

**PROPOSAL
FLASHING BEACON AND INSTALLATION
SHERIDAN ROAD AT MILLINGTON ROAD**

**TUSCOLA COUNTY
BOARD OF COUNTY ROAD COMMISSIONERS**

**1733 S. MERTZ RD.
CARO, MI 48723**

LETTING DATE – SEPTEMBER 16, 2010

8:45 A.M.

CONTRACTOR: _____

ADDRESS: _____

SIGN & PRINT: _____

DATE: _____

PHONE & FAX: _____

EMAIL ADDRESS: _____

Project Total: \$ _____

Completion: _____ **Number of Calendar days after notice of award.**

TUSCOLA COUNTY
ROAD COMMISSION
PROPOSAL FOR
FLASHING BEACON AND INSTALLATION
Page 2 of 4

The contractor has examined the proposal, specifications, plans, and the location of the work described herein and is fully informed as to the nature of the work and the conditions relating to its performance and understands that the quantities shown are approximate only and are subject to either increase or decrease.

A. GENERAL:

This work involves the complete installation of a span wire mounted 4-Way flashing red LED beacon at the intersection of Sheridan Road and Millington Road, Sections 11-14, Millington Township, Tuscola County.

The contractor hereby proposes to furnish all necessary labor, equipment and materials for the unit prices listed, to complete the work herein described in strict accordance with the requirements of the Michigan Department of Transportation 2003 Standard Specifications for Construction (including Errata Specification) and such other special provisions and supplemental specifications as may be attached to this proposal.

In the attached specifications the Owner shall be revised to the Tuscola County Road Commission.

The contractor shall be MDOT prequalified to complete such work. Proof may be requested prior to award.

Coordinating Clause: This project is to be constructed in coordination with work by Tuscola County Maintenance Crews. The bidder awarded this project will cooperate by scheduling their work with the other crew.

Warranty: The Contractor hereby warrants his work and material for one year from the date of placement.

B. MATERIALS:

Shall meet MDOT Specifications, as attached.

C. CONSTRUCTION:

Construction shall comply with the Special Provision for Traffic Signal Work-Construction Methods as amended

Page 2, Note 3. 3rd paragraph, scratch out scheduling, installation, and payment

Page 2, Note 3. 4th paragraph, change Contractor to Owner.

Page 7, Note 5. Last paragraph shall be deleted.

No marking tape.

Page 8, Note 9. Traffic Loops, shall be deleted.

Page 8, Note 10. Signs. Shall be deleted. Signs will be installed by Tuscola County Crew. Work shall be coordinated with beacon installation.

Progress Schedule and Completion Date: The Contractor shall provide the amount of calendar days needed for completion. A late fee of \$100 per calendar day may be assessed after stated days.

D. TRAFFIC CONTROL:

The Contractor shall provide a traffic control plan with reference to the necessary MDOT Maintaining Traffic Typical. The Contractor will not be compensated for others using the traffic control. All necessary labor, equipment, and materials shall be included in the Maintaining Traffic Pay Item.

E. PAYMENT:

The completed work will be paid for at the contract unit price for the contract pay items listed on the back page. An invoice shall be submitted to the Road Commission, with necessary certified material slips, to receive payment.

F. LIABILITY:

The Contractor shall at all times exercise extreme care and shall assume all liability for any damages resulting from his operations and shall hold the Tuscola County Road Commission harmless from any such claims or damages.

The successful bidder must also furnish certificates or policies giving satisfactory evidence of insurance coverage to the minimum extent of \$500,000.00 property damage and \$1,000,000.00 personal liability to insure adequate payment for any damage caused by his operations.

The contractor shall, prior to the start of work, file with the Tuscola County Road Commission a certificate of Workmen's Compensation Insurance. The attached certificate of insurance is required for the successful bidder or bidders.

Reduced sized plans are attached. Full sized plans can be ordered from the Tuscola County Road Commission, Caro Office. Call 989-673-2128.

NON-COMPLIANCE WITH PROJECT SPECIFICATION PROVISIONS

Any variation from the specifications of the project herein without written approval from the Tuscola County Road Commission and/or its authorized representative may result in, at the discretion of the Road Commission, the voiding and/or canceling of the acceptance of any bid and/or contract, resulting from this project.

The Board reserves the right to accept or reject any or all proposals and to re-advertise or to accept the proposal, that in their opinion, is in the best interest of Tuscola County.

<u>Pay Item</u>	<u>Quantity</u>	<u>Units</u>	<u>Unit Price</u>	<u>Total</u>
Maintaining Traffic	1.00	LS	_____	_____
Cable, Equipment Grounding Wire 1/c #6	85	FT	_____	_____
Cable, P.J., 600V, 1, 5/C #16	85	FT	_____	_____
Hh, Square	1	Ea	_____	_____
Utility, Elec	250	Dlr	_____	_____
Wood Pole, Cl 4, 30 foot	1	Ea	_____	_____
Wood Pole, Cl 4, 35 foot	1	Ea	_____	_____
Fish Beacon Controller and Cabinet, Solid State	1	Ea	_____	_____
Power Co. (Est Cost to Contractor)	250	Dlr	_____	_____
TS, Four Way Span Wire Mtd (LED)	1	Ea	_____	_____

Project Total \$ _____

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
TRAFFIC SIGNAL WORK – CONSTRUCTION METHODS

T&S:DJA

1 of 9

C&T:APPR:RJZ:JAJ:05-15-08

a. Description. The following special provision is for electrical construction and/or relocation of traffic signal facilities and is to be used with the current edition of the Standard Specifications for Construction.

b. Materials. All material and equipment furnished by the Contractor must be new, unless specified otherwise, and must comply with sections 918 and 921 of the Standard Specifications for Construction. The Owner shall have the right to reject any material which does not meet specification requirements. All work on any Michigan Department of Transportation (MDOT) facility is subject to their inspection. Materials furnished by the Owner to the Contractor shall be picked up by the Contractor at such site as designated by either MDOT or the Local Agency representing MDOT and any associated costs will be included in other items in the contract and will not be paid for separately.

1. General. Manufacturer's test certificates, in accordance with the specifications, will be required for all wire and cable. These certificates shall be submitted to MDOT immediately upon receipt by the Contractor. The Contractor shall not install any wire or cable before it has been approved by the Engineer.

Contractors shall include on their material order, especially on wire and cable, the statement "Materials are in strict accord with the Specifications."

Where the contract calls for reuse of existing material and equipment, the Contractor shall reuse only the best of the existing material and equipment. The Owner shall have the right to furnish the Contractor with a new part if any are found defective prior to dismantling. Any part or parts damaged by the contractor subsequent to starting the removal are a liability of the Contractor.

Within 5 days after completion of each section of the underground conduit or cable work or the overhead line work, the Contractor shall furnish the Owner an exact record of all underground or overhead work installed. This record shall include the size and length of cable and duct lines, location of the lines, location of handholes and manholes, and location and size of poles. All wires and cables shall be tagged using a brass tag indicating the source and use of the cable.

The Contractor must contact Miss Dig (1-800-482-7171) for underground utility location three full working days prior to any excavation. The Contractor must exercise caution to avoid damage to other existing utilities.

The locations of existing underground obstructions or facilities of other utilities are not necessarily indicated on the plans. Where facilities of other utilities are shown, their locations are only approximate with their exact location not guaranteed for correctness.

2. Construction Influence Area (CIA). The Contractor shall inspect all streets and alleys where work is to be done before submitting a proposal and shall inspect all conditions which may affect proposed work in accordance with subsection 102.04 of the Standard Specifications for Construction. No extras will be allowed for such conditions or for interference with work by other Contractors or Utilities as described in subsection 104.07 of the Standard Specifications for Construction.

The Contractor shall furnish and maintain the traffic signals in areas specified for traffic maintenance.

All existing street lighting, traffic signal, primary, transmission, communication cables, etc. circuits shall be maintained in an operational condition (except where otherwise noted).

The Contractor shall assume all risks and responsibility regardless of existing soil conditions and shall complete the work in whatever material and under whatever ground conditions they may encounter or create, without additional cost to the Owner.

The Contractor shall be responsible for maintenance, vandalism, and accident damage to the lighting, traffic signal, conduit, wood pole, overhead wires, cable, etc., and all other material installed or to be installed related to or necessary for the electrical installation of the project until installation is complete, tested, and accepted by the Owner.

Work activities will be allowed as specified in the Special Provision for Maintaining Traffic. Any work as directed by the Engineer to be performed on a Sunday and/or a holiday is to be included in other items in the contract and will not be paid for separately.

3. Utility Coordination. The Contractor shall notify the System Operating Division of the local utility 72 hours in advance of any work on underground or overhead transmission or distribution circuits. If possible, the System Operating Division will shutdown and red tag the line by 8 a.m. for the day requested. The Contractor shall notify the System Operating Division when the work is complete.

The Contractor shall make arrangements, as described above, to work on traffic signal circuits.

The Contractor shall be responsible for ~~scheduling, coordination, installation, and payment~~ of work provided by the local utility/telephone company, as indicated on the plans or as directed by the Engineer. The Contractor shall receive no payment for any delay caused by utility coordination work.

Utility company service installation fees, metered service charges, and other charges as detailed on the plans (for length of contract) are to be ordered and paid by the Contractor (included in the installation of traffic signals on this contract).

4. Agency Coordination. The Contractor shall secure all necessary permits covering his operations including permits from the Public Authorities having jurisdiction over the streets or other Public Properties in which the work is located and the improvements therein. The Contractor shall obtain the amount of any charges for payment, including fees or

inspection charges required by such authorities, and shall include the cost of these fees in the bid prices.

The Contractor shall obtain the requirements of said authorities and shall include all costs of restoring existing improvements in the bid prices.

During installation of cable and conduit and all related work, the Contractor shall at all times maintain traffic in the manner and requirements of local authorities. The local traffic authority may impose restrictions regarding particular times of certain days of the week wherein the Contractor cannot perform his work and may, in fact, be required to clear the area of work obstacles or construction equipment. The Contractor shall take note of this and there will be no extra payment to perform the work with possible restrictions imposed. There will be no extra payment if the Contractor chooses to perform work during overtime status.

5. Conduit. Conduits, fittings, and bends shall be Schedule 80 plastic polyvinyl chloride (PVC) in accordance with the *National Electric Code* (NEC) and Section 918 of the Standard Specifications for Construction.

Conduits, fittings, and bends shall be approved for aboveground and underground use, sunlight resistant, and for 194 degree F rated cable.

The concrete mix, used to encase the conduit, shall be sufficiently fluid that when placed, the line of advancing concrete will show at the bottom of the excavation.

All conduit pipe fittings and bends shall be joined with an approved PVC conduit cement.

All conduits entering a handhole shall have a PVC end bell on the end of the conduit with no sharp edges to damage cable, refer to MDOT "typical" signal construction detail.

