MAINTENANCE RATING PROGRAM

FIELD DATA COLLECTION MANUAL

KENTUCKY TRANSPORTATION CABINET
Division of Maintenance
Operations and Pavement Management Branch
April 2018

MAINTENANCE RATING PROGRAM

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INTRODUCTION

Maintenance Rating Program

The Maintenance Rating Program is a key part of the cabinet-wide effort to use performance measurement data to make management decisions based on facts. The results will be used not only to assess accountability but also to provide guidance in resource allocation and investment decisions. Our goal is to maintain a level of service that meets or exceeds our customer expectations, and to deliver that level of service consistently across the Commonwealth.

NECESSARY EQUIPMENT

☒Clipboard and pencils
☒MRP inspection forms (iOS Device)
☒Rolling wheel measure
☒Upside down spray paint cans (colors specified for each wave)
☒Rut measuring rod (6 ft. long straight 1” x 1” piece of aluminum)
☒Ruler (6 inch or longer)
☒Reflectometer for striping (if possible)
☒Traffic paddles
☒Safety vest for each inspection team member
☒DMI equipped vehicle with flashing lights for each inspection team
☒Route log

PROCEDURE

- The sampling unit will be a 500 foot roadway segment, including all adjacent right-of-way.
- Make sure there is not a bridge or other structure, a large intersection, or a construction zone within the segment. If there is, the team will move forward (in the direction the segment runs) to the beginning point of the first clear section (no bridges, intersections, or construction zones). If a construction zone is so long that the team reaches another sample segment before becoming clear, they should note that in the bottom margin of the form and skip the segment.
- The inspection team must constantly be aware of their **safety** and the **safety of the traveling public.** Each team member must wear a safety vest when outside their vehicle at an inspection site.
- The inspection team should mark the beginning mile point (the starting point of the segment) with paint on the edge of the pavement. Then, in the specified direction, the team should mark every 100 feet.
- Unless a direction is noted on the inspection form, measurements and observations should be done on both sides of the roadway segment. If a direction is noted, measurements and observations should be done only in that direction (usually Interstates and Parkways).
- To avoid recording in the wrong line on the inspection form, do not skip lines or leave them blank. Always write “0” when there is no measure to be recorded. NEVER RECORD “N/A” OR A DASH ON THE FORM.

ROADWAY GENERAL

General Aesthetics

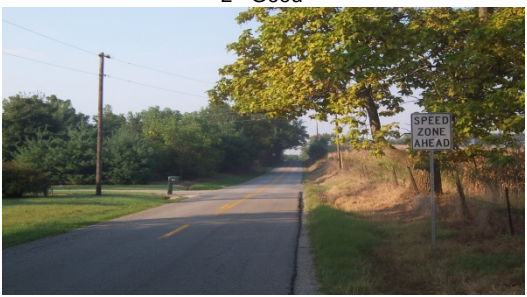
(r1) General Aesthetics

This item refers to the general appearance (pleasantness) of the roadway and roadside to the public at large. This includes potholes, cracking, height and uniformity of grass, noxious weeds, unsightly patching, uneven stripes, leaning signs, litter, rusting or broken guardrail, shoulder failures, etc.

1 = Excellent

General Aesthetics Cont'd

2= Good



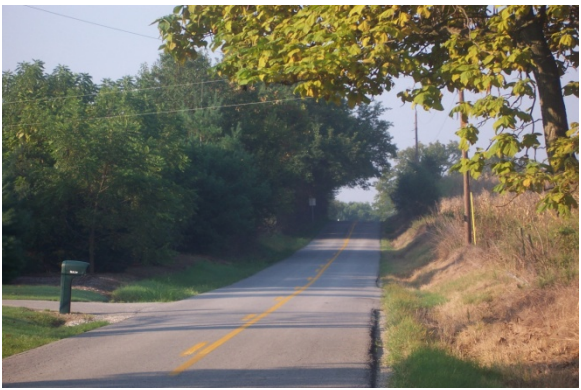
3=Acceptable

General Aesthetics Cont'd

4=Poor

5= Unacceptable

Roadway/Shoulder Obstructions



(r2) Is there roadway or shoulder with less than 15' vertical clearance?

The roadway and shoulders should be free of any canopy (tree or other vegetation) or other obstructions for a minimum height of 15 feet.

Circle **Y** if there is any roadway in the section with less than 15 feet of vertical clearance.

Visual Obstructions

(r3) Are there visual obstructions of intersections, curves or signs, etc.?

This item refers to either horizontal or vertical visual obstructions at intersections, curves, signs, etc. This could be due to vegetation.

Circle **Y** if there are visual obstructions of roadway, intersections, curves or signs in the section.

Right-of-Way Fence

(r4) Is there right-of-way fencing?
Circle **Y** if there is fence in the section.

(r5) Is there fence not allowing access to the roadway?
The fences on limited access highways (Interstate/Parkways) should provide effective barriers to deny access.

Check right-of-way fence for breaks, holes, rusting out, down or totally missing. Vines on a fence or brush growing in a fence can still provide an effective barrier. Circle **Y** if the section has fence that is broken, has holes or is completely missing (that fails to provide a positive barrier).

