MISSOURI DEPARTMENT OF TRANSPORTATION
NEMA TS2 TRAFFIC CONTROLLER ASSEMBLIES

The equipment shall conform to the latest revision of Section 1092 of the Missouri Standard Specifications for Highway Construction and the following:

1. Controller operation shall comply with the phasing shown on the attached controller order form.

2. Time-delay-to-call shall be integral with detectors so indicated. Calling detectors shall be supplied where indicated.

3. Cabinets indicated for side of pole mounting shall be furnished with the bottom undrilled or with a plate of the same cabinet material, covering 85 percent of the bottom area, attached to the bottom with four, 1/4 inch diameter bolts.

4. Furnish three complete operation manuals for all equipment, including but not limited to controllers, conflict monitors, detectors and auxiliary equipment. Furnish four complete cabinet wiring diagrams with each controller. The cabinet wiring diagrams shall include labeling for all field terminal connections and shall provide an orientation of the terminal layout that conforms with the intersection information supplied.

5. Only items on the latest revision of the Missouri Department of Transportation Approved Products List for Traffic Signals and Highway Lighting Equipment will be accepted. The attached Traffic Controller Assembly Equipment List shall be completed and returned with the bids.

6. TS2 Controller Assembly Requirements:

A. Traffic Controller Assemblies. Traffic controller assemblies are defined as the complete assembly of all required equipment and components for control of traffic signal indications. Traffic controller assemblies shall conform to the requirements of the latest revision of NEMA Standards Publications No. TS 2, hereafter called NEMA. Each assembly shall consist of a controller cabinet, controller unit, back panel, malfunction management unit, all required wiring, switches and connectors and all other equipment as defined in these specifications and as shown on the plans. Double controller assemblies to control two intersections shall consist of a controller cabinet, two controller units, two back panels, two malfunction management units all required wiring, switches and connectors and all other equipment as defined in these specifications and as shown on the plans.

1. General.

a. Voltage and Temperature Variations. Variations in the voltage of the power supply from 89 to 135 volts or sustained temperatures inside

the cabinet between -30 F(-34 C) and +165 F (+74 C) shall not change the timing of any functions or cause electrical or mechanical damage. Heater elements shall not be used to attain compliance with these requirements.

b. Fuse Protection. All controllers and other specified auxiliary equipment shall be properly protected with fuses on each applicable unit. Fuses shall be installed in 1/4 twist or screw-in type fuse holders or shall be automotive blade-type fuses. Pop-out fuse holders shall not be used. There shall be no exposed high voltage contacts on the outside of any unit.

c. Warranty. All controller units, on-street system masters, malfunction management units, terminals and facilities, detectors and any other auxiliary unit(s) provided as specified shall be warranted by the manufacturer to be free from defects in workmanship and material for at least one year from the date of project acceptance. Any components found to be defective during the warranty period shall be replaced free of charge. All warranties provided shall be transferred to the Commission upon project acceptance. No direct payment will be made for warranties.

2. Controller Units (CU). This section supplements NEMA in describing the general specifications for actuated solid-state controller units. If requested by the engineer, the contractor shall provide a prototype controller for testing and evaluation.

a. CU Configuration.

(i) CUs shall be NEMA Actuated Type 2 with the following connectors:

Port 1
Port 2
Port 3
Connector A
Connector B
Connector C
Connector D

(ii) CUs shall be capable of operation of a minimum of 12 vehicle and pedestrian phases and 8 overlaps.

(iii)All phases and overlaps shall be activated or inactivated by program entry.

b. Actuated Coordination. Actuated coordination shall conform to NEMA and the following:

(i) Signal phases controlling the movements on which signal progression is desired (coordinated phases) shall be serviced during a guaranteed period as specified by programming. While under coordination, the designated coordinated phase(s) shall be capable of releasing from a hold status and operating in the actuated mode. The CU shall operate in actuated mode from a designated hold release point to the corresponding force off point(s) of the coordinated phase(s). If the coordinated phase(s) gaps out or reaches the force off point and there is a conflicting phase with a call or recall, the CU shall terminate the coordinated phase(s) and service the next phase in the sequence with a call or recall.

(ii) For non-coordinated actuated phases, vehicle and pedestrian detectors shall remain active. The non-coordinated actuated phases may gap out prior to the force off point or shall be forced off at the force-off point and the next phase in the sequence with a call or recall shall be serviced. The coordinator shall provide selectable recall by signal plan for non-coordinated phases. The coordinator shall be capable of fixed time operation for any and all active phases by timing plan.

(iii) The coordinator shall be capable of generating individual force-off points for each available phase in each timing plan even though it may not be necessary to use all of phases. The position of the force-off points shall be settable at any percentage point or seconds in any selected timing plan. The coordinator shall be capable of placing force-off points at fixed points in the cycle or floating points as selected by programming. With floating force-offs split times govern the force-off point in each cycle regardless of the starting point of the phase.

(iv) The coordinator shall have all of the following methods of synchronizing to the master sync pulse:

(1) Dwell. The coordinator shall establish a new offset by stopping the cycle timer in the coordinated phase(s) green, until the new offset value is reached.

(2) Dwell with Interrupt. The coordinator shall establish a new offset by stopping the cycle timer in the coordinated phase(s) green. The maximum time the coordinator can dwell shall be adjustable from 1 to 99 seconds.

(3) Shortway. The coordinator shall establish a new offset by the shortest route possible.

(v) For hardwire systems, if the sync monitor detects a fault the controller shall revert to internal time based control unless no

time based control is programmed. In that case, the CU shall revert to free mode.

(vi) A MoDOT D-plug shall be provided between the D-plug on the controller and the interconnect panel on the cabinet. In the absence of the sync signal, the coordination interface shall be configured to cause the controller to default to free operation. Configuration of the MoDOT D-plug shall be as follows:

Pin	Assignment	Pin	Assignment	Pin	Assignment
D1	Cycle 1	D10	Split 4	D19	Future (Pre-empt 4)
D2	Cycle 2	D11	Offset 1	D20	Flash
D3	Cycle 3	D12	Offset 2	D21	Hardwire Interconnect[a]
D4	Cycle 4	D13	Offset 3	D22	Future
D5	Future (Cycle 5)	D14	Future (Offset 4)	D23	Future
D6	Future (Cycle 6)	D15	Future (Offset 5)	D24	Future
D7	Split 1	D16	Pre-empt 1	D25	Future
D8	Split 2	D17	Pre-empt 2		
D9	Split 3	D18	Pre-empt 3		

(vii) The MoDOT D-plug shall be a Cinch TRW Super D Connection as follows:

1 – Part #TB 25P	Plug	1 – Part #SHD-25GL	Hood with Latch
1 – Part #TB 25SLB-1	Socket	1 – Part #SHD-25GFCS	Hood with Filler Ends

c. Time Base Control. Time Base Control shall conform to NEMA and the following:

(i) The CU shall be zero time based, settable to the second, programmable for 52 weeks, accommodate at least 3 weekly programs, 12 day programs and not less than 12 exception day programs. Total event changes shall not be less than 160. It shall be possible to interrogate the CU to determine the year, month, day, hour, minute, second, a.m. and p.m., as well as program information programmed in the unit. Indicators shall show the condition of all outputs.

(ii) The first program of the day shall be implemented at the beginning of the minute selected. When changing from one cycle length to another while in the coordination mode, the change to the new cycle length shall not occur until the present cycle length has terminated. If the controller is operated in the free mode between cycle lengths, the next

cycle length programmed shall begin at the beginning of the minute selected.

(iii) The CU shall be capable of generating a daily reference point at which time all coordinated cycles are resynchronized. This daily reference point shall be either 12:00 midnight or a selectable time of which 12:00 midnight could be selected. The resynchronization reference time is an arbitrary point in time that marks the beginning of all cycles on a daily basis.

(iv) The CU shall be capable of generating an absolute reference point at which time all coordinated cycles are resynchronized. This absolute reference point shall be a selectable time by date and hour and minute that marks the beginning of all cycles.

(v) Timing base shall be the 60 hertz power line frequency. Timing error shall not exceed plus or minus one second per month from any adjacent CU operating from the same power company substation. Timing error due to power failure or low voltage shall not exceed plus or minus 0.005 percent.

d. Detector Functions. The CU shall allow vehicle and pedestrian detector inputs to be programmed to any available phase. In addition to normal detector operation, the CU shall have the following programmable functions for vehicle detector inputs.

