



STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
16 STATE HOUSE STATION
AUGUSTA, MAINE
04333-0016

JOHN ELIAS BALDACCI
GOVERNOR

DAVID A. COLE
COMMISSIONER

October 3, 2008
Subject: **South Portland to Houlton**
Federal Project No. ITS-1244(803)X
State Pin No.012448.03
Amendment No. 1

Dear Sir/Ms:

Please make the following changes to the Bid Documents:

In the: "Schedule of Items" two pages total, (pages 3 & 4 in the book) on page 3, within Item 645.603 Flashing Speed Sign-Radar Retrofit, CHANGE the Quantity/Units from 44.000 to 43.000. Make this change in pen and ink.

REMOVE the existing: "Side View, Typical Solar Powered, Remotely Controlled Flashing Speed Sign" drawing (Page 30 of the book) and REPLACE with the attached updated: "Side View, Typical Solar Powered, Remotely Controlled Flashing Speed Sign" drawing.

On page 35 of the book, "Flashing Speed Sign Locations (Existing Sites for Radar Retrofit Only)" DELETE in its entirety the following location: "Interstate 395 – Westbound – Brewer - At Green Point Road overpass" also DELETE any and all references to the above location elsewhere in the Bid Book. Make these changes in pen and ink.

REMOVE the existing: "Special Provision, Section 645, (Dynamic Speed Signing)" dated 9/17/08 three pages total (pages 47-49 in the book), and REPLACE with the attached updated: "Special Provision, Section 645, (Dynamic Speed Signing)" with a revised date of 10/1/08 three pages total.

REMOVE the existing: "Special Provision, Section 645, (Dynamic Speed Signing – Camera & Radar Retrofit)" dated 9/17/08 two pages total (pages 50 & 51 in the book), and REPLACE with the attached updated: "Special Provision, Section 645, (Dynamic Speed Signing – Camera & Radar Retrofit)" with a revised date of 10/1/08 two pages total.



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REMOVE the existing: "Special Provision, Section 645, (Dynamic Speed Signing – Radar Retrofit)" dated 9/17/08 one page total (page 52 in the book), and REPLACE with the attached updated: "Special Provision, Section 645, (Dynamic Speed Signing – Radar Retrofit)" with a revised date of 10/1/08 one page total.

The following question has been received:

Question: In regards to the 45 MPH signs, there is no mention as to how these signs will be turned on/off and how the digits will be changed. Please provide this information.

Response: The signs will be controlled by cellular modem communication. MDOT will provide the CPU.

Consider these changes and information prior to submitting your bid on **October 8, 2008**.

Sincerely,

Scott Bickford For

Scott Bickford

Contracts & Specifications Engineer

SPECIAL PROVISION
SECTION 645
(Dynamic Speed Signing)

Description. This work shall consist of furnishing and installing a new, remotely controlled, solar powered, flashing speed limit sign assembly mounted on a Type II warning sign; solar panels; charge controller; two 100 amp-hour gel cell batteries per installation; sign and solar panel supports; communication devices; weather-proof boxes, including expansion couplings, for containment of batteries, control units and splicing; directional radar unit; Internet-capable monitoring camera; cellular antenna; pressure-treated wood post; conduit; and wiring and other incidentals necessary to provide a complete functioning installation. Work will include installation of a central processing unit (CPU) to be furnished by the Department.

General. All equipment shall be new unless otherwise specified or approved. All equipment, installation of equipment and related incidental work shall comply with the latest provisions of NEC, MUTCD, NESC, NEMA and applicable ITE standards for traffic control equipment and must be completed to the satisfaction of the Resident.