Guardrail

(r6) Is there guardrail?

Circle **Y** if there is guardrail in the segment.

(r7) Is there guardrail outside height specifications (27" to 31")?

Guardrail that has a height less than 27" or greater than 31" is considered to be outside specifications.

Circle **Y** if the section has guardrail that is outside of specifications. The height of guardrail should be measured with respect to the near edge of the road or shoulder. Outdated end treatments do not need to be counted as guardrail that is outside specifications.

Guardrail Cont'd

(r8) Is there guardrail with post or accident damage?

Guardrail can be damaged due to vehicular hits or other factors.

Circle **Y** if the section has guardrail that is damaged to the extent that structural integrity or functionality is lost.

Guardrail Cont'd

(r9) Number of guardrail attenuators/rail ends

Count and record the total number of attenuators/end treatments. Include the guardrail radius as an end treatment.

(r10) Number of attenuators/rail ends damaged

Attenuators damaged due to vehicular hits or other factors.

Count and record the total number of attenuators/end treatments that are damaged to the extent that structural integrity or functionality is lost.

PAVEMENTS

Pavement Potholes

(p1) Number of pavement potholes 6” long, 6” wide and 1” deep or larger

A pothole is a bowl shaped hole or depression in the pavement surface. The surface may have broken into small pieces due to cracking or localized disintegration and the material removed by traffic.

Count each pothole that measures 6”x6”x1” or larger. Potholes smaller than the minimum size are not counted as deficiencies. If a section contains more than 20 potholes then just record 20.

Rutting

(p2) Rutting – Outside wheel path at 0 feet
(p3) Rutting – Outside wheel path at 100 feet

A rut is a surface depression of the pavement in the wheel paths. Ruts may be more noticeable after rainfall when wheel paths are filled with water.

A straightedge (60" long) is laid across the outside wheel path in the right lane and ruts are measured in 1/4" increments. Circle the appropriate rut measurement at the beginning of the section on line **(p2)** and at the 100' location on line **(p3)**.

SHOULDERS

Pavement Drop Off to Shoulder

(s1) Is there pavement drop off to shoulder greater than or equal to 1.5"?

Lane/shoulder drop off occurs wherever there is a decrease in elevation between the traffic lane and the shoulder. It may be due to consolidation, displacement or settlement of underlying material. The absence of any shoulder would be counted as lane/shoulder drop off.

Measure approximately 6" from edge of driving lane. If drop off is greater than 1.5" circle **Y**.

Shoulder Drop Off to Ground

(s2) Is there shoulder drop off to ground greater than or equal to 3.0"?

Drop off is the elevation decrease between the improved shoulder and adjacent ground at the outside edge of the shoulder. It could be due to consolidation of material, erosion, run off or other factors.

Measure at the edge of shoulder and if the drop off is 3" or more circle **Y**.

High Shoulder

(s3) Is there high shoulder?

High shoulder is the opposite of pavement drop off to shoulder. It can be caused by frost heave, swelling soils, unmowed grass or other factors. High shoulder creates ponding of water on pavement.

Circle **Y** if the section has any shoulder that is higher than the adjacent pavement which would cause ponding of water on the pavement.

Shoulder Potholes

(s4) Number of shoulder potholes 6” x 6” x 1” or larger

A pothole is a bowl shaped hole or depression in the shoulder surface. The surface may have broken into small pieces due to cracking or localized disintegration and the material removed by traffic.

Count each pothole that measures 6”x6”x1” or larger and record. Potholes smaller than the minimum size (6”x6”x1”) are not counted as deficiencies. If a section contains more than 20 shoulder potholes then just record 20.

DRAINAGE

Drainage Structure Damaged or Blocked

(d1) Number of drainage structures

Count the number of drainage structures in the segment and record. Do not count edge drains.

(d2) Number of drainage structures with 25% or greater flow inhibited

Drainage structures, like pipes and culverts, should be free of obstruction and in good working order.

Measure the total number of drainage structures encountered in the test section. For each of these structures, estimate the percentage of flow area inhibited on the worst end of the drainage structure and record the number of structures with 25% or greater flow inhibited. **Entrance pipes along a ditch should <u>not</u> be included in this section, but if blocked, they should be counted as ditch obstructions in the "Ditch's Flow Inhibited" section.**

Ditches

(d3) Are there ditches?

Circle **Y** if the section has ditch on either side of the road. Include cross slope ditch.

(d4) Are there ditches with flow inhibited?

Water flow in the ditches (paved or unpaved) on the side of the road should be unobstructed by blockages or damage.

Ditches Cont'd

Blocked entrance pipes along the ditch should be included as a ditch obstruction. Circle **Y** if there is any blockage of ditches or entrance pipes along the ditch that inhibit water flow.

Curbs and Gutters

(d5) Are there curbs and gutters?

Circle **Y** if the section has any curbs and gutters.

(d6) Are there curbs and gutters with flow inhibited?

