires for up to two 2-channel preemption devices

 Lightning protection device mounting holes shall be provided to accommodate the potential usage of an EDCO LCA-6, lightning protection device.

 A cable consisting of 20 AWG twisted pair wires shall be wired directly from the interface panel to the detector rack. The twisted pair wires shall be color coded red and white wire. No connectors shall be used to connect the interface panel to the detector rack.

10. All termination points shall be identified by a unique number and silk screened on the panel. Each detector rack shall accommodate rack mountable preemption devices such as EMTRAC or Opticom.

<u>Cabinet Test Switches and Police Panel</u>: A test switch panel shall be mounted on the inside of the main door. The test switch panel shall provide as a minimum the following:

- SIGNALS ON/OFF SWITCH In the OFF position, power shall be removed from signal heads in the intersection. The controller shall continue to operate. When in the OFF position, the MMU shall not conflict or require reset.
- AUTO/FLASH SWITCH When in the flash position, power shall be maintained to the controller and the intersection shall be placed in flash. The controller shall not be stop timed when in flash. Wired according to NEMA-TS2-2003, the MMU forces the controller to initiate the start-up sequence when exiting flash.

STOP TIME SWITCH - When applied, the controller shall be stop timed in the current interval.

4. CONTROL EQUIPMENT POWER ON/OFF - This switch shall control the controller, MMU, and cabinet power supply AC power. The TS2 controller to be provided with the cabinet assembly shall provide vehicle and pedestrian call inputs from its keyboard while in the standard status display.

The police door switch panel shall contain the following:

 SIGNALS ON/OFF SWITCH - In the OFF position, power shall be removed from signal heads within the intersection. The controller shall continue to operate. When in the OFF position, the MMU shall not conflict or require reset.

- AUTO/FLASH SWITCH When in the flash position, power shall be maintained to the controller and the intersection shall be placed in flash. The controller shall be stop timed when in flash. Wired according to NEMA-TS2-1998, the MMU forces the controller to initiate the start-up sequence when exiting flash.
- AUTO/MANUAL SWITCH Cabinet wiring shall include provisions for an AUTO/MANUAL switch and a momentary push button or hand cord. The AUTO/MANUAL switch and push button or hand cord shall not be provided unless it is called for in the CUSTOMER SPECIFICATION.

All toggle type switches shall be heavy duty and rated 15 amps minimum. Single- or double-pole switches may be provided, as required. Any exposed terminals or switch solder points shall be covered with a non-flexible shield to prevent accidental contact. All switch functions must be permanently and clearly labeled. All wire routed to the police door-in-door and test switch push button panel shall be adequately protected against damage from repetitive opening and closing of the main door.

#### **Auxiliary Devices:**

Load Switches: Load switches shall be solid state and shall conform to the requirements of Section 6.2 of the NEMA TS2 Standard. Signal load switches shall have a minimum rating of 10 amperes at 120 VAC for an incandescent lamp load. The front of the load switch shall be provided with three indicators to show the input signal from the controller to the load switch. Load switches shall be dedicated per phase. The use of load switches for other partial phases is not acceptable. The full complement of load switches shall be supplied with each cabinet to allow for maximum phase utilization for which the cabinet is designed.

<u>Flashers</u>: The flasher shall be solid state and shall conform to the requirements of section 6.3 of the NEMA TS2 Standard. Flashing of field circuits for the purpose of intersection flash shall be accomplished by a separate flasher. The flasher shall be rated at 15 amperes, double pole with a nominal flash rate of 60 FPM. A full complement of flasher shall be provided.

Flash Transfer Relays: All flash transfer relays shall meet the requirements of Section 6.4 of the NEMA TS2 Standard. The coil of the flash transfer relay must be de-energized for flash operation.

The full complement of relays shall be supplied with each cabinet to allow for maximum phase utilization for which the cabinet is designed.

Malfunction Management Units (MMU): Each cabinet assembly shall be supplied with one MMU as defined by the requirements of Section 4 of the NEMA TS2 Standard. Malfunction Management Units shall be a Type 16. The MMU shall be Model MMU-16 (EDI Model MMU-16LE) or approved equal.

Bus Interface Units (BlU): All BlUs shall meet the requirements of Section 8 of the NEMA TS2 Standard. A full complement of BlUs meeting Section 5.3.1.4 if the NEMA Publication No. TS2-2003 shall be supplied per cabinet. Bus Interface Units shall be supplied with each cabinet to allow for maximum phase and function utilization for which the cabinet is designed. A minimum of 3 BlUs shall be provided for each cabinet. Each BlU shall include power on, transmit and valid data indicators - all indicators shall be LEDs. A Type 1 Interface shall be as defined by Section 5.3, the controller interface shall conform to Standard Publication No. TS2-2003.

