



CARSTM

Curve Advisory Reporting Service

User's Manual

January 2018

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What's Included

Equipment

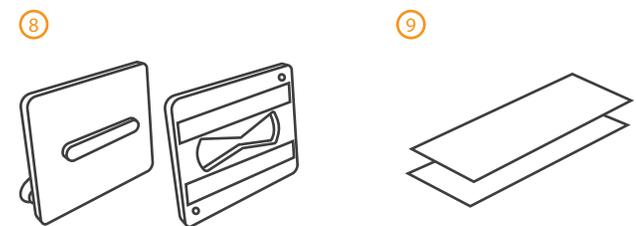
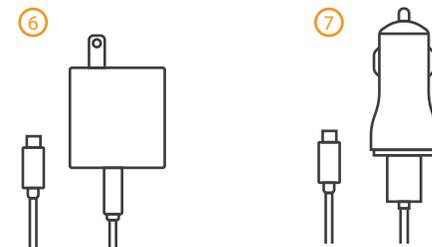
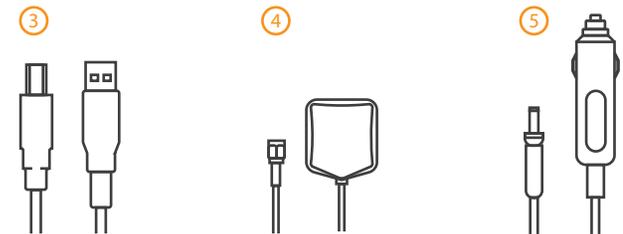
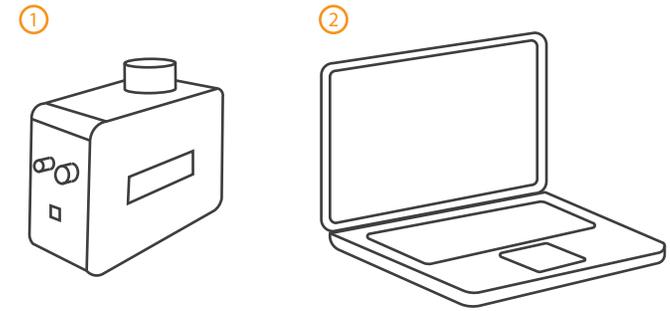
- 1) **RDS7-GPS-PRO** – is a self-contained unit, powered by the vehicle's 12 VDC cigarette lighter. It can also be powered by an optionally supplied 120 VAC power cord if the vehicle is equipped with a 120 VAC inverter. The RDS7-GPS-PRO needs to be secured in the vehicle, typically the dash, in a horizontal position, level to the ground when the vehicle is on a level surface. The device is shipped with a Velcro base for attaching to the vehicle dash.
- 2) **Tablet** – runs Windows 8/Windows 10 software and can be run on internal battery, the cigarette lighter adapter or the optionally supplied 120 VAC power cord. When fully charged the Tablet will typically run for 8 hours. The Tablet and the RDS7-GPS-PRO are connected with the supplied USB cable. The cable should be attached to both devices before either is powered on. The cable can be replaced with any standard USB cable.

Cables

- 3) **USB Cable** – 6FT (CBL-USB-A) connects the tablet to the RDS7-GPS-PRO.
- 4) **GPS Antennae** – 12FT (CBL-GPS-A) antennae has a non-scratching magnetic bottom to apply to center of roof of test vehicle and connect to RDS7-GPS-PRO.
- 5) **Cigarette Lighter Adapter** – 6FT (CBL-CLA-A) connects the RDS7-GPS-PRO to the cigarette lighter power source.
- 6) **Tablet Wall Charger** – (CBL-TWC-A) charges tablet from outlet power source.
- 7) **Tablet Car Charger** – (CBL-TCC-A) charges tablet from cigarette lighter.

Accessories

- 8) **Calibration Plate** – is a two piece device. The side with the adhesive is applied to the RDS7-GPS-PRO permanently and the side with the suction cups is applied to the driver's side window. When joined the plates have a rotation angle of 20 degrees to test the calibration of the RDS7-GPS-PRO and confirm reliability.
- 9) **Velcro Pad** – to be applied to the bottom of the RDS7-GPS-PRO and level dashboard location.
- 10) **Tablet Mount** – Car mount for tablet, follow mount instructions



Before You Begin

Registration

- 1) From any internet connected PC, login to <http://riekersolutions.com> using Google Chrome.
- 2) First time users, click the "register here" link to create you account.
- 3) Enter your key, user name (email), and a password that is at least 8 characters long and includes 1 uppercase letter and a number.
- 4) Confirm you have read and agree to the terms of use.

Connecting to Wi-Fi

The Tablet is pre-loaded with the software necessary to connect to the RDS7-GPS-PRO and collect data. This can be done with no additional configuration, however, to upload the data, the Tablet will need access to the CARS server through a public Internet wi-fi (wireless) connection. Typically, office wi-fi connections are secured and require authorization for new devices. You may need to have your network administrator authorize the Tablet on your office wi-fi.

- 5) To see the status of available wi-fi connections by taping the start button.
- 6) Tap the settings option.
- 7) Select network and internet.
- 8) Make sure wi-fi is on.
- 9) Choose your network.

If you do not have access to a wi-fi internet connection, you can create a "hot spot" with your mobile device. Note that you should verify your data charges with your mobile carrier. As well, creating a wi-fi hot spot with your phone will require you to pair the Tablet and authorize it on the phone's wi-fi.

User Name:

Don't have an account? [Register Here](#)

Password:

[Forgot password](#)

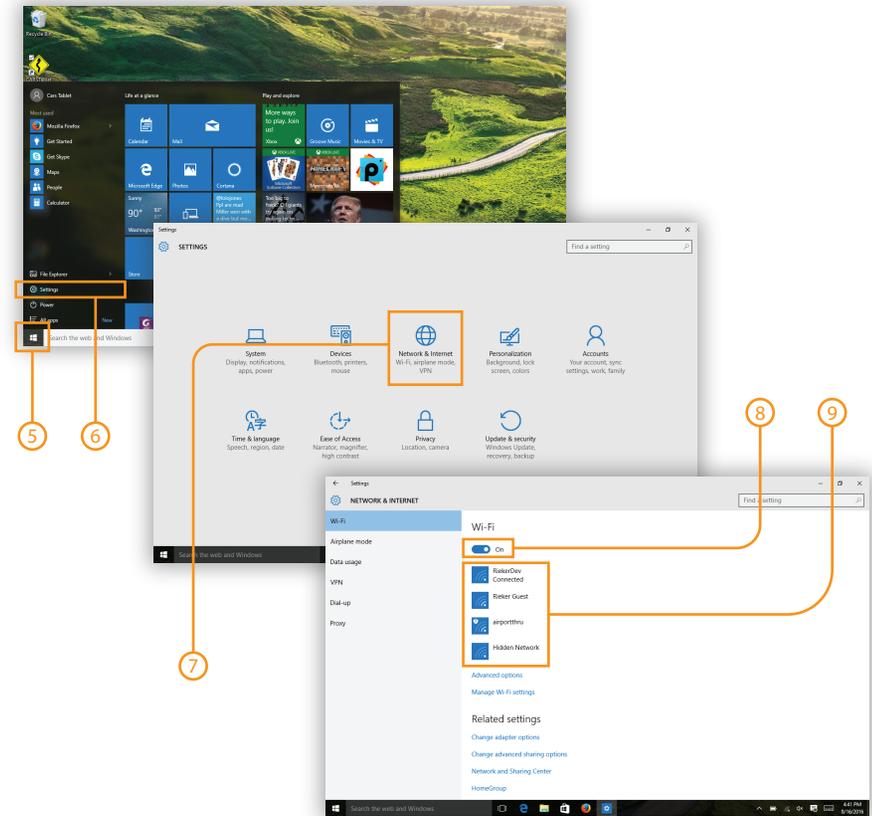
Account Key:

User ID: (email address)

Password:

Confirm Password:

I have read and accept the [End User License Agreement](#)



Before You Begin

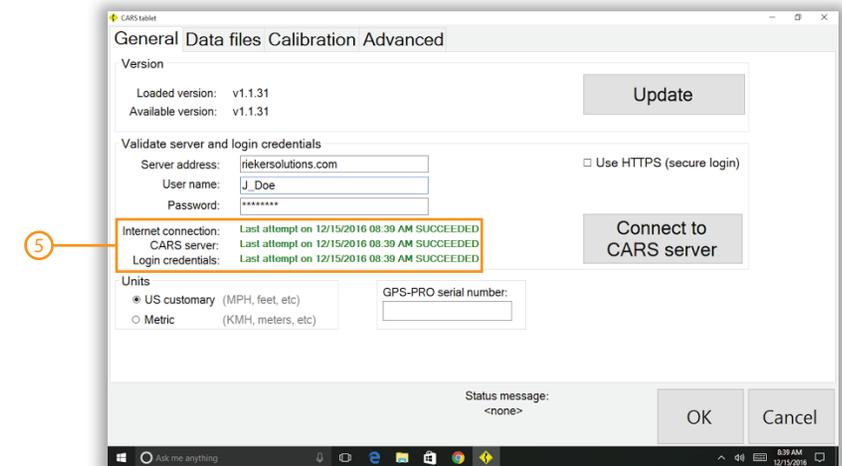
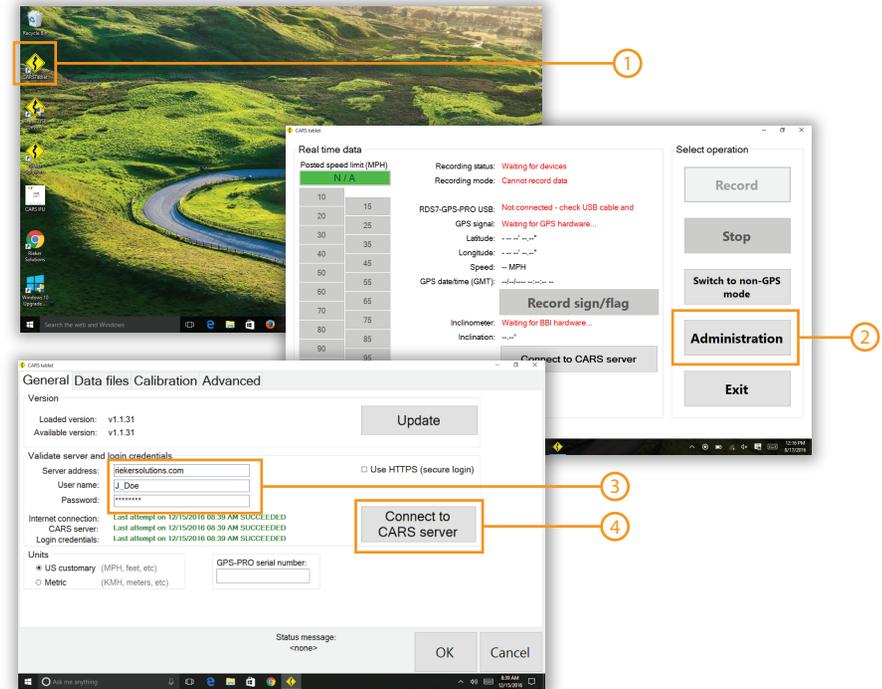
Logging Into The Application

- 1) To verify your tablet connection to the server, first open the application called "CARSTablet". This is the application that all field data will be collected with.
- 2) Tap the "Administration" button.
- 3) Enter your log in information. The server address should read riekersolutions.com.
- 4) Tap "Connect To Server".

