

Date Issued: September 20, 2017

Invitation to Bid No.: 17-035

The City of Decatur will accept sealed bids for the following project:

Description: Installation of WB Radio Traffic Signals in the Existing Traffic System

Sealed Bids must be received before: 2:00pm on October 5, 2017

A mandatory pre-bid conference will be held on October 3, 2017 at 2:00pm in the 6th floor conference room of Decatur City Hall.

Return sealed bid to:

Regular Mail

City of Decatur
Purchasing Department
P.O. Box 488
Decatur, AL 35602

Courier

City of Decatur
Purchasing Department
Third Floor
402 Lee St., NE
Decatur, AL 35601

I/We agree to furnish at the prices shown and guarantee that each item offered will meet or exceed all specifications, terms and conditions, and requirements listed. I herein affirm I have not been in any agreement or collusion among bidders in restraint of freedom of competition by agreement to bid at a fixed price or to refrain from bidding or otherwise. I have read and understand all terms and conditions of this bid.

Company Name

Authorized Signature

Mailing Address

Typed/Printed Authorized Name

City, State, Zip

Title

Contractor's License No. (if required)

Telephone

Email

PRICE SHEET

Invitation to Bid No.: 17-035

Opening Date: October 5, 2017

Opening Time: 2:00PM

Group/Material	Quantity	Unit Price	Total Price
Group One Lump	Lump		
Group Two Lump	Lump		
Group Three Lump	Lump		
Total Project			
Additive Alternate: modification work at the intersection of Cedar Lake Road & Hwy 31 (Turn Signal)			
Total Project Including Alternate			
Option: Price to provide and install additional AP repeaters			

For questions related to the scope of work and specifications contact Temple, Inc. Attn: David Griffin or Blake Temple at 800.633.3221. For questions related to your bid submission and bid requirements contact Charles Booth, Purchasing Agent, City of Decatur at 256-341-4522 or by email at cbooth@decatur-al.gov

Prices quoted in all bids for personal property shall be total delivered price.

- A bid bond **IS** required for this ITB.
- Work can commence _____ days or _____ weeks after receipt of order.
- Terms: _____ (Discounts offered in payment terms will be considered in the bid evaluation)
- Prices valid for acceptance within _____ days (not to be less than 180 days)

By signing this contract, _____ represents and agrees that it is not currently engaged in, nor will it engage in, any boycott of a person or entity based in or doing business with a jurisdiction with which the State of Alabama can enjoy open trade.

Bidder Signature

Company

NOTE: FOR THIS BID TO BE CONSIDERED RESPONSIVE, ALL INFORMATION REQUESTED SHOULD BE SUPPLIED, AS APPROPRIATE OR THE ENTIRE BID MAY BE DISQUALIFIED. BID RESPONSE MUST BE IN INK OR TYPED WITH THE ORIGINAL SIGNATURE INCLUDED.

STANDARD TERMS AND CONDITIONS

IN ORDER TO SUBMIT A RESPONSIVE BID, IT IS VERY IMPORTANT THAT ALL TERMS AND CONDITIONS, SPECIFICATIONS AND INSTRUCTIONS ARE READ THOROUGHLY.

Bid response envelopes shall be properly identified on the front with the invitation to bid number, opening date and time. Each individual invitation to bid shall be submitted in a separate sealed envelope. Multiple bid responses submitted in the same envelope/courier package (that are not in separate envelopes properly identified) shall be rejected. The Purchasing Department assumes no responsibility for late bid responses that occur due to the U.S. Postal Service or private courier service.

Bid responses and signature page must be submitted on this form in ink or typewritten or the bid will be rejected. Submit this **original and (1) copy** of the original with your response.

For a “no-bid” response, return the signature page signed and marked “no bid”. Non-response may result in removal from active bidders list.

The attached specifications are being provided to potential bidders as guidelines that describe the type and quality of equipment, supply, and/or service the City of Decatur is seeking to purchase. The bidder must indicate compliance or list exceptions to each specification item for consideration. Failure to comply with this provision could be cause for rejection of the bid.

Bid responses must be received in the office of the Purchasing Department not later than the date and time specified.

The Purchasing Department will not accept facsimile (fax) nor email transmissions of bids.

Changes or modifications of this Invitation to Bid are allowed only by written authority of the Purchasing Agent.

Non Appropriation of Funds: Continuation of any agreement between the City of Decatur and a bidder beyond a fiscal year is contingent upon continued legislative appropriation of funds for the purpose of this bid and any resulting agreement. Non availability of funds at any time shall cause any agreement to become void and unenforceable and no liquidated damages shall accrue to the City as a result. The City will not incur liability beyond the payment of accrued agreement payment.

Descriptive Literature: Reference to brand names and numbers is not restrictive, unless otherwise specified. Bids on equivalent items meeting the standards of quality indicated will be considered, providing the bid clearly describes the item offered and indicates how it differs from the referenced brands. Descriptive literature on any supplemental information necessary for comparison purposes shall be submitted with the bid or the Purchasing Agent may reject the bid for that item. Reference to literature submitted with a previous bid, or on file with the Purchasing Department will not satisfy this requirement.

The City of Decatur reserves the right to modify all or any portion of this Invitation to Bid when the best interest of the City is involved. The City reserves the right to award this bid to a single vendor or multiple vendors when in the best interest of the City. The City reserves the right to award parts of this bid or to reject all bid submissions.

The City of Decatur reserves the right to seek clarification of bid responses from vendors submitting responses.

The City of Decatur is exempt from all Federal, sales and use taxes.

All bidders shall maintain such insurance as will protect bidder and the City of Decatur from claims under Workman's Compensation Acts and from claims for damage and or personal injury, including death, which may arise from the operation and/or fulfillment of the resulting contract of this Invitation to Bid. Insurance shall be written by companies authorized to do business in Decatur, Alabama. Evidence of insurance shall be furnished to the City of Decatur Purchasing Department with submitted bids when requested.

Any individual, company, or corporation doing business with the City of Decatur must possess and show proof thereof all proper licenses and/or proper certifications required by Federal, state and local statutes and regulations prior to award when requested.

The City of Decatur reserves the right to terminate any contract resulting from this bid for just and reasonable cause whereby it appears to be in the best interest of the City. The City shall give the Contractor 90 day's written notice of termination.

The successful bidder agrees, by entering into this contract, to defend, indemnify, and hold the City of Decatur harmless from any and all causes of action or claims of damages arising out of or related to bidder's performance under this contract.

The successful bidder shall abide by all Federal, State, and Local Statutes, laws, regulations, and ordinances. Including but not limited to a current business license and remittance of sales tax owed to the City.