(i) Call Detector. A mode of operation where the detection of a vehicle places a locking call into the assigned phase when the assigned phase is not green.

(ii) Detector Switching. Besides the normal assigned phase, the detector input can be programmed to switch to a secondary phase while the secondary phase is green and the assigned phase is not green. In all other conditions the detector input acts as a normal detector input for the assigned phase.

(iii) Extend Function. While the assigned phase is green, each detector actuation input is extended a programmed amount of time with a range of at least 0 to 99 seconds.

(iv) Delay Function. While the assigned phase is not green each detector actuation input is delayed a programmed amount of time with a range of at least 0 to 99 seconds.

e. Special Functions. Any special functions, special sequences, or modes of operation specified in the plans or required to operate the

specified signal phasing and timing shall be included in the programming capability of the CU.

3. Malfunction Management Unit (MMU). Each controller assembly shall contain a malfunction management unit external to the controller circuitry conforming to NEMA. When the MMU actuates flashing operation, the controller shall freeze or stop timing with the stop time switch in Normal position in the condition causing the actuation until manually reset.

a. Phases or overlaps with only one signal head shall have load resistors installed across the outputs to prevent a single lamp failure from actuating the MMU.

4. Terminals and Facilities. All terminals and facilities in the controller assembly shall conform to NEMA TS2 Type 1 and the following requirements. For double controller assemblies, two complete sets of all terminals and facilities shall be provided with all items contained in the same compartment as the associated CU.

a. Wiring and Terminations

(i) Back Panel Wiring. All wiring carrying 120 volts AC shall be discrete insulated wires and shall be soldered directly to lugs on the back of terminal blocks or sockets. All discrete wiring on the backside of the back panel shall be neatly bundled and secured with plastic cable ties.

(ii) Any multi-conductor cable shall be contained in an expandable braided sleeving.

(iii) Input/output terminals shall be configured according to the following NEMA configurations:

Specified Operation		NEMA Configuration (NEMA Table 5.3.1-1)
2 through 8 Phases		Configuration 3 (12 Load Switch Positions)
9 through 12 Phases or more than		Configuration 4 (16 Load Switch Positions)
4 Overlaps or Ped Phases		

(iv) In addition to the minimum NEMA requirements, four pedestrian call input terminals shall be provided.

(v) If hardwire interconnection is specified, the following input/output terminals shall be provided:

Timing Plan A Output
Timing Plan B Output
Timing Plan C Output
Timing Plan D Output
Offset 1 Output
Offset 2 Output
Offset 3 Output
Timing Plan A Input
Timing Plan B Input
Timing Plan C Input
Timing Plan D Input
Offset 1 Input
Offset 2 Input
Offset 3 Input
Interconnect Common

(vi) Buss Interface Units (BIU) and BIU racks shall be provided for all required terminals and facilities.

(vii) All Port 1 cable connectors shall have positive strain relief latches such that tension on the cable will not disconnect the connector from the unit they are connected to.

b. Switches and Controls. Each controller cabinet shall be furnished with the following switches and controls. For double controller cabinets, two sets of switches and controls are provided, one set for each controller installed in each compartment.

(i) Power Interrupt Switch - A switch located inside the main cabinet shall interrupt electrical power to the controller during maintenance on the controller. Operation of this switch shall not affect the flash operation. This switch shall not be accessible via the police panel.

(ii) Flash Switches - The following switches shall place the signal on flash. Operation of these switches shall not affect the electrical power supply to the controller. When the signals are returned to normal operation the external start shall be activated causing the controller to revert to the programmed initialization phase(s).

(1) Each controller cabinet shall be furnished with a clearly labeled flash switch mounted in the access or police panel.

(2) Each controller cabinet shall be furnished with a clearly labeled flash switch mounted on the cabinet door in the inside of the cabinet.

(iii) Stop Time Switch - A three position switch mounted inside the main cabinet shall provide the following functions:

(1) Stop Time - Causes the controller to stop time.

(2) Normal - Allows the controller to cycle all phases, but during MMU flash causes the controller to stop time.

(3) Run - Allows the controller to cycle all phases and during any flashing operation allows the controller to continue cycling all phases without displaying them on the signal heads.

(iv) Switches or relays which completely interrupt power to the signal heads other than the protective circuit breaker shall not be installed in the cabinet.

(v) If specified, a manual operation push button shall be installed in the police panel. The push button shall be wired for manual operation of the signals. The push button shall be water resistant and designed to protect the user against electrical shock and shall be supplied with a coiled cord with a nominal 6-foot (2-m) stretched length. A clearly labeled switch shall also be installed in the police panel to switch between manual or automatic operation of the controller.

c. Detector Facilities.

(i) At a minimum, one NEMA Configuration 2 detector rack shall be provided with the associated BIU. If more than 16 detector channels are specified, additional NEMA Configuration 1 or 2 detector racks and associated BIU(s) shall be provided for the required number of detectors. Each detector channel shall be assigned to a separate detector input into the CU.

(ii) Detector loop connections shall be provided for the total number of detector channels available in the detector racks supplied as specified above.

(iii) Two terminals shall be provided for each detector as follows.

(1) Screw terminal strips mounted vertically on the left side of the cabinet approximately 6 inches (150 mm) from the bottom of the cabinet.

(2) All inductive loop detector inputs shall be protected with two 30-volt metal oxide varistors (MOV) with a 30 Joule rating. An MOV shall be connected between each field terminal and cabinet ground.

(iv) The detector rack shall be attached to the controller cabinet shelf by an easily removable attachment. Sufficient wire lengths shall be provided for access to the back of the rack. The rack shall not block the back panel or other termination panels.

(v) Unless shown differently on the controller order form, each detector field input into the card rack shall be associated with the appropriate card position as follows:

Channel	*Card Position*							
	1	2	3	4	5	6	7	8
1	Phase 1	1 or 6	6	6	3	3 or 8	8	8
2	Phase 5	5 or 2	2	2	7	7 or 4	4	4

(vi) Each detector channel shall be clearly labeled with detector number, phase and direction.

d. Power Distribution.

(i) Each assembly shall contain a separate aluminum power panel located in the lower right portion of the cabinet containing the following equipment:

(1) Main breaker - one type B circuit breaker conforming to Sec 1091 that shall interrupt power to the controller and signals. The frame size and trip rating is shown on the traffic signal plans or designated in the contract.

(2) Auxiliary breaker - one type B circuit breaker conforming to Sec 1091 that interrupts power to cabinet lamp and receptacle. The frame size and trip rating shall be 15 amperes.

(3) One mercury contactor that controls power to the signal bus.

(4) One radio frequency interference suppresser.

(5) One AC service transient suppression device.

(6) One terminal block for AC power input.

(7) One earth ground bus terminal block.

(8) One isolated AC neutral bus terminal block.

(ii) Each controller assembly shall have a fluorescent lighting fixture.

5. *Auxiliary Interfaces for Controllers.* Interface panels shall be aluminum panels with deburred edges and rounded corners installed in the controller cabinet containing the required terminals and equipment. Interface panels shall be neatly laid out, neatly wired and easily accessible. For double controller cabinets, the auxiliary interface shall be located in the same compartment as the associated CU.

a. Pre-emption Interface. The preemption operation and interface shall conform to NEMA. The pre-emption interface shall include any field wire termination panels, relays or isolators, wiring and connectors required for proper operation. Each preemption field input shall be protected with a metal oxide varistor (MOV). For 120-volt inputs, a 150-volt MOV with an 80-Joule rating shall be used and for 24-volt inputs, a 30-volt MOV with a 30-Joule rating shall be used.

b. Hardwire Master and Local Coordination Interface. The coordination interface shall consist of any field wire termination panels, wiring and connectors required for proper operation. The master coordination interface shall output commands to the local controllers in the system. Local coordination interfaces shall accept command inputs from the master coordination interface. Coordination interfaces shall be connected to one another or to a telephone interconnection unit, by a multi-conductor cable.