System Verification

- 5) There are three steps to correctly connecting to the server. The three lines show each level of connection and will turn red if you are unable to connect. All three are hierarchical meaning if line 1 shows red (no connection) then lines 2 and 3 will not connect either.

Line 1 shows your tablets connection with the internet on via wi-fi. After tapping "Connect To Server" if line 1 is red, make sure your wi-fi is connected or contact someone in your IT department for further assistance. Line 2 shows your connection to the CARS server. If red, make sure the server address above reads riekersolutions.com. Otherwise it may be that our server is down, however, this is very uncommon. Line 3 shows the validity of your login credentials. If red, make sure your user name and password is correct.



Before You Begin

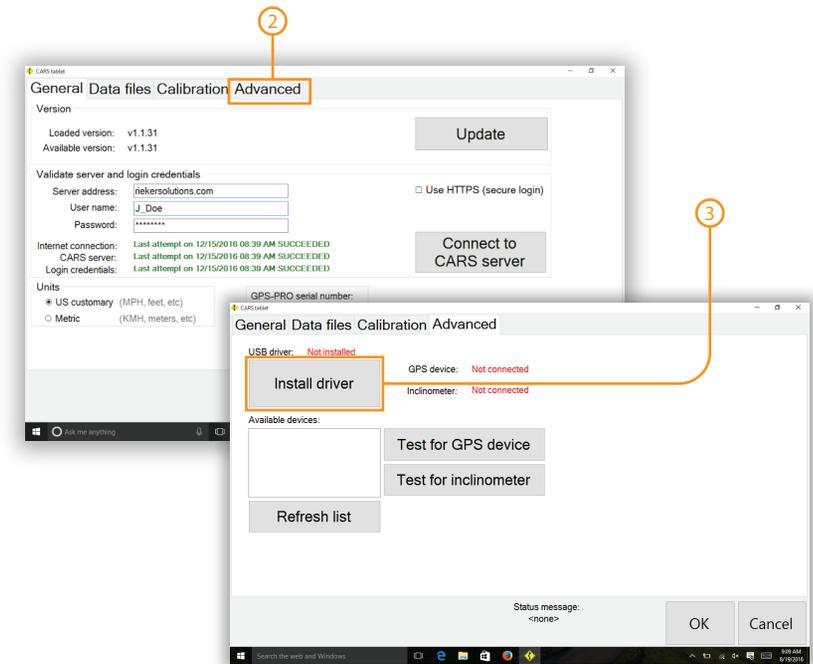
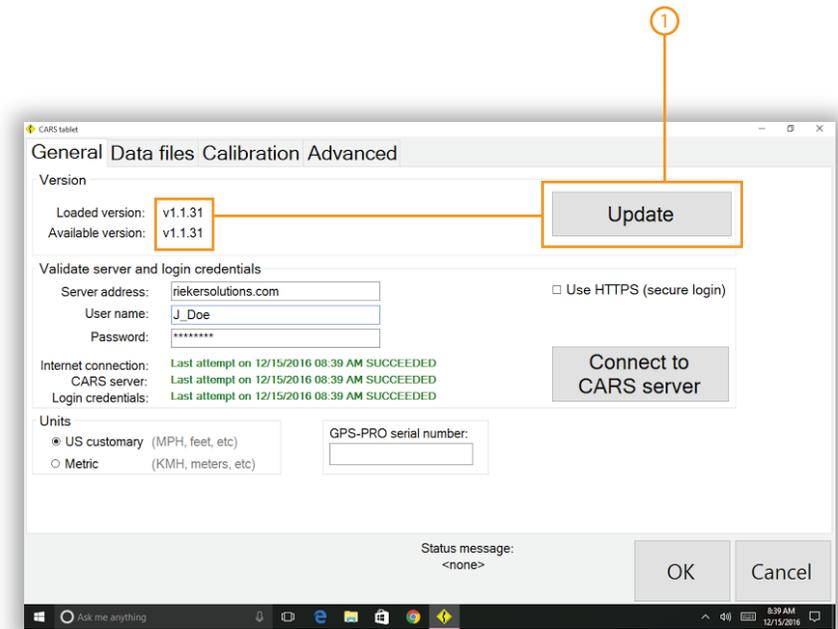
Checking For Updates

- 1) As improvements are made to CARS updates will be pushed to the tablet. If there is an update available you will be presented a message stating that an update is available. You should accept the update and ensure you have the newest available version of the CARS Recording Tablet Software. Periodically check to make sure the loaded version and available version match. If not, please tap update which will download the newest version and restart the software.

USB Driver

The USB driver allows information from the RDS7-GPS-PRO to be processed by the tablet.

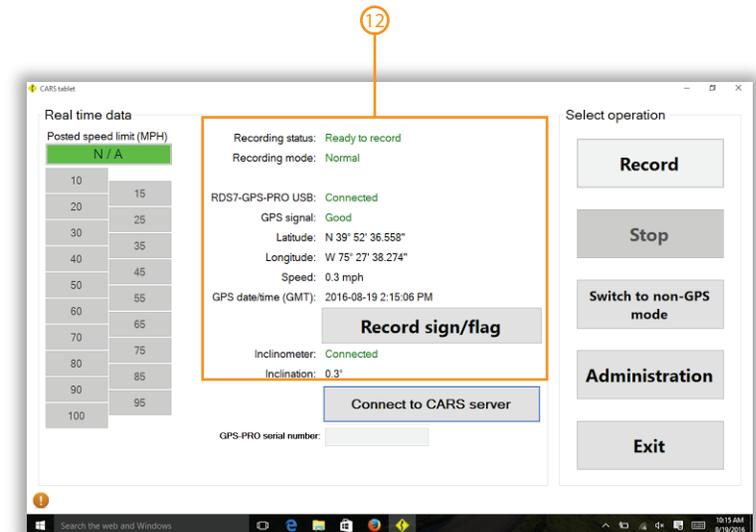
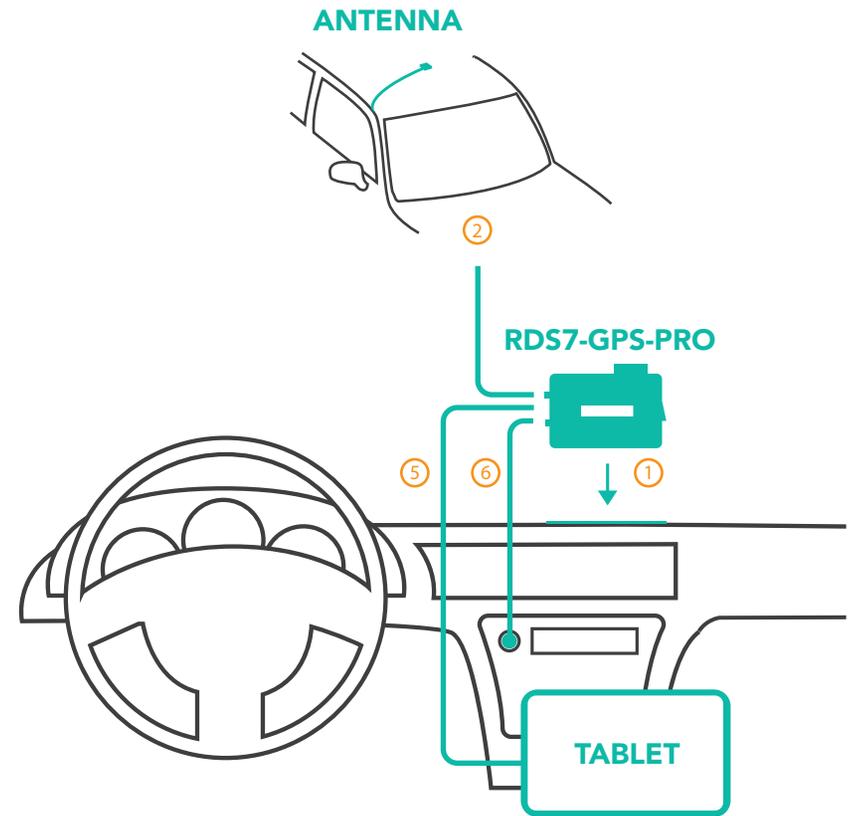
- 2) In the "Administration" page, tap the "Advanced" tab.
- 3) If the USB driver status reads in red "Not Installed". Tap the "Install Driver" button which will pop up a terminal window and install the USB Driver. Once this step is done, road data can successfully be collected.



Vehicle Installation

Setting Up The Vehicle

- 1) Attach the RDS7-GPS-PRO to the dash in a close to level position on the dashboard. (See “zeroing for the RDS7-GPS-PRO” for more details)
- 2) Connect the GPS antenna and route the magnetic antenna outside of the vehicle to the center of the roof with a clear view of the sky. The cable can be passed through an open window or through the car door.
- 3) (Optional) Attach the Goose-neck Floor Tablet Mount to the passenger seat support bracket, orient in a position conveniently accessible from the driver seat and place the tablet into the bracket.
- 4) (Optional) Place the Cup-holder Tablet Mount into a convenient empty cup-holder and place the tablet into the bracket.
- 5) Connect the RDS7-GPS-PRO and the Tablet with the supplied USB cable.
- 6) Connect the RDS7-GPS-PRO power supply and plug into the vehicle cigarette lighter adapter
- 7) (Optional) Connect the Tablet power supply
- 8) Once connected – Turn on the Tablet.
- 9) Once the Tablet boots up, tap the screen, and login to the Pre-setup CARS™ USER.
- 10) From the Windows desktop, launch the CARS™ Tablet Recording Application. This can be done by double taping your finger on the icon (yellow curve sign). This should launch the Application Home screen.
- 11) Turn on the RDS7-GPS-PRO by turning on the rocker switch on the side of the unit. After it boots, you will see the inclination angle displayed on the LCD display.
- 12) It can take 30-40 seconds for the tablet to initially recognize the RDS7-GPS-PRO and initialize the GPS. You can see the progress on the Application Home screen. When the Application is ready for use, the Recording Status will turn green. If the Recording status does not initialize after 1 minute, see the Troubleshooting section for further instructions