6. Handholes. Precast concrete handholes shall be of the design and dimensions shown on the plans. The handholes shall be manufactured of vibrated concrete reinforced with an all welded cage containing 0.35 percent longitudinal steel, unless otherwise shown on the plans. The concrete shall have a minimum compressive strength of 3,500 psi.

7. Concrete. Concrete for manholes, handholes, foundations, and encased conduit shall be grade S2 as specified in section 701 of the Standard Specifications for Construction. The coarse aggregate used for concrete to encase conduits shall be 17A per section 902 of the Standard Specifications for Construction.

8. Overhead Service Connection. The Contractor shall furnish and install a pole band and any necessary hardware, to meet local utility company requirements, for installation of a secondary electric service rack by the utility company on a steel pole as indicated on the plans or as directed by the Engineer.

9. Service Disconnect. Disconnect switches (stainless steel) shall be *National Electrical Manufacturers Association* (NEMA) heavy duty (HD), fusible quick-make, quick-break type, with full cover interlock. Enclosure shall be NEMA 4X, unless otherwise noted. Means for padlocking the operating handles in the open or closed position shall be

provided. Switches shall be single throw, unless otherwise noted. Switches shall be of the voltage ratings and current carrying capacities indicated on the drawings.

The service disconnecting means shall consist of equipment marked, rated, and suitable for the purpose.

10. Cable and Wire. Multi-conductor, plastic-jacketed cable (from controller to signal head) shall be furnished and installed on wood poles or in duct, as indicated on the plans, interconnecting the traffic signals with their proper controllers.

All overhead wires and underground cables shall consist of stranded copper conductors as per Standard Specifications for Construction.

All overhead traffic signal cable shall be supported by 5/16 inch extra high strength (EHS) grade span wire as per Standard Specifications for Construction (included with the cable and will not be paid for separately).

c. Construction. All work shall comply with sections 819 and 820 of the Standard Specifications for Construction, the applicable "typical" signal construction details, this Special Provision, and requirements of the NEC, the Electric Code of the local city, the *National Electrical Safety Code*, and the Michigan Department of Labor and Economic Growth.

Construction must be performed by persons who are experienced and qualified for the work required. On-site licensed (Journeyman electrician) supervision is required for the electrical system installation (including placement of traffic loops, conduits, and/or cables in dirt, foundations, and handholes) and shall be present at all times when electrical construction is in progress.

The Contractor shall contact the Michigan Department of Labor and Economic Growth for electric service inspection and is responsible for all applicable fees.

1. Conduit. The conduit called for on the plans is the preferred installation method. If the conduit installation method is impossible to construct or if the contractor prefers to use any other method such as jack-bored, open cut, or direct burial; the change of method may be made upon approval by the Engineer.

The Contractor is responsible for determining or anticipating their need or desire to install conduit by any other method and include the cost in the contract bid. No extra payment will be allowed for any change in the method of conduit installation.

Factory conduit bends shall only be used when entering foundations or cable pole envelopes. All conduit bends shall have minimum radii in accordance with the current NEC. Unless otherwise specified on the plans, the radii of the conduit bends, in inches, shall not be less than the following:

TABLE 1 RADII OF THE CONDUIT BENDS (INCHES)

Size of Conduit	Cable Without Lead Sheath	Cable With Lead Sheath
1.5	10	16
2	12	21
2.5	15	25
3	18	31
3.5	21	36
4	24	40

Spacers shall be not more than every 7 feet when 20 foot lengths of conduit are installed and not more than every 5 feet when 10 foot lengths of conduit are installed.

The conduit bank shall be prevented from floating up when the concrete is placed, by anchoring to stakes at intervals not to exceed 10 feet in firm soil and not to exceed 5 feet in loose soil.

Typical sections and various typical arrangements of conduit will be shown on the plans.

Coilable conduit shall be continuous between handholes.

All conduits not terminating in structures such as manholes, handholes, foundations, or cabinets shall extend two feet beyond pavement limit (except as otherwise indicated). All unoccupied conduits shall be plugged.

New conduits broken into existing manholes or handholes shall not interfere with racking and/or training of cables. Exercise caution not to disturb existing cables.

No concrete encasement shall be in contact with any obstruction. A vertical clearance of nine inches shall be provided, except that conduits parallel to water and gas mains shall be separated by not less than three feet.

Installation of encased conduit called for on plans shall be concrete encased unless otherwise directed by the Engineer.

Conduit grades shall be staked at 8 foot intervals or less. Excavation below the bottom line of the trench shall be filled and compacted with Porous Material as defined in section 204 of the Standard Specifications for Construction. Grade shall have a fall to the lowest manhole or handhole, or from the middle toward both holes, of not less than 4 inches per 100 feet.

All surfaces which have been dug up or disturbed for any reason by the Contractor shall be restored in kind to its original condition.

2. Handholes. Precast or cast-in-place handholes shall be installed or constructed as shown on the plans.

Where installing or building a handhole over or into an existing conduit line (to accommodate new and existing conduits) the Contractor shall carefully remove the existing conduits and encasement so as not to damage the existing cables. All conduit and concrete

encasement shall be broken off and away to the walls of the new handhole. The existing cables shall be extended, properly trained, racked, and supported on the walls of the handhole. Breaking away the concrete encasement and cable racking shall be included in building the handhole.

3. Concrete. Concrete shall be placed in the forms in a layer of such thickness that when compacted and finished, the pad will be of the thickness shown on the drawings. The pad shall be continuous between expansion joints. After the concrete has been placed between side forms, a strike-off guided by the side forms shall be used to bring the surface to the proper section to be compacted.

Concrete, during and immediately after depositing, shall be compacted by means of rods, forks, and other suitable tools. The concrete shall be worked thoroughly around enforcements, around embedded fixtures, and into corners. Every precaution shall be taken to produce a dense water-proof concrete free of voids and honeycomb.

Temporary enclosures and other protection for concrete shall remain intact for not less than 24 hours after the heating source is removed.

Salt, or other chemicals for the prevention of freezing, shall not be used.

4. Foundations. Traffic signal strain pole, pedestal, and controller foundations shall be constructed as shown on the plans and the applicable "typical" construction details.

No construction rubble, broken sidewalk, or other foreign material will be permitted in place of concrete. Cracked or otherwise defective foundations will not be accepted.

Standards shall not be installed on foundations until the concrete has been cured for a minimum of 7 days.

Foundations shall at all times be properly protected and guarded to prevent injury to persons until the standards are installed.

No foundation shall be placed until the curb is in place. The foundation shall be located as shown on the plan unless otherwise authorized by the Engineer.

Ground rods and ground wires shall be installed as shown on the detail drawings. The ground wire shall be connected to the ground rod with a copper clad steel solder-less type clamp. The connection must be electrically solid and mechanically secure.

The lower portion of the foundation shall be placed without forms unless the soil is subjected to cave-in and the use of forms is authorized by the Engineer. Forms shall be used to shape the upper part of the foundation, as shown on the plans. The top surface of the foundation shall be horizontal and at the elevation shown on the plans or established by the Engineer.

All foundations which require backfill shall have the backfill placed in layers not more than 12 inches in depth and compacted to not less than 95 percent of maximum unit weight. The backfill shall be placed in accordance with section 206 of the Standard Specifications for Construction or as directed by the Engineer.

If any spoil material is encountered or noted on plans, all spoil material from drilled shafts or other foundations at any location shall be disposed of according to subsection 205.03 of the Standard Specifications for Construction.

Base Mount Controller Foundations shall be placed using forms to shape the foundation as shown on the plans and the appropriate traffic signal construction details. The top surface of the controller foundation shall be horizontal, finished with a smooth straight surface free from irregularities, to permit placement of the controller cabinet flush onto the foundation. Any gap between the two surfaces shall not exceed 1/8 inch or as directed by the Engineer.

5. Cable and Wire. The work may necessitate working with energized cables, the voltage of which does not exceed 250 volts alternating current (VAC).

All wires and cables shall be tagged in a permanent manner indicating the source and use of each. This shall be done in all manholes, handholes, and cabinets where these cables or wires enter, exit, are spliced, and are terminated. A minimum 10 foot coil of each cable is required in each manhole and/or handhole.

The tagging of wires and cables shall occur at the wire entrances and exits of all handholes, manholes, and cabinets. Tagging shall also occur at all cable and wire terminations and splices. Wires and cables in manholes and handholes shall be tagged only with an engraved metal tag.

Seal end of cable where coiling of cable is shown on the plans.

The Contractor shall cut and remove cables within handholes and manholes where abandonment of underground cables is indicated on the plans. Abandonment of all cables and conduit shall be included in the contract and will not be paid for separately.

All detector wiring harnesses shall be labeled in a permanent manner at the connector as to source and use.

~~Place marking tape from 6 inches to 18 inches above all underground conduit or cable installed on this contract. The only exception will be Jack and Bored Conduit or Directional Bore Conduit. This marking tape shall have the MDOT logo and telephone number on it and be furnished by the department. The marking tape can be obtained by the Contractor by a telephone call to MDOT's Lansing Signal Shop at 517-322-3360.~~

6. Span Wire. Any span wire not included in this contract (specified to be replaced by the utility company), but is requested to be replaced by the Contractor will be considered as being changed to facilitate ease of construction by the Contractor and must be arranged and paid for by the Contractor at no cost to MDOT. Any change of span wire must have prior approval of the Engineer and MDOT's Traffic and Safety Division, Traffic Signals Unit, Lansing at 517-373-2323.

For traffic signal span wire supporting traffic signals, use 5/16 inch EHS grade as per Standard Specifications for Construction.

All new anchor guys shall be installed on a 1:1 ratio or as nearly as possible and will have a porcelain strain insulator installed (except where otherwise noted). (Strut guys are excepted.)

7. Traffic Signal Controller. The traffic signal controller cabinet shall be secured by means indicated on the plans (for either pole or base mounted).

The Contractor shall furnish the Owner two copies of manufacturing specifications of the controller, outlining in particular, special details, features, or changes in design operation. The Contractor shall furnish the Owner one complete wiring diagram, parts list, assembly drawings, and maintenance manual of the controller.

All traffic signal controllers furnished on this contract shall be capable of accepting the prescribed timing contained in this proposal.

All traffic signal installations with solid state controllers shall be grounded at each span contact pole. The grounding shall have a measured resistance no greater than 10 OHMS when installed.

8. Traffic Signals. All traffic signal items, as called for on the plans, shall have included in the traffic signal item all cables from the controller to the traffic signals and foundations as indicated.

All traffic signals shall be mounted with new standard traffic signal brackets and fittings.

All traffic signal fittings (screws, nuts, bolts, pinnacles, etc.) shall be greased with a non-oxide type grease.

Stemming of signal heads to maintain equal under clearance for each span wire mounted signal head (at all intersections in this contract) is included in the item and will not be paid for separately.

All salvaged traffic signals shall be traffic signals previously installed new on this contract (except as otherwise indicated).

Bagging of temporary or final traffic signal required by the Engineer shall be included in the installation of traffic signal on this contract.