Cabinet Power Supply: The cabinet power supply shall meet the requirements of Section 5.3.5 of the NEMA TS2 Standard. The cabinet power supply shall provide LED indicators for the line frequency, 12 VDC, 12 VAC, and 24 VDC outputs. The cabinet power supply shall provide (on the front panel) jack plugs for access to the +24 VDC for test purposes. Cabinet power supply shall be provided with each cabinet assembly per manufacturer's specifications and be wired directly to the Power Bus Assembly via a 12-pin Molex Robotic type connector Model# 54332-1270 or exact equivalent.

<u>Testing:</u> Each controller and cabinet assembly shall be tested as a complete entity under signal load for a minimum of 48 hours. Each assembly shall be delivered with a signed document detailing the final cabinet tests performed. The cabinet shall be assembled and tested by the controller manufacturer or authorized local distributor to ensure proper component integration and operation.

Warranty: The controller and Malfunction Management Unit shall be warranted by the manufacturer against mechanical and electrical defects for a period of two years from date of shipment. The manufacturer's warranty shall be supplied in writing with

each cabinet and controller. Second party extended warranties are not acceptable. The cabinet assembly and all other components shall be warranted for a period of one year from date of shipment. Any defects shall be corrected by the manufacturer at no cost to the owner.

#### 3.1.5 Contract Items #5 — Siemens Eagle (Yunex Traffic) Traffic Control Systems TS 2 Traffic Signal Cabinet or Equal -Ground Mounted

3.1.5.1 Contract Item # 5 shall be a Siemens Eagle (Yunex Traffic) Traffic Control Systems (a division of Mobotrex) Size P (Model #EL712 or equivalent) with one (1) set [of four (4)] anchor bolts (UA242).

Cabinets: The following are minimum design requirements for a TS2 Type 1 or Type 2 traffic control cabinet assembly. As a minimum, the cabinet assembly shall meet all applicable sections of the NEMA Standard publication No.TS2-2003 (Revised 2008) or most recent version. Where differences occur, this specification shall govern.

<u>Cabinet Design and Construction:</u> The cabinet shall be constructed from type 5052-H32 aluminum with a minimum thickness of 0.090 to 0.125 inches. The cabinets shall have the following features:

- The cabinet shall be designed and manufactured with materials that will allow rigid mounting, whether intended for pole, base or pedestal mounting.
- 2. The cabinet must not flex on its mount.
- A rain channel shall be incorporated into the design of the main door opening to prevent liquids from entering the enclosure.
- The cabinet door opening must be a minimum of 80 percent of the front surface of the cabinet.
- A stiffener plate shall be welded across the inside of the main door to prevent flexing.
- door to prevent flexing.
  Top of the cabinet shall incorporate a slope toward the rear to prevent rain accumulation.
- 7. The cabinet shall be supplied with a natural aluminum finish.
- Sufficient care shall be taken in handling to ensure that scratches are minimized.

- All surfaces shall be free from weld flash. Welds shall be smooth, neatly formed, free from cracks, blowholes and other irregularities.
- 10. All sharp edges shall be ground smooth.
- All seams that are not welded shall be sealed with RTV sealant or equivalent material on the interior of the cabinet.
- 12. All cabinets shall be supplied with a minimum of two (2) removable shelves manufactured from 5052-H32aluminum. The shelf shall be a minimum of 10 inches deep. Shelves to be designed to accommodate a minimum 50-pound loading. The shelf shall have horizontal slots at the rear and vertical slots at the front of the turned downside flange. The shelf shall be installed securely at the rear edge of the shelf on cabinet rear sidewall mounting studs, then lowering the shelf on the front sidewall mounting studs. The front edge of the shelf shall have holes punched every 6 inches to accommodate tie-wrapping of cables/harnesses.
- 13. A minimum of two (2) sets of vertical "C" channels shall be mounted on each interior wall of the cabinet for the purpose of mounting the cabinet components. The channels shall accommodate spring mounted nuts or studs. All mounting rails shall extend to within 7 inches of the top and bottom of the cabinet. Sidewall rail spacing shall be no more than 9.0 inches center-to-center. Rear wall rail spacing shall be 19.0 inches center-to-center.
- 14. The main door and police door-in-door shall close against a weatherproof and dust-proof, closed-cell neoprene gasket seal. The gasket material for the main door shall be a minimum of 0.250 inches thick by 1.00 inch wide. The gasket material for the police door shall be a minimum of 0.250 inches thick by 0.500 inches wide. The gaskets shall be permanently bonded to the cabinet.
- 15. The cabinet shall be equipped with a louvered air entrance. The air inlet shall be large enough to allow sufficient air flow per the rated fan capacity. Louvers must satisfy the NEMA rod entry test for 3R ventilated enclosures. A non-corrosive, vermin- and insect-proof, removable air filter shall be secured to the air entrance. The filter shall filt snugly against the cabinet door wall. The roof of the cabinet shall incorporate an exhaust plenum with a vent screen. Perforations in the vent screen shall not exceed 0.125 inches in diameter.
- 16. The main door of the cabinet shall be equipped with a three-point latching mechanism. The handle on the main door of the cabinet shall be manufactured from cast aluminum or stainless steel. The handle shall include a hasp for the

attachment of an optional padlock. The cabinet door handle shall rotate counterclockwise to open. The handle shall not extend beyond the perimeter of the main door at any time.