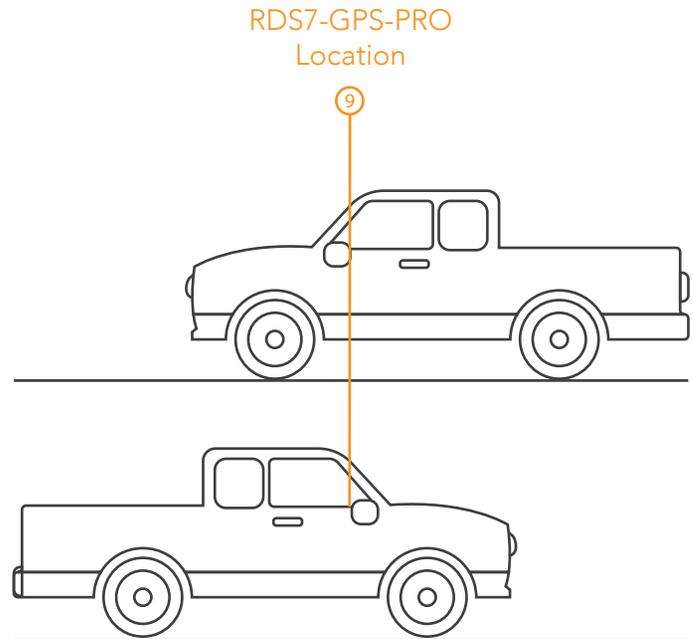


Vehicle Installation

Zeroing the RDS7-GPS-PRO

- 1) Drive to a known level pad (most commonly found at a gas station over the top of the fuel tanks). It is recommended to use a bubble level or carpenter level to assure level.
- 2) With the RDS7-GPS-PRO plugged in and powered on, locate a level spot on dash where the LCD display shows 0.0° ($0.0^\circ - 0.4^\circ$ is acceptable).
- 3) Place adhesive mounting strip (such as Velcro supplied) on this spot.
- 4) Since the vehicle is at a known level, and the unit was positioned on a known level spot on the dash, each time the unit is placed on the Velcro, it is zeroed - no need to use the Relative Zero (REL) feature with a known level location.
- 5) Re-zero unit each day before test data collection
- 6) Re-zero after unit is powered On
- 7) Factory setting are restored on Power Off
- 8) If the vehicle is known level but there are no level spots for the RDS7-GPS-PRO, place the unit anywhere on the dash and hit "Rel" which will zero the device on the slanted dash. (Only use this if the vehicle is known level.
- 9) If you cant find a level pad, place the RDS7-GPS-PRO on a visually level surface. If you can pull into the spot both forwards and backwards and have the RDS7-GPS-PRO read equally opposite values, the unit is level to the vehicle. Make sure the unit is in the same location both times.

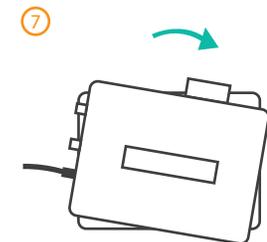
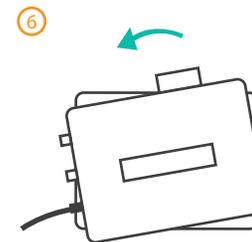
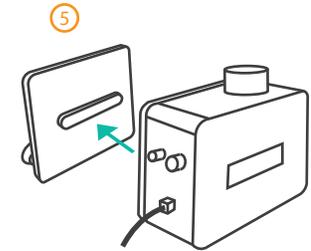
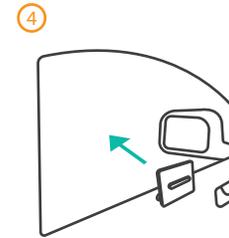
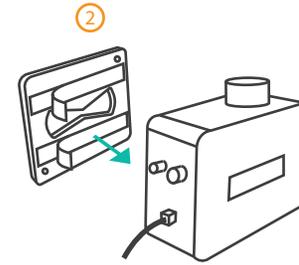
Verifying Placement Of Sensor



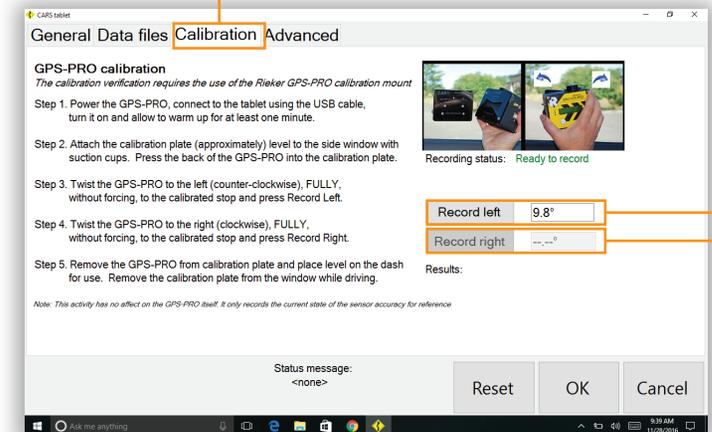
Using The Tablet

Checking Device Calibration

- 1) It is important to check the RDS7-GPS-PRO calibration after every data collection session. This ensures that the data just collected and everything before it is valid because the device is in calibration.
- 2) (One time step), Using the adhesive tape, permanently apply the flat plate with the center cut out to the back side of the RDS7-GPS-PRO.
- 3) On the tablet, tap the "Administration" button, then the "Calibration" tab.
- 4) Using the suction cups, stick the calibration plate to the drivers side window in a relatively level position.
- 5) Join the window plate and RDS7-GPS-PRO back plate together.
- 6) Rotate the unit to the left until it stops and tap "Record Left".
- 7) Rotate the unit to the right until it stops and tap "Record Right".
- 8) If the recordings are within 20 degrees (+/- .5 degrees) then the device is calibrated and the data is valid.
- 9) The device will never go out and back into calibration, so if the RDS7-GPS-PRO passes the calibration test, all data prior is valid.



3



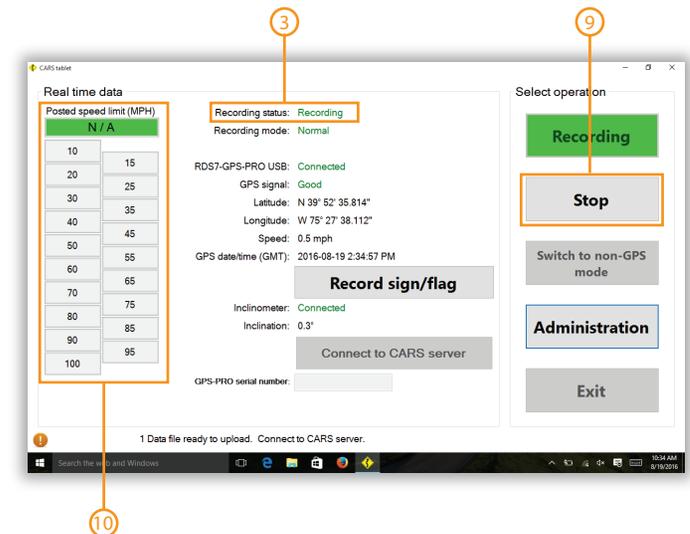
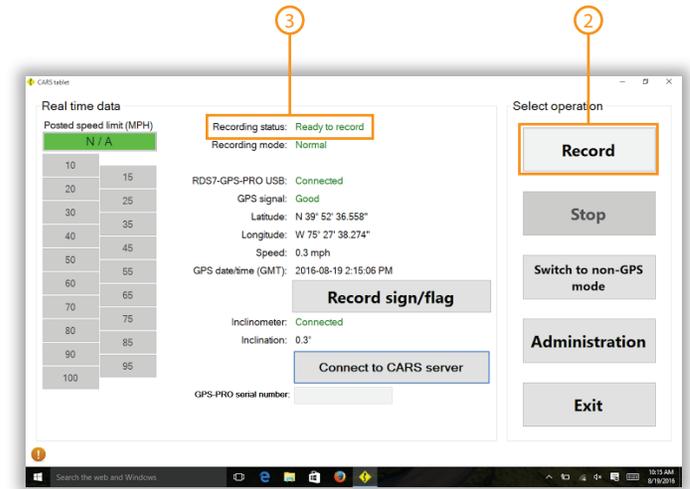
Using The Tablet

Collecting Data

- 1) Once the CARS components are connected, powered up, calibration is checked and device is level to vehicle, the system is ready for use.
- 2) With the Application home screen open, press the "Record" button before the data collection driving is started.
- 3) You will know data is being recording when the Recording Status reads: "Recording".
- 4) Driving should be conducted at or below the posted speed limit. Data will be collected at any speed, but more accurate data will be recorded at slower speeds.
- 5) It is not necessary to drive at a speed to achieve the side friction limit (as is the case with the classic Ball Banking technique) – best practice: slower is better.
- 6) Driving should be done as smooth as possible, with the test vehicle in the center of the driving lane. Erratic steering will result in lower recommended curve advisory speeds.
- 7) You can come to a stop during the test, but prolonged stops on a curve should be avoided. If it is necessary to stop on a subject curve for a prolonged period of time, another test run should be conducted.
- 8) There is no need to stop/start collection at each curve, but it is okay to do so. Though you can, there is no need to leave on for the entire day, creating a very large file - Best practice: Record one pass of a corridor then stop and start again for reverse direction
- 9) To stop data collection, click on the "Stop" button.

Posted Speed Limit

- 10) Posted speed limit data can optionally be collected in the field. Best practice is to pull over before or after a speed limit sign and tap the correct speed. If set, the value will remain until changed. This can also be entered on the portal during data analysis. This information allows the system to produce chevron spacing requirements for a given curve.