A Bid Bond or a certified check in the amount of five percent (5%) of the price bid, or \$10,000, whichever is least, payable to the City of Decatur, must accompany each bid. Performance Bond and Payment Bond, each in the amount of one-hundred percent (100%) of the bid amount, will be required of the successful Bidder.

An electronic version of this bid is available on the City's website at www.decaturlabamausa.com or by emailing purchasing@decatur-al.gov. In order to decrease the evaluation time and insure award by the award date please enter your responses in the electronic version if possible, and return it with a hard copy with your bid response package.

The hard copy of the invitation to bid on file in the City of Decatur Purchasing office shall serve as the master document. Any alterations, deletions, additions or other changes that materially change the intent of the bid could be considered grounds for rejection of the bid response.

Exclusion of the electronic files in a bid response is not a basis for rejection.

Materials incorporated into the Work are exempt from sales and use tax pursuant to Alabama Act No. 2013-205 (effective January 1, 2014). General Contractors and subcontractors interested in bidding are advised to contact the Sales, Use, & Business Tax Division of the Alabama Department of Revenue for information regarding required qualifications for exemption. Materials incorporated into the project are exempt from sales and use tax. General contractors and/or subcontractors are advised that the successful bidder will be required to submit a routine application to the Alabama Department of Revenue for an exemption certificate.

A BID RESPONSE MAY BE REJECTED IF:

- Bids improperly submitted or identified
- Bid bond not included
- Bid not signed or not original signature
- Requested information, or documentation not submitted with bid
- Failure to acknowledge receipt of addendum with bid
- Material alteration of the master document
- Invitation to bid number not on face of envelope
- Received late
- Bid response not on original form
- Bid not in ink or typed
- Proper licensing not included/provided as required by law

Notice: As a condition of contract, grant or incentive performance with the City of Decatur, compliance with the requirements of the Beason-Hammon Alabama Taxpayer and Citizen Protection Act must be provided. Please enter the name of your company and your name and complete the affidavit below. Your signature must be notarized.

BUSINESS NAME: _____

APPLICANT'S NAME: _____

E-VERIFY AFFIDAVIT

I am the applicant listed above. In my capacity as _____ of the business entity listed above, I do hereby execute this affidavit on behalf of the business listed above and, by executing this affidavit, I verify that business' compliance with Section 31-13-9 of the Code of Alabama, 1975, stating affirmatively that it does not knowingly employ, hire for employment or continue to employ an unauthorized alien. Further, the business has registered with and is participating and will participate during the performance of any contract with the City in the federal work authorization program known as "E-verify" web address <https://e-verify.uscis.gov/enroll> , operated by the United States Citizenship and Immigration Service Bureau of the United States Department of Homeland Security to verify information of newly hired employees pursuant to the Immigration Reform and Control Act of 1986 (IRCA), P. L. 99-603, in accordance with the applicable provisions of Alabama's Immigration law.

The undersigned further represents that, should the business employ or contract with any subcontractor(s) in connection with the physical performance of services pursuant to the contract with the City, it will secure from such subcontractor(s) verification of compliance with Section 31-13-9 of the Code of Alabama, 1975, in a form substantially similar to this affidavit. The Business further agrees to maintain records of such compliance and provide a copy of each said verification on request of the City.

E-verify Employment Eligibility Verification User Identification Number

Applicant

Sworn to and subscribed before me on this the _____ day of _____, 20_____

Notary Public

My Commission Expires: _____

Section 34-8-8

Copy of chapter to be included in plans of owners, architects, and engineers; inclusion of license number on bid.

(a) All owners, architects, and engineers preparing plans and specifications for work to be contracted in Alabama pursuant to this chapter shall include in their invitations to bidders, including but not limited to all public and private advertisements, and their specifications a copy of this chapter or the portions thereof as are deemed necessary to convey to the invited bidder, whether he or she is a resident or nonresident of this state and whether a license has been issued to him or her or not, the information that it will be necessary for him or her to show evidence of license before his or her bid is considered. Any person including an owner, architect, or engineer who violates this section shall be guilty of a Class B misdemeanor and shall for each offense of which he or she is convicted be punished, fined, or both, in accordance with Sections 13A-5-7 and 13A-5-12.

(b) All owners, architects, and engineers receiving bids pursuant to this chapter shall require the person, firm, or corporation to include his or her current license number on the bid. The owner, architect, and engineer shall reject all bids that do not contain the current license number of the general contractor submitting the bid. All persons who violate this subsection shall be guilty of a Class C misdemeanor and shall for each offense for which he or she is convicted be punished, fined, or both, in accordance with Sections 13A-5-7 and 13A-5-12.

(Acts 1935, No. 297, p. 721; Code 1940, T. 46, §79; Acts 1959, No. 571, p. 1429; Acts 1996, No. 96-640, p. 1013, §1.)

**CITY OF DECATUR, ALABAMA
Contractor Pre-qualification Form (PQF)**

This form must returned in your sealed bid submission

Safety Health and Environmental (FOR CONTRACTORS AND MAJOR SUPPLIERS)			
GENERAL INFORMATION			
1. Company Name:		Telephone:	
Street Address:	Mailing Address:		
2. Contact for Insurance Information (Name):			
Title:		Telephone:	Fax:
3. PQF Completed By (Name):			
Title:		Telephone:	Fax:
ORGANIZATION			
4. Project Description:			

SAFETY, HEALTH & ENVIRONMENTAL PERFORMANCE			
5. Injury & Illness Stats (previous 3 years)			
Total Recordable Incidents: _____			
Fatalities: _____			
6. Has your company received any Citations, Notice of Violations, or other penalties relative to safety, health, or environmental within the last three years?			
Yes _____ No _____			
If Yes, please provide detailed explanation.			