- 17. The lock assembly shall be positioned so that the handle shall not cause any interference with the key when opening the cabinet door.
- 18. The main door hinge shall be a one-piece, continuous piano hinge with a stainless-steel pin running the entire length of the door. The hinge shall be attached in such a manner that no rivets or bolts are exposed.
- 19. The main door shall include a mechanism capable of holding the door open at approximately 90, and/or (165 or 180) degrees under windy conditions. The main door shall be equipped with a standard Corbin No. 2 lock or exact equivalent.
- 20. Minimum of two keys shall be supplied.

The police door-in-door shall be provided with a treasury-type lock Corbin No. R357SGS or exact equivalent and have a minimum of one key. All base mounted cabinets require anchor bolts to properly secure the cabinet to its base. The cabinet flange for securing the anchor bolts shall not protrude outward from the bottom of the cabinet. Four (4) anchor bolts shall be required for proper installation. Each cabinet shall be of sufficient size to accommodate all equipment. At a minimum, the cabinet sizes are as follows:

## **GROUND MOUNTED EAGLE CABINETS**

56.00 INCHES HEIGHT 44.00 INCHES WIDTH 25.00 INCHES DEPTH

Main doors shall incorporate a shroud to cover the filtered louvered openings. The assembly is secured on the interior of the door over the filtered Louvers. The shroud is louvered downward and matches the door louvers. All enclosures must be constructed, approved and marked in accordance with the requirements for Type I Industrial Control Panel Enclosures contained in UL 508A, the Standard for Industrial Control Panels. Enclosure must meet NEMA 3R rating requirements and be marked with UL approval sticker.

Terminals and Facilities/Main panel Design and Construction: The main panel shall be constructed from 5052-H32 brushed aluminum of 0.125 inches minimum thickness and installed so as to minimize flexing when plug-in components are installed. All main panels are provided with a mounting mechanism which allows access to all wiring on the rear of the panel without the removal of any cabinet shelves. Lowering of the main panel can be accomplished. Complete removal can be accomplished by the use of hand tools.

#### The cabinet shall have the following features:

- The terminals and facilities shall be available as a minimum in the following configuration: Sixteen load switch sockets, six flash transfer relay sockets, one flasher socket, 2- BIU sockets (expandable to 4), one 16-channel detector rack (expandable to 4) with one BIU, and one Type-16 MMU.
- 2. All load switch and flash transfer relay socket reference designators shall be silk-screen labeled on the front and rear of the main panel to match drawing designations. Socket pins shall be marked for reference on the rear of the panel. A maximum of eight load switch sockets may be positioned horizontally or stacked in two rows on the main panel.
- Main panels requiring more than eight load switch sockets shall be mounted in one horizontal or two vertical rows. All load switches shall be supported by a bracket, extending at least half the length of the load switch.
- 4. The 16-load switch position main panels shall have all field wires contained on two rows of horizontally mounted terminal blocks. The upper row shall be wired for the pedestrian and overlap field terminations. The lower row shall be reserved for phase one through phase eight vehicle field terminations.
- All field output circuits shall be terminated on a non-fused barrier type terminal block with a minimum rating of 10 amps.
- All field input/output (I/O) terminals shall be identified by permanent alphanumerical labels. All labels shall use standard nomenclature per the NEMA TS2 specification.
- 7. It shall be possible to flash either the yellow or red indication on any vehicle movement and to change from one color indication to the other by use of a screwdriver. Field terminal blocks shall be wired to use four positions per vehicle or overlap phase (green, yellow, and red, flash).
- It shall not be necessary to de-buss field terminal blocks for flash programming. The main panel shall contain at least one flasher socket (silk screen labeled) capable of operating a 15-

- amp, 2-pole, NEMA solid-state flasher. The flasher shall be supported by a bracket, extending at least half its length.
- One RC network shall be wired in parallel with each group of three flash-transfer relays and any other relay coils.
- All logic-level, NEMA-controller and Malfunction Management Unit input and output terminations on the main panel shall be permanently labeled.
- Cabinet prints shall identify the function of each terminal position.
- 12. At a minimum, three 20-position terminal blocks shall be provided at the top of the main panel to provide access to the controller unit's programmable and non-programmable I/O.
- Terminal blocks for DC signal interfacing shall have a number 6-32 x 7/32-inch screw as minimum.