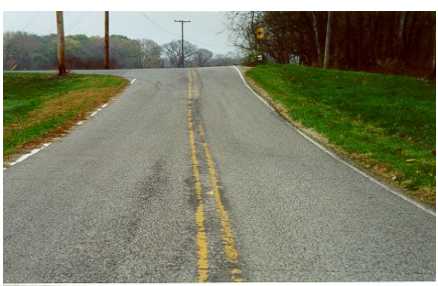
Water flow in the curbs and gutters should not be obstructed by blockages or damage. Circle **Y** if the section has obstructions of curbs and gutters that inhibit water flow.

TRAFFIC

Striping Reflectivity

Good Stripe

Poor Stripe



(t1 thru t6) Striping reflectivity measurements

Striping should be reflective at night to provide positive guidance to the motorist.

Take three readings per section for each color with an LTL 2000 Retroreflectometer. Lines to be measured should be chosen in order of priority as follows: edge line, center line, and lane line. On solid lines, take the first reading at the beginning of the section, with subsequent readings taken at ten pace intervals. On skip lines, take three readings, one per skip, in the center of the skip. Readings should only be taken at locations on the pavement that will provide a representative sampling of the striping.

Guide Sign Faces

(t7) Number of guide signs

Guide sign faces include route markers (cardinal directions, route numbers, arrows), distance/destination signs, and directional signs (green, brown or blue backgrounds)
Enter the number of guide sign faces within the section.

Guide Sign Faces Cont'd

(t8) Number of guide signs not conforming with specifications

In order to meet the specifications, the sign face should be free from any obvious, visible defect that would detract from its effectiveness under night-time conditions. Examples of obvious defects include graffiti, bumper stickers, bullet holes, delamination, missing letters or substantial fading. Record the number of guide sign faces that do not conform to specifications.

Guide Sign Assemblies

(t9) Number of guide sign assemblies

A guide sign assembly consists of a sign or signs on one or more connected posts. The picture above shows one assembly with thirteen guide signs. Enter the number of guide sign assemblies within the segment.

(t10) Number of guide sign assemblies not conforming to specifications

In order to meet the specifications, the sign assembly should not be leaning more than 22.5 ^{o} in any direction. There should be no bolts or rivets missing. No sign face should be turned more than 45^{o} from the line of sight to the traffic flow. Sign posts should not extend from the top of any sign face. The minimum height from the pavement edge extended to the bottom of the lowest sign face should be no less than 5 feet in rural areas and 7 feet in urban areas (sidewalks) and on all fully controlled access highways. If any of these criteria are not met, the sign assembly does not conform to specifications and should be recorded.

Regulatory and Warning Sign Faces

(t11) Number of warning and regulatory signs

Regulatory sign faces include STOP, WRONG WAY, DO NOT ENTER, SPEED LIMITS, ETC. They have either red or white backgrounds. Warning sign faces include STOP AHEAD, curve warning signs, chevrons, NO PASSING ZONE pennants, and other signs with yellow backgrounds. Enter the number of regulatory and warning sign faces within the segment.

Regulatory and Warning Sign Faces Cont'd

(t12) Number of warning and regulatory signs not conforming with sign face specifications

In order to meet the specifications, the sign face should be free from any obvious, visible defect that would detract from its effectiveness under night-time conditions. Examples of obvious defects include graffiti, bumper stickers, bullet holes, delamination, missing letters or substantial fading. Record the number failing to meet specification.

Regulatory and Warning Sign Assemblies

(t13) Number of regulatory and warning sign assemblies

A regulatory and warning sign assembly consists of a sign or signs on one or more connected posts. A STOP sign on one post is considered the same as curve warning signs with an advisory speed sign on two connected posts. Enter the number of regulatory and warning sign assemblies.

Regulatory and Warning Sign Assemblies Cont'd

(t14) Number of regulatory and warning sign assemblies not conforming to specifications

In order to meet the specifications, the sign assembly should not be leaning more than 22.5 ^{o} in any direction. There should be no bolts or rivets missing. No sign face should be turned more than 45^{o} from the line of sight to the traffic flow. Sign posts should not extend from the top of any sign face. The minimum height from the pavement edge extended to the bottom of the lowest sign face should be no less than 5 feet in rural areas and 7 feet in urban areas (sidewalks) and on all fully controlled access highways. If a secondary sign (advisory speed plate, parking restriction sign, etc.) is used, the minimum distance to the bottom of the lowest sign faces should be 4 feet and 6 feet respectively. If any of these criteria are not met, the sign assembly does not conform to specifications. Record the number that fails to conform.

Maintenance Rating Program (MRP) Mobile Application

Introduction

This tutorial is designed to assist customers who will be using the iOS iPad and iPhone devices with the ESRI Collector Application

If you have any questions what so ever please feel free to contact the GIS team with any questions

Mitchell.Masarik@ky.gov

502-782-3718

Using the iOS Device App Store, download the ESRI Collector App.
You will need to download iTunes to your Desktop in order to get the Offline Basemaps for your District.

Slideload Maps for Offline and Online Use:

Start by connecting your iOS device to your laptop or desktop and load iTunes. When connected, iTunes may want to backup your device and may even want to erase content and then sync. If this process starts, you can stop it - you do not need to establish a sync relationship between your iOS device and your laptop to copy basemaps to them. This typically happens when the device has never been connected to iTune before.

