**Parts List and Specifications**

**Advanced Flasher Assembly Installed by Outside Party**

1. One, twelve (12) inch black signal head with yellow lens, five (5) inch black back plate, tunnel-away visor and hardware to mount on top of post.

2. One, four and one-half (4-1/2) inch outside diameter pedestal post and pedestal base. Length of post is to be determined as needed to meet dimensions on the attached drawing. The horizontal distance of the post from the pavement shall be as per the attached drawings.

3. One Type C concrete base.

4. Minimum two inch (2") rigid conduit.

5. Signs and mounting brackets supplied by the Missouri Highway and Transportation Commission. Installation of signs is the responsibility of the outside party. Signs shall be installed using stainless steel straps and sign bracket.

6. One fused slip connector assembly required on each control or power cable conductor in the base of the post. If control enclosure is on the post, the fuse shall be 15 amps, if the control enclosure is remote, the fuse shall be 3 amps.

7. Wiring shall be as follows (120 Volt Systems):

 **Control Wires from Control Equipment to Beacon**

 Max. Length of Wire Run Min. Cable Size

 1100 Feet #12 AWG

 1850 Feet #10 AWG

 2830 Feet #8 AWG

 **Power Cables From Power Source to Control Enclosure**

 Max. Length of Wire Run Min. Cable Size

 1220 Feet #8 AWG

 1950 Feet #6 AWG

8. One NEMA 4 aluminum or stainless-steel enclosure that contains the necessary equipment to operate the beacon as shown on the attached wiring diagram specified by the Commission. The enclosure shall be of sufficient size to house all specified equipment. The control enclosure shall be mounted on the control pedestal or on the sign post as specified by the Commission. If the control enclosure is mounted on the sign post, it shall be located directly behind the warning sign.

 If a special event button is specified, it shall be mounted 3 feet to 5 feet 6 inches above ground and shall be in a separate lockable compartment. If the control enclosure is not mounted in this range, the button shall be housed outside the cabinet in a separate lockable enclosure. The special event button enclosure may be installed on the post below the control enclosure if necessary, for accessibility. Wiring for the special event button shall not be exposed.

9. The power may be provided from a building owned by the outside party, by a separate power drop to the control pedestal with the meter installed on the control pedestal, or a solar power system as approved by the Commission. For 120 Volt power sources, a separate disconnect enclosure shall be provided on the control pedestal. The control pedestal shall be located as close to the right-of-way as possible or, if the power source is on the right-of-way, as close to the power source as possible.

10. All applicable equipment shall conform to the Missouri Department of Transportation Approved Products List for Traffic Signals and Highway Lighting Equipment and applicable Standard Specifications and Standard Plans. Applicable specifications and standard plans are as follows, but are not necessarily limited to this list:

 Item Standard Specs. Standard Plan

 Signal Heads 902.4.1 902.00

 Pedestal Post and Base 902.4.3

 Concrete Bases 902.5.2 902.30

 Rigid Conduit 902.5.3, 1060 902.10

 Fused Slip Connector Assembly 901.5.8.3 901.02

 Electrical Conductors 1061

 Circuit Breakers 901.4.4.6

 Disconnect Enclosure & Meter Box 901.4.5

 An equipment list of proposed items to be used and a layout of the entire installation shall be submitted to the engineer for approval before ordering equipment. All equipment to be maintained by the Commission shall be located on the right-of-way.

11. Solar powered equipment may be used if approved by the Commission. Solar installations must meet all the location, material and operational conditions listed above. In addition. the outside party shall be responsible for the maintenance of the solar panels, solar controller and storage batteries, this is in lieu of the power costs of a conventional installation.

12. For remote activation systems and signal phase activation systems, positive interconnection to the flashers shall be provided. The preferred method is "hard" wire supplying both power and control for the flashers. Radio interconnection can be allowed however, the outside party shall be responsible for licensing and maintaining the radio equipment. Special events or remote activation shall be a normally open momentary connection.

13. If radio interconnect is used a control enclosure containing the control equipment described above will be provided for each flasher. Also, the meter and power disconnect breaker box shall not be located on the flasher post. The power disconnect breaker shall be located within the right of way as close to the right of way line as possible.