The coordination interface shall provide a control terminal strip for 7 or 12 wire interconnect as specified in the plans, vertically or horizontally mounted, that shall be located 6 (150 mm) to 8 (200 mm) inches above the bottom of the cabinet. Control voltages applied to the terminals are associated with the following input/output functions:

7 - Wire	12 - Wire
Neutral	Neutral
Timing Plan A (Dial 2)	Timing Plan A (Dial 2)
Timing Plan B (Dial 3)	Timing Plan B (Dial 3)

Timing Plan C (Split 2)	Timing Plan C (Split 2)
Offset 1	Timing Plan D (Split 3)
Offset 2	Offset 1
Automatic Flash	Offset 2
	Offset 3
	Automatic Flash

All command voltages applied to these terminals shall be 120 volts AC. Terminals for interconnect cable shall be fused and provided with a 150-volt metal oxide varistor (MOV) with an 80 Joule rating. Interface circuitry between this terminal strip and the controller shall be by solid state or relay logic.

c. Closed Loop System Interface. If the controller assembly will be part of a closed loop system, all components required to interface with the system shall be in accordance with the plans.

d. Dial-Up Modem Interface. This panel shall provide for interfacing of a leased, unconditioned telephone drop to a Hayes compatible modem that connects to the on-street system master or local controller as specified in the plans. The panel shall be mounted on the inside of the cabinet on the right side. A telephone network interface, such as a Siecor CAL3000 or other approved interface acceptable to the local phone company shall be attached to the aluminum panel. The telephone interface shall also include the installation of the necessary cable, connectors, etc. to connect the interface to the telephone drop provided by the local telephone company.

6. Auxiliary Devices. Each auxiliary unit shall be enclosed in a suitably finished metal or molded plastic case. It shall be mounted in the controller cabinet unless otherwise specified. The function of each auxiliary unit shall be indicated by an identification plate on the case. Auxiliary equipment cases shall be ventilated. Temperature, voltage and frequency shall meet the requirements of Sec 1a unless otherwise specified.

a. External Time Switches. External time switches shall be solid state, keyboard entry and contain filtering and shielding circuitry to protect the unit's operation against electrical interference. Timing shall be based on the 60 Hz power supply frequency. Each unit shall contain a programmable automatic central daylight time compensation feature. Each unit shall contain a back-up power source to maintain time and memory functions during loss of AC power. Each unit shall provide a weekly program with at least 20 event changes per week.

b. Dial-Up Modem. The unit shall be an auto-dial, auto-answer modem. The modem shall be Hayes compatible capable of responding to

the standard "Hayes command set". The modem shall be self-contained. The unit shall be powered by a nominal 120 VAC from the duplex service outlet provided in the cabinet. The modem shall be capable of operating at all standard baud rates from 300 to 56K baud over a standard dial-up, unconditioned telephone line. Installation shall include the appropriate interface cable to connect to an RJ-11 telephone jack on the telephone interface panel, the RS-232 cable from the modem to the system master, all other cabling, connectors and incidental items necessary for operation.

7. *Controller Cabinets.* Controller cabinets shall be cast aluminum or 0.125 inch (3.2 mm) reinforced sheet aluminum alloy and be of clean-cut design and appearance. The cabinet shall provide ample space for housing all equipment and components. Controller cabinets housing solid state controllers shall be furnished with unused cabinet space measuring 18 inches (450 mm) wide by 12 inches (300 mm) high by 12 inches (300 mm) deep. Cabinet size shall be not less than 54 inches (1350 mm) high by 38 inches (950 mm) wide by 25 inches (625 mm) deep and support a 12 or 16 position backpanel. The cabinet shall contain rigid shelves of such construction that the CU and auxiliary equipment may be withdrawn from the cabinet without breaking any electrical connections or interrupting normal controller operation.

a. A hinged door or doors shall provide complete access to the interior of the cabinet. Door holds shall be furnished which shall hold the door in an open position at least 90 degrees from the closed position. The doors shall fit against a rain tight gasket. Each door shall be provided with a cabinet lock and shall have a stamped or raised outside designation, "Traffic Control" or other approved identification. An auxiliary door, positioned on each main cabinet door, equipped with a rain tight gasket, shall allow access to a switch panel and shall be equipped with a lock whose key will not unlock the main door. Two keys shall be furnished for each type lock used. The door hinges and pins shall be of corrosion resistant metal. Pins shall be rolled or solid rod, at least 1/8 inch (3.18 mm) in diameter, except if continuous hinges are furnished, the pins shall be continuous the full length of the hinges and shall be not less than 1/16 inch (1.59 mm) in diameter.

b. The back panel in all controller cabinets shall be hinged at the bottom to permit the top of the panel to be rotated forward and down to an angle of not less than 45 degrees with all components, including load switches, attached for maintenance purposes. The bottom of the back panel shall be not less than 6 inches (150 mm) above the bottom of the cabinet.

c. Cabinets shall have a thermostatically controlled ventilating fan with exhausting capability, in an enclosure, of at least 150 cubic feet per

minute (4.25 m^3/min) for cabinets up to 30.5 cubic feet (0.86 m^3) and at least 250 cubic feet per minute (7.08 m^3/min) for cabinets 30.5 cubic feet (0.86 m^3) and more, installed in the top of the cabinet. These cabinets shall be supplied with a replaceable furnace type fiberglass filter of at least one square foot (m^2) area mounted behind louvers in the lower one fourth of the door.

d. Double controller cabinets for two controllers shall be not less than 57 inches (1425 mm) high by 74 inches (1850 mm) wide by 17 inches (425 mm) deep and shall support two 12 position back panels. All double cabinets shall have two doors that are hinged on the outside corners of the cabinet so that the doors open away from each other. Double cabinets shall have a divider between the two halves of the cabinet with an 8-inch (200-mm) opening between the compartments at the bottom of the divider for wiring between the compartments.

B. Induction Loop Detectors. Loop detector units shall conform to NEMA. If specified, each channel shall have extension and delay timing features as specified in NEMA. Each detector shall have a regulator for the power input. The regulator shall have the appropriate power and voltage rating for operation of the detector. Card rack detectors shall be card rack-mounted detectors as specified in NEMA unless otherwise specified on the controller order form.

7. These controllers shall be equipped with internal time base coordination using daily midnight reference or a selectable daily reference of which midnight can be selected. All necessary components shall be furnished. Cabinet type, interconnect information and delivery locations are attached.

8. All boxes of equipment delivered for a specific intersection should be clearly marked with both the controller number and the intersection, as shown on the Delivery Schedule.

9. All controllers shall be stamped or tagged with a manufacturer's serial number.

Award

The right is reserved to award all or none of the controllers and compatible accessories to a bidder, or to reject any and all bids.

Delivery

All equipment must be received at the specified destination within 90 calendar days after the issue date of the purchase order. Liquidated damages for late delivery will be assessed at $50.00 per controller per day after the specified delivery date.

All boxes required to complete the controller assembly shall be packaged together as one.

Acceptance

All equipment shall be subject to a twenty-day acceptance period, which includes fifteen days for testing the equipment and five days for the supplier to repair or replace any defective equipment. The test period shall begin no later than fifteen days after the date the equipment is received. Any failure or malfunction of the equipment during the test period shall be corrected at the vendor's expense. The equipment shall then be tested for an additional fifteen days. This procedure shall be repeated until the equipment has operated to the state's satisfaction for fifteen consecutive days. Liquidated damages for defective equipment shall be assessed at $50.00 per controller per day after the twenty-day acceptance period.

Liquidated Damages

Liquidated damages will be limited to 50 (fifty) percent of the total contract price. When this amount is reached, the Commission, at its discretion, reserves the right to cancel the remainder of the contract without being considered in breach of the contract and without any additional payment to the bidder. Prior to the effective date of cancellation by the Commission, the Commission will purchase all units requested, received and found acceptable, less any liquidated damages. The Commission will apply liquidated damages to those amounts not fulfilled.