When you are connected to iTunes, click on the iPad (or iPhone) to display conetent from the device and then click Apps so you can locate the Collector App.

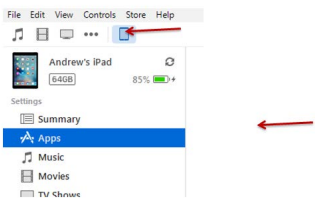
You will see the list of apps that are on the device but you will want to scroll down on the entire page until you see the section titled File Sharing. Select the Collector App from the list and you will see the existing content that is stored on the device.

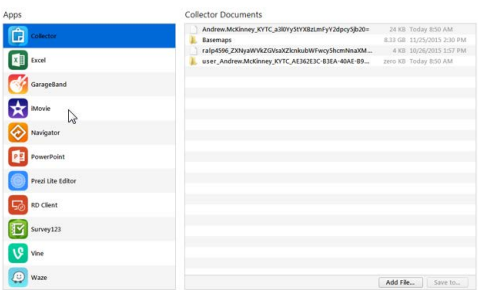
Slideload Maps for Offline and Online Use (cont.):

With Collector selected, click the Add File... button to add the tile package that you crated onto the iPad or you can drag and drop into the Collector Documents space.

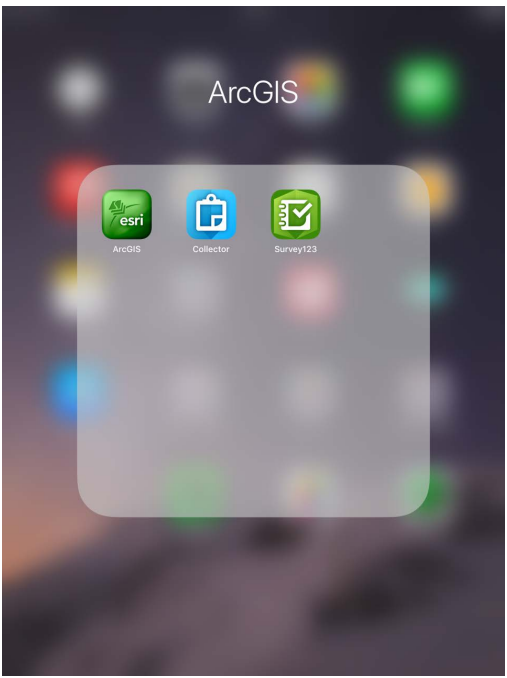
The Basemaps are available here:

\\ot-gisdata\gisdata3\Support\Offline_Maps



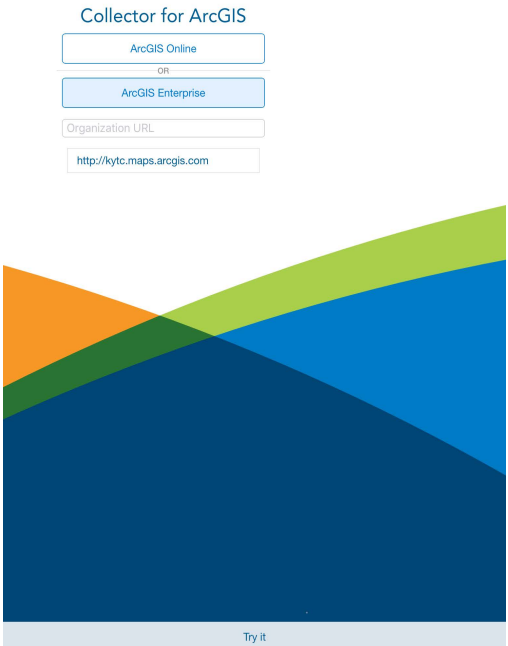


Selecting the Application

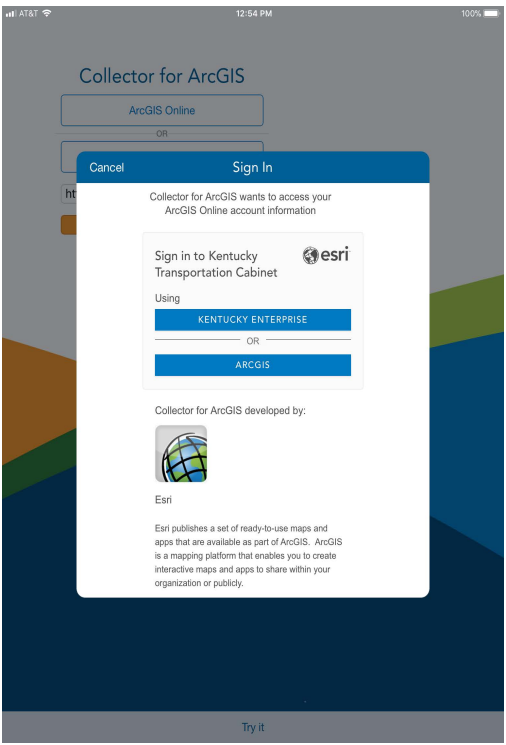


When you first start the Collector Application; you will need to login with your ArcGIS Account. This account will need to be created with the Central Office GIS Branch.