Materials. In addition to requirements for specific components detailed herein, other materials shall meet the requirements of the following sections of the Standard Specifications:

Steel Conduit	715.02
Non-metallic Conduit	715.03
Reflective Sheeting	719.01
Demountable High Intensity Reflectorized Letters, Numerals, Symbols and Borders	719.02
Aluminum Sheets	719.04
Plywood	719.05
Assembly Hardware	719.07
Wood Utility Pole	720.10
Wood Sign Posts	720.12

Variable Speed Limit Displays The 30" wide by 24" high 45 mph variable LED speed display shall be as manufactured by M-Systems, Inc. and distributed by Nova Tech LLC, 184 Goose Lane, Tolland, CT 06084 (tel. 860-871-4180), or approved equal. Frame shall be heavy-duty 6105-T5extruded aluminum. Front panel shall be UV-stabilized polycarbonate with pebble texture. Rear panel shall be black HDPE. Front and rear panels shall have rubber gasket seal. All related hardware shall be stainless steel. Diodes shall display yellow. The display shall have one internal printed circuit board for each displayed digit. Six feet of flexible 3/4" liquid-tight non-metallic conduit shall be mounted on the back of the display for protection of data and power wiring between the sign and pole-mounted conduit. The display shall operate at 12 Volts on DC current. The system shall be capable of operating satisfactorily within a temperature range of -30°F to +165°F and humidity range of 18% to 90% relative humidity. The display shall be watertight against blowing rain at intensities of up to 5" per hour at 40 mph wind speed. Light emitting diodes shall be arranged in groups of four with no fewer than ~~200~~ 52 groups per digit. Diodes shall operate at a wavelength of 590nm with a luminous intensity between 2700 and 5000 mcd. Diodes shall have a 12 degree viewing angle.

Solar Panels Solar panels shall have multi-crystalline or polycrystalline silicon cells in a configuration of 36 cells connected in series per panel. Panel surface shall be textured or have an anti-reflective coating to limit light reflection. Each panel shall have a bypass diode to limit power drop in shaded conditions. Panels shall have anodized aluminum frames. Maximum weight per panel shall be 32 pounds. **Solar panels shall have a nominal power rating of 80 watts.** Minimum power produced per panel at nominal 12 Volts DC output shall be 70 watts or greater. Open circuit voltage shall be 22.0V \pm 1.0V. Module efficiency shall be 12% or greater. Frames for mounting of panels to support hardware may be either proprietary or custom-constructed, but must be consistent for all installations. They shall be anodized aluminum, stainless steel or galvanized steel, unless otherwise approved by the resident, and shall be of minimum size and weight necessary to support panels in wind gusts of 90 mph. Shop drawings and supporting design data for proposed frames and mounting hardware shall be provided to the Resident for approval at least five working days prior to installation.

Batteries Batteries shall be 12 Volt sealed gel cell with nominal rated capacity of 100 amp-hours or greater, Universal Battery Model UB121100 or equal, with flag terminals.

Charge Controllers Charge controllers shall be ProStar Model PS-30M with digital meter for 12 volt systems and 30 amp current rating, as manufactured by Morningstar Corporation, 1098 Washington Crossing Road, Washington Crossing, PA 18977 (tel. 215-321-4457).

Directional Radar Units Directional radar units shall be **Model DRU-III** as manufactured by Kustom Signals, Inc., Lenexa, KS 66215-3347 (tel. 913-492-1400). Units shall operate at nominal 12 Volts DC. **Units shall provide adjustable speed range to +1 mph, adjustable sensitivity levels, and selectable units of measure.** Units shall be supplied in waterproof housing with mounting bracket.

Cameras Cameras shall be 3-megapixel Internet cameras, NetCam XL Model CAM-XL3MP-01 with megapixel varifocal lens Model LEN-MV410CS, as manufactured by StarDot Technologies, 6820 Orangethorpe Avenue, Building H, Buena Park, CA 90620 (tel. 1-888-782-7368).

Camera Housings and Mounts Camera housings shall be heavy-duty, weatherproof aluminum construction, Model OCH1 housing with Model OCHWMT mount, as manufactured by Arm Electronics (tel. 1-888-771-4544).