NEMA TS1/TS2 Traffic Signal Controller Order Form

DISTRICT	COUNTY	DESIGNATION	TRAVELWAY	CROSS STREET	LOG MILE
6 - ST. LOUIS	ST. LOUIS	IS	270	MO Bottom Road	1.23000

SHIP TO:

NEIL SCHLICHTING	2309 A BARRETT STATION ROAD	BALLWIN, MO	63021

SIGNAL ID 2

CONTROLLER
TS2/Type2

CONTROLLER TYPE
ACTUATED

CABINET TYPE
NEMA/PT STANDARD EV

CABINET DESCRIPTION

SYSTEM MASTER

DETECTION TYPE
INDUCTION

INTERCONNECT TYPE
7-WIRE LOCAL

VIDEO SYSTEM INTERFACE

PRE-EMPT

BACKPANEL
8-POSITION-TS1

VIDEO SYSTEM TYPE

PRE-EMPT INFORMATION

☑ **D PLUG**

NEMA TS1 LOAD SWITCH ASSIGNMENTS

1	2	3	4	5	6	7	8	9	10	11	12
1	2										

☐ **EXCLUSIVE PED PHASE**

NEMA TS2 LOAD SWITCH ASSIGNMENTS

13	14	15	16

NEMA

 # OF STANDARD 2-CHANNEL DETECTOR 3

 # OF DELAY/EXT 2-CHANNEL DETECTOR 0

CARD RACK CONFIGURATION

FILL IN POSITIONS NEEDED WITH ASSOCIATED PHASE NUMBER

1-CH1	2-CH1	3-CH1	4-CH1	5-CH1	6-CH1	7-CH1	8-CH1
1	1	2	0	0	0	0	0
1-CH2	**2-CH2**	**3-CH2**	**4-CH2**	**5-CH2**	**6-CH2**	**7-CH2**	**8-CH2**
0	0	0	0	0	0	0	0

DELAY/EXTEND	DET ☐	DET ☐	DET ☐	DET ☐	DET ☐	DET ☐	DET ☐	DET ☐
VIDEO	V DET ☐	V DET 2 ☐	V DET 3 ☐	V DET 4 ☐	V DET 5 ☐	V DET 6 ☐	V DET 7 ☐	V DET 8 ☐

OTHER INFORMATION OR SPECIAL REQUIREMENTS:

Load switch position #4 is for the constant green NB through traffic. However, no Load switch is needed for position #4. Wire P1, P2, OLA, and OLB for future use on Load Switch positions 5-8.

Go To Next Record ▶ | Go to Previous Record ◀ | Add a New Record ▶* | Close File

NEMA TS1/TS2 Traffic Signal Controller Order Form

DISTRICT	COUNTY	DESIGNATION	TRAVELWAY	CROSS STREET	LOG MILE
6 - ST. LOUIS	ST. LOUIS	IS	270	MO Bottom NB off-rmp (E. E	1.11000

SHIP TO:

NEIL SCHLICHTING	2309 A BARRETT STATION ROAD	BALLWIN, MO	63021

SIGNAL ID 1684

CONTROLLER
TS2/Type2

CONTROLLER TYPE
ACTUATED

CABINET TYPE
NEMA/PT STANDARD EV

CABINET DESCRIPTION

SYSTEM MASTER

DETECTION TYPE
INDUCTION

INTERCONNECT TYPE
7-WIRE LOCAL

VIDEO SYSTEM INTERFACE

PRE-EMPT

BACKPANEL
12-POSITION-TS1

VIDEO SYSTEM TYPE

PRE-EMPT INFORMATION

☑ **D PLUG**

NEMA TS1 LOAD SWITCH ASSIGNMENTS

1	2	3	4	5	6	7	8	9	10	11	12
1	2	3									

☐ **EXCLUSIVE PED PHASE**

NEMA TS2 LOAD SWITCH ASSIGNMENTS

13	14	15	16

NEMA

 # OF STANDARD 2-CHANNEL DETECTOR 3

 # OF DELAY/EXT 2-CHANNEL DETECTOR 0

CARD RACK CONFIGURATION
FILL IN POSITIONS NEEDED WITH ASSOCIATED PHASE NUMBER

1-CH1	2-CH1	3-CH1	4-CH1	5-CH1	6-CH1	7-CH1	8-CH1
1	0	0	0	3	0	0	0
1-CH2	**2-CH2**	**3-CH2**	**4-CH2**	**5-CH2**	**6-CH2**	**7-CH2**	**8-CH2**
0	2	0	0	0	0	0	0

DELAY/EXTEND	DET ☐	DET ☐	DET ☐	DET ☐	DET ☐	DET ☐	DET ☐	DET ☐
VIDEO	V DET ☐	V DET 2 ☐	V DET 3 ☐	V DET 4 ☐	V DET 5 ☐	V DET 6 ☐	V DET 7 ☐	V DET 8 ☐

OTHER INFORMATION OR SPECIAL REQUIREMENTS:

Wire Peds P1, P2, and P3 on Load Switches 9-11 and OLA on Load switch 12 for future use.

Go To Next Record ▶ | Go to Previous Record ◀ | Add a New Record ▶* | Close File

NEMA TS1/TS2 Traffic Signal Controller Order Form

DISTRICT	COUNTY	DESIGNATION	TRAVELWAY	CROSS STREET	LOG MILE
6 - ST. LOUIS	ST. CHARLES	OR	70	I-70 NOR @ Bryan Rd.	0.00000

SHIP TO:

NEIL SCHLICHTING	2309 A BARRETT STATION ROAD	BALLWIN, MO	63021

SIGNAL ID 1

CONTROLLER
TS2/Type2

CONTROLLER TYPE
ACTUATED

CABINET TYPE
NEMA/PT STANDARD EV

CABINET DESCRIPTION
A, B, C AND D PLUGS

SYSTEM MASTER

DETECTION TYPE
INDUCTION

INTERCONNECT TYPE
FIBER CLOSED LOOP

VIDEO SYSTEM INTERFACE
INDUCTION DETECTOR PANEL

PRE-EMPT

BACKPANEL
16-POSITION-TS1

VIDEO SYSTEM TYPE
None

PRE-EMPT INFORMATION
N/A

☑ D PLUG

NEMA TS1 LOAD SWITCH ASSIGNMENTS

1	2	3	4	5	6	7	8	9	10	11	12
	SB		WB		NB	WBL	EB				

☐ EXCLUSIVE PED PHASE

NEMA TS2 LOAD SWITCH ASSIGNMENTS

13	14	15	16

NEMA

 # OF STANDARD 2-CHANNEL DETECTOR 5

 # OF DELAY/EXT 2-CHANNEL DETECTOR 0

CARD RACK CONFIGURATION

FILL IN POSITIONS NEEDED WITH ASSOCIATED PHASE NUMBER

1-CH1	2-CH1	3-CH1	4-CH1	5-CH1	6-CH1	7-CH1	8-CH1
0	6	6	0	3	8	8	0
1-CH2	**2-CH2**	**3-CH2**	**4-CH2**	**5-CH2**	**6-CH2**	**7-CH2**	**8-CH2**
0	2	2	0	8	4	4	0

DELAY/EXTEND	DET ☐	DET ☐	DET ☐	DET ☐	DET ☐	DET ☐	DET ☐	DET ☐
VIDEO	V DET ☐	V DET 2 ☐	V DET 3 ☐	V DET 4 ☐	V DET 5 ☐	V DET 6 ☐	V DET 7 ☐	V DET 8 ☐

OTHER INFORMATION OR SPECIAL REQUIREMENTS:

Wire Load Switches 9-12 for Peds P2, P4, P6, & P8 and Load Switches 13-16 for overlaps A-D for future use.

Go To Next Record ▶ | Go to Previous Record ◀ | Add a New Record ▶* | Close File

NEMA TS1/TS2 Traffic Signal Controller Order Form

DISTRICT	COUNTY	DESIGNATION	TRAVELWAY	CROSS STREET	LOG MILE
6 - ST. LOUIS	ST. CHARLES	IS	70	I-70 @ Bryan (S. End)	215.98000

SHIP TO:

NEIL SCHLICHTING	2309 A BARRETT STATION ROAD	BALLWIN, MO	63021

SIGNAL ID 13

CONTROLLER
TS2/Type2

SYSTEM MASTER

INTERCONNECT TYPE
7-WIRE LOCAL

BACKPANEL
12-POSITION-TS1

☑ D PLUG

CONTROLLER TYPE
ACTUATED

DETECTION TYPE
INDUCTION

VIDEO SYSTEM INTERFACE
INDUCTION DETECTOR PANEL

VIDEO SYSTEM TYPE
none

CABINET TYPE
NEMA/PT STANDARD EV

CABINET DESCRIPTION
A, B, C, and D plugs

PRE-EMPT

PRE-EMPT INFORMATION
N/A

NEMA TS1 LOAD SWITCH ASSIGNMENTS

1	2	3	4	5	6	7	8	9	10	11	12
	SB	EB		SBL	NB			P2	P4	P6	

☐ EXCLUSIVE PED PHASE

NEMA TS2 LOAD SWITCH ASSIGNMENTS

13	14	15	16

NEMA

 # OF STANDARD 2-CHANNEL DETECTOR 4

 # OF DELAY/EXT 2-CHANNEL DETECTOR 2

CARD RACK CONFIGURATION
FILL IN POSITIONS NEEDED WITH ASSOCIATED PHASE NUMBER

1-CH1	2-CH1	3-CH1	4-CH1	5-CH1	6-CH1	7-CH1	8-CH1
1	6	6	0	3	0	0	0
1-CH2	**2-CH2**	**3-CH2**	**4-CH2**	**5-CH2**	**6-CH2**	**7-CH2**	**8-CH2**
5	2	2	0	8	0	0	0

	DET	DET	DET	DET	DET	DET	DET	DET
DELAY/EXTEND	☑	☐	☐	☑	☐	☐	☐	☐

	V DET	V DET 2	V DET 3	V DET 4	V DET 5	V DET 6	V DET 7	V DET 8
VIDEO	☐	☐	☐	☐	☐	☐	☐	☐

OTHER INFORMATION OR SPECIAL REQUIREMENTS:

Wire Load Switches 9-11 for P2, P4 & P6. Wire Load Switch 12 for OLA for future use.

Go To Next Record ▶ | Go to Previous Record ◀ | Add a New Record ▶* | Close File

NEMA TS1/TS2 Traffic Signal Controller Order Form

DISTRICT	COUNTY	DESIGNATION	TRAVELWAY	CROSS STREET	LOG MILE
6 - ST. LOUIS	ST. CHARLES	IS	70	I-70 @ Bryan (N. End)	215.98000

SHIP TO:

NEIL SCHLICHTING	2309 A BARRETT STATION ROAD	BALLWIN, MO	63021

SIGNAL ID 1687

CONTROLLER
TS2/Type2

CONTROLLER TYPE
ACTUATED

CABINET TYPE
NEMA/PT STANDARD EV

CABINET DESCRIPTION
A, B, C and D plugs

SYSTEM MASTER

DETECTION TYPE
INDUCTION

INTERCONNECT TYPE
FIBER CLOSED LOOP

VIDEO SYSTEM INTERFACE
INDUCTION DETECTOR PANEL

PRE-EMPT

BACKPANEL
12-POSITION-TS1

VIDEO SYSTEM TYPE
None

PRE-EMPT INFORMATION
N/A

☑ **D PLUG**

NEMA TS1 LOAD SWITCH ASSIGNMENTS

1	2	3	4	5	6	7	8	9	10	11	12
NBL	SB		WB		NB						

☐ **EXCLUSIVE PED PHASE**

NEMA TS2 LOAD SWITCH ASSIGNMENTS

13	14	15	16

NEMA

 # OF STANDARD 2-CHANNEL DETECTOR 5

 # OF DELAY/EXT 2-CHANNEL DETECTOR 0

CARD RACK CONFIGURATION

FILL IN POSITIONS NEEDED WITH ASSOCIATED PHASE NUMBER

1-CH1	2-CH1	3-CH1	4-CH1	5-CH1	6-CH1	7-CH1	8-CH1
1	6	6	0	4	0	3	0
1-CH2	**2-CH2**	**3-CH2**	**4-CH2**	**5-CH2**	**6-CH2**	**7-CH2**	**8-CH2**
5	2	2	0	4	0	0	0

DELAY/EXTEND	DET ☐	DET ☐	DET ☐	DET ☐	DET ☐	DET ☐	DET ☐	DET ☐
VIDEO	V DET ☐	V DET 2 ☐	V DET 3 ☐	V DET 4 ☐	V DET 5 ☐	V DET 6 ☐	V DET 7 ☐	V DET 8 ☐

OTHER INFORMATION OR SPECIAL REQUIREMENTS:

Wire Load Switches 9-11 for P2, P4 & P6. Wire Load Switch 12 for OLA for future use.

Go To Next Record ▶ | Go to Previous Record ◀ | Add a New Record ▶* | Close File

NEMA TS1/TS2 Traffic Signal Controller Order Form

DISTRICT	COUNTY	DESIGNATION	TRAVELWAY	CROSS STREET	LOG MILE
6 - ST. LOUIS	ST. CHARLES	OR	70	I-70 SOR @ Bryan Rd	5.14000

SHIP TO:

NEIL SCHLICHTING	2309 A BARRETT STATION ROAD	BALLWIN, MO	63021

SIGNAL ID 1656

CONTROLLER
TS2/Type2

CONTROLLER TYPE
ACTUATED

CABINET TYPE
NEMA/PT STANDARD EV

CABINET DESCRIPTION
A, B, C and D plugs

SYSTEM MASTER

DETECTION TYPE
INDUCTION

INTERCONNECT TYPE
FIBER CLOSED LOOP

VIDEO SYSTEM INTERFACE
INDUCTION DETECTOR PANEL

PRE-EMPT

BACKPANEL
16-POSITION-TS1

VIDEO SYSTEM TYPE
none

PRE-EMPT INFORMATION
N/A

☑ **D PLUG**

NEMA TS1 LOAD SWITCH ASSIGNMENTS

1	2	3	4	5	6	7	8	9	10	11	12
NBL	SB	EBL	WB	SBL	NB	WBL	EB				

☐ **EXCLUSIVE PED PHASE**

NEMA TS2 LOAD SWITCH ASSIGNMENTS

13	14	15	16

NEMA

 # OF STANDARD 2-CHANNEL DETECTOR 8

 # OF DELAY/EXT 2-CHANNEL DETECTOR 0

CARD RACK CONFIGURATION
FILL IN POSITIONS NEEDED WITH ASSOCIATED PHASE NUMBER

1-CH1	2-CH1	3-CH1	4-CH1	5-CH1	6-CH1	7-CH1	8-CH1
1	6	6	6	3	8	8	8
1-CH2	**2-CH2**	**3-CH2**	**4-CH2**	**5-CH2**	**6-CH2**	**7-CH2**	**8-CH2**
5	2	2	2	7	4	4	4

	DET	DET	DET	DET	DET	DET	DET	DET
DELAY/EXTEND	☐	☐	☐	☐	☐	☐	☐	☐

	V DET	V DET 2	V DET 3	V DET 4	V DET 5	V DET 6	V DET 7	V DET 8
VIDEO	☐	☐	☐	☐	☐	☐	☐	☐

OTHER INFORMATION OR SPECIAL REQUIREMENTS:

Wire Load Switches 9-12 for Peds P2, P4, P6, & P8 and Load Switches 13-16 for overlaps A-D for future use.

Go To Next Record ▶ | Go to Previous Record ◀ | Add a New Record ▶* | Close File

NEMA TS1/TS2 Traffic Signal Controller Order Form

DISTRICT	COUNTY	DESIGNATION	TRAVELWAY	CROSS STREET	LOG MILE
6 - ST. LOUIS	ST. CHARLES	OR	70	I-70 SOR @ Country Club	4.86000

SHIP TO:

NEIL SCHLICHTING	2309 A BARRETT STATION ROAD	BALLWIN, MO	63021

SIGNAL ID 1465

CONTROLLER
TS2/Type2

CONTROLLER TYPE
ACTUATED

CABINET TYPE
NEMA/PT STANDARD EV

CABINET DESCRIPTION

SYSTEM MASTER

DETECTION TYPE
VIDEO W/CARD RACK

INTERCONNECT TYPE
FIBER CLOSED LOOP

VIDEO SYSTEM INTERFACE

PRE-EMPT

BACKPANEL
12-POSITION-TS1

VIDEO SYSTEM TYPE
Iteris

PRE-EMPT INFORMATION
N/A

☑ **D PLUG**

NEMA TS1 LOAD SWITCH ASSIGNMENTS

1	2	3	4	5	6	7	8	9	10	11	12
	N&S	EBL									

☐ **EXCLUSIVE PED PHASE**

NEMA TS2 LOAD SWITCH ASSIGNMENTS

13	14	15	16

NEMA

 # OF STANDARD 2-CHANNEL DETECTOR 0

 # OF DELAY/EXT 2-CHANNEL DETECTOR 0

CARD RACK CONFIGURATION
FILL IN POSITIONS NEEDED WITH ASSOCIATED PHASE NUMBER

1-CH1	2-CH1	3-CH1	4-CH1	5-CH1	6-CH1	7-CH1	8-CH1
0	0	0	0	0	0	0	0
1-CH2	**2-CH2**	**3-CH2**	**4-CH2**	**5-CH2**	**6-CH2**	**7-CH2**	**8-CH2**
0	0	0	0	0	0	0	0

	DET	DET	DET	DET	DET	DET	DET	DET
DELAY/EXTEND	☐	☐	☐	☐	☐	☐	☐	☐

	V DET	V DET 2	V DET 3	V DET 4	V DET 5	V DET 6	V DET 7	V DET 8
VIDEO	☑	☑	☑	☐	☐	☐	☐	☐

OTHER INFORMATION OR SPECIAL REQUIREMENTS:

Wire Load Switches 9 & 10 for future ped crossing with phases 2 and 3. Wire Load Switches 11 & 12 for future OLA & OLB. Video card rack, not induction loop card rack.