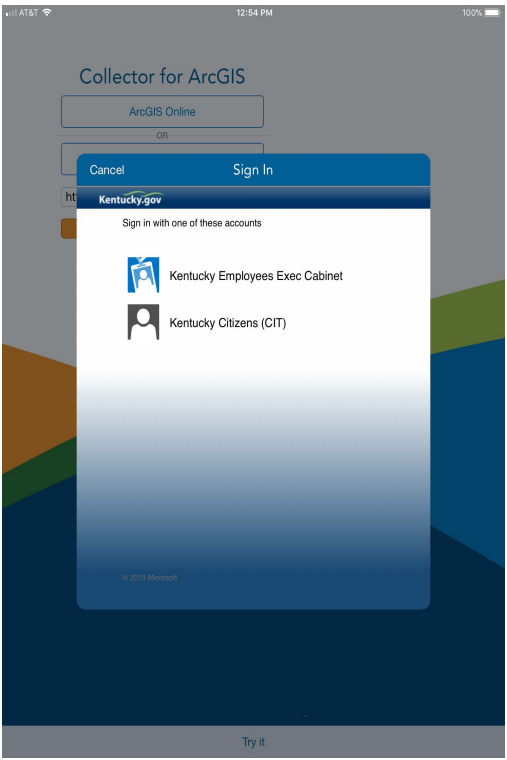
Select the ArcGIS Enterprise and input:
http://kytc.maps.arcgis.com



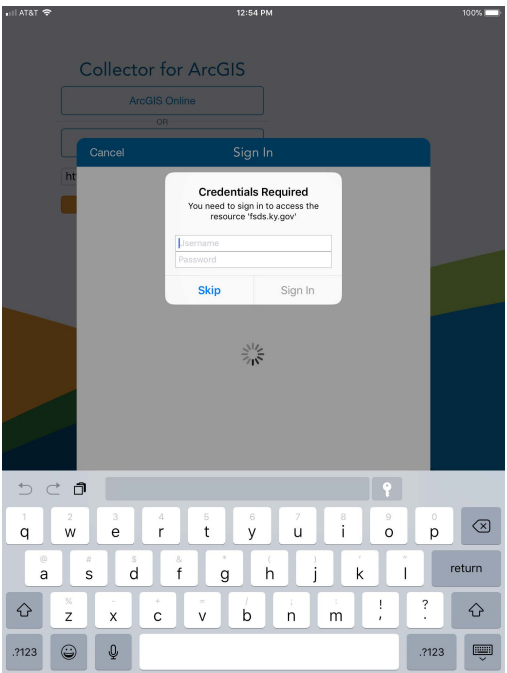
Select Kentucky Enterprise



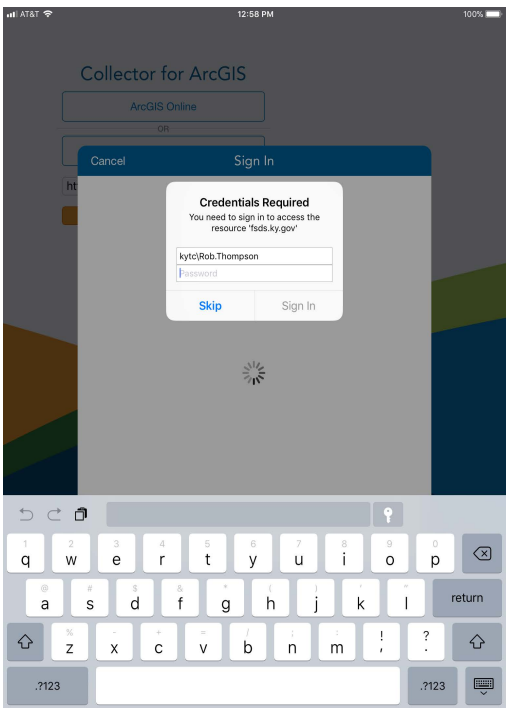
Select Kentucky Empolyees Exec Cabinet



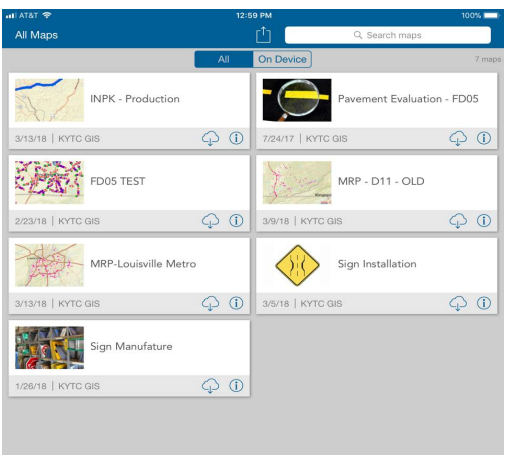
Use your Desktop Login Credentials (or use the Credentials of one the Section Office ArcGIS MRP Inspection agents who has had their account created).