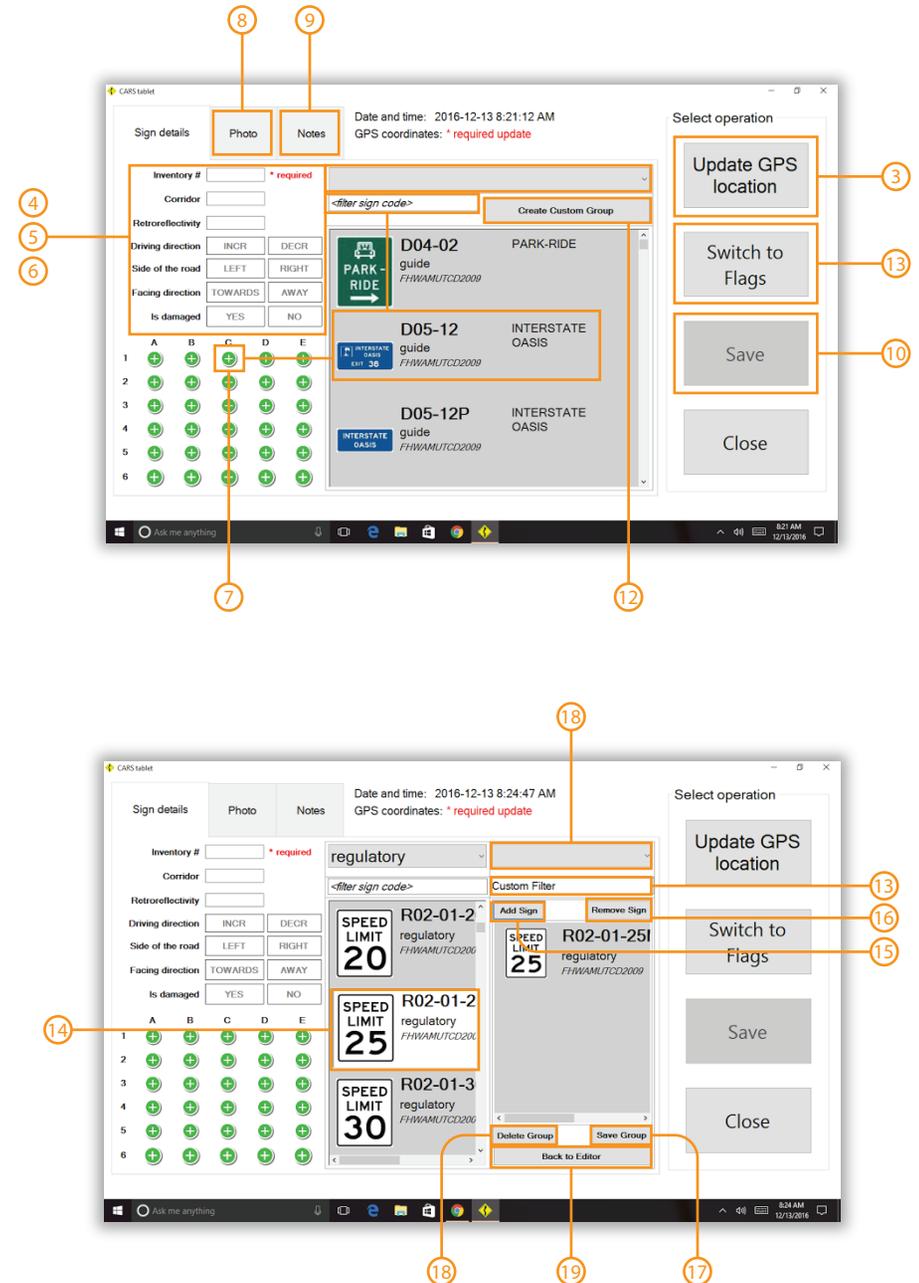
Using The Tablet

Recording Signs

- 1) Best practice is to have two people in the car so the passenger can record the signs.
- 2) Pull the vehicle over either right before or after the signs
- 3) Tap "Update GPS Location" near the sign
- 4) Give the sign an inventory number. If you do not have an inventory number system, it is best to create one.
- 5) (Optional), record the corridor and retro-reflectivity of the sign
- 6) (Optional), record the driving direction - increasing or decreasing mile markers (if none, the field is subjective), side of the road - left or right, facing direction - towards or away, and is damaged - yes or no.
- 7) Using the drop down or filter sign code box, pick the sign category in order to find the correct sign, then tap the image and tap a location on the 6x5 array.
- 8) (Optional), If you want to take a photo of the sign to remember the condition, etc. tap the "Photo" tab and take a picture.
- 9) (Optional), If you want to make a note about the sign to remember the condition, etc. tap the "Notes" tab and type out a note.
- 10) To save the flag, tap "Save" and button will say "Sign Saved" momentarily and then will be ready for next input.
- 11) All information can be input before the GPS location is updated. The location just needs to be updated at the sign and saved when done.

Custom Signs Filter

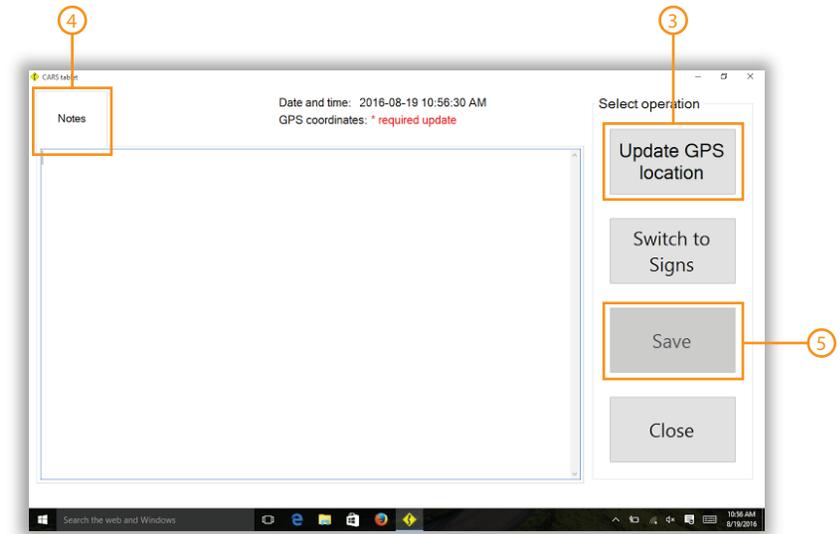
- 12) Click the "Create Custom Group" button.
- 13) Name your custom signs group.
- 14) Select signs from the stock group that you want to add.
- 15) Click the "Add sign" button to add it to your custom group.
- 16) To delete signs, select them in your custom group and click "Remove sign".
- 17) Click "Save group" to save your custom group.
- 18) To delete a custom group, select the group from the right drop down box and click "Delete group".
- 19) Select back to editor to view and use all stock and custom groups



Using The Tablet

Recording Flags

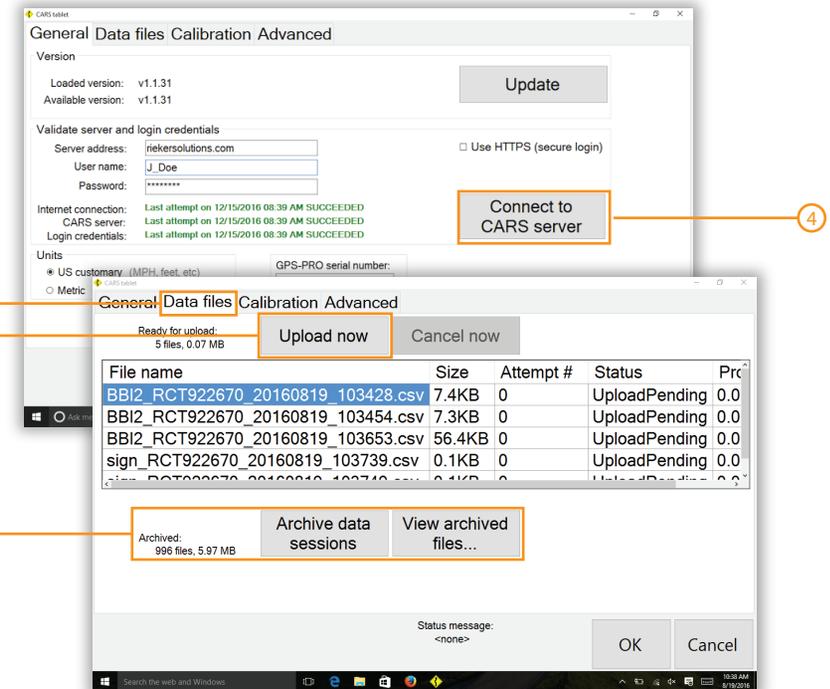
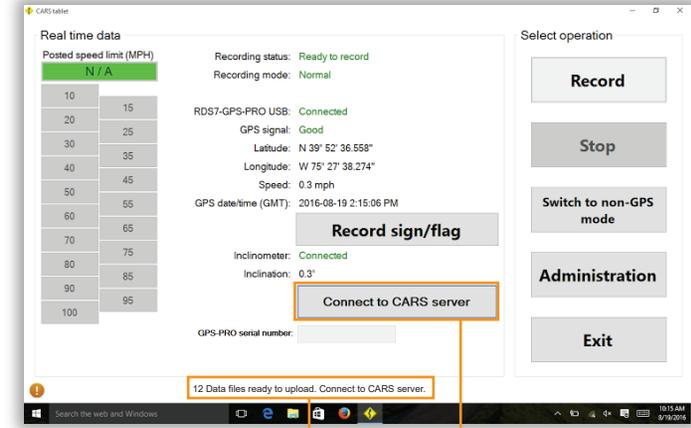
- 1) Flags are used for important areas of road that the user wants to note such as potholes, downed trees, etc.
- 2) Pull the vehicle over right before or after the notable area. From the signs tab, tap "Switch To Flags"
- 3) Tap "Update GPS Location" at the location of the flag.
- 4) Add a note about the flagged area.
- 5) Tap the "Save" button.



Using The Tablet

Uploading Data

- 1) To Upload your data you must be connected to wi-fi in order to connect to CARS server.
- 2) The bottom of the main screen will show you how many files have been collected and are ready to upload.
- 3) The fastest way to upload these files is to tap "Connect to CARS Server" from the main screen. This will begin the upload.
- 4) You can also upload your files by tapping the "Administration" button. Then under general tab tap "Connect to CARS Server". This way you can see all your connections in order to troubleshoot if needed.
- 5) Then Tap the "Data Files" tab to view all files to be uploaded.
- 6) Tap the "Upload Now" button to begin uploading all the files.
- 7) All uploaded files get archived on the tablet. Just in case something happens to the uploaded files, Rieker can still retrieve it from your tablet.