All main panel wiring shall conform to the following wire size and color:

- 1. Green/Walk load switch output brown wire 14 gauge
- 2. Yellow load switch output yellow wire 14 gauge
- 3. Red/Don't Walk load switch red wire output 14 gauge
- 4. MMU (other than AC power) violet wire 22 gauge
- 5. Controller I/O blue wire 22 gauge
- 6. AC Line (power panel to black wire main panel) 8 gauge
- 7. AC Line (main panel) black wire 10 gauge
- 8. AC Neutral (power panel to white wire main panel) 8 gauge
- 9. AC Neutral (main panel) white wire 10 gauge
- 10. Earth ground (power panel) green wire 8 gauge
- 11. Logic ground gray wire 22 gauge
- 12. Flash programming orange wire
- 13. Flasher terminal Black wire red or yellow field terminal 14

All wiring, 14 AWG and smaller, shall conform to MIL-W-16878/1, type B/N, 600V, 19-strand tinned copper. The wire shall have a minimum of 0.010 inches thick PVC insulation with clear nylon jacket and rated to 105 degrees Celsius. All wiring shall have the following features:

- All 12 AWG and larger wire shall have UL listed THHN/THWN-2 90 degrees Celsius, 600V, 0.020 inches thick PVC insulation and clear nylon jacketed.
- Connecting cables shall be sleeved in a braided nylon mesh or poly jacketed.

- The use of exposed tie wraps or interwoven cables is unacceptable.
- All Terminals and Facilities configurations shall be provided with BIU wiring assignments consistent with NEMA TS2-2003 specifications.
- All Terminals and Facilities configurations shall be provided with sufficient RS-485 Port 1 communication cables to allow for the intended operation of that cabinet.
- Each SDLC communication cable connector shall be a 15-pin metal shell D subminiature type. The cable shall be a shielded cable suitable for RS-485 communications.
- All main panels shall be pre-wired for a Type-16 Malfunction Management Unit.
- 8. All wiring shall be neat in appearance.
- All cabinet wiring shall be continuous from its point of origin to its termination point.
- 10. Butt type connections or splices are not acceptable.
- All connecting cables and wire runs shall be secured by mechanical clamps. Stick-on type clamps are not acceptable.
- 12. The grounding system in the cabinet shall be divided into three separate circuits (AC Neutral, Earth Ground, and Logic Ground). These ground circuits shall be connected together at a single point as outlined in the NEMA TS2 Standard. The main panel shall incorporate a relay, to be designed as K1, to remove +24 VDC from the common side of the load switches when the intersection is placed into mechanical flash. The relay shall have a momentary push button located on the relay to apply power to the load switch inputs for ease of troubleshooting.
- 13. All pedestrian push button inputs from the field to the controller shall be opto-isolated through the BIU and operate at 12 VAC. All wire (size 16 AWG or smaller) at solder joints shall be hooked or looped around the eyelet or terminal block post prior to soldering to ensure circuit integrity. Lap joint soldering is not acceptable.

<u>Power Panel Design and Construction</u>: The power panel shall be integrated into the main panel and be located on the lower right portion of the cabinet. The power panel shall be wired to provide the necessary filtered power to the load switches, flasher(s), and power bus assembly. The power components shall be equipped with a removable plastic front cover for protection. The design will allow a technician to access the main and auxiliary breakers without removing the protective front cover.

The power panel portion of the main panel shall include the following components:

- A minimum of one (1) 40-amp main breaker for 16 position cabinets. This breaker shall supply power to the controller, MMU, signals, cabinet power supply and auxiliary panels. Breakers shall be at minimum, a thermal magnetic type, UL listed for HACR service, with a minimum of 10,000 amp interrupting capacity.
- 2. A minimum of one (1) 15-amp auxiliary breaker. This breaker shall supply power to the fan, light and GFI utility outlet
- A HESCO/RLS, Inc. model HE1750 or exact approved equivalent surge arrester.
- 4. A 50-amp, 125 VAC radio interference line filter.
- A normally open, 50-amp, Solid State Relay (SSR). Shall be Crydom Model Number HA4875H or approved equal.
- A minimum of one (1) 8-position neutral bus bar capable of connecting three #12 wires per position.
- A minimum of one (1) 6-position ground bus bar capable of connecting three #12 wires per position.
- 8. A minimum of one (1) NEMA type 5-15R GFI utility outlet.
- The cabinet shall have a roll-out/swing-out concealable shelf/platform that can be used as platform for a laptop computer or other tools when the cabinet door is opened.