Wireless Cellular Modems Wireless cellular modems shall be Airlink™ Model Pinpoint X communications platform for HSDPA networks, as manufactured by Sierra Wireless, Inc., 13811 Wireless Way, Richmond, British Columbia, Canada V6V 3A4 (tel. 604-231-1100).

Power Adapter Cables Power adapter cables shall be KOBICONN DC power cable Number 172-4207, as distributed by Mouser Electronics, Inc., 1000 North Main Street, Mansfield, TX 76063-1514 (tel. 1-800-346-6873).

Wiring **Wiring between the solar panel array and the variable speed limit display shall be No. 8 AWG copper, red and black. Wiring between the variable speed limit display and the fiberglass cellular modem box shall be No. 4 AWG copper, red and black. All internal wiring shall be No. 12 AWG copper. Wiring from the sign to the DT-26 cabinet shall be No. 19 AWG copper, 8-pair filled underground with shield.**

Terminal Blocks *One terminal block shall be installed in the fiberglass box on the sign pole. Two terminal blocks shall be installed in the DT-26 cabinet. Fuse power blocks shall be Waytek Stock No. 46060 or approved equal. Power terminal blocks and accessories shall be as manufactured by SquareD: Grainger Item No. 5B379 terminal block, Grainger Item No. 5B373 end clamp, Grainger Item No. 5B378 separator, and Grainger Item No. 5B369 GH mounting channel, or approved equal.*

Construction. Installation of Flashing Speed Sign – Contractor Supplied shall follow manufacturer’s recommendations for proprietary products and shall meet applicable requirements of the Standard Specifications for the various non-proprietary components of the work. Attachment of the solar panel mounting frame to vertical rigid conduit shall be capable of withstanding 90 mph wind gusts without rotation of the frame from the required 70° tilt angle or displacement from true south orientation. Vertical rigid conduit shall be attached to the W8x28 H-beam post with clamps bolted to the flange. Installation shall be capable of withstanding a minimum 350-pound wind load on the solar panels without pullout.

Method of Measurement. Flashing Speed Sign – Contractor Supplied will be measured by the number of completed and accepted installations.

Basis of Payment. The accepted quantity of Flashing Speed Sign – Contractor Supplied will be paid at the contract unit price each and will be full compensation for all labor, materials and equipment necessary for each complete functioning installation, except as otherwise noted. Minor grading, loaming, seeding (Method Number 2) and mulching, including provision and placement of fill material necessary to grade slopes around new foundations, will be incidental to payment under this item. Payment for precast concrete foundations, steel H-beam poles, and breakaway devices for steel poles will be made separately under their respective pay items. Payment for minor clearing where noted in the special provisions or directed by the Resident will be made under hourly force account pay items.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
645.602 Flashing Speed Sign – Contractor Supplied	Each

SPECIAL PROVISION
SECTION 645

(Dynamic Speed Signing – Camera & Radar Retrofit)

Description. This work shall consist of retrofitting existing remotely controlled, solar powered, flashing speed limit sign installations with a directional radar unit, Internet-capable monitoring camera, cellular modem and antenna, and wiring and other incidentals necessary to provide a complete functioning installation. Work will include installation of a new central processing unit (CPU) to be furnished by the Department.

General. All equipment shall be new unless otherwise specified or approved. All equipment, installation of equipment and related incidental work shall comply with the latest provisions of NEC, MUTCD, NESC, NEMA and applicable ITE standards for traffic control equipment and must be completed to the satisfaction of the Resident.

Materials.

Directional Radar Units Directional radar units shall be ***Model DRU-III*** as manufactured by Kustom Signals, Inc., Lenexa, KS 66215-3347 (tel. 913-492-1400). Units shall operate at nominal 12 Volts DC. ***Units shall provide adjustable speed range to +1 mph, adjustable sensitivity levels, and selectable units of measure.*** Units shall be supplied in waterproof housing with mounting bracket.