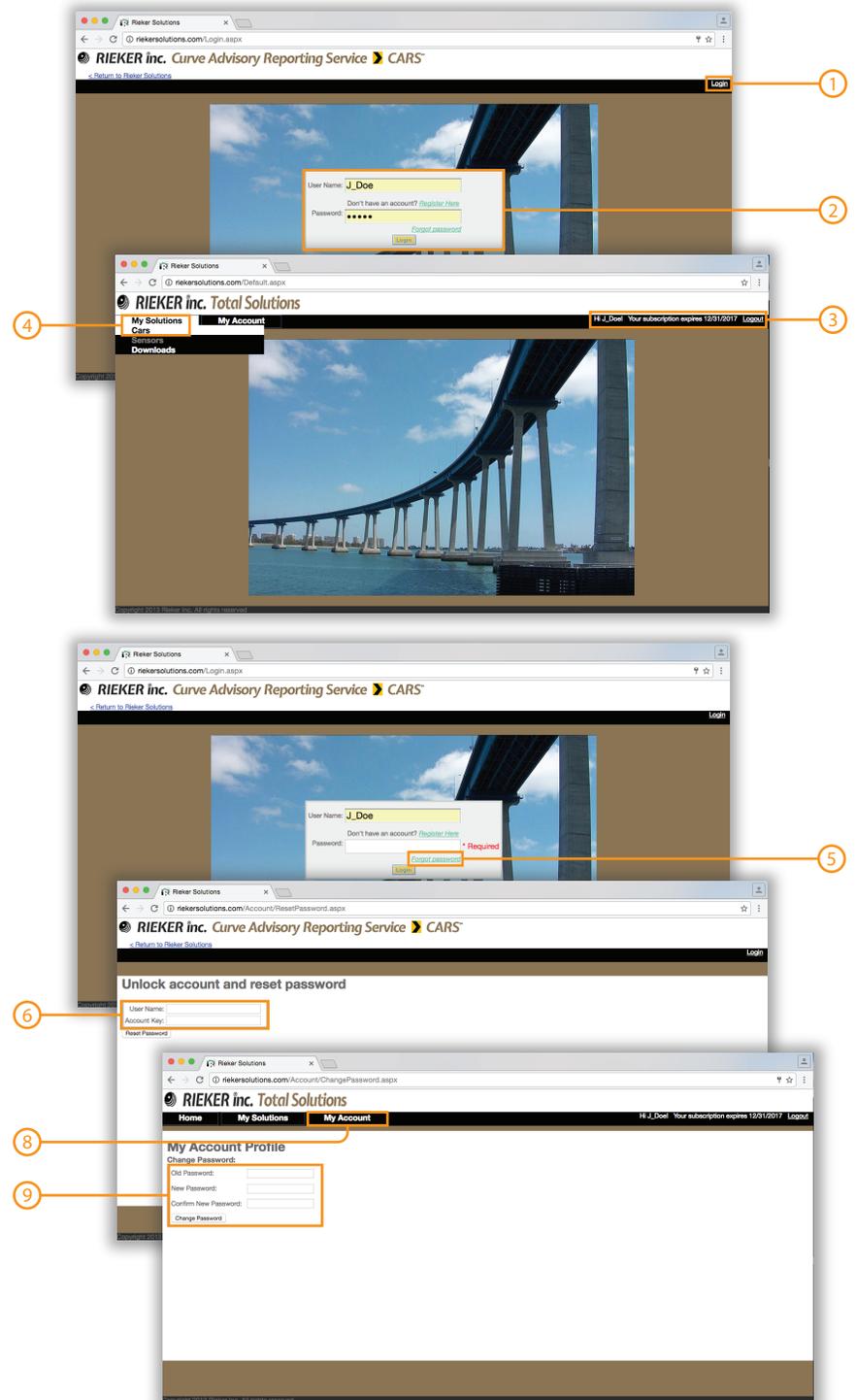
Using The Portal

Logging In

- 1) To access the portal click "login".
- 2) Enter your account user name and password you registered with.
- 3) Once logged in, you can view when your subscription to the portal expires.
- 4) To access the portals CARS pages, click "My Solutions" and then "CARS".

Resetting Your Password

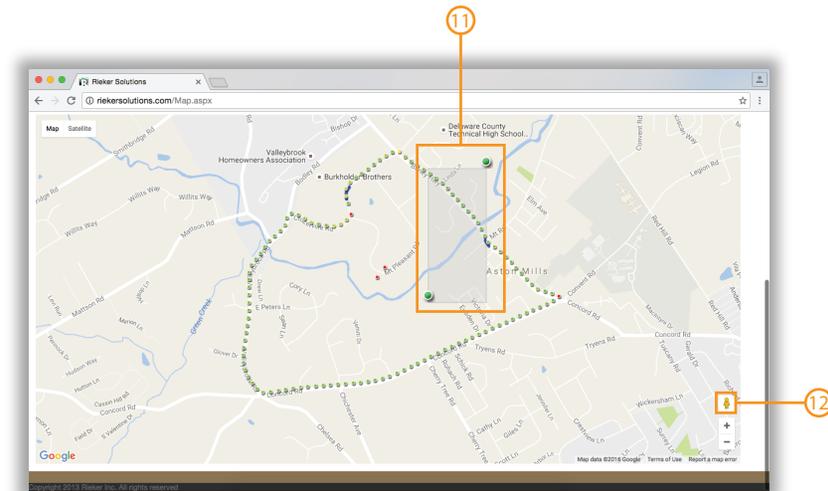
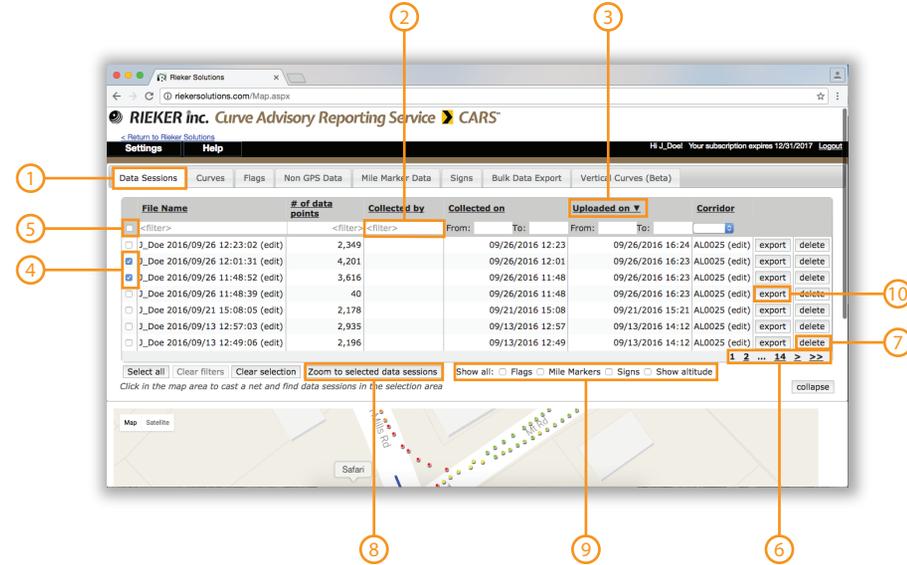
- 5) If you forget your password, click "forgot password" on the login box.
- 6) Enter your user name and account key to reset your password.
- 7) A new password link will be sent to your email
- 8) To change your password, once logged in, click "My Account".
- 9) Enter your old password and what you want to change it to.



Using The Portal

Selecting a Data Session

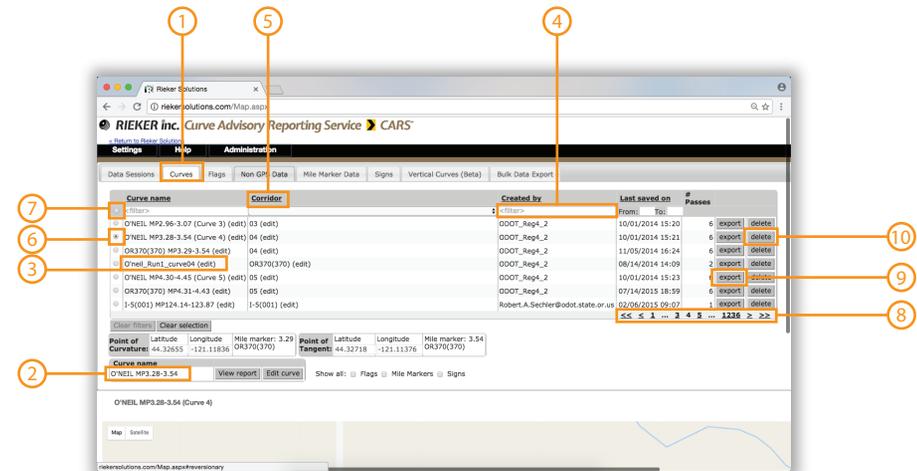
- 1) Select the "Data Sessions" tab.
- 2) To find a data session in the table, you can use the filter boxes to type in any specific identifier to filter your results. Data sessions have a naming scheme of (user date time). This is the default but can be edited.
- 3) You can also click on the underlined headers to sort the column in ascending or descending order.
- 4) Once you find your data session, you can select it by checking the check box.
- 5) You can select multiple data sessions if needed.
- 6) To view all data sessions that have been selected, check the check box in the header column and it will filter based on what has been selected.
- 7) You can scroll through pages as well to find a data session.
- 8) If you want to delete a data session, you can click the "delete" button in the respective row.
- 9) Once you have the data session(s) of your choice selected, click "zoom to selected data sessions" to view them on the map.
- 10) You can view flags, mile markers, signs and altitude on that section of road as well by checking the respective box.
- 11) To export a specific data session, click "export" for that selection.
- 12) You can select a data session from the map by dropping two points over the area of road which will select any data sessions that fall in that net.



Using The Portal

Selecting a Curve

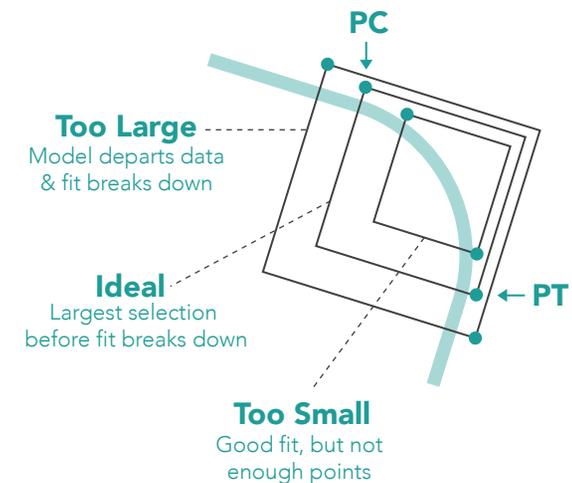
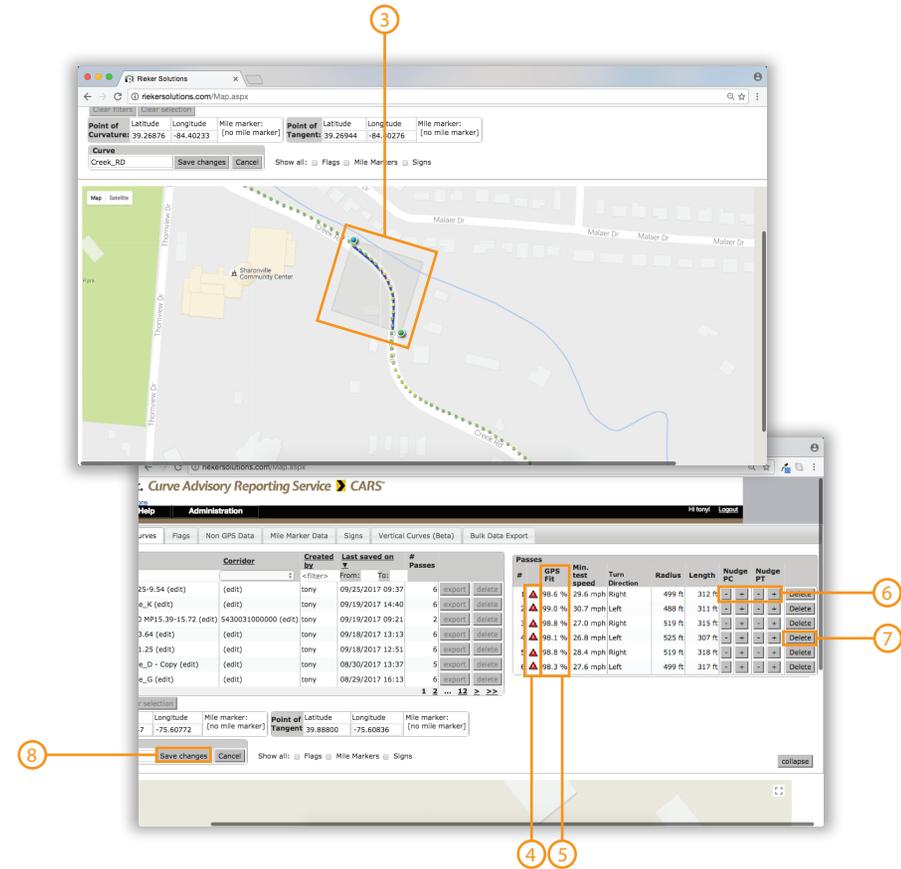
- 1) Select the "Curves" tab.
- 2) If mile markers are associated with a curve, it will have a default name of (road name PC mile marker PT mile marker)
- 3) If no mile marker is associated, the user should name the curve.
- 4) To find a curve in the table, you can use the filter boxes to type in any specific identifier to filter your results.
- 5) You can also click on the underlined headers to sort the column in ascending or descending order.
- 6) Once you find your curve, you can select it by checking the radio button. You can only select one curve at a time.
- 7) To find the curve that have been selected on the table, click the radio button in the header column and it will filter based on selection.
- 8) You can scroll through pages as well to find a curve.
- 9) To export .csv files for a specific curve, click that curves "export" button.
- 10) To delete a specific curve, click that curves "delete" button.