Go To Next Record ▶ | Go to Previous Record ◀ | Add a New Record ▶* | Close File

NEMA TS1/TS2 Traffic Signal Controller Order Form

DISTRICT	COUNTY	DESIGNATION	TRAVELWAY	CROSS STREET	LOG MILE
6 - ST. LOUIS	ST. LOUIS	OR	270	Ford Lane@Pershall (270 SO	0.21000

SHIP TO:

NEIL SCHLICHTING	2309 A BARRETT STATION ROAD	BALLWIN, MO	63021

SIGNAL ID 3194

CABINET TYPE
NEMA/PT STANDARD EV

CONTROLLER
TS2/Type2

CONTROLLER TYPE
ACTUATED

CABINET DESCRIPTION

SYSTEM MASTER

DETECTION TYPE
INDUCTION

INTERCONNECT TYPE
NON-COORDINATED

VIDEO SYSTEM INTERFACE

PRE-EMPT

BACKPANEL
12-POSITION-TS1

VIDEO SYSTEM TYPE

PRE-EMPT INFORMATION

☑ **D PLUG**

NEMA TS1 LOAD SWITCH ASSIGNMENTS

1	2	3	4	5	6	7	8	9	10	11	12
	2	3		5	6			9			

☐ **EXCLUSIVE PED PHASE**

NEMA TS2 LOAD SWITCH ASSIGNMENTS

13	14	15	16

NEMA

 # OF STANDARD 2-CHANNEL DETECTOR 3

 # OF DELAY/EXT 2-CHANNEL DETECTOR 0

CARD RACK CONFIGURATION

FILL IN POSITIONS NEEDED WITH ASSOCIATED PHASE NUMBER

1-CH1	2-CH1	3-CH1	4-CH1	5-CH1	6-CH1	7-CH1	8-CH1
50	0	0	0	30	32	0	0
1-CH2	**2-CH2**	**3-CH2**	**4-CH2**	**5-CH2**	**6-CH2**	**7-CH2**	**8-CH2**
51	0	0	0	31	33	0	0

DELAY/EXTEND	DET	DET	DET	DET	DET	DET	DET	DET
	☐	☐	☐	☐	☐	☐	☐	☐
VIDEO	V DET	V DET 2	V DET 3	V DET 4	V DET 5	V DET 6	V DET 7	V DET 8
	☐	☐	☐	☐	☐	☐	☐	☐

OTHER INFORMATION OR SPECIAL REQUIREMENTS:

Please wire OLA on Load Switch 9.

Go To Next Record ▶ Go to Previous Record ◀ Add a New Record ▶* Close File

NEMA TS1/TS2 Traffic Signal Controller Order Form

DISTRICT	COUNTY	DESIGNATION	TRAVELWAY	CROSS STREET	LOG MILE
4 - KANSAS CITY	JACKSON	IS	470	Blue Ridge	2.08400

SHIP TO:

MARK DURHAM	9101 EAST 40TH TERRACE	KANSAS CITY, MO	64133

SIGNAL ID 1100

CONTROLLER
TS2/Type2

CONTROLLER TYPE
ACTUATED

CABINET TYPE
NEMA/PT STANDARD EV

CABINET DESCRIPTION

SYSTEM MASTER

DETECTION TYPE
INDUCTION

INTERCONNECT TYPE
7-WIRE LOCAL

VIDEO SYSTEM INTERFACE

PRE-EMPT

BACKPANEL
12-POSITION-TS2

VIDEO SYSTEM TYPE

PRE-EMPT INFORMATION

☑ **D PLUG**

NEMA TS1 LOAD SWITCH ASSIGNMENTS

1	2	3	4	5	6	7	8	9	10	11	12
1	2	3	4	5	6	7	8				

☐ **EXCLUSIVE PED PHASE**

NEMA TS2 LOAD SWITCH ASSIGNMENTS

13	14	15	16

NEMA

 # OF STANDARD 2-CHANNEL DETECTOR 8

 # OF DELAY/EXT 2-CHANNEL DETECTOR 1

CARD RACK CONFIGURATION

FILL IN POSITIONS NEEDED WITH ASSOCIATED PHASE NUMBER

1-CH1	2-CH1	3-CH1	4-CH1	5-CH1	6-CH1	7-CH1	8-CH1
1	6	6	6	6	3	8	8
1-CH2	**2-CH2**	**3-CH2**	**4-CH2**	**5-CH2**	**6-CH2**	**7-CH2**	**8-CH2**
5	2	2	2	2	7	4	4

	DET	DET	DET	DET	DET	DET	DET	DET
DELAY/EXTEND	☑	☐	☐	☐	☐	☐	☐	☐

	V DET	V DET 2	V DET 3	V DET 4	V DET 5	V DET 6	V DET 7	V DET 8
VIDEO	☐	☐	☐	☐	☐	☐	☐	☐

OTHER INFORMATION OR SPECIAL REQUIREMENTS:

Go To Next Record ▶ | Go to Previous Record ◀ | Add a New Record ▶* | Close File

NEMA TS1/TS2 Traffic Signal Controller Order Form

DISTRICT	COUNTY	DESIGNATION	TRAVELWAY	CROSS STREET	LOG MILE
4 - KANSAS CITY	JACKSON	IS	70	Prospect Avenue	3.63200

SHIP TO:

MARK DURHAM	9101 EAST 40TH TERRACE	KANSAS CITY, MO	64133

SIGNAL ID 6233

CONTROLLER
TS2/Type2

CONTROLLER TYPE
ACTUATED

CABINET TYPE
NEMA/PT STANDARD EV

CABINET DESCRIPTION

SYSTEM MASTER

DETECTION TYPE
INDUCTION

INTERCONNECT TYPE
7-WIRE LOCAL

VIDEO SYSTEM INTERFACE

PRE-EMPT

BACKPANEL
12-POSITION-TS2

VIDEO SYSTEM TYPE

PRE-EMPT INFORMATION

☑ D PLUG

NEMA TS1 LOAD SWITCH ASSIGNMENTS

1	2	3	4	5	6	7	8	9	10	11	12
1	2	3	4	5	6	7	8				

☐ EXCLUSIVE PED PHASE

NEMA TS2 LOAD SWITCH ASSIGNMENTS

13	14	15	16

NEMA

 # OF STANDARD 2-CHANNEL DETECTOR 8

 # OF DELAY/EXT 2-CHANNEL DETECTOR 4

CARD RACK CONFIGURATION

FILL IN POSITIONS NEEDED WITH ASSOCIATED PHASE NUMBER

1-CH1	2-CH1	3-CH1	4-CH1	5-CH1	6-CH1	7-CH1	8-CH1
1	6	6	6	3	3	8	8
1-CH2	**2-CH2**	**3-CH2**	**4-CH2**	**5-CH2**	**6-CH2**	**7-CH2**	**8-CH2**
5	2	2	2	7	7	4	4

	DET	DET	DET	DET	DET	DET	DET	DET
DELAY/EXTEND	☑	☐	☑	☑	☐	☑	☐	☐

	V DET	V DET 2	V DET 3	V DET 4	V DET 5	V DET 6	V DET 7	V DET 8
VIDEO	☐	☐	☐	☐	☐	☐	☐	☐

OTHER INFORMATION OR SPECIAL REQUIREMENTS:

Go To Next Record ▶ | Go to Previous Record ◀ | Add a New Record ▶* | Close File

PREFERENCE IN PURCHASING PRODUCTS

DATE: _____

The bidders attention is directed to Section 34.076 RSMo 2000 which gives preference to Missouri corporations, firms, and individuals when letting contracts or purchasing products.

