**Infrastructure Management Bootcamp**
**Summer 2014**
**Response to project questions from North Carolina DOT 6/26/14**

1. What do P, S, and O stand for under the pavement type classification in the Asphalt rating data table?

S= slurry seal surface
P= Plant Mix (Hot mix asphalt)
O= Composite Pavement (concrete covered with asphalt)

2. What is the meaning of the N.C. DOT rating classification, i.e. what is considered good, fair or poor?

Good is defined as having a rating number >= 80.
Fair is defined as having a rating number >=60 and <80.
Poor is defined as having a rating number <60.

3. How did the NCDOT create the Rating Number?

The NCDOT Pavement Condition Survey started in 1982. The survey itself was designed by the Institute for Transportation Research and Education (ITRE) at North Carolina State University. The calculation for the rating number was created around the same time. The rating calculation was done by NCDOT personnel. The attached file (NCDOT Asphalt Deduct Values.xls) shows the calculation.

4. How is it considered in the design of maintenance programs?

The rating number is used to define the departmental condition goals for pavements by system. For example, the goal for interstates is 85% good (rating number >= 80) with no more than 5.0% poor (rating number < 60), primary routes (NC and US combined) has a goal of 80% good and no more than 7.5% poor, and secondary routes have goals of 70% good and no more than 10.0% poor.

We also use the rating number in the Pavement Management System to measure the benefit of a treatment in a cost benefit analysis. We have family deterioration curves for the rating number. For example we have curves for NC routes with ADT between 0 and 1,000, NC routes with ADT between 1,000 and 5,000, etc. When we apply a treatment we know the expected improvement to the rating number and can plot a new deterioration curve based on this new rating. The measured benefit for the analysis is the area between the two curves.

5. Does the NCDOT work with decision trees? Could we have access to them?

Decision trees are used in the Pavement Management system to trigger recommended treatments. We have one tree per distress type and one tree for the composite rating number. These trees branch on several factors such as surface type, average daily traffic and the specific distress index. Unfortunately, we can't share this with you. It's not that they are secret, it's the fact that they are housed in our system and there is not a simple way to export them.

6. Which treatments do you usually consider in your maintenance programs?

I have include a file (Treatments.xls) that has all the treatments that can be potentially recommended by the Pavement Management System.

7. Do you have reference costs of maintenance treatments?

Unit costs are included in the Treatments.xls file. To get an estimated cost of treatment, multiply the unit cost by the width of the road in feet multiplied by the length of the road in miles.