~~9. Traffic Loops. The Contractor shall use a high pressure water and air spray method to thoroughly clean and dry the slot prior to placing traffic loop wire. This work includes removal of all dirt, dust, debris, and standing water in the slot and the pavement area adjacent to the slot, so any removed material is not dragged into the slot during loop installation. The Contractor shall remove and dispose of all associated debris from the roadway. This work shall comply with section 820 of the Standard Specifications for Construction or as directed by the Engineer.~~

~~10. Signs. Traffic sign materials shall be in accordance with sections 919 (permanent) and section 922 (temporary) of the Standard Specifications for Construction, comply with Special Provisions 03T810(B20) and 03SP919(A),(B),(C), and the requirements of the MMUTCD.~~

11. Wood Posts for Signs. Wood posts for mounting signs and push buttons shall be in accordance with subsection 919.05 of the Standard Specifications for Construction.

d. Measurement and Payment. The work of furnishing, installing, and removing all wire and cables, making all connections and splices, and tagging and bonding cables is included in the unit prices bid for traffic signal controllers and traffic and pedestrian signals. Installation of miscellaneous conduit, fittings, and cutouts is included with the secondary service and will not be paid for separately.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
SOLID-STATE FLASHING BEACON CONTROLLER AND CABINET

T&S:DJA

1 of 2

C&T:APPR:JKG:DBP:06-06-07

a. Description. Furnish all labor, equipment, and material required to install a Solid State Flashing Beacon Controller and Cabinet, as indicated on the plans, including mounting brackets, surge protection, hardware, fittings, wiring, grounding, conduits, and any associated material necessary to complete the work.

b. Materials. Material shall meet Sections 918 and 921 of the Standard Specifications for Construction and the requirements of this Special Provision.

1. **Flasher Controller.** Each controller shall be one of the following National Electrical Manufacturers Association (NEMA) types:

- NEMA Type 1 – 20 Amperes, single-circuit
- NEMA Type 2 – 10 Amperes, dual-circuit
- NEMA Type 3 – 15 Amperes, dual-circuit

The flasher controller shall not exceed the nominal dimensions of 8.25 inches long, 1.9 inches wide and 4.2 inches high. The flasher controller shall integrate with a Cinch-Jones socket Type S-406 or approved equal.

The flasher controller shall operate at 120 volts alternating current (VAC) at 60 hertz (Hz). This input source shall supply power for the output circuit and to the flasher logic. The flasher controller output shall provide a range of 50 up to and including 60 flashes per minute with an On Period of 50 +/- five percent.

2. **Cabinet.** An Eagle-240 cast aluminum type cabinet, or approved equal, shall be used for advance warning flashing beacon type installations or other applications where the conduit feed into the cabinet is two inches or less. The flasher controller cabinet shall have the nominal dimensions of 13 11/16 inches high, 10 13/16 inches wide, and 6 21/32 inches deep.

3. **Equipment Box.** A flasher controller equipment box enclosure shall be used for intersection overhead flashing beacon installations (with dual displays, illuminated case sign), advance warning sign flashing beacon installations (school or fire station type with radio assemblies), or other applications where the conduit feed into the cabinet is greater than two inches (three inches typical). The equipment box enclosure shall have the nominal dimensions of 16 inches high, 14 inches wide, and 12 inches deep, and be manufactured from 1/8 inch thick aluminum meeting American Society for Testing Material (ASTM) 5052-H32 or approved equal. The equipment box shall have a nominal 1/2 inch lip formed on the opening to allow the equipment box door gasket to seal out dust and moisture. The equipment box enclosure shall have four standoffs mounted on the inside to accommodate a back-panel.

- A. **Painting.** The inside of the enclosure shall be painted white. The exterior shall be finished with a durable and weather-resistant protective coating having a total dry film thickness of not less than 1.5 mils. The final coating shall be aluminum in color with a total dry film thickness of not less than 0.75 mils.
- B. **Door.** The door shall be equipped with a weather tight seal consisting of a neoprene sponge rubber type gasket approximately 5/8 inches wide by 3/16 inches deep. The door shall include a heavy duty stainless steel continuous hinge, be provided with a lock and lock cover to prevent dust and moisture from entering the lock assembly, and have two Corbin Type Blank 04266 type keys or approved equal.
- C. **Back-Panel.** The back-panel shall be aluminum 1/8 inches thick and have nominal dimensions of 15 inches wide and 11 1/2 inches wide. The back-panel shall be attached to the standoffs with four 1/2 inch, 10-32 stainless steel Phillip head/star type screws and four lock washers. The panel shall not have any other holes drilled except those necessary to attach the panel to the standoffs.

4. **Packing and Marking.** Each Solid-State Flashing Beacon Controller and Cabinet shall be individually packaged in such a manner that it will be accepted by common carriers and no injury or defacement will occur to the contents during transportation to the point of destination. Each package shall be legibly marked with the content description, order number, and vendor's name.

5. **Inspection.** Inspection shall be performed by the Michigan Department of Transportation (MDOT) or the agency representing MDOT. Test reports shall be furnished upon request by the agency for conformance to these specifications. Any unit not meeting performance specifications will be returned to the Contractor.

6. **Warranty.** The Contractor shall provide materials with a manufacturer's guarantee/warranty, transferable to MDOT, that the supplied materials will be free from all defects in materials and workmanship for a specified period from the date of shipment. The Contractor shall supply the Engineer with any guarantee/warranty documents for the manufacturer and a copy of the invoice showing date of shipment.

c. **Construction.** Work shall be done in accordance with the plans and comply with Sections 819 and 820 of the Standard Specifications for Construction and this Special Provision.

d. **Measurement and Payment.** The completed work as described shall be measured and paid for using the following contract item (pay item):

Contract Item (Pay Item)	Pay Unit
Flsh Beacon, Controller and Cabinet, Solid State	Each

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
METERED SERVICE

T&S:SAS

1 of 2

C&T:APPR:JJG:JKG:05-20-05

a. Description. The work shall consist of furnishing and installing the meter, ground rods, service cable, and conduits necessary to provide a complete and operating job as specified herein. Metered service removal work shall also be included within this special provision.

b. Materials. Conduit, grounding, and risers shall meet Section 918 of the Standard Specifications for Construction. Other material required shall meet local utility company specifications and the National Electric Code (NEC).

c. Construction. For removal of metered services, remove all meters, conduits, risers, service connections, and associated materials. Contact the local power company shown on the plans to coordinate service removal and power feed. All removal work shall be done in accordance to the NEC, the current MDOT standards, and the local power company's standards.

For new metered services, furnish and install a new meter socket in accordance with NEC and local utility company specifications. Connect the meter socket to the service disconnect using a minimum of 1.50 inch diameter schedule 80 PVC or galvanized metal conduit on wood poles. On steel poles, every effort shall be made to connect the wiring between the meter socket and the service disconnect on the inside of the pole. Conduit may be run on the outside of the pole only if required by the Engineer or utility company. The conduit shall be supported using two-hole galvanized support brackets using no more than three foot spacing. The conduits and equipment shall be bonded as required by the NEC, utility company, and the MDOT standards. Waterproof LB's shall be used to enter and exit all meters, service disconnects, and controllers. All work shall comply with the following MDOT signal details:

1. Steel Poles – Detail ST-24A
2. Wood Poles – Detail ST-24B
3. Wood Posts – Detail ST-24D

All additional work required by the local utility company to make a complete and operating job shall be considered included in this pay item.

In Oakland County, all work shall comply with Detail OC-24.

d. Measurement and Payment. The completed work as described shall be measured and paid for at the contract unit price for the following contract items (pay items):

Contract Item (Pay Item)	Pay Unit
Metered Serv.....	Each
Metered Serv, Rem.....	Each

The contract unit price each for **Metered Serv** shall be payment in full for furnishing and installing the meter socket, ground rod(s), ground wire, service cable, PVC Schedule 80 or galvanized rigid metal pipe risers, concrete encased conduit bend(s), wood post, or any other material required to provide a complete and operating job. Any material required by the local utility company and the NEC to provide a complete and operating job is included in the item and will not be paid for separately.

The contract unit price each for **Metered Serv, Rem** shall be payment in full for furnishing all labor for the removal of meter, meter socket, cable, risers, concrete encased conduit bend(s), wood post, and all other related equipment or hardware. Returning the meter to the local utility company and disposing of materials from the site is also included in the item and will not be paid for separately.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
POWER CO. (EST. COST TO CONTRACTOR)

T&S:DJA

1 of 1

C&T:APPR:JAR:JKG: 9-28-05

a. Description. This item shall consist of reimbursement of payment the Contractor has made to the power company for furnishing electrical power at the location(s) indicated on the plans. The estimated cost(s) to the Contractor shall be estimated into a lump sum price dollar amount as indicated on the plans. The Contractor shall be reimbursed for actual paid invoices to the power company by submitting copies of the invoices to the Engineer.

b. Materials. None required.

c. Construction. The Contractor shall be responsible for ~~scheduling,~~ coordination, ~~installation, and payment~~ of work provided by the local utility company, as indicated on the plans or as directed by the Engineer.

d. Measurement and Payment. The work described will be measured and paid for using the following contract item (pay item):

Contract Item (Pay Item)	Pay Unit
Power Co. (Est. Cost to Contractor).....	Dollar

The contract unit price for item Power Co (Est. Cost to Contractor) shall be payment in full in a dollar amount reflecting the actual paid invoices to the power company as specified in the special provisions and indicated on the plans.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
LIGHT EMITTING DIODE (LED) VEHICLE TRAFFIC SIGNALS

T&S:DJA

1 of 10

C&T:APPR:JKG:DBP:01-18-07

a. Description. Furnish all labor, equipment, and material required to install Light Emitting Diode (LED) Vehicle Traffic Signals in either a new traffic signal installation or as a retrofit unit capable of replacing the optical unit of existing vehicular traffic signal sections meeting the Institute of Transportation Engineers (ITE) for Vehicle Traffic Control Signal Heads (VTCSH) LED Circular Signal Supplement dated June 27, 2005 and LED Vehicle Arrow Traffic Signal Supplement, Version: April 3, 2006. This includes installation of LED traffic signal modules for ball and/or arrow lenses and removal of the existing lamp, socket assembly gasket, reflector and door assembly (when appropriate), hardware, fittings, conduit, riser(s), grounding and ground rod(s), cable, and such other material to complete the work. The LED modules shall be provided, installed in an Eagle Signal type (or approved equal) polycarbonate door and visor assembly, when being used as a retrofit in an existing signal head. The polycarbonate door and visor assembly is included in the cost and will not be paid for separately.

The LED signal shall provide a safe, minimum performance requirement and achieve the minimum intensity requirements of the ITE photometric test criteria as described in the ITE VTCSH: LED Circular Signal Supplement dated June 27, 2005, and the LED Vehicle Arrow Traffic Signal Supplement, Version: April 3, 2006. If requested, the manufacturer shall provide independent lab test results certifying the LEDs meet ITE specifications for LED signals.

