6870000 HIGHWAY ADVISORY RADIO
COMMENTS FROM INTERNAL/INDUSTRY REVIEW

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Daniel A. Smith, PMP
District 4
954-295-2582
Daniel.Smith@dot.state.fl.us

Comment: (7-3-13)

687-2.7 HAR Sign and Flashing Beacons: *Ensure HAR system is able to activate flashing beacons that are activated when an associated HA is transmitting.*

Provide 12 inch beacons, communications, power and material needed to provide a fully functioning flashing beacon system. Ensure that the flashing beacons use a NEMA-rated flasher circuit. Ensure that the flashing beacons can be operated locally and remotely.

There are 3 ways to activate the beacons: locally, remotely via broadcast DTMF, and remotely via network interface. We have both remote capabilities in D4, we have found broadcast DTMF activation to be unreliable. Suggest language to encourage network activation of beacons where feasible.

687-3 Installation Requirements.

Obtain all required licenses to operate the HAR as per FCC requirements using the services of the HAR manufacturer. Perform all necessary on-site testing to select the clearest and most appropriate operating frequency for all HAR transmitters at the proposed locations. Submit the results of the frequency search, testing, and the recommended frequency selection to the Engineer for approval prior to application for FCC licenses.

Provide all utility coordination, power design and power service installations to obtain power for the HAR and flashing beacon sites.

Ensure that any public network connections (PSTN, cellular, or other connections) used for system interconnect are approved by the Engineer.

Ensure that the synchronization eliminates interference and audio distortion within possible overlapping areas. Ensure the antenna is tuned to the frequency of the transmitter.

Suggest requiring signed and sealed RF field survey by qualified engineer before the HAR frequency is chosen. This will protect the Department in the event of interference with a commercial radio station.

Response: We agree network activation of beacons may be preferable in many cases and must be supported by these devices. Specification updated to require beacon activation via an IP network. The document has also been revised to clarify coordination of, and requirements for, FCC applications and licensure.

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Jennifer Williams
D3
850-330-1592
jennifer.williams@dot.state.fl.us

Comment: (7-26-13)
District Three staff have reviewed the subject procedure and have the following to offer at this time. Please let me know if you need anything else.
For Sub article **687-2.5 Antenna Assembly** and Sub article **687-3 Installation Requirements** - consider adding the following: *"Provide a field measurement for RF forward and reflected power (often referred to as SWR) after the HAR system has been installed".*
Backup information: Although there is a requirement to tune the antenna to the operating frequency of the HAR, there are additional components which might affect the antenna system including cabling, connectors, grounding, installed antenna height, etc. This measurement should be included to ensure that value does not exceed the manufactures specification and is recorded for FDOT records. Allowing an HAR to operate with high reflected power or high SWR could cause unintended RF feedback into the transmitter causing distortion or spurious emissions. Maintaining a recorded value for this measurement might also provide a baseline metric for any future repair or adjustment of the antenna system or to resolve issues with the FCC should they be needed.
For Sub article **687-2.8 Power System** – consider adding the following:"*Provide a low voltage drop out circuit or device that will remove all power from the HAR system should the available supply voltage drop below the manufactures specifications for minimum power requirements".*
Back up information: Low voltage can also cause unstable transmitter operation. Low voltage in transmitter circuits typically can cause unstable oscillator and amplifier stage operation. Amplifier stages will typically operate erratically and could break into oscillation. A commercially available low voltage drop-out circuit (device) would address these issues and could be added as a separate component.

Response: Document modified to incorporate recommendations.

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Dean Perkins
850-414-4359
dean.perkins@dot.state.fl.us

Comment: (7-10-13)
Is there an accommodation for persons who are deaf or have a hearing impairment? Can they get the same information in an alternate format? (i.e., TTY, changeable message signs, etc.?) Will this system coordinate with or be a part of the "511" system?
Response: Yes, HAR is a component of coordinated systems that include changeable message signs, 511, and other subsystems that provide similar information in alternate formats.

Chris Birosak
863-519-2507
chris.birosak@dot.state.fl.us

Comment: (7-18-13)
District One ITS Section has reviewed the above referenced spec with the old 781-4 HAR spec. Below are our comments/questions.

1. Add highway advisory radio acronym to section 687-1 and remove from section 687-2.1.

Response: Done.

2. Why removing minimum surge protection requirements per 785 from this spec?

Response: Surge protective devices must meet the requirements of Section 785. The explicit cross-reference was included in past versions to emphasize that SPD requirements existed in another section. We believe this cross-referencing is unnecessary. Cross-references within Sections often require updates to other Sections when content is moved, introduced, deleted, numbering changes, etc. We are currently trying to limit the amount of cross-referencing throughout the specifications and deleting those references when practical and possible.

3. Why removing the requirement for a controller from this spec?

Response: This was removed in an attempt to avoid confusion between specialty electronics used for flashing beacons and other traditional "controllers". Our goal is to allow the use of different system electronics that are appropriate for the application and operating environment, such as network enabled industrial controls, flasher circuits, and other electronics that are often packaged together to provide a fully functioning flashing beacon system. We have added "electronics" to the general list of material that will likely be necessary to construct a fully functioning flashing beacon system.

4. Why removing minimum grounding test requirements per 785 from this spec?

Response: Grounding must still be per Section 785. We believe further cross-referencing is no longer necessary. See response to comment #2.

5. Remove DATs reference from the second to last sentence under section 687.4.

Response: Done.

I have attached the document (Birosak attachment 7-18-13) we created to compare the 2 specs and see the differences.
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Feel free to contact me if you have any questions.

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