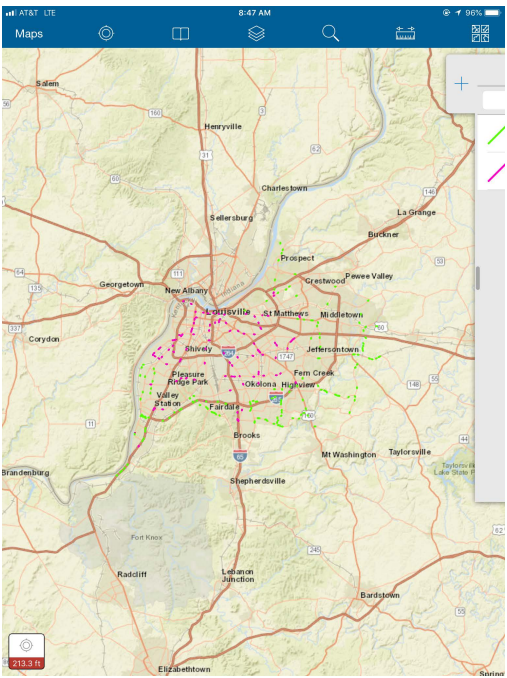
Use: kytc\UserFirst.UserLast and the account login Password.



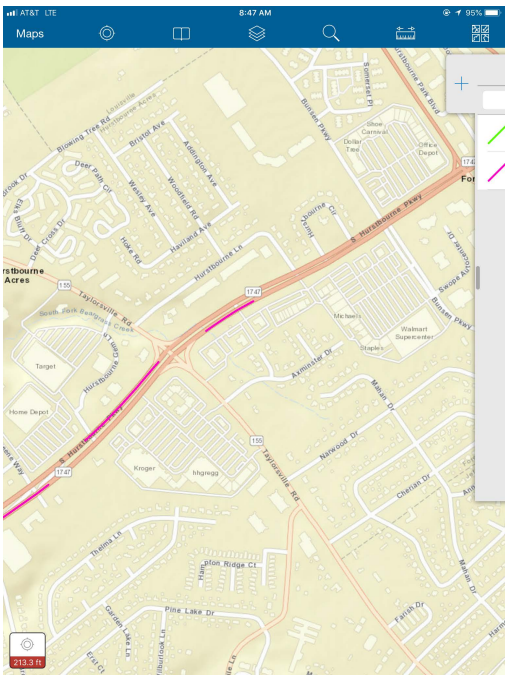
Once Logged in; select your District MRP Map from the list of available Maps. You might only have access to the one Map. If you press the "Cloud" icon you will be able to download the Map for Offline Mode. This is recommended. Choose your District Base Map and modify the zooming range to be sure you have all sections within the selection window.



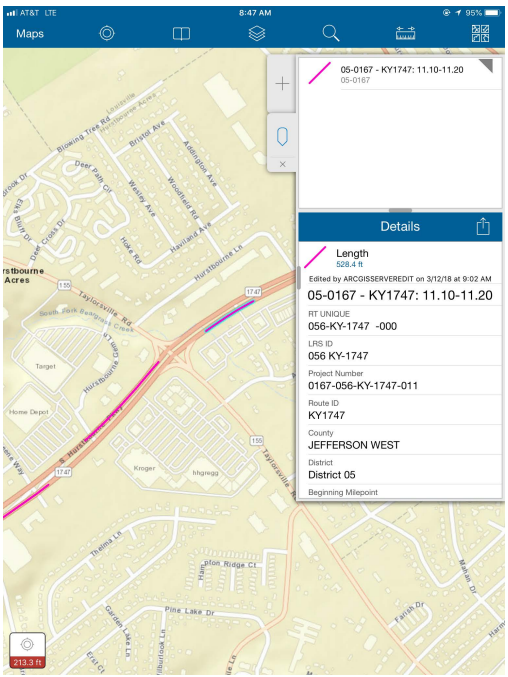
An example of what you should see when the Map is opened.



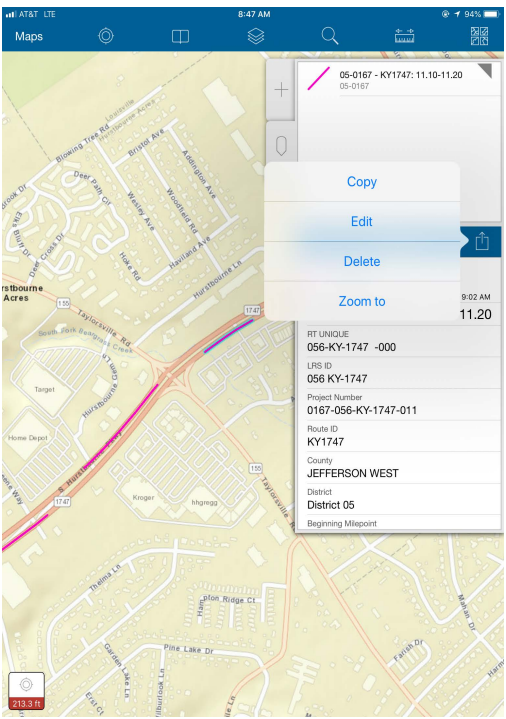
Use the "Compass" to Zoom to location using device GPS or Pinch Zoom and Scoll using the touch screen.