7. Does your organization have a "Drug Free Workplace Policy and/or Program?"

Yes No

8. Does your organization have an Accident/Incident Reporting and Investigation procedure?

Yes No

9. Do you have a Safety Orientation Program?

Yes No

10. Do you conduct field safety inspections?

Yes No

11. Do you conduct Safety Meetings?

Yes No

12. Company Safety Health and Environmental contact:

Name: _____

Title: _____

Address: _____

Phone Number: Mobile _____

Office _____

Email Address: _____

13. Company Representative:

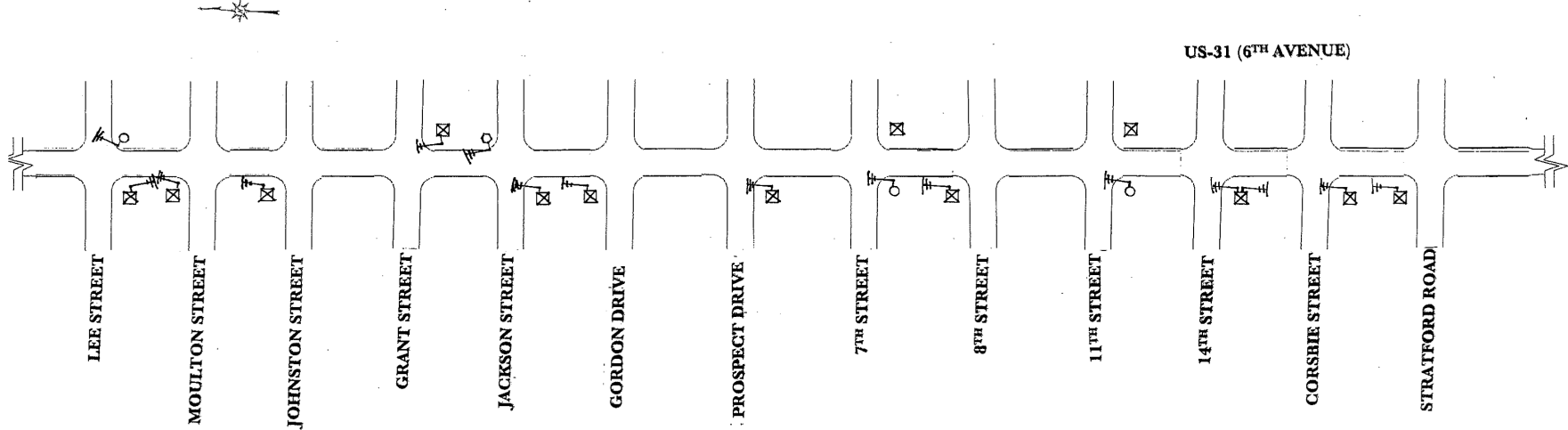
Signature _____

Date _____

At the City of Decatur we strive to be a top performing safety organization, and provide safety and healthful worker places for our employees, while ensuring that public safety remains at the forefront of our operations. The preceding information has been requested as part of the City of Decatur's Safety and Health program, and supports efforts to improve safety in all of our activities.

Thank you for your cooperation and assistance, address any questions to me at 256-341-4897 or by email at rshepherd@decatur-al.gov

TRAFFIC SIGNAL COMMUNICATION LAYOUT GROUP ONE - US-31



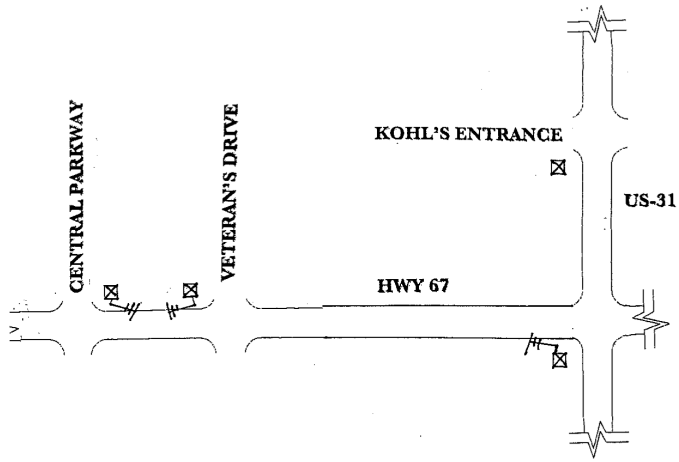
Drawing is not to scale, only a simple depiction of the communication system.

Notes:

1. The installed system shall communicate with the existing signal communication system on US-31.
2. Contractor shall erect Antennas/Radios to achieve point to multipoint and point-to-point communications.
3. The Contractor shall align the Antennas/Radios per manufacturer's guidelines to maximize signal strength between Antennas/Radios.
4. Existing EPAC controllers shall be replaced with newer EPAC controllers compatible with the existing traffic system and with an Ethernet port for IP addressability.

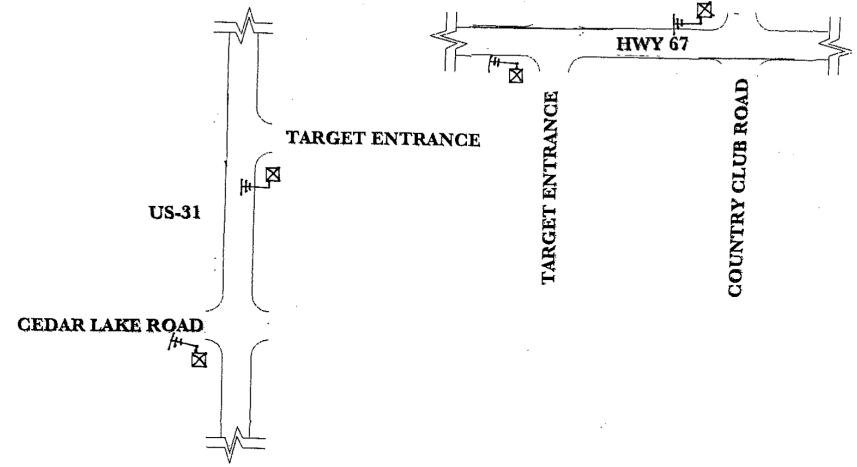
Intersection	Estimated Equipment and Material Schedule			
	WB-G581	EPAC	Cat5e	Misc. Hardware
6th Ave @ Lee Street	2	1	150	1
6th Ave @ Moulton Street	1	1	100	1
6th Ave @ Johnston Street	1	1	100	1
6th Ave @ Grant Street	1	1	125	1
6th Ave @ Jackson Street	2	1	150	1
6th Ave @ Gordon Drive	1	1	100	1
6th Ave @ Prospect Drive	1	1	100	1
6th Ave @ 7th Street	1	1	125	1
6th Ave @ 8th Street	1	1	100	1
6th Ave @ 11th Street	2	1	200	1
6th Ave @ 14th Street	2	1	150	1
6th Ave @ Corsbie	1	1	100	1
6th Ave @ Straford Rd	1	1	100	1
Totals	17	13	1600	13

**TRAFFIC SIGNAL COMMUNICATION LAYOUT
GROUP TWO - US-31 & HWY-67**



Group Two		Estimated Equipment and Material Schedule			
Intersection	WB-G581	EPAC	Cat5e	Misc. Hardware	
6th Ave @ Kohl's Entrance	1	1	150	1	
6th Ave @ Highway 67	1	1	150	1	
Highway 67 @ Veterans Drive	1	1	100	1	
Highway 67 @ Central Parkway	1	0	100	1	
Totals	4	3	500	4	