All LED signals shall be Dialight, Gelcore, or approved equal. All LED signals shall be the latest model currently in production and new. Equipment no longer being manufactured shall not be accepted even if it meets the following specifications. All LED signals installed at a location shall be produced by the same manufacturer.

The reference to LED signals or module includes both circular and arrow modules unless otherwise noted.

b. Materials. Material shall meet Sections 918 and 921 of the Standard Specifications for Construction and the requirements of this Special Provision.

1. Physical and Mechanical Requirements:

- A. Each LED module shall be a self-contained, sealed unit consisting of a lens, color coded leads with pre-insulated spade lugs, LED assembly, power supply, and a one-piece neoprene gasket. Materials used for the lens and module construction shall conform to American Society for Testing and Materials (ASTM) specifications for the materials, where applicable. Enclosures containing either the power supply or electronic components for the signal module shall be made of UL94 flame retardant materials. When retrofitting into an existing traffic signal housing, the LED module shall be provided in a new signal door and visor assembly.

- B. The assembly and manufacturer's process for the LED assembly shall be designed to assure all internal LED and electronic components are adequately supported to withstand mechanical shock and vibration per MIL-STD-883, Test Method 2007. The LED vehicle signal manufacturer shall be ISO 9001 certified.
- C. The LED signal module shall be protected against dust and moisture intrusion per the requirements of MIL-STD-810F procedure I, Rain and Blowing Rain. The test is to be conducted on stand-alone units with no protective housing required.
- D. The LED signal module lens shall be made from ultraviolet stabilized polycarbonate. The red, yellow, and green lens shall be color tinted to match the color of the LEDs. The lens shall require no special tools for replacement. The lens shall be hard coated or otherwise made to comply with the material exposure and weathering effects requirements of the Society of Automotive Engineers (SAE) J576. The lens shall be securely attached to the signal body using waterproof silicone seal.
- E. The external lens surface for all vehicle signals shall be smooth, with no raised features, to minimize the collection of dirt, diesel smoke, and other particulate contaminants, and to facilitate periodic cleaning.
- F. Each signal module shall be identified with the manufacturer's name, model number, serial number on the outside of the unit, related voltage, and power consumption. The identification tag shall be attached using polyester or vinyl self-adhesive labels and be visible without disassembly of the signal module. Paper labels shall not be used.
- G. Each LED signal module shall have a prominent and permanent vertical indication for proper orientation inside a traffic signal housing.
- H. Each LED module shall incorporate a dual lens approach utilizing a single inner collimating lens and a single outer spreading lens. The inner Fresnel lens shall serve to collimate the light emitted by the LED light engine and shall span the full diameter of the interior of the signal. The outer lens shall have raised optical detail on its inner surface in which serves to distribute the light rays in order to meet the intensity and distribution standards required by this specification.
- I. Each LED module shall incorporate two separate printed circuit boards, one for the LED light source, and the other for the power supply. The LED modules shall consist of high flux LEDs mounted on a metal core circuit board via thermal epoxy and the LED electrical contacts shall be soldered to the circuit board. A single layer of thermal transfer material shall be included between the metal core printed circuit board and the module's heat sink to ensure optimum transfer of heat away from the LED p-n junctions.
- J. The lens assembly shall disperse the light such that individual LEDs are not readily visible from vehicles.

- K. The LED signal shall be watertight when properly installed in a traffic signal housing. The LED signal module(s) shall utilize the same mounting hardware used to secure an incandescent lens and gasket assembly, and shall only require a screwdriver or standard installation tool to complete the mounting. The LED signal module assembly shall weight less than five pounds.
- L. The LED arrow module shall be mounted and soldered to a printed circuit board. The LED arrow module shall incorporate a single lens approach, where the single outer lens serves both to spread and diffuse the light from the LEDs. A black arrow mask shall be incorporated behind the outer lens to enhance the definition of the arrow icon. The outer lens shall have raised optical detail on its inner surface in which serves to distribute the light rays in order to meet the intensity and distribution standards required by this specification.

2. Aluminum Vehicular Traffic Signals and Mounting Assemblies:

- A. LED traffic signal modules shall not require special installation tools. The LED modules shall fit into existing Eagle Signal type (or approved equal) traffic signal housings without modification of the signal housing. Installation of the LED module shall only require removal of the existing lamp, socket assembly, gasket, and reflector. The LED module shall be installed in the existing door and connected to the existing terminal block. Screw-in type products are not allowed for vehicle signals.
- B. Each LED module shall be a self-contained unit consisting of a lens, color coated leads with pre-insulated spade lugs, LED assembly, power supply, and a one-piece neoprene gasket.

3. Electrical Requirements:

- A. The LED signal module shall operate from a 60 hertz (Hz) line frequency and over a voltage range of 80-135 volts (V). A change of luminous intensity of no more than ± 10 percent shall be allowed over the voltage range.
- B. The LED signal module shall operate over a temperature range of -40 °F to 165 °F (-40 °C to 74 °C).
- C. Each LED signal module shall be provided with two color coded #18 gauge minimum, anti-capillary 39 inch long, 600V, jacketed wires, conforming to the *National Electrical Code* (NEC), rated for service at $+ 221$ °F ($+105$ °F). The LED module wire leads shall be provided with insulated spade lug terminals for connection to existing traffic signal terminal blocks.
- D. The LED signal module shall include voltage surge protection to withstand high-repetition noise transients and low-repetition, high-energy transients as stated in current *National Electrical Manufacturers Association* (NEMA) *Standard Publication TS-2*.

- E. The LED circuitry shall prevent flicker at less than 100 Hz over the voltage range 80-135 V per the current ITE VTCSH.
 - F. The LED signal and associated on-board circuitry must meet Federal Communications Commission (FCC) Title 47, Sub Part B, Section 15 regulations concerning the emission of electronic noise by Class A digital devices.
 - G. Power factor shall be 90 percent or greater, at nominal rated voltage, at 77 °F (25 °C). Total harmonic distortion (THD) shall be less than 20 percent at rated voltage, at 77°F (25°C).
 - H. The failure of a single LED shall cause loss of light from only that LED. No loss of light output from the complete module assembly shall occur as a result of a single LED failure in a LED ball lamp.
 - I. The LED module shall be designed to detect catastrophic loss of the LED load. Upon sensing the loss of the LED load, the module shall present a resistance of at least 250 k Ω across the input power leads within 300 msec. The LED light source will be said to have failed catastrophically if it fails to show any visible illumination when energized according to Section 5.2.1 of the ITE VTCSH: LED Circular Signal Supplement, dated June 27, 2005, after 75 msec or Section 5.7 of the LED Vehicle Arrow Traffic Signal Supplement, Version: April 3, 2006.
 - J. The LED signal module shall be operationally compatible with currently used controller assemblies (solid state load switches, flashers, and conflict monitors).
 - K. The LED modules shall be wired with #18 American Wire Gauge (AWG) or larger, color-coded thermoplastic insulated wire.
 - L. A six-point terminal block with screw terminals, for use with spade lugs of brass, stainless steel, or other suitable non-corrosive material shall be provided for connection of wires from the LED module and the cable from the signal controller. The terminal block shall be mounted in the center section of the signal face and shall have a minimum of 1-inch lateral clearance from the housing and shall be held in place with stainless steel screws.
 - M. The terminal block, in addition to other requirements, shall be so mounted and located in the housing as to minimize the danger of electrical shock to personnel performing maintenance duties on the signal head.
4. **Power Consumption and Operational Range:**
- A. All LED traffic signal modules shall meet the minimum intensity requirements while operating over the temperature range of -40 °F to 165 °F (-40 °C to 74 °C) for a period of 5 years.

- B. Each high flux LED shall be capable of being driven continuously at a minimum of 350 milli-amp (ma) and have a minimum power dissipation rating of 1 watt.
- C. LEDs shall not illuminate for input voltages below 35 V and shall illuminate for all input voltages higher than 45 V and be regulated above 80 V.
- D. Maximum power consumption for 8 and 12 inch LED red ball traffic signal modules shall consume no more than 6 and 9 watts respectively, at 120 Volts Alternating Current (VAC), at 77 °F (25 °C).
- E. Maximum power consumption for 8 and 12-inch LED yellow ball traffic signal modules shall consume no more than 13 and 19 watts, respectively, at 120 VAC, at 77 °F (25 °C).
- F. Maximum power consumption for 8 or 12-inch LED green ball traffic signal modules shall consume no more than 6 and 12 watts, respectively, at 120 VAC, at 77 °F (25 °C).
- G. Maximum power consumption for 12-inch LED red arrows shall consume no more than 7 watts at 120 VAC, at 77 °F (25 °C).
- H. Maximum power consumption for 12-inch LED yellow arrows shall consume no more than 9 watts at 120 VAC, at 77 °F (25 °C).
- I. Maximum power consumption for 12-inch LED green arrows shall consume no more than 7 watts at 120 VAC, at 77 °F (25 °C).
- J. Each LED module shall reach 90 percent of their full illumination (turn-on) within 75 msec of the application of the nominal operating voltage. The modules shall not have any visible illumination (turn-off) after 75 msec of the removal of the nominal operating voltage.
- K. The Red LEDs shall utilize exclusively Aluminum (Al) Indium (In) Gallium Phosphide (GaP) technology, either Absorbing Substrate (AS) or Transparent Substrate (TS), and shall not exhibit degradation of more than 30 percent of their initial light intensity following accelerated life testing [operating at 185°F (85°C) and 85 percent humidity, for 1000 hours]. Al Ga As technology is not acceptable.
- L. The Green LEDs shall utilize Indium Gallium Nitride technology. Green LED traffic signal modules shall not be illuminated when the applied voltage is less than 35 VAC. They shall be illuminated (unregulated) when the applied voltage is 45 to 80 VAC. Their illumination shall be in compliance with the ITE VTCSH, Part II, when applied voltage is between 80 and 135 VAC.

- M. The Yellow LEDs shall utilize Al In GaP technology, either AS or TS. Yellow LED traffic signal modules shall not be illuminated when the applied voltage is less than 35 VAC. They shall be illuminated (unregulated) when the applied voltage is 45 to 80 VAC. Their illumination shall be in compliance with the ITE VTCSH when applied voltage is between 80 and 135 VAC.
- N. The LED modules shall be operationally compatible with *NEMA TS-1* and *NEMA TS-2* conflict monitoring parameters.