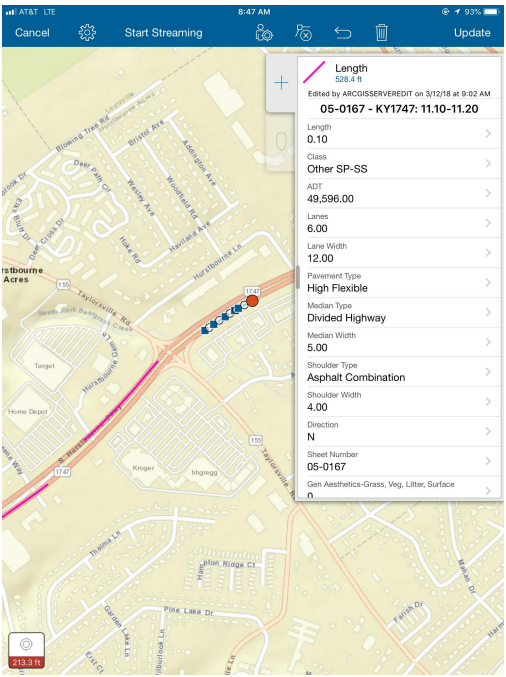
Tap the section on the screen to highlight the section. Section information will be available on the right.



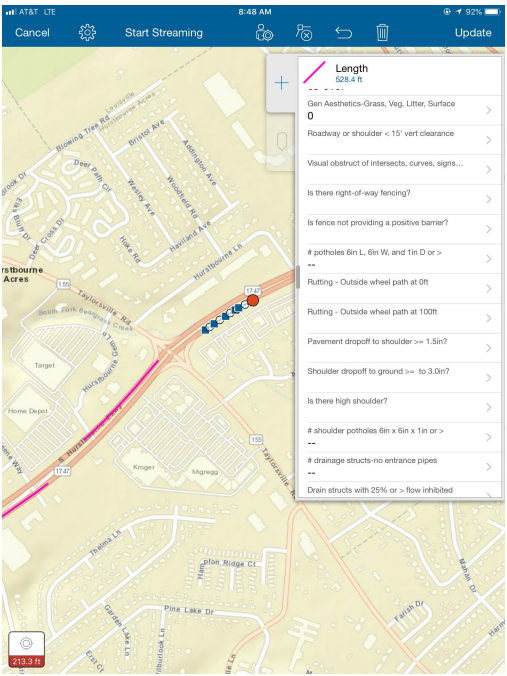
Select the Square with the Arrow pointing Up.
Choose **Edit** from the drop down Menu.



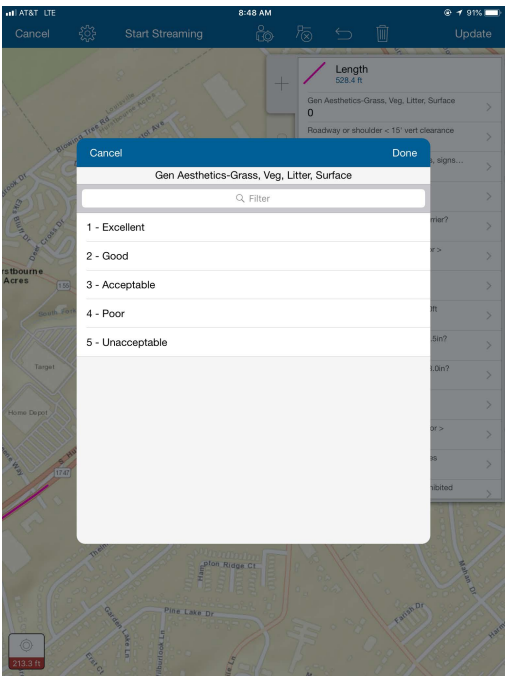
This opens up the features list for Edits.



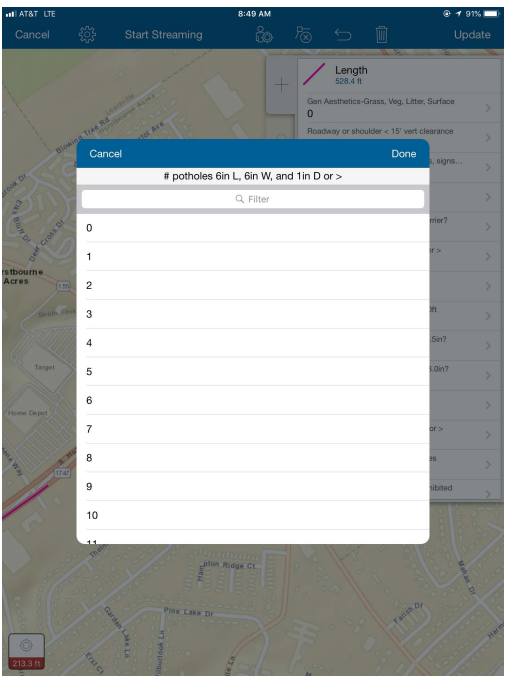
The required Fields start with "Gen. Asthetics" and go to "Warning Signs Assembly"