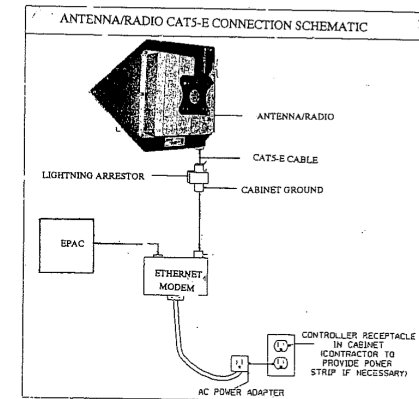
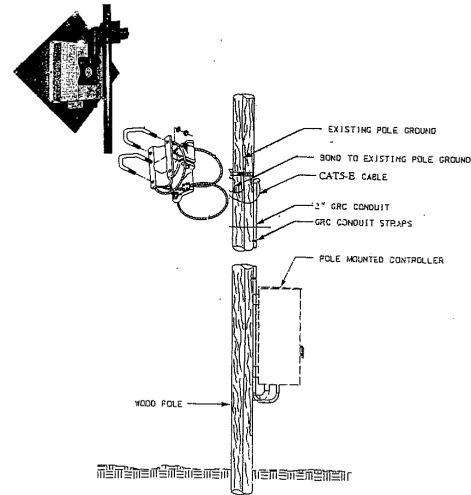
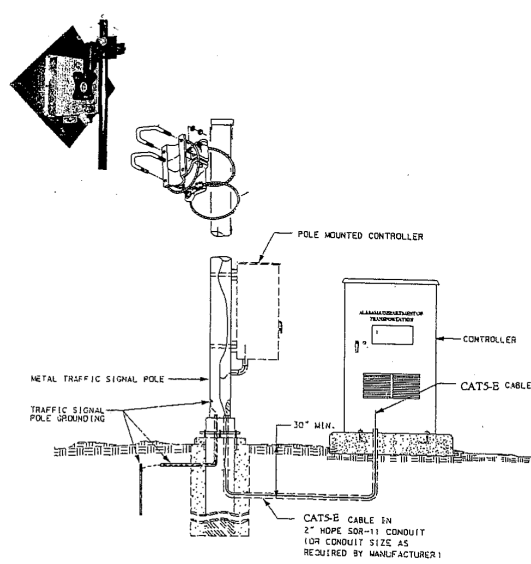
**TRAFFIC SIGNAL COMMUNICATION LAYOUT
GROUP THREE - US-31 & US-67**



Group Three		Estimated Equipment and Material Schedule			
Intersection	WB-G581	EPAC	Cat5e	Misc. Hardware	
6th Ave @ Target Entrance	1	1	100	1	
6th Ave @ Cedar Lake Road	1	1	100	1	
Highway 67 @ Target Entrance	1	1	100	1	
Highway 67 @ Country Club Road	1	1	100	1	
Totals	4	4	400	4	

PROJECT DETAIL

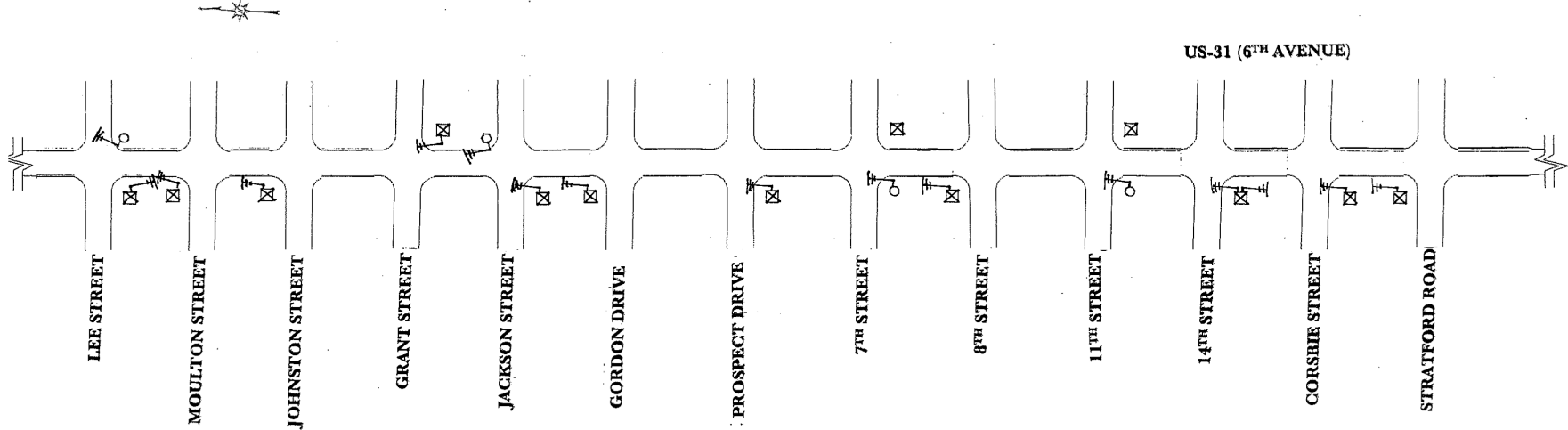
WIRELESS ANTENNA/RADIO MOUNTING



NOTES:

1. THE CONTRACTOR SHALL SETUP THE WIRELESS DEVICES IN A TEMPORARY INSTALLATION AND VERIFY SIGNAL STRENGTHS AND BANDWIDTHS WITH THE CITY BEFORE FINAL INSTALLATION.
2. MOUNTING HEIGHT OF WIRELESS ANTENNA/RADIO IS APPROXIMATELY 25 FEET OR AS RECOMMENDED BY THE MANUFACTURER AND APPROVED BY THE CITY. MOUNTING HEIGHT IS IN RELATION TO THE ROADWAY/TRAVELWAY.
3. ON COMPLETION OF THE INSTALLATION WIRING IN CONDUIT IN THE CONTROLLER CABINET AND ALL EXPOSED CONDUIT OPENINGS SHALL BE SEALED WITH AN APPROVED SILICONE COMPOUND.
4. ALL EQUIPMENT AND MATERIAL RELATED TO THE TRAFFIC SIGNAL INSTALLATION SHALL BE IN CONFORMANCE TO THE REQUIREMENTS OF STANDARD DRAWINGS TSD-730-2, TSD-730-2A, AND TSD-730-4 AND SECTIONS 730 AND 890 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.
5. METAL POLE - CONNECT A #14 AWG STRANDED COPPER WIRE TO ANTENNA SUPPORT USING PIPE CLAMP METHOD APPROVED BY THE CITY AND TERMINATE AT THE TRAFFIC CABINET GROUND.
6. WOOD POLE - BOND #6 AWG SOLID BARE COPPER WIRE TO ANTENNA SUPPORT USING PIPE CLAMP. BOND OTHER END OF #6 AWG SOLID BARE COPPER WIRE TO THE EXISTING POLE GROUND USING A METHOD APPROVED BY THE CITY.
7. INSTALL AN END CAP TO SEAL THE EXPOSED END OF THE MOUNTING PIPE.
8. ALL EQUIPMENT SHALL BE COMPATIBLE WITH THE CITY'S EXISTING COMMUNICATION SYSTEM ON US-31.

