

**THE CITY OF CHATTANOOGA
PUBLIC WORKS
DEPARTMENT**



**REQUEST FOR PROPOSALS
GROUND PENETRATING RADAR (GPR) & FALLING WEIGHT DEFLECTOMETER
(FWD) TESTING FOR CITY OF CHATTANOOGA PAVEMENT MANAGEMENT
SYSTEM (PMS)
CONTRACT #E-07-015
ADDENDUM #1**

The City of Chattanooga Public Works Department (City) received questions regarding the GPR and FWD testing request for proposal. The questions are listed below and the City's response follows in blue letters.

1. Would the City provide a breakdown of the pavement surface types (asphalt concrete, composite, etc. and their respective lengths?

The City is not in a position to answer these questions at this time. The intent is to conduct the GPR survey, and calibrate/correlate the post-processing with core sampling, which the City will conduct with direction from the consultant.

2. Would the City provide a list of the roadway functional class (i.e. local residential, collector, arterial, etc.) and breakdown of the length of each?

The City does have a listing of roadways and their respective functional classes and recorded lengths. This data may be provided in spreadsheet and/or ArcGIS shape file format.

3. Are there any divided roadways included in the 1600 centerline miles of roadway identified? If so, are these to be tested separately?

Yes and yes.

4. For multi-lane roadways, is more than one lane to be tested?

GPR testing is required in every lane and FWD testing will be conducted on network level, statistically selected sample units to be determined after breaking the network into structurally-based roadway sections.

5. Will the City specify the frequency of testing and reporting for both the GPR and FWD?

The City will defer to the consultant's GPR testing and reporting recommendations as long as the testing frequency is sufficient to identify pavement structure differences within +/- 50-feet of the actual transition.

FWD testing frequency will be a function of the number of City-generated sample units which will be dependant on the lengths of the structurally-based roadway sections.

6. Are we required to determine the thickness of the surface layer only or of all pavement layers?

The City desires the average thicknesses of each pavement layer for each roadway section for use in its deflection testing analysis and PMS modeling. However, if conditions exist such that pavement layers below the surface layer cannot be measured reliably, the City will accept surface layer thicknesses.

7. What is the required accuracy of the GPR calculated thickness values with respect to the answer to Question 6 above?

The City requires the minimum accuracies documented in the Federal Highway Administration publication FHWA-HIF-00-015, "Ground Penetrating Radar for Measuring Pavement Layer Thickness." The following table summarizes the publication's GPR accuracies:

Ground-Penetrating Radar:

Range of Accuracy for Pavement Layer Thickness Measurements*

Layer Type	Accuracy (vs. Cores)
New Asphalt	3–5%
Existing Asphalt	5–10%
Concrete	5–10%**
Granular Base	8–15%**

*Maser, 1996

**Requires adequate contrast between layer materials

8. Will the City permit coring the pavement structures to assist in the calibration of the GPR data?

The City shall provide coring for calibration purposes.

9. Are there any restrictions on the hours of work?

There are no work restrictions for the GPR testing outside of normal operational requirements for the equipment.

FWD testing will be restricted to the following:

- Arterial roadways shall be tested after regular business hours starting at about 7:00-pm or other mutually agreed upon time.
- Residential roads shall be restricted to day-light hours as mutually agreed upon by the City and Consultant.

10. Please confirm that the City will provide all required traffic control/protection for the FWD testing. What will be the working hours for the City supplied traffic control services?

Yes, the City can provide traffic control for the FWD testing as requested by the Consultant. Consultant needs will govern working hours.

11. What is the format and quality of the City's current GIS mapping?

The City is using ESRI ArcMap 9.2, and the roadway attributes that are mapped include centerline, roadway edge, and Right-of-Way.

12. Does the City require any specific analysis method to be used for the evaluation of the FWD data?

The City will be conducting the analysis in-house.

13. What are the minimum and maximum lengths of pavement sections expected for a particular roadway?

The City anticipates a minimum pavement section length of one (1) block and a maximum of about one (1) mile.