Using The Portal

Creating a Curve

- 1) With a data session selected scroll into the area that looks like a curve.
- 2) You can tell a curve by the points collected going from green to yellow, orange, and red.
- 3) Drop a net around the curved section by dropping a point near the PT and PC of the curve. Selecting extra tangent sections of a curve will give an artificially low curve advisory speed.
- 4) Once the curve is selected, check the passes box to see if there are any errors. Hover the mouse over the triangular warning to see the error.
- 5) Fit tells you how well the curve selected fits the modeled parabola. You want to select the largest area of the curve before the fit deteriorates.
- 6) Use the PC and PT nudge buttons to slight move the selected curve section. Alternatively you can move the pins on the map for larger moves.
- 7) To delete a pass you do not want included in the analysis, click the "Delete" button in the passes table.
- 8) When done creating curve click "Save Changes".



Using The Portal

Understanding Proper Fit

- 1) **GPS Fit** - This fit shows how well the actual curve aligns with the chosen model (parabolic or circular). If the curve does not align with the model, it can be due to improper driving technique or the selection area including curve tangents.

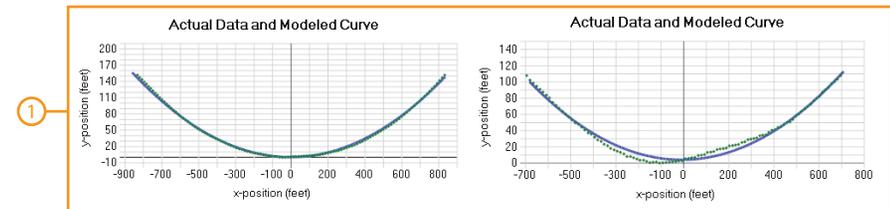
Percent Fit	Description
99.9 - 94.0	Excellent Fit
93.9 - 88.0	Good Fit - Check data to verify results
87.9 - Less	Poor Fit - Verify results or re-survey area

Passes										
#	GPS Fit	Min. test speed	Turn Direction	Radius	Length	Nudge PC		Nudge PT		
1	98.6 %	29.6 mph	Right	499 ft	312 ft	-	+	-	+	Delete
2	99.0 %	30.7 mph	Left	488 ft	311 ft	-	+	-	+	Delete
3	98.8 %	27.0 mph	Right	519 ft	315 ft	-	+	-	+	Delete
4	98.1 %	26.8 mph	Left	525 ft	307 ft	-	+	-	+	Delete
5	98.8 %	28.4 mph	Right	519 ft	318 ft	-	+	-	+	Delete
6	98.3 %	27.6 mph	Left	499 ft	317 ft	-	+	-	+	Delete

①

Excellent Fit

Poor Fit



Using The Portal

HTML Curve Report

- Once the curve is saved, click view report. To revert back to the map, click view map in the same location.
- To get the proper side friction limit, it is important to enter the posted speed limit (not the advisory speed limit) in the saved box. The collected drop down menu is a list of all speed limits collected in the field. No speed limit will be used for calculation unless it is in the saved box.
- Entering the posted speed limit will set the auto side friction limit. You can enter a custom value if needed (ex. semi-trucks).
- Auto side friction values correspond to the 2009 MUTCD guidelines.
- Select the curve model based on the deflection angle. For curves under 140 use the parabolic model, for curves over 140 use the circular model.
- Click "Update" to recalculate all values based on new posted speed limit and side friction limit.
- The system will autoselect one pass in each direction with the highest fit. You can change the selection using the checkboxes. Click the "update" button to save the selection.
- The minimum calculated advisory speed gives the unrounded advisory speed recommendation from the calculation.
- The recommended advisory speed gives the recommended speed.
- It is up to the traffic engineers discretion if they think a value should be rounded differently (ie. 29 to 30) based on their assessment of the road.
- The sign requirements and spacing requirements (required, recommended, optional, none) are given (ie. curve sign and speed plaque are placed proper distance before the PC).
- To add these signs to the signs page, click "Create Signs". They will then also appear on the signs table (13).
- Curve details are given for all GPS data points recorded.
- Collected data is graphed on charts for analysis and to determine how well each pass was driven.
- If you would like to copy the curve to generate a new report with a different limit (ie. cars and trucks), click the "copy curve" button.

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Using The Portal

PDF Report

- 1) After Selecting a curve, clicking "Printer Friendly PDF" will give you a PDF version of the HTML report on that specific curve.

Settings

- 2) To control what content is exported on the PDF report, from the top navigation bar click "settings"
- 3) Check/uncheck the boxes of content you want to include then go back to the curve tab and re-click "Printer Friendly PDF" on the selected curve.

Safe Curve Speed Analysis Report

Curve Name: Creek_Rd_MP9.25-9.54

Consider Name: N/A Created by: tony Model Geometry: Parabolic Posted Speed: 35 mph
 Mile Post: N/A Saved On: 07/30/17 14:56 Lateral Friction Limit: 12" RAS - Right: 20 mph
 RAS - Left: 20 mph

Analysis Summary

Post #	Turn Direction	Tangent Direction	Point of Curvature Latitude Longitude	Point of Tangent Latitude Longitude	EPS FR	BSI FR	Average Test Speed	Curve Radius	Curve Length	Deflection Angle	Curve Chord	Curve Slope	Curve Min. Cant	Recommended Advisory Speed (RAS)
1	Right	North	39.88676° -75.60696°	39.88719° -75.60702°	98.2 %	94.9 %	27.8 mph	179 ft	254 ft	67°	179 ft	-4.1 %	A	12.1 mph

Sign placement detail

Inventory Number	Sign Code Number	Distance from PC	Created By	User Created On	Consider Name	Latitude	Longitude	Curve Direction	Facing Direction	Facing Direction	Last Inspection Date	Existing	Proposed
SKGN-91101-ADVISORY- DIRECTION	W1-1L	107 feet	tony	07/30/17 15:03	39.88746° -75.60775°			Left					Proposed
SKGN-91101-ADVISORY- DIRECTION	W13-1P-20mph	20 feet	tony	07/30/17 15:03	39.88746° -75.60775°			Left					Proposed
SKGN-91101-0 FT-L	W1-8L	10 feet	tony	07/30/17 15:03	39.88719° -75.60776°			Left					Proposed
SKGN-91101-40 FT-L	W1-8L	52 feet	tony	07/30/17 15:03	39.88750° -75.60776°			Left					Proposed
SKGN-91101-80 FT-L	W1-8L	87 feet	tony	07/30/17 15:03	39.88668° -75.60720°			Left					Proposed
SKGN-91101-120 FT-L	W1-8L	125 feet	tony	07/30/17 15:03	39.88688° -75.60750°			Left					Proposed
SKGN-91101-160 FT-L	W1-8L	160 feet	tony	07/30/17 15:03	39.88682° -75.60772°			Left					Proposed
SKGN-91101-200 FT-L	W1-8L	195 feet	tony	07/30/17 15:03	39.88678° -75.60772°			Left					Proposed
SKGN-91101- DIRECTION	W1-6L	10 feet	tony	07/30/17 17:18	39.88719° -75.60776°			Left					Proposed
SKGN-91101-ADVISORY- DIRECTION	W1-1R	95 feet	tony	07/30/17 17:18	39.88665° -75.60666°			Right					Proposed
SKGN-91101-ADVISORY- DIRECTION	W1-4R	95 feet	tony	07/30/17 17:18	39.88665° -75.60666°			Right					Proposed
SKGN-91101-ADVISORY- DIRECTION	W1-4R	1 feet	tony	07/30/17 17:18	39.88676° -75.60698°			Right					Proposed
SKGN-91101-0 FT-R	W1-8R	1 feet	tony	07/30/17 17:18	39.88676° -75.60698°			Right					Proposed
SKGN-91101-40 FT-R	W1-8R	50 feet	tony	07/30/17 17:18	39.88681° -75.60713°			Right					Proposed
SKGN-91101-80 FT-R	W1-8R	85 feet	tony	07/30/17 17:18	39.88684° -75.60715°			Right					Proposed
SKGN-91101-120 FT-R	W1-8R	126 feet	tony	07/30/17 17:18	39.88680° -75.60733°			Right					Proposed

Settings

RIEKER inc. Curve Advisory Reporting Service CARS

Printed Reports:

- Analysis summary
- Include warnings
- Sign recommendation summary
- Curve map reference
- Map view (default)
- Satellite view
- Sign map reference
- Map view (default)
- Satellite view
- Sign placement detail
- Sign placement detail
- Data graphic
- Test speed and vertical profile
- Processed curve data detail
- Model X/Y coordinates (default)
- Curvilinear distance (requires mile marker data)
- Collected GPS data detail
- Collected B1 data detail
- Data session summary
- Calibrations verification results log

Units:

- English
- Metric

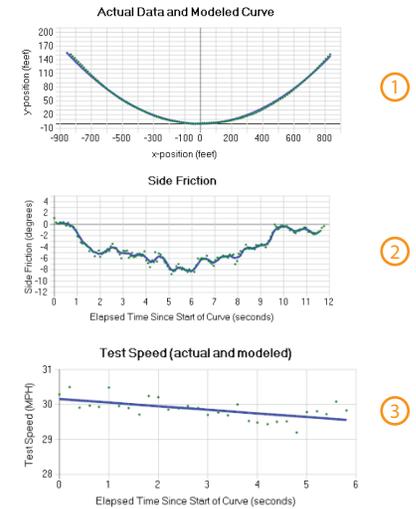
Using The Portal

Determining Good Driving

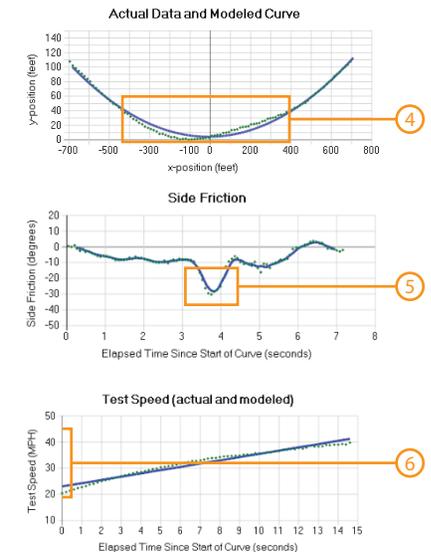
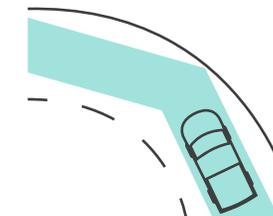
- 1) Proper driving will conform to the modeled curve by driving smoothly around a corner and staying in the middle of the lane.
- 2) The side friction chart will show a regular oscillation due to the suspension of the car.
- 3) Test speed should maintain as constant as possible. Best practice is to stay within 5 mph.
- 4) If the driver under/over steers during the curve, the actual data will not follow the modeled curve.
- 5) Under/over steering can be seen in the side friction graph as a spike in the normal oscillation.
- 6) Varying test speeds by more than 5 mph can cause a cross axis error which will effect the recommended curve advisory speed. Bad driving will result in an artificially low advisory speed. It will never result in an artificially high advisory speed due to the larger increase in side friction that it causes.