TRAFFIC SIGNAL COMMUNICATION LAYOUT GROUP ONE - US-31



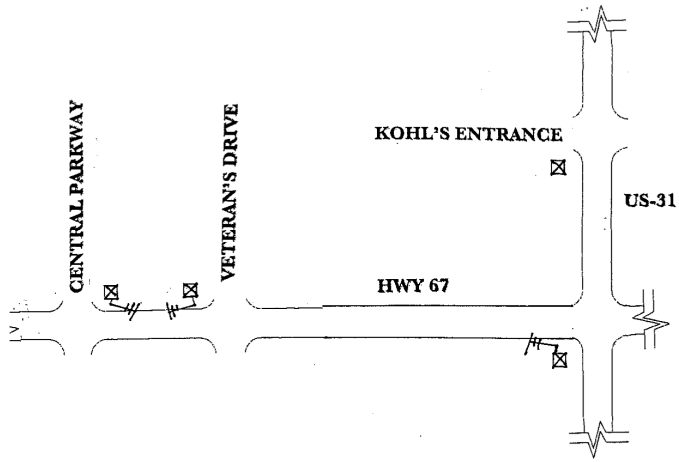
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Notes:

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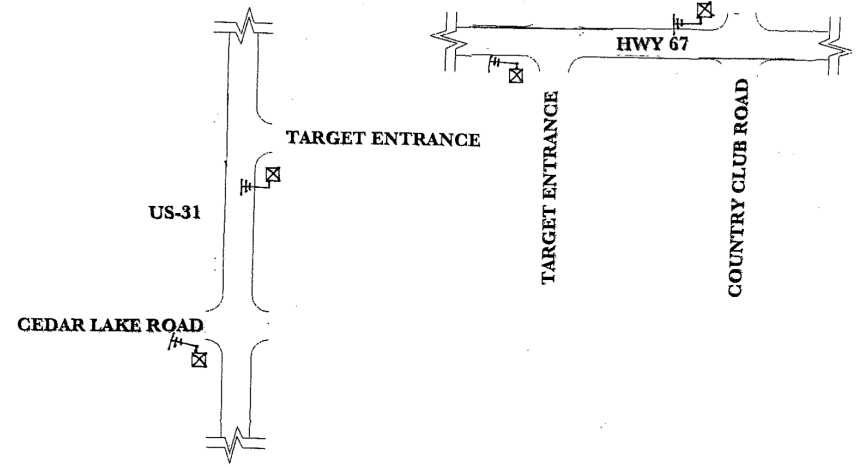
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**TRAFFIC SIGNAL COMMUNICATION LAYOUT
GROUP TWO - US-31 & HWY-67**



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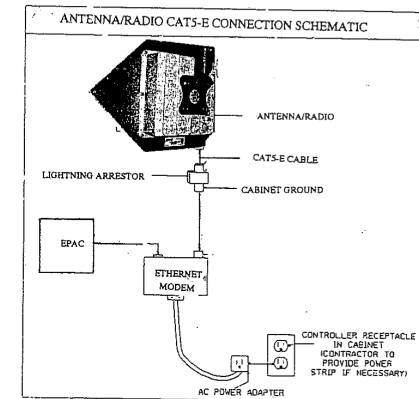
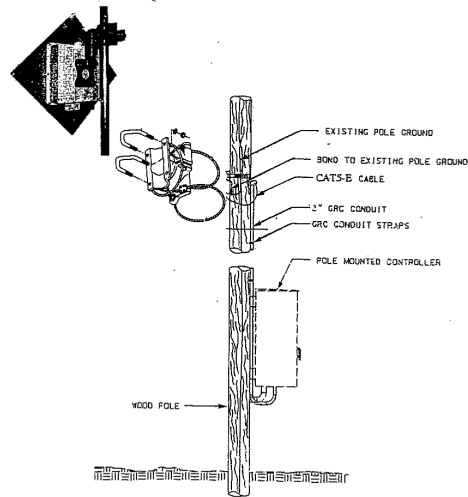
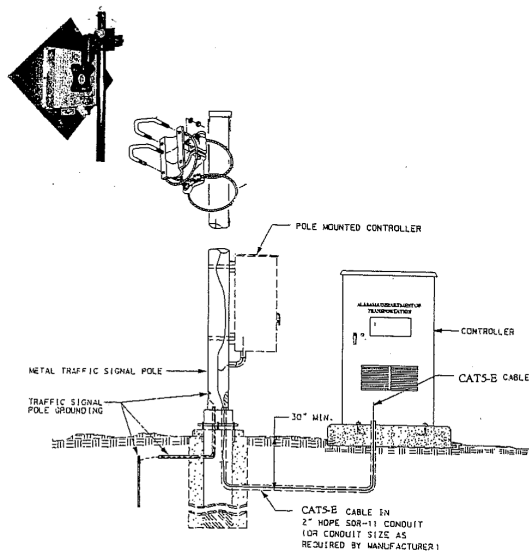
**TRAFFIC SIGNAL COMMUNICATION LAYOUT
GROUP THREE - US-31 & US-67**



Group Three		Estimated Equipment and Material Schedule			
Intersection	WB-G581	EPAC	Cat5e	Misc. Hardware	
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6th Ave @ Cedar Lake Road	1	1	100	1	
Highway 67 @ Target Entrance	1	1	100	1	
Highway 67 @ Country Club Road	1	1	100	1	
Totals	4	4	400	4	

PROJECT DETAIL

WIRELESS ANTENNA/RADIO MOUNTING



NOTES:

1. THE CONTRACTOR SHALL SETUP THE WIRELESS DEVICES IN A TEMPORARY INSTALLATION AND VERIFY SIGNAL STRENGTHS AND BANDWIDTHS WITH THE CITY BEFORE FINAL INSTALLATION.
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7. INSTALL AN END CAP TO SEAL THE EXPOSED END OF THE MOUNTING PIPE.
8. ALL EQUIPMENT SHALL BE COMPATIBLE WITH THE CITY'S EXISTING COMMUNICATION SYSTEM ON US-31.

1. SCOPE OF WORK FOR FURNISHING AND INSTALLING WB RADIO COMMUNICATION DEVICES FOR EXISTING TRAFFIC SYSTEM.

Electrical work shall consist of furnishing and installing new traffic signal controllers and wide-band radios to replace the existing twisted pair interconnect cable and the non-IP addressable existing controllers.

The final locations for the radios will be determined by the attached installation guidelines, suggested locations, and in cooperation with the City's maintaining company.