Power and SDLC Bus Panel: The Power and SDLC BUS Panel shall be manufactured from 0.090 to 0.125 inch thick, 5052-H32 aluminum. It shall provide a central location to supply filtered power for the controller, malfunction management unit, cabinet power supply, and all auxiliary equipment. It shall have the following features:

- It shall include the SDLC Bus connecting cables wired to a barrier type terminal block. As an alternative, SDLC Bus connections may be made via an SDLC Hub Assembly.
- All cabinet equipment requiring filtered power to operate shall be hardwired directly to the supplied barrier type terminal blocks on the Power and SDLC BUS Panel.
- All AC+ power sources shall be protected with a removable plastic cover plate.
- The SDLC Hub Assembly shall accommodate all D-Subminiature Female 15 (DB15) connectors as required, and a minimum of five (5) SLDC connections shall be provided.

Auxiliary Cabinet Equipment: The cabinet shall be provided with a thermostatically controlled (adjustable between 55-160 degrees Fahrenheit) ventilation fan in the top of the cabinet plenum. The fan plate shall be removable with the use of simple hand tools for serviceability. A minimum of one, maximum of two, exhaust fans shall be provided. The fan shall be a ball bearing type fan and shall be capable of drawing a minimum of 100 cubic feet of air per minute (CFM). The Fan/Thermostat assembly shall be connected to the Power panel by means of a 4-position plug-in cable or hardwired to an appropriate circuit breaker.

A LED cabinet lighting system may be used to illuminate the internal structure of the cabinet assembly. The LED cabinet lighting shall be a Luxembright LED module Model #770-W0013 and approved power supply or approved equivalent. This lighting system shall be wired directly to a door active switch mounted near the top of the door. Alternately, a fluorescent lighting fixture shall be mounted on the inside top of the cabinet near the front edge. The fixture shall be rated to accommodate at minimum a F15T8 lamp operated from a normal power factor UL or ETL listed baltast. The lamp shall be wired on the power panel or to a door activated switch mounted near the top of the door.

A re-sealable print pouch shall be mounted to the door of the cabinet. The pouch shall be of sufficient size to accommodate one complete set of folded cabinet prints. A minimum of two sets of complete and accurate cabinet drawings shall be supplied with each cabinet.

<u>Vehicle Detection:</u> A minimum of one Detector rack shall be provided in each cabinet.

- Shall support up to 16 channels of loop detection (either eight 2 channel detectors or four 4 channel detectors), two 2channel preemption devices and one BIU.
- All connections to the back of the detector racks to the detector cards shall be soldered to a 44 terminal, double row, 3.962 mm (0.156 in.) contact spacing, Cinch Jones card edge connector 50-44A-30M, or equivalent centered vertically for each detector module.
- All designations shall correspond to the requirements of the TS2-2003 specification. Card guides shall be provided on the top and bottom of the card rack for each connector position.

- Each cabinet shall contain a detector interface panel per each detector rack for the purpose of connecting field loops and vehicle detector amplifiers. The panels shall be manufactured from 0.090 or 0.125 inch thick 5052- H32 Aluminum and use barrier type terminal blocks.
- One 16-position interface panel shall be provided for a 16channel rack cabinet. The interface panel shall be secured to the left wall of the cabinet.
- Each interface panel shall allow for the connection of a minimum of eight independent field detectors.
- 7. In the case of loop detection, a ground bus terminal shall be provided between each loop pair terminal to provide a termination for the loop lead-in cable ground wire. Each interface panel shall provide a barrier style terminal block to terminate the field wires for up to two 2-channel preemption devices.
- Lightning protection device mounting holes shall be provided to accommodate the potential usage of an EDCO LCA-6, lightning protection device.
- 9. A cable consisting of 20 AWG twisted pair wires shall be wired directly from the interface panel to the detector rack. The twisted pair wires shall be color coded red and white wire. No connectors shall be used to connect the interface panel to the detector rack.
- All termination points shall be identified by a unique number and silk screened on the panel. Each detector rack shall accommodate rack mountable preemption devices such as EMTRAC or Opticom.

<u>Cabinet Test Switches and Police Panel</u>: A test switch panel shall be mounted on the inside of the main door. The test switch panel shall provide as a minimum the following:

- SIGNALS ON/OFF SWITCH In the OFF position, power shall be removed from signal heads in the intersection. The controller shall continue to operate. When in the OFF position, the MMU shall not conflict or require reset.
- AUTO/FLASH SWITCH When in the flash position, power shall be maintained to the controller and the intersection shall be placed in flash. The controller shall not be stop timed when in flash. Wired according to NEMA-TS2-2003, the MMU forces the controller to initiate the start-up sequence when exiting flash.
- STOP TIME SWITCH When applied, the controller shall be stop timed in the current interval.