5. Photometric Requirements:

- A. The minimum initial luminous intensity values for the LED traffic signal module shall be as defined in Section 4, Table 1 of the ITE VTCH:LED Circular Signal Supplement dated June 27, 2005, and the LED Vehicle Arrow Traffic signal Supplement, Version: April 3, 2006.
- B. When operated within the temperature range specified in Section 3.3.2 of the ITE VTCSH: LED Circular Signal Supplement dated June 27, 2005, and the LED Vehicle Arrow Traffic Signal Supplement, Version: April 3, 2006, the actual luminous intensity for a module shall not exceed three times the required peak value of the minimum maintained luminous intensity for the selected signal size and color.
- C. The uniformity of the signal output across the entire module lens shall not exceed a ratio of 10 to 1 between the maximum and minimum luminance values (cd/m^2).
- D. The appearance of the module to the motorist shall almost perfectly approximate the appearance of a standard incandescent signal indication. The surface of the LED module shall appear to be nearly totally uniform in illumination and eliminate the visibility of individual LEDs to the motorist.
- E. The measured chromaticity coordinates of LED traffic signal modules shall conform to the color regions based on the 1931 CIE chromaticity diagram as listed in the ITE VTCSH: LED Circular Signal Supplement dated June 27, 2005.
- F. The dominant wavelength for any individual color measurement of a portion of the emitting surface of a module shall be within $\pm 3\text{nm}$ of the dominant wavelength for the average color measurement of the emitting surface as a whole.
- G. The LED modules shall be operationally compatible with *NEMA TS-1* and *NEMA TS-2* conflict monitoring parameters.
- H. The LED traffic signal module shall meet the minimum luminous intensity values listed in Table 1 for circular modules or Table 2 for arrow modules for a period of 60 months.

Table 1 provides the minimum maintained luminous intensity values for the VTCSH: LED Circular Signal, for the range from 12.5 degrees above to 22.5 degrees below the

horizontal plane, and from 27.5 degrees left to 27.5 degrees right of the vertical plane, at 5 degree increments.

Table 1

Minimum Maintained Luminous Intensity Values — VTCSH: LED Circular Signal

Vertical Angle	Horizontal Angle	Luminous Intensity (candela)					
		Red	8-inch Yellow	Green	Red	12-inch Yellow	Green
+12.5	2.5	17	41	22	37	91	48
	7.5	13	33	17	29	73	38
+7.5	2.5	31	78	41	69	173	90
	7.5	25	62	32	55	137	71
	12.5	28	45	24	40	100	52
+2.5	2.5	68	168	88	150	373	195
	7.5	56	139	73	124	309	162
	12.5	38	94	49	84	209	109
	17.5	21	53	28	47	118	62
	22.5	12	29	15	26	64	33
-2.5	2.5	162	402	211	358	892	466
	7.5	132	328	172	292	728	380
	12.5	91	226	118	201	501	261
	17.5	53	131	69	117	291	152
	22.5	28	70	37	62	155	81
	27.5	15	37	19	33	82	43
-7.5	2.5	127	316	166	281	701	366
	7.5	106	262	138	234	582	304
	12.5	71	176	92	157	391	204
	17.5	41	103	54	91	228	119
	22.5	21	53	28	47	118	62
	27.5	12	29	15	26	64	33
-12.5	2.5	50	123	65	110	273	143
	7.5	40	98	52	88	218	114
	12.5	28	70	37	62	155	81
	17.5	17	41	22	37	91	48
	22.5	8	21	11	18	46	24
	27.5	5	12	6	11	27	14
-17.5	2.5	23	57	30	51	127	67
	7.5	18	45	24	40	100	52
	12.5	13	33	17	29	73	38
	17.5	7	16	9	15	36	19
	22.5	3	8	4	7	18	10
-22.5	2.5	17	41	22	37	91	48
	7.5	13	33	17	29	73	38
	12.5	10	25	13	22	55	29
	17.5	5	12	6	11	27	14
-27.5	2.5	12	29	15	26	64	33

Vertical Angle	Horizontal Angle	Luminous Intensity (candela)					
		8-inch			12-inch		
		Red	Yellow	Green	Red	Yellow	Green
	7.5	8	21	11	18	46	24

Note 1: Luminous intensity values for equivalent left and right horizontal angles are the same.

Note 2: Tabulated values of luminous intensity are rounded to the nearest whole value.

Table 2 provides the minimum maintained luminous intensity values for the VTCSH: LED Vehicle Arrow Traffic Signal, for the range from 12.5 degrees above to 22.5 degrees below the horizontal plane, and from 27.5 degrees left to 27.5 degrees right of the vertical plane, at 5 degree increments.

Table 2

Vertical Angle (deg)	Horizontal Angle (deg)	Luminous Intensity (candela)		
		12 inch arrow		
		Red	Yellow	Green
+12.5	2.5	6	15	8
	7.5	5	12	6
+7.5	2.5	11	28	14
	7.5	9	22	11
	12.5	6	16	8
+2.5	2.5	24	60	31
	7.5	20	49	26
	12.5	13	33	17
	17.5	8	19	10
	22.5	4	10	5
-2.5	2.5	57	143	75
	7.5	47	116	61
	12.5	32	80	42
	17.5	19	47	24
	22.5	10	25	13
	27.5	5	13	7
-7.5	2.5	45	112	59
	7.5	37	93	49
	12.5	25	63	33
	17.5	15	36	19
	22.5	8	19	10
	27.5	4	10	5
-12.5	2.5	18	44	23
	7.5	14	35	18
	12.5	10	25	13
	17.5	6	15	8
	22.5	3	7	4
	27.5	2	4	2
-17.5	2.5	8	20	11
	7.5	6	16	8
	12.5	5	12	6
	17.5	2	6	3
	22.5	1	3	2

Vertical Angle (deg)	Horizontal Angle (deg)	Luminous Intensity (candela)		
		Red	Yellow	Green
-22.5	2.5	6	15	8
	7.5	5	12	6
	12.5	4	9	5
	17.5	2	4	2
-27.5	2.5	4	10	5
	7.5	3	7	4

Note 1: Luminous intensity values for equivalent left and right horizontal angles are the same.

Note 2: Tabulated values of luminous intensity are rounded to the nearest whole value.

6. **Quality Assurance.** LED modules shall comply with the quality assurance production testing, inspection, and design as specified in the ITE VTCSH: Light Emitting Diode (LED) Circular Signal Supplement dated June 27, 2005, and LED Vehicle Arrow Traffic Signal Supplement, Version: April 3, 2006.

7. **Tests, Inspection, and Sampling.** Each LED module is to be tested as necessary and inspected for conformance with the specification before shipment. Failure of any piece of equipment to meet the requirements of this specification shall be cause for rejection.

8. **Drawings and Information.** If required, two copies of drawings of the signal head and LED module showing manufacturer's part numbers for all parts shall be provided.

Independent test lab reports indicating that the material being proposed to furnish meets or exceeds these specifications and all Quality Assurance Testing and Inspection per Section 6 of the ITE VTCSH: LED Circular Signal Supplement dated June 27, 2005 and LED Vehicle Arrow Traffic Signal Supplement, Version: April 3, 2006 shall be supplied. Failure to provide the independent lab test reports shall be cause for rejection.

The information required under paragraphs one and two along with a sample, if requested, will be held as standards for acceptance.

9. **Warranty.** The Contractor shall provide materials with a manufacturer's warranty/guarantee, transferable to MDOT, that the supplied materials will be free from all defects in materials and workmanship for the stated time period from the date of shipment. The Contractor shall supply the Engineer with any warranty/guarantee documents from the manufacturer and a copy of the invoice showing date of shipment.

c. **Construction.** The furnishing and installation of the Light Emitting Diode (LED) Vehicle Traffic Signals shall be as indicated on the plans. All work shall comply with Sections 819 and 820 of the Standard Specifications for Construction, the applicable "typical" signal construction detail(s), and this Special Provision.

LED traffic signal modules shall not require special tools for installation. The LED modules shall fit into existing Eagle Signal type (or approved equal) traffic signal housings without modification of the signal housing. Installation of the LED module shall only require removal of the existing lamp, socket assembly, gasket, and reflector. The LED module shall be connected to the existing terminal block. Screw-in type products are not allowed for vehicle signals.

The current version of Michigan Department of Transportation (MDOT) Special Provision for Aluminum Vehicular Traffic Signals and Mounting Assemblies shall be used for meeting all requirements for signal faces, mounting assemblies, paint, and color with the optical unit modified for use of LED signal modules.

d. Measurement and Payment. The completed work as described will be measured and paid for using the following contract items (pay items):

Contract Item (Pay Item)	Pay Unit
TS, ___ Way ___ Mtd (LED)	Each
TS, ___ Way ___ Mtd, ___ (LED)	Each
TS, ___ Way ___ Mtd (LED) Retrofit Assembly	Each
TS, ___ Way ___ Mtd, ___ (LED) Retrofit Assembly	Each
TS, 4th Level, ___ (LED)	Each
TS, 4th Level, ___ (LED) Retrofit Assembly	Each

MICHIGAN
DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATION
FOR
ERRATA TO THE 2003 STANDARD SPECIFICATIONS

03SS001(2h)

1 of 11

02-07-07

Page	Subsection	Errata
iii		Add <i>Soil Erosion and Sedimentation Control Manual</i> to the list of MDOT publications included by reference.
vii		Change the title of Section 605 to read "Concrete Quality Assurance"
27	103.03.A.1	Reference should read 109.07.B and C.
27	103.03.C	Reference should read 109.07.E.
38	104.08.A.3	Change "right of way" to "right-of-way" in this subsection.
38	104.08.A.5	Change "right of way" to "right-of-way" in five instances in this subsection.
42	104.08.B.11	Change "the Engineerwill" to "the Engineer will" in the first sentence of this subsection.
43	104.08.B.15	The first sentence of this subsection should read "Final measurement for payment for all earthwork, undercuts, muck excavation, swamp backfill, sand subbase, and topsoil stripping will be the responsibility of the Contractor and must include detailed measurements, sketches and computations."
50	104.09.A.1	Delete the second instance of the word "or" in this subsection.
63	106.03.D	Formula 106-2 should read $S = \sqrt{\frac{\sum (x_i - \bar{x})^2}{n - 1}}$
67	107.02	Change "National Pollution Discharge Elimination System" to "National Pollutant Discharge Elimination System" in the second sentence of the third paragraph of this subsection.
71	107.10.D	Delete the first sentence of this subsection and replace with the following: "All insurance policies and binders must also include endorsements by which the insurer shall agree to provide the Department, in writing, items 1 and 2 below. All insurance policies and binders issued in the name of the contractor must also include the additional endorsement, to be provided in writing, in item 3 below."