The new radios and controllers shall be compatible with the City's existing system and meet the specifications for this project.

The existing riser's for the interconnect may be used for installing the cable for the radio as the existing interconnect cable is being abandoned.

All systems shall be complete and in operating condition at the time of acceptance of the contract by the Radio testing method outlined in this document.

2. Deliverables

Controllers:

- Installation of Siemens EPAC3108M52 controllers at each existing intersection receiving a WB radio.
- The successful bidder is to deliver the controller to Temple, Inc. to be programmed by Temple to match the timing plans currently in effect. Temple, Inc. will determine the IP address for each new controller and confirm communication back to the central system.
- The successful bidder will attach the Ethernet cable to the new controller and Ethernet switch.

Radios:

- Installation of the SIMREX WB-Radio as per the attached guidelines. The location of the radios shall be located with the approval of Decatur Utilities for utility poles and with the Decatur Police Department for traffic poles.
- Install the CAT5e shielded outdoor cable from the radio to the controller cabinet assembly and terminate in the cabinet. A new conduit riser may be required if the location of the radio will not be able to utilize the existing riser.
- The location of the repeater radios will be coordinated with Temple, Inc. and the local utility owner. The radio will require a power source for its operation. Any ancillary material required is to be provided by the successful bidder.
- The AP repeater radios may not be required for Group Two and Group Three locations. This will be determined following the installations of the client radios for the required intersections.

3. Responsibilities

- The successful bidder will provide the equipment, installation, set-up, turn-on, and validation testing of all equipment in specified intersections and radio repeater locations.
- The successful bidder will take responsibility for any traffic control that may be required in the installation of the Radio equipment.
- Temple, Inc. will take responsibility for programming the traffic controller and the Radio.
- Existing controllers and other ancillary equipment to be delivered to Temple, Inc. upon removal.

4. Installation

All radios should be mounted in such a way as to get as clear a view of the corridor as possible. For paths of 2 miles or greater with intermediate intersections, the AP riser should be 8-10 feet to clear intermediate signal heads and signage. Clients should be elevated on 6 foot risers at 1 mile or more distance or if there are intermediate obstructions.

If using existing luminaire arms, use a riser to get at least 6 feet above the intermediate (aligned) luminaire heads. Steep gradient (usually short) short diagonal paths using no riser are OK as they give better Fresnel clearance to the next luminaire.

Handling: Leave radios in factory cartons until ready to install at the site. The antennas are light-weight to minimize riser loading and antenna corners are easily damaged if dropped or transported loose in the bed of a truck.

Use of optical aiming tool: Use a purpose built optical aiming tool (available from Temple) or at minimum the edge of a square to aim the radio. For obstructed paths where the opposite radio cannot be easily seen, Temple, Inc. will supply the installation crew with a Google earth map/photo indicating the path line and a close vicinity aiming landmark (A tree, a pole, pavement marking, an air handler on a roof, etc.) that lines up with the path.

Excess signal strength: If faced with the situation that the AP has very close (1/2 mile or less) and far (1 mile or more) located clients, the close radios can overload and reduce quality /throughput if RSSI is stronger than -30 dBm (eg. -25 dBm). In this case, tilt the close ratio panel upwards ~ 10 degrees and check that the RSSI has reduced to -30 dBm or less.

If the path is long enough to not overload the receiver (-30 dBm or weaker receive signal level), then the antennas can be aimed directly at each other. A calculator on the SIMREX web site can be used to determine if a radio signal is likely to overload.

<http://www.simrex.com/site/tools/som.php4>

If the close proximity results in signals that are higher than -30 dBm, then the client antenna can be turned upwards some 3 to 8 degrees to lower the RX signal level. Turning an antenna upwards (in elevation) also typically reduces interference.

The antennas should be aimed directly at each other in azimuth and the path should be benchmark tested using the benchmark tool in WBconfig. If the throughput is less than 80% of

ideal conditions, or if the user is not satisfied, then a spectrum scan can be done at each end of the link to see if there is competing interference and possibly a better frequency choice. Retest with the benchmark tool if any changes are made in frequency.

If all frequencies are fairly busy, interference may possibly be alleviated by turning the antenna left and right slightly (2 to 7 degrees) and watch that the interfering signal is diminished or nulled more than the desired signal.

The following image demonstrates the proper way to mount this style of antenna (Figure 1). When mounted in this manner, there is little force from the antenna's own weight acting upon the bracket and the effects of gravity and vibrations are minimized.

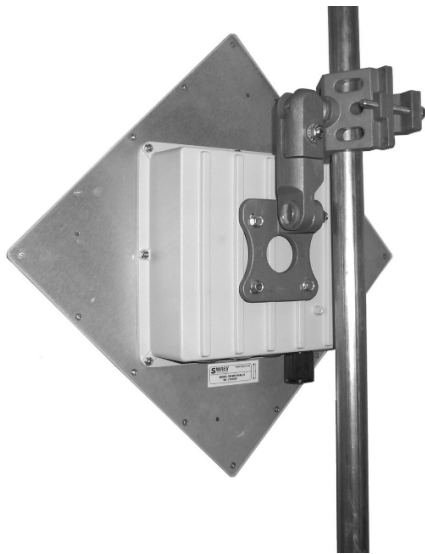


Figure 1

5. Radio Testing

Every path should have a benchmark test performed and the following data saved and submitted to Temple, Inc. for purposes of system acceptance as well as baseline performance information for later comparison if system degradation is suspected during maintenance phase.

The benchmark should test for at least 30 seconds in TX and then RX direction.

Benchmark test should include and save all of the following information:

- Client Radio name and IP address.
- Frequency
- Channel width
- TX/RX RSSI's
- Min, max, average data rate

Statistics on the over the air data rates used during the test, i.e. how much time at each over the air speed.

Ethernet cable test: The purpose is to validate that the cable is not damaged and is properly terminated and performing at the substandard rate for the cable. For a 100 Mbps interface , a data rate of 95 to 97 Mbps should be seen in each direction.

This test can be done between the radio on the pole and a compatible SIMREX switch at the cabinet. If no Simrex switch is available, another SIMREX radio can work plugged into the switch at the cabinet as long as it is on same VLAN and IP address is known. Perform BW test in both directions between the UUT and the cabinet to validate Ethernet cable. Save the results and submit to Temple, Inc.

6. Pricing

This project will be bid in three groups. The City reserves the right to award any or all of the groups being bid for this project.

- Group One will consist of Client Radios for (13) intersections, EPAC controllers for (13) intersections, and (4) AP (repeater) locations along Highway 31 (6th Avenue).
- Group Two will consist of Client Radios for (3) intersections, EPAC controllers for (3) intersections, and (2) AP (repeater) for locations on Highway 31 and Highway 67.
- Group Three will consist of Client Radios for (4) intersections, EPAC controller for (1) intersection, and (2) AP (repeaters) for additional locations on Highway 31 and Highway 67.

