
Supplemental Technical Specification for

Electronic Ticket Delivery (e-Ticketing) System for Asphalt Paving

SCDOT Designation: SC-M-409 (01/22)

1. SCOPE

- 1.1 The following specifications consist of the use of an Electronic Ticket Delivery (e-Ticketing) System for certified weights of asphalt mixtures delivered to the project site. Using an automated real-time process with no direct personnel interaction necessary, the e-Ticketing System will monitor and report the location and weight of the truck load of asphalt mix after being loaded at the asphalt plant and at the transfer point into the paving train at the project site. Location at any other point along the route is not required by the Department.
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2. REFERENCED DOCUMENTS

- 2.1 SCDOT Standard Specifications
- 2.1.1 Division 300 and Division 400 for all asphalt mixtures - This specification will be used in addition to using the triplicate tickets as stated in 401.4.30.
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3. CONSTRUCTION REQUIREMENTS

- 3.1 Provide an electronic ticket (e-Ticket) from a qualified plant weigh person for each load of asphalt mixtures that is delivered to the project. Automatically generate E-tickets using a combined software and hardware fleet management system or an e-Ticketing System. Fully integrate the e-Ticketing System with the load read-out scale system used to weigh the mixture being delivered.
- 3.2 Provide the RCE access to a GIS based data software or phone application which displays the required information in real-time compatible with iOS, Android, and MS applications.
- 3.3 Ensure that the e-Ticketing System has an off-line and on-line capability on the user's mobile device "the Device". Ensure that the Device alerts the user through a visual display that the Device is currently in on-line mode or in off-line mode. Ensure that on-line mode is defined as a good internet connection and that the Device is able to receive and send ticket data. Define off-line mode as a low or bad internet connection, with the Device unable to send or receive ticket data. Intentional disconnection of any truck mounted device, cell phone, or other acceptable device used in e-ticketing will not be tolerated and will be investigated by the HMA Contractor and the SCDOT DOC representative listed on QPL No. 107. Ensure that the Device is capable of caching all cloud tickets received from the cloud for the current day's e-Ticketing project. Ensure that the cloud tickets are automatically cached/stored locally on the Device and allow the user to interact with the tickets locally on the Device. All of the current ticket fields that are currently allowed to be edited on a ticket in on-line mode (waste, temperature, notes, and mark delivered/rejected) must be allowed to be edited in off-line mode. The Device must auto-sync with the cloud when the Device regains internet service and must

download new cloud tickets and reconcile any tickets that were worked on in off-line mode back into the e-Ticketing System automatically. In the event that the system is not operational due to no internet connection, need for software updates, or other computer related issues, paper tickets will be accepted per 401.4.30. However documentation of e-ticketing systems not working will need to be reported to the DOC personnel listed on QPL 107 within 24 hours, systems are required to be re-established immediately in order to prevent the possibility of the project being halted until proper steps are enacted to get the system back online.

- 3.4 Provide real time, continuous e-Ticketing System access to SCDOT representatives for the duration of the project using a web based application. No less than 21 days from the start of the project, conduct a Calibration test of the e-ticketing system to verify that the Department representatives have reliable access to project e-tickets. Ensure that the E-Ticketing System being used is listed on the most recent version of Qualified Products List No. 107. Provide on-site technical assistance to SCDOT Representatives and Contractor (if needed) or have a representative from the e-Ticketing software available as needed during the project to assist in operating the system. Ensure that all operations and software and mobile apps are operational and downloaded prior to producing any asphalt mixture.
 - 3.5 Ensure that the e-Ticketing System includes individually certified e-tickets and generates daily LOT summary sheets that can be exported as PDF files by the Department representatives. Ensure that the system is designed so data inputs from scales cannot be altered by either the Contractor or the Department. Provide electronic means of collecting the actual time the load is delivered on the job site. Delivery times must be accepted immediately once the loads are engaged with the material transfer vehicle or asphalt paver. Acceptance of loads prior to dumping will not be permitted. This process can be done automatically using the software or may require individual load input by the Contractor. Ensure that the Department representatives have the ability to make notes on each e-ticket for documentation of tests, and can provide comments (i.e. - temperature) about the load delivered. A LOT summary sheet of the e-tickets must be available during placement operations in tablet-spreadsheet format so the inspector can view and keep track of loads delivered and accepted.
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- 3.6 Ensure that all certified e-Tickets for asphalt mixtures are accessible in real time during placement of the mixture. The e-ticketing information must be readably accessible until the signed Consent of Surety for final payment has been submitted to SCDOT for project closeout. The certified e-tickets and LOT summary worksheets must have this information:
 - 3.6.1 Date
 - 3.6.2 Ticket Number
 - 3.6.3 Truck Number / ID
 - 3.6.4 SCDOT Contract ID Number
 - 3.6.5 Name of Material Producer

- 3.6.6 Mixture Type
 - 3.6.7 SCDOT Job Mix Number
 - 3.6.8 Gross Weight of the Loaded Truck (tons)
 - 3.6.9 Tare Weight of the Truck (tons)
 - 3.6.10 Net Weight of the Asphalt Mixture (tons)
 - 3.6.11 Accumulative Daily Total (tons)
 - 3.6.12 Time Loaded
 - 3.6.13 Time Un-Loaded (Delivered to the MTV or Paver)
 - 3.6.14 Comments Section: SCDOT Representative (i.e. - mix temp., reason for rejection)
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4.0 METHOD OF MEASUREMENT

- 4.1 Utilize an e-Ticketing System for asphalt as specified. If any e-tickets or the Lot summary sheets are not available for the RCE, payment may be withheld for the items of work on the monthly estimate.
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5.0 BASIS OF PAYMENT

- 5.1 Include compensation for the e-Ticketing System in the bid price of weighted material. Payment will be full compensation for all costs related to providing the e-Ticketing System; equipped plants, pavers, MTVs, and any other equipment required for the construction and reporting process; all quality control procedures including the e-Ticketing System representative's technical support and on-site training.