Cameras Cameras shall be 3-megapixel Internet cameras, NetCam XL Model CAM-XL3MP-01 with megapixel varifocal lens Model LEN-MV410CS, as manufactured by StarDot Technologies, 6820 Orangethorpe Avenue, Building H, Buena Park, CA 90620 (tel. 1-888-782-7368).

Camera Housings and Mounts Camera housings shall be heavy-duty, weatherproof aluminum construction, Model OCH1 housing with Model OCHWMT mount, as manufactured by Arm Electronics (tel. 1-888-771-4544).

Wireless Cellular Modems Wireless cellular modems shall be Airlink™ Model Pinpoint X communications platform for HSDPA networks, as manufactured by Sierra Wireless, Inc., 13811 Wireless Way, Richmond, British Columbia, Canada V6V 3A4 (tel. 604-231-1100).

Power Adapter Cables Power adapter cables shall be KOBICONN DC power cable Number 172-4207, as distributed by Mouser Electronics, Inc., 1000 North Main Street, Mansfield, TX 76063-1514 (tel. 1-800-346-6873).

Construction. Installation of Flashing Speed Sign – Camera & Radar Retrofit shall follow manufacturer's recommendations for proprietary products and shall meet applicable requirements of the Standard Specifications for the various non-proprietary components of the work.

Method of Measurement. Flashing Speed Sign – Camera & Radar Retrofit will be measured by the number of completed and accepted installations.

Basis of Payment. The accepted quantity of Flashing Speed Sign – Camera & Radar Retrofit will be paid at the contract unit price each and will be full compensation for all labor, materials and equipment necessary for each complete functioning installation.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
645.604 Flashing Speed Sign – Camera & Radar Retrofit	Each

SPECIAL PROVISION
SECTION 645
(Dynamic Speed Signing – Radar Retrofit)

Description. This work shall consist of retrofitting existing remotely controlled, solar powered, flashing speed limit sign installations with a directional radar unit, cellular modem and antenna, and wiring and other incidentals necessary to provide a complete functioning installation. Work will include installation of a new central processing unit (CPU) to be furnished by the Department.

General. All equipment shall be new unless otherwise specified or approved. All equipment, installation of equipment and related incidental work shall comply with the latest provisions of NEC, MUTCD, NESC, NEMA and applicable ITE standards for traffic control equipment and must be completed to the satisfaction of the Resident.

Materials.

Directional Radar Units Directional radar units shall be ***Model DRU-III*** as manufactured by Kustom Signals, Inc., Lenexa, KS 66215-3347 (tel. 913-492-1400). Units shall operate at nominal 12 Volts DC. ***Units shall provide adjustable speed range to +1 mph, adjustable sensitivity levels, and selectable units of measure.*** Units shall be supplied in waterproof housing with mounting bracket.

Wireless Cellular Modems Wireless cellular modems shall be Airlink™ Model Pinpoint X communications platform for HSDPA networks, as manufactured by Sierra Wireless, Inc., 13811 Wireless Way, Richmond, British Columbia, Canada V6V 3A4 (tel. 604-231-1100).

Power Adapter Cables Power adapter cables shall be KOBICONN DC power cable Number 172-4207, as distributed by Mouser Electronics, Inc., 1000 North Main Street, Mansfield, TX 76063-1514 (tel. 1-800-346-6873).

Construction. Installation of Flashing Speed Sign – Radar Retrofit shall follow manufacturer’s recommendations for proprietary products and shall meet applicable requirements of the Standard Specifications for the various non-proprietary components of the work.

Method of Measurement. Flashing Speed Sign – Radar Retrofit will be measured by the number of completed and accepted installations.

Basis of Payment. The accepted quantity of Flashing Speed Sign – Radar Retrofit will be paid at the contract unit price each and will be full compensation for all labor, materials and equipment necessary for each complete functioning installation.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
645.603 Flashing Speed Sign – Radar Retrofit	Each