4. CONTROL EQUIPMENT POWER ON/OFF - This switch shall control the controller, MMU and cabinet power supply AC power. The TS2 controller to be provided with the cabinet assembly shall provide vehicle and pedestrian call inputs from its keyboard while in the standard status display.

The police door switch panel shall contain the following:

- SIGNALS ON/OFF SWITCH In the OFF position, power shall be removed from signal heads within the intersection. The controller shall continue to operate. When in the OFF position, the MMU shall not conflict or require reset.
- AUTO/FLASH SWITCH When in the flash position, power shall be maintained to the controller and the intersection shall be placed in flash. The controller shall be stop timed when in flash. Wired according to NEMA-TS2-1998, the MMU forces the controller to initiate the start-up sequence when exiting flash.
- AUTO/MANUAL SWITCH Cabinet wiring shall include provisions for an AUTO/MANUAL switch and a momentary push button or hand cord. The AUTO/MANUAL switch and push button or hand cord shall not be provided unless it is called for in the CUSTOMER SPECIFICATION.

All toggle type switches shall be heavy duty and rated 15 amps minimum. Single- or double-pole switches may be provided, as required. Any exposed terminals or switch solder points shall be covered with a non-flexible shield to prevent accidental contact. All switch functions must be permanently and clearly labeled. All wire routed to the police door-in-door and test switch push button panel shall be adequately protected against damage from repetitive opening and closing of the main door.

#### **Auxiliary Devices:**

Load Switches: Load switches shall be solid state and shall conform to the requirements of Section 6.2 of the NEMA TS2 Standard. Signal load switches shall have a minimum rating of 10 amperes at 120 VAC for an incandescent lamp load. The front of the load switch shall be provided with three indicators to show the input signal from the controller to the load switch. Load switches shall be dedicated per phase. The use of load switches for other partial phases is not acceptable. The full complement of load switches shall be supplied with each cabinet to allow for maximum phase utilization for which the cabinet is designed.

<u>Flashers</u>: The flasher shall be solid state and shall conform to the requirements of section 6.3 of the NEMA TS2 Standard. Flashing of field circuits for the purpose of intersection flash shall be accomplished by a separate flasher. The flasher shall be rated at 15 amperes, double pole with a nominal flash rate of 60 FPM. A full complement of flashers shall be provided.

Flash Transfer Relays: All flash transfer relays shall meet the requirements of Section 6.4 of the NEMA TS2 Standard. The coil of the flash transfer relay must be de-energized for flash operation. The full complement of relays shall be supplied with each cabinet to allow for maximum phase utilization for which the cabinet is designed.

Malfunction Management Units (MMU): Each cabinet assembly shall be supplied with one MMU as defined by the requirements of Section 4 of the NEMA TS2 Standard. Malfunction Management Units shall be a Type 16. The MMU shall be Model MMU-16 (EDI Model MMU-16LE) or approved equal.

Bus Interface Units (BiU): All BIUs shall meet the requirements of Section 8 of the NEMA TS2 Standard. A full complement of BIUs meeting Section 5.3.1.4 if the NEMA Publication No. TS2-2003 shall be supplied per cabinet. Bus Interface Units shall be supplied with each cabinet to allow for maximum phase and function utilization for which the cabinet is designed. A minimum of 3 BIUs shall be provided for each cabinet. Each BIU shall include power on, transmit and valid data indicators - all indicators shall be LEDs. A Type 1 Interface shall be defined as defined by Section 5.3: the controller interface shall conform to the Standard Publication No. TS2-2003.

Cabinet Power Supply: The cabinet power supply shall meet the requirements of Section 5.3.5 of the NEMA TS2 Standard. The cabinet power supply shall provide LED indicators for the line frequency, 12 VDC, 12 VAC, and 24 VDC outputs. The cabinet power supply shall provide (on the front panel) jack plugs for access to the +24 VDC for test purposes. Cabinet power supply shall be provided with each cabinet assembly per manufacturer's specifications and be wired directly to the Power Bus Assembly via a 12-pin Molex Robotic type connector Model# 54332-1270 or exact equivalent.

Testing: Each controller and cabinet assembly shall be tested as a complete entity under signal load for a minimum of 48 hours. Each assembly shall be delivered with a signed document detailing the final cabinet tests performed. The cabinet shall be assembled and tested by the controller manufacturer or authorized local distributor to ensure proper component integration and operation.

<u>Warranty</u>: The controller and Malfunction Management Unit shall be warranted by the manufacturer against mechanical and electrical defects for a period of two years from date of shipment. The manufacturer's warranty shall be supplied in writing with each cabinet and controller. Second party extended warranties are not acceptable. The cabinet assembly and all other components shall be warranted for a period of one year from date of shipment. Any defects shall be corrected by the manufacturer at no cost to the owner.