7. Group One

Below are the intersection names along with the suggested Radio locations and also the location of the controller cabinet. Final locations will have to be determined during installation.

Intersection	AP radio	Clint Radio	Controller Cab Location
6th Ave at Lee Street	NW Corner	SE Corner	SW Corner
6th Ave at Moulton Street		NW corner	NW Corner
6th Ave at Johnston Street		NW corner	NW Corner
6th Ave at Grant Street		SW Corner	SE Corner
6th Ave at Jackson Street	SW Corner	NE Corner	SW Corner
6th Ave at Gordon Drive		NW Corner	NW Corner
6th Ave at Prospect Drive		SW Corner	SW Corner
6th Ave at 7 th Street		SW Corner	SE Corner
6th Ave at 8 th Street		NW corner	NW Corner
6th Ave at 11 th Street	SW Corner	SW Corner	SE Corner
6th Ave at 14 th Street	SW Corner	SW Corner	SW Corner
6th Ave at Corsbie Street		SW Corner	SW Corner
6th Ave at Stratford Road		NW corner	NW Corner

8. Group Two

Below are the intersection names and the location of the controller cabinet. Final locations for the radios will have to be determined during installation. The Central Parkway location is for the AP repeater to link this group to the system. The intersection already contains a Client Radio so only the repeater will be added.

Intersection	AP radio	Client	Controller Cab
6th Ave at Kohl's		SW Corner	SW Corner
6th Ave at Highway 67		SW Corner	SW Corner
Highway 67 at Veterans		NW Corner	NW Corner
Highway 67 Central Parkway	NW Corner	NA	NW Corner

9. Group Three

Below are the intersection names and the location of the controller cabinet. Final locations for the radios will have to be determined during installation. AP radios may not be required if this group is installed.

Intersection	AP radio	Client	Controller Cab
6th Ave at Target Entrance		SE Corner	SE Corner
6th Ave at Cedar Lake Road		SW Corner	SW Corner
Highway 67 at Target Entrance		SW Corner	SW Corner
Highway 67 at Country Club		NW Corner	NW Corner

**Appendix A
Pricing**

Group/Material	Quantity	Unit Price	Total Price
Group One	Lump		
Group Two	Lump		
Group Three	Lump		
Option: Price to provide and install additional AP repeaters			
Total Project			

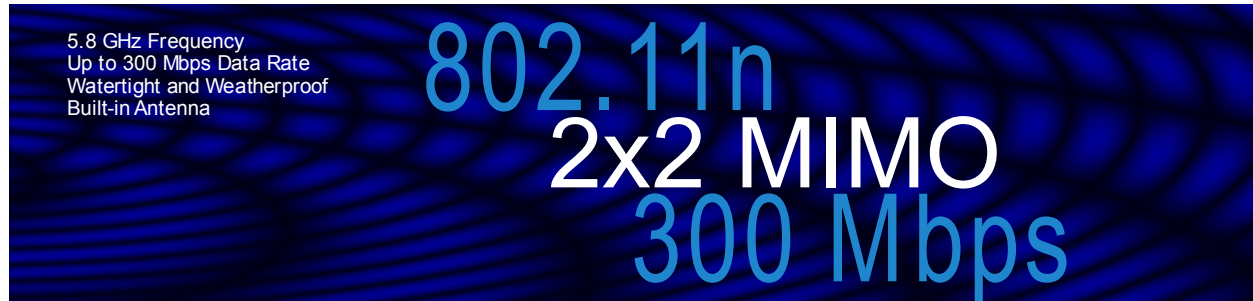
Appendix B Required Material

Simrex DM WB-G581-II-23M radio with DM MS-5 ethernet switch

SIMREX Corporation

DM WB-G58N

DataMover Wideband Integrated Data Link



Features

- Up to 300 Mbps physical data rates and 200 Mbps of actual user throughput
- 2x2 MIMO
- VLAN Tagging
- 500mW (27 dBm) max average RF power adjustable in 1 db steps
- Standard 802.11n protocol or SimStream TDMA protocol.
- Bandwidth Management Control
- Built in Spectrum Analyzer
- Dynamic Frequency Selection
- Automatic Channel Selection
- Automatic Transmit Power Control
- Channel Bandwidth: 40,20,10,5 Mhz
- 30 miles range possible.
- DHCP or Static IP Address
- Up to 4094 VLANs (Transparent, Trunk or Edge)
- Ethernet Protocol Filtering
- Static MAC Address Filtering
- TCP/UDP Port Filtering
- Intuitive, easy to use browser interface
- Browser, Telnet and SSH administration possible.
- SNMP

SIMREX..Global wireless solutions. Wireless Outdoor Bridge

For more than 2 decades, SIMREX Corporation's wireless products have been providing wireless networking solutions with applications in SCADA, telemetry, telecommunications, mobile data and online transaction markets. SIMREX Corporation provides licensed and unlicensed frequency communications solutions worldwide.

Product Overview

The DataMover WB Outdoor Wireless Multi-Client Bridge/Access Point/repeater operates seamlessly in the 5.8 GHz frequency spectrum supporting 1 Mbps - 300 Mbps wireless transmission.

The DataMover WB utilizes OFDM modulation that can significantly improve throughput in non line of sight conditions. The DataMover WB has high TX output power and high RX sensitivity. These features can extend range and reduce the expense of equipment in the infrastructure. The narrow antenna beamwidth of 10 degrees provides significant off axis interference rejection.

To protect the security of your data, all wireless transmissions may be encrypted through WPA/WPA2 or AES.

Product Benefits

- Capable of handling heavy data payloads such as MPEG video streaming.
- High TX power and high RX sensitivity allow for minimum number of Access Point locations and cost savings.
- Transfer data between two buildings or multiple buildings.
- Administrators can remotely configure or manage the Access Point easily.
- Powerful data security ensures a secure network connection.
- Simultaneous wireless AP and Bridge mode for wireless repeater functionality.
- Weather tight IP67 enclosure for outdoor use.
- Built in high gain antenna saves on hardware cost and eliminates external RF cable.
- Easy to install.