Page	Subsection	Errata
71	107.10.D.1	Change "initialed" to "initiated."
76	107.15.A.2	Delete the last paragraph of this subsection.
105	109.07	The first sentence of this subsection should read "...prices for extra work, the extra work..."
122	203.03.C.2	Reference in the first sentence of this subsection should read 402.03.E.
122	203.04	Delete the following Contract Items (Pay Items) Culv, Rem, More than 24 inch..... Each Culv, End, Rem, More than 24 inch Each Sewer, Rem, More than 24 inch..... Foot Add the following Contract Items (Pay Items) Culv, Rem, Over 48 inch Each Culv, End, Rem, Over 48 inch..... Each Sewer, Rem, Over 48 inch Foot
142	205.03.P	Change "solely" to "solely" in the last sentence of this subsection.
158	208.03.D.13	Change "22A" to "21AA" in the first sentence of this subsection.
162	209.01	Change "Removel" to "Remove" in the first sentence of this subsection.
171	304.03.B.5	This subsection should read as follows. 5. Loose joint materials and loose patching materials may be removed prior to rubblizing; do not fill the resulting voids prior to rubblizing.
174	305.03.A	Delete the second instance of "reduction" in the first sentence of the first paragraph in this subsection.
180 *	307.04	Change the last pay item in this list to read as follows: Approach, CI ____, __ inch.
192	401.04	Change the fourth pay item from the end of this list to read as follows: Steel Casing Pipe, __ inch, Tr Det ____.
197	402.03.C.1	Replace "CPE" with "CPE and CPV" in three instances in this subsection.
202 *	402.04	Change the first pay item in this list to read as follows: Sewer, CI ____, __ inch, Tr Det ____.
206	403.03.A.6	Delete the fourth sentence of this subsection beginning with

Page	Subsection	Errata
206	403.03.A.8	“Wrap the connection...” Change the last sentence of this subsection to read as follows: “Place and compact the HMA according to Section 502.”
210	Table 403-1	Change “350” to “315” for the Weight, lbs for Cover B in this table.
210	Table 403-1	Change “350” to “318” for the Weight, lbs for Cover Q in this table.
240 subsection.	502.03.I	Change “point” to “print” in the first sentence of this subsection.
240	502.03.I	Delete the word “a” in the last sentence of this subsection.
242	502.04.C	Change the first sentence of this subsection to read as follows: “...material, and cleaning the cold milled pavement.”
242	502.04.C	Change “placment” to “placement” in the second sentence of this subsection.
266	507.03.G.3	The time period for placing mixture in the Upper Peninsula should read: • June 1 - September 15
287	601.03.F	The first sentence of this subsection should read “Concrete must be between 45 °F and 90 °F, inclusive, at the time it is placed.”
288	601.03.G	This subsection should read as follows: “G. Concrete Mixture Requirements. The Contractor is responsible for quality control for concrete on all projects according to Section 604.”
289	601.03.G	Re-index subheadings in this subsection, beginning with the second instance of 601.03.G.3, as follows: 4. Air Content. 5. Water-Reducing Admixtures. 6. Slump. 7. Strength of Concrete.
290*	601.03.G.7.b	Delete the paragraph with the heading Non Concrete QA Projects , in its entirety, and replace with the following: b. Non Concrete QA Projects. The Engineer will perform strength testing for acceptance and payment, according to Department procedures, for all projects not covered by the Department’s concrete quality assurance program.
314	602.04.C.1	Change “faction” to “fraction” in the second sentence of this subsection.

Page	Subsection	Errata
324*	603.03.B	Change "6 feet" to "4 feet" in the first sentence of the second paragraph of this subsection.
327	603.03.B.3	The last sentence in this subsection should read as follows: 4. Placing Reinforcement. Position and support reinforcement according to the standard plans.
328	603.03.B.8	The third sentence, in the third paragraph of this subsection should read "...correct all high or low spots exceeding 1/8 inch."
330	603.03.B.13	Change "3/4" to "5/8" in the third paragraph of this subsection.
333	603.03.D.3	Reference in the first sentence of this subsection should read 602.03.R.
333	603.03.D.4	The last sentence of this subsection should read "...flush to 1/8 inch (after cooling) below the surface..."
333	603.03.E.3	The last sentence of the first paragraph of this subsection should read "...flush to 1/8 inch below the surface..."
338	604.01	Delete the first sentence of the first paragraph of this subsection and replace with the following: 604.01 Description. Provide quality control for all concrete production and placement on the project adequate to produce work of acceptable quality.
339	604.03.C	Change "assurance" to "control" in the first sentence of the first paragraph of this subsection.
348	605.03.C.1	Change " <i>Materials Quality Assurance Manual</i> " to " <i>Materials Quality Assurance Procedures Manual</i> " in the first sentence of this subsection.
350	Table 605-2	Change "10" to "90" for the Rejection Limit (percent) for all grades of concrete shown in this table.
350	605.03.D.1.a	The first sentence of this subsection should read "...retest strength from Table 605-2 for the class..."
352	605.03.E.3.c	Delete the second instance of the word "a" in the first sentence of this subsection.
353	605.04	Change the lettering for the subheadings from "A., D. & E." to "A., B. & C."
360	701.03.D	The first sentence of this subsection should read "Concrete must be between 45 °F and 90 °F, inclusive, at the time it is placed."

Page	Subsection	Errata
363	701.03.G.2	<p>Delete the first four paragraphs of this subsection and replace with the following:</p> <p>2. Non Quality Assurance. The Engineer will perform strength testing for acceptance and payment, according to Department procedures, for all concrete not covered by the Department's concrete quality assurance program.</p> <p>Test specimens will be made according to AASHTO T 23 and cured according to section 9.2 or 9.3 of T 23.</p>
382	705.03.F	Formula 705-1b should read $C = \frac{Wr + k^2 Wp}{Wr + Wp}$
407	706.03.M.3	Change "Grove" to "Groove" in the first sentence of the first paragraph of this subsection.
416	706.04.B	Move the entire paragraph beginning with "Concrete placed by the pumping method..." from subsection 706.04.C to the end of subsection 706.04.B.
416	706.04.C	Change the first sentence of this subsection to read as follows. "C. False Decking will be measured for the total area protected, including the width of the beams."
423	Table 707-1	Change the Minimum Size of Fillet Weld from "3/4" inch to "1/4" inch when Base Metal Thickness of Thicker Part Joined is less than or equal to 3/4 inch.
427	707.03.C.8	Change the first sentence of this subsection to read as follows: "...must be qualified according to AWS D1.5, <i>Bridge Welding Code</i> , ..."
435	707.03.D.3	Change the first sentence of this subsection to read as follows. "3. Falsework. Build and remove falsework according to subsections 706.03.C and 706.03.O."
449	708.03.A.13.e	Change reference to AASHTO M 111.
475	712.03.A.3	Change " Equipment for Constructing Latex Modified Concrete Surfaces. " to " Equipment for Constructing Concrete Overlay Surfaces. " in the heading of this subsection.
483	712.03.L.3	Change the fourth sentence of this subsection to read as follows: "...two test splices on the largest bar sizes that are to be spliced."
488*	712.03.Q	The first sentence of the last paragraph of this subsection should read "Maintain wet cure for no less than seven days

Page	Subsection	Errata
		following concrete placement.”
489*	712.03.T	The last sentence of the fifth paragraph of this subsection should read “Allow heavy equipment on the deck overlay only after the overlay concrete has reached an age of at least seven days.”
491	712.03.W.1	The last sentence of this subsection should read “Clean and coat as required according to Section 715.”
497	713.02	Change “Grade 400” to “Grade 60” for the Steel Reinforcement.
500	713.03.C.2	Reference in the first paragraph of this subsection should read 204.03.A.5
535	804.02	Change Type H-2 to Type H-1 for Mortar and Grout material.
548	807.04	Change the Pay Unit for Guardrail, Type ___ to “Foot”.
558	809.04.A	Delete the first sentence of the first paragraph in this subsection and replace with the following: A. Field Office, CI __ includes set up, providing access, grading, maintaining, plowing snow, utility hook up charges and monthly water and sanitary service fees.
562	810.03.J	Change “sigh” to “sign” in the last sentence of this subsection.
571	810.03.P	Delete the phrase “and the traffic signal contract typical construction plans” from the end of the first sentence of this subsection.
577	810.04.D	This subsection should read “...all work, including construction of the foundations, necessary for the installation of...”.
583	811.03.D.2	The last sentence of this subsection should read “Place regular dry paint between October 1 and May 1, inclusive.”
588	811.04	Change the third pay item in this list to read as follows “Pavt Mrkg, Waterborne, for Rest Areas, Parks, & Lots, ___ inch, (color)”.
588	811.04	Change the nineteenth pay item in this list to read as follows “Rem Curing Compound, for Longit Mrkg”.
602	812.03.G	Delete the word “of” in the second sentence of the second paragraph of this subsection.

Page	Subsection	Errata
610*	812.03.K.6	Change “W8-11 (UNEVEN LANES)” to “W8-9b (UNEVEN LANES)” in two places.
616	812.04	Change the eighth pay item from the end of this list to read as follows “Pavt Mrkg, Longit, 6 inch or Less Width, Rem”.
621	812.04.M.3	The second sentence of the first paragraph of this subsection should read “...applies for both existing longitudinal permanent markings and temporary Type NR markings...”.
623	812.04.T.3	Delete this subsection and replace with the following: 3. Items measured as lump sum if they are used or required on the worksite during the authorized extension of time, except that Minor Traffic Control Devices will not be adjusted when conspicuity tape is the only minor traffic control device in service or required during the authorized extension of time.
639	816.01	Change “National Pollution Discharge Elimination System” to “National Pollutant Discharge Elimination System” in the last sentence of this subsection.
640	816.03.A	Delete the last sentence of this subsection beginning with “Supply compost from...”
643	Table 816-2	Under Mixture for Upland Areas, in the row for ES (Environmental Seeding), in the Seeding Rate column, change “110 lb/acre” to “Table 917-1”.
646	816.03.H	Reference in the second paragraph of this subsection should read 917.15.D.2.
661	819.03E.3	The second sentence of the third paragraph of this subsection should read “...so that they are not displaced during concrete placement.”
665	819.03.H	Add the following sentence at the beginning of this subsection: “Construct tower lighting unit foundations according to subsections 810.03.J and K.”
667	819.04	Change the fifth pay item in this list to read as follows “Conduit, Fiberglass, ___ inch, Structure”.
679	820.03.H	Delete the word “lineal” in the first sentence of the sixth paragraph of this subsection.
680	820.04	Change the first pay item of this list to read as follows “TS, <u>(number)</u> Way <u>(type)</u> Mtd”.