Bids/Quotations received will be evaluated on the basis of this legislation.

All vendors submitting a bid/quotation must furnish ALL information requested below.

FOR CORPORATIONS:

State in which incorporated: _____

FOR OTHERS:

State of domicile: _____

FOR ALL VENDORS:

List address of Missouri offices or places of business:

_____

_____

_____

_____

_____

_____

_____

THIS SECTION MUST BE COMPLETED AND SIGNED:

FIRM NAME: _____

ADDRESS: _____

CITY: _____ **STATE:** _____ **ZIP:** _____

BY (signature required): _____

Federal Tax I.D. #: _____ **if no Federal Tax I.D. # - list Social Security #:** _____

NOTE: For bid/quotation to be considered, the "Preference in Purchasing Products" form must be on file in the General Services (Procurement) Division and must be dated in the current calendar year.

MISSOURI DOMESTIC PRODUCTS PROCUREMENT ACT

The bidder's attention is directed to the Missouri Domestic Products Procurement Act, Sections 34.350 to 34/359, RsMO, which requires all manufactured goods or commodities used or supplied in the performance of this contract or any subcontract to be manufactured or produced in the United States.

Section 34.355, RsMO, requires the vendor or contractor to certify his compliance with Section 34.353 and, if applicable, Section 34.359, RsMO, at the time of bidding **and** prior to payment. Failure to comply with Section 34.353, RsMO, during the performance of the contract **and** to provide certification of compliance prior to payment will result in nonpayment for those goods or commodities.

Section 34.353.2, RsMO, specifies that it does not apply where the total contract is less than Twenty-Five Thousand Dollars ($25,000.00). If your total bid is Twenty-Five Thousand Dollars ($25,000.00) or more, you **must** complete this form as directed below.

Failure to complete and return this document with this bid will cause the State to presume the manufactured goods or products listed in the bid are not manufactured or produced in the United States, and the bid will be evaluated on that basis. Please read the certification appearing below on this form.

[ ] If all the goods or products specified in the attached bid which the bidder proposes to supply to the State shall be manufactured or produced in the "United States" as defined in Section 34.350, RsMO, check the box at left.

[ ] If only one item of any particular goods or products specified in the attached bid is manufactured or produced in the "United States" as defined in Section 34.350, RsMO, check the box at left and list the items (or item number) here:

_____

_____

[ ] If any or all of the goods or products specified in the attached bid which the bidder proposes to supply to the State are **not** manufactured or produced in the "United States" as defined in Section 34.350, RsMO, then: (a) check the box at left; (b) list below, by item (or item number), the country other than the United States where each good or product is manufactured or produced; and (c) check the boxes to the left of the paragraphs below if applicable and list the corresponding items (or item numbers) in the spaces provided.

Item (or item number)	Location Where Item Manufactured or Produced

(attach an additional sheet if necessary)

[ ] The following specified goods or products cannot be manufactured or produced in the United States in sufficient quantities or in time to me the contract specifications. Items (or item numbers): _____

_____

[ ] The following specified goods or products must be treated as manufactured or produced in the United States, in accordance with an existing treaty, law, agreement, or regulation of the United States, including a treaty between the United States and any foreign country regarding export-import restrictions or international trade. Items (or item numbers): _____

_____

CERTIFICATION

By submitting this document, completed as directed above, with a bid, the bidder certifies under penalty of making false declaration (Section 575.060, RsMO) that the information contained in this document if true, correct and complete, and may be relied upon by the State in determining the bidders qualifications under and in compliance with the Missouri Domestic Products Procurement Act.

The bidder's failure to complete and return this document with the bid as directed above will cause the State to presume the manufactured goods or products listed in the bid are not manufactured or produced in the United States, and the bid will be evaluated on that basis pursuant to Section 34.353.3(2), RsMO.

Missouri Highways and Transportation Commission
Standard Bid/Proposal Provisions, General Terms and Conditions and Special Terms and Conditions

STANDARD SOLICITATION PROVISIONS

a. The Missouri Department of Transportation (MoDOT) reserves the right to reject any or all bids/quotes/proposals, and to accept or reject any items thereon, and to waive technicalities. In case of error in the extension of prices in the bid/quote/proposal, unit prices will govern.

b. All bids/quotes/proposals must be signed with the firm name and by a responsible officer or employee. Obligations assumed by such signature must be fulfilled.

c. By virtue of statutory authority, a preference will be given to materials, products, supplies, provisions and all other articles produced, manufactured, made or grown, within the State of Missouri.

d. Time of delivery is a part of the consideration and, if not otherwise stated in the solicitation documents, must be stated in definite terms by the Bidder/Offeror and must be adhered to. If time varies on different items, the Bidder/Offeror shall so state.

e. If providing bids/quotes/proposals for commodities, the Bidder/Offeror will state brand or make on each item. If bidding or proposing other than the make, model or brand specified, the manufacturer's name, model number or catalog number must be given.

f. **For bids/proposals of $25,000** or more, no bids/proposals by telephone, telegram or telefax will be accepted. If provided, these bids/proposals should be returned in the MoDOT solicitation return envelope.

g. If a solicitation return envelope is provided by MoDOT, the bid/quote/proposal should be returned in the envelope provided with the Bid/RFQ/RFP Request Number plainly indicated thereon.

h. The date specified for the returning of bids/quotes/proposals is a firm deadline and all bids/quotes/proposals must be received at the designated office by that time. The Department does not recognize the U.S. Mail, Railway Express Agency, Air Express, or any other organization, as its agent for purposes of accepting proposals. All proposals arriving at the designated office after the deadline specified will be rejected.

GENERAL TERMS AND CONDITIONS

General Performance

a. This work is to be performed under the general supervision and direction of the Missouri Department of Transportation (MoDOT) and, if awarded any portion of the work, the Contractor agrees to furnish at his own expense all labor and equipment required to complete the work, it being expressly understood that this solicitation is for completed work based upon the price(s) specified and is not a solicitation for rental of equipment or employment of labor by MoDOT, and MoDOT is to have no direction or control over the employees used by the Contractor in performance of the work.

Deliveries

a. Unless otherwise specified on the solicitation documents or purchase order, suppliers shall give at least 24 hours advance notice of each delivery. Delivery will only be received between the hours of 8:00 a.m. to 3:00 p.m., Monday through Friday. Material arriving after 3:00 p.m. will not be unloaded until the following workday. No material will be received on Saturday, Sunday or state holidays.

b. If the prices bid herein include the delivery cost of the material, the Contractor agrees to pay all transportation charges on the material as FOB - Destination. Freight costs must be included in the unit price bid and not listed as a separate line item.

c. Any demurrage is to be paid by the Contractor direct to the railroad or carrier.

Nondiscrimination

a. The Contractor shall comply with the Regulations relative to nondiscrimination 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.

b. 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 the Contractor's obligations under this contract and the Regulations, will be relative to nondiscrimination on the grounds of race, color, or national origin.

1) Sanctions for Noncompliance: In the event of the Contractor's noncompliance with the nondiscrimination provisions of this contract, MoDOT shall impose such contract sanctions as it or the Federal Highway Administration may determine to be appropriate, including, but not limited to:

i. withholding of payments to the Contractor under the contract until the Contractor complies, and/or,

ii. cancellation, termination or suspension of the contract, in whole or in part.

Contract/Purchase Order

a. By submitting a bid/quote/proposal, the Bidder/Offeror agrees to furnish any and all equipment, supplies and/or services specified in the solicitation documents, at the prices quoted, pursuant to all requirements and specifications contained therein.

b. A binding contract shall consist of: (1) the solicitation documents, amendments thereto, and/or Best and Final Offer (BAFO) request(s) with any changes/additions, (2) the Contractor's proposal and/or submitted pricing, and (3) the MHTC's acceptance of the proposal and/or bid by purchase order or post-award contract.

c. A notice of award does not constitute an authorization for shipment of equipment or supplies or a directive to proceed with services. Before providing equipment, supplies and/or services, the Contractor must receive a properly authorized purchase order and/or notice to proceed.

d. The contract expresses the complete agreement of the parties and performance shall be governed solely by the specifications and requirements contained therein. Any change, whether by modification and/or supplementation, must be accomplished by a formal contract amendment signed and approved by and between the duly authorized representative of the Contractor and the duly authorized representative of the MHTC, by a modified purchase order prior to the effective date of such modification. The Contractor expressly and explicitly understands and agrees that no other method and/or no other document, including correspondence, acts, and oral communications by or from any person, shall be used or construed as an amendment or modification.