** All specifications are subject to change without notice.

Available Configurations:

- DM WB-G58N-23** - Single radio, single ethernet port with integrated 23dBi panel antenna
- DM WB-G58N-23-E2** - Single radio, dual ethernet ports with integrated 23dBi panel antenna
- DM WB-G58N-X** - Single radio, single ethernet port with external antenna connectors (N Female)
- DM WB-G58N-X-E2** - Single radio, dual ethernet ports with external antenna connectors (N Female)

Siemens EPAC3108M52 Controller compatible with existing system



SIEMENS

usa.siemens.com/mobility

Siemens M50 Series Traffic Controller

Siemens controller line for use in NEMA style cabinets



Description

The Siemens M50 series controllers are an innovative, fully actuated controller unit with an extensive complement of operational, programming, and diagnostic capabilities. The M50 series exceeds many industry standards and specifications with advanced functionality. The M50 features new capabilities and enhancements in hardware design and communications. The series consists of the M52 TS2 Type 2 and the M53 TS2 Type 2 models.

Benefits

- Advanced priority handling routines that offer increased efficiency for transit vehicles while minimizing impact on coordination
- Linux processor option that provides advanced networking capabilities, USB support and a multitasking environment
- Additional bicycle and pedestrian timing options to handle changing urban landscapes
- Support for a variety of deployment options including closed-loop, central control, and adaptive environments
- Backward compatibility to support a variety of cabinet styles including NEMA, Caltrans, and ITS

Features

- Built in external 10 Base-T Ethernet port with configurable IP
- 8MB of flash memory
- NEMA TS2 Type 115-pin Input/Output serial connection to the bus interface unit
- NEMA TS2 Type 2 for direct parallel connection to load switches and detectors
- Removable handheld front panel with 8x40 character backlit LCD display
- Choice of OS-9 or Linux operating systems
- USIS port optional

Answers for mobility.

QWC0038

1) CONSTRUCTION:		NOM. DIA.
CONDUCTOR:	24 AWG 7/32 STRANDED TINNED COPPER	.0236"
INSULATION:	HIGH DENSITY POLYETHYLENE, .011" NOM. WALL THICKNESS	.046"
PAIRS:	COLOR CODED SINGLES TWISTED INTO PAIRS	.092"
CABLE:	(4) TWISTED PAIRS TWISTED TOGETHER AND WRAPPED WITH A FOAM POLYPROPYLENE TAPE TO FORM A CABLE CORE.	.197"
SHIELDS:	AN OVERALL SHIELD OF 38 AWG TINNED COPPER BRAID (75% MINIMUM COVERAGE), SHALL BE APPLIED OVER THE CABLE CORE. A SECOND SHIELD OF ALUMINIZED POLYESTER FOIL (FOIL IN, 100% COVERAGE) SHALL BE APPLIED OVER THE BRAID.	.216"
JACKET:	THERMOPLASTIC ELASTOMER, (COLOR, PER CHART 1), .037" NOM. WALL THICKNESS (PRESSURE)	OVERALL CABLE DIAMETER .290" ± .010"

2) PHYSICAL PROPERTIES:

TEMPERATURE RATING, MAX. 75°C & 80°C
 TEMPERATURE RATING, MIN. -40°C (MANUFACTURER'S RECOMMENDED)
 WT./M', NOM., NET. 43.0 LBS.
 JACKET IS WELD SPATTER RESISTANT
 JACKET IS SUNLIGHT RESISTANT
 FLEX LIFE (PENDING) (126 CYCLES/MIN, @ 20°C) 1 MILLION CYCLE TEST (10X CABLE O.D., MINIMUM RADIUS)
 10 MILLION CYCLE TEST (20X CABLE O.D., MINIMUM RADIUS)

TORSION TEST (1 LB LOAD, 360°, 71 CYCLES/MIN, @ 20°C) 4.8 MILLION CYCLE TEST
 PASSED ASSEMBLY TEST REQUIREMENTS
 JACKET CUTTING/MACHINING OIL RESISTANCE (6 MONTHS @ 20°C)

TENSILE STRENGTH RETENTION, NOM. 80%
 ELONGATION RETENTION, NOM. 100%

POE COMPLIANT (802.3af) TO 90 METERS WHEN INSTALLED PER RECOMMENDATIONS IN TIA TSB-184
 CABLE WILL MEET CAT 5e CHANNEL REQUIREMENTS TO 90 METER LENGTH

CHART 1:

QUABBIN P/N	JACKET COLOR
5089	BLACK
5090	TEAL

3) ELECTRICAL CHARACTERISTICS:
SEE PAGE 2

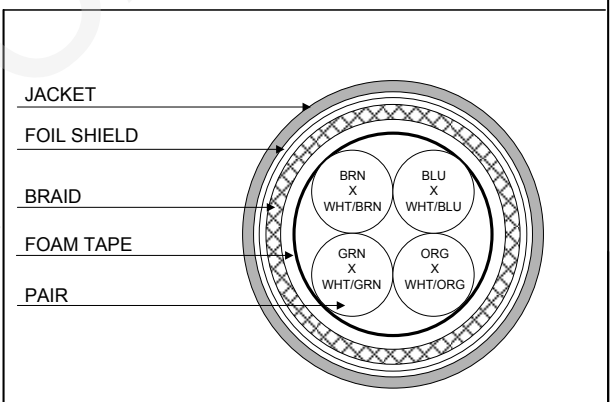
4) AGENCY APPROVALS:
UL AWM STYLE 2463 (80C 600V)
NEC (UL) TYPE CMX OUTDOOR - CM
CEC C(UL) TYPE CMX OUTDOOR - CM

5) APPLICATION:
RoHS COMPLIANT MATERIALS.
U.S. PATENT NO. US 8,487,184 B2

6) PRINT: (WHITE INK ON BLACK JACKET, ALL OTHERS BLACK INK)
 QUABBIN DATAMAX EXTREME HIGH FLEX INDUSTRIAL ETHERNET/IP PATCH CORD CAT 5e SF/UTP P/N (P/N PER CHART 1) -- U.S. PATENT NO. US 8,487,184 B2 -- C(UL)US TYPE CMX OUTDOOR - CM 4PR 24 AWG 75C SUN RES OR AWM 2463 80C 600V -- RoHS -- (LOT DESIGNATOR) (SEQUENTIAL FOOTAGE)

7) COLOR CODE:
 1. BLUE X WHITE/BUE
 2. ORANGE X WHITE/ORANGE
 3. GREEN X WHITE/GREEN
 4. BROWN X WHITE/BROWN

8) PACKAGING:
TO BE PACKAGED AS PER QWC'S STANDARD PACKAGING



CUSTOMER APPROVAL: _____ DATE: _____

PS1470

Created 7/18/12	DRAWN: BMD 12/27/16	
REV. 07	CHECKED: JFR 12/28/16	
TITLE 4PR. SF/UTP HIGH FLEX INDUSTRIAL ETHERNET PATCH CORD -- CAT 5e		
DRAWING #	QWC0038	1 of 1

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Cat5-e, 24 AWG, 4 Pair, Shielded, TPE, Black cable required for connection to radio and Ethernet switch in traffic control cabinet.

Appendix C Drawings & Map