## 3.1.6 Contract Item #6 - Iteris RZ4 Vehicle Detection Video Camera or Equal

3.1.6.1 Contract Item #6 shall be an Iteris Vantage RZ4 series or Equal vehicle detection video camera with associated connectors, cable, installation hardware and accessories including surge protection (EDCO #CX06-M or equivalent).

## 3.1.7 Contract Item # 7- Non-Warranty Repair of Iteris RZ4 Vehicle Detection Video Camera or Equal

3.1.7.1 Contract Item #7 shall be for the repair of Iteris RZ4 or Equal vehicle detection video Camera. The repaired items shall be repaired to new working condition and with a description of the repair and certificate of repair confirming it was repaired and verifying the date of repair. Repairs must be made by an Iteris or Equal certified factory workshop and by a technician with a manufacturer's certification that they are certified to work on these items.

## 3.1.8 Contract Item #8 - Iteris Vehicle Detection Video Cards or Equal

- 3.1.8.1 Contract Item #8 shall be an Iteris Edge 2 Dual series (Model #493094001) vehicle detection video card or equivalent.
- 3.1.9 Contract Item #9 Non-Warranty Repair of Iteris Vehicle
  Detection Video Card or Equal
  - 3.1.9.1 Contract Item #9 shall be for the repair of Iteris or Equal vehicle detection video cards. The repaired items shall be repaired to new working condition and with a description of the repair and certificate of repair confirming it was repaired and verifying the date of repair. Repairs must be made by an Iteris or equal certified factory workshop and by a technician with a manufacturer's certification that they are certified to work on these items.
- 3.1.10 Contract Item #10 TOMAR Preemption Control Systems
  Detectors or Equal
  - 3.1.10.1 Contract Item #10 shall be a TOMAR Strobecom II series (Model # 2091-SD) or equivalent.
- 3.1.11 Contract Item # 11 TOMAR Preemption Control Systems
  Detection Cards or Equal
  - 3.1.11.1 Contract Item #11 shall be a TOMAR Strobecom II series (Model # 3080 optical signal processor) or equivalent.
- 3.1.12 Contract Item # 12 Non-Warranty Repair of TOMAR
  Preemption Control Systems Detection Cards or Equal
  - 3.I.12.1 Contract Item #12 shall be for the repair of TOMAR Preemption Control Systems or Equal detection cards. The repaired items shall be repaired to new working condition and with a description of the repair and certificate of repair confirming it was repaired and verifying the date of repair. Repairs must be made by a TOMAR or Equal certified factory workshop and by a technician with a manufacturer's certification that they are certified to work on these items.

## 3.1.13 Contract Item #13- Iteris Vantage Radius Radar Vehicle Detection Sensor Kit or Equal

3.1.13.1 Contract Item #13 shall be an Iteris Vantage Radius Radar Sensor Kit with Sensor Unit, Pedestal-Mounting Bracket Assembly and Two (2) Shielded RJ-45 Connectors (Part #RAD-SENSOR-PAK, includes Part #RAD-PROC-SHIPKIT) or equivalent.

## 3.1.14 Contract Item #14 - Iteris Vantage Radius Radar Vehicle Detection CCU Kit or Equal

3.1.14.1 Contract Item #14 shall be an Iteris Vantage Radius Radar CCU Kit with CCU Shelf-Mount Unit for TS2 applications, supports up to four (4) sensors, external din-rail power supply, 2.4 GHz rubber duck antenna (Part #RAD-CCU-SM4-TS2-PAK, includes Part #CCU-SM-TS2-SHIPKIT) or equivalent.

#### 4 CONTRACT AWARD:

- 4.1 Contract Award: The Contract is intended to provide Agencies with a purchase price on all Contract Items. The Contract shall be awarded to the Vendor that provides the Contract Items meeting the required specifications for the lowest overall total cost as shown on the Pricing Pages.
- 4.2 Pricing Pages: Vendor should complete the Pricing Pages by completing Exhibit A by entering the Unit Price for each commodity line item requested. The Exhibit A Pricing Pages are supplied in Excel and formatted to calculate the Extended Cost and the Grand Total Cost. It is the vendor's responsibility to ensure the calculations for their bid is correct before submitting. Vendor should complete the Pricing Pages in their entirety as failure to do so may result in Vendor's bids being disqualified.

The Pricing Pages contain a list of the Contract Items and estimated purchase volume. The estimated purchase volume for each item represents the approximate

volume of anticipated purchases only. No future use of the Contract or any individual item is guaranteed or implied.

Vendor should electronically enter the information into the Pricing Pages through wvOASIS if available, or as an electronic document. In most cases, the Vendor can request an electronic copy of the Pricing Pages for bid purposes by sending an email request to the following address: <a href="mailto:John.W.Estep@wv.gov">John.W.Estep@wv.gov</a>.