Subcontracting

a. It is specifically understood that no portion of the material or any interest in the contract, shall be subcontracted, transferred, assigned or otherwise disposed of, except with the written consent of MoDOT. Request for permission to subcontract or otherwise dispose of any part of the work shall be in writing to MoDOT and accompanied by documentation showing that the organization which will perform the work is particularly experienced and equipped for such work.

b. Consent to subcontract or otherwise dispose of any portion of the work shall not be construed to relieve the Contractor of any responsibility for the production and delivery of the contracted work and the completion of the work within the specified time.

c. All payments for work performed by a subcontractor shall be made to the Contractor to whom the contract was awarded and the purchase order issued.

Invoicing and Payment

a. MoDOT is exempt from paying Missouri Sales Tax, Missouri Use Tax and Federal Excise Tax. However, the Contractor may themselves be responsible for the payment of taxes on materials they purchase to fulfill the contract. A Federal Excise Tax Exemption Certificate will be furnished to the successful Bidder/Offeror upon request.

b. Each invoice should be itemized in accordance with items listed on the purchase order and/or contract. The statewide financial management system has been designed to capture certain receipt and payment information. Therefore, each invoice submitted must reference the purchase order number and must be itemized in accordance with items listed on the purchase order. Failure to comply with this requirement may delay processing of invoices for payment.

c. Unless otherwise provided for in the solicitation documents, payment for all equipment, supplies, and/or services required herein shall be made in arrears. The Missouri Highways and Transportation Commission (MHTC) shall not make any advance deposits.

d. The MHTC assumes no obligation for equipment, supplies, and/or services shipped or provided in excess of the quantity ordered. Any authorized quantity is subject to the MHTC's rejection and shall be returned at the Contractor's expense.

e. The MHTC reserves the right to purchase goods and services using the state-purchasing card.

Applicable Laws and Regulations

a. The contract shall be construed according to the laws of the State of Missouri. The Contractor shall comply with all local, state, and federal laws and regulations related to the performance of the contract.

b. The Contractor must be registered and maintain good standing with the Secretary of State of the State of Missouri and other regulatory agencies, as may be required by law or regulations. Prior to the issuance of a purchase order and/or notice to proceed, the Contractor may be required to submit to MoDOT a copy of their current Authority Certificate from the Secretary of State of the State of Missouri.

1) Prior to the issuance of a purchase order and/or notice to proceed, all **out-of-state** Contractors **providing services** within the state of Missouri must submit to MoDOT a copy of their current Transient Employer Certificate from the Department of Revenue, in addition to a copy of their current Authority Certificate from the Secretary of State of the State of Missouri.

c. The contractor shall only utilize personnel authorized to work in the United States in accordance with applicable federal and state laws and Executive Order 07-13 for work performed in the United States.

d. The exclusive venue for any legal proceeding relating to or arising, out of the contract shall be in the Circuit Court of Cole County, Missouri.

Preferences

a. In the evaluation of bids/quotes/proposals, preferences shall be applied in accordance with Chapter 34 RSMo. Contractors should apply the same preferences in selecting subcontractors.

b. By virtue of statutory authority, RSMo. 34.076 and 34.350 to 34.359, a preference will be given to materials, products, supplies, provisions and all other articles produced, manufactured, made or grown within the State of Missouri. Such preference shall be given when quality is equal or better and delivered price is the same or less.

1) If attached, the document entitled **"PREFERENCE IN PURCHASING PRODUCTS"** should be completed and returned with the solicitation documents.

2) If attached, the document entitled **"MISSOURI DOMESTIC PRODUCTS PROCUREMENT ACT"** should be completed and returned with the solicitation documents. **Applies if bid is Twenty-Five Thousand Dollars ($25,000.00) or more.**

c. In the event of a tie of low bids, the MHTC reserves the right to establish the method to be used in determining the award

Remedies and Rights

a. No provision in the contract shall be construed, expressly or implied, as a waiver by the MHTC of any existing or future right and/or remedy available by law in the event of any claim by the MHTC of the Contractor's default or breach of contract.

b. The Contractor agrees and understands that the contract shall constitute an assignment by the Contractor to the MHTC of all rights, title and interest in and to all causes of action that the Contractor may have under the antitrust laws of the United States or State of Missouri for which causes of action have accrued or will accrue as the result of or in relation to the particular equipment, supplies, and/or services purchased or produced by the Contractor in the fulfillment of the contract with the MHTC.

c. 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 MoDOT to enter into such litigation to protect the interests of the MHTC, and, in addition, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

Cancellation of Contract

a. The MHTC may cancel the contract at any time for a material breach of contractual obligations or for convenience by providing the Contractor with written notice of cancellation. Should the MHTC exercise its right to cancel the contract for such reasons, cancellation will become effective upon the date specified in the notice of cancellation sent to the Contractor.

b. If the MHTC cancels the contract for breach, the MHTC reserves the right to obtain the equipment, supplies, and/or services to be provided pursuant to the contract from other sources and upon such terms and in such manner as the MHTC deems appropriate and charge the Contractor for any additional costs incurred thereby.

Bankruptcy or Insolvency

a. Upon filing for any bankruptcy or insolvency proceeding by or against the Contractor, whether voluntary or involuntary, or upon the appointment of a receiver, trustee, or assigned the benefit or creditors, the Contractor must notify MoDOT immediately. Upon learning of any such actions, the MHTC reserves the right, at its sole discretion, to either cancel the contract or affirm the contract and hold the Contractor responsible for damages.

Inventions, Patents, and Copyrights

a. The Contractor shall defend, protect, and hold harmless the MHTC, its officers, agents, and employees against all suits of law or in equity resulting from patent and copyright infringement concerning the Contractor's performance or products produced under the terms of the contract.

Inspection and Acceptance

a. No equipment, supplies, and/or services received by MoDOT pursuant to a contract shall be deemed accepted until MoDOT has had reasonable opportunity to inspect said equipment, supplies, and/or services.

b. All equipment, supplies, and/or services which do not comply with the specifications and/or requirements or which are otherwise unacceptable or defective may be rejected. In addition, all equipment, supplies, and/or services which are discovered to be defective or which do not conform to any warranty of the Contractor upon inspection (or at any later time if the defects contained were not reasonably ascertainable upon the initial inspection) may be rejected.

c. The MHTC reserves the right to return any such rejected shipment at the Contractor's expense for full credit or replacement and to specify a reasonable date by which replacements must be received.

d. The MHTC's right to reject any unacceptable equipment, supplies, and/or services shall not exclude any other legal, equitable or contractual remedies the MHTC may have.

Warranty

a. The Contractor expressly warrants that all equipment, supplies, and/or services provided shall: (1) conform to each and every specification, drawing, sample or other description which was furnished to or adopted by MoDOT, (2) be fit and sufficient for the purpose expressed in the solicitation documents, (3) be merchantable, (4) be of good materials and workmanship, and (5) be free from defect.

b. Such warranty shall survive delivery and shall not be deemed waived either by reason of the MHTC's acceptance of or payment for said equipment, supplies, and/or services.

Status of Independent Contractor

a. The Contractor represents itself to be an independent Contractor offering such services to the general public and shall not represent itself or its employees to be an employee of the MHTC. Therefore, the Contractor shall assume all legal and financial responsibility for taxes, FICA, employee fringe benefits, workers' compensation, employee insurance, minimum wage requirements, overtime, etc., and agrees to indemnify, save and hold the MHTC, its officers, agents and employees harmless from and against any and all losses (including attorney fees) and damage of any kind related to such matters.

Indemnification

a. The Offeror shall defend, indemnify and hold harmless the Commission, including its members and department employees, from any claim or liability whether based on a claim for damages to real or personal property or to a person for any matter relating to or arising out of the Offeror's performance of its obligations under this Agreement.