Page	Subsection	Errata
694	902.03.B	Change "...retained on the-inch sieve..." to "retained on the 3/8-inch sieve..." in the second paragraph of this subsection.
696	Table 902-1	Delete section reference "503" in three places in the Item of Work by Section Number column. Delete the reference to "502 Temporary Patching with HMA Mixture" in footnote (a).
705	903.06.A	Change the first sentence of the first paragraph of this subsection to read "...ASTM C 309, Type 2 compounds, except that the requirements for reflectance and drying time do not apply."
719	905.03	Change "A 616" to "A 616-96a" and change "A 617" to "A 617-96a" in the first paragraph of this subsection.
719	905.03	Change "A 617" to "A 617-96a" in the second paragraph of this subsection.
719	905.03	Delete the third paragraph of this subsection and replace with the following: Bar reinforcement for prestressed concrete beams must meet ASTM A 616-96a for Grade 60 steel bars, except that bar reinforcement meeting ASTM A 615 or A 617-96a for Grade 40 steel bars will be permitted for stirrups in prestressed concrete beams.
720	905.03.C	Change the first sentence of this subsection to read "... must be coated according to AASHTO M 284, with the following exceptions and additions:"
720	905.03.C.3	Change this subsection to read "...and tested according to AASHTO M 284."
720	905.03.C.4	Reference in the last sentence of this subsection should read subsection 706.03.E.8.
720	905.05	Change "A 616" to "A 616-96a" and change "A 617" to "A 617-96a" in the first paragraph of this subsection.
723	906.04.B	Change "40 °F" to "30 °F" in the last sentence of this subsection.
729	907.03.D.2.b	Change "1æ" to "1½" in the second sentence of the first paragraph of this subsection.
734	908.04	Change the second sentence of the first paragraph of this subsection to read "...requirements for carbon steel castings

Page	Subsection	Errata
		of ASTM A 148 Grade 60/90, as specified on the plans.”
761	910.03.B	Change the last sentence of this subsection to read, “Furnish a non-woven geotextile meeting the strength requirements in Table 910-1 for Geotextile Liner Heavy when heavy riprap is specified.”
774	Table 912-2	Replace Table 912-2 with new Table 912-2 shown below.
789*	914.04.A	Change the first sentence of this subsection to read “Conform to ASTM D 6690, Type II with the following exceptions:”
795	914.08	Reference in the second paragraph of this subsection should read subsection 914.09.C.
795	914.08	Change “A 616” to “A 616-96a” and change “A 617” to “A 617-96a” in the first sentence of the third paragraph of this subsection.
795	914.09.A	Change “A 616” to “A 616-96a” and change “A 617” to “A 617-96a” in the first sentence of this subsection.
797	912.12	Change “A 570” to “A 1011” in the first sentence of the second paragraph in this subsection.
800	916.01.B	Change “ Coarse Gravel 3x1. ” to “ Coarse Aggregate 3x1. ” in the heading of this subsection.
801	916.01.D.1	The last sentence of this subsection should read “...3 to 12 inches for ditch grades 2 percent or greater.”
801	916.02	Delete the sixth sentence of this subsection beginning with “Silt fence fabric...”
805	917.08	Delete the first sentence of this subsection beginning with “Furnish compost from...”
839*	919.02.C	Delete the second and third paragraphs of this subsection and replace with the following. Bolts, nuts, washers, U-bolts and straps must be stainless steel. The stainless steel alloy for bolts, washers, U-bolts, and straps must conform to ASTM A 320, Class 1, Grade B8. Nuts must be self-locking nylon insert type conforming to ASTM A 320 and A 194 for Grade 8F. If U-bolts are formed from straight bar stock, forming must be by cold working.
846*	919.10.A	Delete the last two paragraphs of this subsection and replace with the following. Bolts, nuts, washers, U-bolts and straps must be stainless steel. The stainless steel alloy for bolts, washers, U-bolts,

Page	Subsection	Errata
		and straps must conform to ASTM A 320, Class 1, Grade B8. Nuts must be self-locking nylon insert type conforming to ASTM A 320 and A 194 for Grade 8F. If U-bolts are formed from straight bar stock, forming must be by cold working.
847	919.11.A.1	This subsection should read as follows:
847	919.11.A.2	1. Wood Posts. Concrete for wood post foundations, when required, must be Grade P2 as specified in section 601. This subsection should read as follows:
		2. Breakaway Columns. Concrete for breakaway column foundations must be Grade P2 as specified in section 601.
868	922.02.D	Change “3200 square feet” to “32 square feet” in the last sentence of this subsection.
869	922.03.C	Delete this subsection and replace with the following. C. Drums with Lights. Drums with warning lights attached must meet NCHRP 350 crashworthy criteria. Provide certification, according to subsection 922.01, when requested.
869	922.03.D	Change “crash worthy” to “crashworthy” in the last sentence of this subsection.
871	922.03.E.2	Change “1/2 inch” to “1/2 –inch” in the second sentence of the third paragraph of this subsection.
883	Pay Item Index	Change the page number reference for Calcium Chloride to 322.
883	Pay Item Index	Delete the reference for Conc, Grade ___ and add the following references. Conc, Grade ___ (for pavements)..... 313 602 Conc, Grade ___ (for structures) 414 706
886	Pay Item Index	Change “Fertilizer, Chemical Nutrient, Class ___” to “Fertilizer, Chemical Nutrient, Cl ___”.
899	General Index	Change the page number reference for Concrete: Barrier, Bridge to 469.
906	General Index	Change “Carrier Bills, Required for Partial Payments” to “Freight Carrier Bills, Required for Partial Payments”.
920	General Index	Delete the material page reference, in boldface type, for Sleeves Placed in Structures.

Page

Subsection

Errata

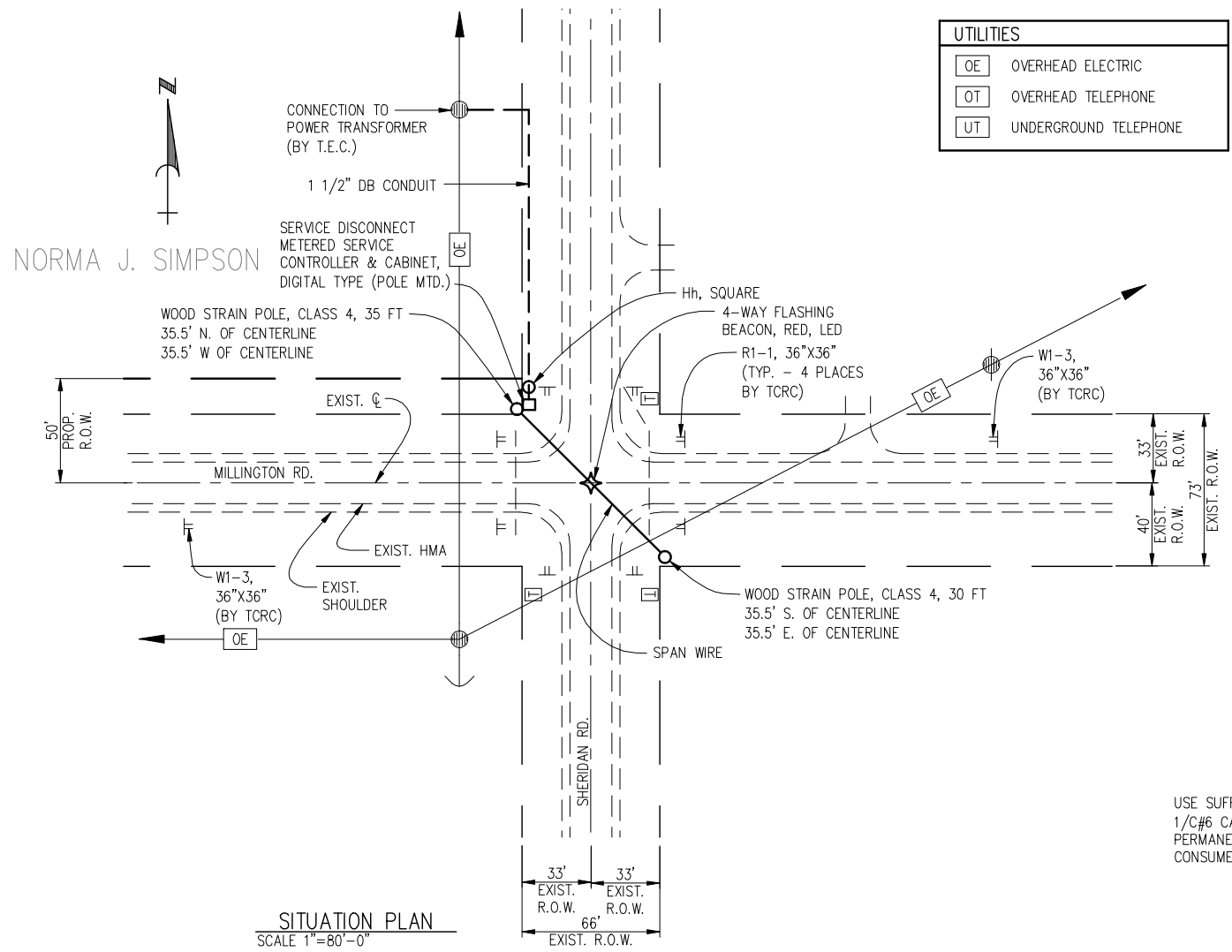
922

General Index

Change "Structure: Rehabilitation: Remove Portions" to "Structure: Rehabilitation, Remove Portions".

Table 912-2 Species and Grading Requirements for Posts

Species	Round Posts Grade	Sawn Posts Agency (a)
Hardwoods		
Red Oak (Northern Red, Black, Pin Laurel, Cherry-Bark, Scarlet, Water and Willow Oaks) (b) Hard Maple (Black and Sugar) and Red Maple White Ash White-Heartwood Beech Yellow Birch	ASTM D 245	MDOT
Softwoods		
Northern White Cedar, Red Pine and Eastern White Pine (Northern White Pine)	No. 1 or better	NHPMA
Douglas-Fir	No. 2 or better	WCLIB, WWPA
Southern Pine Species	No. 2 or better	SPIB
a. NHPMA (Northern Hardwood and Pine Manufacturers Assoc.); WWPA (Western Wood Products Assoc.); WCLIB (West Coast Lumber Inspection Bureau) and SPIB (Southern Pine Inspection Bureau). b. Southern Red Oak is not permitted.		