Good Driving



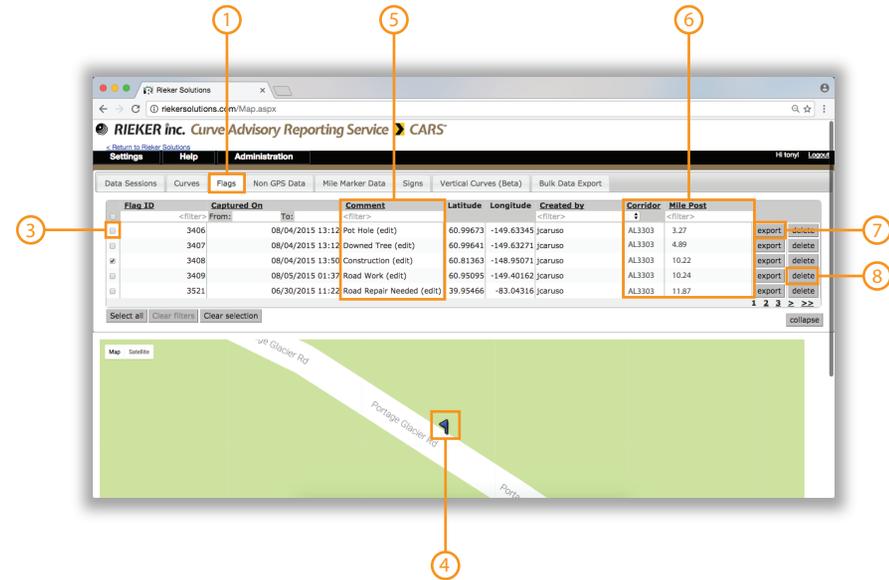
Bad Driving



Using The Portal

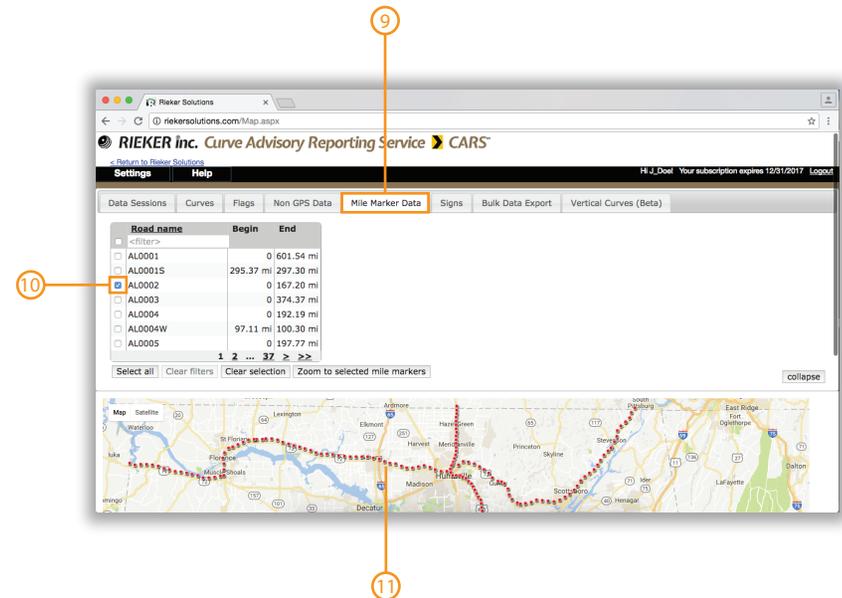
Selecting a Flag

- 1) To view flags click the "Flags" tab.
- 2) You can filter and sort the table the same way you would with the data sessions and curves tab.
- 3) Click the check box to select a flag. You can select multiple flags at once.
- 4) Selected flags will show as a blue icon on the map below.
- 5) The note that is associated with the flag is available in the table and can be edited.
- 6) The corridor and mile marker data is available in the table in order to find exact location of flag.
- 7) To export flag's .csv file, click the "export" button for the specific flag.
- 8) To delete a flag, click the "delete" button for that specific flag.



Mile Marker Data

- 9) To view mile marker data, click the "Mile Markers" tab.
- 10) Check the box of the mile marker section that you want to view.
- 11) The mile markers will display as a line of red dots on the map.



Using The Portal

Selecting a Sign

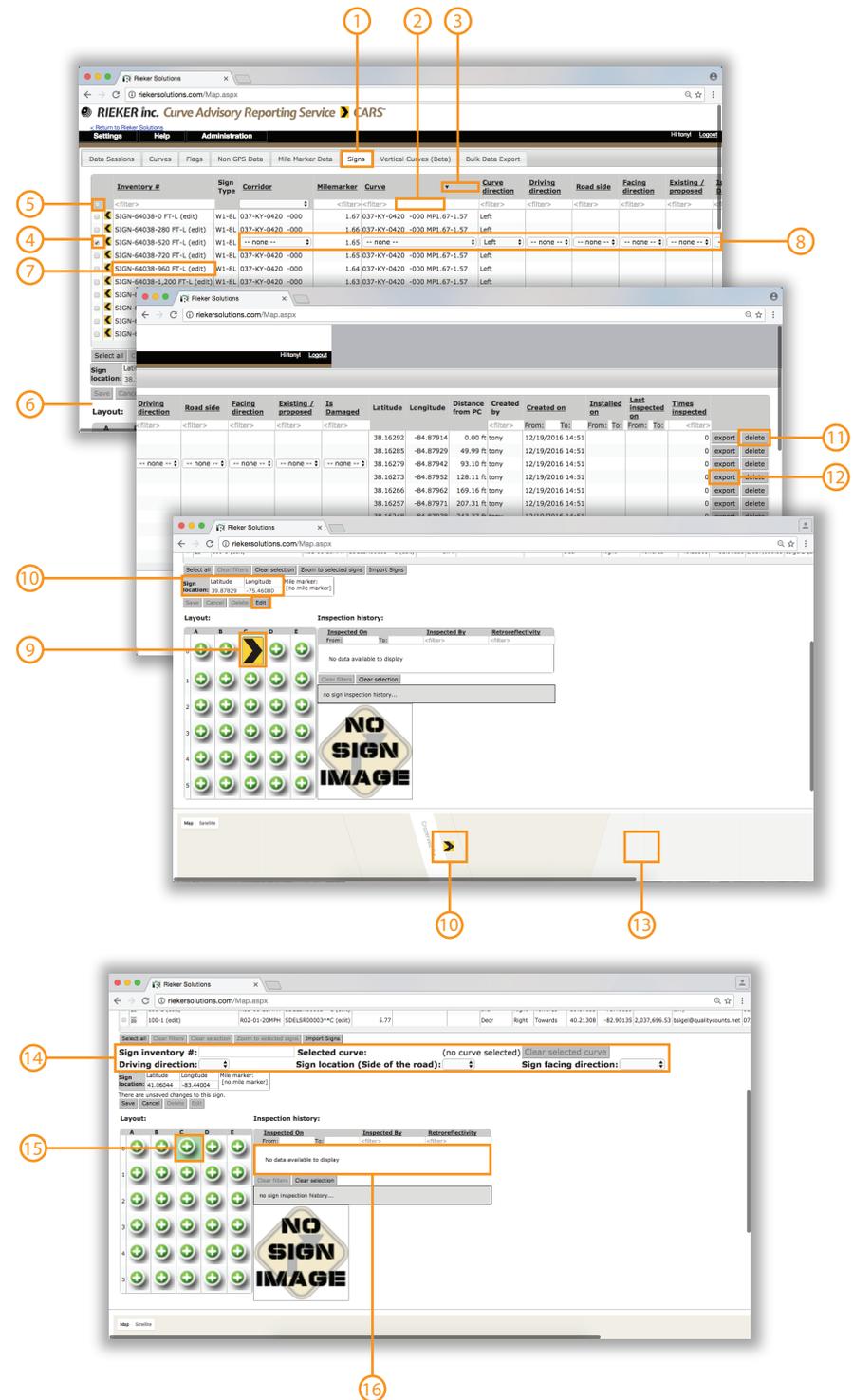
- 1) To view signs click the "Signs" tab.
- 2) To find a sign in the table, you can use the filter boxes to type in any specific identifier to filter your results.
- 3) You can also click on the underlined headers to sort the column in ascending or descending order.
- 4) Once you find your sign, you can select it by checking the check box.
- 5) To view all signs that have been selected, check the check box in the header column and it will filter based on what has been selected.
- 6) Selected signs will show detailed information on the drop down screen below the table.
- 7) Signs associated to curves have a naming scheme of (SIGN_signID_DistanceFromBeginningOfCurve_FeetOrMeters_LeftOrRight)

Editing a Sign

- 8) When a sign is selected, you can edit its attributes on the table including associated curve, driving direction, road side and facing direction with the drop down menus.
- 9) To edit a selected sign's icon image, click "Edit", click the image and pick the new one.
- 10) To edit a sign's location, click "edit" then drag it to the new location on the map or manually input a lat/long value.
- 11) To delete a sign, click the "delete" button for the specific sign.
- 12) Click "export" to export one specific sign file.