#### 5 ORDERING AND PAYMENT:

- Ordering: Vendor shall accept orders through WVOASIS, regular mail, facsimile, e-mail, or any other written form of communication. Vendor may, but is not required to, accept on-line orders through a secure internet ordering portal/website. If Vendor has the ability to accept on-line orders, it should include in its response a brief description of how Agencies may utilize the on-line ordering system. Vendor shall ensure that its on-line ordering system is properly secured prior to processing Agency orders on-line.
- 5.1 Payment: Vendor shall accept payment in accordance with the payment procedures of the State of West Virginia.

## 6 DELIVERY AND RETURN:

- 6.1 Delivery Time: Vendor shall deliver standard orders within thirty-two (32) working days after orders are received. The vendor shall deliver emergency orders within three (3) working day(s) after orders are received. The vendor shall ship all orders in accordance with the above schedule and shall not hold orders until a minimum delivery quantity is met.
- 6.2 Late Delivery: The Agency placing the order under this Contract must be notified in writing if orders will be delayed for any reason. Any delay in delivery that could cause harm to an Agency will be grounds for cancellation of the delayed order, and/or obtaining the items ordered from a third party. Any order not received in full after thirty-two (32) working days of ARO will be penalized \$40.00 per calendar day until order is completed in full.

Any Agency seeking to obtain items from a third party under this provision must first obtain the approval of the Purchasing Division.

- 6.3 Delivery Payment/Risk of Loss: Standard order delivery shall be F.O.B. destination to the Agency's location. Vendor shall include the cost of standard order delivery charges in its bid pricing/discount and is not permitted to charge the Agency separately for such delivery. The Agency will pay delivery charges on all emergency orders provided that Vendor invoices those delivery costs as a separate charge with the original freight bill attached to the invoice.
- Return of Unacceptable Items: If the Agency deems the Contract Items to be unacceptable, the Contract Items shall be returned to Vendor at Vendor's expense and with no restocking charge. The vendor shall either make arrangements for the return within five (5) days of being notified that items are unacceptable or permit the Agency to arrange for the return and reimburse Agency for delivery expenses. If the original packaging cannot be utilized for the return, Vendor will supply the Agency with appropriate return packaging upon request. All returns of unacceptable items shall be F.O.B. the Agency's location. The returned product shall either be replaced, or the Agency shall receive a full credit or refund for the purchase price, at the Agency's discretion.

Return Due to Agency Error: Items ordered in error by the Agency will be returned for credit within 30 days of receipt, F.O.B. Vendor's location. Vendor shall not charge a restocking fee if returned products are in a resalable condition. Items shall be deemed to be in a resalable condition if they are unused and in the original packaging. Any restocking fee for items not in a resalable condition shall be the lower of the Vendor's customary restocking fee or 5% of the total invoiced value of the returned items.

#### 7 VENDOR DEFAULT:

- 7.1 The following shall be considered a vendor default under this Contract.
  - 7.1.1 Failure to provide Contract Items in accordance with the requirements contained herein.
  - 7.1.2 Failure to comply with other specifications and requirements contained herein.
  - 7.1.3 Failure to comply with any laws, rules, and ordinances applicable to the Contract Services provided under this Contract.
  - 7.1.4 Failure to remedy deficient performance upon request.

- The following remedies shall be available to the Agency upon default. 7.2
  - 7.2.1 Immediate cancellation of the Contract.
  - 7.2.2 Immediate cancellation of one or more release orders issued under this Contract.
  - 7.2.3 Any other remedies available in law or equity.

### 8 MISCELLANEOUS:

- No Substitutions: Vendor shall supply only Contract Items submitted in response to the Solicitation unless a contract modification is approved in accordance with the provisions contained in this Contract.
- Vendor Supply: Vendor must carry sufficient inventory of the Contract Items being offered to fulfill its obligations under this Contract. By signing its bid, Vendor certifies that it can supply the Contract Items contained in its bid response.
- Reports: Vendor shall provide quarterly reports and annual summaries to the Agency showing the Agency's items purchased, quantities of items purchased, and total dollar value of the items purchased. Vendor shall also provide reports, upon request, showing the items purchased during the term of this Contract, the quantity purchased for each of those items, and the total value of purchases for each of those items. Failure to supply such reports may be grounds for cancellation of this Contract.
- Contract Manager: During its performance of this Contract, Vendor must designate and maintain a primary contract manager responsible for overseeing Vendor's responsibilities under this Contract. The Contract manager must be available during normal business hours to address any customer service or other issues related to this Contract. Vendor should list its Contract manager and his or her contact information below.

Contract Manager: Jason Atteberry
Telephone Number: 804-893-8412
Fax Number: 804-379-1016
Email Address: Jatteberry@mobotrex.com