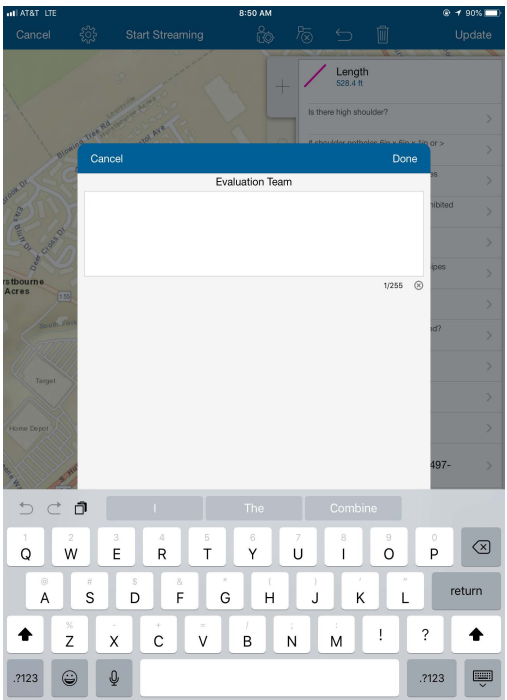
Select the Right Facing Arrow to open the feature for grading. Choose the appropriate selection and press the "**Done**" button to confirm your selection.



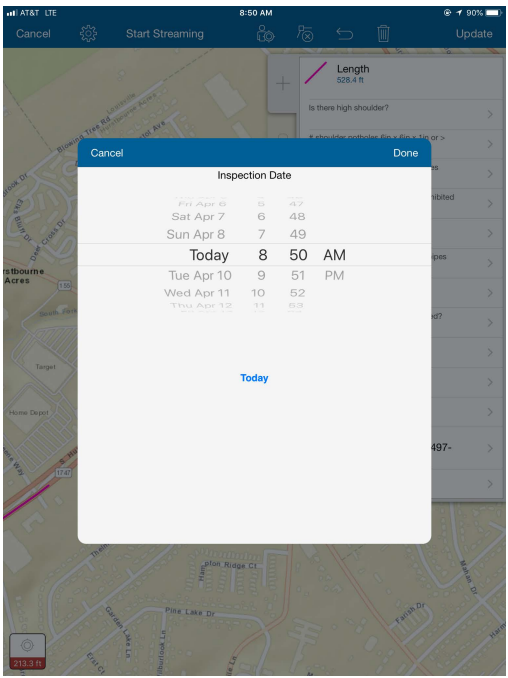
You may need to scroll the box down to see all available options.



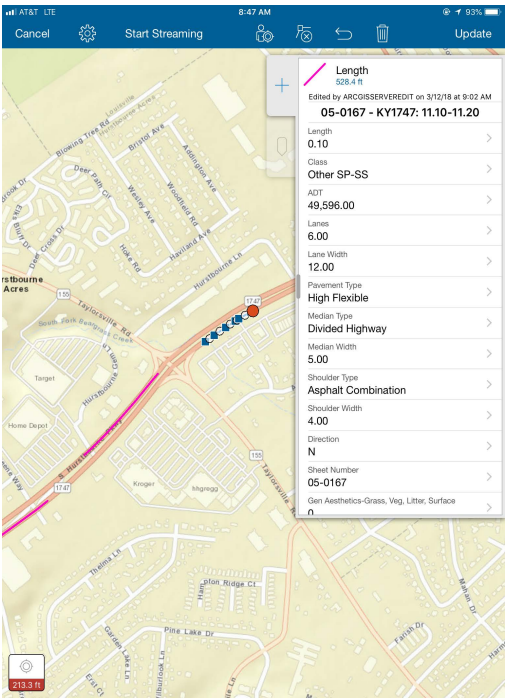
Be sure to include your **Evaluation Team** name in the text box. If you have any comments (moved section, etc.), add them to the **Comments** text box.



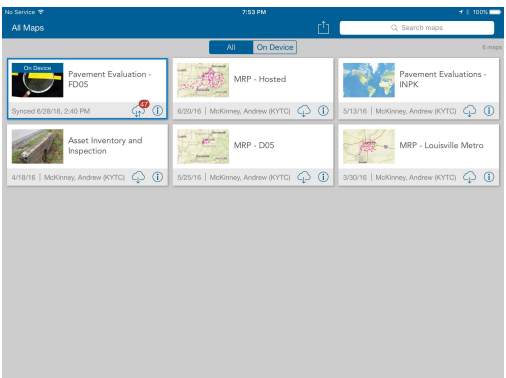
Choose "**Today**" for Inspection Date.



Once you have completed all the features select the "**Update**" button in the top right.



Once you have completed your Evaluations for the day, find a reliable WiFi location inorder to Upload your Evaluation Scores to the Database. From the **All Maps** screen, select the "Cloud" with the "Red Number". This will Sync the Data to the Database.



If you have any issues whatsoever do not hestitate to call the GIS team.

Mitchell.Masarik@ky.gov – 502-782-3718