Creating a Sign

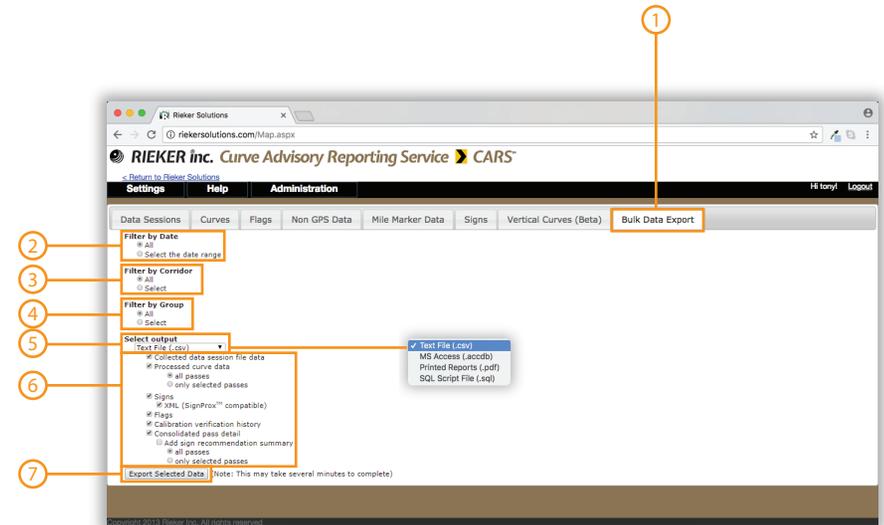
- 13) To create new sign, click on the map in the area that you want to place the sign.
- 14) The drop down screen will allow you to enter all the signs inventory and location details.
- 15) Click any plus sign on the array to find and place the proper sign image. The array is there to be able to properly arrange a pole with more than one sign on it.
- 16) For signs already created on the road, if there was a note associated, it will show in the inspection history.



Using The Portal

Bulk Exporting Data

- 1) To bulk export your data, click the "Bulk Data Export" tab.
- 2) To export only data between a specific date range, click the "select the date range" button and enter a "from" and "to" date.
- 3) To export only data on a specific corridor, click the "corridor" button and select from the drop down menu.
- 4) For Admins, to export only data in a specific group, click the group button and select from the drop down menu.
- 5) To pick the type of file you want exported, click the drop down under "select output" to choose. Text file will export your data in a .csv file compatible with excel. MS Access will export a Microsoft Access compatible file. Printed reports will format the report into a PDF file compatible with any PDF reader and in printable format. SQL Script File will export your data compatible with your SQL Server d
- 6) To select the type of information you want to include on the report, click the check box(s) of the data types. Note: Printed reports will only export "processed curves" and XML (SignProx compatible) is only available in the Text File export.
- 7) Once all settings are selected, click "Export Selected Data". This will bring up a loading bar below and take a few minutes to complete. Files will end up in your downloads folder by default.



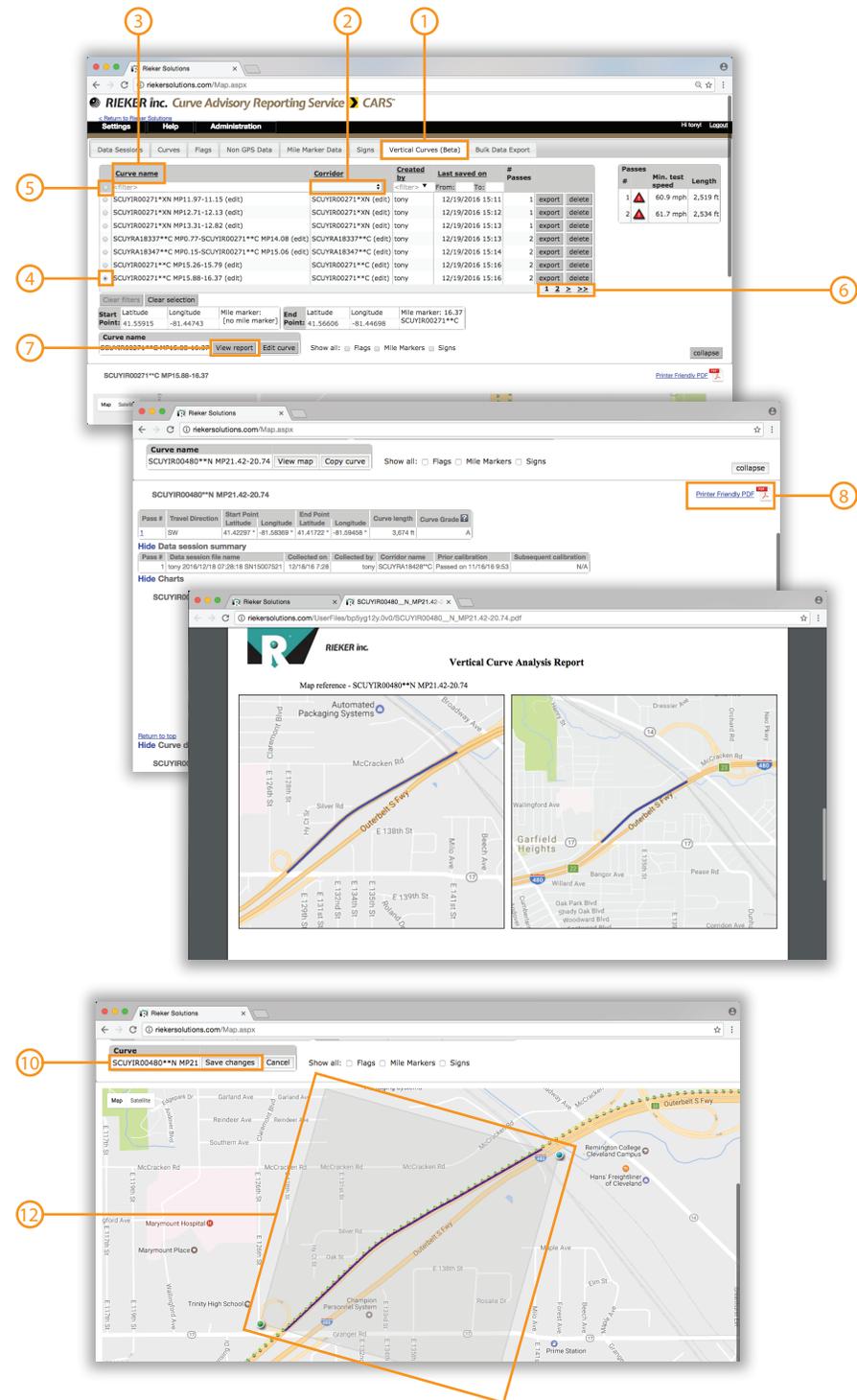
Using The Portal

Selecting Vertical Curves

- 1) Select the "Vertical Curves" tab.
- 2) To find a curve in the table, you can use the filter boxes to type in any specific identifier to filter your results.
- 3) You can also click on the underlined headers to sort the column in ascending or descending order.
- 4) Once you find your curve, you can select it by checking the radio button. You can only select one curve at a time.
- 5) To find the curve that have been selected on the table, click the radio button in the header column and it will filter based on selection.
- 6) You can scroll through pages as well to find a curve.
- 7) To view its HTML report, click "View Report".
- 8) To view it's PDF report, click "Printer Friendly PDF".

Creating Vertical Curves

- 9) Green dots show no change in elevation while yellow, orange and red respectively show greater changes in elevation.
- 10) Drop a pin on the end of one green section and the start of the next dropping a net over the yellow, orange, and red sections.
- 11) If mile markers are associated, the name will be prepopulated.
- 12) If no mile markers are associated, you can name the vertical curve. Then hit "Save Change".



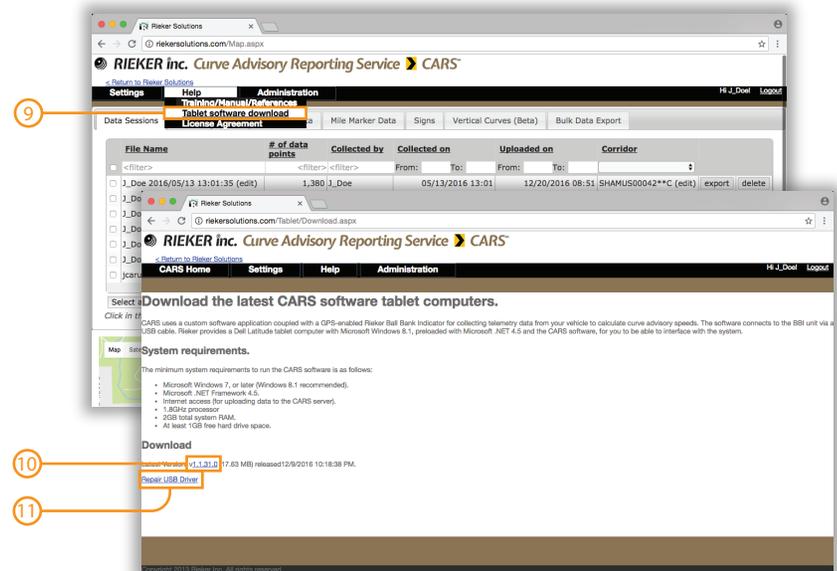
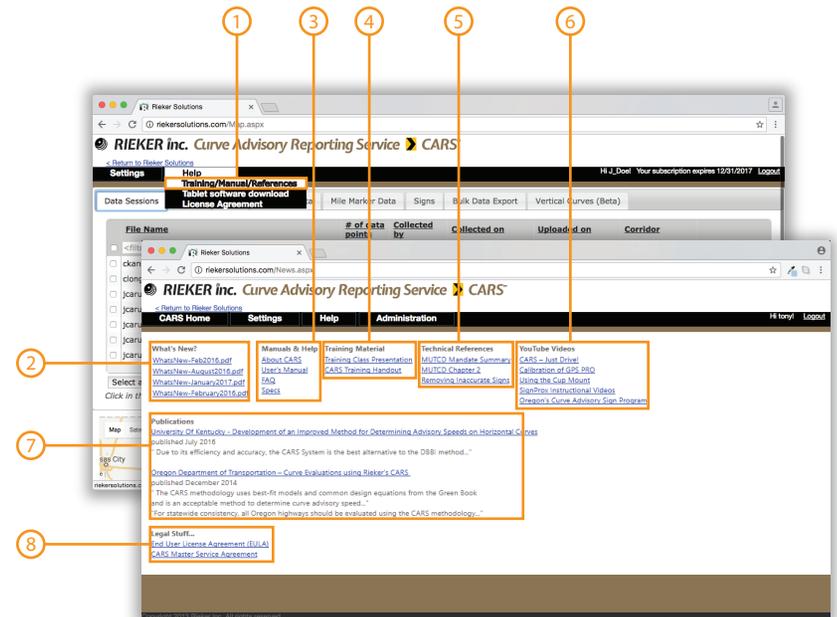
Using The Portal

Help Guides

- 1) To view help guides, click, "Help" then "What's New? / FAQ".
- 2) The "What's New" category updates the user with new features that are added to the CARS system periodically.
- 3) The "Manuals & Help" section provides guides on product/service specifics and features.
- 4) "Training Materials" include the training presentation and handout.
- 5) "Technical References" provides links to MUTCD mandate information.
- 6) The "Youtube Videos" give information about the CARS system, using some devices and the SignProx software.
- 7) The "Publications" are studies performed showing the effectiveness of the CARS system.
- 8) The "Legal Stuff" section includes documents on the license agreement.

Tablet Software Download

- 9) To get to software downloads, click the "Help" tab then "Tablet Software Downloads".
- 10) The latest version of the CARS tablet software will be listed. Click the link which will automatically start the download to the tablet you are accessing the page from.
- 11) "Repair USB Driver" link downloads a software to the tablet to reinstall the USB Driver should a problem occur.





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