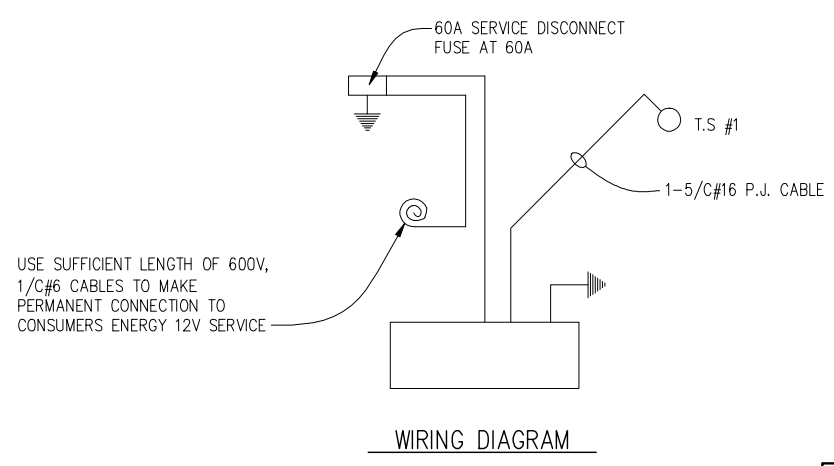


TCRC - LIST OF MATERIALS

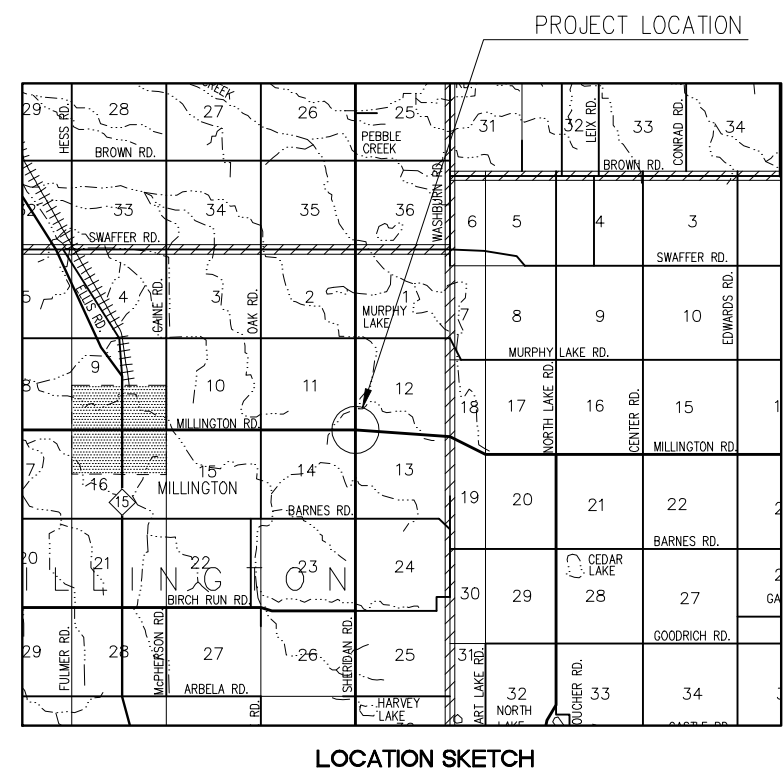
NO.	ITEM	QUANTITY	UNIT
1	Mobilization, Max. ____	1	LS
2	Flag Control	1	LS
3	Minor Traf Devices	1	LS
4	Cable, Equipment Grounding Wire, 1/C#6	85	Ft
5	Hh, Square	1	Ea
6	Utility, Elec	250	Dir
7	Wood Pole, Cl 4, 30 foot	1	Ea
8	Wood Pole, Cl 4, 35 foot	1	Ea
9	Cable, P.J., 600V, 1, 5/C#16	85	Ft
10	Flash Beacon, Controller and Cabinet Solid State	1	Ea
11	Power Co. (Est. Cost to Contractor)	250	Dir
12	TS, Four Way Span Wire Mtd (LED)	1	Ea

TEC - LIST OF MATERIALS

NO.	ITEM	QUANTITY	UNIT
13	Conduit, DB, 1, 1 1/2 inch	170	Ft
14	Conduit, Galv Steel, 1 1/2 inch	20	Ft
15	DB Cable, in Conduit, 600V, 1/C#6	170	Ft
16	Cable, P.J., 600V, 1, 1/C#6	35	Ft
17	Metered Serv	1	Ea
18	Serv Disconnect	1	Ea



- LEGEND**
- ⊥ REFERS TO STOP SIGN
 - REFERS TO TELEPHONE PEDESTAL



72 HOURS
(3 WORKING DAYS)
BEFORE YOU DIG
CALL MISS DIG
800-482-7171
(TOLL FREE)

THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT LOCATION AND ELEVATION OF EXISTING UTILITIES AND PROPOSED UTILITY CROSSINGS IN THE FIELD PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY CONFLICTS ARE APPARENT OR IF THE LOCATION OR DEPTHS DIFFER SIGNIFICANTLY FROM THE PLANS

R.S.A. R. S. SCOTT ASSOCIATES, INC.
ENGINEERING • ARCHITECTURE • SURVEYING

405 RIVER STREET
ALPENA, MICHIGAN 49707
(989) 354-3178

TUSCOLA COUNTY ROAD COMMISSION
MILLINGTON ROAD/SHERIDAN ROAD INTERSECTION
MILLINGTON TOWNSHIP
SECTIONS 11, 12, 13 & 14, T10N - R8E

PLAN OF SITE

BY: TAS	DATE: 9/10	W.O. 79-129-4	SHEET NO. 1
CHK: SUP	DATE: 9/10		OF 1

P:\tuscold79\79-129-4\pws\SITE.dwg 9/1/2010 3:51:53 PM EDT

Your bid will not be accepted unless the enclosed agreement is signed and returned with your bid.

AGREEMENT

This agreement made this _____ day of _____, 20____
by and between the Board of Tuscola County Road Commissioners and _____
_____.

1. _____ hereby agrees to undertake the following work
in the status of an independent contractor performing the following job:

2. Said contractor, _____, shall at all times exercise extreme care and shall assume any and all liability for property damage or bodily injury resulting from the above operation by this employees, agents, assigns, sub-contractors and anyone else acting under his control or direction; and will indemnify, hold harmless and defend the Tuscola County Road Commission, its Commissioners or employees from any and all claims for property damage or bodily injury arising out of this Agreement.

3. Said contractor, _____, while engaged in said job shall maintain and furnish certificates of insurance, naming the Tuscola County Road Commission and Commissioners as **an additional insured** under the policy, with policy limits of \$500,000/\$1,000,000 for property damage and bodily injury, and **shall** furnish the Tuscola County Road Commission copies of said certificates of insurance prior to commencing any work on said project. Additionally, said contractor, _____, shall furnish prior to start of said job with the Board of Tuscola County Road Commissioners, a policy of insurance certifying he carries and has in effect worker's compensation insurance on all those required to be covered under Michigan law.

4. The address of the Board of Tuscola County Road Commissioners is 1733 S. Mertz Rd., Caro, MI 48723.

Witnessed:

Board of Tuscola County Road Commissioners

Contractor

TUSCOLA COUNTY
ROAD COMMISSION
“AN EQUAL OPPORTUNITY EMPLOYER”

SPECIAL PROVISION
FOR
MAINTAINING TRAFFIC
1 of 1

GENERAL

Traffic shall be maintained in accordance with Sections 103.05, 103.06, 812, and 922 of the 2003 Michigan Department of Transportation (MDOT) Standard Specifications for Construction, including any Supplemental Specifications, and as herein specified.

CONSTRUCTION INFLUENCE AREA

The construction influence area (CIA) shall consist of the width of the project right-of-way from 3,500 feet before the project P.O.B. to 3,500 feet beyond the project P.O.E. and 500 feet in all directions along all cross roads.

TRAFFIC CONTROL DEVICES

All traffic control devices and their usage shall conform to the Michigan Manual of Uniform Traffic Control Devices (MMUTCD), 2005 edition as amended, and as herein specified.

Sign covers shall be placed over existing regulatory, warning and construction signs that are not applicable during construction.

Signing for a lane closure shall be according to attached MDOT Maintaining Traffic Typical Figure M0150. Additional signing pertaining to “Andy’s Law” shall be post driven at the proper D distance prior to project limits as per attached MDOT Figure M0030 on all long term operations and may be required on other projects at the discretion of the Engineer.

Sheeting shall conform to Engineer grade reflective sheeting and must meet the requirements for ASTM D 4956 Type I engineer grade sheeting, as per section 922.02B, of the 2003 Standard Specifications for Construction.

TRAFFIC RESTRICTIONS

Work shall be conducted during daylight hours only. No work shall be conducted on Sundays unless approved by the Engineer.

The maximum distance between the traffic regulators shall be no more than 2 miles in length. All sequences of more than 2 miles in length will require written permission from the Engineer before proceeding.

PAYMENT

Payment for Maintaining Traffic shall be included in other Bid unit prices. There will be no separate payment for Maintaining Traffic.

TUSCOLA COUNTY ROAD COMMISSION
TITLE IV COMPLIANCE
APPENDIX A

During the performance of this contract, the contractor, for itself, its assignees and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

1. **Compliance with Regulations:** The contractor shall comply with the Regulations relative to non-discrimination in Federally-assisted programs of the Department of Transportation, Title 49, code of Federal Regulations, Part 21 as they may be amended from time to time, (hereinafter referred to as the Regulations), which are herein incorporated by reference and made a part of this contract.
2. **Non-discrimination:** The contractor, with regard to the work performed by it during the contract, shall not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor shall not participate either directly or indirectly in the discrimination prohibited by section 21.5 of the Regulation, including employment practices when the contractor covers a program set forth in Appendix B of the Regulations.
3. **Solicitations for Subcontracts, Including Procurements of Materials and Equipment:** In all solicitations either by competitive bidding or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials or leases of equipment, each potential subcontractor or supplier shall be notified by the contractor of the contractor's obligations under this contract and the Regulations relative to non-discrimination on the grounds of race, color, or national origin.
4. **Information and Reports:** The contractor shall provide all information and reports required by the Regulations, or directives issued pursuant thereto, and shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the **Tuscola County Road Commission** to be pertinent to ascertain compliance with such Regulations or directives. Where any information required of a contractor is in the exclusive possession of another who fails or refuses this information, the contractor shall so certify to the State highway department, or the Federal Highway Administration as appropriate, and shall set forth what efforts it has made to obtain the information.
5. **Sanctions for Non-compliance:** In the event of the contractor's non-compliance with the non-discrimination provisions of this contract, the **Tuscola County Road Commission** shall impose such contract sanctions as it or the Federal Highway Administration may determine to be appropriate, including, but not limited to:
 - (a) Withholding of payments to the contractor under the contract until the contractor complies, and/or
 - (b) Cancellation, termination or suspension of the contract, in whole or in part.
6. **Incorporation of Provisions:** The contractor shall include the provisions of paragraphs(1) through (6) in every subcontract, including procurement of materials and leases of equipment, unless exempt by the Regulations, or directives issues pursuant thereto. The contractor shall take such action with respect to any subcontract or procurement as the **Tuscola County Road Commission** may direct as a means of enforcing such provisions including sanctions for non-compliance: Provided, however, that, in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of such direction, the contractor may request the **Tuscola County Road Commission** to enter into such litigation to protect the interests of the County, and, in addition, the contractor may request the State highway department to enter into such litigation to protect the interests of the State and/or the United States to enter into such litigation to protect the interests of the United States.

“The **TUSCOLA COUNTY ROAD COMMISSION**, in accordance with Title VI of the Civil Rights Act of 1964, 78-252, 42 U.S.C. 2000d-222d-4, the Civil Rights Act of 1987, P.L. 100-259, and Title 49, Code of Federal Regulations, Department of Transportation, subtitle A, Office of the Secretary, Part 21, Non-discrimination in federally assisted programs of the Department of Transportation issued pursuant to such Act, hereby notifies all bidders that it will affirmatively insure that in any contract entered into pursuant to this advertisement, Disadvantaged Business Enterprise firms will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of Race, Color, Sex, Age, National Origin, or Handicap in consideration for an award. For additional compliance information, please see Appendix A.”